Judgments About Fact and Fiction by Children From Religious and Nonreligious Backgrounds

Kathleen H. Corriveau[a], Eva E. Chen[b], Paul L. Harris[c]

[a]*School of Education, Boston University*
[b]*Division of Social Science, The Hong Kong University of Science and Technology*
[c]*Graduate School of Education, Harvard University*

Abstract

In two studies, 5- and 6-year-old children were questioned about the status of the protagonist embedded in three different types of stories. In realistic stories that only included ordinary events, all children, irrespective of family background and schooling, claimed that the protagonist was a real person. In religious stories that included ordinarily impossible events brought about by divine intervention, claims about the status of the protagonist varied sharply with exposure to religion. Children who went to church or were enrolled in a parochial school, or both, judged the protagonist in religious stories to be a real person, whereas secular children with no such exposure to religion judged the protagonist in religious stories to be fictional. Children's upbringing was also related to their judgment about the protagonist in fantastical stories that included ordinarily impossible events whether brought about by magic (Study 1) or without reference to magic (Study 2). Secular children were more likely than religious children to judge the protagonist in such fantastical stories to be fictional. The results suggest that exposure to religious ideas has a powerful impact on children's differentiation between reality and fiction, not just for religious stories but also for fantastical stories.

Keywords: Religion; Fantasy; Impossibility; Testimony

1. Introduction

Children often learn about people such as Cinderella, Tom Sawyer, George Washington, and Rosa Parks in the context of a narrative. However, these protagonists vary in their status. Cinderella and Tom Sawyer are fictional characters, whereas George Washington and Rosa Parks were real people. When children hear about such protagonists, do they grasp that some are make-believe, whereas others are real?

Correspondence should be sent to Kathleen H. Corriveau, School of Education, Boston University, 2 Silber Way, Room 240, Boston, MA 02215. E-mail: kcorriv@bu.edu

Five- and 6-year olds are able to use one important heuristic in assessing the status of story protagonists (Corriveau, Kim, Schwalen, & Harris, 2009). When hearing a story about an unfamiliar protagonist, they use the nature of the events in the narrative as a clue to the protagonist's status. If the narrative includes magical elements, children are likely to judge that the protagonist is make-believe. By contrast, if the narrative includes only prosaic or plausible events, devoid of any magical component, they are likely to judge the protagonist to be a real person. Admittedly, this heuristic is not completely reliable. Some narratives—the story of Tom Sawyer, for example—include no magical elements, and yet the protagonist is purely fictional. Nevertheless, despite its limitations, the heuristic does enable children to make an important and useful distinction between fictional narratives that include impossible elements—magical outcomes, animals that talk, protagonists with superhuman powers—and historical narratives that include only plausible outcomes and ordinary human beings.

Strong evidence for children's sensitivity to the implausible or magical elements in a narrative emerged in the justifications that children offered after categorizing a given protagonist as fictional or real. Five- and 6-year olds often justified the categorization of a protagonist as pretend by referring to implausible elements of the narrative: "There's no such thing as invisible sails" or "You can't have a sword that protects you from danger every single time."

Moreover, when younger children (i.e., 3- and 4-year olds) were explicitly asked to think about the plausibility of critical components of the story (e.g., "Could someone eat a magic cookie that allowed her to stay the same age forever?") and answered correctly, they typically went on to assess the status of the main protagonist appropriately. In justifying their assessment, they showed the same pattern as their 5- and 6-year-old counterparts (Corriveau et al., 2009).

By implication, even preschoolers know that some story events cannot happen in reality, and when that knowledge is activated via explicit questions, they use it to decide whether a story protagonist is real or pretend.

However, this conclusion leaves an important aspect of children's conception of narrative unanalyzed. In the United States, about 84% of families report a religious affiliation (Pew Forum on Religion, 2008). Such families are likely to take their children to church, or to send them to a parochial school, or both. Conversely, the proportion of children who never go to church and attend a public school is relatively small (about 16%; Pew Forum on Religion, 2008). Thus, the majority of US children are likely—either in the context of church or school, or both—to be presented with religious narratives that include seemingly impossible events brought about by divine intervention (i.e., miracles). For instance, in biblical stories, water is transformed into wine, a few loaves or fishes are multiplied to feed a multitude, and the seas are parted, all with the aid of God. The analysis presented so far implies that on hearing such stories, children would think of them as akin to fairy tales. They would judge the events described in them as implausible or magical and conclude that the protagonists in such narratives are only pretend.

Yet two domains of research suggest that this prediction is likely to be wrong. Young children regard a variety of outcomes as impossible (Johnson & Harris, 1994; Rosengren, Kalish, Hickling, & Gelman, 1994; Sharon & Woolley, 2004; Shtulman, 2009; Shtulman & Carey, 2007; Subbotsky, 1994). Nevertheless, they still regard such outcomes as possible

under special circumstances. Subbotsky (1985) showed 4- to 6-year olds a "magic" box and told them that it could transform pictures into real objects. When left alone with the box, children tried to produce such transformations, and they expressed puzzlement or surprise at their failure when the experimenter returned. Similarly, when presented with a "potion" that allegedly could make objects—or people—travel back in time, children were reluctant to drink it for fear of being overly "rejuvenated" (Subbotsky, 1994). Bering and Parker (2006) told 3- to 9-year olds about Princess Alice, who would help them in a guessing game even though she would remain invisible. Older children were especially likely to treat unexpected events—such as a light suddenly going out—as helpful communications from Princess Alice signaling that their guess was wrong. Thus, in all three studies, when an adult testified that an ordinarily impossible event had taken place, or would take place, children accepted that testimony and acted upon it.

Second, research on children's religious ideas also suggests that they accept adults' claims about ordinarily impossible outcomes. Young children recognize that human beings are prone to false beliefs, especially when they lack full perceptual access to a given situation, but they increasingly accept that God is not subject to such human limitations (Barrett, Richert, & Driesenga, 2001; Giménez-Dasí, Guerrero, & Harris, 2005; Lane, Wellman, & Evans, 2010, 2012; Makris & Pnevmatikos, 2007). They also come to understand that whereas human beings begin life as babies, get older and eventually die, God is not subject to the ordinary human lifecycle: He was never a baby and will not die (Giménez-Dasí et al., 2005). Thus, children acknowledge that God has special powers that human beings lack.

These two sets of findings, one concerning children's ideas about magic and the other concerning their ideas about God, suggest that with appropriate testimony from adults, young children believe that otherwise impossible outcomes can occur. Accordingly, it is plausible to expect that children who grow up in religious households will not treat a religious story as a fairy tale. Instead, they will conceive of the protagonist in such narratives as a real person—even if the narrative includes impossible events.

Two recent studies support this prediction. Woolley and Cox (2007) found that preschoolers increasingly claim that the miracles in religious (i.e., biblically based) storybooks could have really occurred. Moreover, as compared to children from nonreligious families, children from Christian families were especially likely to regard such events as plausible. In a follow-up study, Vaden and Woolley (2011) examined the judgments of 4-, 5-, and 6-year olds about closely matched religious and nonreligious stories. In both story types, ordinarily impossible events occurred (e.g., the parting of the seas), but in the religious stories, there was also a reference to divine intervention. Children were more likely to claim that the story character and the ordinarily impossible event were real in the context of the religious stories than in the context of nonreligious stories. This pattern was more evident among 6-year olds than younger children, more evident for familiar religious stories, and more evident among children with a Christian upbringing. Moreover, when subsequently interviewed about the impossible story events, children acknowledged their impossibility but often invoked God to further explain the story events.

In summary, these two studies provide persuasive evidence that older preschoolers and preschoolers with more religious exposure readily think of Bible stories as accounts of actual

events that include real people. By implication, even if young children differentiate between realistic stories that are shorn of any impossible elements and fictional stories in which the impossible can occur, they can also come to recognize a third story genre—stories that describe miracles, that is, events that are ordinarily impossible but did actually occur.

The families of the children studied by Woolley and her colleagues reported varying degrees of religiosity. However, children with minimal or zero exposure to religious teaching were not identified for separate analysis. This was an important objective of Study 1. We asked how children with no systematic exposure to religion in either church or school would respond to religious stories. As noted earlier, the proportion of such children in the US population is quite small (16%), but they offer an important opportunity to test two competing predictions about children's stance toward the miraculous. The analysis offered by Corriveau et al. (2009) implies that, in the absence of a religious education, children will regard miracles as implausible because they involve ordinarily impossible outcomes. Accordingly, they should conclude that the protagonist in a story that includes a miracle is a fictional character rather than a real person. In that respect, the judgments of such secular children should diverge sharply from these made by children who have received a religious education.

However, theorists studying religious development have emphasized a different possibility. They have proposed that young children have a natural inclination to believe in beings with extraordinary powers. For example, in his book *Born Believers*, Barrett (2012) argues that because children readily see the natural world as designed and purposeful, they are disposed to believe in a powerful God. Indeed, as reviewed earlier, children in a variety of cultures are prepared to attribute special powers to him, such as omniscience. Similarly, reviewing evidence that deaf children with little or no access to human communication nonetheless think about the origins and purpose of human beings, Bering (2011, p. 51) argues in his book *The Belief Instinct* that such thinking reflects "an insuppressible eruption of our innate human minds." Thus, even in the absence of explicit religious instruction about divine miracles, when children listen to a narrative that includes ordinarily impossible events, they might be prone to accept the existence of extraordinary beings who can bring them about. On this view, secular children should not differ radically from religious children in their judgments about biblical stories. In particular, they should accept that a real protagonist might be involved in a miraculous event.

To examine these competing predictions, we compared four groups of children in Study 1. Three of the groups had been exposed to religious teaching, either by attending a parochial school or by going to church with their family, or by doing both. The fourth group attended a nonparochial school and did not attend church with their families. All four groups were presented with three different types of stories: (a) realistic stories that contained no magical elements; (b) religious stories that included miracles brought about by divine intervention; and (c) fantastical stories that included magical elements but no divine intervention.

The analysis offered by Corriveau et al. (2009) predicts that the fourth group—referred to hereafter as secular children—will differ sharply from the other three religious groups by responding to religious stories in the same way as they respond to fantastical stories. However, if young children are naturally inclined to accept the existence of beings with

extraordinary powers, even secular children should respond in the same way as religious children. They should respond to religious stories in the same way as they respond to realistic stories. The inclusion of the three religious groups also permitted us to examine both the separate and joint influence of different sources of religious teaching. Thus, some children were exposed to religious teaching by virtue of belonging to a churchgoing family; others were not churchgoers, but received religious teaching in their parochial school; and finally, the third group of children were exposed to both sources of religious teaching.

2. Study 1

2.1. Method

2.1.1. Participants

A total of sixty-six 5- and 6-year-old children participated (M = 5;8, SD = 6 months, range: 4;11–6;7, 36 female). Participants were recruited from kindergarten classrooms in public schools (n = 32) and parochial schools (n = 34) in Cambridge, MA, and the surrounding area. Most participants were White (61%), although other ethnicities were represented (21% Asian American, 18% African American). Irrespective of whether they attended a public school or a parochial school, children were asked about church attendance. Specifically, after presentation of the final story, children were asked, "Does your family go to services?" Children who said "yes" were categorized as *churchgoers*. Children who said "no" were categorized as *non-churchgoers*. This description of children's religious home life was confirmed through consultation with the kindergarten teachers. The majority of children who said that they did attend services attended Christian services. We excluded the additional few children who said that they attended Jewish Temple (n = 6), because several of the stories used in the study are based on the New Testament (see Appendix A) and therefore would be likely to be less familiar to children who grew up in a Jewish family. For the 32 children who attended public school, 16 children (M = 5;7 years, SD = 5 months, 7 females) were identified as churchgoers. The remaining 16 children (M = 5;8 years, SD = 6 months, 8 females) were identified as non-churchgoers. For the 34 children who attended parochial school, 16 children (M = 5;9, SD = 5 months, 10 females) were identified as churchgoers. The remaining 18 children (M = 5;9, SD = 7 months, 10 females) were identified as non-churchgoers.

In summary, three groups of children had exposure to religion: churchgoers who attended public school; non-churchgoers who attended parochial school; and churchgoers who attended parochial school. A fourth group of children—non-churchgoers attending public school—had no exposure to religion in either church or school.

2.1.2. Procedure

Children were tested individually in a separate room in their school. They received two separate tasks in a fixed order: *Familiar Characters* and *Story-Based Characters*. Each of these tasks is described in more detail.

The experimenter first brought out two boxes: one labeled "real" with an illustration of a teacher standing by a blackboard, and one labeled "pretend" with an illustration of a flamingo painting a picture. The experimenter told the child, "Sometimes we hear stories about people that really happened. For example, you might have heard a story about your mommy or daddy when they were little like you. But sometimes we hear stories about people that are just 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. Some of the people are real—so we would put them in the real box. See, this box says 'real' and there's a picture of a teacher and she's really teaching. Some of the people are just pretend—so we would put them in the pretend box. See, this box says 'pretend' and there's a picture of a flamingo painting. Can flamingoes really paint? No, so this box is for things that are just pretend."

2.1.2.1. Familiar characters: In two practice trials, the experimenter presented children with pictures of Goldilocks and Thomas Edison. Children were told a short narrative about the characters if they said they did not know who they were. Children were then invited to place each picture in one of the two boxes. Feedback was provided following both practice trials.

Next, the experimenter presented children with additional historical and fictional figures drawn from a set of 18 pictures: nine historical figures and nine fictional figures. Previous testing had established that many of these figures were known to kindergarteners. The experimenter presented pictures individually and asked, "Have you heard of _____?" Only pictures with which the child claimed to be familiar were presented for categorization. Thus, if the child was familiar with the picture, the experimenter went on to ask, "Where should we put _____, in the 'real' box, or the 'pretend' box?" Trials were discontinued after children had recognized and categorized one historical and one fictional figure.

2.1.2.2. Story-based characters: Immediately following the last Familiar Characters trial, the experimenter said, "Now I'm going to tell you some stories about some people you've never heard of. Some of them are real, and some of them are pretend. After I finish the story, I'm going to ask you to put the picture in the 'real' or the 'pretend' box, and then I'm going to ask you why you decided to put the picture there."

The experimenter then presented nine characters: three in a realistic story context, three in a religious story context, and three in a fantastical story context. The religious stories were adapted from the Old and New Testaments of the Bible, in which an ordinarily impossible event was brought about via divine intervention. In the fantastical stories, the same Bible stories were modified to exclude any reference to divine intervention, so that the impossible event was effectively presented as magical rather than miraculous. Finally, in the realistic stories, the Bible stories were modified such that the improbable event was made plausible due to human intervention (see Appendix A for the full script of the nine stories in all three contexts). For example, the story of Joseph was told in three different contexts:

Religious
This is Joseph. Joseph was sent to a mean king in a land far away. However, God sent Joseph many dreams warning about terrible storms, and Joseph used those dreams to tell

the king how to protect his kingdom from the storms. The king was so amazed by Joseph and they became friends.

Fantastical
This is Joseph. Joseph was sent to a mean king in a land far away where there were terrible storms. Joseph used his magical powers to see into the future, and told the king how to protect his kingdom from the storms. The king was so amazed by Joseph and they became friends.

Realistic
This is Joseph. Joseph was sent to a mean king in a land far away where there were terrible storms. The king realized that Joseph was very good at looking at clouds and predicting when there would be rain. The king was so amazed by Joseph and they became friends.

Immediately after the experimenter told each story, the child was asked to categorize the story character (*Categorization* question). The experimenter presented the child with a picture of the story character and invited her to place the picture in either the "real" or the "pretend" box. The experimenter then stated which box the child had chosen and invited the child to offer a justification, for example: "You said Joseph goes in the 'real' box. Why do you think he goes in the 'real' box?" (*Justification* question).

The order of presentation of the nine stories was randomized. Additionally, the assignment of the particular story character to one of the three story contexts (Religious, Fantastical, Realistic) was systematically varied across children (all children received three stories in each context). As an example, for a third of the participants, Joseph was a character in a religious story; for another third, he was a character in a fantastical story; and for the remaining third, he was a character in a realistic story.

2.2. Results

We first present the results from the Familiar Characters trials. Next, we describe children's categorization of the Story-Based Characters as a function of story context, and then discuss how they justified their categorizations. To anticipate, all four groups of children categorized familiar historical characters as real and familiar fantasy characters as pretend. However, there was a sharp difference among the groups in their categorization of story-based religious characters. Religious children (i.e., children who were churchgoers and/or attended a parochial school) were more likely than secular children (i.e., children who were non-churchgoers and attended a public school) to categorize these characters as "real."

2.2.1. Familiar characters: Children received one point for correctly categorizing the familiar historical character as "real" and another point for correctly categorizing the familiar fantasy character as "pretend" (maximum = 2 points). Children in all four groups performed significantly above chance in categorizing these familiar figures (Non-churchgoers/public school: $M = 1.81$, $SD = .40$, $t(15) = 8.06$, $p < .001$, $d = 2.03$;

Churchgoers/public school: $M = 1.75$, $SD = .45$, $t(15) = 6.71$, $p < .001$, $d = 1.67$; Non-churchgoers/parochial school: $M = 1.83$, $SD = .38$, $t(17) = 9.22$, $p < .001$, $d = 2.18$; Churchgoers/parochial school: $M = 1.88$, $SD = .34$, $t(15) = 10.25$, $p < .001$, $d = 2.59$.

2.2.2. Story-based characters: For all three types of stories (Realistic, Religious, Fantastical), children received one point whenever they categorized a figure as "real" and zero points whenever they categorized a figure as "pretend." Because children heard three stories of each story type, correct performance would result in high scores (out of 3) for characters in realistic stories and in low scores for characters in fantastical stories. The key experimental question was whether children's categorization of characters in religious stories would vary by group, with religious children judging them to be real more often than secular children.

Table 1 displays the mean proportion of "real" categorizations (out of 3), standard deviations, and comparisons to chance (= 50%) across the three story contexts as a function of church attendance (churchgoers, non-churchgoers) and school (public, parochial). Inspection of Table 1 indicates that all four groups were significantly above chance in categorizing realistic characters as "real." All three groups of religious children were also significantly above chance in categorizing religious characters as "real." However, secular children were significantly below chance in categorizing religious characters as "real" (i.e., they judged them to be pretend). Finally, children were inclined to judge fantastical characters as "pretend," but this tendency was only significant for the two groups of children attending public school—especially those who were non-churchgoers.

To further examine the pattern of categorization a 2 (Church Attendance: Churchgoers, Non-churchgoers) × 2 (School: Public, Parochial) × 3 (Story Context: Realistic, Religious, Fantastical) repeated measures ANOVA for the total number of "real" categorizations (out of 3) was calculated. This analysis revealed a main effect of Story Context, $F(2, 124) = 86.62$, $p < .001$, $\eta^2_p = .58$, School, $F(1, 62) = 33.78$, $p < .001$, $\eta^2_p = .35$, and Church Attendance, $F(1, 62) = 15.88$, $p < .001$, $\eta^2_p = .20$. In addition, the three-way Church Attendance × School × Story Context interaction was significant, $F(2, 124) = 11.13$, $p < .001$, $\eta^2_p = .15$, as well as each of the possible two-way interactions, School × Story Context, $F(2, 124) = 9.51$, $p < .001$, $\eta^2_p = .13$, Church Attendance × Story Context, $F(2,$

Table 1

Proportion categorization as "real" and comparisons to chance of realistic, fantastical, and religious story-based characters by religious status (churchgoers, non-churchgoers) in Study 1

	Realistic	t	Religious	t	Fantastical	t
Public school						
Non-churchgoers	.83 (.21)	6.32***	.06 (.13)	13.02***	.13 (.27)	−5.58***
Churchgoers	.77 (.20)	5.39***	.75 (.26)	3.87**	.33 (.21)	−2.44*
Parochial school						
Non-churchgoers	.89 (.20)	6.21***	.80 (.20)	6.21***	.42 (.30)	1.05
Churchgoers	.88 (.17)	9.00***	.83 (.27)	4.90***	.48 (.32)	.26

Note. *$p < .05$; **$p < .01$; ***$p < .001$.

124) = 13.85, $p < .001$, $\eta^2_p = .18$, and Church Attendance × School Context, $F(1, 62) = 10.26$, $p < .01$, $\eta^2_p = .14$. The 3-way interaction of church attendance, school and story context is displayed in Fig. 1. Inspection of Fig. 1 confirms that all four groups of children categorized realistic characters as "real." For the religious characters, the three groups with any religious exposure categorized religious characters as "real," but non-churchgoers attending public school categorized religious characters as "pretend." Finally, children attending public school, especially non-churchgoers, characterized fantasy characters as "pretend," whereas children attending parochial school were at chance.

To further examine the pattern of categorization, we conducted a separate 2 (Church Attendance: Churchgoers, Non-churchgoers) × 2 (School: Public, Parochial) between-subjects ANOVA for each of the three story contexts.

For the realistic stories, the 2 × 2 ANOVA revealed no main effects and no interaction. This is consistent with inspection of Fig. 1; all children, regardless of school or church attendance correctly categorized story-based realistic characters as "real."

For religious stories, the 2 × 2 ANOVA revealed a main effect of church attendance, $F(1, 62) = 43.48$, $p < .001$, $\eta^2_p = .41$, a main effect of school, $F(1, 62) = 55.31$, $p < .001$, $\eta^2_p = .47$, and a significant Church Attendance × School interaction, $F(1, 62) = 35.05$, $p < .001$, $\eta^2_p = .36$. Inspection of Fig. 1 reveals that children exposed to religion via church attendance or parochial school or both categorized the story-based religious characters as "real." By contrast, non-churchgoers attending public school categorized the story-based religious characters as "pretend."

For fantastical stories, the 2 × 2 ANOVA revealed main effects of church attendance, $F(1, 62) = 4.36$, $p < .05$, $\eta^2_p = .07$, and school, $F(1, 62) = 7.98$, $p < .01$, $\eta^2_p = .11$, but no significant Church Attendance × School interaction. Inspection of Fig. 1 shows that
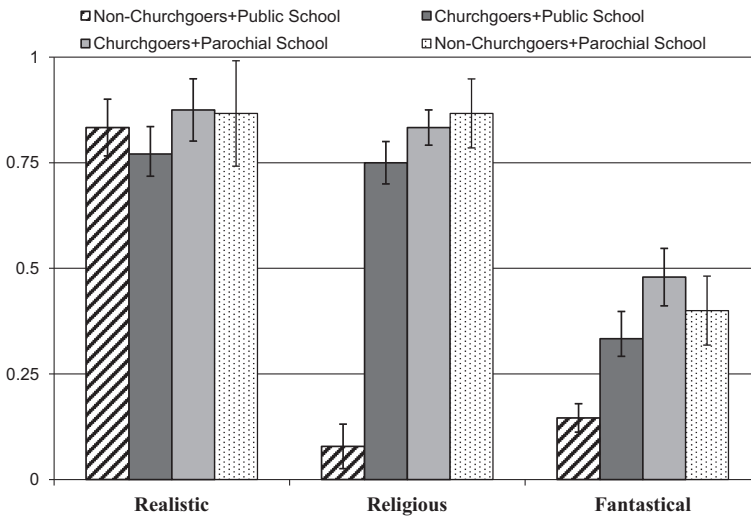

Fig. 1. Proportion of real judgments for realistic, religious, and fantastical stories by child's religious status (churchgoers, non-churchgoers) for the public school students and parochial school students in Study 1.

children attending church and children attending parochial schools were less likely to categorize story-based fantasy characters as "pretend."
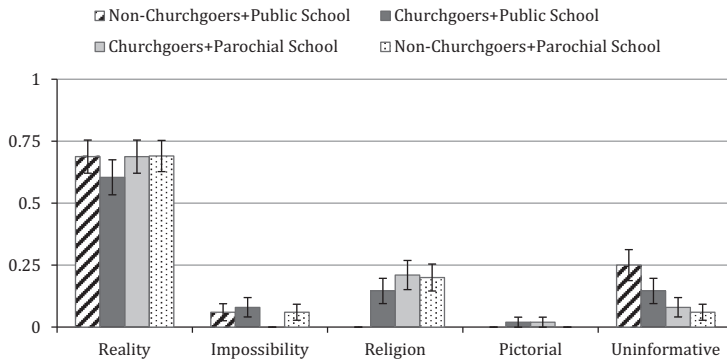
2.2.3. Justifications: Children's justifications were coded as belonging to one of five categories: *Reality* (references to the reality-bound nature of the event or character, e.g., "you can get better from being sick," "whales are real"); *Impossibility* (references to the impossibility of the character or event, e.g., "there's no such thing as a monster," "you can't walk on water"); *Religion* (references to God, miracles, heaven, or other religious figures, e.g., "it could have happened if God helped," "people don't have magic but God does"); *Pictorial* (references to a cue in the picture of the story protagonist, e.g., "he looks like he is real"); and *Uninformative* (answers such as "don't know" or that were unrelated, e.g., "she's doing something different," "just because"). Note that the Religion category included justifications that could be regarded as skeptical, e.g., "I don't think God could come down and tell him something," or faith-based, "Praying to God can help," but there were others in this category that simply referred to religion, e.g., "Because of God." To obviate any need for subtle and potentially questionable coding decisions, we chose to retain all of these justifications in one single category. The first and second authors (KC and EC) separately coded all responses. Agreement was 96% (Cohen's κ = .94) and disagreements were resolved through discussion.

Fig. 2 displays the percentage of children's responses allocated to each of the five coding categories as a function of Church Attendance and School for the realistic stories (Fig. 2a), religious stories (Fig. 2b) and fantastical stories (Fig. 2c). Comparison of the three figures shows that children's primary justifications shifted with story type. Children gave mainly reality-oriented justifications for realistic stories (Fig. 2a), religion-oriented justifications for religious stories (Fig. 2b) and impossibility-oriented justifications for fantastical stories (Fig. 2c). Nevertheless, this overall pattern was moderated by group.

Fig. 2a shows that in the context of realistic stories, all four groups of children mainly justified their categorizations by appealing to reality. However, all three groups of religious children sometimes referred to religion, whereas secular children never did so. Fig. 2b shows that in the context of religious stories, all four groups of children often justified their categorization by appealing to religion. However, secular children (bar with diagonal lines) offered such justifications less often than religious children, especially those attending a parochial school. Finally, Fig. 2c shows that in the context of fantastical stories, all four groups of children often justified their categorization by appealing to the impossibility of the story event. However, secular children did this more often than religious children. In addition, religious children sometimes justified their categorization by appealing to religion, whereas secular children never did so.

To further explore children's religious justifications, we examined how frequently they were used to justify a decision that the character was real or, alternatively, to justify a decision that the character was pretend. Considering first the secular children, recall that they produced religious justifications only for characters embedded in religious stories. Strikingly, in all such cases (24 out of 24 = 100%), children produced these religious justifications to explain their categorization of the story character as pretend.

(a) Realistic

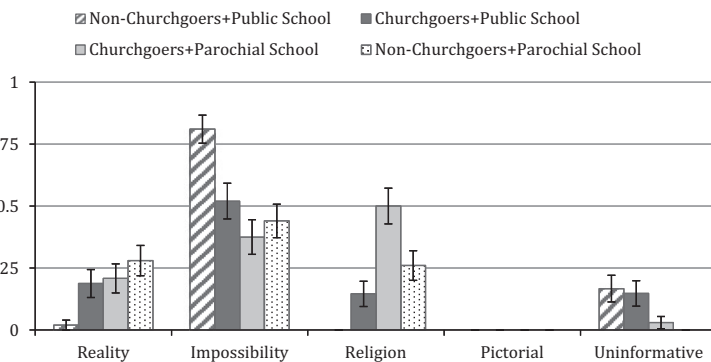**(b)** Religious
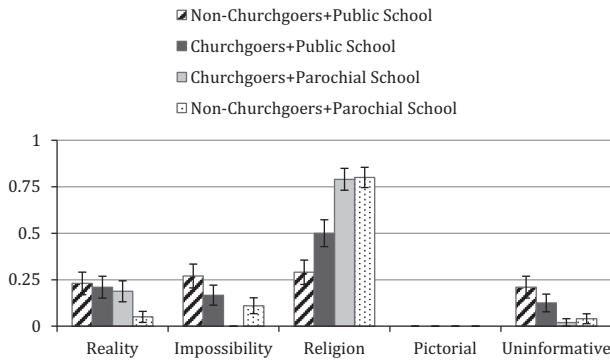
(c) Fantastical

Fig. 2. Proportion of children's responses to the justification question by justification type (reality, impossibility, religion, pictorial, and uninformative), and religious exposure (schooling, church attendance) for each of the three story types: (a) realistic, (b) religious, and (c) fantastical in Study 1.

The pattern for the three groups of religious children was quite different. They appealed to religious justifications across all three story contexts, with such appeals being especially frequent for religious stories. Most of the religious justifications that they produced in the context of religious stories (81%) were produced after they had categorized the character as real. Indeed, religious children displayed a similar stance for the other two story types. Thus, most of the religious justifications they produced in the context of realistic stories (83%) followed a judgment that the character was real. Similarly, many of the religious justifications they produced in the context of fantastical stories (64%) also followed a judgment that the character was real.

2.3. Discussion

Study 1 examined children's judgments about the status of story characters presented in different story contexts: realistic, religious, and fantastical. Based on previous findings indicating that young children are able to use the realistic context of a story to judge the protagonist as "real" (e.g., Corriveau et al., 2009; Vaden & Woolley, 2011), we anticipated that all children would characterize the protagonists in realistic stories as real. The results were fully consistent with this hypothesis. All four groups of children performed significantly above chance in judging story protagonists in a story with realistic content as real, and they frequently justified that categorization by referring to realistic elements of the story.

Our central question concerned children's judgments about the status of story characters in religious stories. Children with exposure to religion—via church attendance, parochial schooling, or both—judged such characters to be real. By contrast, children with no such exposure judged them to be pretend. This sharp discrepancy between children with and without exposure to religion lends no support to the hypothesis that children are "born believers" (Barrett, 2012) with a natural credulity toward extraordinary beings with superhuman powers. Indeed, secular children responded to religious stories in much the same way as they responded to fantastical stories—they judged the protagonist to be pretend.

The difference between the religious and secular children is further highlighted by the pattern of justifications that children offered. Not surprisingly, religious children made more references to religion than did secular children. However, when secular children did offer a religious justification, it was used to justify their categorization of the protagonist as pretend. By contrast, when children with exposure to religion offered a religious justification, it typically followed their categorization of the protagonist as real. Thus, secular and religious children differed sharply in the way that they conceptualized their references to religion. Secular children produced them as a warrant for thinking of the story character as pretend. By contrast, religious children produced them as a warrant for thinking of the story character as real.

Unexpectedly, children's judgments about the protagonists in fantastical stories varied depending on their exposure to religion. Children exposed to religion via church or parochial schooling were less likely to judge such characters as pretend. Note that we did not

find differences in children's judgment of protagonists by type of religious exposure. That is, children who received religious education at school, but did not attend church with their family demonstrated similar judgments as compared to children who attended church with their families, but received a secular education. Moreover, children who received both types of religious exposure (school, home) also demonstrated similar patterns of judgments about story characters. A plausible interpretation of these findings is that regular exposure to religious narratives—from any source—is sufficient to modify children's categorizations of story characters. In future research, it will be appropriate to check this conclusion, for example, by asking whether a more limited exposure (i.e., occasional church attendance or religious instruction) also influences children's categorizations of story characters.

Why was religious exposure related to children's judgments about protagonists not just in religious stories but also in fantastical stories? A plausible explanation is that these children make use of their familiarity with biblical stories in conceptualizing fantastical stories. Study 2 was designed to assess various ways in which that conceptualization process might have occurred.

One possibility is that important elements in the fantastical stories sounded familiar to children with religious exposure. For example, the name of the protagonist (e.g., Joseph) or an ordinarily impossible event (e.g., creating many loaves out of thin air) may have reminded them of biblical stories. To examine the potential effect of such cues, children in Study 2 were presented with stories that included popular contemporary names (e.g., John, Paul) that are encountered in many contexts other than the Bible. In addition, whereas half of the stories included impossible events described in the Bible (e.g., the parting of the seas), the remaining stories included equally impossible events (e.g., the parting of the mountains) not described in the Bible.

A second possibility is that the fantastical stories reminded children of biblical stories because they included an explicit reference to magic. Not recognizing the important theological distinction between miraculous outcomes achieved via divine intervention and magical outcomes with no such intervention, religious children may have mistakenly regarded a reference to magic as a reference to divine intervention and judged the protagonist to be real for that reason. To examine this possibility, half the stories in Study 2 included a reference to magic, whereas half did not.

Finally, Study 2 was also designed to examine a more radical hypothesis. It is possible that religious teaching, especially exposure to miracle stories, leads children to a more generic receptivity toward the impossible, that is, a more wide-ranging acceptance that the impossible can happen in defiance of ordinary causal regularities. On this hypothesis, secular and religious children should differ in judging the status of characters in a range of fantastical stories—even those lacking familiar religious cues or references to magic. Alternatively, if exposure to religion increases children's familiarity only with particular Bible stories but does not modify their general sense of the limits of possibility, religious and secular children alike should view fantastical stories that include impossible but unfamiliar events in a similar fashion, namely as fictional.

3. Study 2

3.1. Method

3.1.1. Participants

Thirty-three 5- and 6-year-old children participated ($M = 5;8$, $SD = 5$ months, range: 5;0–6;5, 15 female). Sixteen children ($M = 5;8$, $SD = 4$ months, range: 5;3–6;2, 9 female) were recruited from kindergarten classrooms in public schools in Cambridge, MA, and the surrounding area and did not regularly attend services. The remaining 17 children ($M = 5;9$, $SD = 5$ months, range: 5;0–6;9, 10 female) were recruited from kindergarten classrooms in parochial schools in Cambridge, MA, and the surrounding area. These children all identified as Catholic and regularly attended services with their families. As in Study 1, these identifications were confirmed through consultation with the child's kindergarten teacher. Most participants were White (88%), although other ethnicities were represented (9% East Asian, 3% Southeast Asian). Thus, the "secular" children had no exposure to religion in either church or school, whereas the "religious" children had exposure to religion in both church and school. Note that we focused on these two groups of children to maximize the likelihood of finding a difference between the two groups, either because of exposure to religion via school, or church, or both.

3.1.2. Procedure

Children were tested individually in a separate room in their school. They received two separate tasks in a fixed order: *Familiar Characters* and *Story-Based Characters*. The Familiar Characters task was identical to that used in Study 1, except that children were required to categorize six familiar characters (three historical and three fantasy) to ensure that they adequately understood the categorization procedure (as in Corriveau et al., 2009). The Story-Based Characters task is described in more detail below.

3.1.2.1. Story-based characters: Immediately following the last Familiar Characters trial, the experimenter said, "Now I'm going to tell you some stories about some people you've never heard of. After I finish the story, I'm going to ask you to put the picture in the 'real' or the 'pretend' box, and then I'm going to ask you why you decided to put the picture there."

The experimenter then presented eight story-based characters. As in Study 1, all of the characters were adapted from the Old and New Testaments of the Bible, but all were presented in the fantasy context only and with a name that was not tied to the biblical story (for example, in the story of the parting of the Red Sea, Moses was called John). The 8 stories were modified to exclude any reference to divine intervention, so that the impossible event was presented as violating ordinary causal principles but not as a miracle. Nevertheless, in half of the stories, the causal violation was the familiar violation from the Bible story (e.g., the parting of the sea). In the remaining half of the stories, the causal violation was comparable in terms of its causal implausibility, but it was

unfamiliar (e.g., the parting of a mountain). In addition, for half of the stories, the word "magic" was explicitly used. In the remaining half, the word "magic" was not used. This resulted in four within-subjects story conditions. For example, the four variants of the Moses/John story were as follows:

Familiar+Magic
This is John. John led his people when they were escaping from their enemies. When they reached the sea John waved his magic stick. The sea separated into two parts, and John and his people escaped through the pathway in the middle.

Familiar+No Magic
This is John. John led his people when they were escaping from their enemies. When they reached the sea John waved his stick. The sea separated into two parts, and John and his people escaped through the pathway in the middle.

Unfamiliar+Magic
This is John. John led his people when they were escaping from their enemies. When they reached the mountain John waved his magic stick. The mountain separated into two parts, and John and his people escaped through the pathway in the middle.

Unfamiliar+No Magic
This is John. John led his people when they were escaping from their enemies. When they reached the mountain John waved his stick. The mountain separated into two parts, and John and his people escaped through the pathway in the middle.

Immediately after the experimenter told each story, the child was asked to categorize the story character (*Categorization* question). The experimenter presented the child with a picture of the story character and invited her to place the picture in either the "real" or the "pretend" box. The experimenter then stated which box the child had chosen and invited the child to offer a justification, for example: "You said Joseph goes in the 'real' box. Why do you think he goes in the 'real' box?" (*Justification* question).

Children were presented with four blocks of stories, one for each story condition. Within each block, the two stories were presented in a random order. In addition, the order of the four blocks was systematically varied across children. Thus, half the children received four familiar stories followed by four unfamiliar stories and half received the reverse order. In addition, within each half, the order of the magic versus no magic blocks was systematically varied across children. Additionally, the assignment of a particular story character to one of the four story conditions (Familiar+Magic, Familiar+No Magic, Unfamiliar+Magic, Unfamiliar+No Magic) was systematically varied across children (all children received two stories in each of the four story conditions). Thus, for a quarter of the participants, John was presented in a familiar context with magic; for another quarter, he was presented in a familiar context without magic; for the third quarter, he was presented in an unfamiliar context with magic; and for the remaining quarter, he was presented in an unfamiliar context without magic.

3.2. Results

We first present the results from the Familiar Characters trials. Next, we describe children's categorization of the Story-Based Characters as a function of story context, and then discuss how they justified their categorizations. To anticipate, both groups of children accurately categorized Familiar characters. However, there was a difference between the two groups in their categorization of Story-Based characters. Religious children were more likely than secular children to categorize these characters as "real."

3.2.1 Familiar characters: Children received one point each for correctly categorizing the three familiar historical characters as "real" and the three familiar fantasy character as "pretend" (maximum = 6 points). Both religious and secular children performed significantly above 50% chance (Religious: $M = 5.88$, $SD = .33$, $t(16) = 35.78$, $p < .001$, $d = 8.72$; Secular: $M = 5.75$, $SD = .45$, $t(15) = 24.59$, $p < .001$, $d = 6.11$).

3.2.2 Story-based characters: For all four types of fantasy stories (Familiar+Magic, Familiar+No Magic, Unfamiliar+Magic, Unfamiliar+No Magic), children received one point whenever they categorized a figure as "real" and zero points whenever they categorized a figure as "pretend." Because children heard two stories for each condition, a tendency to think of the characters as real people would result in high scores (out of 2) across all conditions.

Table 2 displays the mean proportion of "real" categorizations (out of 2), standard deviations, and comparisons to chance (= 50%) across the four story contexts for the two groups. Inspection of Table 2 indicates that secular children were significantly below chance in categorizing all sets of story characters as "real"; in other words, they

Table 2
Proportion categorization as "real" (standard deviation) and comparisons to chance of story characters by religious status (religious, secular) and story context (Familiar+Magic, Familiar+No Magic, Unfamiliar+Magic, Unfamiliar+No Magic) in Study 2

	Religious	t	Secular	t
Condition				
Familiar+Magic	.44 (.30)	.81	.16 (.24)	−5.75***
Familiar+No Magic	.61 (.37)	1.28	.09 (.20)	−8.06***
Unfamiliar+ Magic	.38 (.38)	1.29	.09 (.20)	−8.06***
Unfamiliar+No Magic	.59 (.26)	1.37	.31 (.31)	−2.42*
Total Categorization				
Total Magic	.41 (.25)	1.46	.13 (.18)	−8.22***
Total No Magic	.59 (.26)	1.37	.20 (.21)	−5.69***
Total Familiar	.53 (.17)	.70	.13 (.16)	−9.49***
Total Unfamiliar	.47 (.21)	.56	.20 (.21)	−5.69***
All stories	.50 (.17)	0	.16 (.15)	−8.99***

Note. *$p < .05$; ***$p < .001$.

systematically treated the characters as "pretend." By contrast, religious children performed at chance across all 4 story contexts.

To further explore the pattern of categorization, a 2 (Group: Religious, Secular) × 2 (Story Familiarity: Familiar, Unfamiliar) × 2 (Magic: Magic, No Magic) repeated measures ANOVA for the total number of "real" categorizations (out of 2) was calculated. This analysis revealed a main effect of group, $F(1, 31) = 42.48$, $p < .001$, $\eta^2_p = .58$, and a main effect of magic, $F(1, 31) = 6.11$, $p < .05$, $\eta^2_p = .17$. No other main effects or interactions were found. Overall, religious children were more likely to categorize the story characters as real ($M = 4.11$, $SD = 1.22$) than secular children ($M = 1.31$, $SD = 1.19$). Regardless of religious exposure, children judged characters in stories with the word "magic" as less likely to be real than characters in stories without the word "magic" (magic: $M = 1.09$, $SD = 1.09$; no magic: $M = 1.67$, $SD = 1.21$).

Finally, to further check on whether familiarity influenced children's judgments we re-conducted the above ANOVA including a between-subjects effect of order (first four stories familiar, second four stories familiar). This analysis confirmed the main effect of group, $F(1, 29) = 49.29$, $p < .001$, $\eta^2_p = .63$, and the main effect of magic, $F(1, 29) = 5.68$, $p < .05$, $\eta^2_p = .16$. However, no main effect of order and no interactions were found. Thus, whether children received the four familiar stories first or not made no difference to their judgments.

3.2.3 Justifications: As in Study 1, children's justifications were coded as belonging to one of five categories: *Reality*; *Impossibility*; *Religion*; *Pictorial*; and *Uninformative*. The first and second authors (KC and EC) separately coded all responses. Agreement was 94% (Cohen's κ = .91) and disagreements were resolved through discussion.

Fig. 3a–d displays the percentage of justifications by secular and religious children that were allocated to each category for each of the four story contexts. Inspection of each figure shows that, consistent with their categorization of the story characters as pretend, secular children (bars with diagonal lines) mainly appealed to the impossibility rather than the reality of the story event, whereas this bias is attenuated, and even reversed, among religious children (gray bars). In addition, for both groups of children, the focus on impossibility is more evident for stories that included a reference to magic (Fig. 3a and c) as compared to stories that did not (Fig. 3b and d). This is consistent with children's categorization in that references to magic reduced the number of "real" categorizations. Finally, religious children very rarely appealed to religion to justify their responses. This is in contrast to the findings from Study 1, where they appealed to religion for both fantastical and religious stories.

3.3. Discussion

In Study 2, we asked how secular and religious children would respond to fantastical stories in which the impossible event (a) was or was not taken from the Bible and (b) did or did not include a reference to magic. Across all four story types, secular children were more likely than religious children to categorize the protagonist as pretend. This pattern
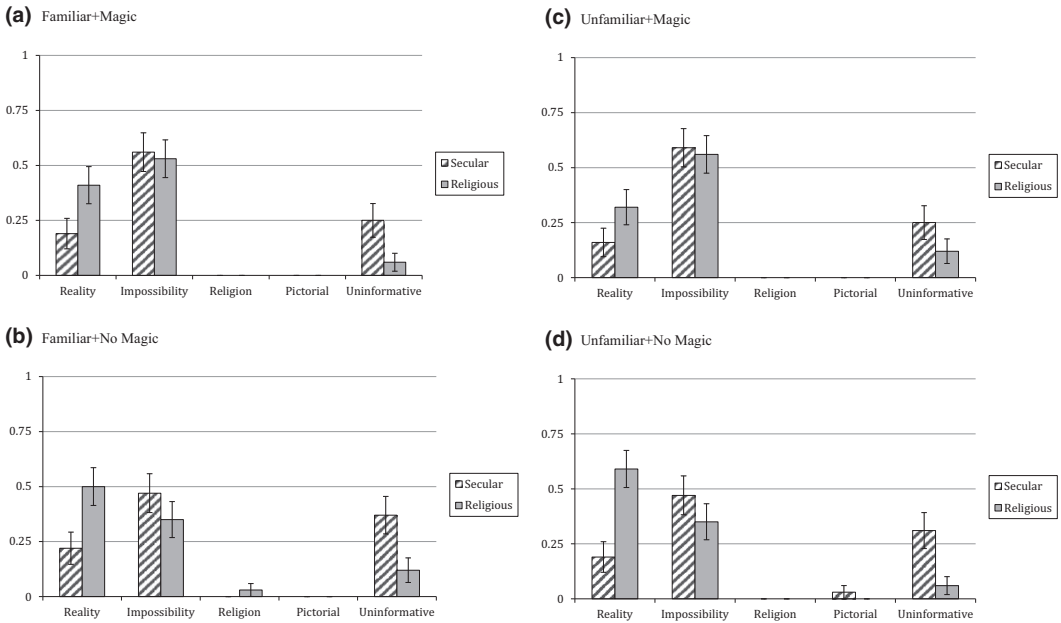
Fig. 3. Proportion of children's responses to the justification question by justification type (Reality, Impossibility, Religion, Pictorial and Uninformative) and religious exposure (Secular, Religious) for each of the four story types: (a) Familiar+Magic, (b) Familiar+No Magic, (c) Unfamiliar+Magic, and (d) Unfamiliar+No Magic in Study 2.

of results undermines the hypothesis that religious children associate fantastical stories with familiar Bible stories. That is, if familiarity with particular biblical stories were critical for religious children's judgments of fantastical stories, then the difference between secular and religious children ought to have been greater for stories that included familiar events from the Bible compared to those that contained only unfamiliar, albeit equally impossible events. Indeed, consistent with the goal of presenting children with stories that never included any explicit reference to God and would be less likely to remind them of familiar Bible stories, it is important to note that there were almost no religious justifications in Study 2, even by the religious children. The results also undermine the hypothesis that religious children take a reference to magic to be an indirect reference to a miracle. In fact, religious as well as secular children were *more* likely, not less likely, to judge the story protagonist as pretend if the story included a reference to magic.

The stable difference between secular and religious children across all four story types lends support to the more radical hypothesis. The presence versus absence of a religious education is associated with children's conviction that ordinarily impossible events can or cannot occur in a realistic story. Thus, secular children, who had no exposure to such an education, systematically concluded that the protagonist in fantastical stories is pretend and justified that decision by reference to the impossibility of the story events. By contrast, children who had been exposed to religion via church or parochial schooling did

not systematically conclude that the protagonist was pretend, and made fewer appeals to the impossibility of the story events.

4. General discussion

Taken together, the two studies reveal important similarities across children in their ability to differentiate among familiar characters and in their judgments about realistic stories. At the same time, the two studies reveal striking differences between secular and religious children in their judgments about religious as well as fantastical stories. We review these similarities and differences before considering explanations and implications.

Irrespective of the type of school they were attending (public vs. parochial) and irrespective of their families' church attendance (churchgoers vs. non-churchgoers), all children appropriately classified familiar characters who were known to them as either real or pretend. For example, children who claimed to have heard of George Washington and Snow White correctly categorized the former as a real person and the latter as a fictional character. These results are consistent with the earlier findings of Corriveau et al. (2009). Children's systematic categorization of these familiar characters shows that they understood the instructions and the difference between the two categories. Despite differences in schooling and church attendance, young children understand that the various characters about which they have heard differ in status: Some are real, but some are make-believe.

The findings for story-based characters revealed a further pattern of judgment that was stable across all four groups of children in Study 1. When introduced to a character via a realistic story (realistic in the sense that none of the story events violated everyday causal constraints), children systematically categorized the character as real. Moreover, when justifying their categorization, they appealed to the reality-bound nature of the story events. These findings indicate, like those reported by Corriveau et al. (2009), that children realize that stories involving real people typically include events that could actually happen.

The findings for the other two types of story-based characters—those embedded in religious and fantastical stories—varied sharply across children. Secular children growing up in non-churchgoing families and attending a public school responded very differently from religious children growing up with exposure to religious teaching (either by attending a parochial school or by attending church with their family, or both).

Considering first the characters embedded in religious stories, secular children categorized these characters as pretend. Very few categorized them as real and of those that did, none made any reference to God. Indeed, whenever these secular children did refer to religion—which they sometimes did in the context of the religious stories—it was to justify a decision that the character was pretend. By contrast, the other three groups of children systematically judged the characters in the religious stories to be real. Moreover, inspection of Fig. 2 also shows that all three groups of religious children often made an appeal to religion in the case of Study 1. In other words, although the characters in the religious stories were implicated in ordinarily impossible events, namely miracles, all

three religious groups invoked God as a justification for categorizing those figures as real, whereas their secular peers invoked God as a justification for categorizing those figures as pretend.

Finally, in both studies, secular children systematically categorized the characters embedded in fantastical stories as pretend, and most of their justifications referred to the impossibility of a central event in the story. Effectively, secular children responded to these stories just as they might respond to a fairy story—they inferred that the central characters were fictional because they were involved in an event that is ordinarily impossible in reality. The pattern of responding for children exposed to religion was different. In both studies, they were less likely to judge the characters in the fantastical stories as pretend, and in line with this equivocation, they made more appeals to reality and fewer appeals to impossibility than did secular children.

To summarize, despite important parallels between the story judgments of the secular and religious children, we also see a divergence—not just in their responses to the religious stories—but also in their responses to the fantastical stories. The secular children responded to the fantastical stories just as they might respond to a fairy story, whereas this stance was muted among the three religious groups. They were less systematic in their categorizations, less likely to invoke the impossibility of the story event, and more likely to appeal to reality.

How can we explain both the parallel and divergent patterns in children's responses? Five- and 6-year olds' systematic recognition of certain familiar characters as real and other familiar characters as pretend confirms that they grasp the fundamental distinction between real and fictional people. This differentiation is likely rooted in a broader differentiation that children meet repeatedly in the course of everyday conversation (Harris & Koenig, 2006). On the one hand, children are likely to hear narratives about family members as well as public figures, including those that they may never meet (e.g., distant family members, deceased grandparents, and community leaders). To the extent that these people are woven into realistic narratives, including narratives that connect to aspects of the child's everyday life (e.g., the place where the child's family now lives; existing institutions; and current events), children will become familiar with the idea that narratives can include real people whom one may never meet. However, children will also hear fictional stories that have a different status. When presented to young children, such stories will often include genre markers (e.g., "Once upon a time...", "And they all lived happily ever after"), special beings (e.g., giants, fairies, talking animals), but they will not ordinarily include any link to the child's everyday life. For example, the characters and the challenges they face will have no obvious causal connection to the place or community in which the child lives.

We also assume that young children differentiate between what possible and what is impossible in a variety of domains (Shtulman, 2009; Shtulman & Carey, 2007). For example, children come to understand stable regularities concerning: (a) inanimate physical objects, for example, that physical objects retain their identities over time and that one solid object cannot pass through another (Johnson & Harris, 1994); (b) biological organisms, for example, that biological organisms can grow in size over time but not

shrink (Rosengren et al., 1994) or get older over time but not younger (Subbotsky, 1994); and (c) mental processes, for example, that seeing an object requires an unobstructed line-of-sight (Flavell, Everett, Croft, & Flavell, 1981) or that thinking typically involves a single, unstoppable stream of thoughts (Flavell, Green, & Flavell, 1993). Children's conceptualization of the physical, biological, and mental domains should enable them to identify some of the outcomes and transformations they encounter in narratives as impossible, and to differentiate between what can happen in real life and what can happen in a fairy tale. Consistent with that claim, preschoolers grasp that otherwise impossible transformations (passing through a solid barrier or traveling back in time) can occur in a fairy tale (Subbotsky, 1994) but not in real life. In addition, 5- to 6-year-old children, as reported by Corriveau et al. (2009) and as found in the present study, systematically categorize protagonists in realistic stories as real but are less likely to do so for fantastical stories.

Despite this wide-ranging distinction between factual and fictional narratives, it is likely that community beliefs and practices are related to children's understanding of what causal powers can actually affect ordinary events and, hence, what can be deemed a factual narrative. As a result, children may vary in the way that they demarcate the boundary between the factual and the fictional. Children growing up in a Christian community will encounter many contexts in which the actions and utterances of adults presuppose the existence of a God with extraordinary powers. Many young children in the United States and Europe not only believe in the existence of God (Harris, Pasquini, Duke, Asscher, & Pons, 2006), they also accept that God has special powers to do the following: answer prayers (Bamford & Lagattuta, 2010; Woolley & Phelps, 2001); create species *ex nihilo* (Evans, 2001); live forever (Giménez-Dasí et al., 2005); gain knowledge in an extraordinary fashion (Barrett et al., 2001; Giménez-Dasí et al., 2005; Lane et al., 2010, 2012); and ensure an afterlife (Harris, 2011; Harris & Giménez, 2005). To the extent that children accept that God has such superhuman powers, they are likely to regard stories describing the exercise of those powers as realistic rather than fantastical—as confirmed by the present results. Thus, religious children are likely to see God as connected to their everyday lives and are prepared to view religious stories containing miracles as similar to realistic stories. They judge the characters in those stories to be real, and they frequently appeal to God in justifying those categorizations. Thus, for these children, God is part of the real world and stories that refer to God can properly be regarded as realistic.

By contrast, secular children displayed little recognition of God's special powers. When presented with religious stories that included ordinarily impossible events, they categorized the protagonists as pretend. Moreover, they rarely referred to religion in their justifications. Secular children offered no justifications referring to religion for the realistic and fantastical stories. Even for the religious stories, only a minority of their justifications (26%) referred to religion, and in all of these latter justifications, they referred to religion to justify their categorization of the central character as pretend rather than as real. They adopted a dichotomous and essentially secular view of narratives and their characters, thinking of them as either fictional or factual. Contrary to what might be

expected if children were "born believers" (Barrett, 2012) or possessed a "belief instinct" (Bering, 2011), they treated stories of the miraculous as akin to fairy stories. Indeed, some secular children displayed an attitude of active skepticism toward religion. They referred to God to justify their categorization of a story protagonist as pretend.

Before discussing the differences between the religious and secular children any further, it is appropriate to consider two important methodological concerns. First, recall that children were asked whether or not they attended church with their families, and that children's replies were checked by consulting their kindergarten teachers. Because children's parents were not directly consulted, it is possible that some children were misclassified. However, such misclassifications would have served to attenuate the observed differences between religious and secular children. Thus, to the extent that consistent differences emerged between the two sets of children in both Studies 1 and 2, it is reasonable to conclude that those differences are robust. A second concern is that even if the group differences observed in both studies are correlated with differential exposure to religion, other family factors may have been as important if not more important in bringing about the observed differences. Indeed, short of conducting an experimental study in which children are randomly allocated to varying amounts of religious instruction, and then tested for their story judgments, it is difficult to rule out such a family-based, selection bias. It is worth noting, however, that the particular groups that were investigated, especially in Study 1, reduce the likelihood that nonreligious factors play a crucial role. Recall that children who were in public school but went to church with their families and children who were in a parochial school but did not go to church with their families were quite similar to one another and in each case different from secular children in their mode of responding. At the very least, this pattern of results suggests that even if exposure to religion is not a critical factor per se then family attitudes and practices that permit or prevent exposure to religion (be it in church or in school) are likely to be influential.

Why did secular and religious children also diverge on the fantastical stories of Study 1? Recall that three different explanations were considered in the design of Study 2. Religious children might have assimilated fantastical stories to Bible stories, and think of the protagonist as real (a) because the particular protagonist (e.g., Moses) or the particular event (e.g., the parting of the seas) sounded familiar; (b) because the stories included an explicit reference to 'magic'; or (c) because, religious children have a broader conception of what events can actually happen. No support emerged in Study 2 for the first two explanations. Even when the fantastical stories included names that are frequently encountered in nonreligious contexts as well as impossible events that do not appear in the Bible, secular and religious children still judged the stories differently. In addition, both groups of children were *less* rather than more inclined to categorize the protagonist as real when the story included an explicit reference to magic. The findings are, however, consistent with the third explanation, namely that religious children have a broader conception of what can actually happen. Scrutiny of children's justifications lends support to this conclusion. For all four story types, secular children made more references to impossibility than to reality, whereas this bias was attenuated among religious children; and for

stories with no reference to magic, it was even reversed: Religious children made more references to reality than impossibility (see Fig. 3b and d).

How exactly do religious children come to have a broader conception of what can actually happen than secular children? On the one hand, exposure to religious teaching might encourage children to entertain the idea that some agents are endowed with a special or superhuman power that can override ordinary causal regularities. This extraordinary power might be best exemplified by God, but it might extend beyond God to a variety of other agents, including those encountered in narratives. On this hypothesis, even if children have no natural inclination to believe in divine or superhuman agency, religious instruction can readily lead them to do so. An alternative possibility is that children are disposed to credulity unless they are taught otherwise by their families. Thus, secular children are schooled in the idea that natural laws preclude any kind of miraculous or magical outcome. For example, their parents might cast doubt on any invocation of non-natural powers. According to this interpretation, secular children would likely differ from religious children in thinking about what can happen even when no agent, divine or otherwise, is present. More specifically, on this second hypothesis, secular children would be more confident than religious children that certain outcomes are impossible, simply because they violate the laws of nature, irrespective of the presence or absence of any particular agent.

It is too early to adjudicate firmly between these two hypotheses, and indeed both might have some validity. Nevertheless, recent findings lend more support to the first hypothesis than the second. When asked to say what events could or could not occur in real life, children from 4 to 8 years of age as well as adults differentiate sharply between ordinary events (e.g., eating an apple) and impossible events (e.g., walking on water; Shtulman & Carey, 2007). Moreover, this differentiation is observed whether the events fall into the physical, biological, or psychological domain (Shtulman, 2009). Given this early emerging, widespread and stable tendency to judge a variety of events in different domains as impossible, it is reasonable to think of children as adopting a default stance of doubt toward violations of ordinary causality. In other words, it is more plausible that a religious upbringing overcomes children's pre-existing doubts about whether ordinarily impossible events can occur than that a secular upbringing suppresses children's natural inclination toward credulity.

One other notable finding reported by Shtulman warrants discussion (Shtulman & Carey, 2007; Shtulman, 2009). There is a marked change in the way that children judge events that are improbable but not impossible (e.g., finding an alligator under the bed). Younger children often mistakenly judge that these events are impossible, but this tendency declines in an approximately linear fashion with age, being virtually absent among adults. It is unlikely that this developmental change for improbable events can be directly linked to the differences between religious and secular children. The biblical stories that we used as a basis for the stories in Studies 1 and 2 involved miracles, and miracles, virtually by definition (Hume, 1748/1902), involve the violation of natural laws. Thus, using the criteria of Shtulman and Carey (2007) these story events fall into the category of impossible events and, as noted, there was agreement across participants of all

ages that such events cannot occur. Nevertheless, Shtulman and Carey (2007) propose a mental strategy that may be pertinent. They argue that the increasing tendency to accept that an improbable event can occur may be due to older participants' greater inclination to imagine circumstances in which an intuitively unlikely event could happen. It is possible that religious instruction helps children to engage in such imaginative reflection with respect to impossible events as well. Thus, it prompts them to think about ways an otherwise impossible event could happen even if their immediate intuition is that it could not.

Finally, we may consider ways in which our findings reinforce and also differ from those reported by Woolley and Cox (2007) as well as Vaden and Woolley (2011). With respect to the religious stories, the results of Studies 1 corroborate and extend their conclusions. By 6 years of age, children are likely to regard the protagonist in stories that include miraculous events as a real person rather than a fictional character. That tendency is associated with a religious upbringing, be it in the context of the family, the school, or both. However, the present results also go beyond those earlier studies in showing that such a tendency is markedly absent among children with a predominantly secular upbringing. As noted, they judged the protagonist in religious stories to be pretend rather than real. Moreover, even though they sometimes invoked religion to justify their categorization, it was always to justify their claim that the protagonist was fictional—unlike the appeals to religion made by the three religious groups. Thus, taken together, these recent findings from different laboratories converge in demonstrating that young children's stance toward the miraculous is malleable. Depending on their upbringing, 5- and 6-year olds are disposed to the type of credulity emphasized by Bering (2011) and Barrett (2012), but equally, in the absence of a religious education via school or church attendance, they are disposed to skepticism: They think of Bible stories as fictional.

In one important respect, our findings diverge from those of Vaden and Woolley (2011). They found that when children were presented with nonreligious stories, that is, stories that were matched to religious stories in that they included an impossible event but were stripped of any reference to divine intervention, children typically thought of the impossible event and the protagonist as fictional rather than real. Moreover, there was no evidence that children's judgments about these nonreligious stories were influenced by their religious background. Our findings for fantastical stories in both Studies 1 and 2 displayed a different pattern. Although secular children treated them as fictional, this stance was significantly less frequent among religious children.

One plausible explanation of this divergence concerns the mix of stories that children received. Vaden and Woolley (2011) adopted a between-subjects design in which children made judgments about either religious stories or nonreligious stories but not both. This between-subjects design might have ensured that children treated the two sets of stories quite differently—the religious stories as more familiar Bible stories describing a real person and a real event and the nonreligious stories as unfamiliar and fantastical stories describing a fictional person and an impossible event. By contrast, in Study 1, children received a mix of realistic, religious, and fantastical stories. In Study 2, they received a mix of fantastical stories, some based quite closely on impossible events described in the Bible (albeit with no reference to any divine intervention) and some based on similarly

impossible events not found in the Bible. This within-subjects design might have encouraged the religious children to transfer the credulous stance that they typically adopt toward impossible events described in the Bible to equally impossible events not found in the Bible. However, analysis of Study 2 failed to reveal any such effect of order. More specifically, there was no indication that the religious children were more inclined to treat the protagonist in unfamiliar stories as real, if they had first received the four familiar stories. Indeed, in Study 2, even the religious children rarely gave religious justifications.

Nevertheless, for the time being the pattern of findings points to the plausible conclusion that religious children approach unfamiliar, fantastical stories flexibly. They approach them with either a religious stance—they think of the story as akin to a Bible story and they judge that the character and the events are real; or they approach them with a nonreligious stance—they think of the story as nonreligious and judge that the character and the events are fictional. Such flexibility has been well established in other domains. For example, children and adults can be prompted to conceptualize a death in either secular or religious terms (Legare, Evans, Rosengren, & Harris, 2012).

To conclude, the current set of studies add to an important body of recent research examining children's conception of different narrative genres. The findings show that the way that children differentiate among genres varies markedly depending on whether they have had a predominantly secular upbringing or religious or exposure to religion, through their family, their school or both. By implication, the environment in which children are raised has an important influence on the way they process and categorize the narratives that they encounter.

References

Bamford, C., & Lagattuta, K. H. (2010). A new look at mind and emotion: Children's understanding of prayer. *Developmental Psychology*, *46*, 78–92. doi: http://dx.doi.org.eproxy1.lib.hku.hk/10.1037/a0016694

Barrett, J. L. (2012). *Born believers*. New York: Free Press.

Barrett, J. L., Richert, R. A., & Driesenga, A. (2001). God's beliefs versus mother's: The development of non-human agent concepts. *Child Development*, *72*, 50–65. doi: http://dx.doi.org.eproxy1.lib.hku.hk/10.1111/1467-8624.00265

Bering, J. M. (2011). *The belief instinct*. New Work: W.W. Norton & Company.

Bering, J. M., & Parker, B. D. (2006). Children's attributions of intentions to an invisible agent. *Developmental Psychology*, *42*, 253–262. doi: http://dx.doi.org.eproxy1.lib.hku.hk/10.1037/0012-1649.42.2.253

Corriveau, K. H., Kim, A. L., Schwalen, C., & Harris, P. L. (2009). Abraham Lincoln and Harry Potter: Children's differentiation between historical and fantasy characters. *Cognition*, *112*, 213–225. doi: http://dx.doi.org.eproxy1.lib.hku.hk/10.1016/j.cognition.2009.08.007

Evans, E.M. (2001). Cognitive and contextual beliefs factors in the emergence of diverse belief systems: Creation versus evolution. *Cognitive Psychology*, *42*, 217–266. doi: http://dx.doi.org.eproxy1.lib.hku.hk/10.1006/cogp.2001.0749

Flavell, J. H., Everett, B. A., Croft, K., & Flavell, E. (1981). Young children's knowledge about visual perception: Further evidence for the Level 1-Level 2 distinction. *Developmental Psychology*, *17*, 99–103. doi: http://dx.doi.org.eproxy1.lib.hku.hk/10.1037/0012-1649.17.1.99

Flavell, J. H., Green, E., & Flavell, E. (1993). Children's understanding of the stream of consciousness. *Child Development*, *64*, 387–398. doi: http://dx.doi.org.eproxy1.lib.hku.hk/10.2307/1131257

Giménez-Dasí, M., Guerrero, S., & Harris, P. L. (2005). Intimations of immortality and omniscience in early childhood. *European Journal of Developmental Psychology*, *2*, 285–297. doi: http://dx.doi.org.eproxy1.lib.hku.hk/10.1080/17405620544000039

Harris, P. L. (2011). Death in Spain, Madagascar, and beyond. In V. Talwar, P. L. Harris, & M. Schleifer (Eds.), *Children's understanding of death*. New York: Cambridge University Press.

Harris, P. L., & Giménez, M. (2005). Children's acceptance of conflicting testimony: The case of death. *Journal of Cognition and Culture*, *5*, 143–164.

Harris, P. L., & Koenig, M. (2006). Trust in testimony: How children learn about science and religion. *Child Development*, *77*, 505–524.

Harris, P. L., Pasquini, E. S., Duke, S., Asscher, J. J., & Pons, F. (2006). Germs and angels: The role of testimony in young children's ontology. *Developmental Science*, *9*, 76–96. doi: http://dx.doi.org.eproxy1.lib.hku.hk/10.1111/j.1467-7687.2005.00465.x

Hume, D. (1748/1902). *An enquiry concerning human understanding*. L. A. Selby Bigge (Ed.) Oxford, UK: Clarendon Press.

Johnson, C. N., & Harris, P. L. (1994). Magic: Special but not excluded. *British Journal of Developmental Psychology*, *12*, 35–51. doi: http://dx.doi.org.eproxy1.lib.hku.hk/10.1111/j.2044-835X.1994.tb00617.x

Lane, J. D., Wellman, H. M., & Evans, E. M. (2010). Children's understanding of ordinary and extraordinary minds. *Child Development*, *81*, 1475–1489. doi: http://dx.doi.org.eproxy1.lib.hku.hk/10.1111/j.1467-8624.2010.01486.x

Lane, J. D., Wellman, H. M., & Evans, E. M. (2012). Sociocultural input facilitates children's developing understanding of extraordinary minds. *Child Development*, *83*, 1007–1021. doi: http://dx.doi.org.eproxy1.lib.hku.hk/10.1111/j.1467-8624.2012.01741.x

Legare, C., Evans, E. M., Rosengren, K. S., & Harris, P. L. (2012). The coexistence of natural and supernatural explanations across cultures and development. *Child Development*, *83*, 779–793.

Makris, N., & Pnevmatikos, D. (2007). Children's understanding of human and super-natural minds. *Cognitive Development*, *22*, 365–375.

Pew Forum on Religion (2008). *U.S. Religious landscape survey. Religious affiliation: Diverse and dynamic*. Washington, DC: Pew Research Center.

Rosengren, K. S., Kalish, C. W., Hickling, A. K., & Gelman, S. A. (1994). Exploring the relation between preschool children's beliefs and causal thinking. *British Journal of Developmental Psychology*, *12*, 69–82. doi: http://dx.doi.org.eproxy1.lib.hku.hk/10.1111/j.2044-835X.1994.tb00619.x

Sharon, T., & Woolley, J. D. (2004). Do monsters dream? Young children's understanding of the fantasy/reality distinction. *British Journal of Developmental Psychology*, *22*, 293–310 doi: 10.1348/026151004323044627.

Shtulman, A. (2009). The development of possibility judgment within and across domains. *Cognitive Development*, *24*, 293–309.

Shtulman, A., & Carey, S. (2007). Improbable or impossible? How children reason about the possibility of extraordinary events. *Child Development*, *81*, 669–679.

Subbotsky, E. V. (1985). Preschool children's perception of unusual phenomena. *Soviet Psychology*, *23*, 91–114.

Subbotsky, E. V. (1994). Early rationality and magical thinking in preschoolers: Space and time. *British Journal of Developmental Psychology*, *12*, 97–108.

Vaden, V. C., & Woolley, J. D. (2011). Does God make it real? *Children's belief in religious stories from the Judeo-Christian tradition. Child Development*, *82*, 1120–1135. doi: http://dx.doi.org.eproxy1.lib.hku.hk/10.1111/j.1467-8624.2011.01589.x

Woolley, J. D., & Cox, V. (2007). Development of beliefs about storybook reality. *Developmental Science*, *10*, 681–693. doi: http://dx.doi.org.eproxy1.lib.hku.hk/10.1111/j.1467-7687.2007.00612.x

Woolley, J. D., & Phelps, K. E. (2001). The development of children's beliefs about prayer. *Journal of Cognition and Culture*, *1*, 139–167.

Appendix A

Elisha

Religious
This is Elisha. One season, the crops in Elisha's hometown did not grow and the people had nothing to eat. Elisha took several loaves of bread and, with the power of God, multiplied them and fed hundreds of hungry people.

Fantastical
This is Elisha. One season, the crops in Elisha's hometown did not grow and the people had nothing to eat. However, Elisha used his magical powers and created many loaves of bread out of thin air! Then he fed the bread to hundreds of hungry people.

Realistic
This is Elisha. One season, the crops in Elisha's hometown did not grow and the people had nothing to eat. Elisa traveled to a town far away and brought many loaves of bread back home. He fed the loaves of bread to hundreds of hungry people.

Jonah

Religious
This is Jonah. After disobeying God's orders, Jonah was thrown overboard a ship and then swallowed by a large whale. Jonah prayed to God for three days, and was spit out by the whale safe and sound. As a result, Jonah promises to obey God's orders in the future.

Fantastical
This is Jonah. Jonah took a trip on a boat. One stormy night, Jonah was thrown overboard a ship and then swallowed by a large whale. But Jonah had magical powers, and he was able to jump out of the whale's mouth and swim all the way to the shore.

Realistic
This is Jonah. Jonah took a trip on a boat. One stormy night, Jonah was thrown overboard. A nearby whale opened its mouth to bite him, but Jonah swam away just in time. Jonah then climbed back onto the boat with the help of his fellow sailors.

Joseph

Religious
This is Joseph. Joseph was sent to a mean king in a land far away. However, God sent Joseph many dreams warning about terrible storms, and Joseph used those dreams to tell the king how to protect his kingdom from the storms. The king was so amazed by Joseph and they became friends.

Fantastical
This is Joseph. Joseph was sent to a mean king in a land far away where there were terrible storms. Joseph used his magical powers to see into the future, and told the king how to

protect his kingdom from the storms. The king was so amazed by Joseph and they became friends.

Realistic

This is Joseph. Joseph was sent to a mean king in a land far away where there were terrible storms. The king realized that Joseph was very good at looking at clouds and predicting when there would be rain. The king was so amazed by Joseph and they became friends.

Samson

Religious

This is Samson. He was a very strong man, so when he was captured and tied to some pillars, he kept breaking the pillars and escaping. But one day, Samson's long hair was cut and made him weak, so he prayed to God and became strong once again.

Fantastical

This is Samson. He was a very strong man, so when he was captured and tied to some pillars, he kept breaking the pillars and escaping. But one day, Samson's long hair was cut and made him weak, so he used his magical powers to become strong once again.

Realistic

This is Samson. He was a very strong man, so when he was captured and tied to some pillars, he kept breaking the pillars and escaping. But one day, Samson got sick and lost all of his hair. When he got better, he did a lot of exercise to become strong once again.

Peter

Religious

This is Peter. One night he and the disciples were sailing a boat and got caught in a bad storm. Jesus walked on water to save them and Peter jumped out to walk toward him. Peter started to sink but Jesus caught him and they both jumped into the boat. The storm passed and everyone was safe.

Fantastical

This is Peter. One night he and his friends were sailing a boat and got caught in a bad storm. Peter fell into the water and started to sink. A fairy flew toward the boat to save them and used her powers to get him back onto the boat. The storm passed and everyone was safe.

Realistic

This is Peter. One night he and his friends were sailing a boat and got caught in a bad storm. Lightning flashed and Peter fell out of the boat. Peter started to sink, but his friends threw him a rope and pulled him back into the boat. The storm passed and everyone was safe.

David

Religious
This is David. One day, he fought a nine-foot tall monster, who was protected in armor. David had no armor on so he prayed to God for help. When David threw a stone at the monster, God gave the stone special powers so it would kill the monster instantly. David won the battle!

Fantastical
This is David. One day, he fought a nine-foot tall monster, who was protected in armor. David had no armor on so he didn't know what to do. David found a magic stone and when he threw the stone, the monster was killed instantly. David won the battle!

Realistic
This is David. One day, he fought a very tall man, who was protected in armor. David had no armor on so he didn't know what to do. David noticed that there was no armor protecting the man's head. He threw a stone at the man's head and killed him instantly. David won the battle!

Libnah

Religious
This is Libnah. Libnah was very sick, and went to sleep. Her sisters were very sad and were crying, and asked Jesus for help. Jesus put his hands on Libnah and told her to wake up, and Libnah woke up and was not sick anymore.

Fantastical
This is Libnah. Libnah was very sick, and went to sleep. Her sisters were very sad and were crying, and asked some fairies for help. The fairies gave Libnah a magic drink and told her to wake up, and Libnah woke up and was not sick anymore.

Realistic
This is Libnah. Libnah was very sick, and went to sleep. Her sisters were very sad and were crying, and asked a doctor for help. The doctor gave Libnah some medicine and told Libnah to wake up, and Libnah woke up and was not sick anymore.

Moses

Religious
This is Moses. Moses was leading his people from their enemies, when they reached the sea. Moses asked God for help, and waved his staff. The sea parted into two, and Moses and his people escaped through the dry land in the middle.

Fantastical

This is Moses. Moses was leading his people from their enemies, when they reached the sea. Moses had a magic staff and he used it. He waved his staff and the sea parted into two, and Moses and his people escaped through the dry land in the middle.

Realistic

This is Moses. Moses was leading his people from their enemies, when they reached the sea. Moses asked a fisherman for help, and borrowed his boat. He waved his staff goodbye. Moses and his people sailed on the boat to the other side of the sea and they escaped.

Noah

Religious

God warned Noah about a flood that was going to cover the Earth. Noah and his wife built a giant boat and gathered two of every kind of animal before the flood came. They were very worried but Noah, his family, and all the animals drifted for days until they reached new land.

Fantastical

A troll warned Noah about a flood that was going to cover the Earth. Noah and his wife built a giant boat using magic wood and gathered two of every kind of animal before the flood came. They were very worried but Noah, his family, and all the animals drifted for days until they reached new land.

Realistic

A weatherman warned Noah about a flood that was going to cover the Earth. Noah and his wife built a giant boat and gathered as many animals as they could before the flood came. They were very worried but Noah, his family, and all the animals drifted for days until they reached new land.