Theory of Mind and Children's Engagement in Fantasy Worlds

Rebecca A. Dore[1] and Angeline S. Lillard[1]

Abstract

We examined the relationship between theory of mind (ToM) and engaging in fantasy worlds in a short-term longitudinal study. Engagement in fantasy worlds might advance ToM because engaging in alternative worlds is similar to imagining the world from others' viewpoints. Fantasy might also be related to preference for describing others' mental states. To test these theories, we examined relationships between preschoolers' fantasy orientation, ToM, and preference for mentalistic descriptions. ToM and preference for mentalistic descriptions were measured at two time points, 7 months apart, allowing examination of change over time. None of the fantasy measures were related to preference for mentalistic descriptions, but three fantasy measures (child's Fantasy Orientation Interview, parent-reported preference for fantasy media and games, and parent-reported belief in event-related fantasy entities) predicted improvement on ToM over the time period examined. Two of these three did not predict ToM concurrently, highlighting the importance of developmental study.

Keywords

theory of mind, fantasy, social cognition

Basic research on children's theory of mind (ToM) has focused on predictable developmental changes with age (see Flavell, 1999 for a review and Wellman, Cross, & Watson, 2011 for a meta-analysis). More recently, research has begun to examine individual differences that are related to ToM. For example, research

[1]Department of Psychology, University of Virginia, Charlottesville, VA, USA

Corresponding Author:
Rebecca A. Dore, Department of Psychology, University of Virginia, P.O. Box 400400, Charlottesville, VA 22904-4400, USA.
Email: rebeccadore@virginia.edu

has examined relationships between ToM and mothers' mental state language (Adrian, Clemente, Villanueva, & Reiffe, 2005; Ruffman, Slade, & Crowe, 2002; Slaughter, Peterson, & Mackintosh, 2007; Symons, 2004), children's language skills (Astington & Baird, 2005; Astington & Jenkins, 1999; Cutting & Dunn, 1999; Milligan, Astington, & Dack, 2007), number of siblings (Lewis, Freeman, Kyriakidou, Maridaki-Kassotaki, & Berridge, 1996; McAlister & Peterson, 2012; Perner, Ruffman, & Leekam, 1994), and executive function (Carlson & Moses, 2001; Hughes, 1998; Hughes & Ensor, 2007). The current research focuses on another individual difference factor that might predict ToM: children's interest in and engagement in fantasy worlds. By fantasy worlds we mean not just ordinary pretend worlds, but engagement in worlds that could not actually exist, like those including fairies or monsters.

Why might fantasy engagement be related to ToM? The ability to imagine a situation that differs from one's present reality underlies both engagement in fantasy and an understanding of others' minds, in particular, false belief (Harris, 1994). When engaging in fantasy, a child must imagine that his or her imaginary friend is sitting at the table or that the people in a television show can perform magic spells. To understand false belief, children must imagine that the world could be different than it is and that this different situation is what another person believes to be true about the world. Fantasy, as one type of pretend play, might give children practice in such imagining (Moses & Chandler, 1992; Taylor & Carlson, 1997).

Engagement in fantastical worlds specifically might be related to ToM, beyond an association between ToM and pretending about realistic scenarios. When engaging in fantasy, children must imagine impossible entities and events. According to Vygotsky (1967), the further away one gets from reality, the more psychologically challenging it is to create and manipulate the fantasy world. Perhaps engaging in fantasy worlds specifically builds up children's ability to create alternative realities, a skill that later serves them in their understanding of others' minds (Saltz, Dixon, & Johnson, 1977).

Supporting this theoretical link, past research shows that, among 4-year-olds, high fantasy orientation is related to better performance on ToM tasks (Taylor & Carlson, 1997). However, a later study reported that only impersonating an imaginary character was related to ToM; a broader measure of fantasy orientation was not (Taylor, Carlson, Maring, Gerow, & Charley, 2004). Thus, findings on the relationship between fantasy and ToM have been mixed. Furthermore, because both these studies measured fantasy and ToM concurrently, directionality is unclear. Although fantasy orientation likely does not change over short periods of time—a 3-year-old who is attracted to fairy princesses is likely still attracted to them 6 months later[11]—ToM is known to undergo rapid and large changes across this time period. Thus, in the current study, we assess ToM at two time points, in order to examine whether fantasy orientation is related to change in ToM over time, in addition to concurrent

ToM. To our knowledge, a potential longitudinal relationship between these variables has not been examined in past research.

In this study, we also examined relationships between children's engagement in fantasy worlds and preferences for mentalistic descriptions. The Mental/Behavioral (MB) task measures children's tendency to assign mentalistic descriptions (those relating to beliefs, desires, and emotions) or behavioral ones (those that are surface level or external) to drawings of people engaged in different actions (Lillard & Flavell, 1990; Youngstrom & Goodman, 2001). We expected that fantasy engagement might also be related to children's preference for mentalistic descriptions, because to provide a mentalistic description, children must imagine another person's mental state rather than focus on their surface-level behavior.

The current research tested preschool-aged children's ToM and preference for mentalistic descriptions at two time points, 7 months apart, and also gathered parent and child reports of fantasy orientation at the second time point, on the assumption that fantasy orientation likely changed little across the 7 months.

Method

Participants

Eighty-four children participated at Time 1 (42 girls, M age = 3;5, range = 3;0–3;11), and 57 of these children returned at Time 2 (25 girls), approximately 6 to 8 months after the Time 1 visit (M = 6.94 months between visits, SD = .73, range: 5.7–9.0, M age at Time 2 = 4.0, range = 3.7–4.7). Children were primarily white and middle to upper-middle class and were recruited from a database of families willing to bring their children to the laboratory for research. Parents were contacted by phone and e-mail to schedule visits. Parents provided written informed consent, and children provided verbal assent before entering the testing room. Children were given a small gift for their participation.

Materials and Procedure

At both time points, children were tested individually by the same female experimenter in a quiet room in one session. Parents either remained in the waiting room or sat quietly in the back of testing room, behind the child.

Time 1

MB task. For each of 12 items, children were shown three differently colored copies of the same picture of a person engaged in an action. The experimenter described the first two pictures, one using a mentalistic description and the other

using a behavioral description of the depicted action. Children were asked to tell another figure (usually a stuffed animal) about the third picture and typically gave one of the two descriptions previously provided by the experimenter. This task included 12 items (Lillard & Flavell, 1990, Study 2), four in each of three categories: emotion (e.g., "She's happy with the puppy" vs. "She's patting the puppy"), other mental states (e.g., "He wants to get a cupcake" vs. "He's on tiptoes by the cupcakes"), and unsuggested mental states, in which the mental state is not suggested by the picture (e.g., "She's thinking about her big sister" vs. "She's wearing her black shoes"). Coders categorized other responses as behavioral or mentalistic. For example, "He likes cupcakes" was coded as mentalistic, whereas "He's looking at the cupcakes" was coded as behavioral. A second coder coded a randomly selected 20% of the participants' responses and agreement was 100%.

For each of the 12 items, mentalistic responses were coded as 1, and behavioral responses were coded as −1 (Lillard & Flavell, 1990). Thus, scores could range from −12 to 12, where 0 indicates no preference, negative numbers indicate a preference for behavioral descriptions, and positive numbers indicate a preference for mentalistic descriptions.

At Time 1, the items were presented in one of two random orders and which six items were described with the mental state description first was counterbalanced across participants. Neither order nor placement of the mental state description influenced performance ($ps > .44$). For exploratory reasons, subsets of these children told a king puppet (eight children) or the experimenter (eight children) about the picture rather than the stuffed animal. Regression analyses showed that neither of these conditions altered performance ($ps > .27$) so responses were combined. At Time 2, all children reported to the stuffed animal.

For 60 out of the 84 children, at Time 1, the MB task was administered in two phases (six items each) with an intervening experience (a 10-min play session), to test if the intervening experience would influence performance. The intervening experience did not affect children's performance on this or later tasks, so the total score is used here. At Time 2, all 12 items were given together.

ToM scale. Children completed the five-item version of the ToM scale (Wellman & Liu, 2004) with the following tasks: (a) diverse desires, which tests children's understanding that others can have desires that differ from the child's own; (b) diverse beliefs, which tests children's understanding that others can have beliefs that differ from the child's own; (c) knowledge access, which tests children's understanding that others do not necessarily have the same knowledge as the child does; (d) contents false belief, which tests children's understanding that others can have false beliefs despite the fact that the child knows the truth about a given situation; and (e) real-apparent emotion, which tests children's understanding that a person can feel one emotion inwardly and display a different

emotion outwardly. Children received one point for each item on the scale passed, resulting in a 0 to 5 ToM score.

After these tasks, children completed several other tasks as part of a larger study. Parents responded to questionnaires including demographic information such as siblings. Controlling for number of siblings did not change any of the analyses discussed here.

Time 2

For the most part, the MB task and ToM scale were presented in the same way at Time 2, except as already noted. In addition, because no order effects were found at Time 1, at Time 2, the MB task was presented in one random order, and a set six of the 12 items were presented with the mentalistic description provided first.

An alternate version of the ToM scale was used at Time 2. This version retained the basic structure and constructs but changed character names and items in the vignettes.

In addition to the MB task and the ToM scale, at Time 2 three measures were used to assess children's fantasy orientation: a Fantasy Orientation Interview, a Fantasy Toy Preference Task, and a parent-reported Fantasy Orientation Questionnaire, which had several components. These are described in turn.

Fantasy Orientation Interview. Children responded to a Fantasy Orientation Interview adapted from previous studies (Richert & Smith, 2011; Singer, 1961; Singer & Streiner, 1966). The interview included four questions: whether the child talks to himself or herself when lying in bed at night, whether the child makes up songs or plays, whether the child sings songs or acts out plays for family and friends, and whether the child has an imaginary companion (IC). If the child responded affirmatively to the IC question, the experimenter asked several follow-up questions about the IC (adapted from Taylor & Carlson, 1997).

Children's responses to each question were coded as 0 for *no* and 1 for *yes*. Cronbach's alpha for the four items was low, $\alpha = .55$. Removing the IC question improved Cronbach's alpha to an acceptable level, $\alpha = .71$. Many children apparently did not understand this question: Only 4 of 28 children who reported having an IC themselves were also categorized by their parent as having an IC. Thus, the IC question was omitted from the fantasy interview composite score. A sum score for the remaining three items was created, resulting in a 0 to 3 possible range.

Fantasy Toy Preference Task. At the beginning of the Time 2 test session, children chose between a fantasy-oriented toy (a magic wand) and a pinwheel, a reality-oriented toy (Taylor & Carlson, 1997). At the end of the session, children chose

between a fantasy-oriented coloring book (Peter Pan and Tinkerbell on the cover) and a reality-oriented coloring book (two children selling lemonade on the cover). The number of fantasy items chosen was calculated for a fantasy toy preference score of 0 to 2.

Fantasy Orientation Questionnaire. Parents responded to a series of questions regarding the child's interest in fantasy (Boerger, Tullos, & Woolley, 2009; Gilpin, 2012; Woolley, Boerger, & Markman, 2004). The questionnaire included: (a) a question asking whether or not the child had an IC, and if so, to describe it; (b) seven questions asking whether or not the child believed in each of seven fantastical entities, the first three of which are related to specific events (Santa Claus, Tooth Fairy, Easter Bunny, ghosts, witches, fairies, and dragons); (c) two open-ended question asking the parent to describe the child's favorite television shows, video games, and books and the child's favorite games, which were later coded for fantasy content; and (d) a question asking for the parent's rating of the child's level of fantasy orientation on a scale from 1 (*strongly interested in reality*) to 5 (*strongly interested in fantasy*).

For each of the fantasy entities, parents indicated that their child believed that the entity was real (coded as 1), believed that the entity was pretend (coded as 0), or that the parent did not know what the child believed about that entity (coded as .5). A total score was created by summing the children's score for each entity. Subscores were created by summing the children's scores for the event-related fantasy entities (Santa Claus, Easter Bunny, and Tooth Fairy) and the non-event-related fantasy entities (ghosts, witches, fairies, and dragons).

Parents' responses to questions about children's favorite media and games were coded for fantasy content following procedures from previous research (Boerger, Tullos, & Woolley, 2009; Woolley et al., 2004). Reality-based responses were scored as 0 (e.g., card games or nonfiction books), low fantasy responses were scored as 0.5 (e.g., Chutes & Ladders or Berenstein Bears), and high fantasy responses were scored as 1 (e.g., Star Wars or playing princess). The sum score for fantasy items was divided by the number of examples the parent provided to create proportion scores for both media and games. These scores were then averaged to create a fantasy media and game score.

Results

Descriptive statistics for the relevant measures are provided in Tables 1 and 2. We examined the relationships between each of the fantasy measures and (a) ToM and (b) preference for mentalistic descriptions (MB). We compared regression models with the variable of interest, control variables (see later), and relevant interactions to find the simplest model that fit the data. The initial models included the fantasy variable, the control variables of gender, age, and intervening time between visits (where applicable), as well as two-way interactions

Table 1. Mean Score and Standard Deviation on Tasks at Each Time Point.

	Task	
Time	MB task	ToM scale
Time 1	−1.15 (3.53)	1.95 (1.05)
Time 2	1.05 (3.69)	2.51 (1.04)

Note. Possible range for MB task was −12 to 12, with higher values indicting more mentalistic responses. Possible range for ToM scale was 0 to 5, with higher values indicating better performance. MB = Mentalistic/Behavioral; ToM = theory of mind.

Table 2. Mean Scores and Standard Deviations for Fantasy Measures.

	Task				
	Fantasy Orientation Interview	Event-related fantasy entities	Non-event-related fantasy entities	Fantasy media	Fantasy games
Mean	1.82	2.39	1.99	0.62	0.62
SD	1.17	0.71	1.10	0.20	0.24
Possible range	0−3	0−3	0−4	0−1	0−1

between the fantasy variable and the control variables and two- and three-way interactions between the control variables. These interactions were included in the model for exploratory purposes. MB score was included as a control variable in the models predicting ToM, and ToM was included as a control in the models predicting MB score. Uninformative effects were systematically removed using model comparison.

In the models predicting change from Time 1 to Time 2, Time 1 MB score or ToM score was also included and was always retained in the final model. Thus, the dependent variable in these analyses is the Time 2 score, but by controlling for Time 1 score, the analyses are effectively predicting change in the dependent variable from Time 1 to Time 2 (Hauser-Cram & Krauss, 1991).

Our design included six methods of quantifying fantasy orientation: (a) the Fantasy Orientation Interview, (b) the Fantasy Toy Preference Task, and four items from the parent questionnaire, namely (c) the IC question, (d) questions about the child's belief in fantasy entities, (e) questions about the child's favorite media and games, and (f) a fantasy orientation rating. Three of these measures were not significantly related to either ToM or MB score and will not be

Table 3. Regression Model Predicting Time 2 ToM From Fantasy Orientation Interview.

	B	SE	F	R^2
T1 ToM	0.51**	0.18	8.62	0.39
Fantasy Orientation Interview	0.45*	0.23		
Age	0.12***	0.03		
Intervening time	0.30⁺	0.15		
Fantasy Orientation Interview × T1 ToM	−0.17*	0.09		

Note. ToM = theory of mind; T1 = Time 1.
$+p < .10$. $*p < .05$. $**p < .01$. $***p < .001$.

discussed further: the Fantasy Toy Preference Task, the IC question, and the parent fantasy orientation rating. Results relating to the other predictors are discussed next.

Theory of Mind

Fantasy Orientation Interview. The Fantasy Orientation Interview composite score reflects whether the child talks to himself or herself when lying in bed at night, makes up songs or plays, and sings songs or acts out plays for family and friends. Although not a significant predictor of ToM concurrently at Time 2, this score was a significant predictor of improvement in ToM from Time 1 to Time 2. The main effect showed that children who were higher in fantasy (as indicated by the three questions mentioned earlier) improved more in ToM from Time 1 to Time 2, $B = .45$, $p = .047$, adjusted $R^2 = .39$, controlling for age and intervening time between visits (see Table 3). The main effect was qualified by an interaction showing that the Fantasy Orientation Interview composite score had a greater positive effect on Time 2 ToM for children who had lower Time 1 ToM scores, $B = −.17$, $p = .048$.

Fantasy entities. The fantasy entities sum reflected children's belief in seven different fantasy entities and was not a significant predictor of ToM either concurrently or over time. However, the event-related fantasy entities subscore predicted ToM both concurrently ($B = .36$, $p = .02$, and adjusted $R^2 = .38$) and over time ($B = .33$, $p = .04$, and adjusted $R^2 = .37$), when controlling for age (see Table 4). Belief in event-related fantasy entities predicted better ToM at Time 2 and more improvement in ToM from Time 1 to Time 2.

Fantasy media and games. Although not a significant predictor of ToM concurrently at Time 2, preference for fantasy media and games predicted more improvement in ToM from Time 1 to Time 2, $B = 12.14$, $p = .042$, and an interaction showed that this effect was stronger at shorter intervening times, $B = −1.75$, $p = .046$. The best-fitting model also controlled for age, gender,

Table 4. Regression Model Predicting Time 2 ToM From Event-Related Fantasy Entities.

	B	SE	F	R^2
T1 ToM	0.20**	0.10	11.82	0.37
Event-related fantasy entities	0.33*	0.16		
Age	0.13***	0.03		

Note. ToM = theory of mind; T1 = Time 1.
+p < .10. *p < .05. **p < .01. ***p < .001.

Table 5. Regression Model Predicting Time 2 ToM From Fantasy Media and Games.

	B	SE	F	R^2
T1 ToM	0.15	0.10	6.99	0.47
Fantasy media and games	12.14*	5.8		
Age	0.13***	0.03		
Gender	0.21	0.22		
Intervening time	1.39*	0.58		
T2 MB	−0.73**	0.28		
Fantasy media × Intervening time	−1.75*	0.85		
Intervening time × T2 MB	0.11**	0.04		

Note. ToM = theory of mind; T1 = Time 1; T2 = Time 2; MB = Mentalistic/Behavioral.
+p < .10. *p < .05. **p < .01. ***p < .001.

Time 2 MB score, intervening time, and the interaction between intervening time and Time 2 MB score (see Table 5; adjusted R^2 = .47).

Preference for Mentalistic Descriptions

None of the fantasy measures were positively related to preference for mentalistic descriptions either concurrently or over time.

Summary

Three fantasy measures predicted improvement on ToM over time: Fantasy Orientation Interview, belief in event-related fantasy entities, and preference for fantasy media and games. Belief in event-related fantasy entities also predicted better ToM concurrently.

Discussion

These findings suggest that there are important relationships between fantasy orientation and ToM. Although past research has found concurrent

relationships between these variables, to our knowledge, these are the first longitudinal findings showing that fantasy predicts *improvement* in ToM over time. Although not conclusive, this design supports a possible causal relationship whereby engagement in fantasy helps children develop an understanding of minds. Furthermore, in contrast to previous findings (Taylor & Carlson, 1997), two of these fantasy variables were not related to ToM concurrently. These findings suggest that studies examining the relationship between fantasy and ToM at only one time point might be missing important connections between these variables that only emerge over time.

Past research has found that verbal ability is one of many factors predicting ToM (Astington & Jenkins, 1999; Cutting & Dunn, 1999; Milligan et al., 2007). However, a previous study found a relationship between fantasy orientation and ToM controlling for the effects of verbal ability (Taylor & Carlson, 1997), suggesting that verbal ability does not explain the concurrent relationship between those two domains. Furthermore, we see no compelling path by which verbal ability could explain fantasy engagement predicting *improvement* in ToM over time. Although including a measure of verbal intelligence would be desirable in future research in this domain, it seems unlikely that it explains the relationships seen here.

Although these findings provide further evidence that fantasy and ToM are related, the mechanism remains unclear. If, as Vygotskian theory suggests (Saltz et al., 1977; Vygotsky, 1967), what matters is the distance between the fantasy and reality, then we would expect that this *distance* in the child's fantasy engagement as well as the *quantity* of the fantasy engagement would be related to ToM. The current research examined quantity of fantasy but could not determine how relatively fantastical children's experiences and creations were. Future research could investigate fantasy engagement on a more fine-grained level to test this hypothesis.

Despite the significant positive relationships between fantasy and ToM, fantasy was not related to preference for mentalistic descriptions. This finding suggests that fantasy does not improve children's ToM simply by causing them to think about others' mental states more. Furthermore, it suggests important differences between wanting to talk about mental states and having an understanding of others' minds.

Overall, these findings support the existence of a positive relationship between fantasy and ToM. It is unclear from these findings what factors might distinguish measures that related to ToM concurrently and those that predicted change over time. The finding, however, that some measures were related longitudinally but not concurrently suggests that research that examines the relationship between ToM and fantasy at one time point may be failing to detect significant relationships. Importantly, although a relationship between these variables over time provides a stronger case for causality than concurrent relationships, experimental or training studies would provide more conclusive evidence that engagement in fantasy causes improvement in children's ToM.

Note

1. Although we know of no longitudinal studies of fantasy orientation, similar constructs, like pretend play, have been shown to be stable over time (Howes & Matheson, 1992; Jenkins & Astington, 2000; Russ, Robins, & Christiano, 1999; Tamis-LeMonda & Bornstein, 1994).

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Author Biographies

Rebecca A. Dore is a graduate student in developmental psychology at the University of Virginia. Her research focuses on the effects of experiences with fiction on children's real-world cognition and behavior.

Angeline S. Lillard is a professor of psychology at the University of Virginia. Her research interests include children's pretense, the effects of television on executive function, and Montessori education.