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Cognitive Development

journal homepage: www.elsevier.com/locate/cogdev

Helping as an early indicator of a theory of mind: Mentalism or teleology?

Beate Priewasser^{a,b,1,*}, Eva Rafetseder^{c,1}, Carina Gargitter^b, Josef Perner^{a,b}

^a Centre for Cognitive Neuroscience, University of Salzburg, Austria

^b Department of Psychology, University of Salzburg, Austria

^c Faculty of Natural Sciences, University of Stirling, Scotland, United Kingdom

ARTICLE INFO

Keywords:

Helping paradigm
Theory of mind
Replication
Teleology
Early false belief understanding

ABSTRACT

This article challenges the claim that young children's helping responses in [Buttelmann, Carpenter, and Tomasello's \(2009\)](#) task are based on ascribing a false belief to a mistaken agent. In our first Study 18- to 32-month old children ($N = 28$) were more likely to help find a toy in the false belief than in the true belief condition. In Study 2, with 54 children of the same age, we assessed the authors' mentalist interpretation of this result against an alternative teleological interpretation that does not make the assumption of belief ascription. The data speak in favor of our alternative. Children's social competency is based more on inferences about what is likely to happen in a particular situation and on objective reasons for action than on inferences about agents' mental states. We also discuss the need for testing serious alternative interpretations of claims about early belief understanding.

1. Introduction

Buttelmann's helping paradigm plays an important role in the discussion about when infants or children come to understand belief ([Buttelmann, Carpenter, & Tomasello, 2009](#): BCT). In the standard false belief test children are asked to predict where an agent, who is mistaken about an object's location, will look for it. Quite reliably only by about 4 years children answer this question correctly ([Wimmer & Perner, 1983](#); [Wellman, Cross, & Watson, 2001](#)). In contrast, children's looking behavior that indicates their anticipations about where the agent will search for the object provides evidence for sensitivity to false beliefs in infants as young as 18 months ([Clements & Perner, 1994](#); [Southgate, Senju, & Csibra, 2007](#); [Thoermer, Sodian, Vuori, Perst, & Kristen, 2012](#)). In violation of expectation paradigms evidence was found at an even younger age around 14–16 months ([Onishi & Baillargeon, 2005](#); [Surian, Caldi, & Sperber, 2007](#)). Prolonged looking when an agent's belief does not match the child's own belief showed sensitivity to the agent's belief as young as 7 months and similar ages are reported for neural signatures of representing belief ([Kampis, Parise, Csibra, & Kovacs, 2015](#); [Kovacs, Teglas, & Endress, 2010](#); [Southgate & Vernetti, 2014](#)). BCT provide an importantly different kind of evidence for early understanding of belief because they used helping behavior, an intentional action, as indicator of understanding. Before expanding on the ongoing debate about the nature of young children's false belief understanding and on our alternative interpretation of BCT's findings we start by describing their procedure and interpretation in detail.

Two experimenters E1 and E2 (E2 being the *agent* to be helped) engage with the child C. After a short warm up E2 discovers two boxes of different color (A and B) and opens and closes the lids of both with interest. In E2's absence E1 shows C how the boxes can be

* Corresponding author.

E-mail address: beate.priewasser@sbg.ac.at (B. Priewasser).

¹ These authors contributed equally to this work.

<http://dx.doi.org/10.1016/j.cogdev.2017.08.002>

Received 14 February 2017; Received in revised form 2 August 2017; Accepted 6 August 2017

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locked and opened with a pin. E1 leaves the boxes unlocked and E2 returns excitedly with a caterpillar toy. She plays for a while with it, introducing it also to E1 and C, and puts it into box A. In the *false belief (FB) condition* E2 leaves again to get her keys. E1 and C “play a trick” on E2 and E1 sneakily moves the toy to box B, continuously checking on the door, and then locks both boxes with the pin. E2 returns and tries to open box A (where she thinks the toy still is). In the *true belief (TB) condition* E2 stays in the room and watches how E1 moves the toy to box B with mutual eye contact with E2 and C. E2 looks briefly away when E1 locks the boxes with the pin. After going to check whether the door was properly shut, E2 approaches box A and unsuccessfully tries to open it. If the child does not respond immediately, E1 suggests to C to help E2 and if needed, several prompts follow. BCT tested one group of 18-month-old and another group of 30–32-month-old children and found that in each age group children in the FB condition tended to go to box B to retrieve the toy for E2, while in the TB condition they tended to help E2 to open box A. The mentalistic interpretation preferred by BCT is as follows: When E2 tries to open the locked box A the child has to figure out the reason for E2’s action. Since in the FB condition E2 thinks that the toy is still in box A she most likely is looking for her toy. Since she does not know where the toy really is the children help her find it in box B. In the TB condition E2 knows that the toy is in box B, therefore she cannot be after the toy when trying to open box A. She must be trying to open A for some other (unknown) reason.

BCT’s results play a central role for theories about the cognitive basis of early theory of mind competences. Two lines of explanation are particularly prominent. The first one distinguishes between an implicit and explicit understanding (Clements & Perner, 2001; Onishi & Baillargeon, 2005). Children’s looking is an indirect measure of their knowledge. They look as a consequence of their expectations and not in order to serve a purpose (They look there *because* the agent will go there, not *in order* that the agent will go there, nor *in order* to tell the experimenter what they are thinking). Whereas, they answer the test question posed in the traditional false belief task *in order* to answer the question. Appropriate responses on an indirect measure (looking) in the absence of correct responding to a direct measure (answer to question) is taken as a sign of implicit knowledge in the consciousness literature (Reingold & Merikle, 1993; applied to false belief studies: Perner & Clements, 2001). Children’s helping behavior in BCT’s study is highly relevant evidence, since it is a direct measure: children do it *in order* to help the experimenter. So their data speak against the implicit knowledge explanation (Carruthers, 2013, p. 145).

The second main explanation of the discrepancy in when children take belief into account assumes that children have explicit knowledge from early on but cannot show it in the standard task due to processing limitations. Baillargeon, Scott, and He (2010) distinguish between spontaneous and elicited test responses. Looking time and gaze direction are spontaneous responses, while the answers to the traditional test questions are elicited responses. In particular the additional processing required by the test question is supposed to exceed younger children’s processing capacity. BCT’s finding thus poses a problem for this theory since children’s helping is elicited by E1’s verbal suggestion to help E2 (the relevant agent to whom a belief is supposed to be attributed). Hence it should be as difficult as the standard test, which it is not. To account for Buttelmann’s data Carruthers (2013, p. 152), for instance, saw the need to amend Baillargeon et al.’s theory with assumptions from language pragmatics as proposed by Helming, Strickland, and Jacob (2014) and Helming, Strickland, and Jacob (2016). When being asked a question by the experimenter in the traditional test, children have to coordinate their third-person perspective as a listener to the story with their second person perspective when interacting with the experimenter. It is this coordination of perspectives that makes the traditional task so difficult and helping in BCT’s procedure easy since this does not necessitate such coordination. In contrast, Setoh, Scott, and Baillargeon (2016); also Scott (2017) argue that despite requiring elicited responses BCT’s task is easier than the standard false belief task because it lacks the need for inhibiting a prevalent (reality oriented) response.

Evidently the results by Buttelmann et al. (2009) are of great theoretical importance for the field. For this reason we decided to have a closer look at their replicability and interpretation. Although there are quite a few demonstrations of early sensitivity to belief, hardly any of them have been replicated by different laboratories (e.g., for BCT’s task Fiske, Butterfill, & Rakoczy, 2013) found similar results but they used a noticeably different procedure). Another question, of course, concerns the interpretation of the results. Again, although there are many demonstrations of infants’ sensitivity to belief in different situations, no study that we are aware of, has yet specifically tested the more recently suggested alternative interpretations for several of the VOE and AL studies (e.g., Ruffman, 2014; Wellman, 2014, chapter 8). To our knowledge the only study that tested an alternative explanation for BCT’s findings was run by Allen (2015).

Allen (2015) contrasted the FB condition with a new *clairvoyance* condition, which was the same as the FB condition except that E2 tried to open box B, where the toy is but E2 thinks it is empty. If, so Allen reasoned, children take E2’s false belief into account E2 must be intending to open an empty box, so they should direct E2 to box A, which is empty. Children did not do this. They helped E2 find the toy as often in the clairvoyance as in the FB condition. However, Allen’s argument is not very persuasive, since trying to open a box of which one thinks that it is empty, does not mean one wants to open box A because one thinks it is empty. One might have plenty other reasons for opening it.

To gain experience with BCT’s paradigm we started with a straight replication of the original TB and FB conditions.² We soon noticed that with the FB-TB manipulation not only E2’s belief changed but the conditions had a quite different feel. One very obvious difference between the conditions is the trick which E1 plays on E2 only in the FB condition. As already pointed out by Allen (2015, p.66): “*Hiding the toy in the context of playing a trick not only makes the toy particularly salient but it also creates an expectation that the adult is going to return and look for the toy*”. Two further potentially confounding factors pertain to ownership of the toy and to E2’s projected interest in the toy. The procedure of the FB condition (1) confirms the initial impression that the toy belongs to E2 because,

² We most gratefully acknowledge David Buttelmann’s personal visit to our lab in Salzburg and the intense exchange with both labs, Salzburg and Stirling, to instruct us in the details of how to conduct their study and to check the videos of our procedure.

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