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## Abraham Lincoln and Harry Potter: Children's differentiation between historical and fantasy characters

Kathleen H. Corriveau<sup>\*</sup>, Angie L. Kim, Courtney E. Schwalen, Paul L. Harris

Harvard University, Human Development and Psychology, Cambridge, MA 02138, United States

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## 1. Introduction

Young children encounter both historical and fantasy narratives. How do they differentiate between them? In particular, how do they distinguish between two radically different types of protagonists: those who actually lived at a certain point in time and those who are merely fictional? In studying children's early cognitive development, the history of ideas can serve as a guide. For example, in tracing children's understanding of heat and temperature (Wiser, 1988), their predictions about falling objects (McCloskey, Caramazza, & Green, 1980), or their ideas about the origin of species (Shtulman, 2006), psychologists have looked at conceptual change in the history of science. Although few domains are as cumulative or progressive as science, the same strategy might be helpful in tracing the development of children's understanding of non-scientific domains such as history and fiction. Historiographic analysis has suggested that the distinction between historical and fantasy narratives emerges only gradually. David Hume, for example, declared that: "The first page of

\* Corresponding author. Tel.: +1 617 894 1027.

E-mail address: kcorriv@fas.harvard.edu (K.H. Corriveau).

## ABSTRACT

Based on the testimony of others, children learn about a variety of figures that they never meet. We ask when and how they are able to differentiate between the historical figures that they learn about (e.g., Abraham Lincoln) and fantasy characters (e.g., Harry Potter). Experiment 1 showed that both younger (3- and 4-year-olds) and older children (5-, 6-, and 7-year-olds) understand the status of familiar figures, correctly judging historical figures to be real and fictional figures to be pretend. However, when presented with information about novel figures embedded in either a realistic narrative or a narrative with obvious fantasy elements, only older children used the narrative to make an appropriate assessment of the status of the protagonist. In Experiment 2, 3-, and 4-year-olds were prompted to judge whether the story events were really possible or not. Those who did so accurately were able to deploy that judgment to correctly assess the status of the protagonist.

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Thucydides, in my opinion, is the commencement of real history" (Hume, 1742/1987, II, Essay IX; 98). Subsequent scholarship has supported Hume's dictum. Before Thucydides, historians introduced the supernatural, notably the deeds of the gods, into their narrative with the goal of delivering a dramatic story. By contrast, Thucydides aimed at an accurate account of the past analyzing historical events only in terms of natural phenomena and human motives (Cochrane, 1929; Williams, 2002).

This analysis suggests the following developmental hypotheses. It is possible that at first young children make no systematic distinction between historical and fictional figures. At best, they learn on a rote basis which figures belong to which category. Then, children gradually come to use their causal knowledge of the real world to differentiate between historical narratives that contain no magical or supernatural events and fantasy narratives that do contain such events. Based on that differentiation, children could infer that the protagonist in a historical narrative is a real person whereas the protagonist in a fantasy narrative is not

A review of earlier findings offers some support for the proposal that young children do not systematically differentiate between real and fictional figures. They sometimes



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judge that real figures are only fictional. For example, when Morison and Gardner (1978) asked children ranging from 5 to 12 years to sort 20 pictures of real and fantasy figures into two piles - "one pile of things that are real and one pile of things that are pretend" - children often misjudged real figures that were remote from their everyday experience - 'knight' 'Indian' and 'dinosaur' - as pretend. A similar error pattern was reported by Woolley and Cox (2007) in a study of preschoolers. When fantastical stories (which included special beings such as monsters) as well as realistic stories (which included only ordinary events) were presented to 3-, 4-, and 5-year-olds, they typically claimed that the protagonists in both types of stories were not real and just "in the book." Moreover, in a followup experiment, 4- and 5-year-olds claimed that the events in the stories - irrespective of whether these were fantastical or realistic events - did not happen in real life but "just happened in the story."

In addition, children also judge fantasy characters to be real. Sharon and Woolley (2006) found that 3-5-year-olds judged Santa Claus and the Easter Bunny to be real, possibly due to the input children receive about these characters. Similarly, when Applebee (1978) asked 6- and 9-year-olds about the status of familiar story protagonists (e.g., "Where does Cinderella live? Could we go for a visit?"), most 9-year-olds recognized that Cinderella is only a fictional character and judged that such stories are not about things that really happened. However, many 6-year-olds were not so lucid. For example, one 6-yearold denied that a visit to Cinderella was possible but offered a pragmatic rather than an ontological explanation: "'Cause they'll say Cinderella can't come - she'll have to wash up the plates and all the dishes and wash the floor." Indeed, when pressed further by the interviewer ("Hmm, do you think we could go visit the ugly sisters?"), the child agreed that a visit was possible. Overall, Applebee concluded that 6-year-olds often think that fictional stories are about actual people, places and events. If the protagonist is inaccessible, it is because he or she lives far away or lived a long time ago - and not because the protagonist is purely imaginary.

Taken together, these studies indicate that young children do not systematically distinguish between real, historical figures and fantasy figures. However, they do not provide evidence pertinent to the developmental hypotheses advanced earlier. In particular, the studies do not indicate whether children come to use their causal understanding of the world to distinguish between historical and fantasy figures.

Experiment 1 included two tasks – a Familiar Characters task and a Novel Characters task. The two tasks were designed to answer two related but distinct questions. The Familiar Characters task re-examined children's ability to classify familiar figures as real or fictional. Children were presented with a mix of well-known historical and fictional figures (e.g., Abraham Lincoln, Batman, Albert Einstein, and Harry Potter). Each figure was depicted by means of a photograph or portrait. Children were shown individual photographs, told the name of the person in the photograph, asked if they knew of the person, and then invited to allocate the photograph of the familiar person to one of two boxes: a box for real people and a box for pretend people (Sharon & Woolley, 2006; Woolley & Cox, 2007). Preliminary training was used to check that children understood the difference between the two boxes. Testing continued until children had made decisions about a total of six familiar figures, three historical and three fictional.

The Novel Characters task was designed to examine the basis for any observed differentiation that children might make between the two types of characters. Children were presented with a novel protagonist in the context of either a realistic narrative or, alternatively, a narrative with obvious fantasy events. They were then asked to categorize the protagonist as either "real" or "pretend". The experimental question was whether children would use the narrative events to infer the status of the protagonist. To further assess whether children were using this heuristic, they were asked to justify their responses.

We anticipated a developmental shift in children's ability to characterize these Novel Characters. Based on previous research, it is plausible that younger children may not make a principled distinction between real and fictional protagonists. Instead, they learn on a rote basis that some figures are real and others are not. More specifically, in first learning about a new character, young children have no real insight into the difference between real and fantasy characters, or between factual and fantasy narratives, but they remember, if told, the status of a given narrative and its protagonist. For example, they might be told explicitly that George Washington 'really' crossed the Delaware or that the story of Pinocchio is 'just' a story. On this hypothesis, younger children would lack any independent means of assessing the status of a new character that they learn about. Instead, they would rely on explicit signals from informants, and in the absence of such explicit signals, they would be at a loss to decide whether the character should be regarded as real or fictional. By analogy, they would be in roughly the same position as children who have been told about particular fruits and vegetables and can assign many familiar kinds to the appropriate category but have no principled grasp of the distinction between the two when determining the status of a novel kind.

By contrast, it is plausible that older children grasp one key difference between fantasy stories and historical narratives. Instead of learning the status of narrative figures on a rote basis, they use their understanding of what is not ordinarily possible in the real world to carve out a fantasy domain, one that is distinct from reality. Suggestive evidence that older preschoolers can use a heuristic of this sort to assess the status of a novel entity has been reported by Woolley and Van Reet (2006). Children were told about unfamiliar entities in a fantastical narrative context (e.g., "...dragons collect surnits"), in a scientific context (e.g., "...scientists collect surnits") or in an everyday context (e.g., "...children collect surnits"). Although 3-year-olds failed to make systematic make use of the contextual clues, 5-year-olds were more likely to judge the novel entity as real if they learned about it in either the scientific or everyday context rather than the fantastical context.

Thus, by listening to the narrative events and deciding whether they could occur in the world of everyday reality, children could correctly conclude that many of the narratives that they hear - traditional fairy tales, stories about talking animals, contemporary stories about enchantment or witchcraft, tales of superhuman heroics, and so forth are fantasy narratives. They could then infer that the central characters in such stories are only fictional. Admittedly, this heuristic would sometimes lead children astray. They would regard narratives about people leading ordinary lives and performing ordinary deeds as factual rather than fictional and, in some cases, they would be in error to do so. However, despite such occasional error, the heuristic would generally lead children to draw the correct conclusions. Therefore, if older children have an understanding of the distinction between historical and fictional characters based on the type of narrative in which they are embedded, they should be able to apply that knowledge to newly encountered figures, such as those presented in the Novel Characters task.

#### 2. Experiment 1

## 2.1. Method

## 2.1.1. Participants

Forty-one children between the ages of 3 and 7 years participated. Children were divided into a younger group of 3–4-year-olds (N = 21, M = 48 months, SD = 6 months, range = 36–59 months) and an older group of 5–7-year-olds (N = 20, M = 73 months, SD = 8 months, range = 60–88 months). Participants were recruited from a children's exhibit in a local science museum. Most participants were White and middle-class. All available children in the age range studied were invited to participate, and most accepted.

#### 2.1.2. Procedure

Children were tested individually in a quiet corner of the museum. They received two separate tasks: Familiar Characters and Novel Characters. Each of these two tasks is described in more detail below.

To introduce the two tasks, the experimenter first presented the child with two boxes: one labeled "real" with a picture of a teacher standing by a blackboard and one labeled "pretend" with a picture of a flamingo painting on a canvas. The experimenter said, "Sometimes we hear stories about people that really happened. For example, you might have heard a story that really happened about your Mommy when she was a little girl. But sometimes we hear stories about people that are pretend. For example, you might hear a story about a superhero who killed a dragon. So, in this game, I have pictures of people, but they're all mixed up and I want you to help me. Some of the people are real. So, I want you to put those in the real box. See this box says 'real' on it and it has a picture of teacher and she's really teaching. And some of the people are pretend and only exist in stories - so I want you to put those in the pretend box. See, this box says 'pretend' and it has a picture of a flamingo and he's painting. Can flamingoes really paint? No, so this box is for things that are just pretend. Let's begin."

2.1.2.1. Familiar Characters. The experimenter first presented children with two practice trials: Goldilocks and Thomas Edison. Children were asked if they knew who each character was. If they did not, the experimenter presented a short narrative about the character. Children were then invited to place the relevant picture in either the 'real' or the 'pretend' box. Corrective feedback was given on these two practice trials.

Next, the experimenter presented children with 18 additional pictures: nine of historical figures and nine of fictional figures (see Fig. 1a for an example of a historical and fictional figure). The experimenter presented the pictures one-by-one and first asked, "Have you heard of ?" If children said no, the picture was set aside. If they responded yes, the experimenter asked, "Where should we put \_\_\_\_, in the 'real' box or in the 'pretend' box?" (Categorization question). No feedback was given on these trials. Trials were discontinued after children had categorized three fictional figures and three real figures that they claimed to have heard of, or after all 18 pictures had been presented, whichever came first. With the exception of two 4-year-olds and two 5-year-olds, who claimed to know only of two of the nine real figures, the children in both age groups claimed to have heard of three fictional figures and three real figures before the complete set of 18 pictures had been exhausted.

2.1.2.2. Novel Characters. Immediately after presenting the final Familiar Character trial, the experimenter removed the pictures from the two boxes. Children were then given an introductory prompt to maximize the likelihood that they would be alert to the informative cues embedded in the story: "Now I'm going to tell you some stories about some people you've never heard of before. Some of them are real and some of them are pretend. At the end, I'm going to ask you to decide whether the person should go in the 'real' or in the 'pretend' box. I want you to listen closely, because I'm also going to ask you some questions about it later."

The experimenter then presented 12 stories about six character types: soldier, princess, sailor, child, farmer, and Native American (see Fig. 1b for illustrative pairs of story characters). Each of the six character types was presented in the context of both a fictional and a historical story, for a total of 12 stories. For example, the two stories for the child character type were: Fictional: "This is Sarah Adams. She became a firefighter when she grew up. She had a secret blanket that protected her from any harm and made her invisible." Historical: "This is Annie Paine. She became a doctor when she grew up. She was born in Washington D.C. on the 4th of July." (See Appendix A for the full script of 12 stories.)

Immediately after the experimenter told each story, children were invited to categorize the story character (Categorization question). The experimenter gave children the picture of the character and said: "Which box should we put \_\_\_\_\_\_ in, the 'pretend' box or the 'real' box?" After children had placed the picture into one of the two boxes, the experimenter asked why s/he had chosen to put the character in the box (Justification question).

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b)

Child



Fig. 1. Pictures of (a) familiar fictional and historical figures (Snow White, George Washington) and (b) Novel Characters (soldier, child).

The order of presentation of the 12 stories varied randomly. In addition, the assignment of each particular depiction of a given character type to either a Fictional or a Historical story was systematically varied. For example, some children were given stories in which the soldier with a rifle was allocated to the Fictional story and the solder without a rifle to the Historical story. Some children received the reverse arrangement.

Soldier

## 2.2. Results

We first present the results from the Familiar Characters trials. Next, we present the results from the Novel Characters trials. Finally, we discuss the relationship between children's ability to categorize a novel character correctly and their justification of that categorization. To anticipate, we found that both age groups were able to categorize known characters correctly. However, 3–4year-olds performed at chance when categorizing Novel Characters, whereas 5–7-year-olds were able to categorize them systematically. The 5–7-year-olds also justified their responses appropriately – by referring to the impossibility of the fictional event and to the realistic or historical nature of the historical event.

Because the categorization data in Experiments 1 and 2 were proportional, Kolmogorov–Smirnov tests were run to check for violations of normality. Unless otherwise indicated, these tests failed to reach significance. The one exception was for children's judgments of the Familiar Characters in Experiment 1, as explained in more detail below. These data were transformed using an arcsine transformation. All other analyses were conducted on the untransformed data.

## 2.2.1. Familiar Characters

Children received a 1 whenever they categorized a figure as 'real' and a 0 whenever they categorized a figure as pretend. Thus, correct responding resulted in high scores (out of 3) for historical figures and low scores (out of 3) for fictional figures.

Table 1 (upper panel) displays the mean number of 'real' categorizations (out of 3), standard deviation and comparison to chance performance for the known historical and fictional figures by age group. Inspection of Table 1

## Table 1

Mean categorization and comparison to chance of pretend and historical figures as 'real' in the Familiar Characters and Novel Characters in Experiment 1.

	3–4-year-olds	<i>t</i> (20)	5–7-year-olds	<i>t</i> (19)
Familiar Cha Fictional Historical	aracters (out of 3) .95 (.97) 2.28 (.95)	2.58 <sup>*</sup> 3.76 <sup>****</sup>	.20 (.97) 2.95 (.22)	11.13 <sup>***</sup> 29.00 <sup>***</sup>
Novel Characters (out of 6) Fictional 2.91 (2.01) .18 1.20 (1.10) 7.28***				
Historical	3.06 (1.94)	.16	5.30 (.97)	10.51***

\* *p*<.05;

\*\*\* p<.001.

indicates that both age groups systematically categorized both types of figures. They performed significantly and appropriately above chance when categorizing historical figures as 'real' and they performed significantly and appropriately below chance when categorizing fictional figures as 'real.'

Because a Kolmogorov-Smirnov test on the total number of 'real' categorizations indicated that the distribution violated the assumption of normality (z = 2.04, p < .001) we conducted an arcsine transformation. To examine the pattern of categorization in more detail, a 2 (Age: 3-4year-olds, 5-7-year-olds)  $\times$  2 (Figure Type: historical, fictional) ANOVA with repeated measures on the second factor for the arcsine of the number of 'real' categorizations was calculated. This confirmed the main effect of Figure Type (*F*(1, 39) = 174.72, *p* < .001,  $\eta^2$  = .81) as well as the interaction of Age  $\times$  Figure Type (*F*(1, 39) = 18.85, p < .001,  $\eta^2 = .33$ ). The interaction is displayed in Fig. 2. Inspection of Fig. 2 shows that the 5-7-year-olds were more systematic in differentiating historical and fictional figures than were the 3-4-year-olds. Nevertheless, follow-up tests confirmed that the simple effect of figure type was significant for both younger (F(1, 20) = 23.28, p < .001) and older children (*F*(1, 19) = 663.65, *p* < .001).

Nonparametric analyses confirmed these findings. A Wilcoxon Signed Ranks test on the number of 'real' categorization for fictional and historical figures was conducted



**Fig. 2.** Mean categorization of familiar figure as 'real' by Figure Type (historical, fictional) and age group (3–4-year-olds, 5–7-year-olds). Error bars represent SE.

for each of the two age groups. Both age groups were more likely to judge the historical figures as 'real' (3–4-year-olds: z = 3.25, p < .001;5–7-year-olds: z = 4.18, p < .001).

## 2.2.2. Novel Characters

As for Familiar Characters, children received a 1 whenever they categorized a figure as 'real' and a 0 whenever they categorized a figure as pretend. Thus, correct performance resulted in high scores (out of 6) for historical figures and low scores (out of 6) for fictional figures.

## 2.2.3. Categorizations

Table 1 (lower panel) displays the mean number of 'real' categorizations (out of 6), standard deviation and comparison to chance performance for the novel historical and fictional figures by age group. Inspection of Table 1 indicates that 5–7-year-olds children systematically categorized both types of figures. They performed significantly above chance when categorizing historical figures as 'real' and significantly below chance when categorizing fictional figures as 'real.' In contrast, 3–4-year-olds performed at chance when categorizing both novel fictional and historical figures.

To further examine the pattern of categorization, a 2 (Age: 3–4-year-olds, 5–7-year-olds) × 2 (Figure Type: historical, fictional) repeated measures ANOVA for the number of 'real' categorizations was calculated. This revealed a main effect of Figure Type (F(1, 39) = 102.28, p < .001,  $\eta^2 = .72$ ) and an interaction of Age × Figure Type (F(1, 39) = 88.56, p < .001,  $\eta^2 = .69$ ). This interaction is displayed in Fig. 3. Inspection of Fig. 3 confirms that whereas the 3–4-year-olds performed at chance when characterizing the figures, the 5–7-year-olds were systematic in their characterizations. Follow-up tests confirmed that the simple effect of figure was not significant for younger children (F(1, 39) = .29, n.s.) but was highly significant for older children (F(1, 39) = 160.50, p < .001).

#### 2.2.4. Justifications

Children's justifications were allocated to one of four categories: Impossible (references to the impossibility of



**Fig. 3.** Mean characterization of novel story figure as 'real' by Figure Type (historical, fictional) and age group (3–4-year-olds, 5–7-year-olds). Error bars represent SE.

the event or character, e.g., "there's no such thing as invisible sails", "seeds don't make you live forever"); Historical/ Real (references to the historical or real nature of the event or character, e.g., "he fought in the war", "people are real"; Visual (references to a visual cue, e.g., "he looks like a real person", "I see her and she looks like a doll"); Uninformative (answers such as 'don't know' or that were unrelated, e.g., "she's doing something different", "just because"). The first and second author (KC and AK) separately coded all responses. Agreement was 93% (Cohen's  $\kappa = .93$ ) and disagreements were resolved through discussion.

Fig. 4a and b displays the percentage of children's responses allocated to each category by Type of Figure for younger children (upper panel) and older children (lower panel). Inspection of Fig. 4a indicates that 3-4-year-olds justified their responses similarly across the two story types. Most of their responses (70%) fell into the uninformative category. When they did give an informative justification, they mostly referred to the Historical/Real aspects of the story. This strategy is inappropriate for the Fictional stories, for which a focus on the impossible aspects is more appropriate. By contrast, the 5-7-year-olds provided different justifications for the Historical and Fictional stories. For the Historical stories, they focused on the Historical/ Real aspects of the story almost 60% of the time. For the Fictional stories, they focused on the impossible aspects of the story about 65% of the time.



**Fig. 4.** Percentage of children's responses to the justification question by Justification Type (Impossible, Historical/Real, Visual, DK/Unrelated) and Type of Figure (Fictional, Historical) for the (a) 3–4-year-olds and (b) 5–7- year-olds.

We also examined the distribution among the four coding categories of only those justifications that followed correct categorizations of the story figure. (Thus, justifications that followed incorrect categorizations were set aside.) The distribution of Justification Types for each age group was extremely similar to that found in Fig. 4a and b. Three- to four-year-olds justified their responses with an uninformative answer 70% and 71% of the time in the Historical and Fictional stories, respectively. When they did provide an informative justification, they mostly referred to Historical/Real aspects of the story. By contrast, 5–7-year-olds focused on the impossible aspects of the Fictional stories 79% of the time and the Historical/Real aspects of the Historical stories 60% of the time.

## 2.3. Discussion

The Familiar Characters task showed that both age groups were able to perform above chance in classifying known historical figures as real and known fictional characters as pretend. Nevertheless, there was an age change. Whereas most of the older children (80%) performed correctly on all six judgments, only a minority of the younger children (28%) did so. The Novel Characters task also revealed an age change. Whereas older children were highly systematic, younger children performed at chance. Moreover, older children offered a different pattern of justification for the two types of figures, whereas younger children offered the same pattern, even when their prior classifications had been correct.

A plausible explanation for the age change found in the Familiar Characters task is that 3–4-year-olds have no principled understanding of the distinction between historical and fictional figures. To the extent that they first learn about both types of figure via narratives that, in the case of both genres, typically represent the events as having taken place in the past, 3–4-year-olds might think of both types of figure as belonging to a generic non-present that embraces all sorts of story genres: fairy tales, historical narratives, family stories, story books, parables, and so forth. Admittedly, younger children performed above chance in allocating Familiar Characters to the correct category. However, as noted in the introduction, 3–4-year-olds may have simply learned on a rote basis which figures are fictional and which figures are historical.

The Novel Characters task was designed to explore whether children can take advantage of cues embedded in the narrative to decide whether an unfamiliar protagonist is fictional or historical. Echoing the results reported by Woolley and Van Reet (2006) for novel entities, we found an age change in children's ability to use narrative cues to infer the status of a novel protagonist. Younger children responded randomly in allocating the 12 unfamiliar characters to the real versus pretend box. Indeed, unlike the findings of Applebee (1978) and Woolley and Cox (2007), who found a reality and fantasy bias, respectively, no child in the younger group displayed a systematic pattern of performance. They all made more than three correct but fewer than 10 correct allocations. Recall that this was not because younger children were unable to differentiate between the two boxes. In the Familiar Characters task,

younger children performed above chance in their allocations, even if they also made a considerable number of errors. The unprincipled nature of the allocations made by younger children was also evident in their justifications. Almost three quarters of their justifications involved an unrelated or 'don't know' response.

Older children, by contrast, performed well in the Novel Characters task. The majority (75%) made 10-12 correct allocations, and many of their justifications involved an informative rather than an unrelated or 'don't know' response. Nevertheless, it is revealing to look carefully at the frequency with which children followed a correct allocation - whether to the real or the pretend box - with a distinctive and potentially appropriate justification. Older children made a total of 120 judgments about both historical figures and fictional figures. They were correct for 88% of their historical judgments (i.e., they allocated the story character to the real box) and for 80% of their fictional judgments (i.e., they allocated the story character to the pretend box). The pattern of older children's justifications differed for historical as compared to fictional allocations. However, older children sometimes made a correct allocation but backed it up with an evidently post-hoc or irrelevant justification (e.g., "he's a soldier" "she's standing on grass"). Thus, even older children sometimes made correct judgments whose grounds they could not articulate.

Why, as compared to older children, did younger children perform so poorly in the Novel Characters task? There are at least two plausible explanations. First, younger children might have a less systematic appreciation of what is impossible. For example, even though they recognize that certain outcomes rarely or never happen, they might not have a conception of impossibility that is systematically linked to their causal understanding. Recent research on children's understanding of magic lends support to this possible interpretation. Although preschoolers aged 3 and 4 years can differentiate between 'magical' and 'regular' outcomes (Johnson & Harris, 1994), it is unlikely that they do so by assessing whether the event in question does or does not defy ordinary causal laws. Rather, they appear to judge how easy it is to imagine the event happening. Thus, Shtulman and Carey (2007) found that children judged many improbable outcomes to be impossible, presumably because they could not easily imagine such outcomes and not because they believed them to defy causal laws. Based on these findings, we may speculate that young children find it difficult to differentiate between stories that contain fantastic elements and historical narratives that contain improbable or difficult-to-imagine elements. In each case, children would judge the narrative events to be impossible and they would regard the protagonists therein as fictional. Subsequently, to the extent that older children begin to grasp that certain events are not simply unusual but causally impossible, they could begin to acquire a more systematic basis for differentiating between factual, historical narratives containing unlikely but possible events and fantasy narratives containing downright impossible events.

Despite its initial plausibility, there are two reasons for doubting this first explanation. First, it implies that younger children will judge the protagonists of both historical and fictional stories to be pretend. Recall, however, that younger children showed no such bias. Instead, they were at chance in judging both types of figure (see Fig. 3). Second, reference to the historical narratives (listed in Appendix A) shows that none of the stories included improbable or difficult-to-imagine events. Instead, they were mostly composed of prosaic events, likely to be familiar to preschoolers.

A second possible explanation for younger children's failure on the Novel Characters task is that although they have some ability to differentiate between impossible or extraordinary events on the one hand and regular occurrences on the other, they have not yet learned to use this distinction when differentiating between fictional and historical narratives. Thus, according, to this hypothesis, younger children do not appreciate the distinguishing features of particular narrative genres but could be prompted to do so if their attention were drawn to the possibility versus impossibility of the story events. Experiment 2 was designed to distinguish between these two explanations.

## 3. Experiment 2

In Experiment 2, children aged 3–5 years were again given the Novel Characters task. However, after answering questions about four story characters in the absence of any special prompts, children were presented with four additional stories in which they were asked about the possibility or impossibility of a key story event before making a decision about the status of the story character. Finally, children were given four more stories with no special prompts. The experiment was designed to provide answers to three questions. First, can young children correctly judge the possibility versus impossibility of key story events? Second, having been prompted to make a judgment about that aspect of the story, do they decide the status of the main character in light of that judgment? Third, when such prompts are removed can children continue to make correct assessments about the status of the story character?

#### 3.1. Method

#### 3.1.1. Participants

Thirty-four children between the ages of three and five participated (age range: 3;0–5;2, M = 4;2, SD = 8 months). Participants were recruited from a children's exhibit in a local science museum. Most participants were White and middle-class. All available children in the age range studied were invited to participate, and most accepted.

### 3.1.2. Procedure

The 'real' and 'pretend' boxes were introduced in the same way as in Experiment 1. As in Experiment 1, the child received two practice categorization trials (where they were asked to categorize George Washington and Snow White) and received feedback on their responses. They were then asked to categorize one additional known fictional and historical character to gain additional practice with the two boxes. These additional characters were chosen at random from the pile of pictures.

The 12 stories used in the Novel Characters task in Experiment 1 were again used in Experiment 2. They were divided into a pretest (Stories 1–4), training (Stories 5–8), and post-test (Stories 9-12) period. Each set of four stories included two Fictional stories and two Historical stories (the content of the stories varied randomly across children). The procedure in the pre- and post-test was identical to that used in Experiment 1. In the intervening training period, the experimenter also told children the same stories used in Experiment 1 but with one additional question. Prior to asking children to categorize the story character, the experimenter asked about the possibility of the central story event (Event question). For example, in the princess fictional story the experimenter asked, "Could someone eat a magic cookie that allowed her to stay the same age forever?" After children responded to the Event question, they were invited both to categorize the story character in the same manner used in Experiment 1 (Categorization question) and to justify their response (Justification question).

## 3.2. Results

We first present the results of the categorization questions in the pretest, training, and post-test periods. We next discuss children's performance on the event questions in the training period. We discuss the effectiveness of the categorization training in relationship to children's performance on the event questions. Finally, we discuss children's justifications of their responses and the relationship between these justifications and the categorization training.

## 3.2.1. Categorization questions

In all three testing periods (pretest, training, post-test), children received a score of 1 if they appropriately categorized the story character and a score of 0 if they did not. Because all three periods included four stories, each categorization total was out of a maximum of four points. During the pretest, children correctly categorized an average of 2.12 characters (SD = .93), which did not differ significantly from chance performance (t(33) = .93, n.s.). However, children's performance did significantly differ from chance in the training and in the post-test period (training: M = 2.56, SD = 1.08, t(33) = 3.02, p < .01; posttest: M = 2.65, SD = 1.04, t(33) = 3.62, p < .001). These results were confirmed with a repeated measures ANOVA on the total score by training period (pretest, training, post-test), which revealed a main effect of training period  $(F(2, 66) = 3.53, p < .05, \eta^2 = .10)$ . Post-hoc Bonferroni tests revealed that the pretest performance was significantly lower than the training and the post-test performance (p < .01), but that the training and post-test did not differ significantly from each other. Thus, training appeared to enhance young children's categorization - even after the explicit prompt questions were removed.

## 3.2.2. Event questions during training

During the four training trials, children were asked about the plausibility of the story event prior to categorizing the story character. For example, after hearing about a sailor who had a boat with invisible sails, children were asked "Can someone have invisible sails and ropes that always protect them?" Children received a score of 1 if they appropriately acknowledged the possibility/impossibility of the historical and fictional events, for a total of four points. On average, children performed significantly better than chance in judging the possibility of the story events (M = 2.71, SD = 1.11, t(33) = 3.69, p < .001).

# 3.2.3. Relationship between Event questions and training effectiveness

To determine whether children's performance on the event questions was related to their subsequent performance on the categorization questions, we allocated the 34 children to two subgroups, those answering 3 or 4 Event questions correctly (N = 20) and those answering 0-2questions correctly (N = 14). We then re-ran the repeated measures ANOVA of Training Period (pretest, training, post-test) with Event Question Performance (good: 3-4 correct; poor: 0-2 correct) added as a covariate. Results indicated a significant effect of Training Period  $(F(2, 64) = 3.75, p < .05, \eta^2 = .10)$  and Event Question Performance (*F*(1, 32) = 12.86, *p* < .001,  $\eta^2$  = .29) and a significant Training Period × Event Question Performance interaction (*F*(2, 64) = 4.42, *p* < .05,  $\eta^2$  = .12). This interaction is displayed in Fig. 5. Inspection of Fig. 5 indicates that the training did not significantly affect categorization performance if children performed poorly on the event questions (F(2, 62) = 2.71, n.s.), but it significantly improved performance if children performed well on the event questions (*F*(2, 64) = 5.63, *p* < .01).

We also compared categorization performance to chance (2) for the good and poor performers on the event questions. For the group who scored 0–2 correct on the event questions, categorization did not differ significantly from chance performance on any of the test periods (pretest: M = 1.79, SD = 1.05, t(13) = .76, n.s.; training: M = 1.71, SD = .83, t(13) = 1.30, n.s.; post-test: M = 2.50,



**Fig. 5.** Total number of categorization questions correct (max = 4) by training period (pretest, training, post-test) and performance on the event questions (good: 3–4 correct; poor: 0–2 correct). Error bars represent SE.

SD = 1.16, t(13) = 1.61, n.s.). By contrast, the group who scored 3–4 correct on the event questions significantly differed from chance at the two later training periods (pretest: M = 2.25, SD = .71, t(19) = 1.56, n.s.; training: M = 3.15, SD = .81, t(19) = 6.33, p < .001.; post-test: M = 2.75, SD = .97, t(19) = 3.47, p < .01). Thus, training appeared to have significantly boosted the categorization performance of children who were able to answer the event questions systematically.

## 3.2.4. Justifications

As in Experiment 1, children's justifications were allocated to one of four categories: Impossible (references to the impossibility of the event or character, e.g., "magic isn't real", "she can't drink anything that made her the same age"); Historical/Real (references to the historical or real nature of the event or character, e.g., "he was in the war like John McCain", "he plants fruit"; Visual (references to a visual cue, e.g., "the picture is real"); Uninformative (answers such as 'don't know' or that were unrelated, e.g., "she's doing something different", "just because"). The first and second author (KC and AK) separately coded all responses. Agreement was 96% (Cohen's  $\kappa = .96$ ) and disagreements were resolved through discussion.

Fig. 6a and b displays the percentage of children's pretest responses allocated to each category by story type (Fictional, Historical) for poor performers on the event questions (0–2 questions correct; upper panel) and good performers on the event questions (3–4 questions correct; lower panel). Inspection of Fig. 6a and b indicate that in the pretest, the pattern of justifications mirrors that shown by the younger children in Experiment 1 (see Fig. 4a). Most of the responses (66% for poor performers, 45% for good performers) fell into the uninformative category, indicating that young children did not have a clear idea of how to justify their responses.

For the poor performers, this pattern of justifications did not change after the training period (see Figs. 7a and 8a). Most of their responses continued to fall into the uninformative category (59% in training; 69% in post-test). Moreover, when poor performers did justify their responses, their justifications were not differentiated by story type. By contrast, the pattern of justifications did change after the training period for the good performers. In both the training and post-test periods (Figs. 7b and 8b), their pattern of responses more closely resembles that shown by the older group (see Fig. 4b). The percentage of uninformative responses decreased (to 40% in training and 43% in post-test). When children did give an informative justification, their justification differed based on whether they were categorizing a fictional or historical figure. Categorizations of fictional figures were often followed by an impossible justification (47% of the time in both the training and post-test) but rarely by a Historical/Real justification (10% of the time in training and 13% in post-test). By contrast, categorizations of historical figures were often were followed by a Historical/Real justification (50% of the time in both the training and post-test) but rarely by an impossible justification (8% in training and 5% in the post-test).



**Fig. 6.** Percentage of children's responses to the justification question by Justification Type (*Impossible*, Historical/Real, Visual, DK/Unrelated) and Type of Figure (Fictional, Historical) in the pretest for the (a) poor performers (0–2 on event questions) (b) good performers (3–4 on event questions).

We also examined the distribution among the four coding categories of only those justifications that followed correct categorizations of the story figure. (Thus, justifications that followed incorrect categorizations were set aside.) The distribution of Justification Types by training period was similar to that found in Figs. 6–8. In the posttest, 3- and 4-year-olds focused on the impossible nature of the Fictional stories 47% of the time and the Historical/ Real aspects of the Historical stories 57% of the time. Thus, the training improved younger children's ability to correctly categorize unknown figures, and also to correctly justify their categorizations.

#### 3.3. Discussion

Experiment 2 was designed to answer three questions. First, can young children correctly judge the possibility versus impossibility of story events? Second, having been asked to make such judgments, do they decide the status of the main character in light of that judgment? Third, when such prompts are removed do children continue to judge the status of the story character correctly? The results show that children can indeed make possibility judgments. However, children varied in the extent to which

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**Fig. 7.** Percentage of children's responses to the justification question by Justification Type (Impossible, Historical/Real, Visual, DK/Unrelated) and Type of Figure (Fictional, Historical) in the training for the (a) poor performers (0–2 on event questions) (b) good performers (3–4 on event questions).

they did so systematically. Those who were systematic were successful in making a judgment about the historical or fictional status of the story characters during the training period and continued to do so in the post-test when the prompt to reflect on the nature of the story events was removed. By contrast, those children who were unsystematic at making possibility judgments were also unsystematic in assessing the status of the story characters both during the training period and the post-test.

Analysis of the justifications further consolidated the conclusion that children fell into two groups. Those who were systematic in their possibility judgments often referred to the fantasy nature of the story events if they had judged the character to be pretend and to the historical or real nature of the story events if they had judged the character to be real. By contrast, children who were unsystematic in their possibility judgments offered a similar pattern of justifications, irrespective of the status they had assigned to the main character.

## 4. General discussion

Experiments 1 and 2 explored children's ability to judge historical and fictional figures with whom they were



**Fig. 8.** Percentage of children's responses to the justification question by Justification Type (Impossible, Historical/Real, Visual, DK/Unrelated) and Type of Figure (Fictional, Historical) in the post-test for the (a) poor performers (0–2 on event questions) (b) good performers (3–4 on event questions).

familiar as well as novel figures that they learned about through narratives. We were interested in the age at which young children were able to make a distinction between historical and fictional characters, and if they use narrative events to guide their decisions. The results from Experiments 1 and 2 revealed several main findings. First, young children are able to distinguish between familiar historical and fictional characters. Second, when asked to characterize an unfamiliar character, older children - but not younger children - are able to correctly classify them as real or pretend based on the story premises. Finally, when explicitly prompted to examine the story events, some young children perform similarly to older children in appropriately classifying unfamiliar characters and in justifying their responses. We review these findings and then explore several key issues raised by the data.

Both younger (3–4-year-old) and older (5–7-year-old) children are able to make a distinction between familiar historical and fictional figures, correctly categorizing them at better than chance levels. These data contrast with previous findings suggesting that when thinking about story characters, young children display a reality bias (Applebee, 1978) or, alternatively, a fictional bias (Woolley & Cox,

2007). The superior categorization performance by children as young as 3 years may be due to various experimental modifications. First, in the initial phase of Experiment 1, children were asked to classify only familiar figures. In the studies of both Applebee (1978) and Woolley and Cox (2007), children were not asked whether they were familiar with the character. Hence, they may have been asked to classify some characters with whom they were unfamiliar. The data from Experiments 1 and 2 indicate that younger children perform very differently when asked to classify unfamiliar story characters. They categorize historical and fictional figures at random. Second, the box task may have helped younger children to categorize Familiar Characters. Instead of being asked about particular properties of the character (such as whether it would be possible to visit the character) children were asked to make a judgment about the nature of the character. Had we asked more complicated questions about how these characters might interact with reality, it is possible that preschoolers may have found it difficult to characterize them (e.g., Samuels & Taylor, 1994; Taylor & Howell, 1973; see Skolnick and Bloom (2006) for additional discussion of the fantasy-reality distinction). Third, children were not told the stories with the help of books. Rather, the interviewer simply said: "I am going to tell you a story". In addition, children were shown photographic rather than standard storybook illustrations. Either or both of these presentational changes may have attenuated the fictional bias reported by Woolley and Cox (2007).

Although both younger and older children were successful at categorizing familiar historical and fictional figures, the results from Experiments 1 revealed a developmental progression in children's ability to characterize unknown figures based on story premises. Older children performed above chance in categorizing historical story figures as real and fictional story figures as pretend, whereas younger children did not differ from chance performance on either the fictional or the historical story figures.

The developmental difference between younger and older children's ability to categorize unknown historical and fictional figures was also evident in their open-ended justifications. Whereas the majority of justifications supplied by younger children were uninformative, older children referred to the possibility/impossibility of the story premise. They often justified their decision to place a historical figure in the 'real' box by highlighting the historical or real aspects of the story. By contrast, they often justified placing a fictional figure in the 'pretend' box by highlighting the impossible aspects of the story. These age differences in children's justifications provide further support for the argument that older children judge whether the story events could really happen, and spontaneously use that judgment to decide whether the characters are real or pretend.

Younger children, by contrast, displayed no systematic strategy. Thus, in contrast to previous findings suggesting that younger children have a consistent reality (Applebee, 1978) or fantasy bias (Woolley & Cox, 2007), our results suggest that younger children are not inclined to either bias, at least when they categorize unfamiliar characters. The majority (57%) of younger children in Experiment 1 responded randomly when categorizing both Historical and Fictional figures (i.e., categorized between 2 and 4 correct out of a possible 6). Only a minority of younger children displayed a reality (19%) or a fantasy (24%) bias, categorizing all but two stories in the same manner, regardless of story premise. It is also noteworthy that the younger children failed to supply different justifications for their real versus pretend allocations. Indeed, as noted most of their justifications were uninformative.

When explicitly prompted to examine the story premise in Experiment 2, some young children performed similarly to older children, both in categorizing unknown characters and in justifying their responses. More specifically, if children made systematic possibility judgments their categorization and justification performance resembled that of older children, both during the training phase and in a subsequent post-test phase. Thus, some young children are able to distinguish unknown historical and fictional figures when prompted to reflect on the nature of the story events.

We now turn to several issues raised by these findings. First, we reflect on the success displayed by some younger children in making judgments about the status of the characters. Second, despite children's success in moving from possibility judgments to judgments about the status of the story characters, we re-visit some likely limitations of this heuristic, briefly mentioned in the introduction. Third, we consider the subgroup of younger children who failed to make systematic possibility judgments. Finally, we reflect on the challenges that children face when they encounter religious narratives. Such narratives frequently include a description of ordinarily impossible events but they are not usually presented to young children as fictional narratives.

In considering the effectiveness of the prompt introduced in the training period of Experiment 2, it is worth emphasizing that it was quite indirect. Children were explicitly asked about whether the story events could possibly occur but the experimenter made no explicit suggestion to the children that they should deploy that decision in weighing the status of the main character. Thus, some younger children, notably those who were good at making such possibility judgments, made spontaneous use of that heuristic in Experiment 2. Recall that the older children in Experiment 1 used a similar heuristic as indicated by the pattern of their justifications. By implication, the prompt that the younger children were given in Experiment 2 – namely to reflect on the nature of the story events is a strategy that children come to spontaneously deploy in the course of the preschool years.

As mentioned earlier, despite its effectiveness for deciding the status of many of the narratives that they encounter, this heuristic is likely to lead children into error sometimes. Two errors are feasible. On the one hand, children might judge that a story event is impossible and come to the mistaken conclusion that the story and the main character are fictional. For example, an historical narrative might include rare events that younger children have never contemplated such as a tsunami or an earthquake. On the other hand, children might judge that the events in a fictional narrative are quite ordinary and well within the bounds of possibility. Hence, they might come to the mistaken conclusion that the story and the main character are historical. Future research, in which the apparent likelihood of the central story events is manipulated, should indicate whether children are indeed misled by their own heuristic in these different ways.

Turning to the third issue, why did some of the 3-4year-olds in Experiment 2 perform poorly on the possibility judgments? One explanation is that some children of this age have yet to grasp that certain outcomes are impossible. Certainly, there is a long tradition of research, inspired by Piaget's early writing on children's grasp of causality, that would suggest that children have a very inclusive notion of what is causally possible (Piaget, 1928). In particular, they are inclined to assume that various magical outcomes are plausible. However, subsequent work has not borne out Piaget's claims, neither when they have been directly tested (Huang, 1930;Mead, 1932) nor when they have been re-examined in the light of children's domain specific causal understanding (Wellman & Gelman, 1998). Indeed, preschoolers are generally quite systematic in differentiating between ordinary outcomes and 'impossible' outcomes that could only occur by magic (Johnson & Harris, 1994).

An alternative explanation is that the poor performers in Experiment 2 did not have a generic difficulty in judging the impossible but a more specific, or local difficulty with the particular items used in Experiment 2. It is noteworthy that the impossible outcomes that were examined by Johnson and Harris (1994) involved the violation of deeply held, and widely applicable, causal convictions about the lifelessness of inanimate objects, the permanence of objects, and so forth. For example, children were asked about an inanimate object that spontaneously moved by itself and an object that disappeared instantaneously. Arguably, the outcomes included in Experiment 2 were less obvious violations of deep causal convictions and more difficult to recognize as impossible. For example, when asked if someone can have "invisible sails and ropes that always protect them", preschoolers might decide that sails and ropes lie outside their everyday experience and might well have such special powers. To explore this issue, the four training stories were re-examined to check whether good and poor performers behaved differently across all four stories or diverged only on particular stories. However, we found little difference in good and poor performer's responses to the four stories. Whereas the majority of good performers (75-95%) performed correctly on each of the training stories, the majority of the poor performers (71–50%) were incorrect on each of the training stories. In any case, it is important to note that previous studies have shown that preschoolers are good at realizing that a variety of outcomes are impossible (Schult & Wellman, 1997; Sobel, 2004) including those in story books (Woolley & Cox, 2007).

A third interpretation is that the poor performers in Study 2 misunderstood the thrust of the experimenter's modal questions about the story events. For example, they may have mistakenly thought that they were being asked to decide on the permissibility – rather than the possibility - of the relevant events. This account has the merit of explaining why poor performers tended to perform poorly on all four training stories. Rather than lacking any particular piece of causal knowledge, they may have misinterpreted the nature of the prompt questions and failed to invoke their causal knowledge at all. Further research in which the wording of the prompt question is systematically varied might provide support for this interpretation.

Finally, we may consider children's judgments about religious narratives. Such narratives frequently include miraculous deviations from ordinary causality: water is turned into wine, the seas are parted, and the dead are resurrected. Preschool children, especially older preschoolers, will likely regard such events as extraordinary and impossible. The analysis we have proposed so far implies that they will judge the narratives that contain such events and the characters within them - to be fictional. The limited evidence available, however, suggests that children do not make that judgment. Woolley and Cox (2007) and Vaden and Woolley (submitted for publication) report in line with the findings of Experiments 1 and 2 - that preschoolers make a distinction between regular events that are causally possible and fantastical or miraculous events that are not. However, when they are presented with miraculous events in a narrative - for example, God saving a man from the lions – older preschoolers – notably 5- and 6-year-olds, are inclined to judge that the miraculous events did happen whereas they doubt that fantastical events really happened. By implication, young children do not think of miracles as belonging to a fairy tale world - they connect them to the real world.

If this conclusion is correct, the analysis presented so far requires some modification. In particular, an explanation is needed of why children do not make a simple dichotomous distinction between historical narratives about real events on the one hand and fictional narratives about impossible or fantasy events on the other. Two different lines of explanation appear feasible. First, it is possible that parents, particularly religious parents, frame religious narratives differently from fantasy narratives. Thus, although children, if left to their own devices, would be likely to conclude that religious narratives include events that are impossible, they come to accept the guasi-historical status that their parents confer upon them. An alternative possibility is that parents - especially religious parents - frequently invoke God and his powers. Once children become familiar with the scope of those powers, they draw the broad conclusion that if God is included in a narrative then the constraints imposed by the laws of ordinary causality are suspended. Evidence reported by Woolley and Cox (2007) is consistent with either of these two interpretations. Thus, correlational analyses showed that parental reports of family religiosity were associated with children's claims that the events in the religious narratives could really happen. By contrast, there was no significant correlation between parental reports of family religiosity and children's judgments about events in fantasy narratives or regular narratives. One implication of both of these interpretations is that children who are growing up in predominantly secular or agnostic homes will not display the developmental trend reported by Woolley and Cox (2007).

More specifically, they would regard narratives that include ordinarily impossible events, namely miracles, as fictional rather than factual, consistent with the heuristic identified in Experiments 1 and 2.

In conclusion, the present findings highlight an important direction for future research. Young children assimilate much of their cultural heritage by becoming familiar with a variety of different narratives. However, narratives fall into different genres. To navigate that heritage, children need to be able to recognize which genre they are dealing with. Yet we know very little about how children come to differentiate among narrative genres in the course of development. The present findings offer a first step. They show that older preschoolers have mastered the fundamental distinction between historical and fantasy narratives. They also show that some younger preschoolers can be readily prompted to make that distinction. Further research is needed to assess exactly how children come to situate religious narratives.

## Appendix A. Novel stories presented in Experiment 1

#### A.1. Historical stories

Soldier: This is a very brave soldier named John Diamond. He fought in many battles. He died in Virginia when he was fighting in the Civil War.

Indian: This is a very strong Indian named Chitto. He ate lots of vegetables to take care of his body. But he died in Maryland from the smallpox disease that the European settlers brought to America.

Child: This is a child named Annie Pane. She became a doctor when she grew up. She was born in Washington D.C. on the 4th of July.

Farmer: This is a farmer named Betsy Johnson. She liked to grown corn. She planted seeds on her farm in Pennsylvania, where she lived until she was very old.

Princess: This is a princess named Emily White. She liked to drink tea. She liked to eat and drink in Buckingham palace in England, where she died when she was very old.

Sailor: This is a sailor named Bill Jones. He liked to use his boat to go fishing. Often he would sail his boat from New York to Florida. After he grew old, his son became the sailor of the boat.

## A.2. Fictional stories

Soldier: This is a very fierce soldier named Bill Gold. He fought in many wars. His special sword prevented him from dying in any battle.

Indian: This is a very tough Indian named Alo. He ate lots of fruit to be healthy. He lived forever because of the magic seeds he used to plant his fruits and vegetables.

Child: This is a child named Sara Adams. She became a firefighter when she grew up. She had a secret blanket that protected her from any harm and made her invisible.

Farmer: This is a farmer named Penny Smith. She liked to grown beans. She ate a magical cookie every morning that allowed her to live forever. Princess: This is a princess named Jane Black. She liked to eat cookies. She drank a potion every day that kept her the same age, and she lived happily ever after.

Sailor: This is a sailor named Timmy Brown. He liked to use his boat to travel. He would sail through fierce storms, but the invisible sails and ropes would always protect him.

#### References

- Applebee, A. N. (1978). *The child's concept of story: Ages two to seventeen*. Chicago: The University of Chicago Press.
- Cochrane, C. N. (1929). *Thucydides and the science of history*. Oxford: Oxford University Press.
- Huang, I. (1930). Children's explanations of strange phenomena. *Psychologische Forschung*, 14, 63–183.
- Hume, D. (1742/1987). Essays: Moral, political and literary. Indianapolis, IN: Liberty Fund, Inc.
- Johnson, C. N., & Harris, P. L. (1994). Magic: Special but not excluded. British Journal of Developmental Psychology, 12, 35–51.
- McCloskey, M., Caramazza, A., & Green, B. (1980). Curvilinear motion in the absence of external forces: Naïve beliefs about the motion of objects. *Science*, 210, 1139–1141.
- Mead, M. (1932). An investigation of the thought of primitive children, with special reference to animism. *Journal of the Royal Anthropological Institute*, 62, 173–190.
- Morison, P., & Gardner, H. (1978). Dragons and dinosaurs: The child's capacity to differentiate fantasy from reality. *Child Development*, 3, 642–648.
- Piaget, J. (1928). Children's understanding of causality. British Journal of Psychology, 18, 276–301.
- Samuels, A., & Taylor, M. (1994). Children's ability to distinguish fantasy events from real-life events. British Journal of Developmental Psychology, 12, 417–427.
- Schult, C. A., & Wellman, H. (1997). Explaining human movements and actions: Children's understanding of the limits of psychological explanation. *Cognition*, 62, 291–324.
- Sharon, T., & Woolley, J. D. (2006). Do monsters dream? Young children's understanding of the fantasy/reality distinction. *British Journal of Developmental Psychology*, 22, 293–310.
- Shtulman, A. (2006). Qualitative differences between naive and scientific theories of evolution. Cognitive Psychology, 52, 170–194.
- Shtulman, A., & Carey, S. (2007). Improbable or impossible: How children reason about the possibility of extraordinary events. *Child Development*, 78, 1015–1032.
- Skolnick, D., & Bloom, P. (2006). The intuitive cosmology of fictional worlds. In S. Nichols (Ed.), *The architecture of the imagination: New* essays on pretense, possibility, and fiction. Oxford: Oxford University Press.
- Sobel, D. M. (2004). Exploring the coherence of young children's explanatory abilities: Evidence from generating counterfactuals. *British Journal of Developmental Psychology*, *22*, 37–58.
- Taylor, B., & Howell, R. (1973). The ability of three-, four-, and five-yearold children to distinguish fantasy from reality. *The Journal of Genetic Psychology*, *122*, 315–318.
- Wellman, H. M., & Gelman, S. A. (1998). Knowledge acquisition in foundational domains. In D. Kuhn & R. S. Siegler (Eds.), *Handbook of child psychology: Vol. 2. Cognition, perception and language* (4th ed., pp. 523–574). New York: John Wiley.
- Williams, B. (2002). *Truth and truthfulness*. Princeton, N.J.: Princeton University Press.
- Wiser, M. (1988). The differentiation of heat and temperature: History of science and novice-expert shift. In S. Strauss (Ed.), Ontogeny, phylogeny, and historical development (pp. 28–48). Strauss, Sidney; Westport, CT: Ablex Publishing.
- Vaden, V.C., & Woolley, J. (submitted for publication). Does god make it real? Children's belief in religious stories from the Judeo-Christian tradition. Child Development.
- Woolley, J. D., & Cox, V. (2007). Development of beliefs about storybook reality. Developmental Science, 10, 681–693.
- Woolley, J. D., & Van Reet, J. (2006). Effects of context on judgments concerning the reality status of novel entities. *Child Development*, 77, 1778–1793.