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# Do monsters dream? Young children's understanding of the fantasy/reality distinction

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Young children are often thought to confuse fantasy and reality. This study took a second look at preschoolers' fantasy/reality differentiation. We employed a new measure of fantasy/reality differentiation—a property attribution task—in which children were questioned regarding the properties of both real and fantastical entities. We also modified the standard forced-choice categorization task (into real/fantastical) to include a 'not sure' option, thus allowing children to express uncertainty. Finally, we assessed the relation between individual levels of fantasy orientation and fantasy/reality differentiation. Results suggest that children have a more developed appreciation of the boundary between fantasy and reality than is often supposed.

The distinction between fantasy and reality is basic to human cognition, reflecting a fundamental ontological divide between the non-real and the real. Children have traditionally been thought to confuse the boundary between fantasy and reality. Piaget (1929, 1930) held that children not only confuse fantasy and reality but the mental and the physical, dreams and reality, and appearance and reality. The influence of this perspective is still felt in early childhood education, media and common-sense beliefs of adults (see, e.g., Dawkins, 1995).

However, the view that children confuse fantasy and reality is at odds with a large body of research showing that children as young as three years are able to make various *other* non-reality/reality distinctions. For example, by three years of age, children can distinguish a mental entity, such as a thought or an image, from the real physical object it represents (Estes, Wellman, & Woolley, 1989; Wellman & Estes, 1986). At about this same age, children in their everyday talk discuss the contrasts between toys and reality, pictures and reality, and pretense and reality (Woolley & Wellman, 1990). They can track real and pretend transformations concurrently (Harris & Kavanaugh, 1993) and, when their pretend play is interrupted, are able to flexibly step out of the pretense mode then return to it (Golumb & Kuersten, 1996). In contrast to this research, the

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smaller body of work specifically exploring children's understanding of the fantasy/reality distinction confirms Piaget's view that children often fail to observe the proper boundary. For example, Taylor and Howell (1973) presented 3- to 5-year-old children with both fantastical and natural pictures of animals, and asked children to state whether the depicted scenes could really happen. Three-year-olds had considerable difficulty differentiating real from fantastical scenes. Using a similar method, Samuels and Taylor (1994) found that children were most confused when events were perceived as frightening. These findings imply a role for emotion in young children's understanding of reality status and suggest that their grasp of the fantasy/reality distinction may be somewhat fragile. In another study (Morison & Gardner, 1978), a somewhat firmer grasp of the distinction emerged in an older group of children (kindergarten through sixth grade), but performance continued to improve throughout the grade school years.

Empirical research on the fantasy/reality distinction is thus consistent with Piaget's view that young children have difficulty negotiating the boundary between fantasy and reality. It is also consistent with survey data showing high levels of belief in specific fantasy entities such as Santa Claus and the Easter Bunny (Clark, 1995; Prentice, Manosevitz, & Hubbs, 1978; Rosengren, Kalish, Hickling, & Gelman, 1994). It seems clear that children have strong levels of belief in entities that to adults are unambiguously fantastical.

These various sources thus present a somewhat inconsistent picture of young children's understanding of different non-reality/reality contrasts. To begin to make sense of these findings, we take a second look at children's fantasy/reality differentiation. Our methods were guided in part by the belief that the categorization tasks used in previous research may give an overly simplistic reading of children's understanding, lending their responses an appearance of ontological commitment not actually felt by them. We were also guided by the finding that children often reveal greater category understanding when their knowledge is assessed via induction tasks that test their ability to make appropriate inferences (e.g. Gelman & Markman, 1987). In a typical induction task, children are taught a novel property for an object and then are tested for the categorical range over which they are willing to generalize that property. This method has proven extremely productive in revealing the depth and complexity of children's early concepts (e.g. Gelman, 1989; Kalish & Gelman, 1992; Lopez, Gelman, Gutheil, & Smith, 1992; Mandler & McDonough, 1996). Given this, it is possible that children who fail to label entities according to adult categories of real and pretend may still recognize differences between real and fantastical entities in terms of their abilities and properties. This possibility has not previously been tested.

Prior work does however suggest that at least part of the necessary knowledge is in place. Specifically, research has shown that young children have clear ideas about the kinds of things real entities can and cannot do. By four or five years of age, they can identify and differentiate real entities on the basis of their physical, psychological and biological properties (Wellman & Gelman, 1998). For example, children of this age know that living things occupy space, have thoughts and grow. At the same time, many fantasy figures possess clear non-human abilities, such as the ability to travel great distances instantaneously. Children may thus appreciate that these properties are unusual and—more importantly—non-human, before they appreciate that the entities that possess them are necessarily fantastical. In other words, young children may demonstrate more accurate fantasy/reality differentiation in the properties they attribute to various entities than in the categories to which they assign them.

The first goal of the present study was to explore this possibility. Specifically, we investigated the number and kinds of properties children and adults attributed to a range of real and fantastical entities. Properties from four foundational domains were included (physical, biological, social and mental), because previous research has shown that children's knowledge develops at different rates in these domains, with physical and social knowledge developing before knowledge of biology or mental states (e.g. Carey, 1996; Hirshfield & Gelman, 1994). Adult property attributions were also assessed in order to (1) confirm that adults discriminate in their property attributions for real and fantastical entities, and (2) establish the adult pattern of attributions across domains.

A second goal was to obtain a more nuanced picture of young children's categorization of real and fantastical entities. As in previous studies, we had children categorize a variety of entities. However, instead of having children simply categorize entities as 'real' or 'pretend', we included a third 'not sure' option to capture uncertainties, which arguably could be very prevalent in this domain yet would not be captured in the traditional sort.

The third goal of this study was to investigate the potential role of individual differences in children's fantasy/reality differentiation. Oddly, the role of individual differences in fantasy/reality differentiation is rarely addressed (cf. Bourchier & Davis, 2000; Johnson & Harris, 1994; Woolley, 1997). Some children are much more inclined than others to engage in fantastical pursuits, such as pretending or having an imaginary companion (Taylor, 1999). Such a high fantasy orientation (FO) could have great potential relevance to children's beliefs in fantastical figures. On the one hand, a high FO could increase belief in fantastical entities. FO and a willingness to believe in the existence of entities for which there is little empirical support have often been conjoined (Singer & Singer, 1990; Vyse, 1997). On the other hand, it is not necessarily the case that someone who enjoys and engages in fantasy frequently is also someone who is confused about where to draw the boundary. In fact, just the opposite may be true. A child who engages in fantasy a great deal may develop a more highly tuned sense of what is real and what is not precisely because of his or her play.

It is also possible that fantasy orientation and understanding of the fantasy/reality distinction are unrelated. Data have been sparse and contradictory, with some researchers finding a positive relation (Singer & Singer, 1981) and others finding no relation (Dierker & Sanders, 1996–1997; Prentice *et al.* 1978; Taylor, Cartwright, & Carlson, 1993). One recent study aimed specifically at this question (Bouldin & Pratt, 2001) found that children with an imaginary companion were more likely than children without such a companion to entertain the possibility that a briefly presented image was a monster. However, a substantial proportion of children without imaginary companions also considered this possibility, leading the authors to suggest that it is individual differences in credulity, rather than fantasy orientation per se, that leads to fantasy/reality confusion. Research is complicated by the fact that, at present, there exists no single, validated scale of fantasy orientation. To enable an initial exploration of the issue in the current study, a range of fantasy orientation tasks were included.

To summarize, the goals of the current study were (1) to determine whether children differentiate between real and fantastical entities in the properties they attribute to them, (2) to probe children's categorization of a range of real and fantastical entities, and (3) to explore the influence of general fantasy orientation on children's fantasy/reality differentiation. Although there are indications in the literature that verbal and behavioural measures can reveal different levels of understanding of the fantasy/reality distinction (e.g. Harris, Brown, Marriott, Whittall, & Harmer, 1991; Subbotsky, 1997;

Woolley & Phelps, 1994), including both types of measures would have made our already lengthy study excessively prolonged. We therefore chose to use only verbal measures, to facilitate comparison between our results and results of those studies most closely related to ours (Morison & Gardner, 1978; Samuels & Taylor, 1994; Taylor & Howell, 1973).

## Method

### *Participants*

Sixty-four preschoolers were tested, including twenty-two 3-year-olds (6 male and 12 female, $M$ = 40 months, range 33–47), nineteen 4-year-olds (10 male and 9 female, $M$ = 51 months, range 48–58) and twenty-three 5-year-olds (13 males and 10 females, $M$ = 62 months, range 60–68). Responses from three participants were omitted, one due to uncooperativeness (a 4-year-old boy) and two because of 'yes' biases (two 3-year-old boys). Most children attended a childcare center affiliated with a large university. Informed consent was obtained from all parents. Adult participants were 38 adults enrolled in an introductory psychology course and 27 additional adults attending the same university.

### *Procedure*

Children were tested individually by one of three female experimenters in two separate 25-min sessions. Sessions were spaced 1–15 days apart ($M$ = 5 days). Testing involved three tasks and an interview assessing the child's level of fantasy orientation. The tasks were a properties task, a categorization task, and 3 min of free play with blocks. In the first session, children completed half of the properties task (3 entities), the blocks task and the FO interview. In the second session, children completed the second half of the properties task (3 entities), the FO interview again and the categorization task. The FO interview was completed twice to provide a more accurate assessment of children's fantasy orientation.

#### *Properties task*

Children were presented with coloured line drawings of various entities. Previous research has suggested that children respond to, and reason differently about, generic fantastical entities (such as monsters and ghosts) compared with specific entities associated with certain events (such as Santa; Rosengren *et al.*, 1994; Sobel & Lillard, 2001). Accordingly, children were presented with six entities: 2 real entities, one specific (Michael Jordan) and one generic (a child of the same sex as the subject), 2 specific event-related fantastical entities (Easter Bunny and Santa Claus), and 2 generic fantastical entities (a monster and a fairy). Each picture was presented individually, and children's recognition of the entity was ascertained. Recognition was universal with the exception of Michael Jordan, for whom recognition was lower (53, 50 and 90% for 3-, 4- and 5-year-olds, respectively). Children who did not recognize Jordan were provided a brief description ('Michael Jordan is a famous basketball player. He is very fast and strong').

For each entity, a series of 12 yes/no questions were asked regarding whether the entity possessed specific properties. There were three questions in each of four

domains: physical, biological, social and mental (see Appendix) Questions were designed to tap a broad range of properties, including both those that are necessarily true of humans (e.g. biological properties such as sleeping) and those that are not necessarily true but highly characteristic of humans as children know them (e.g. social properties such as eating dinner with one's family). The order of questions was fixed. The order of entities was partially counterbalanced via eight different orders of presentation around the constraint that one real entity be presented in each session.

*Categorization task*

Children were shown three trays of different colours. The experimenter explained that one tray was for 'real ones', one was for 'pretend ones', and one was for 'ones you're not sure about, or you don't know'. The 'not sure' tray was always in the centre; placement of the other two trays was counterbalanced. Next, children were shown individual pictures of entities presented in a random order with the question 'Who is this?' for specific figures (e.g. Santa) or 'What is this?' for generic ones (e.g. a monster). They were then asked, 'Where does this one go?'. Because this task was much less time-intensive than the properties task, we were able to add more entities: two relatively familiar figures (a clown and a magician), two less familiar figures (a knight and Robin Hood) and a comic-book figure (Superman). Also included were two roughly comparable non-human entities, one fantastical (dragon) and one real (dinosaur). Recognition of the additional entities was generally very high.[1]

*Fantasy orientation assessment*

The Fantasy Orientation assessment included four separate measures of fantasy orientation used in previous research: a three-part interview, and 3 min of free play with blocks.[2] It included Taylor and Carlson's (1997) Impersonation Interview, a shortened version of their Imaginary Companion (IC) Interview and a subset of questions drawn from Singer's IPP (Imaginative Play Predisposition) scale (Singer, 1973; Singer & Singer, 1981). In a large study utilizing 20 different potential measures of fantasy orientation (Taylor & Carlson, 1997), Singer's IPP loaded significantly and heavily on a 'fantasy engagemnnent' factor. Measures of the child's possession of an imaginary companion and their impersonation behaviour also loaded highly and significantly.

The testing situation at the preschool precluded recruiting parental input on the FO measures, which can be a helpful way of cross-validating children's responses. In lieu of this, we administered each of the interview FO measures twice, once in each session; scores from both sessions were then summed. In this way, children who were more consistent in their fantasy orientation (who gave fantastical responses both times) achieved a higher score on the individual measure than children who were less

[1] *The exception was Robin Hood, who was not recognized by a sizeable minority of children. Robin Hood was accordingly dropped from analysis. The magician was also dropped due to ambiguity regarding his status even among adults: Many adults would say that a magician is a real person while holding that magic itself does not exist. The only other entity that occasioned any difficulty in recognition was the knight, which was sometimes identified with more general military figures (soldier, guard, army). All other entities were recognized by all but 1 or 2 children. In the few cases where children did not spontaneously identify the entity, or identified it incorrectly, a short description was provided. Thus, children who labelled the picture of a knight a 'soldier' were told 'This knight fights his enemies with his sword.'*

[2] *Children's scores on the blocks task were not significantly correlated with either Singer's IPP or Taylor and Carlson's Impersonation interview, nor were scores related to any of the dependent measures. The blocks task was accordingly dropped from the analysis and will not be discussed further.*

consistent (giving some fantastical and some non-fantastical responses). Children who gave consistently non-fantastical responses scored the lowest.

The Impersonation Interview (Taylor & Carlson, 1997) consisted of three questions asking whether children ever pretended to be (a) an animal, (b) a different person, and (c) anything else (such as an airplane). Children were given one point for each 'yes' answer for which they could also give at least one example; thus, scores after both sessions could and did range from 0 to 6 ($M$ = 3.15).

In the Imaginary Companion Interview, the term 'pretend friend' was first explained, and children were asked whether they had a 'pretend friend'. For children who answered yes, a series of nine follow-up questions were asked concerning issues such as the friend's name and gender; where the IC lives and sleeps; and whether the IC was a toy or totally pretend. The follow-up questions allowed us to evaluate the substantiveness of positive responses. 'Yes' responses that clearly referred to a specific real child (e.g. a cousin) or pet, or for which no details could be provided, were scored as 0. Negative responses at both sessions were scored 0. A single substantiated positive response was coded 1; substantiated, positive responses at both sessions were scored 2. The modal response on this measure was 0; almost 60% of children did not report an imaginary companion, while 40% did. This proportion is comparable with previous research (Taylor & Carlson, 1997).

Four questions from Singer's (1973; Singer & Singer, 1981) IPP scale were used, regarding children's favourite game and favourite toy, whether they like to talk to themselves in bed at night and what they think about before they go to sleep. Responses were coded, following Singer's (1973) guidelines, as either fantasy-oriented (e.g. monster game), which received a score of 1, or reality-oriented (e.g. checkers), which received a score of 0. Responses that suggested an imaginative content without a clear fantasy element (e.g., playing fireman) were coded 0.5. Scores on this measure after both sessions could range from 0 to 8. Actual obtained scores ranged from 0 to 6 ($M$ = 2.68).

### *Reliability of FO measures*

One experimenter scored all protocols. A different experimenter re-scored 45% of the protocols. The inter-rater agreement was 93–98% for the 3 questions in the Impersonation Interview; 93% for the Imaginary Companion interview; and 78 to 89% for the 4 questions in Singer's IPP. Individual children's responses to the FO interview measures across the two sessions were also assessed and found to be largely consistent. Agreement for the 3 questions in the Impersonation Interview ranged from 73 to 79%; for the Imaginary Companion interview, the figure was 82%; and for the 4 questions in Singer's IPP, agreement ranged from 74 to 85% except for the 'sleep' question, for which agreement was 63%.

### *Testing of adults*

The properties task was administered to 38 adults as a simple four-page questionnaire that took approximately 10 min to complete. Although we felt confident that adults would agree with our intuitions about the reality status of the entities (e.g. that Michael Jordan is real and that Santa Claus is not), we confirmed our intuitions on a separate sample of 27 adults. These adults were given a list of the entities and asked to check whether they were real or not (or whether they were unsure). For the 11 entities used in the final analysis, the judgments of these adults confirmed our intuitions 97% of the time (288 out of 297 judgments).

## Results

### *FO measures*

Because one of the measures of fantasy orientation was categorical rather than continuous, the relations between the measures were assessed by a non-parametric measure of correlation, Spearman's rank correlation coefficient. Results showed a significant relation between Taylor and Carlson's Impersonation Interview and both Singer's IPP Interview ($\rho = .304, p < .05$) and the IC Interview ($\rho = .324, p < .05$). There was also a marginally significant relationship between the latter two measures, $\rho = .217$, $p = .09$. Accordingly, these three measures were combined to create an overall FO score. To correct for the different scales on the different measures, scores were first converted to $z$ scores and then summed. The resulting scale had a mean of −0.28 and ranged between −4.09 and 3.98. Inspection of the distribution of scores showed a break just below the median score. Thus, children who scored below the median were classified as low FO ($n = 29$) and children at or above it as high FO ($n = 32$). The distribution of high and low FO did not differ significantly across the age groups, $\chi^2(2) = 1.97, p = .37$, nor by gender $\chi^2(1) = .85, p = .39$.

### *Categorization of the entities*

Preliminary analyses showed no main effects or interactions involving order or gender; these variables were dropped from subsequent analyses. The first set of analyses investigated children's fantasy/reality differentiation as measured in their categorization of the various entities. Consistent with previous research, children performed poorly. Fewer than half (46%) of their total category judgments were correct. A 3 (age) × 2 (FO) × 2 (entity type) mixed analysis of variance was conducted on the proportion of correctly categorized entities, with age and FO as between-subjects variables and entity type as the within-subjects variable.[3] Results showed a main effect of FO $(1, 51) = 6.38$, $p < .05$. Children with a high FO were more accurate in their category judgments than were low FO children (54 vs. 40%).

There were also main effects of age, $F(2, 51) = 8.74, p < .001$, and entity type, $F(2, 51) = 10.54, p < .001$, qualified by a significant interaction between them, $F(2, 51) = 10.54, p < .0005$. Inspection of the means showed that correct categorization of the real entities increased with age ($M = 33$, 60 and 74% for 3-, 4- and 5-year-olds, respectively), while correct categorization of the fantastical entities showed no improvement ($M = 34$, 39 and 39%; See Fig. 1). Thus, all age groups performed at chance levels in categorizing the fantastical entities, and 3-year-olds were equally poor at categorizing the real entities. The poor scores of 3-year-olds cannot be attributed solely to their lack of familiarity with Jordan, as the same pattern was obtained with the Michael Jordan item excluded. However, inspection of children's patterns of response to individual entities (discussed shortly) shows that, rather than being random, their poor overall performance reflected the fact that some fantastical entities were systematically judged as fantastical, whereas others were systematically judged as real.

#### *Children's use of 'not sure'*

Before examining these data, we removed the entities that children had difficulty

[3] *Proportion correct was used in place of raw scores to correct for the baseline difference in number of real versus fantastical entities. All analyses in this paper conducted on proportional scores were also run with an arc-sine transformation on the dependent variables. The pattern of results was identical in every case.*

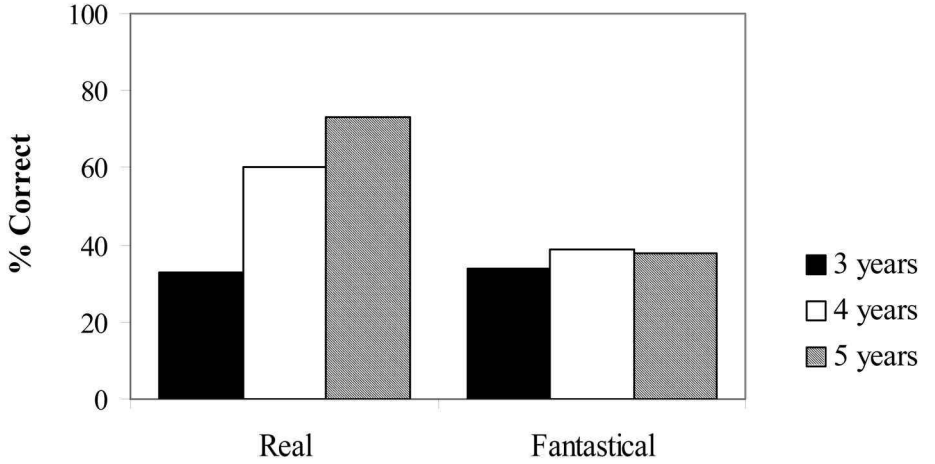



**Figure 1.** Correct categorization of entities by age and entity type.

recognizing (Michael Jordan and the knight). This was done to ensure that children's use of the 'not sure' option reflected uncertainty regarding these entities' fantasy/reality status rather than their identity. We found that children used the 'not sure' option extensively. Virtually all entities were assigned to this category by at least some children at each age, and use frequently ranged over 30%. Overall, across the age groups and entities, 21% of assignments were to the 'not sure' box. These findings thus reveal an important element of uncertainty in children's fantasy/reality judgments.

*Category judgments for individual entities*

Among 3-year-olds, the only entity for whom children's pattern of responses differed significantly from a chance level of 33%, as measured by Pearson chi-square tests, was the knight (Table 1). Further, their consensus opinion was incorrect. Four-year-olds' category choices were more consistent. Among the real entities, responses for the child, clown and Michael Jordan were all systematically different from chance ($p < .01$), with the majority correctly assigning real status. Thus, 4-year-olds demonstrated a clear understanding of the reality status of both specific and generic human figures. Among fantasy figures, categorization choices for Superman and Santa were significantly different from chance ($p < .05$), with the majority of children correctly categorizing Superman as pretend but incorrectly categorizing Santa as real.

By five years of age, children made systematic, if sometimes erroneous, category judgments for all but two entities (fairy and dragon). The majority of this age group correctly categorized all of the real entities as real and the monster and Superman as pretend ($p < .05$). However, the majority also incorrectly categorized the two event-related fantastical entities—the Easter Bunny and Santa—as real ($p < .001$.)

### *Property attributions*

The second set of analyses concerned the attribution of various properties to the different entities. The most basic question was whether children would show any discrimination in their property attributions based on their *own* notions of what was

**Table 1.** Children's categorization choices for each entity (%), by age

| | Real | | | | | Fantasy | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Child** | **Michael Jordan** | **Clown** | **Knight** | **Dinosaur** | **Easter Bunny** | **Santa** | **Fairy** | **Monster** | **Superman** | **Dragon** |
| **3-year-olds** | | | | | | | | | | | |
| Real | 50 | 28 | 39 | 17* | 33 | 44 | 44 | 50 | 39 | 33 | 27 |
| Not sure | 22 | 33 | 28 | 22 | 28 | 28 | 33 | 33 | 28 | 17 | 20 |
| Pretend | 28 | 39 | 33 | 61 | 39 | 28 | 22 | 17 | 33 | 50 | 53 |
| **4-year-olds** | | | | | | | | | | | |
| Real | 71** | 94*** | 71** | 35 | 29 | 35 | 76*** | 41 | 29 | 35* | 18 ∧ |
| Not sure | 24 | 6 | 24 | 35 | 41 | 35 | 12 | 29 | 24 | 6 | 24 |
| Pretend | 6 | 0 | 6 | 29 | 30 | 29 | 12 | 29 | 47 | 59 | 59 |
| **5-year-olds** | | | | | | | | | | | |
| Real | 82*** | 73*** | 86*** | 59* | 64** | 81*** | 71*** | 52 | 24* | 14** | 27 ∧ |
| Not sure | 9 | 14 | 0 | 18 | 23 | 10 | 14 | 14 | 14 | 18 | 18 |
| Pretend | 9 | 14 | 14 | 23 | 14 | 10 | 14 | 33 | 62 | 68 | 55 |

Patterns of responding that are significantly different from chance by a chi-square test are indicated: ∧ $\rho < .10$; * $\rho < .05$, ** $\rho < .01$; *** $\rho < .001$.

real or fantastical. To provide the clearest picture possible, entities categorized as 'uncertain' were not included in this analysis. Average attribution scores in each of the four domains were calculated for each child based on his or her own category judgments of 'real' and 'fantastical'. Eight separate scores resulted, each of which could range from 0 to 3 (e.g. average attribution of social properties for entities judged real, average attribution of biological properties for entities judged fantastical, etc.). As children assigned different numbers of entities to each category, scores were calculated as average proportions rather than average raw scores.

Scores were entered into a 3 (age) × 2 (FO) × 2 (entity classification) × 4 (property type) mixed ANOVA. Results showed only a main effect of attributions, $F(1, 45) = 8.9$, $p < .01$. Children granted more human-like properties of every type to entities they classified as real than to those they classified as fantastical; however, post-hoc Scheffé tests showed that the only significant difference was in the social domain (71% vs. 50%). This suggests that children's inferences about the social properties of an entity may play a leading role in their judgments about the entity's reality status.

The next step was to examine children's property attributions to entities as defined by the adult categories of real and fantastical. The adult data were analysed first to establish the adult pattern of attribution, followed by analyses of the children's data that also took into account their age and fantasy orientation.

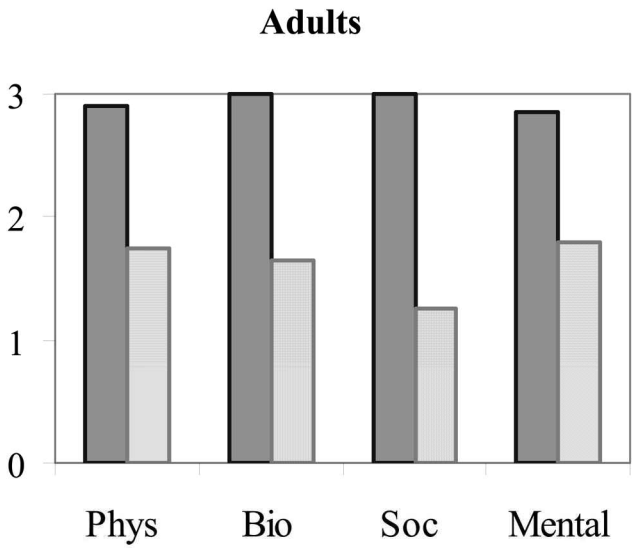
A repeated-measures ANOVA on adult's attributions by property and entity type produced a significant main effect of attributions, $F(37, 259) = 124.08$, $p < .0001$. Post-hoc Scheffé tests showed that adults endorsed significantly more properties of every type for real entities compared with fantastical entities (all $p < .0001$) (see Fig. 2A). In addition, adults did not discriminate in the types of human-like properties they attributed to real entities; they were all endorsed at equally high levels. However, adults did differentiate in their pattern of attribution for fantastical entities: Human-like social properties were attributed significantly less often to fantastical entities than any other type of property ($p < .05$). Attribution of the other types of properties to fantastical entities was comparable.

To assess children's patterns of attribution by property and entity type,[4] a 3 (Age) × 2 (FO) × 2 (entity type) × 4 (property type) mixed ANOVA was conducted, revealing main effects of age, $F(2, 55) = 5.95$, $p < .005$, and FO, $F(1, 55) = 10.56$, $p < .005$. Three-year-olds attributed fewer properties on average than did 4- or 5-year-olds ($M = 1.7, 2.0, 2.1$ out of 3, respectively, $p < .005$), and high FO children attributed more properties ($M = 2.0$) than did low FO children ($M = 1.8$). There was also a significant main effect of attributions, $F(7, 385) = 46.78$, $p < .0001$, qualified by a significant age-by-attribution interaction, $F(14,385) = 4.32$, $p < .0001$.

To determine the cause of the age by attribution interaction, post-hoc Scheffé tests were conducted on the pattern of attributions separately for each age. The results (see Fig. 2B–D) revealed that the 5-year-olds closely matched the adult pattern of attributions: Among 5-year-olds, real entities were attributed more human-like properties of each type than were fantastical entities, $p < .0001$, while attributions of the different types of properties within each entity type did not differ. Four-year-olds showed a similar pattern, although their differentiation between real and fantastical entities was not as complete: They accorded significantly more human-like social ($M = 2.6$) and physical properties ($M = 2.4$) to real entities compared with fantastical entities

[4] *Because a large proportion of children did not spontaneously recognize Michael Jordan, we conducted an initial analysis to determine whether the child's recognition had any effect on patterns of attribution. The result was negative $F(1, 56) = .04$, $p = .83$.*

a)




b)

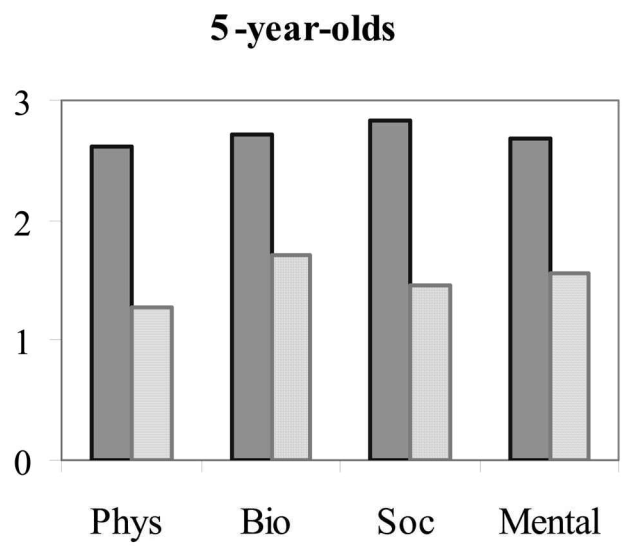
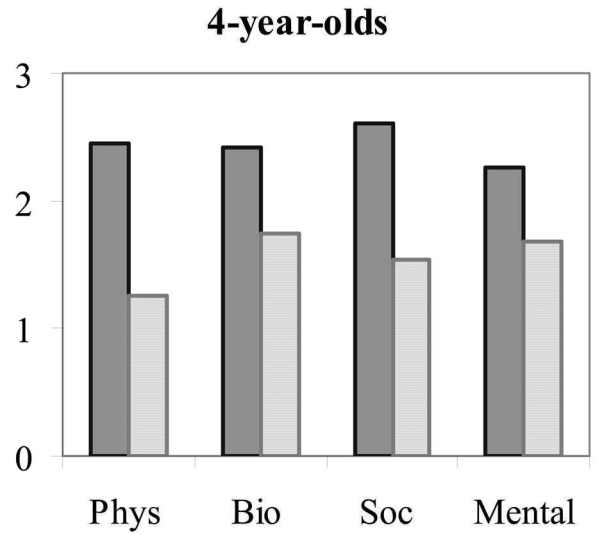



**Figure 2.** Average number of human-like properties endorsed by type of entity, property type and age (maximum = 3). ▬ indicate endorsements for real entities, ▬ indicate endorsements for fantastical entities.

c)




d)

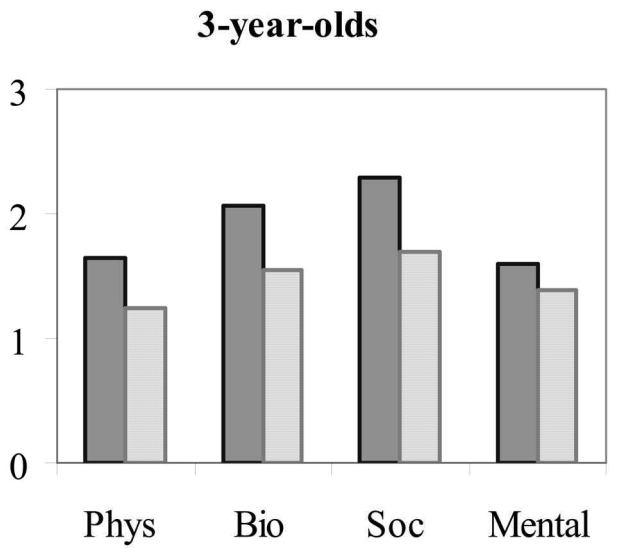



**Figure 2.** *Continued*

($M$ = 1.5 and 1.3, $p < .005$) but did not discriminate significantly between real and fantastical entities in their attributions of mental properties. They showed a non-significant trend towards differentiating in the biological domain ($M$ = 2.4 and 1.7), $p$ = .08. In contrast, 3-year-olds showed no systematic differentiation by property type, attributing real and fantastical entities roughly equivalent numbers of properties of each type.

Finally, there was also a significant three-way interaction between age, FO and attributions, $F(14, 343) = 1.81$, $p < .05$. Inspecting children's mean attributions suggested two sources of this interaction. First, high-FO 3-year-olds were relatively enthusiastic in their endorsement of social properties for fantastical entities compared with the other groups, ($M$'s = 2.4 vs. 1.4–1.7). Second, 4-year-olds' attributions of human-like properties to real entities revealed an interesting gap based on fantasy orientation: High-FO 4-year-olds attributed properties similarly to 5-year-olds of both orientations on 3 of the 4 property types (biological, social and mental), whereas low-FO 4 year-olds showed a much lower level of attributions and resembled the 3-year-olds. This finding suggests a possible advantage of a high FO in making the fantasy/reality distinction.

## Discussion

The most striking finding of this research was the contrast between children's relatively inaccurate category judgments and their relatively adult-like property attributions. Both 4- to 5-year-old children and adults differentiated clearly between real and fantastical entities in their property attributions, although children correctly categorized the fantastical entities only one third of the time. Further, in their category judgments, children often assigned the 'uncertain' category. This suggests that, rather than being actively misguided, young children are sometimes simply unsure about an entity's reality status. Finally, an intriguing relation was found between a high fantasy orientation and more adult-like category judgments for both real and fantastical entities.

### *Category judgments*

Consistent with previous research (Samuels & Taylor, 1994; Taylor & Howell, 1973), young children in our study frequently failed to categorize entities correctly in terms of their fantasy/reality status. Overall, they were correct less than half the time. Thus, in terms of assigning entities to the correct category, children of all ages in this study performed poorly. However, two additional analyses point to a more complex picture.

#### *Children's use of 'not sure'*

Previous research has commonly offered children only two response options, 'real' and 'pretend'. If children are uncertain about the status of a fantasy figure, this will produce an erroneous picture of children's beliefs, either inflating or deflating estimates of belief levels. Our procedure allowed us to capture children's uncertainty regarding these entities. When 'not sure' responses are taken into account, we find that for only a few of the entities did the majority of children at a given age actively assign the wrong status. Thus, when given the opportunity, many children acknowledged their uncertainty regarding the reality status of many entities. This is a very different kind of confusion than confidently holding a belief in the incorrect reality status. A child who

expresses hesitation when asked whether a monster is real or pretend has not yet achieved an adult understanding of the insubstantiality of monsters, but neither is he or she committed to a belief in their reality.

#### *Category judgments for individual entities*

The entities that produced the most consistent miscategorization (e.g. Santa Claus among 4-year-olds, and Santa and the Easter Bunny among 5-year-olds; see Table 1) were largely those for which parental and social support is most strong (Prentice *et al.*, 1978; Rosengren *et al.*, 1994). The role of social factors was further revealed in the differences in children's beliefs across the age groups. Of the 11 entities included in the categorization task, 8 showed clear developmental trends, and 6 of these were in the 'correct' direction (i.e. increasing categorization as real for the child, clown, knight and dinosaur, and increasing categorization as pretend for the monster and Superman). Only two entities showed a clear trend in the 'incorrect' direction, and these two (the Easter Bunny and Santa Claus) are the fantastical entities that enjoy the most parental and social support (Rosengren *et al.* 1994).

This pattern of responses underscores the importance of the larger social context in the development of children's beliefs. The view of children as highly credulous has often failed to acknowledge the extent to which children are expected and encouraged to hold certain fantastical beliefs (cf. Woolley, 1997). It should be noted that Piaget, whose work contributed significantly to this view, made a strong distinction between children's individual magical beliefs and the magical beliefs of society as a whole (Piaget, 1930). Yet these seemingly paradoxical trends—of both increasing accuracy and increasing error—can be traced to children's developing knowledge of and experience in the world. Children learn in the course of a school day that dinosaurs lived aeons ago, but they also write letters to Santa from these same classrooms. Parents and other adults impart factual knowledge, but they also actively foster particular fantastical beliefs (Clark, 1995). Thus, both the development of beliefs considered correct (e.g. dinosaurs are real), and the simultaneous development of beliefs considered incorrect, but age-appropriate (e.g. Santa is real), originate in what children are taught. Children may be more willing to entertain fantastical beliefs than are most adults, but they are also more uniformly encouraged to do so. These data thus suggest that it is incorrect to view children as generically credulous (Dawkins, 1995). They did not yet make the same fantasy/reality assignments as adults, but neither did they fail to differentiate at all. Rather, their most common miscategorizations concerned specific fantastical entities that young children are generally encouraged to believe are real.

### *Property attributions*

In contrast to their category judgments, children's patterns of property attribution were similar to those of adults, and revealed an intriguing developmental progression. Five-year-olds were identical to adults in their pattern of attributions across the different types of properties (physical, social, etc.). Four-year-olds differentiated between fantastical and real entities in their attribution of social and physical properties, while failing to differentiate significantly between the two in their attribution of biological and mental properties. When property attributions were analysed in terms of the individual child's own categories of real and pretend, 3-year-olds performed like the older children, consistently attributing more human-like social properties to entities they classified as real compared with entities they classified as pretend.

The developmental change in children's patterns of property attributions suggests an important role for knowledge acquisition in the development of the fantasy/reality distinction. Children discriminated first between the properties of real and fantastical entities in the two domains in which they are apt to have the most knowledge (i.e. the physical and the social; see, e.g., Fivush, 1997; Spelke, Guteil, & Van de Walle, 1995). The social domain seemed especially important at all ages. Adults granted social properties to fantastical entities least often. The first sign of differentiation among the 3-year-olds in our study was in the greater number of social properties they attributed to entities they considered real compared with those they considered fantastical. Only later did children discriminate in the domains in which they are still relative novices (i.e. the domains of biology and mind; see, e.g., Wellman & Gelman, 1998). This result underscores the far-reaching effects of this foundational knowledge.

Even with such knowledge, children face a considerable challenge, as they must still recognize what implications the property information has for reality status. Fantastical entities may be particularly difficult because they have contradictory properties. They often possess many attributes that are basic (e.g. facial features) or highly typical (e.g. Santa wears clothes and has a wife) of real entities. At the same time, they possess attributes that are not only unusual but also impossible for real entities (e.g. Santa also flies in a sleigh). In a study on young children's understanding of gender, Gelman, Collman, and Maccoby (1986) found that children were notably better at correctly inferring properties, given a category label, than the reverse. Inferring the correct category when given contradictory property information was especially difficult. Yet this is precisely the challenge that fantastical entities raise. Children must come to recognize, for example, that an entity may possess many human-typical social properties, but even one non-human biological property is enough to consign it to the realm of fantasy.

The contrast between children's category judgments and property attributions has another developmental implication. It suggests that many preschool-age children may have an implicit category of entities they do not yet label pretend, yet to which they grant few human-like properties. This mixed category could conceivably serve as a transitional category as children develop the adult fantasy category. As children learn more about the properties that are necessary and typical of humans, the contrast between the properties of the supposedly real entities and those of the truly real will increase; this could help children recognize that some of the entities are not real but imaginary.

### *Effects of fantasy orientation*

Our final finding was that a high FO had a positive effect on children's categorization of both real and fantastical entities: At all ages, high-FO children were more accurate than were their low-FO peers. This is an exciting finding, as there is very little information in the literature on the role that individual differences play in children's understanding of the fantasy/reality distinction. One possible explanation is that high-FO children spend more time engaged with the fantasy world and thereby accrue more knowledge about it, seeing first hand both the limits and the possibilities of imagination. It is also possible that these children's interest and engagement in fantasy elicits more instruction from parents, for example discussion of the differences between real friends and imaginary ones. More work is sorely needed on this issue.

## Conclusion

Our results suggest the following tentative sketch of the possible course of development of the fantasy/reality distinction: The very young child may initially be somewhat unsure about attributing human-like properties to various entities. With experience, children acquire increasing knowledge about everything in their world—both about real entities and their properties, and about such socially supported myths as Santa Claus and the Easter Bunny. Thus, there is the simultaneous development of beliefs considered correct (e.g. dinosaurs are real) and of beliefs considered incorrect but age-appropriate (e.g. Santa is real). But at the same time, as children believe in the reality of fantasy figures, or are unable to say with certainty that they are pretend, they treat them very differently from real entities in terms of the properties and abilities they are willing to grant. In this way, children seem to place fantastical entities in a separate category—neither unquestionably real nor pretend, but somewhere in between. This category could then form a natural bridge to the adult category of fantastical entities. Thus, rather than having misplaced the boundary between real and fantastical entities, young children are still in the process of actively constructing it.

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## Appendix: Questions asked in the property attribution task

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| Can X travel the whole world in one night? |
| Can someone touch X? |
| Can X be in different places at the same time? |
| Does X need to sleep sometimes? |
| Does X get older every year? |
| Can X get hurt? |
| Does X have parents? |
| Does X eat dinner with his/her family sometimes? |
| Can X have a pet? |
| Does X dream sometimes? |
| Can X know what we're thinking? |
| Can X get his/her feelings hurt? |