BUTTERFILL

Dear Josef, Dear Johannes,

Thanks for a great read! Here are some quick comments on the TiCS paper:

1. On p. 20 in the description of Low & Watts, it looks like you don't explain that the agent sees the blue side on the first movement, from left to right but then sees the red side on the second movement, from right to left.

2. I have some questions about your "abstracted regularities". Your write (p.7): "infants are very keen to register and record what others did and did not perceptually track, i.e., they keep an *experiential record*. The announcement of the agent's reappearance is likely to evoke these records and make the infants think of what the agent had experienced. What the agent had experienced (the object is in its original location) presents precisely the content of the agent's false belief. Thinking of this content allows children to anticipate a possible action based on this content and influence their looking behaviour." I have some comments:

--- As I interpret this, you are not saying that infants record the agent's experiences as the agent's experiences. You are saying, more carefully, just that the infant is recording those aspects of the scene which the agent has experienced.

--- How might the fact that the infant is recalling some recorded aspects of a scene (for example, recalling the object's being in its original location) lead the infant to anticipate that the agent will perform an appropriately related action (for example, attempting to retrieve the object at that location)? And how might whether recall leads to anticipation of action depend on the infants' awareness of the agent's goal? (Presumably if the infant didn't think that the agent was likely to perform actions with the goal of retrieving the object (say), recalling aspects of the scene would not lead infants to anticipate the same actions.)

--- Imagine you and I spend the night drinking whiskey. Next time you see me, seeing me evokes in you fragments of a scene involving whiskey. (Your recording is a bit gappy.) As we enter the pub and I head to the bar, your eyes spontaneously leap to the whiskey section behind it. Are you suggesting that the infants' action anticipation is like this (without the whiskey, of course)?

--- The recording/evoking idea might work nicely for the findings of Kovács et al (2010), where there is no anticipation of action.

--- You say that the recording/evoking/anticipating view can also explain the findings from Buttelmann et al's active helping paradigm (in your box 1; also relevant is Knudsen & Liszkowski 2011 which uses pointing). Subjects are seeing the agent performing an action, tugging on a box or walking towards one of two locations location. What's special here is not that infants are anticipating an action, but that they are treating the action as being directed to a goal relative to which it could not succeed (because the object is not in the box). Your proposal (p.9) is that infants are somehow anticipating an action other than the one they are seeing, or that the agent's evoking a fragment of an earlier scene appropriately influences what they take to be the goal of the action. I find it hard to see how this might work. For now it seems like an amazing coincidence that just the right fragments of the scene are evoked and have just the right effects on the infants' understanding of the goal of the agent's action. It might be helpful to have an illustration of a similar effect in a case without false belief.

Josef Perner 19/7/12 14:54
Comment [1]: Does it really need to be made clearer?

Josef Perner 19/7/12 14:55
Comment [2]: correct

Josef Perner 19/7/12 15:47
Comment [3]: The actor appears or gets ready to act (blinking windows) this draws attention to the actor which activates the experiential record (ER) especially the last state of the world (object in original location A). From training the child anticipates that the agent will grab for the object (need not be understood as a goal, just a tendency). Putting "object in A" together with "grabbing the object" makes the child think of The window behind A and the child looks there.

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Josef Perner 19/7/12 15:27
Comment [4]: not really needed

Josef Perner 19/7/12 15:31
Comment [5]: May be not a goal but an expectation of what that agent tends to do, i.e., grab the object.

Josef Perner 19/7/12 15:32
Comment [6]: Comes pretty close.

Josef Perner 19/7/12 15:32
Comment [7]: There it works very nicely, too nicely to bother explaining it.

Josef Perner 19/7/12 16:06
Comment [8]: That's how I figured how it might work:
In the helping paradigm, the actor's appearance activates where the object was when he was in the room (box A). The agent tries to open box A which gives the child the idea that he is after the object, and the child points to where the object is. In the control condition the ER says "object in B" (wher e the agent saw it), so the agents's trying to open box A does not evoke the idea that he is after the object, but after opening the box.

I get the impression that your talking of "just the right fragments" etc. are based on the assumption that the children reason properly. I suspect that these behaviours are just tendencies without precise rationale.

--- As I understand your view, there is no direct connection between tracking what is experienced and the later recall of this leading to anticipating an action. The fact that the agent experiences some aspect of a scene increases the probability of an infant associating the agent with that aspect. But when it comes to anticipating action, it is not directly relevant that this aspect of the scene was experienced by the agent: all that matters is that the infant now recalls this aspect of the scene. Are there be ways of causing infants (and adults?) to record aspects of a scene other than those the agent experiences and to associate these with the agent? If so, wouldn't you have to predict that these associations lead to anticipations of action no less than the experience-caused associations?

One last question. This is beyond the aims of the paper, but do you think that your explanation of infants might also explain some adult behaviour, including perhaps apparently automatic abilities to track beliefs?

best wishes,
Steve

only given that the infant is aware that the goal to which the agent's actions are directed (I guess you know the research on this better than me)?

--- It seems to me that

To make the question vivid, suppose that an infant is observing an initially empty scene. Just as a novel agent appears on the scene for the first time, a vase falls off a table (making a loud crash). Now the agent leaves. Next the agent reappears, and this time she is close to the table, close enough to have caught the vase. Let's assume that the infant recalls the vase's falling off the table (this is the sort of assumption you make, I think). Do you predict that the infant will anticipate that the agent will attempt to catch the vase?

Suppose that infants see an agent and recall a vase's falling from the table

--- If you take Song et al (2008) at face value, it seems you also need to be able to explain how whether recalling aspects of a scene leads to action anticipation can also depend on communication.

--- You don't mention Luo (2011), but if you take these findings at face value they show that differences in belief can modulate not only action anticipation but also ascription of preferences.

PS: you mention 'abstracted regularities' in the abstract but I couldn't see how the account given in the paper depends on abstraction or regularity.

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Josef Perner 19/7/12 16:13

Comment [9]: I want to leave various possibilities open.
1. The connection between ER and anticipated action can be very superficial, as you seem to construe it: associations.
2. It can be very specific: anticipations are only made on basis of ER associations (because they capture implicitly the workings of the mind, i.e., the belief formed on the basis of the ER.
3. The ER leads to a a belief inference (not in the reason giving but in the inferential sense: if belief (o in A) then look in A. The critical point is still that this belief is presented by the agent reminding the child of the ER and the to be computed belief. The belief is, so to speak, presented to the child and the child bases his further belief-desire and action computations on the presented belief. The child would not realise that it has to look for the agent's belief in order to figure out his reasons for doing something.

Josef Perner 19/7/12 16:14

Comment [10]: very much so. I have always thought that we are in our spontaneous unreflective behaviour no different from children.

Josef Perner 19/7/12 16:15

Comment [11]: I guess something went wrong here, but I will try to answer all fragments below provided there is enough of a fragment left.

Josef Perner 19/7/12 17:32

Comment [12]: Only if the infant has seen that the agent tends to catch vases.

Josef Perner 19/7/12 17:35

Comment [13]: I can't remember the details. But I in principle if the agent was told something, e.g., "the object is in A" and then the object is moved (or was somewhere else). Then the agent signals looking for the object the ER brings up that the agent was told "object in A" and this representation may effect the child's expectation of what the agent will do.

Josef Perner 19/7/12 17:48

Comment [14]: I have looked at this in detail, some time ago. We know from Tomasello & Haberl, Moll & Tomasello, that 1 ½ year olds or earlier keep track of what a person has seen and not (my ER) and that people prefer to look at and play with things they haven't seen before.

Now in Luo's one object condition the agent sees object A but not B which is behind the opaque screen and repeatedly grabs A. At test both objects are visible and the children expect the agent to go for B. This follows from the understanding that agents prefer to play with newly encountered objects.
In Luo's version of the traditional Woodward condition the agent places B behind an opaque screen and then grabs A repeatedly. At test they expect the person to grab A. This can be explained that the agent has encountered B and, furthermore, expressed dislike or sidinterest by placing it out of sight. hence children expect him to pref A.

Josef Perner 19/7/12 17:59

Comment [15]: Maybe we could delete this from the Abstract.
In any case the idea was that infants understanding is a causal one a la theory theory (TT). If the agent experiences x then he believes y and given goal z he will do a. The ER suggests the belief which combined with the desire and the child has the right expectation.

Bob GORDON

Gordon Comments in TiCS draft

I very much like the general position you take, including the following:

> Switching perspectives is needed to represent the agent's subjective reason as an objective, or factual, reason.
> Such perspective switching does not require either adopting pretend desires or carrying out simulated or vicarious decision-making.

Here are some questions and reservations it might be useful to consider:

1. I am not clear why the switching perspectives must be *intentional* for the Max situation; couldn't it be automatic and even unconscious?
2. Although switching "perspectives" in the relevant sense does not require either adopting pretend desires or carrying out simulated decision-making, it requires -- indeed, is -- the simulation of beliefs and even knowledge.
3. You say: "*Subjective* reasons are propositional attitudes that make it rational for an agent to act in a certain way." Perhaps you mean, "rational, given the agent's desires"? Also, you say: "In an obvious sense, Max should (has reason to) go to the green cupboard: this is what a well-meaning spectator would advise him to do." Well, not if the spectator thinks that what Max intends is irrational or perhaps harmful (Max is obese, allergic to chocolate, etc.). Again, the same point may apply to "one needs to determine what he would have 'objective reason to do, were his belief true" -- objective reason, given his desires?

The following are some non-substantive points.

4. Two sets of terms are used to describe the two kinds of experiment: online/offline, direct/indirect. Perhaps it would be helpful to say how these match up, and perhaps to use one pair as the primary description. Perhaps too it would be good to explain why these terms are appropriate.
5. The following should be stated more clearly:

   > In favour of implicit understanding speaks the fact that the early sensitivity to belief responds to task manipulations like implicit knowledge does in near-threshold perception and in blindsight patients

6. The following is not a stand-alone sentence: "A need that is bypassed in the non-committal expectation expressed in the anticipatory looking."
7. I don't understand why the word *teleological* is warranted here: "young children might explain actions 'teleologically', in terms of reason-giving *facts* rather than beliefs and desires."

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Josef Perner 19/7/12 20:31
Comment [16]: With "intentional" we don't mean necessarily conscious or non-automatic. It rfers to the need to have knowledge (could be unconscious) that a switch is needed as opposed to the "online" tasks where the experiential record switches children into the right perspective. Evidence that it is also conscious only comes from the data that the looking behaves like unconscious the question answering more like conscious knowledge (see Box 2). That it is not automatic is suggested by Apperly's finding that only Level 1 but not Level 2 (or presumably higher) is automatic.

Josef Perner 19/7/12 20:32
Comment [17]: Why?
We see it as understanding reasons under counterfactual assumptions. Is that "simulation"?

Josef Perner 19/7/12 20:35
Comment [18]: No. Desires come in as goals (objective reasons) under counterfactual assumptions.

Josef Perner 19/7/12 20:36
Comment [19]: correct!

Josef Perner 19/7/12 20:36
Comment [20]: no, objective goal.

Josef Perner 19/7/12 20:37
Comment [21]: What should we do?

Josef Perner 19/7/12 20:39
Comment [22]: How more clearly?

Josef Perner 19/7/12 20:41
Comment [23]: corrected by Stavroula.

Josef Perner 19/7/12 20:41
Comment [24]: Exactly for that reason, if I understood correctly. Right?

JASON LOW

Dear Josef and Johannes,

I very much enjoyed reading your TiCS manuscript! Adding to Steve's responses, my quick impressions and comments are as follows.

You say that in answering the test question found in the classical FB task, children need to become aware of subjectivity in people's reasons for actions in order to switch intentionally to that perspective. What factors promote the development of such awareness? If space permits, it may be worthwhile to convey your view on the deeper role of language and executive functioning for partly paving the way to a mature understanding of perspective.

Josef Perner 19/7/12 20:43

Comment [25]: Good point—no space (I presume). Unless we could do it in a few words (unlikely)

For readers, could there be some tension between the concept of "abstracted regularities" (p. 2 abstract) and "keeping an experiential record" (p. 7)? The former fits nicely with a behaviour-rules account where there is no need to consider minds, whereas there appears to be some leeway for minimal theory of mind when infants/pre-schoolers/adults track and keep 'experiential records'. The statement "infants are very keen to register and record what others did and did not perceptually track" dovetails to some extent with a 2-systems account whereby S1 helps infants/pre-schoolers/adults track belief-like states (e.g., the correctness of an agent's encountering and registration). In any case, the experiential record account nicely explains the Kovacs et al. (2010) findings (as per Low & Perner, 2012). Further though, you say that it could account for performance on all online tasks used hitherto (p. 9). How would one explain 16-month-olds' limited performance in Buttelmann et al.'s (2009) helping task? Buttelmann et al. emphasized that 16-month-olds at least showed the same pattern as 18-month-olds' in the false-belief condition, but that's too quick an argument as their younger infants failed the true-belief control condition. For me, there is no meaningful effect for 16-month-olds on their helping task. This leads to a question: Why might younger infants, as compared to the 18-month-olds, fail to robustly use an experiential records perspective in that helping context? (This question is related to the issue of limits raised next.)

Josef Perner 19/7/12 20:46

Comment [26]: Is not that specific. It could consist of regularities involving beliefs, etc.

Josef Perner 19/7/12 20:47

Comment [27]: correct.

Josef Perner 19/7/12 20:48

Comment [28]: ??? Why belief.like states? Baillargeon's S1 tracks reality and gaps in realist—insofar it does nicely dovetail with experiential records.

Josef Perner 19/7/12 20:50

Comment [29]: Exactly! Too obviously for bothering to argue about it.
Should we mention it (Steve also remarked on it!)?

It is very clear when you say that when an experiential record does not provide for the perspective of the agent's belief, there would be no anticipation of the agent's expected action (p. 9) (Low & Watts' findings). By extension, do you also mean that if there was some way to simplify the testing of existing Level-2 perspective problem tasks (e.g., the ones by Low & Watts, Surtees et al. etc.) and it somehow becomes possible for participants to create a detailed enough experiential record that provides the perspective of the agent's belief about a particular object, one might be able to obtain accurate anticipatory looking or altercentric interference? The 2-systems proposal we are drawn towards theorizes that there are natural signature blindspots in the kinds of belief-inducing situations that can be pulled off automatically or that can be shown at the level of eye gazing (and even helping) responses. Would your account also/necessarily require that there be natural signature limitations to an experiential recording system?

Josef Perner 19/7/12 20:56

Comment [30]: Like with all implicit stuff, there is no expectation that somebody has to use it, it just happens if circumstances are favourable. So that children do not show in some tasks at some age can be due to millions of reasons. Things are different with direct measures. Here the subject intends to get it right and if they don't then one should be able to specify why not. I don't think we have to worry about this. (?)

Josef Perner 19/7/12 20:59

Comment [31]: I think so. But experiential record is essentially a L1 enterprise: separating events the agent had acces to from those he didn't have.

Josef Perner 19/7/12 20:59

Comment [32]: Yeah—L1.

I like the outstanding problems box that you pose. I wonder if it would benefit readers even more to illustrate your point about flexibility of early sensitivity by explaining the Yott & Poulin-DuBois (2012) rule training attempt and highlighting where their method falls short of your suggested test.

Josef Perner 19/7/12 21:01

Comment [33]: That's what motivated me, but their way of doing this is rather feeble and we are already above limits (though not on this particular box). I prefer to put some other points instead, e.g., role of language.

Finally, a minor point, and I might have been reading this too quick; on page 3, Max puts chocolate in blue location and in his absence object transferred to green location. The sentence then states that "most 2- and 3-year-olds reliably claim that Max will look in the blue location". Should be sentence be that the younger preschoolers get the task wrong by picking the green location (where object really is)?

Josef Perner 19/7/12 21:02

Comment [34]: error. Some reviewer spotted this too. Have corrected it.

Thanks again for the papers and all the best with TiCS – it will be an important counterpoint to Baillargeon et al.'s response account.

Best wishes,

Jason

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