

The impact of fantasy and action on young children's understanding of pretence

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Theorists examining children's understanding of the mind have been particularly interested in pretence as it may be a marker for early understanding of mental representation (Leslie, 1987). Although Lillard (1993a, 1996) found that children appeared not to understand that pretence involves mental representation or even the mind, Lillard and Sobel (1999) showed that for certain types of pretence, in particular, pretence involving fantasy characters, children's understanding might be more advanced. The two experiments here replicate and extend this finding. In both experiments, children performed better on fantasy items than items that did not involve fantasy. This was true regardless of the amount of action the pretence involved.

Researchers in early social cognition have been concerned with when children acquire an understanding of mental representation (Flavell & Miller, 1998). Many researchers have concluded that children acquire this capacity sometime during the fourth or fifth year, as acknowledged by their success on the now classic 'false belief' task (Astington, Harris, & Olson, 1988; Flavell & Miller, 1998; Wellman, Cross, & Watson, 1999).

The domain of pretend play is of particular importance, as it seems to involve similar capacities to understanding another's false beliefs (Leslie, 1987). In order to pretend and to entertain that someone has a false belief, one must put aside a true representation of the world in favour of a false one (Lillard, 1993b). Experimental evidence, however, suggests that children understand pretence representation before they understand false belief. Harris and Kavanaugh (1993), for example, showed that by 28 months children are able to understand that if an experimenter pretends to spill a cup of pretend tea, that location is now 'wet'. Based on this and other findings, several researchers have suggested that by the age of four children know that pretence involves mental representations and may use that understanding to guide their understanding of belief (Bruell & Woolley, 1998; Custer, 1996; Flavell, 1988; Ferguson & Gopnik, 1988;

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Hickling, Wellman, & Gottfried, 1997; Leslie, 1988).

An alternative viewpoint, put forth by several researchers, is that children do not understand that pretence involves mental representations (Harris, 1991; Harris, Lillard, & Perner, 1994; Lillard, 1993b, 1994, 1998a; Lillard & Flavell, 1992; Perner, 1991). Experimental evidence has been gathered that supports this view. Lillard (1993a) presented 4-year-olds with a troll doll (Moe) who was hopping like a kangaroo. Children were told that Moe did not know anything about kangaroos. Children were asked, given the circumstances, if Moe was pretending to be a kangaroo. Over several experiments, approximately 60–70% of these children consistently stated that the doll was indeed pretending to be a kangaroo (Lillard, 2000). In contrast, the majority of 4-year-olds passed the ‘deceptive container’ false belief task (Gopnik & Astington, 1988). Importantly, in these experiments, the type of pretence being enacted did not appear to impact the results. Children responded similarly whether Moe was acting like a animal or acting like a stick was a train.

Lillard (1996) also investigated children’s understanding of the role of the mind in pretence. Children were asked to categorize pretence actions with actions that either require a mind only (i.e. thinking), a body only (i.e. sliding down a slippery hill) or both (i.e. talking). Approximately 60% of the 4-year-olds consistently categorized pretend actions with events that required only a body (Lillard, 1996; Sobel & Lillard, 2000). However, in one experiment (Lillard, 1996, Expt 4), there was some suggestion that children made more mentalistic responses when asked about pretence items that involved a higher fantasy component: pretending to be the Lion King and pretending to be in a jungle. Lillard and Sobel (1999a) systematically examined this finding. Twenty-four 4- and 5-year-olds were first trained to use three boxes to categorize various types of activities. One box was for activities that could be done just with one’s mind, a second was for activities that could be done just with one’s body, and a third was for activities that required both a mind and a body. In the test stage, children were shown four ordinary pretence items (i.e. pretend to be a puppy), four fantasy pretence items (i.e. pretend to be the Lion King), and several controls. Children chose the mind and both boxes significantly more often for fantasy pretence items than for the ordinary ones (58% vs. 43%). This finding suggested that children’s understanding of the mind’s involvement in pretence was influenced by the fantasy content of that pretence.

The first experiment had two goals. The first was to investigate whether the fantasy effect with the ‘box’ method would extend to the ‘Moe’ method. The second was to determine if the fantasy effect would extend from pretence to false belief tasks. Prior work has shown an improvement in performance on a variety of cognitive tasks when the level of fantasy was varied. Dias and Harris (1988, 1990) showed that children’s performance on tasks that required syllogistic reasoning improved when problems were presented within a fantasy context. Likewise, Saltz, Dixon, and Johnson (1977) trained disadvantaged preschoolers over the course of a year to enact fairy tales or ordinary routines like grocery shopping and found that the fairy tale group performed better on tests of language, empathy, and inhibitory control than the ordinary group. The present experiments replicate and extend these findings.

EXPERIMENT 1

Experiment 1 sought to replicate the findings of Lillard and Sobel (1999) using the 'Moe the troll' task (Lillard 1993a, 1998a). Children were presented with a doll who was acting similarly to either a fictional character or a real animal. Children were instructed that the troll doll had no knowledge of the character or animal they were acting like, and were asked if the doll was pretending to be that character or animal.

A second task examined whether the fantasy effect generalized to other tasks requiring understanding of mental states. Children were presented with two versions of the unexpected transfer (Maxi) false belief task (Wimmer & Perner, 1983). In one, the story was acted out by familiar, fantasy characters, and in the other by nondescript dolls. The pretence task involved a fantasy character acting like an ordinary or another fantasy character. The false belief task involved either an ordinary or fantasy character acting out events with ordinary items. Although not perfectly parallel, these tasks do serve to test whether there is a general boosting effect of fantasy.

Method

Participants

Twenty-four children from an urban area preschool were tested, ranging in age from 4:0 to 5:4, with a mean age of 4:8. There were 11 boys and 13 girls in the sample. Participants were from middle-class families, spoke English as or as if it were their native language (as judged by the experimenter) and were mostly white, although a range of ethnic backgrounds was represented.

Materials

Two small, human-like troll dolls approximately 9 cm in height were used in the pretence experiments. The dolls differed only in hair colour (blue and green). In the false belief tasks, four dolls were involved: Elmo and Cookie monster (popular fantasy characters), approximately 8 cm in height, and two nondescript human-like dolls approximately 6 cm in height. Four small (approximately 4 × 4 × 4 cm) boxes, coloured red, yellow, blue and green, a marble, and a piece of wrapped-up hard candy were also used.

Procedure

Children were given two blocks of tasks. Each block contained four pretence tasks and one false belief task. One block involved familiar, fictional characters as the content of the pretence and as the characters in the false belief story (Fantasy tasks). The other block involved ordinary pretence items and nondescript dolls in the false belief story (Ordinary tasks).

Pretence tasks. This procedure employed a similar method to that of Lillard (1993a). Children were shown troll dolls named Moe and Luna. Moe performed an action (such as running) and the child was told that Moe was running 'just like the Lion King' (in the Fantasy tasks) or 'just like a cat' (in the Ordinary tasks, done with the other troll doll). The stimuli used and their relevant actions are listed in Table 1. Children were then told that the troll was from the land of the trolls and had no knowledge of the character he was acting like, nor had he ever seen the character before. Children were asked two control questions, counterbalanced for order: whether the troll was acting like the character in question and whether the troll had knowledge of the character. Children were required to answer both questions correctly. Finally, children were asked whether they would say Moe was pretending to be that character. Half the children were given the fantasy items first, while the other half were given the ordinary items first.

Table 1. Actions and descriptions used in pretence tasks in Expt 1

| Action | Fantasy pretence tasks | Ordinary pretence tasks |
|----------|------------------------|-------------------------|
| Running | Lion King | Cat |
| Swimming | Sebastian | Crab |
| Digging | Pongo | Dog |
| Leaping | Bambi | Deer |

False belief tasks. After each block of four pretence tasks, children were given a false belief task similar to that used by Wimmer and Perner (1983). Children were shown two coloured boxes and an Elmo doll holding a sweet (in the fantasy trial) or a nondescript doll named Sally and a marble (in the ordinary trial). Children were told that the doll did not want what s/he was carrying just now and wanted to go off and play, so s/he put the item into one of the boxes to keep it safe. While the doll was away, another character (a Cookie monster doll or another nondescript doll named Anne), came and looked in the box in which the first doll had put the item. In both conditions, the second doll told the child that s/he was going to move the item from one box to the other and then would go and eat lunch. Finally, the original doll returned and the experimenter told the child that the doll really wanted his/her item. The child was asked, 'Where will Elmo look for his candy?' Children were also asked two control questions: 'Where was the candy really?' and 'Where was the candy in the beginning?'.

Results

Pretend tasks

No child made an error on any of the control questions, suggesting that they were clear about the premises of the tasks. Children received a score of 1 if they correctly answered that the troll doll was not pretending to be the character or animal in question, and a score of 0 otherwise. Omnibus *F* tests revealed no differences between children's responses on the four ordinary pretence items nor the four fantasy pretence items, so the scores were summed. Table 2 shows the percentage of correct answers children gave on the fantasy and ordinary pretence items. Children's performance was first considered against that of chance. Children claimed (incorrectly) that the doll was pretending more often than chance (50%) performance for both the fantasy items: $t(1,23) = -2.245$, $p < .05$, and the ordinary items: $t(1,23) = -4.053$, $p < .001$. This suggests that the children were not responding haphazardly.

Children's performance between the fantasy and ordinary items was then considered. A 2 (order: ordinary vs. fantasy first) \times 2 (item: ordinary vs. fantasy item) mixed ANOVA was conducted with order as a between-participant factor and item as a within-participant factor. A main effect of item was found. Children rejected the notion that the troll doll was pretending an average of 1.29 times out of a possible 4 (32%) in the fantasy condition, significantly more than the 0.75 times out of a possible 4 (19%) that they did so in the ordinary condition: $F(1,22) = 7.91$, $p < .01$. No other main effects were found. No significant interactions were found. Finally, children's individual patterns of response were also considered. Fifteen of the 24 children showed no difference between the fantasy and ordinary pretence items. Of the remaining nine children, all were more likely to reject the doll as pretending for the fantasy items (Binomial test, $p < .005$).

False belief tasks:

No child made an error on the control tasks, suggesting that they correctly followed the story. Table 2 also shows children’s performance on the two false belief tasks. Children’s responses on the two false belief tasks were first considered with respect to chance performance. Eighteen of the 24 children either passed or failed both false belief tasks, significantly more than would have been obtained by chance performance (Binomial test, $p < .05$).

Table 2. Percentage of times children passed pretence and false belief tasks in Expt 1

| | Fantasy tasks | Ordinary tasks |
|--------------------------|---------------|----------------|
| Pretence (Moe the troll) | 32 (38) | 19 (38) |
| False belief | 46 (51) | 37 (49) |

Note. Standard deviations (SD) in parentheses.

Children’s performance between the fantasy and ordinary tasks was then considered. Eleven out of the 24 children (46%) passed the false belief task acted out by fantasy characters. Nine out of the 24 children (37%) passed the false belief task acted out by the ordinary dolls. A 2 (order: ordinary vs. fantasy first) \times 2 (item: ordinary vs. fantasy) mixed ANOVA was conducted with order as a between-participant factor and item as a within-participant factor. There were no significant differences.

Finally, these data were examined to consider whether children’s responses on the false belief tasks were predictive of their performance on the pretence tasks (see Table 3). Overall, there was no consistent pattern between passing the false belief tasks and success on the pretence task: $\chi^2(15) = 13.745$, n.s.

Table 3. Number of pretence tasks children passed as a function of performance on false belief (FB) tasks

| | Number of pretence tasks correct | | | | |
|------------------------------|----------------------------------|-----|-----|-----|-------|
| | 0–1 | 2–3 | 4–6 | 7–8 | Total |
| Failed both FB tasks | 8 | 2 | 0 | 1 | 11 |
| Passed only ordinary FB task | 1 | 0 | 0 | 1 | 2 |
| Passed only fantasy FB task | 3 | 0 | 1 | 0 | 4 |
| Passed both FB tasks | 4 | 1 | 0 | 2 | 7 |

Discussion

As in previous work, children’s understanding of mental involvement in pretence improved when the subject of that possible pretence was a fantasy character instead of a more ordinary item (in this case, animals). This experiment replicates and extends the findings of Lillard and Sobel (1999) by showing that the effect persists over a second

methodology: one that tests the understanding that knowledge of a particular entity is required to pretend to be it. Importantly, however, this improvement does not seem to be due to a general boosting effect of fantasy. Prior work (Dias & Harris, 1988, 1990; Saltz *et al.*, 1977) is consistent with the idea that the fantasy effect might be generalizable, such that children's performance on any cognitive task improves as a function of fantasy. However, in this experiment, children did not perform better on false belief tasks when a fantasy character was involved.

As described earlier, two types of fantasy measures were used in this experiment. In the pretence tasks, the character was always fantastic (a troll doll) and what differed was whether s/he engaged in a pretence action like an ordinary or a fantasy-oriented character. In the false belief tasks, the characters themselves were either fantastic or ordinary and the object of the false belief was always ordinary (a sweet or a marble). It is possible that only manipulating the fantasy level of the object of the mental state produces a boosting effect of fantasy, while manipulating the fantasy level of the holder of the mental state does not. Children do perform better on a false belief task with purely imaginary context (Fritz, 1993; Hickling *et al.*, 1997), but future research should concentrate on whether manipulating the fantasy nature of the content (such as an unexpected transfer task with a 'magic rock' rather than an ordinary marble) improves performance. Regardless, the results of this experiment speak against a general boosting effect of fantasy.

Lillard and Sobel (1999) discussed several possible motivating factors for children's improved understanding concerning the fantasy items. For one, fantasy items might be more familiar to the children than the ordinary items. However, children's performance in Expt 1 on more familiar ordinary items (cats and dogs, 21%) was almost identical to that of less familiar items (crabs and deer, 17%). Furthermore, Kavanaugh and Cinquegrana (1999) showed that children's performance on false belief tasks involving familiar fairy tales did not improve when compared with unfamiliar fairy tales. Still, the child's familiarity with the fantasy items has not been specifically addressed in pretence understanding tasks, so familiarity might be an important variable.

A second possibility is that all of the fantasy items used in this and previous experiments were cartoons and that cartoons somehow improve children's performance. The cartoon characters themselves are imaginary and the child must use their imagination to pretend to be them. It is possible that children might associate this fact with both the use of the mind in general (in Lillard & Sobel, 1999) and with understanding that one must know about a character to pretend to be it (in Expt 1). The fantasy effect, then, might be a cartoon effect. If so, it would produce an improvement for the fantasy items and not generalize to false belief tasks because in those tasks, the content was always real.

A third possibility is that children's understanding is facilitated by the fact that the fantasy characters have a specific identity. Specific identities could enhance the regard for the fantasy character's intentionality. This might lead children into thinking that more mental qualities are necessary to represent their pretence, consistent with previous findings relating pretence and intentionality (Joseph, 1998).

Each of these possibilities was tested in Expt 2 by introducing a varied group of stimuli which required children to consider not only the level of fantasy, but also the level of action necessary for a pretender to engage in the particular pretence. Some

researchers have criticized the 'Moe' paradigm on the grounds that children focus on the action of the troll doll, which biases their performance against a mentalistic response (Bruell & Woolley, 1998; Gerow, Taylor, & Moses, 1998). By presenting a group of stimuli that required relatively little action, one can not only consider this criticism, but see if children's poor performance was due to the presence of action on the possible pretender's part. In addition, the non-action group contained items that were not necessarily familiar to the children, did not necessarily suggest a cartoon interpretation, and did not have specific identities, which necessarily suggested intentionality.

EXPERIMENT 2

Experiment 2 sought both to replicate the prior results with fantasy-oriented stimuli and to systematically examine the effect of intentional, scripted action on children's understanding of pretence. Since the 'Moe the Troll' paradigm always involved an action, which was an independent variable in Expt 2, the 'box' method employed by Lillard and Sobel (1999) was used instead.

Method

Participants

Thirty-two children from two urban area preschools were tested. Seven children were subsequently dropped from the study for failure to correctly respond to the control questions (described below). This left a sample of 11 boys and 14 girls, ranging in age from 4:0 to 5:2, with a mean age of 4:6. Participants were from middle-class families, spoke English as or as if it were their native language (as judged by the experimenter) and were mostly white, although a range of ethnic backgrounds was represented.

Materials

Three boxes ($7 \times 12 \times 4$ cm) were used, each with a slot on top into which index cards (4×6 cm) could be placed. On the front of each box was a picture and a label. One box was labelled 'Mind' and had a picture of a light bulb. One box was labelled 'Body' and had a picture of a body. The third (the both box) was labelled 'Mind and Body' and had both pictures. Forty-two index cards were used, each with a short phrase written on it. Twelve of these were training cards, six were controls, and 24 were test items. The test stimuli are listed in Table 4.

Procedure

Children were given the same introduction to the boxes as in Lillard and Sobel (1999). Children were first asked if they knew where their mind and body were. They were then told that their mind was used for certain things like dreaming and remembering and that their body was used for other things like being under a bed. Children were then told that the game was about choosing what went inside each of the boxes. The mind box was described as being for things that you can do with your mind, things that do not require a body at all, and the body box as being for things that you can do with just your body and that do not require a mind at all. The both box was described as being for things that absolutely needed both your mind and body.

Children then received up to 12 training phrases, one on each index card, and were asked in which box each card belonged. Two examples are 'Remember what you had for breakfast' and 'Get covered by a blanket'. During the training stage, if children chose the wrong box, they were given feedback on which was the right box. Words like 'think' and 'pretend' that were crucial to the test stage were not used during the training stage. The training stage ended when children correctly responded on five training trials in a row or when all 12 cards had been used.

Table 4. Stimuli used in test stage of Expt 2

| | |
|-------------------------------------|--------------------------------------|
| <i>Fantasy action pretences</i> | <i>Ordinary action pretences</i> |
| Pretend to be the Lion King | Pretend to be a lion |
| Pretend to be Winnie the Pooh | Pretend to be a bear |
| Pretend to be Sebastian | Pretend to be a crab |
| Pretend to be Bugs Bunny | Pretend to be a rabbit |
| Pretend to be Tigger | Pretend to be a tiger |
| Pretend to be Bambi | Pretend to be a deer |
| <i>Fantasy non-action pretences</i> | <i>Ordinary non-action pretences</i> |
| Pretend to be a magic wand | Pretend to be a stick |
| Pretend to be a crystal ball | Pretend to be a glass ball |
| Pretend to be a light-sabre | Pretend to be a sword |
| Pretend to be Aladdin's lamp | Pretend to be a lamp |
| Pretend to be a magic rock | Pretend to be a rock |
| Pretend to be a haunted house | Pretend to be a house |
| <i>Think controls</i> | <i>Body action controls</i> |
| Think about a flower | Get wet in the rain |
| Think about your teacher | Slide down a slippery hill |
| Think about a cat | Fall over when you're pushed |

Note. Children only received three of each type of pretence, counterbalanced so they did not receive the same category (e.g. Lion King and Lion).

The test stage consisted of 18 phrases (three ordinary action pretend items, three ordinary non-action pretend items, three action fantasy pretend items and three non-action fantasy pretend items, three thinking controls and three physical event controls). Children received the 18 phrases in one of four quasi-random orders. Half of the subjects received the six ordinary pretend cards before any of the fantasy pretend cards, while the opposite was true for the other half. Half of each of those groups received the action-oriented pretence items first, while the other half received the non-action pretence items first. A final stipulation was that there were never more than three consecutive pretence items, nor two consecutive control items, so that response biases could be detected. Only children who placed at least five of the six think and physical event control cards into the correct boxes were included in this study. This rigid criterion helped to ensure that only children who genuinely understood the purpose of the boxes were included in the final sample. The seven children who were excluded were distributed evenly across the four orders of presentation.

Results

Children required an average of 10.5 out of 12 cards (ranging from five to 12 cards) to complete the training, suggesting that by the time they received the test items, children understood the nature of the task. Children's performance was first considered against that of chance. In the test stage, children selected the both box on 40 of the 300 pretence trials (14%). In contrast, the mind box was chosen 131 times (44%) and the body box 129 times (43%). This pattern differed from what would have been expected by chance: $\chi^2(2) = 54.02, p < .001$, suggesting that children were not simply choosing boxes at random.

Because choosing the 'both' box implies understanding that the mind is involved, both mind box and the both box choices were scored as correct for the pretence items and assigned a score of 1; these are collectively referred to below as the 'mind boxes'. Body box choices were assigned a score of 0. The scores were summed for each type. Table 5 shows the number of times children placed pretence items from each of the four categories in the mind boxes.

Table 5. Number of 'mind boxes' choices for each category of pretence in Expt 2

| | Action | Non-action |
|----------|---------|------------|
| Fantasy | 46 (61) | 48 (64) |
| Ordinary | 39 (52) | 38 (51) |

Note. Choices out of a total of 75. Percentages shown in parentheses.

Children chose the mind boxes for an average of 1.56 out of a possible 3 (52%) for the ordinary action items (i.e. pretend to be a lion), and 1.52 out of 3 (51%) for the ordinary non-action items (i.e. pretend to be a stick). For the fantasy action items (i.e. pretend to be the Lion King) children chose the mind boxes an average of 1.84 out of 3 (61%) and 1.92 out of 3 (64%) for the fantasy non-action items (i.e. pretend to be a magic wand). For each category, a χ^2 goodness-of-fit test was performed to consider children's performance against that of chance performance, given that children had a 66% chance of being counted as correct on any one trial. For each category, children's performance differed from what would be expected by chance: $\chi^2(3) = 81.86, 98.13, 21.30,$ and 29.70 for the four respective categories above, all $ps < .001$.

Children's performance was then considered for effects of fantasy and action. A 2 (Fantasy: fantasy vs. ordinary items) \times 2 (Action: action vs. non-action items) \times 2 (Fantasy item order) \times 2 (Action item order) mixed ANOVA was performed with fantasy and action items as within-participant factors and the two orders as between-participant factors. There were no main effects of order, nor was there a main effect of the action items. Consistent with prior results, there was a significant main effect of fantasy: $F(1,21) = 4.94, p < .05$. Children consistently placed fantasy items into the mind boxes more often than ordinary items (63% vs. 51%). The only significant interaction was one of action items \times action order: $F(1,21) = 5.13, p < .05$. However, further analysis revealed no differences between children's performance on the action items as a function of the order in which they were presented.

These data were also considered in terms of individual response patterns. Of the 25 children, 11 scored the same on the fantasy and ordinary items. Of the remaining 14 children, 12 scored higher on the fantasy items than on the ordinary items, significantly more than the two who showed the reverse pattern (Binomial test, $p < .05$). Examining the data over the amount of action, of the 25 children, 13 scored the same on the action and non-action items. Five scored higher on action than non-action, not significantly different from the seven who showed the reverse pattern (Binomial test, *n.s.*). Finally, performance on individual items was also examined for both the fantasy and action

effects and it appeared that no single fantasy or action item carried the effect. Children placed 11 of the 12 fantasy items (i.e., light-sabre) in the mind boxes more than their ordinary counterpart (i.e. sword). Consistent with previous findings, children simply chose one or two more fantasy items than ordinary items as belonging in the mind boxes.

Discussion

Children again demonstrated greater understanding of the mental qualities of pretence when that pretence involved a greater fantasy component. This finding held both for pretence items that involved relatively large amounts of scripted, intentional action (pretend to be Bambi vs. pretend to be a deer), and those that did not (pretend to be a light-sabre vs. pretend to be a sword). Children showed no difference with regards to the action component of the pretence. The boosting effect of fantasy was not enormous, but it was consistently clear over both groups of items.

Although the current experiment contrasted items that required action and those that required relatively little action, it is not the case that the non-action items involved no action whatsoever or, more importantly, were interpreted by the child as involving no action whatsoever. It is possible that children interpret 'pretend to be a light-sabre' as 'pretend to use a light-sabre'. Given the possibility that children make this error, it is not clear that all the non-action items used in this experiment involve no action. Future research should use more tightly controlled procedures to allow for a more firm conclusion on the role of action.

GENERAL DISCUSSION

Across two experiments, children showed greater understanding of mental qualities in pretence when the pretence items involved a greater fantasy component. The first experiment replicated previous work using a separate method and found that the fantasy effect held for pretence, but did not generalize to another task concerned with understanding minds. The fantasy effect for pretence held even when the troll doll was acting identically for the fantasy character and the ordinary animal and the only difference was the label. This is important because it demonstrates that it is not the type of action that the pretender has to engage in that is important. The troll dolls were both running—one was simply running like the Lion King while the other was running like a cat. The second experiment examined children's understanding of the mind's involvement in pretence with respect to fantasy, but also to the amount of action the pretence involves. Children again showed improved understanding of the mind's involvement in pretence with respect to fantasy. But action, as operationalized here, seemed not to affect children's performance.

There is a wide range in overall performance across children on these two experiments, and also the similar experiment by Lillard and Sobel (1999). While the differences between children's performance in Expt 2 (63% vs. 51% on the fantasy and ordinary items, respectively) and the prior Lillard and Sobel study (58% vs. 43%) were minimal, children's performance was worse in Expt 1 (32% vs. 19%). Although there was variation in the three experiments between the overall performance of the children, the difference between the fantasy and ordinary items was fairly consistent. Children

showed an approximately 15% improvement for the fantasy items. Given the small sample sizes, one possibility is that the drop in overall performance in Expt 1 was simply due to random variation.

An alternative is that understanding the relationship between knowledge and pretence does intuitively seem more difficult for a 4-year-old than understanding that the mind is simply involved in pretence. Experimental evidence supports this claim. Johnson and Wellman (1982) found that by age 4, children understood the role of the mind in other mental states, like thinking and remembering. In contrast, Flavell, Green, and Flavell (1995, Expt 4) suggested that 4-year-olds do not fully understand the difference between thinking and knowing. Furthermore, combining data across several studies, Lillard (2000) found that only about 30% of 4-year-olds pass the Moe task, whereas about 45% pass the box task.

Children's own fantasy lives have been a source of interest with regard to early understanding of mind. Prior work concerned with an overall effect of fantasy (Dias & Harris, 1988, 1990; Saltz *et al.*, 1977) and correlational work between pretence or fantasy and understanding minds (Astington & Jenkins, 1995; Lalonde & Chandler, 1995; Lillard, *in press*; Taylor, Cartright, & Carlson 1993; Taylor & Carlson, 1997) suggest that pretence is a 'zone of proximal development' (Vygotsky, 1978) for the understanding of mind (Lillard, 1993b, 1998b). Taken with these results, the current work suggests that it may be via fantasy content that children begin to understand that minds are involved in pretence.

How might fantasy facilitate performance? Lillard and Sobel (1999) suggested that children's familiarity with the fantasy characters, fantasy items' cartoon origins, and the fantasy characters having specific identities which indicate a level of intentionality, might all contribute to children's improved performance. The results of Expt 2 are against all three of these possibilities. Children's performance was facilitated by fantasy items that were probably not more familiar (magic rock vs. ordinary rock), did not necessarily suggest a cartoon interpretation and were not specific examples of items (e.g. magic rock, magic wand and haunted house). It is possible that the fantasy items were simply more interesting to the children or evoked a greater emotional response, and while both of these are probably true of the fantasy items, it is unclear why they would enhance performance.

There are several further possibilities for children's higher level of performance on the fantasy items. The first is that the fantasy items require more planning on the child's part to engage in. The fantasy items here may not necessarily involve more action than their ordinary counterparts, but they do require the child to either recall a script or context (from their film or book of origin) or a more in-depth conceptual space in order to engage in the pretence. Lillard (1996, Expt 5) showed that children were more likely to attribute the planning characteristics of pretence to the mind than the actual act of pretence itself. Using a procedure identical to that of Expt 2, children placed phrases like 'decide how to pretend to be a kangaroo' in the mind box significantly more frequently than 'actually pretend to be a kangaroo'. Even at age 8, only approximately 30% of the items concerning actually pretending were designated as requiring a mind. Perhaps the fantasy items seem to the children to require more planning for pretence, and perhaps this planning element is responsible for children more frequently designating fantasy pretence as mental.

A second possibility is that the fantasy items are all encountered in media other than the real world, such as books, films and television. In these media, the characters often violate causal properties that would normally be enforced in the real world. In film and television, animal characters often talk, walk on only their hind legs, have firmly established theories of mind, and defy the laws of physics, whereas none of these are true for their real-world counterparts. In appreciating the difference between fantasy and reality, which children seem to learn early on (e.g. Estes, Wellman, & Woolley, 1989), children may come to recognize this difference. Fantasy would then be the first window through which children view the possibility of manipulating these causal constraints. This could allow children to manipulate and experiment with their understanding of mental representation and be an impetus for theory change. Gopnik (1998) and Gopnik and Meltzoff (1997) have suggested that in general, children use play to investigate and test their theories about the world. Fantasy in pretence could bridge the gap between children's understanding of the fantasy/reality distinction and pretence representations in the same way that Gopnik, Slaughter, and Meltzoff (1994) suggest that children's understanding of perceptual misrepresentations bridge the gap between children's understanding of visual perspective-taking and a more general understanding of belief. This hypothesis would, in addition, explain the prior correlational results mentioned above. Children who score high on measures of fantasy and who have imaginary companions may engage in more active theory building about the nature of representation in general, which then allows these children to pass false belief tasks at an earlier age.

Although this is highly speculative, one piece of confirming evidence would come from examining older age groups. If children are using pretence to scaffold understanding of other mental states and using fantasy to scaffold their understanding of pretence, then older children, who have more mastery of those mental states, should not show an improvement on tasks involving, for example, understanding pretence representations when given a fantasy manipulation. Instead, one would expect no difference between the fantasy and ordinary items. The present line of research also suggests that the fantasy manipulation might benefit younger children's understanding. Perhaps children younger than 28 months would understand other's pretence in a design such as Harris and Kavanaugh's (1993) if a fantasy manipulation was used.

These experiments replicated Lillard and Sobel (1999) and provide strong evidence of an effect of fantasy in facilitating a higher level of understanding of pretence in children. This fantasy effect did not generalize to another task of understanding minds, specifically false belief. These experiments also indicated that certain explanations for the fantasy effect were unlikely. For example, children's improvement on the fantasy items did not appear to be a result of their increased familiarity with the fantasy items, nor their generating a set of specific scripted actions which have an intentional content. Future work should consider exactly what aspects of the fantasy items contribute to children's earlier understanding and should more tightly control how planning, emotion, and the role of causal constraints affect children's performance.

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