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REPORT

Problems with the Seeing = Knowing Rule

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Abstract

The view that children understand the mind via a coherent theory is supported by evidence that children rigidly follow a Seeing = Knowing Rule: seeing, and only seeing, leads to knowing. This paper presents two kinds of evidence that children do not follow this rule. First, we critically review previous findings that children neglect the role of inference and argue that these studies do not in fact support the view that children follow a Seeing = Knowing Rule. We then present two studies in which children who correctly attributed ignorance and false belief to an observer in a false belief task also attributed ignorance (Study 1) and false belief (Study 2) in true belief tasks. These findings demonstrate that children sometimes attribute ignorance and false belief to an observer who is granted visual access, an outcome that should not occur if children rigidly follow the Seeing = Knowing Rule. We end by discussing some problems associated with modifying the Seeing = Knowing Rule to account for children's failure on the true belief task.

Introduction

Research on children's understanding of the mind has led to a variety of theoretical explanations. The theory-theory, one of the most important and influential explanations, claims that children's understanding of the mind resembles a scientific theory (e.g. Gopnik & Wellman, 1994; Wellman, 1990). According to the theory-theory, children come to understand the mind by forming and revising coherent sets of rules or laws that allow prediction and explanation of mental states. One way of supporting the theory-theory is to show that children's understanding of mental states is based on use of incorrect or misapplied rules.

Support for the theory-theory is provided by evidence that children initially understand the relationship between seeing and knowing by rigidly following the rule that seeing or being told leads to knowing (Access Rule), and overextending this rule to form the rule that not seeing or not being told leads to ignorance (No-Access Rule) (Ruffman, 1996; Sodian & Wimmer, 1987). The Access and No-Access Rules, then, can be combined into one rule: seeing or being told, and only seeing or being told, leads to knowing (Seeing = Knowing Rule). If children do indeed follow this rule, then they should attribute knowledge about some event to an observer who sees or is told about that event and ignorance to an observer provided with neither form of informational access, even if the observer has some other source of information about the event (Ruffman, 1996). Thus, the view that children follow a Seeing = Knowing Rule makes clear predictions about when children will attribute knowledge or ignorance to an observer. For brevity, we will refer to the view that children follow a Seeing = Knowing Rule as the Rule View.

In this paper we provide two types evidence against the Rule View. First, we review findings from other investigations thought to provide evidence that children follow the No-Access Rule, and argue that these findings do not provide strong support. We then present two studies that suggest that children do not rigidly follow the Access Rule. In these studies, children attributed ignorance and false belief to an observer who was granted visual access – an outcome that should not

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occur if children rigidly followed the Access Rule. We then show that modifying the Rule View so that it can account for this finding causes this view to conflict with the theory-theory. Thus, we conclude that children's understanding of the mind does not resemble a scientific theory.

Critical review of studies used to support the Rule View

Two types of evidence have been cited to support the Rule View. The first type suggests that children understand the Access Rule that seeing leads to knowing. This evidence is provided by investigations that have found that 3- or 4-year-olds attribute knowledge to an observer who is shown the contents of a container and attribute ignorance to an observer who is denied perceptual access (Pillow, 1989; Pratt & Bryant, 1990; Wimmer, Hogrefe & Perner, 1988; Woolley & Wellman, 1993). Children also understand that an observer who is told about the content of a container is knowledgeable (Wimmer, Hogrefe & Perner, 1988). Four-year-olds are also able to determine which of two observers is knowledgeable in a task in which only one of two observers sees the content of a container or the location of an object (Perner & Ogden, 1988; Pillow, 1989; Povinelli & DeBlois, 1992; Pratt & Bryant, 1990).

The second type of evidence in support of the Rule View comes from studies suggesting that children follow the No-Access rule (not seeing leads to not knowing) and consequently ignore non-visual sources of information. These studies show that prior to the age of 6, children neglect inference as a source of knowledge (e.g. Ruffman, 1996; Sodian & Wimmer, 1987; Varouxaki, Freeman, Peters & Lewis, 1999). For example, Sodian and Wimmer (1987) presented children with an inference task in which a transparent container held balls of identical color. The observer was told that one of the balls would be placed in a bag, but did not stay to see this event occur. After the ball had been moved and the observer had returned, children were asked whether the observer knew the color of the ball in the bag. Children under 6 wrongly attributed ignorance to the observer, despite being able to infer the color when they themselves were put in the observer's position. According to the Rule View, children wrongly attributed ignorance to the observer because the No-Access Rule states that not seeing leads to not knowing, and the observer did not see the ball get placed in the bag.

It is also worth considering findings from similar tasks which show that children incorrectly attribute knowledge to an observer who is told an ambiguous message (see Robinson, 1994, for a review). For example, Sodian (1988) showed children a piece of chocolate being placed in a drawer of a toy cupboard. The cupboard had three drawers, one red upper drawer, and two lower drawers, one red, one green. An observer who did not see the chocolate get placed in the drawer was told that the chocolate was in the red drawer. This message is ambiguous about the location of the chocolate given that there were two red drawers. Until about the age of 6, children wrongly attributed knowledge to the observer, despite being able to acknowledge that they were ignorant of the chocolate's location when they themselves were put in the observer's position. According to the Rule View, children wrongly attributed knowledge to the observer because the Access Rule states that being told leads to knowing and the observer was told about the chocolate's location (Wimmer, Hogrefe & Sodian, 1988). Children ignored or did not recognize the ambiguity of what the observer was told.

A problem with the Rule View

The Rule View appears to explain children's failure on inference and ambiguous message tasks. However, the explanations offered for children's performance on each type of task contradict one another. Inference and ambiguous message tasks are very similar. In each task an object is hidden and children are asked whether an observer knows some information about the hidden object, such as its color or its location. In both kinds of tasks, the observer does not see the object get hidden, but is instead told a message that provides incomplete or indirect information about the hidden object. If children followed the Access Rule, that being told (even if not directly) leads to knowing, then they should have attributed knowledge in both tasks. Alternatively, if children followed the No-Access Rule, that not seeing leads to not knowing, then they should have attributed ignorance in both cases. But children's attributions differed across the tasks, suggesting that the Rule View is unable to predict when they will attribute knowledge or ignorance to an observer.

It is likely that children fail both kinds of tasks because they have difficulties judging how informative a message is. Children may have difficulty realizing that some messages allow information to be inferred, and that others are ambiguous despite appearing to provide information. If this difficulty is the cause of children's failure on the inference task, then the No-Access Rule is not needed to explain failure. Thus, the view that children follow the No-Access Rule is not supported by children's performance on inference and ambiguous message

tasks. We next present a study which suggests that children do not rigidly follow the Access Rule.

Study 1

We conducted a study whose initial goal was to provide more information about the lag between attribution of ignorance and false belief (e.g. Hogrefe, Wimmer & Perner, 1986). When designing the study, we expected that children would follow the Seeing = Knowing Rule. To our surprise, the findings violated this expectation.

Children received three tasks: false belief, ignorance and true belief. In the false belief task, an observer watched a toy get placed under one box and then left the room. The toy was then moved to under a second box. The observer returned, with a false belief about the toy's actual location. Children were asked whether the observer knew the location of the toy (Know Question). If children follow a Seeing = Knowing Rule, they should pass this question and attribute ignorance because the observer did not see the toy get placed in its final location. Children were also asked where the observer would think the toy was (Belief Question). The Belief Question was not asked in the other tasks.

In the ignorance task the observer was given no evidence about which box held the toy. The observer left the room at the beginning of the scenario. The toy was placed under the first box and was then moved to under the second box. The observer returned to the room, and children were asked a Know Question. Again, if children follow a Seeing = Knowing Rule, they should pass the Know Question and attribute ignorance because the observer did not see the toy get placed in its final location.

In the true belief task the observer was knowledgeable about which box held the toy. The observer watched the toy get placed under the first box and then get moved to under the second box. The observer left the room momentarily and then returned still knowledgeable of the toy's location. Children were asked a Know Question. If children follow a Seeing = Knowing Rule then they should pass the Know Question and attribute knowledge, because the observer saw the toy get placed under the second location.

Method

Participants

Participants were 72 children attending local daycare centers. There were 24 children at each of ages 3, 4 and 5. The experimenters were informed of children's ages by daycare staff who brought children to the testing area.[1]

Materials

Each task made use of a hand puppet, a toy car and two small cardboard boxes of different colors, both of which could fit over the toy. Different sets of materials (including differently colored boxes) were used for each task.

Procedure

All children participated in three tasks: a false belief task, an ignorance task and a true belief task. The false belief task began with the child in the room with two experimenters, a puppet, a toy car and two colored boxes on a table. One experimenter (E1) manipulated the puppet, while the other experimenter (E2) recorded the results. The child was introduced to the puppet and the toy car. E1 asked the child to put the toy car under one of the boxes. After the child hid the toy under the box, E1 said that the puppet had to leave the room. E2 then exited the room with the puppet. E1 asked the child to put the toy car under the other box. After the toy car had been moved, the puppet reentered and the following questions were asked:

Know Question: Does [puppet] know where it is?
Belief Question: Does [puppet] think [toy] is in the [color1] box or does he think it's in the [color2] box?
Reality Question: Where is it really?

The true belief and ignorance tasks were identical to the false belief task except for when the puppet exited the room. In the ignorance task, the puppet was first removed from the room and did not return until after the toy was placed under the first box and then moved to the second box. Because the puppet never saw the toy get hidden, the puppet was ignorant about the toy's location.

In the true belief task, the puppet remained in the room while the toy car was placed under the first box and then moved to the second box. After the toy was placed under the second box, the puppet was removed from the room but was soon brought back. The toy car was not moved during the puppet's absence, and so the puppet was knowledgeable about the toy's location.

When the puppet returned in the true belief and ignorance tasks, the following questions were asked:

[1] It was not possible to report the precise age range of the children in months. However, the 3-year-olds' ages were all within 3;0–3;11; the 4-year-olds' ages were all within 4;0–4;11; and the 5-year-olds' ages were all within 5;0–5;11. It is important for the reader to note that age is not relevant for the main analysis of this study, as shown below.

Know Question: Does [puppet] know where it is?
Awareness of Ignorance Question: Let's ask him if he knows where it is. [Puppet] do you know where [toy] is? Will he say, 'Yes, I know where it is' or will he say, 'No, I don't know where it is'?
Reality Question: Where is it really?

The presentation order of the tasks was fully counterbalanced. The side (left or right) on which the first and second boxes were placed was partially counterbalanced. For half the participants, the order of the toy's initial location across the three tasks was left-right-left. For the other half, the order was right-right-left. The order of the forced choice alternatives in the Belief Question and the Awareness of Ignorance Question was fully counterbalanced.

Results

A preliminary analysis was conducted to demonstrate that children's performance on the false belief task was similar to that found in other studies. Specifically, we sought to replicate the finding that children pass Know Questions prior to Belief Questions (Hogrefe *et al.*, 1986; Roth & Leslie, 1998; Surian & Leslie, 1999; but see Sullivan & Winner, 1991, 1993, for exceptions). In order to determine whether this pattern was replicated, children's performance on the false belief task was assessed. The responses of four 4-year-olds and four 5-year-olds were excluded because these children failed the Reality Question. The responses of two 3-year-olds could not be analyzed because they did not answer the Know Question.

A lag between ignorance and false belief attributions was found. Table 1 shows the contingency between passing the Know and Belief Questions in the false belief task. Most 3-year-olds either failed both questions or passed just the Know Question; 4-year-olds were almost evenly split across all response patterns; and almost all 5-year-olds passed both questions. Three-year-olds were more likely to pass the Know Question and fail the Belief Question than the reverse (two-tailed Binomial Sign Test, $p = .0386$). Thus, replicating the findings of previous studies, 3-year-olds found it easier to attribute ignorance than false belief.

Table 1 *Contingency between performance on the know and belief questions in the false belief task*

Questions passed	Age		
	3	4	5
Both	1	6	18
Know question only	10	4	1
Belief question only	2	4	1
Neither	9	6	0

Table 2 *Response patterns on the know question across the false belief, ignorance and true belief tasks for children who passed the belief question and all reality questions*

Response pattern	
Passed all tasks	6
Attributed knowledge in all tasks	2
Attributed ignorance in all tasks	15
Other five response patterns combined	6
Total	29

The main analysis investigated the predictions of the Rule View, and focused on children's responses to the Know Questions in each task. In order to construct a conservative test of the Rule View, the analysis included only children who passed the Belief Question in the false belief task as well as all Reality Questions. That is, we omitted responses from children who may not have been paying attention, or who may not have learned that seeing leads to knowing.

Table 2 shows the response patterns on the Know Questions for these 29 children. There were eight possible response patterns because there were three tasks and children could attribute knowledge or ignorance in each. If children followed the Seeing = Knowing Rule, they should have passed the Know Question in each task, and their dominant response pattern should have been to attribute ignorance in the false belief and ignorance tasks and to attribute knowledge in the true belief task. Contrary to the predictions of the Rule View, children did not show this response pattern at a rate greater than that expected by chance (two-tailed Binomial Test, $p = .146$). The only response pattern found at rates greater than those predicted by chance was for children to attribute ignorance on all tasks, thereby responding incorrectly on the true belief task (two-tailed Binomial Test, $p < .0001$). A chi square test revealed that children's performance on the Know Question in the true belief task was not contingent on whether this task was presented first, second, or third: $\chi^2 (df = 2, N = 29) = 4.20$, $p = .122$. Thus children's poor performance on the true belief task was not due to children repeating responses given previously in the false belief and ignorance tasks.

Discussion

The findings of this study are not consistent with the Rule View. If children followed the Seeing = Knowing Rule, they should have attributed ignorance in the false belief and ignorance tasks, and knowledge in the true

belief task. However, this response pattern was not found: Children often attributed ignorance in the true belief task, revealing that they do not rigidly follow the Access Rule. It is unlikely that children's poor performance on the true belief task was due to their not paying attention and therefore failing to notice that the observer saw the toy get hidden. A lack of attention would have resulted in poor performance on all tasks. However, children's performance was normal in the false belief task, as revealed by analysis of the lag between ignorance and false belief attributions. Also, children's lack of attention would be expected to grow worse as the experiment progressed. However, children's performance on the true belief task was not affected by the presentation order of the tasks.

Skepticism about the finding that children wrongly attributed ignorance in the true belief task is reasonable because this finding seems to conflict with findings from investigations in which children passed similar true belief tasks (Clements & Perner, 1994; Surian & Leslie, 1999). However, other investigations have found that children have difficulties on true belief tasks. Mitchell, Robinson and Thompson (1999) found that while 49% of children passed a false belief task, 19% failed a true belief task. Using three location tasks, Garnham and Ruffman found that children were as likely to attribute false belief on a true (28%) as a false (28%) belief task. (The percentage for the false belief task is higher than that mentioned in Garnham and Ruffman. In three location tasks, there are two empty locations and therefore two ways of attributing false belief. Unlike Garnham and Ruffman, we judged children to have attributed false belief when they referred to either empty location, and not just the empty location where the observer had seen the object placed.) Thus, children's performance on true belief tasks varies considerably across studies.

An explanation for why children sometimes fail these true belief tasks is clearly needed. Before such an account is developed, however, it is important to realize that children's failure on true belief tasks is not predicted by the Rule View, which states that an observer who sees an event will know about that event. We next review the Rule View and discuss whether it can be modified to explain children's failure on the true belief task.

Explaining children's failure on the true belief task

To review, the Rule View claims that children learn the Access Rule, which states that perceptual access (seeing or being told) leads to knowing. Children overextend this rule to form a No-Access Rule, which states that denial of perceptual access (not seeing or not being told) leads to ignorance. However, the Rule View fails to account for children's attribution of ignorance on the true belief task. If children rigidly followed the Access Rule, they should have attributed knowledge to the observer. Contrary to this prediction, children attributed ignorance.

Children's failure on the true belief task might still be explained if the No-Access Rule were modified. The No-Access Rule might be altered to state that denial of perceptual access leads to ignorance about an event even if it is a *denial of irrelevant perceptual access* and the event does not occur while perceptual access is denied. That is, this modified No-Access Rule states that the denial of relevant or irrelevant perceptual access leads to ignorance. Because the observer in the true belief task was denied irrelevant perceptual access, following this rule would cause children to conclude that the observer was ignorant.

This modified version of the Rule View may seem compelling because it is able to account for children's ignorance attributions in the true belief task. However, this modified account differs greatly from the original view. The Access Rule states that perceptual access leads to knowing, and the No-Access Rule states that denial of perceptual access, even if irrelevant, leads to ignorance. In the true belief task, these two rules are pitted against each other because the observer is granted perceptual access and also denied irrelevant perceptual access. If the Access Rule is followed, children should attribute knowledge to the observer. But, if the No-Access Rule is followed, ignorance should be attributed.

The modified account requires a way of selecting which rule to follow in cases where the two rules conflict. One possibility is that the No-Access Rule is followed whenever the rules lead to different attributions, causing children to attribute ignorance. While this solution is consistent with studies finding that children fail the true belief task (e.g. Garnham & Ruffman, 2001), it is inconsistent with studies finding that children succeed on the true belief task (Clements & Perner, 1994; Surian & Leslie, 1999). Another, more likely, possibility is that children determine which rule to follow based on which scenario feature is more salient – the observer's perceptual access or the denial of the observer's perceptual access. This account is plausible because the salience of scenario features can vary across studies, as does children's performance on true belief tasks. A second study was conducted to replicate the findings of Study 1 and to investigate the role of feature salience in children's attributions.

Study 2

Given the counterintuitive findings of Study 1, Study 2 was conducted as a replication. Children were asked a Belief Question rather than a Know Question because

the former question is more commonly asked in false belief tasks. The ignorance task was not included because there is no correct answer to the Belief Question in this task.

Study 2 was also conducted to investigate the role of feature salience in determining children's attributions. There are a number of different factors which may affect the salience of a scenario feature. One obvious factor is the degree to which the experimenter comments on or reminds the child of the feature. For example, Clements and Perner (1994) highlighted the observer's perceptual access by asking children whether the observer had seen the object being moved to the second location. This question was asked after the observer left the room, and shortly before the Belief Question was asked. Surian and Leslie (1999) highlighted the observer's perceptual access by commenting that the observer was watching when the object was moved to the second location (Surian, personal communication).

The salience of a scenario feature is also likely affected by whether the feature occurs earlier or later in a mental state scenario. Consider a true belief task in which the observer initially leaves and then returns to see the object get placed in one location and moved to a second. It is difficult to imagine that children would attribute a false belief on this task, even though it involves the same events as the true belief task in Study 1. If feature salience is an important determinant of children's performance, then children should succeed on this simple true belief task because presenting a feature later in a scenario increases its salience and the importance of its role in children's judgment.

In order to test whether the salience of scenario features is responsible for differences in children's performance on true belief tasks, children were placed in either a return or no-return condition. In the return condition children received true and false belief tasks similar to those in Study 1. In the no-return condition tasks differed because children were questioned as soon as the observer left the room, and so the observer did not return. In the true belief task the observer's return imposes additional time and another event between perceptual access and presentation of the Belief Question. Thus, omitting the return from the scenario may increase the salience of the observer's perceptual access relative to the salience of the observer's subsequent denial of perceptual access, making it more likely that children will follow the Access Rule and attribute true belief. No differences were expected in performance between the false belief tasks in the return and no-return condition because the observer lacks perceptual access altogether and so the salience of this feature cannot be varied. Almost all children tested were 4-year-olds. This age was selected because we wanted to confirm that children begin to fail the true belief task just as they begin to pass the false belief task.

Method

Participants

Participants were 72 3- to 5-year-old-children attending local daycare centers. Children ranged from 46 to 67 months in age (mean = 55.4 months).

Materials

Each task made use of a hand puppet, a small toy and two small cardboard boxes of different colors, each of which could fit over the toy. Different sets of materials were used in each task, and the boxes were different colors in each.

Procedure

Children were randomly assigned to the return or no-return condition, with 36 children participating in each condition. In each condition children received true and false belief tasks. In the return condition the tasks were identical to those in Study 1, though the questions were different. In the no-return condition the puppet never returned to the room after leaving; hence the puppet was absent when the child was questioned. The child was questioned as soon as the puppet had left in the true belief task, and after the toy had been moved to the second location in the false belief task.

After each task children were asked:

Belief Question: Where will [puppet] look for the [toy]?
Reality Question: Where is it?

In the no-return conditions, the Belief Question was prefixed by 'When [puppet] returns'. Roughly half the children in each condition received the true belief task first and the remainder received the false belief task first. The side (left or right) on which the first and second boxes were placed was partially counterbalanced. For half the participants, the side of the toy's first location across the two conditions was left-right, and for the other half, the order was right-left.

Results

If a child failed or did not answer the Reality Question in either task, that child's other responses were excluded

Table 3 *Contingency between performance on the belief question in the return false and true belief tasks in Study 2*

False belief task	Belief attributed in true belief task	
	False	True
Passed	9	2
Failed	0	18

Table 4 *Contingency between performance on the belief question in the no-return false and true belief tasks in Study 2*

False belief task	Belief attributed in true belief task	
	False	True
Passed	8	7
Failed	1	18

from analysis. Data from seven children were excluded in the return condition and data from two were excluded in the no-return condition.

Table 3 shows the contingency between performance on the Belief Question in the false and true belief tasks in the return condition. Children who failed the false belief task also attributed true belief in the true belief task, and most children who passed the false belief task also attributed false belief (incorrectly) in the true belief task.

A Fisher's Exact Test revealed contingency between false and true belief performance ($N = 29$, $p < .0001$). Children who passed the false belief task tended to attribute false beliefs in the true belief task (two-tailed Binomial Sign Test, $p = .0654$). Children who failed the false belief task always attributed true beliefs in the true belief task (two-tailed Binomial Sign Test, $p < .0001$).

Table 4 shows the contingency between performance on the Belief Question in the false and true belief tasks in the no-return condition. Again, children who failed the false belief task attributed true belief in the true belief task. Roughly half the children who passed the false belief task also attributed false belief in the true belief task, while the remaining children passed.

A Fisher's Exact Test revealed contingency between false and true belief performance ($N = 34$, $p = .0042$). Children who passed the false belief task were split between attributing true and false beliefs in the true belief task (two-tailed Binomial Sign Test, $p > .9999$), while children who failed the false belief task attributed true beliefs in the true belief task ($p < .0001$).

Failure on the true belief task may have resulted because children who received the false belief task first perseverated when presented with the true belief task, and attributed a false belief. Thus, further analyses were conducted on children who received the true belief task first and passed the false belief task. In the return condition, these children always attributed a false belief in the true belief task (two-tailed Binomial Sign Test, $p = .0625$). In the no-return condition, these children were evenly split between attributing true and false belief in the true belief task ($p > .9999$). Thus, children failed the true belief task even when it was presented first.

Discussion

Study 2 replicated and extended the findings of Study 1. Children who passed the false belief task (in the return condition) tended to attribute false beliefs (incorrectly) in the true belief task. This finding provides further evidence against the claim that children follow the access rule and attribute knowledge (or true belief) whenever an observer is granted perceptual access.

The second purpose of this study was to determine whether children's performance in the true belief task is affected by the salience of the observer's perceptual access. The salience of the observer's perceptual access was varied by either placing children in a return or no-return condition. It was predicted that when the observer did not return, the observer's perceptual access would be more salient when the Belief Question was asked, improving children's performance in the true belief task.

Consistent with these predictions, a different response pattern was found in the no-return than return condition. Children who passed the no-return false belief task were split between attributing true and false belief in the no-return true belief task. Thus, the observer's return increases the likelihood of false belief attribution in the true belief task.

General discussion

The findings of Studies 1 and 2 are not consistent with the Rule View. If children followed the Seeing = Knowing Rule, they should have attributed knowledge and true belief in the true belief tasks. However, Study 1 found that children attributed ignorance when asked a Know question in this task, and Study 2 found that children attributed false belief when asked a Belief Question. Study 2 also provided evidence for the modified Rule View. To review, this view claims that the true belief task pits the Access Rule (that perceptual access leads to knowing) and the No-Access Rule (that denial of perceptual access, even if irrelevant, leads to ignorance)

against one another. These two rules lead to conflicting attributions in the true belief task because the observer is granted perceptual access and subsequently denied irrelevant perceptual access. In cases where the rules conflict, children determine which rule to follow depending on which scenario feature is more salient, perceptual access or denial of perceptual access. Future research will be necessary to provide further evidence on the importance of feature salience in determining children's attributions, and to discover other factors which affect performance on true belief tasks.

The modified Rule View conflicts with the version of the theory-theory proposed by Gopnik and Wellman (1994) which claims that the child's theory of mind is conceptually coherent. Gopnik and Wellman claim that the concepts that make up children's theory of mind are mutually interdependent and defined in relation to each other. Thus, concepts such as *perception*, *knowledge* and *ignorance* should be related via a set of rules which do not conflict. But in the modified rule account the rules conflict and so children do not behave as if there is a law-like relationship between perception and knowledge. That is, they sometimes attribute ignorance or false belief to an observer who is clearly granted perceptual access. Rather than a coherent theory, then, children's knowledge of the mind appears to be surprisingly fragile. Also, children's mental state attributions are sometimes determined by feature salience rather than only the rules of children's theory. Thus, while children's performance on the true belief task can be explained by the modified Rule View, this view conflicts with Gopnik and Wellman's influential version of the theory-theory.

In summary, we have presented evidence that children do not follow the Seeing = Knowing Rule. The Rule View does not explain children's failure on inference and ambiguous message tasks. It is also unable to explain children's failure on the true belief tasks presented here; nor can it explain the variations in performance on true belief tasks across studies. We suggest that children may attribute mental states by following conflicting rules.

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