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REPORT

Processing demands in belief-desire reasoning: inhibition or general difficulty?

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Abstract

Most 4-year-olds can predict the behavior of a person who wants an object but is mistaken about its location. More difficult is predicting behavior when the person is mistaken about location and wants to avoid the object. We tested between two explanations for children's difficulties with avoidance false belief: the Selection Processing model of inhibitory processing and a General Difficulty account. Children were presented with a false belief task and a control task, in which belief attribution was as difficult as in the false belief task. Predicting behavior in light of the character's desire to avoid the object added more difficulty in the false belief task. This finding is consistent with the Selection Processing model, but not with the General Difficulty account.

Predicting and understanding people's behavior requires the ability to reason about their beliefs and desires. Before age 4 children have difficulty reasoning about false beliefs. The cause of children's difficulty has been intensely debated, and is usually ascribed to either a conceptual deficit (e.g. Perner, 1991) or insufficient processing resources (e.g. Leslie, 2000).

Some task factors make belief-desire reasoning easier while some factors make it harder. Here we study a factor that makes false belief reasoning more difficult. We investigate children's ability to predict the behavior of a person who wants to avoid an object but has a false belief about its location. The combination of avoidance false belief is much more difficult than other combinations, such as approach false belief and avoidance true belief, and even 4-year-olds mostly fail (Friedman & Leslie, 2004; Leslie, German & Polizzi, 2005; Leslie & Polizzi, 1998). Why is this task so difficult? Conceptual deficit can be ruled out because children who pass approach false belief tasks still fail avoidance false belief. We therefore tested between two processing demand accounts.

Children's ability to attribute false beliefs is usually tested with the false belief (FB) task (Baron-Cohen, Leslie & Frith, 1985; Wimmer & Perner, 1983). In a standard version of the task, children view a scenario in which a boy, Billy, finds a frog under a red box and decides to fetch food for the frog. During Billy's absence the frog leaves the red box and moves to under a green box. Children are then asked either where Billy thinks the frog is (Think question) or where Billy will go with the frog food (Prediction question). Both questions have the same answer: Billy mistakenly thinks that the frog is still under the red box, and will go to this box with the food. We refer to the red box as the False Belief Location (FB-Location) because by indicating this location the child correctly attributes a false belief to Billy. We refer to the green box as the True Belief Location (TB-Location) because by indicating this location the child incorrectly attributes a true belief.

The Think and Prediction questions are equally difficult for children and are typically failed at 3 years but passed at 4 (see Wellman, Cross & Watson, 2001, for a meta-analysis). However, the questions are only equally difficult if the character has an approach desire. In avoidance FB tasks, the character wants to avoid the object about which a false belief is held, and so the Think and Prediction questions have different answers. For example, suppose that Billy has a clean hat which he wants to *avoid* putting with the frog. In this case, the correct answer to the Think question is still the FB-Location, but the correct answer to the Prediction question is the TB-Location, because Billy wants to avoid the location where he mistakenly believes the frog to be. In avoidance FB tasks, 4-year-olds fail to predict behavior correctly even while they pass the Think question (Cassidy, 1998; Leslie *et al*., 2005; Leslie & Polizzi, 1998).

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Why do children who pass the standard FB task fail the avoidance FB task? Failure does not result from a lack in conceptual knowledge about 'avoidance' desires. The same children easily predict the behavior of a character with an avoidance desire when the character has a true belief (Leslie & Polizzi, 1998), and even 3-year-olds can do so (Leslie *et al.*, 2005). Failure is probably due to processing demands. We next review two processing accounts of children's difficulty with avoidance false belief, and then test between them.

Selection processing

According to the first account, children's belief-desire reasoning is made possible by two neurocognitive mechanisms, the Theory of Mind Mechanism (ToMM) and the Selection Processor (SP). ToMM provides children with certain basic mental state concepts, such as BELIEF and DESIRE, allowing children to attribute these mental states (Leslie, 1987, 1994). SP is an inhibitory process which helps select the correct content for the mental states to be attributed (Leslie & Thaiss, 1992; Roth & Leslie, 1998). According to the ToMM-SP account, errors in belief-desire reasoning result because SP is immature and ineffective in young children. Other proposals also claim that belief-desire reasoning requires inhibitory processing (e.g. Carlson, Moses & Breton, 2002; Russell, Mauthner, Sharpe & Tidswell, 1991).

When determining the target of a person's belief or desire/action, ToMM first provides a set of plausible candidate targets, and SP then selects the most likely target from this set. In standard FB tasks the TB- and FB-Locations are plausible targets for Billy's belief about where the frog is.

The account assumes varying salience levels for plausible candidates and that the most salient candidate will be selected. The TB-Location is always the most salient candidate initially, but salience can be adjusted downward by applying inhibition. Success in FB tasks requires such adjustment. If inhibition is effective, then the salience of the TB candidate drops, and the FB candidate is selected. Younger children may lack the resources to effectively inhibit the TB candidate, resulting in a failure to attribute false belief. In simple true belief tasks there is no need to inhibit the TB candidate, and so these tasks are easy for young children.

According to the account, predicting the behavior of a person with an avoidance desire also requires inhibition: SP first identifies the target that is to be avoided, and then an inhibition is applied to that target, so that an alternative will be selected as the target of action. Three-year-olds' success predicting behavior from an avoidance desire (with true belief) shows that less inhibition is necessary when determining the target of an avoidance desire than when determining the target of a false belief (with approach desire) (Leslie *et al.*, 2005).

So far we have considered cases of 'single inhibition': false belief with approach desire and avoidance desire with true belief. But predicting the behavior of a person with a false belief and an avoidance desire requires 'double inhibition', one for the belief and one for the desire. Combining the inhibitions in the correct way appears to be demanding – in particular, the inhibitions cannot simply be added together because this will result in the wrong answer being selected.

How do inhibitions for belief and desire combine for successful performance in the avoidance FB task? Leslie and Polizzi (1998) proposed two versions of the model, which mainly differed in whether inhibitions for belief and desire are applied serially or in parallel. We describe only the parallel 'inhibition of inhibition' model, because recent data rule out the serial version (Friedman & Leslie, 2004; Leslie *et al.*, 2005).

In the 'inhibition of inhibition' SP model, inhibitions for belief and desire are applied to the TB candidate in parallel. If either inhibition or both inhibitions reach the TB candidate then its salience will be reduced, ensuring selection of the FB candidate. However, this is the wrong answer for the avoidance FB task. For success, the inhibitions for belief and desire must themselves be inhibited, so that no inhibition reaches the TB candidate. The TB candidate remains more salient than the FB candidate and thus is correctly selected as the target of the person's action. In Figure 1, the processing is visualized via an arrow or index which points at the currently most salient candidate and with one inhibition inhibiting the other.

The 'inhibition of inhibition' SP model claims that successful performance on the avoidance FB task

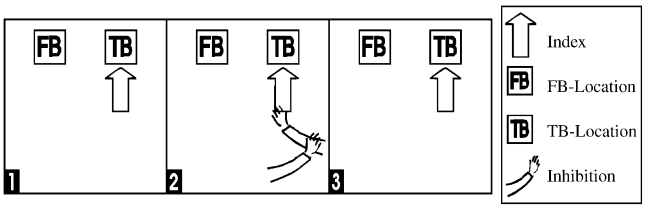

Figure 1 *The Selection Processing Model.*
The TB and FB candidate contents are shown as boxes. The arrow represents the currently selected belief/desire content. To predict where a character with a false belief and an avoidance desire will go: (1) the target of true belief and approach desire – the TB-Location – is indexed; (2) inhibitions for false belief and for avoidance desire are applied in parallel, such that one inhibition inhibits the other, cancelling out; (3) The result is that the initial indexing is unchanged and indicates correctly where the character will go.

requires that inhibitions for belief and desire be mustered simultaneously such that they cancel out. If a child has resources sufficient for only one inhibition, then it will reduce the salience of the TB-Location, and cause the FB-Location to be mistakenly selected as the target of action. The avoidance FB task is more difficult than the standard approach task because passing the avoidance FB task requires inhibition of inhibition.

General Difficulty

It is also possible, however, that children's difficulty with avoidance FB might result from an increase in 'general difficulty' of processing. According to a General Difficulty account, attributing a false belief stresses the child's processing resources nearly to the limit. Behavior prediction requires more resources when considering a person with an avoidance desire than a person with an approach desire. To predict behavior in the avoidance FB task the child must consider both the character's false belief and avoidance desire. Because most of the child's processing resources are already spent in attributing false belief, the addition of avoidance desire to the FB task acts as a 'last straw' that increases the processing resources necessary for success beyond the processing resources actually available to the child, sinking performance.

General Difficulty accounts of the avoidance FB effect have been compared unfavorably with the SP model and dismissed for several reasons (see Leslie, 2000; Leslie *et al*., 2005; Leslie & Polizzi, 1998). For example, if avoidance desire increases general difficulty then we should expect other task manipulations, which increase task complexity, to do the same. But there are few such factors – children's performance on FB tasks is remarkably consistent across many task variations. However, such arguments rely on inference. Experimental evidence is needed to test between the two accounts.

General Difficulty or inhibition of inhibition?

The competing accounts give different explanations for children's relative ease in predicting behavior in avoidance true belief (TB) tasks. According to the ToMM-SP account, avoidance TB requires a single inhibition, namely, for avoidance desire. Passing is therefore easier than in avoidance FB tasks, where two inhibitions must cancel out. According to the General Difficulty account, avoidance TB is easy because true belief attribution requires few processing resources, and so plenty of resources remain available for considering the avoidance desire.

The accounts can be pitted against one another by using a *difficult* TB task, in which belief attribution is at least as difficult as in FB tasks. According to the General Difficulty account, a difficult true belief attribution can stress processing resources as much as false belief. Adding an avoidance desire to such a task will then act as a 'last straw', just as it does in avoidance false belief. Because most of the child's processing resources are already spent in attributing the difficult true belief, the addition of avoidance desire will require more processing resources than are actually available to the child, sinking performance. Thus, children who succeed in attributing 'difficult' true belief will find the extra burden of considering avoidance desire equally detrimental to behavior prediction in both tasks.

According to the ToMM-SP account, predicting the character's action in the difficult avoidance TB task will still require only a *single* inhibition – for desire – just as in the regular *easy* avoidance TB task. The processing demands of the belief and the desire factors in the task will be merely additive, and will not interact as they do in *double* inhibition. Thus, the extra burden of considering avoidance desire will be less detrimental than in the avoidance FB task.

The difficult TB task we used is the partial true belief (PTB) task (Roth & Leslie, 1998; Leslie & Frith, 1988) in which the character is partly informed about and partly ignorant of a situation. In our avoidance version of this task, Billy wants to put his clean hat under one of two boxes, but not under whichever box holds a dirty frog. He sees a frog under one box but is absent when another frog goes under the second box. In this task Billy has partial knowledge: He knows that there is a frog under one box (TB-Location) but is unaware that another frog is under a second box (Ignorance-Location). As in avoidance FB tasks, children were asked a Think question about where Billy thinks a frog is, and a Prediction question about where Billy will go with his clean hat.

We used the PTB task for two reasons. First, previous findings show that prediction in the PTB task is at least as difficult as in the FB task: Roth and Leslie (1998) administered FB and PTB tasks to 3-year-olds in three age groups (young, middle, older). Both tasks were equally difficult at each age, though the PTB task may have been more difficult than the FB task – performance only improved with age in the FB task. Second, the PTB task is a kind of true belief task, and so the ToMM-SP account suggests that it is difficult for different reasons than is the FB task. In the PTB task the character has a true belief and so success does not require inhibiting a default tendency to attribute true belief. Thus, the ToMM-SP account claims that behavior prediction in avoidance PTB tasks requires only a single inhibition – for the character's avoidance desire.

We are uncertain why belief attribution is difficult in the PTB task. But knowing the source of difficulty is not

relevant to our test between the SP and General Difficulty accounts. What is relevant is that belief attribution is at least as difficult in the PTB task as in the FB task, and that succeeding on the PTB task does not require attributing a false belief. Given these conditions, the General Difficulty account predicts that prediction should be equally difficult in avoidance versions of both tasks, whereas the ToMM-SP account predicts that performance will be worse in the avoidance FB task.

Experiment 1

Four-year-olds received either an avoidance FB or PTB task. The General Difficulty account predicts that behavior prediction will be equally difficult in each task. The ToMM-SP account predicts that behavior prediction will be harder in the avoidance FB task than in the PTB version.

Method

Subjects

Seventy 4-year-olds were tested, with equal numbers receiving each task. Five children in the FB task, and one in the PTB task, were rejected for failing a Control question. An additional three children in the FB task, and four in the PTB task, were rejected for failing the Know question. The remaining 27 children who received the FB task ranged between 4:0 and 5:0 years (mean = 4:6 years, SD = 3.24 months), and the remaining 30 children who received the PTB task ranged between 4:2 and 5:0 years (mean = 4:7 years, SD = 2.89 months).

Materials

Each task made use of a foam board stage, and dolls and props.

Procedure

Each child received an avoidance FB or PTB task. In the FB task the character saw the object under one box (FB-Location) but was absent when it moved to under another box (TB-Location). In the PTB task the character saw the object under one box (TB-Location) but was absent when a second object went under another box (Ignorance-Location). We counterbalanced whether the TB-Location was the box on the right or left.

Both tasks included two control questions, a Know question, a Think question, and a Prediction question. To ensure that we were dealing with reliable passers we rejected children who failed a control or Know question. The Appendix shows task protocols. It is unlikely that performance was affected by use of animates (frogs) as the target of belief because previous investigations using animate targets found typical FB task performance (e.g. Leslie & Polizzi, 1998).

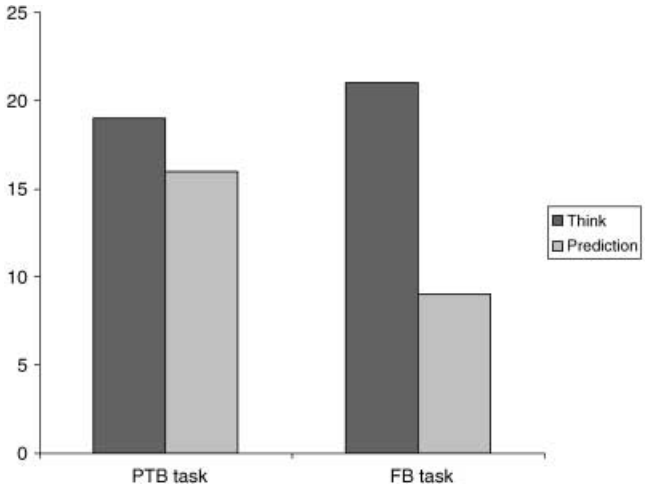

Figure 2 *Experiment 1. Number of children passing Think and Prediction questions in the PTB and FB tasks.*

Results

Testing between the SP and General Difficulty accounts requires that belief attribution be at least as difficult in the PTB task as in the FB task. This requirement was met: 19 of 30 (63.33%) children passed the Think question in the PTB task, and 21 of 27 (77.78%) passed in the FB task (Upton's $\chi^2 = 1.39$, $p = .24$, two-tailed).

We compared the difficulty of predicting avoidance behavior for children who passed the Think question. As predicted by the SP model, and shown in Figure 2, the Prediction question was more difficult in the FB than PTB task: of 19 children who passed the Think question in the PTB task, 16 (84.21%) passed the Prediction question, whereas of 21 children who passed the Think question in the FB task, only 9 (42.86%) passed the Prediction question (Upton's $\chi^2 = 7.10$, $p = .004$, one-tailed).

Discussion

Belief attribution was equally difficult in both tasks. But for children who correctly attributed belief, the need to consider the character's avoidance desire added more difficulty in the avoidance FB task than in the PTB version. This finding is consistent with the SP model, but conflicts with the General Difficulty account.

Our test of the General Difficulty account requires that attributing belief is as difficult in the PTB task as

in the FB task. However, we may have unfairly increased the difficulty of attributing belief in the PTB task through use of the Think question. 'Think' may imply that one is unsure or incorrect, but in the PTB task the character *knows* where the object to be avoided is. Asking the Think question may have misled children about the character's knowledge, and lowered performance.

A second experiment was conducted in which the Think question was replaced with a Say question: 'Which box will Billy say the/a dirty frog is in?' The Say question tests belief attribution, but without implying that the character does not know where the object is.

Experiment 2

Method

Subjects

Forty-five 4-year-olds were tested, with 22 receiving the FB task and 23 receiving the PTB task. In the FB task, one child was rejected for failing a Control question and another three for failing the Know question. In the PTB task, four children were rejected for failing a Know question. The remaining 18 children who received the FB task ranged between 4:3 and 5:1 years (mean = 4:8 years, SD = 3.31 months), and the remaining 19 children who received the PTB task ranged between 4:1 and 5:0 years (mean = 4:7 years, SD = 3.58 months).

Materials

Materials were as in Experiment 1.

Procedure

The procedure was identical to Experiment 1, except that belief attribution was tested with Say questions. In the FB task, the Say question was 'Which box will Billy say the dirty frog is in?' In the PTB task, the question was 'Which box will Billy say a dirty frog is in?'

Results

Despite use of a Say question, belief attribution in the PTB task remained difficult: 12 of 19 (63.16%) children passed the Say question in the PTB task, and 16 of 18 (88.89%) passed in the FB task (Fisher's exact test, $p = .15$, two-tailed). Summing across both experiments, belief attribution was more difficult in the PTB task (Upton's $\chi^2 = 4.17$, $p = .041$, two-tailed).

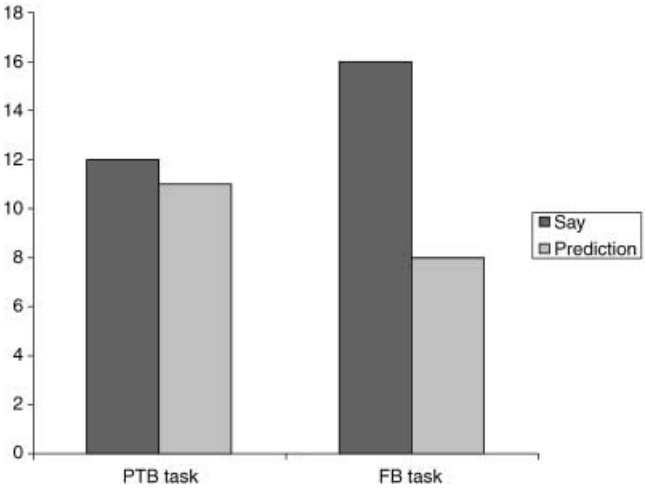

Figure 3 *Experiment 2. Number of children passing Say and Prediction questions in the PTB and FB tasks.*

Figure 3 shows that the Prediction question was more difficult in the FB than PTB task, replicating Experiment 1. Of 12 children who passed the Say question in the PTB task, 11 (91.67%) passed the Prediction question, whereas of 16 children who passed the Say question in the FB task, only 8 (50%) passed the Prediction question (Fisher's exact test, $p = .024$, one-tailed).

Discussion

The findings replicated those of Experiment 1. Consistent with the SP model, children who correctly attributed belief (by passing the Say question) had difficulty predicting behavior in the FB task, but not in the PTB task.

General discussion

In two experiments we showed that belief attribution is at least as difficult in the PTB task as in the FB task. From the perspective of the General Difficulty account this finding suggests that attributing belief demands at least as many processing resources in the PTB task as in the FB task. The General Difficulty account, therefore, predicts that considering the character's avoidance desire should sink performance on the behavior prediction question as much in the PTB task as in the FB task. This was not found.

Consistent with the SP model, children who passed Think questions were worse at predicting behavior in the FB task. According to the SP model, predicting behavior in the avoidance FB task is difficult because it requires 'double inhibition'. In the avoidance PTB task prediction requires only a single inhibition, and is therefore less difficult.

The findings support the SP model and increase our understanding of the role of inhibitory processing in belief-desire reasoning. The SP model claims that 3-year-olds' difficulty with FB tasks results from the need to inhibit attribution of true belief. This processing demand remains in preschoolers after they pass standard FB tasks, and is revealed by their difficulty with avoidance false belief.

Future research may lead us to revise our account of the inhibitory processes in the FB and avoidance FB tasks. Even so, the current findings rule out a General Difficulty account of the avoidance FB task. The General Difficulty account cannot be defended by claiming that children who succeeded in attributing belief in the PTB task had greater processing resources than those in the FB task and therefore found behavior prediction easier. Belief attribution appears to be harder in the PTB than FB task, and may require greater resources. But what matters most for the General Difficulty account is not the resources required to attribute belief, but the resources that *remain after* doing so – these resources are drained when considering avoidance desire. According to the General Difficulty account, the greater difficulty of attributing belief in the PTB task should have left subjects with fewer resources with which to consider avoidance desire, and so behavior prediction should have been harder in the PTB than FB task. The data contradict this prediction.

The General Difficulty account also cannot be helped by claiming that we were wrong to assume that equally difficult tasks stress processing resources equally. Instead, difficulty in one task might result from a lack of conceptual competence. Our findings would be threatened only if difficulty in the FB task was due to processing demands and difficulty in the PTB task due to lack of conceptual competence. If this were true, processing resources would be more strained when attributing belief in the FB task than in the PTB task, and the General Difficulty account would also expect behavior prediction to be more difficult in the FB task. However, there is no reason to believe that 4-year-olds lack the conceptual competence to succeed on PTB tasks, though this explanation is often proposed for children's difficulty with FB tasks.

Finally, the General Difficulty account cannot be modified to posit multiple processing demands in belief-desire reasoning tasks. While a multiple demands model could explain our findings, it would hardly be a *General* Difficulty account, since multiple demands imply specific, not general, difficulties. Indeed, the SP model posits multiple processing demands: attributing false belief and considering avoidance desire both make demands of inhibitory processing, whereas attributing belief in the PTB task makes different processing demands.

Partial true belief

Beyond testing between the SP and General Difficulty accounts, the current experiment extends our knowledge about partial true belief. We now know that belief attribution in the PTB task is at least as difficult as in the FB task at both 3 (Roth & Leslie, 1998) and 4 years of age. According to the ToMM-SP account, attributing belief in FB and PTB tasks is difficult for different reasons. In FB tasks, belief attribution is difficult because it requires mustering inhibition to overcome a default tendency to attribute true belief. But in PTB tasks the character has a true belief, and so some other explanation is needed.

Our findings support the view that belief attribution makes different processing demands in the FB and PTB tasks. Specifically, the findings rule out the possibility that the PTB task is really an FB task, in which the child must ignore her true belief that both boxes contain objects, in order to attribute the false belief that the Ignorance-Location is empty. If the PTB task were really just an FB task, then passing avoidance PTB would require double inhibition, and behavioral prediction would have been equally difficult in both tasks. Our results contradict this, leading us to conclude that PTB and FB are substantially different tasks.

We are uncertain why belief attribution is difficult in the PTB task. However, we suspect that difficulty may arise because the task involves two objects – one in the TB-Location and one in the Ignorance-Location. The ToMM-SP system must index the object in the TB-Location because the character knows about that object, and therefore has a belief about it. However, the system must *not* index the Ignorance-Location, because the character has no belief about the object in that location. ToMM-SP may have difficulty assigning indexes when there are multiple objects or may have difficulty refraining from indexing the Ignorance-Location.

One reviewer suggested that inhibition may be required for successful belief attribution in the PTB task. At first glance our findings contradict this suggestion. If the PTB task required inhibition then the avoidance version should have required double inhibition, and been more difficult. But the PTB task might involve inhibition nonetheless. Further investigation of the PTB task is necessary. For the time being we have refuted the General Difficulty account as an explanation for children's difficulty with the avoidance FB task.

Relation to other accounts

The SP model is related to other accounts of belief-desire reasoning which stress executive and inhibitory processing (e.g. Carlson *et al*., 2002; Frye, Zelazo & Palfai, 1995;

Russell *et al*., 1991). However, we believe that only the ToMM-SP account explains a number of findings pertaining to avoidance desire (see Leslie *et al*., 2005).

Some accounts claim that younger children fail the FB task because they lack the inhibitory resources necessary to inhibit reality, or a tendency to report reality. These 'reality inhibition' accounts differ from the ToMM-SP model in their claims about *what* is inhibited in successful FB task performance. According to the ToMM-SP account, success on FB tasks requires inhibiting a plausible content for belief – the content corresponding to true belief.

This difference between the ToMM-SP and reality inhibition accounts is subtle but important. Although 'reality' and 'true belief' mirror one another, processing 'reality' is not part of 'theory of mind' but processing a true belief attribution is. It is difficult to see how reality inhibition explains children's difficulty in avoidance FB tasks. These accounts claim that younger children fail the FB task because they fail to inhibit reality. But in the avoidance FB task the correct answer is the 'reality' location, and this task is failed by older children.

Reality inhibition accounts face other problems not shared by the ToMM-SP account: Perner, Lang and Kloo (2002) demonstrate that children perform equally poorly on standard FB tasks and 'explanation' tasks, in which children must explain why a person searches for an object in an erroneous location. Perner and colleagues claim that the explanation task does not require inhibition of reality, and so inhibitory demands cannot be the source of children's difficulty in the standard task (assuming that standard and explanation FB tasks are difficult for the same reason).

Perner's argument applies to reality inhibition accounts, but not to the ToMM-SP account. According to the ToMM-SP account, the explanation FB task involves inhibitory processing for the same reason that the standard FB task does, namely, both require the attribution of false belief. To explain why the person looks for the object in an erroneous location, the child must realize that the person has a false belief about where the object is, and must therefore inhibit attributing a true belief to the person. It is no surprise, then, that the Explanation task is as difficult as the standard FB task.

A different processing account for children's failure is the Cognitive Complexity and Control theory (e.g. Frye *et al*., 1995) which claims that children's performance on a variety of tasks is limited by the complexity of rule structures that children can represent. It seems to us that this theory's predictions about the current experiment should be similar to those of the General Difficulty account: PTB and FB tasks are of similar difficulty, and ought to involve similarly complex rule structures. Avoidance desire increases the difficulty of the FB task, implying that a more complex rule structure is needed to pass avoidance FB tasks. Adding avoidance desire to the PTB task should also increase the complexity of the rule structure necessary for success, dropping performance. But it does not: PTB performance is similar regardless of whether avoidance desire is considered.

Appendix

Task protocols for Experiment 1

This is Billy and look what he has. It's a nice clean hat. Billy wants to keep his hat nice and clean, he doesn't want to get it dirty. So he puts it down outside and goes into this room to look for a box to put it under. Look there are two boxes here. What color is this box? And what color is this box? Billy looks under the boxes. Is there anything under the green box? No, nothing. And under the red box? It's a frog and it's all dirty! Billy doesn't want to put his clean hat with the dirty frog. Why not? Right, because he doesn't want his clean hat to get all dirty. Now Billy is going to go outside to get his clean hat. Look what happens while Billy is gone . . .

False Belief	*Partial True Belief*
The dirty frog crawls from under the red box and goes under the green box!	Look who comes in the room . . . It's another dirty frog, and it goes under the green box!

Did Billy see that? No!
Well now Billy is going to come back and I have some questions for you.

Control. In the beginning where did Billy see the dirty frog?	*Control*. In the beginning where did Billy see the first dirty frog?
Control. Where is the dirty frog now?	*Control*. Where is the other dirty frog?
Know. Does Billy know that the dirty frog is in here?	*Know*. Does Billy know that there is a dirty frog in here?
Think. Where does Billy think the dirty frog is?	*Think*. Where does Billy think a dirty frog is?

Prediction. Which box will Billy go to with his clean hat?

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