Self-Other Perspectives and the Development of Perspective Understanding

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Abstract

Historically the view has dominated that infants are initially egocentric and that the ability to take the perspectives of others is a cognitive achievement only reached later in development. Against this, Southgate (2020) has recently argued that even young infants are able to take the perspective of others and that this perspective is encoded more strongly than their own perspective. I focus on three elements of Southgate's proposal: a) children are initially altercentric, b) once they develop a self-awareness they become egocentric and c) early forms of perspective taking do not require perspective understanding. While I agree with c) and the criticism of the assumption that infants must start off being egocentric, I will argue that there is evidence that young children are not predominantly altercentric either. Instead, which perspective is activated is dependent on the situational context. I develop a proposal of this using the mental files framework.

Keywords: social cognition; perspective taking; perspective understanding; egocentric; altercentric

Introduction

Understanding that other people can have a perspective which differs from one's own is arguably a central part of social cognition. How and when such an understanding of perspectives develops, however, is a contentious matter both in psychology and philosophy. Historically the view has dominated that infants are initially egocentric and that the ability to take the perspectives of others is a cognitive achievement which children only reach later in development. This view is famously associated with the work of Piaget (1962) and Flavell (1992).

Over the last 20 years, however, there has been increasing evidence that young infants are already sensitive to the perspectives of others (e.g. Kovács et al., 2010) indicating that already young children are not purely egocentric and are sensitive to the perspective of others.[1] Although few nowadays would accept such a radical egocentric position as that of Piaget, it is still fairly standard to view the child's own perspective as the default position and something which must be inhibited in order for perspective taking to occur (Baillargeon et al., 2010; Leslie et al., 2004). Intuitively there is some appeal to this: simply in virtue of having a perceptual system it would seem that the child has a point of view from which they experience the world. Arguably, access to the own point of view is direct and given, while determining other points of view seems more indirect and computationally difficult as this is something which would need to be worked out.

A radical departure from this view was recently put forward by Southgate (2020; see also Kampis & Southgate, 2020). She argues that children are initially altercentric, that is to say that they are not only able to take the perspective of others, but preferentially encode the perspective of others. This, she claims, is required in order to explain the findings from the implicit false belief task where infants appear to be able to take the perspective of another person even when this conflicts with the child's own perspective. Southgate argues that it is only once children develop a self-representation that the self-perspective becomes dominant, leading to the egocentric errors found in the explicit false belief task later in development (Wellman, Cross, & Watson, 2001). Moreover, Southgate makes clear that infants early altercentrism need not presuppose an understanding of perspectives. Southgate's account can therefore be summarised into three main claims:

a) Children are initially altercentric
b) Once they develop a self-awareness they become egocentric
c) Early forms of perspective taking do not require perspective understanding[2]

In this paper I will critically evaluate Southgate's arguments for these claims, focusing mainly on a) and c). In Section 1 I begin by presenting Southgate's argument in favour altercentrism. In Section 2 I then argue that although she is right to question the default of the self-perspective, altercentrism goes too far and is unable to explain some key findings in the literature. Instead, I argue that children are neither predominantly egocentric nor predominantly

[1] In the literature a distinction is sometimes drawn between visual and cognitive perspective taking (Flavell, 1968). I will not be making use of this distinction in this paper, although it should be noted that most of the examples of perspective taking discussed in this paper are in the context of the false belief task and therefore pertain to cognitive perspective taking.

[2] It should be noted that Southgate does not directly argue for c) in her paper. Rather she makes clear that the early altercentric perspective taking does not commit her to also assuming that perspective understanding must be in place.

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altercentric, but that activation of these perspectives is initially dependent on the situational context. Lastly, in Section 3, I will focus on the claim that there can be early perspective taking without perspective understanding. While I also agree with this claim, I think this generates the open challenge of how this initial perspective taking is to be conceived of, and how perspective understanding can develop from it. Using the mental files framework, I sketch an account of how this development can take place.

1. The Argument for Altercentrism

Southgate's (2020) main motivation for proposing an early altercentrism is to provide an explanation of the so called "paradox of false belief understanding" (de Bruin & Newen, 2014). This refers to the difference in performance of children on implicit and explicit false belief tasks. I will illustrate this using the example of a change of location false belief task. In this type of task, children see an agent place a toy in location 1. The agent then leaves, and while the agent is gone the toy is moved from location 1 to location 2. In the explicit false belief task, children are then directly asked where the agent will look for her toy. There is a robust finding that children only correctly answer this question at the age of around 4 (Wellman et al., 2001). However, if indirect measures such as looking behaviour are recorded, much younger children have been shown to look in anticipation towards the correct location (He et al., 2012; Southgate et al., 2007), or show surprise when the agent searches in the location not consistent with their false belief (Onishi & Baillargeon, 2005;see Scott, 2017 for a recent overview of the literature on implicit false belief tasks).[3]

Many accounts have been proposed to try and explain this developmental paradox, and providing an overview of these would be beyond the scope of this paper. What matters for our purposes is that the findings from the implicit false belief task seem to indicate that infants are already sensitive to the perspective of others, possibly from as early as 7 months (Kovács et al., 2010).[4] Southgate (2020) argues that if children encoded their self-perspective, then this would have to be inhibited in these tasks in order to take the perspective of the other person. However, inhibition is known to be a challenge for young infants, and Southgate argues that it would be implausible to think that infants of 7 months would be able to inhibit their own perspective in favour of that of someone else. Instead, what she proposes is that infants are able to take the perspective of the other person in these tasks because they are in fact altercentric – that is they preferentially encode the perspective of the other person. If the own perspective is either not encoded or encoded more weakly than that of the other person, then this would do away with the need for inhibition of the own perspective in perspective taking. Southgate also stresses that this early altercentrism would have evolutionary benefits for infants, as their ability to act on the world themselves is very limited at this stage. Given that they are dependent on others acting in the world for them, preferentially encoding the perspective of others would bring benefits.

Southgate (2020) proposes three different developmental stages in order to explain the findings from "paradox of false belief understanding". To start off with, infants are altercentric and preferentially encode the perspective of others. This explains the early successes in implicit false belief tasks. In a second stage between 18 and 24 months, children develop self-awareness.[5] This development of self-awareness then leads to a biasing in favour of the own perspective, causing the children to become egocentric. This then explains the failures in the explicit false belief task till the age of 4. Lastly, at the age of around 4 when children pass the explicit false belief task, a balance between self and other representations is reached, with sufficient inhibition abilities available to inhibit the self-perspective to allow for successful perspective taking in the false belief task again.

Of note is that Southgate is quick to stress that the early stage of altercentrism need not presuppose perspective understanding. Although she does not argue strongly in favour of the view that there can be perspective taking without perspective understanding, she is at least open to this possibility. And intuitively this seems plausible – it would be strange to think that a bias towards encoding the perspective of others should amount to any form of understanding perspectives. Moreover, Moll et al.(2013; Moll & Tomasello, 2012) have provided evidence that children are initially able to take another's perspective without being able to relate this perspective to their own. This indicates that there can be perspective taking without perspective understanding (Wolf, 2021).

In the following sections I will focus on two issues raised by Southgate's account. Firstly, are infants really altercentric? As I will show in Section 2, I agree with Southgate that young infants are capable of perspective taking, but argue that this does not mean that they must be altercentric either. Instead, I claim that an account which best fits the empirical data is a balanced perspectives view where

[3] Concerns have been raised about the replicability of the findings from the implicit false belief task, with some findings replicating better than others. . See for example, Kulke & Rakoczy, 2018 for an overview of replication attempts for various types of implicit false belief task. There is an ongoing debate concerning how to interpret these failed replications (for example, see Baillargeon et al., 2018; Poulin-Dubois et al., 2018 for opposing views on this). For the purpose of this paper, I will not address this issue directly and assume that at least some of the findings will replicate, even if the developmental timescale might still shift somewhat. Should the evidence from the implicit false belief task really not hold up, there is also evidence from other areas (such as pretend play) which could be developed to support the argument for early perspective taking abilities (see Wolf, 2021).

[4] We can leave open here the question of whether this sensitivity for the perspective of others should count as belief attribution or not.

[5] Passing the mirror self-recognition test is usually used as an indicator of this, even though there are open questions to what extent mirror self-recognition really requires self-awareness (Brandl, 2018).

perspective activation depends on the situational context. Secondly, in Section 3, I will address the issue of perspective taking without perspective understanding. Regardless of whether one takes and altercentric or a situational context-based view of early perspective taking, if one accepts that there can be early perspective taking without perspective understanding, this poses a challenge of how these different perspectives available to the child can be combined and related to each other in order to allow for perspective understanding.

2. Problems with Altercentrism

While I am sympathetic to Southgate's (2020) criticism of egocentrism and agree that young infants are already sensitive to the perspective of others, I think the view that children are initially altercentric goes too far. It should be stressed that I do not want to argue that children are initially egocentric either, instead I want to argue they can take both their own perspective and that of others, depending on the situational context. My challenge in this section, therefore, is to argue that we lack strong evidence to indicate that children are initially altercentric and do not encode their own perspective. In particular, there are at least three problems for Southgate's position.

Firstly, the evidence in favour of initial altercentrism is currently still limited and has also been somewhat mixed. For example, they have provided evidence that 8-month-olds had better memory of the location of an object where it was co-witnessed and expected the object to be at the co-witnessed location, even though they had (alone) seen it change location since (Manea et al., 2023). This bias towards the co-witnessed location of the object did not hold for older children, which is in line with the idea that there is an initial altercentrism which abates with the onset of self-awareness. However, the interpretation of these findings is made more difficult by the fact that children showed no preference for the actual location of the object, even when the change in location was also co-witnessed. So, while there is some evidence in favour of an initial altercentrism, this is still somewhat inconclusive.[6] Similarly, Yeung et al. (2022) provided evidence that infants who do not pass the mirror self-recognition test (and were therefore assumed not to have a self-representation) did not experience perspective conflict, while those who passed the mirror self-recognition test did experience conflict. This seems very much in line with the altercentric view, that children only code for their own perspective once they have a self-representation. However, in the same study they did not find a corresponding improved performance in the perspective taking task. This is puzzling, as if children are preferentially encoding the perspective of others to the extent that their own perspective, then we would expect children to do very well in perspective taking tasks prior to developing a self-representation. Of course, there might be other reasons why children fail this perspective taking task, as discussed by Yeung et al. (2022), including concerns about the validity of the type of perspective taking task used. Nonetheless, it should be remembered that on the altercentric framework we would generally expect infants' perspective taking to be fairly robust given the lack of a conflicting perspective, and that one of the initial motivations for proposing the altercentric framework was precisely to explain infants' success on perspective taking tasks.[7]

Secondly, according to the altercentrism first hypothesis, young infants should initially be very good at perspective taking tasks, then get worse as their self-representation develops, and finally become more competent again once the dominance of the self-representation is overcome. In other words, what we should find is a u-shaped development in perspective taking tasks over time. However, that does not seem to be the case. While there are tasks indicating early competence in perspective taking tasks with infants, these have increasingly been subject to replication concerns (Kampis et al., 2021; Kulke & Rakoczy, 2018; Poulin-Dubois et al., 2018). In a meta-analysis of implicit false belief tasks Barone et al. (2019) in found a slight decrease of performance with increasing age, but this was non-significant and in general there was much variation in performance across all ages.

Even if the tasks do replicate, it seems that these must be considered "fragile paradigms" (Rubio-Fernández, 2013, 317), which does not fit with the robust altercentrism in the absence of competition from the own perspective, which we should find on Southgate's view. But perhaps this could be explained away given that these are experimental paradigms carried out with very young children, and therefore performance might be fragile due to extraneous factors that come about when working with very young children, rather than their perspective taking abilities being fragile themselves. More problematic, however, is that often when replications were successful, they were often only partially successful in replicating the findings with older children. This is highly problematic for the altercentrism view, as on that

[6] It is also worth noting that these studies show a bias towards co-observed events, rather than a straightforward preference towards the perspective of the other. It therefore remains open whether children really are biased towards another's perspective (other-bias), or whether it is rather the case that their representation of their own perspective is boosted by this being co-observed with another (we-bias). In order to test this experimentally, it would have to be shown that children also show a bias towards the perspective of another which was not shared (at some point) with their own. The studies conducted by Moll et al. (2013) however might provide the required evidence here that children are also able to take the perspective of another, even when this does not overlap with their own previous perspective.

[7] Kampis and Kovács (2021) have also provided evidence that the belief of another modulated 14 month old children's behaviour. As they acknowledge, though, while this data does fit with the altercentric hypothesis, it does not show that children are not encoding their own perspective, as it could also be that the perspective of the other merely modulates the child's own perspective. I therefore take this as evidence of early perspective taking abilities which are not inconsistent with the situational context dependent perspective taking view I am developing.

account the replications should work best with younger children who are not yet subject to interference from the self-perspective, and not older children. Summing up, what the replication crisis seems to indicate, is that early perspective taking is a fragile phenomenon, which may become more robust over time. While the jury is still out concerning the final status of the implicit false belief task, the current data seems rather to point in the direction of gradually improving perspective taking (or a perspective taking ability which gradually becomes more robust), rather than a u-shaped pattern of development. [8]

Thirdly, the altercentrism account is unable to explain the findings of simultaneous success in the implicit false belief task and failure in the explicit false belief task. Clements and Perner (1994) carried out an experiment in which children were presented with a standard change of location false belief task. They found that while children around the age of 3 gave an incorrect answer when asked where the agent would look for the object, they nonetheless showed the correct anticipatory looking behaviour.[9] This cannot be explained simply by Southgate's view, as on this view children should either succeed on both tasks because of their early altercentrism, or fail on both tasks due to the interference from the self-perspective. In other words, what this simultaneous success and failure in the different types of false belief task indicates is that children's performance cannot be explained solely in terms of their developmental stage, but that the differences between the different types of task also need to be considered.[10].

Where does this leave us? I have argued that Southgate's altercentric view goes too far in assuming that young children are biased against their own perspective. In what follows I want to suggest that children are able to represent both their own perspective and that of others. I argue that which perspective is activated depends on the situational context, which can trigger either the self-perspective or the perspective of the other person.

Developing a full account of how situational context can activate different perspectives would go beyond the scope of this paper.[11] My aim for this paper is just to stress that there is evidence indicating that aspects of the situational context can facilitate perspective taking, and that this can explain how early perspective taking is possible without requiring high levels of inhibition.

Evidence that the situational context can influence perspective taking can already be found in Wellman et al's (2001) famous meta-analysis, where they found that task manipulations increased the salience of the mental states of the other person improved children's performance on the False Belief Task. More recently, one of the main studies investigating the role of the situational context on perspective taking abilities is that of Rubio-Fernández and Geurts (2013). In their seminal paper they found that children can pass the explicit false belief task before the age of 3 if the task is modified to focus on Maxi and emphasise his perspective. In particular, they argue that the question "where will Maxi look for the marble?" highlights the object as opposed to the person. This increases the salience of the object and therefore highlights the child's own perspective on reality, rather than the perspective of the other person. In further work using eye-tracking adults, Rubio-Fernández (2013) found that when asking this question interrupted adults tracking of the perspective of the other person and caused them to look to where the object actually was. She hypothesised that adults are able to recover from this distraction and resume perspective tracking. Infants, on the other hand, require situational factors to trigger the perspective of the other person and cannot recover from distraction on their own. The findings from Rubio-Fernandez and Guerts (2013) can therefore be taken to indicate that the false belief task can be modified to highlight the perspective of the other person, thus facilitating perspective taking; or the task can be modified to highlight the actual location of the object, thus impeding perspective taking.[12]

[8] With regards to this, it could be objected that much of the failed replications literature is with older children, very few studies tested infants younger than 2 years old. It might therefore be argued that this evidence is simply not relevant to assessing the altercentrism hypothesis. While it is true that only a minority of the studies reviewed in Kulke and Rakoczy (2018) were with children under 18 months old, the findings for this age group too were mixed. Replication concerns therefore seem to apply across ages. However, it could be objected that this just indicates that there are problems inherent to the paradigm of the implicit false belief task as a measure of perspective taking. While the replication crisis poses a real concern which cannot be discussed here fully for reasons of space, I think there are reasons to be cautious about taking this line of argument. Firstly, as mentioned above, one of the main motivations for the altercentric view was precisely explaining young infants' success in implicit false belief tasks, given that they fail explicit false belief tasks till the age of 4. Disregarding this data therefore runs the risk of undermining part of the initial motivation for the view. Secondly, implicit false belief tasks still comprise much of the evidence base for early perspective taking in infants. Disregarding evidence from the implicit false belief task would therefore also take away much of the evidence base for altercentrism, leaving us only with an even slimmer pool of evidence to draw from. I thank the reviewer for pushing me to stress this point.

[9] This pattern was found in children older than 2 years and 11 months. Younger children (2 years and 5 months to 2 years and 10 months) showed both incorrect looking behaviour and gave the wrong answer to the explicit question.

[10] The altercentric hypothesis could of course be combined with a different view in order to account for these finding, for example a view considering the pragmatics of the task or the influence of the situational context. My argument here is not that such a combination is not possible, but that a situational context view as I develop below can both explain the findings of early perspective taking, as well as these task-based differences. It therefore provides a unifying explanation of all the developmental data and in the absence of contradictory evidence should be preferred on those grounds. I thank a reviewer for pushing me to clarify this point.

[11] For accounts going in this direction see Newen & Wolf (2020) and Wolf (2021).

[12] This evidence is admittedly from children older that 18 months. However, see Wolf (2021) for a more extended argument why this can plausibly be extended to explain the findings from the implicit false belief task in general.

In a similar spirit, Lewis et al. (2012) also provided evidence in support of the idea that if the task emphasises the other person's perspective, then this facilitates false belief task performance. They found that adding another person also searching for the object actually improved false belief performance. This at first sight seems puzzling, as one would think that adding another person would make the task more complex and cognitively demanding. Indeed, on the altercentrism view the question about what happens when there is more than one other person whose perspective is to be tracked is left open. Adding another person, however, increases the salience of the agent's perspective, which would allow for the activation of the other person's perspective.

It is important to note that in arguing that situational factors can help activate the perspective of the other person, I am not claiming that the self-perspective is the default, which is only overcome by situational cueing. This would be a biased competition model. Instead, I suggest that there is a more balanced competition, where both the self and other perspectives are encoded more or less equally, and the situational context determines which perspective is activated. We know that children are very attentive to other people, and therefore in the presence of others it seems likely that their perspectives will be activated. If the other person leaves, however, or if the task is set up to draw the child's attention away from the other person and to the object, then the child's own perspective will be activated over the perspective of the other person.

Importantly, I agree with Southgate that this early perspective taking ability does not presuppose perspective understanding. More precisely, the child does not represent perspectives as perspectives. This applies both to their own perspective and that of others.

With this in mind, it is now time to consider how this early perspective taking – where children are able to take different perspectives without representing them *as perspectives* – can lead to perspective understanding. This is the question I turn to in the next section.

3. Development of Perspective Understanding

Before sketching my account for the development of perspective understanding, a few words should be said with regards to what I mean with perspective understanding, in particular what is meant with the term understanding. I will follow the minimal definition of perspective understanding set forward by (Perner et al., 2002). They highlight that in order to count as having an understanding of perspectives, one must be aware that there can be different perspectives on one and the same thing. This goes beyond mere perspective taking, as it also requires being able to relate different perspectives to each other. For example, I might be able to take Claire's perspective to realise that she is seeing a 6 on the floor between us. I only count as understanding this perspective if I can also appreciate that what she sees as a 6 is exactly the same thing that I see as a 9.[13]

An open question for any account which allows for perspective taking before perspective understanding is the question of how these different perspectives which the child can take come to be represented *as perspectives*. Arguably this a change which takes place around the age of 4, where children not only succeed in the explicit false belief tasks, but also begin to succeed in a number of other perspective taking tasks (Perner et al., 2002). It should be noted that this is an issue both on Southgate's altercentric account, as well as my own account in terms of situational activation of perspectives.

In order to sketch such an account, I will make use of the mental files framework, which has recently been used as a tool for modelling the development of perspective taking in the literature on the false belief task (Huemer, 2023; Newen & Wolf, 2020; Perner et al., 2015; Perner & Leahy, 2016; Wolf, 2021). In the mental files framework, files are used for storing information about objects. So, for example, if the child sees an agent place her toy in the green the green box, the child has a file for the marble as being in the green box. Files can also be used to represent the perspective of others. For example, in the false belief task where the child sees the marble being moved from the green box to the blue box in the absence of the agent, the child will have one file for the perspective of the agent (with the information that the marble is in the green box), and one file for the child's own perspective which represents the marble as being in the blue box (See Figure 1).

Figure 1: Early perspective taking in terms of mental files. There is a file for the child's own perspective and a file for the perspective of the agent, which is causally linked to the agent.

In adults or children who have perspective understanding, the file for the perspective of the other person will be *indexed* to them, marking this as the perspective of the other person. Moreover, these files will be linked, indicating an awareness

[13] While the debate on the development of perspective understanding I have been considering here has largely taken place in the domain of developmental psychology without much attention to the question of what exactly understanding something amounts to, there is a vast philosophical literature on the nature of understanding (see for example, Grimm, 2011). For example, it is debated whether understanding requires a special *grasp* of a phenomenon and what this would amount to. For the purposes of this paper, I will not be endorsing any specific account about the nature of understanding as such, and what the general capacities underlying understanding must be. I therefore remain open whether understanding can be capture purely in terms of a grasping a particular representation of a state of affairs, or whether this also must come along with a set of abilities or know-how.

of their co-reference, and allowing for information to move between files (see Perner & Leahy, 2016 for more discussion of the development of the linking between files).

In order to explain early perspective taking (without perspective understanding) I want to suggest that children initially are able to generate mental files for different perspectives. However, they represent their own perspective and that of others without representing them *as perspectives* of anyone. These files are at most causally with the person so, for example, the perspective of Mum on an object might be triggered by the presence of Mum and the object, without this perspective being represented as Mum's perspective on the object. Furthermore, while both files refer to the same thing (i.e. they are *anchored in the same object)*, the child is not aware of this. This means that the two files on the same object are kept separate without being related to each other. In this situation, which file is activated depends on the situational context.

This changes when children develop a self-awareness, which provides the basis for the child to develop an appreciation of a perspective being her own. This self-awareness is required in order for the child to be able to index the file of their own perspective to themselves. With regards to taking the perspective of people, children already have representations of others, but their representation of other people's perspectives needs to be re-structured for the perspective to be explicitly attributed to the other person. This means that children go from having a file of a perspective which is merely causally associated with the other person to having a file which is indexed to the other person (Figure 2). In other words, what is required is a cognitive reorganisation from object centred representations towards more person-centred representations in which a perspective is represented as a perspective. It is this reorganisation which allows for the recognition that there are different perspectives on one and the same thing, something which is required for perspective understanding (Perner et al., 2002).

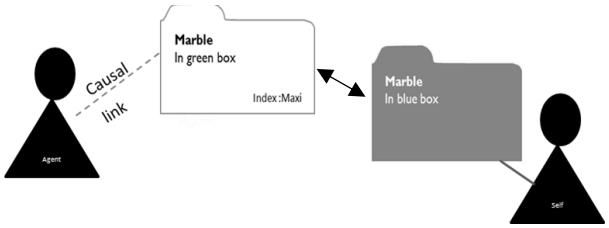

Figure 2: Perspective understanding in terms of mental files. The perspective of the other person is indexed to them, and the child's own perspective is related to the self. This allows for linking between the files.

Conclusion

Southgate's (2020) altercentric account is an important contribution to the literature on the development of perspective taking, as it presents an important departure from the view that the child's own perspective is the default position which must be overcome in order to allow for perspective taking. Moreover, it raises important questions regarding the issue of perspective taking without perspective understanding. Earlier, I stated that Southgate's position can be summarised in terms of three main claims:

a) Children are initially altercentric
b) Once they develop a self-awareness they become egocentric
c) Early forms of perspective taking do not require perspective understanding

I now summarise my arguments with regards to each of these claims.

Firstly, pace a) I have argued that children are initially neither egocentric nor altercentric. I argue for a balanced view of perspectives, where which perspective is activated depends on the situational context of the task. More concretely, what this means is that I predict that young infants are capable of perspective taking (in line with the altercentrism view), but that I argue that this perspective taking can be interfered with due to situational factors highlighting the child's own perspective (also prior to developing a self-awareness).

Secondly, while I did not directly argue against the claim b) that children become egocentric once they develop a self-awareness, the evidence from Rubio-Fernández and Geurts (2013) would indicate that this bias towards the own perspective can still be overcome with the support of situational factors triggering the perspective of another person. More importantly, however, I have agued that the development of self-awareness plays an important role in allowing for a re-organisation of the representation of perspectives. While in initial perspective taking different perspectives are not represented as such, the development of self-awareness is a pre-condition for being able to represent this perspective as one's own.

Lastly, I agreed with claim c) that early forms of perspective taking do not require perspective understanding. However, this raises the question of how the different perspectives the child can take come to be related to each other in order to allow for perspective understanding. Using the mental files framework I have sketched an account of how the initial perspective representation come to be indexed and how this in turn allows for perspective understanding. In doing so, I aim to clarify not only how perspective understanding develops, but also elaborate the notion of 'indexed files', which play a central role in mental file accounts.

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