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PAPER

A visit from the Candy Witch: factors influencing young children's belief in a novel fantastical being

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Abstract

Factors hypothesized to affect beliefs in fantastical beings were examined by introducing children to a novel fantastical entity, the Candy Witch. Results revealed that among older preschoolers, children who were visited by the Candy Witch exhibited stronger beliefs in the Candy Witch than did those who were not. Among children who were visited, older children had stronger beliefs than did younger children. Among children who were not visited, those with a high Fantasy Orientation believed more strongly than did those with a low Fantasy Orientation. Belief remained high one year later. At both time points, the number of other fantastical beings in which a child believed was significantly related to belief in the Candy Witch.

Introduction

There is considerable interest in developmental psychology in the nature of children's beliefs about the world. Children must ultimately learn to form beliefs that bear some correspondence to reality. They must integrate a number of sources of information to form and maintain these beliefs, including both direct perceptual evidence and interpretations of indirect evidence. They also need to learn to evaluate the arguments of people around them in order to make judgments about the truth of their assertions, and to evaluate these assertions against other sources of evidence they have encountered.

The present study addresses one particular type of belief common to young children – fantasy beliefs. Specifically, we focus on belief in fantastical entities – culturally defined mythical entities that, although known to be imaginary by adults, are believed in by young children. These sorts of childhood fantasy beliefs, such as beliefs in ghosts and monsters, involve entities that cannot be observed. Exploration of the factors that influence the formation of these beliefs can provide insight into general factors that support children's beliefs beyond direct observation. Understanding these factors is particularly important given that many of the facts that children learn about the world, like the existence of entities such as germs and the solar system, arise from sources other than direct observation.

However, there are also aspects of childhood fantasy beliefs that make them unique among this larger set of beliefs. Most fantastical beings possess inherent contradictions in their attributes. Santa Claus appears human-like yet he travels in a sleigh pulled by flying deer. The Tooth Fairy deals in real money, yet she is omniscient, at least about who has lost a tooth and when s/he lost it. Children also receive mixed evidence from various cultural sources about fantastical beings. Some of their friends believe and some do not. Some books and movies raise the issue of their reality status. This distinguishes fantastical beings from other invisible or intangible entities. Certainly children never hear others saying that they do not believe in the existence of germs or of Saturn. Fantasy beliefs are also a pervasive component of childhood (Clark, 1995), which appears paradoxical, given the large volume of evidence suggesting that young children's thinking is analogous to that of scientists (Gopnik & Meltzoff, 1997). The prevalence of childhood fantasy beliefs has fostered claims that children are qualitatively different from adults, living in a fantasy world and exhibiting high degrees of credulity (see e.g. Dawkins, 1995). Only through studying these beliefs can we evaluate these claims.

One difficulty in studying children's beliefs about fantastical beings is that children receive messages about these beings from a variety of sources (e.g. books, movies, peers and parents). Thus, it is difficult to isolate the factors that influence the likelihood that children will

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believe in fantastical beings. Also, with the exception of cross-religious studies (see e.g. Prentice & Gordon, 1986), it is difficult to obtain groups of similar children in which there is variation in participation in practices associated with these entities. Our goal is to explore the role of age and individual-difference variables on children's beliefs in a fantastical being by introducing children to a novel fantastical being.

Belief in fantastical beings

The preschool and early elementary years are a time when children appear fascinated by the fantastical realm. From about age 3 to 7, children display high amounts of pretend play (Singer & Singer, 1990), create imaginary companions (Taylor, 1999), believe in magic (Phelps & Woolley, 1994; Rosengren & Hickling, 1994) and fantastical beings (Clark, 1995; Prentice, Manosevitz & Hubbs, 1978). During the preschool period, American children typically believe in the existence of a number of fantastical entities, many of which are generic beings like dragons and fairies (Rosengren & Hickling, 1994; Sharon and Woolley, 2004).

An even more striking demonstration of the large role of fantasy in children's lives is the common belief in fantastical beings that are tied to specific events, such as holidays. Notable among these are two – Santa Claus and the Easter Bunny – that are associated with Christian holidays, and one – the Tooth Fairy – associated with a significant developmental transition. Research shows that belief in these event-related fantastical beings is significantly higher than belief in generic fantastical beings (Rosengren, Kalish, Hickling & Gelman, 1994; Sharon and Woolley, 2004).

Although this research is informative regarding when children believe and how many fantasy beliefs children hold, researchers know little about factors related to belief in fantastical beings. Aside from Prentice and Gordon's (1986) investigation of Jewish children's belief in Santa Claus, researchers have not explored the role of individual differences in children's beliefs in fantastical beings. Yet research on other aspects of children's magical thinking indicates that they are important (Johnson & Harris, 1994; Subbotsky, 1993; Rosengren & Hickling, 1994). In the next section we discuss some factors that might play a role in the formation of these beliefs.

Factors influencing belief in fantastical beings

There is considerable variation in belief among children. Some children believe in fantastical beings and some do not, some children believe in certain fantastical beings but not others, and some children are simply uncertain. Much research shows that age affects belief in fantastical beings: belief appears to peak around age 4 and declines substantially by age 8 (Clark, 1995; Prentice *et al.*, 1978; Rosengren *et al.*, 1994). Unfortunately in all these studies researchers have simply assessed existing beliefs in known fantastical beings. We know little about how age affects the propensity to form beliefs. Would a child who was introduced to a fantastical entity at age 3 be more or less likely to believe than a child who heard about it at age 4 or 5? Because the traditional view of cognitive development is that children grow more, not less, skeptical with age (see e.g. Dawkins, 1995; Piaget, 1929; cf. Subbotsky, 1993), one might expect older children to be less likely to endorse belief in a novel fantastical entity. Alternatively, Rosengren and Hickling (2000) suggest that the emergence of magical beliefs is made possible by a certain level of 'cognitive sophistication', which results from a combination of increased knowledge about the world and cultural support (pp. 78–79). With this view, we might not expect the youngest children to be the most credulous.

Taylor (1999) notes that 'some psychologists have hypothesized that children who believe in cultural myths might be the ones who engaged in fantasy in other parts of their lives – children who have imaginary companions or in some way demonstrate an unusual absorption or interest in fantasy' (p. 94). Traditionally, high involvement in fantasy activities (e.g. having an imaginary companion) has been thought to indicate an inability to make the fantasy–reality distinction. This same inability is purported to underlie belief in the real existence of fantasy figures. Thus the two have been linked theoretically. Alternatively, children with a high fantasy orientation might be viewed as experts within that domain; although they are intrigued by the fantasy world, they may be sophisticated in their ability to navigate it. Thus they might be less likely to believe in fantastical beings.

Results regarding the effects of fantasy orientation on beliefs in fantastical beings are mixed. Singer and Singer (1981) found that imaginatively predisposed children were better able to distinguish between real and fictional TV plots, suggesting that having a strong fantasy orientation aids in making reality/fantasy distinctions. Other researchers have found no differences in fantasy/reality judgments between children who had and those who lacked imaginary companions (Taylor, Cartwright & Carlson, 1993) or between those who were more or less involved in fantasy (Dierker & Sanders, 1996). Prentice *et al.* (1978) found no relation between fantasy orientation and belief in Santa Claus, the Easter Bunny or the Tooth Fairy. In contrast, Sharon and Woolley (2004) found that children with a high fantasy orientation made

more correct judgments of the reality status of a range of fantastical entities.

We assess two other factors that may influence belief in a fantastical being: the number of fantastical beings in which a child already believes, and the child's motivation to believe in the fantastical being. Regarding the first, Zusne and Jones (1989) report that, among adults, people who believe in one sort of paranormal phenomenon (e.g. ESP) are more likely to also believe in similar phenomena (e.g. astrology). To the extent that one can make an analogy between adults' beliefs in anomalous phenomena and children's fantasy beliefs (see e.g. Dawkins, 1995; Woolley, 1997), children who already believe in one or more fantastical beings might be more receptive to the existence of another.

Regarding motivation, it seemed conceivable that the extent to which children associate belief in a fantastical being with positive outcomes, such as receiving presents, might also influence belief. Although it might sound odd to think of believing in something because one wants to, motivation to believe can certainly affect the types of evidence one pays attention to and how that evidence is interpreted (see e.g. Jones & Russell, 1980; Koehler, 1993; Russell & Jones, 1980). We reasoned that children who were excited about getting a new toy would be particularly likely to interpret the presence of that new toy as confirmation of the existence of the fantastical being who purportedly brought it. One aspect of motivation might involve a cost/benefit analysis, in which belief is stronger if the expected rewards outweigh any expected negative consequences. Studies of children's magical beliefs have suggested that children may assess the costs and benefits of engaging in magical thinking (e.g. Subbotsky, 2001; Woolley & Phelps, 1994).

A final factor that we investigated was the extent to which the child's parents joined the experimenter in providing evidence that could be interpreted in favor of the fantasy figure's existence. Parents often go out of their way to produce indirect 'evidence' of the existence of fantastical beings. One unanswered question is whether exposure to this type of evidence increases children's level of belief over and above what they would believe simply by hearing about the existence of the entity. Given developmental variation in how children assess and appreciate evidence (e.g. Dunbar & Klahr, 1989; Kuhn, Amsel & O'Loughlin, 1988), it seems important to investigate what role these pieces of evidence play in children's beliefs.

In the present study we introduced children to the 'Candy Witch', a fantastical being associated with Halloween. Even though Halloween is widely celebrated, and is associated with certain generic fantasy creatures such as ghosts and goblins, it does not have a single specific or dominant event-related fantastical being associated with it. Thus, we could introduce the Candy Witch without fear that it would compete with existing beliefs that a child would have relating to Halloween. We explored effects of age, existing beliefs, motivation to believe, individual Fantasy Orientation, and whether child was visited by the entity on belief in a novel fantastical entity. We also explored the extent to which children would attribute various human and non-human properties to a novel fantastical entity. Our goal was to gain insight into the types of inferences children might make about these kinds of entities, and how these inferences might be constrained (Boyer, 1994, 2001).

Method

Participants

Participants were 23 young preschool-age children (M = 3;9, range = 3;2–4;2, 10 girls and 13 boys) and 21 older preschoolers (M = 4;9; range = 4;3–5;2, 11 girls and 10 boys). Children were tested individually in a quiet room at their childcare center.

Tasks and procedures

All participants were introduced to the Candy Witch through two activities at their childcare center. Approximately 1 week before Halloween, researchers visited five classrooms at a university childcare center. Each researcher introduced children to the Candy Witch during a general discussion about Halloween. Children were asked if they knew about Halloween and what they did on Halloween. They were also asked more specific questions about trick-or-treating (e.g. what they say when they go to people's houses and what people give them). Finally, researchers asked children if they knew about the Candy Witch and told them about her.

An abbreviated version of the script is that the Candy Witch is a nice witch who visits children's houses on Halloween night and takes the candy children have collected and replaces it with a new toy.[1] Researchers also showed children a picture of a Candy Witch doll. This

[1] It is important to point out that, unlike other information children encounter at school, the Candy Witch figure embodied certain elements that contradict children's naïve theories. First, the Candy Witch is a witch, an entity in which researchers report fairly low levels of belief (e.g. Rosengren & Hickling, 1994). Second, she eats candy for every meal, which is something children know that real people do not do (Browne & Woolley, 2004). Finally, she flies (and presumably, partly or wholly because of this, makes it to many more children's houses than a real person could in one night). This mix of counterintuitive and intuitive elements is a unique property of fantasy figures and, according to Boyer (1994, 2001), of religious figures as well.

was done, in part, to reaffirm that the Candy Witch was a nice rather than a mean witch; the doll in the photograph had a round face with rosy cheeks, was smiling, wore round spectacles and had bobbed straight blonde hair. Showing children a picture also made the Candy Witch more similar to familiar fantastical beings such as Santa Claus and the Easter Bunny, in that children have access to fairly standard representations of the physical appearance of these fantastical beings. At no point in the script did researchers explicitly address the reality status of the Candy Witch.

We were concerned that only hearing about the Candy Witch once would not be similar to children's experiences with other fantastical beings. We wanted children to hear about the Candy Witch from multiple sources at different times, as they might presumably hear about Santa Claus and other fantastical beings from multiple sources. Thus, on the day before Halloween a different researcher visited each classroom and conducted an art project in which the children made Candy Witch puppets.

Consent letters to parents offered two levels of participation. Parents who agreed to have the Candy Witch visit their child were provided with a toy, and instructed to phone the Candy Witch to tell her to come to their home and to perform the candy–toy exchange after their children were in bed. They were also given a questionnaire that asked them to rate how much they encouraged their child's belief in the Candy Witch, to note specific things they did to promote the child's belief (e.g. making phone call to CW with the child), and to rate their child's level of belief in the Candy Witch (the questionnaire is available from the first author). Parents were also offered the option of letting their child be tested without having the Candy Witch visit. Testing began the day after Halloween and all children were tested within a week of Halloween.

Belief assessment

The primary measure of belief involved showing children a drawing of the Candy Witch and asking if she was real or pretend ('Reality Status Question'). The Reality Status Question (RSQ) about the Candy Witch was inserted among queries about three real entities (a child, a cat and the child's teacher), three generic fantastical beings (a fairy, a dragon and a ghost) and two other event-related fantastical beings (Santa Claus and the Easter Bunny). Importantly, this also provided an assessment of each child's beliefs about other fantastical beings. Researchers explained to children that they would be asked whether a bunch of things were real or not real. For each entity, children were first shown a drawing and given a brief description, for example, 'This is a dragon. It can breathe fire and scare people.' Then children were asked the test question: 'What do you think, is a dragon real or is a dragon pretend?' The entities were presented in a different random order for each child.

After children had answered the RSQ for all entities, they were queried as to their certainty about their judgments for one entity that they had judged as pretend (in most cases, the ghost), one they had judged as real (in most cases, their teacher) and the Candy Witch, in that order. We showed children three drawings (see Figure 1), one of a child looking quizzical (labeled 'not so sure'), one of a child looking like he was thinking (labeled 'a little sure') and one with a child raising his finger in the air and looking confident (labeled 'really sure'). Children were told: 'See these pictures? We can use these to say how sure we are about something. Like if I really know something then I say I'm really sure (researcher pointed to the child who looked certain). But sometimes I think I know something but I'm just a little sure about that (researcher pointed to the child who looked like he was thinking). And sometimes I really just don't know. Then I say I'm not so sure (researcher pointed to the child who looked quizzical).' Then children were reminded of their judgments (e.g. 'You said the Candy Witch was real/pretend') and asked 'How sure are you that the Candy Witch is real/pretend – are you really sure, a little sure, or not so sure?' The researcher pointed to each picture as she stated each option. Children could point to one of the pictures or verbalize their answer.

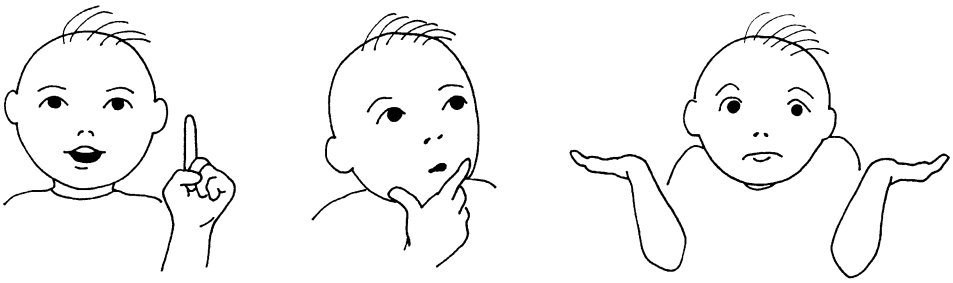

Figure 1 *Pictures used in Certainty Task.*

To provide a richer assessment of how children conceived of the Candy Witch we also included both an open-ended interview and a property attribution task. The interview asked children to tell the experimenter something about the Candy Witch, and then to say whether she had come to their house. If so, children were asked what she did while she was there. Lastly, children were asked if they thought she would come back again. For the properties task, children were asked whether the Candy Witch possessed a number of human-like and non-human-like attributes. None of these properties were discussed in the initial information session, so children had to make inferences about the Candy Witch to answer them. We asked children whether the Candy Witch possessed each of 12 different properties, reflecting the four foundational domains of knowledge discussed by Wellman and Gelman (1998). We included three physical, three social, three psychological and three biological properties (see Appendix B for a list of properties).

Candy/toy preference assessment

We expected that children who liked toys more than candy might have more motivation to believe in the Candy Witch than would those who preferred candy. Therefore children were asked to rate how much they liked both toys and candy on a three-point scale ranging from 'a little' to 'a whole lot', and also were asked whether they would choose toys or candy if they could have only one.

Fantasy Orientation measures

Five measures of Fantasy Orientation were selected on the basis of their use in the literature and their reliability and validity (Sharon & Woolley, 2004; Taylor & Carlson, 1997; Taylor *et al.*, 1993): (1) Four questions from Singer and Singer's (1981, 1990) Imaginative Play Predisposition (IPP) interview, (2) an abridged version of Taylor and Carlson's (Taylor & Carlson, 1997; Taylor *et al.*, 1993) Imaginary Companion (IC) interview, (3) Taylor and Carlson's (1997) impersonation interview, (4) a free play with blocks task (Taylor & Carlson, 1997; Taylor *et al.*, 1993) and (5) a toy choice task (Taylor & Carlson, 1997). From the Singer IPP, children were asked about their favorite game, their favorite toy, whether they talked to themselves in bed at night, and what they thought about before they went to sleep. Responses that were considered high fantasy (scored as 1) had a clear fantastical element (e.g. a unicorn), responses coded as moderate fantasy (scored as .5) were representational without necessarily being fantastical (e.g. a toy train) and responses coded as low fantasy (scored as 0) were mainly physical activities or games with rules (e.g. baseball).

The imaginary companion interview (Taylor & Carlson, 1997; Taylor *et al.*, 1993) asked children if they had an imaginary friend, and if so, to describe it. Responses were coded as 1 if the children said they had an imaginary companion and could provide a description of it, they were scored .5 if they said 'yes' but could not elaborate, and 0 if they said 'no'. The impersonation interview (Taylor & Carlson, 1997) asked children if they ever pretended to be another person, an animal or a machine. These were scored 1 for 'yes' and 0 for 'no'. In the blocks task (Taylor & Carlson, 1997; Taylor *et al.*, 1993), children were provided with a box of colored blocks of various shapes. After 1 and 3 minutes children were asked to describe what they were building. Responses were coded according to the level of representational content: 0 if non-representational, .5 if a simple representation (e.g. 'it's a house') and 1 if a more complex representation involving animate entities or a story line (e.g. 'It's a castle and here's the bridge where the people come to get in it.'). The toy choice task (Taylor & Carlson, 1997) involved inviting children to play with one of two toys, a 'magic wand' and an alphabet puzzle. Selection of the 'magic wand' was coded as high fantasy (scored as 1), and selection of the puzzle was coded as low fantasy (scored as 0).

Responses on all Fantasy Orientation measures were scored by a trained coder. On the IPP and block tasks, a second researcher coded 50% of children's responses. Reliability, calculated as percent agreement, for the IPP was 97% and for the blocks task was 95%. Based on these scores, children were coded, for each measure, as high, moderate or low fantasy. Children who were coded as high fantasy on at least three of the five measures were considered to have a high Fantasy Orientation, others were considered to have a low Fantasy Orientation. Twenty-three children were classified as having a high Fantasy Orientation (mean age 50 months) and 21 children were classified as having a low Fantasy Orientation (mean age 51 months); mean ages for the two groups did not differ statistically, $t(42) = -.40$, ns.

Results and discussion

Parents of 25 children agreed to implement the Candy Witch visit (13 younger preschoolers and 12 older preschoolers; $M = 4;3$; range = 3;2–5;2). Nineteen parents whose children were not visited consented to having their children interviewed (10 younger preschoolers and

Table 1 *Responses to the RSQ for each item (number of children choosing each reply)*

	Item								
	Real			Generic fantastical			Event-related fantastical		
	Child	Teacher	Cat	Dragon	Fairy	Ghost	Easter Bunny	Santa	CW
Real	25	36	30	17	18	5	23	33	29
Pretend	11	5	10	22	20	36	13	7	11
Unsure	8	3	4	5	6	3	8	4	4

9 older preschoolers; $M = 4;2$; range = 3;3–5;1). There was no difference in belief level between the five different classrooms, thus we can consider the children from the different classrooms as one sample.

On the open-ended interview about the Candy Witch, for the first question ('tell me about the Candy Witch'), 32 of the children (73%) mentioned one or both aspects of the candy–toy exchange. Other children described her appearance. Of the children who did not note the exchange, only two reported nothing. Ten of the children even offered elaborations that were not given in the presentation. Children who were visited were asked what the Candy Witch did at their house. Of these 25 children, 22 (88%) responded with one or more aspects of the candy–toy exchange. Of the three who did not, two mentioned other aspects (e.g. the phone call). Likewise, 22 children responded affirmatively when asked if the Candy Witch was going to visit their house again. It appears from these data that children were very engaged with the Candy Witch concept.

The most basic question was whether children would believe in a novel event-related fantastical being that they heard about at their childcare center. Without some level of belief and some variability we could not assess the proposed factors of importance. We coded 'real' responses to the Reality Status Question (RSQ) as 2, 'don't know' or 'unsure' responses as 1, and 'pretend' responses as 0. On the RSQ, 29 of the 44 participants (66%) claimed that the Candy Witch was real, with 4 (9%) saying they were unsure, and 11 (25%) responding that she was pretend. The mean level of belief (out of 2) for the Candy Witch was 1.4 (SD = .87), which was comparable to that for the other two event-related fantastical beings ($M = 1.6$ for Santa Claus and $M = 1.2$ for the Easter Bunny, comparisons non-significant by *t*-test), and significantly higher than that for the generic fantasy figures ($M = .72$ across ghost, dragon and fairy, t's = –6.69, –2.50, –2.38, all p's < .02). The mean rating for the Candy Witch was also comparable to that for the real entities ($M = 1.5$ for the child, the cat and the teacher together, all comparisons non-significant by *t*-test).[2] Table 1 shows response patterns to the individual items. Chi-squared comparisons between the teacher (the most comparable of the real entities to the event-related fantastical entities) and each of the event-related fantastical beings were non-significant, indicating that the distribution of responses was the same for these entities. Comparisons between these entities and the most human-like generic being, the fairy, however, were all significant, indicating that the distribution of responses for both real and fantastical entities with specific identities differed from that for generic fantastical entities ($\chi^2(2, N = 44)$ for Santa vs. fairy = 11.07, for teacher vs. fairy = 15.11 and for Candy Witch vs. fairy = 6.18, all p's < .05).

To obtain a measure of the strength of children's beliefs we created a summary score that took into account both children's judgments on the RSQ and their certainty ratings. This score was formed as follows: Children who claimed the Candy Witch was real and that they were 'really sure' received a score of 6, children who were 'a little sure' received a 5 and children who were 'not so sure' received a 4. Children who responded 'I don't know' were given a 3. Children who claimed that the Candy Witch was pretend but were 'not so sure' received a 2, children who were 'a little sure' received a 1 and children who were 'really sure' received a 0. Scores ranged from 0 to 6, with 0 indicating that the child was *really sure* that the Candy Witch was *pretend*, and 6 indicating that s/he was *really sure* the Candy Witch was

[2] Additional analyses showed that children's accuracy was greater for the real items than for the fantastical entities, $t(43) = 4.93$, $p < .001$. Additionally, for both fantastical entities ($t(43) = -5.5$, $p < .01$) and real entities ($t(43) = 2.64$, $p < .02$), children had higher levels of belief in specific vs. generic beings. In the case of fantastical entities, this may result from differing levels of cultural support (see e.g. Rosengren *et al.*, 1994). However, that we found it in the real entities as well suggests other possible explanations. One is that children may have misinterpreted our question to be regarding whether the particular entity (e.g. the particular child) depicted in the picture was real or pretend. Some children's questions and comments suggested that this was the case.

Table 2 *Mean belief level by age group and participation category*

Age group	Visited by CW	Not visited
Older	5.3 (n = 12)	3.3 (n = 9)
Younger	3.7 (n = 13)	4.4 (n = 10)

real. The mean score was 4.2 (SD = 2.0), indicating a moderate level of belief and a fair degree of variability. It appears that, overall, many of the children did indeed believe wholeheartedly in her existence.

What factors affected level of belief in the Candy Witch? The three primary variables of interest were age group, whether the child was visited and Fantasy Orientation. To assess the effects of these variables we first conducted a 2 (age group: younger, older) × 2 (participation: visit, no visit) × 2 (Fantasy Orientation: high, low) ANOVA on the summary score. The ANOVA revealed a significant interaction between condition and age group, $F(1, 36) = 5.06$, $p < .04$. Simple effects analyses indicated that among children who were visited, older children ($M = 5.3$) had higher levels of belief than did younger children ($M = 3.7$; $F(1, 23) = 4.4$, $p < .05$). Simple effects analyses also indicated that the older children who were visited had significantly higher levels of belief than did older children who were not ($M = 3.3$), $F(1, 19) = 5.26$, $p < .04$. Thus, as shown in Table 2, both age and level of participation affected belief levels.

The analysis also revealed a tendency for children's Fantasy Orientation (FO) to affect level of belief in the Candy Witch, with high FO children ($M = 4.6$, out of 6) tending to display stronger beliefs than low FO children ($M = 3.8$), $F(1, 36) = 3.80$, $p = .06$. Simple effects analyses indicated that this effect was entirely due to the performance of children who were not visited. Among these children, high FO children ($M = 5.2$) had considerably higher levels of belief than did low FO children ($M = 2.7$), $F(1, 17) = 12.3$, $p < .01$, whereas there was no difference in the group of children who were visited ($M = 4.5$).

Of the five familiar fantastical beings included, the mean number correctly categorized (as pretend) was 2.48. This figure did not differ for older ($M = 2.62$) and younger ($M = 2.35$) children. Pearson correlations were computed to assess relations between the number of fantastical beings correctly categorized and children's level of belief in the Candy Witch. These revealed a significant negative relation, $r(42) = -.31$, $p < .04$. In other words, children who believed in more fantastical beings had higher levels of belief in the Candy Witch. There was no relation between the number of fantastical beings children believed in and their Fantasy Orientation ($r = -.02$).[3]

We reasoned that children who liked toys more than candy might be more motivated to believe in the Candy Witch than would children who preferred candy. To assess this we summed scores from the toy–candy choice question and a second score subtracting children's rating of how much they liked candy from their rating of how much they liked toys. This score was not significantly related to level of belief in the total sample ($r = .12$), nor was it related to Fantasy Orientation or to belief in familiar fantasy figures. However, separate analyses for each age group revealed a non-significant (and slightly negative, $r = -.29$) relation in the younger group but a strong and significantly positive relation ($r = .56$, $p < .01$) in the older group. This suggests that as children get older, the expected rewards (in this case, a toy) and the expected consequences (in this case, loss of candy) of believing in a fantastical entity may be weighed. That is, some sort of cost/benefit analyses may play an increasingly important role in belief level.

A final focus was the sorts of inferences children would make about a novel fantastical entity. To address this question we asked children to judge whether the Candy Witch possessed a number of human (e.g. gets older every year) and fantastical (e.g. can travel the whole world in one night) properties (see Appendix B). To analyze these data we reverse keyed the three fantastical properties so that all property attributions could be summed and viewed as a measure of how human-like children thought the Candy Witch was. Overall, younger children attributed to the Candy Witch more human-like properties ($M = 1.58$, out of 3) than did older children ($M = 1.27$; $F(1, 136) = 4.54$, $p < .04$). However, this main effect was qualified by an interaction with Fantasy Orientation (FO), with the age effect being primarily in children with low FO, $F(1, 36) = 5.16$, $p < .03$. In the low FO group only, younger children ($M = 1.88$) attributed more human-like properties than did older children ($M = 1.19$), $F(1, 136) = 5.16$, $p < .05$. In other words, these young low FO children seemed particularly unable to conceive of a fantastical entity with non-human properties. Means of high FO younger ($M = 1.34$) and older ($M = 1.36$) children did not differ.

[3] We also explored the possibility that belief in just one fantastical being might be enough to encourage belief in a novel fantastical entity. The logic was that to believe even in one fantastical being one must be prepared to suspend normal rules of causality. Thus, the addition of more fantasy beliefs should not make much of a difference. Although we had few children who only believed in one fantastical being, we compared belief scores of those children ($n = 6$) to those who believed in more than one fantastical being ($n = 36$). This test proved non-significant, $t(40) = -1.0$, $p = .31$.

We also examined patterns regarding the specific types of properties children attributed to the Candy Witch (physical, social, biological, psychological) by conducting a 2 (age group) × 2 (participation) × 2 (FO) × 4 (property type) ANOVA. This analysis revealed that human physical properties (e.g. cannot be in two places at the same time) were attributed the least often ($M = .98$, out of 3) compared to biological (e.g. gets older every year, $M = 1.56$), social (e.g. eats dinner with her family sometimes, $M = 1.55$) and psychological properties (e.g. can get her feelings hurt, $M = 1.64$), $F(3, 136) = 4.49$, $p < .01$. In other words, children were more likely to view the Candy Witch as more similar to humans in terms of her biological, social and psychological attributes than in terms of her physical abilities.

Parent questionnaire

Twenty-two parent questionnaires were returned. Analyses revealed no relations between parental encouragement and children's belief levels. Our interpretation is not that parental encouragement does not play a role, but that the extra things some parents did simply did not add anything. The only other aspect of the questionnaire that is noteworthy is parents' estimates of their children's beliefs. On a scale from 0 to 4 the mean estimate was 2.7, with an observed range of 1–4. The modal response was a 3 ('believes without question'; $n = 15$). One parent reported that her son asked how the Candy Witch had gotten into the house, and another parent's daughter asked if the Candy Witch had come to her mother's house when she was a child. Another parent reported her child explicitly stating that, 'the Candy Witch left me a toy – she must be real!'

In summary, children were generally very accepting of the real status of a novel fantastical entity introduced to them in their classroom. Although our small sample size prohibits us from making strong claims, our results are suggestive regarding the effects of five variables: (1) age, (2) whether child was visited by the Candy Witch, (3) Fantasy Orientation, (4) the number of fantastical beings the child believed in and (5) toy/candy preference. Among the 25 children who were visited, older children had stronger beliefs. Among the 19 children who just heard about the Candy Witch at their preschool, a high Fantasy Orientation had a positive effect on belief levels. Two variables affected just the beliefs of the older children: (1) Those who were visited had higher levels of belief than those who were not, and (2) Those who liked toys more than candy showed higher levels of belief. Finally, children who believed in more fantastical beings were more likely to believe in the Candy Witch.

One year follow-up

To assess the longevity of belief in the Candy Witch, parents of all children ($n = 44$) who participated in the study were contacted requesting their child's participation in a follow-up study. Twenty-two parents consented to their children's participation ($M = 4;11$; range = 4;3–6;1).[4] Children who were still at the childcare center (12 4-year-olds and 5 5-year-olds) were tested there. The remaining children (3 5-year-olds and 2 6-year-olds) were tested at our lab. There were 10 girls and 12 boys.

Children were interviewed in early October, with the aim of testing them before discussion of the Candy Witch might have taken place at home. We assessed memory of the Candy Witch by showing children the photograph of the Candy Witch doll and asking six memory questions derived from the six questions that guided the initial review session a year previously (Appendix A). To assess belief, children were given the same Reality Status Questions, using the same nine entities, with one minor modification: because we did not know the teachers of the children who had left the center we substituted a generic teacher for the teacher entity for all children. Finally, children completed certainty ratings, and were also given the same property attribution task, candy/toy rating and Fantasy Orientation tasks as in the original assessment.

Older children who had been visited by the Candy Witch appeared to remember more facts about her ($M = 4.5$) than did older children who were not visited ($M = 3.0$). However, this effect failed to achieve significance, most likely due to small sample size ($n = 10$). Younger children's scores did not differ by participation level ($M = 3.9$ for those who were visited and $M = 3.8$ for those who were not). Children's memory scores also did not differ as a function of whether they had originally believed the Candy Witch to be real or pretend. However, memory scores of children with a low Fantasy Orientation ($n = 12$) were significantly higher ($M = 4.6$) than memory scores of children with a high Fantasy Orientation ($n = 10$, $M = 3.4$), $F(1, 20) = 9.1$, $p < .01$. The two Fantasy Orientation groups did not differ by age. It may be that having a high Fantasy Orientation actually interfered with remembering basic facts about the Candy Witch, perhaps due to interference from embellishments these children might have made.

Of the 22 children tested, 14 (64%) responded to the Reality Status Question (RSQ) by claiming that the

[4] This was a disappointingly low response rate and might raise concerns about selection biases. However, of the children who were still at the preschool, 100% of the parents agreed to participate. The low rate was due to parents of children who had moved on to Kindergarten at other schools and in other cities being unwilling or unable to bring their child into our lab for testing.

Candy Witch was real, six (27%) said that she was pretend and two (9%) children responded that they didn't know whether she was real or pretend ($M = 1.4$; SD = .90). Eleven children's belief stayed the same, five changed from saying the Candy Witch was pretend or that they didn't know to saying that she was real, and six changed from saying that she was real to saying that they either didn't know or that she was pretend. Children who changed their belief did not differ from children whose beliefs did not change in terms of age or Fantasy Orientation. However, children who became 'believers' exhibited higher levels of belief in other fantastical beings at this follow-up ($M = 6.6$, out of 10) than did children who became disbelievers ($M = 4.0$) and children whose beliefs remained the same ($M = 4.7$), $F(2, 19) = 3.62$, $p < .05$.

As in the original assessment, we calculated a summary score that took into account children's responses to the RSQ and their certainty judgments. The mean score was 4.2 (SD = 2.5), with a range from 0 to 6. The majority of children ($n = 13$) responded that they were very sure that the Candy Witch was real. One child reported being only a little sure that the Candy Witch was real. Three children indicated that they were very sure, and three that they were a little sure, that she was pretend. The mean summary score for Study 2 was identical to that for the first study, although the two sets of scores were not significantly correlated ($r = .12$).[5] Mean summary scores were unrelated to memory scores ($r = .05$).

ANOVAs on the effects of age, whether the child had been visited, and Fantasy Orientation all yielded non-significant results. (Due to the small sample we were not able to explore interactions.) However, as in the original study, and consistent with the above discussion, level of belief was positively correlated with level of belief in other fantastical beings, $r = .43$, $p < .05$. This did not vary as a function of age; the correlation for each age group independently was .53. Thus the factor that was most strongly related to belief in the Candy Witch a year after hearing about her was how many fantastical beings a child currently believed in. (The number of fantasy figures children believed in at the original assessment was significantly related to the number of fantasy figures believed in at the follow-up ($r = .45$, $p < .04$), but was not related to Candy Witch belief at the follow-up ($r = .12$). The number of fantastical beings children believed in also was not related to Fantasy Orientation, $r = -.09$.)

[5] Further analyses revealed that there was stability across time points in belief in certain fantastical beings (Santa Claus, fairy and dragon) but not others (Easter Bunny and ghost).

General discussion

The results of this investigation provide a unique window into the processes involved in the formation of childhood fantasy beliefs. Children often have partially or fully developed fantasy beliefs by the time researchers are able to assess them. Thus, although research exists on children's beliefs about known fantastical beings, researchers know little about what factors affect a child's initial level of belief in a fantastical being. We attempted to assess this by introducing children to a novel fantastical entity in their childcare classroom.

To enable assessment of the factors that affect belief, it was necessary to establish first that we could, indeed, create belief in a novel fantastical being. Based on the view that children are inherently credulous, one might argue that doing so would be unremarkable because children rather passively accept everything they are told by adults. Yet this is a mistaken assumption, as Harris (2002) argues: 'The underlying implication – that children always yield to adult suggestion – is overstated' (p. 182). Harris cites Margaret Mead's (1932, cited in Harris) work in which, despite living in a superstitious culture, children rarely espoused the magical beliefs of the adults in their culture. There is also a fair amount of research showing that children are often resistant to adult feedback (Field, 1987; Siegler, 1995). That not all children accepted the Candy Witch, and that those who did exhibited a range of belief levels, lends support to Harris's claim, and enabled us to probe the contributions of the factors of interest.

A number of factors affected children's level of belief in the Candy Witch. Because of our small sample size we are cautious in our interpretation of these findings; all of them should be addressed in future studies. With this in mind, we found that within the group of children who were visited by the Candy Witch, older children had significantly higher levels of belief than did younger children. The counterintuitive nature of this finding merits its consideration. First, a common view of young children is that they are credulous (e.g. Dawkins, 1995; Gilbert, 1991; cf. Subbotsky, 1993), and that they grow more rational with age. Our findings indicate that in some situations older children may be more credulous than younger children. Rather than credulity being the starting state, it may take some level of cognitive maturity to believe in an entity for which one has less than optimal evidence. This pattern is consistent with Rosengren and Hickling's (2000) proposal that 'the emergence of magical explanations reflects a degree of cognitive sophistication, with the underlying magical beliefs arising out of the interaction between knowledge acquisition and cultural support' (pp. 78–79).

Our results are also consistent with Sharon and Woolley's (2004) finding that more 4- and 5-year-olds than 3-year-olds judged fantastical beings as real. These findings together present a challenge to the position that credulity characterizes childhood (see also Subbotsky, 1993).

Among the older children in this study, those who were visited had stronger beliefs than those who were not; this variable did not affect belief levels of the younger children. Because it was not possible to randomly assign children to visit and no visit conditions, it is possible that the children who were visited differed in certain other key ways from those who were not. We compared children who were visited with those who were not on a variety of dimensions, and found that they had almost identical levels of belief in the known entities we included (both real and fantastical), indistinguishable scores on the candy/toy liking measure and comparable Fantasy Orientation scores (by *t*-test, all *p*'s > .44). Keeping these concerns in mind, the presence of the interaction suggests that age and exposure to indirect evidence of a fantastical being's existence may work together to produce higher levels of belief. Children who were visited had indirect evidence of the Candy Witch's existence. Within this group, the older children may have been better able to make use of this evidence to infer the existence of the Candy Witch. The ability to link informational circumstances to knowledge develops significantly in the preschool years (Wimmer & Gschaider, 2000). Thus the youngest children may not have properly linked the phone call, the appearance of the toy and other indirect pieces of evidence to their knowledge and/or certainty about the Candy Witch's existence. These data support a view that some basic ability to recognize the relation between evidence and knowledge appears to be important in forming beliefs about something for which one lacks direct evidence.

Children's level of belief in the Candy Witch was also significantly related to the number of familiar fantastical beings in which they believed, at both time points. This suggests that children may have a network of beliefs about fantastical entities. They may have implicitly recognized some similarity between the fantastical beings in which they believed and the Candy Witch; this might have facilitated a judgment that she was real. Children's comments illustrate this sort of reasoning, for example, 'She brings you toys like Santa Claus' and 'She flew in my house, got in the chimney.' Both children and adults may have such networks of belief, in which new information fits more easily than if such a network was lacking. A critical step is to address how these networks break down. Studies could assess effects of disbelief in one fantastical being on both subsequent disbelief in others and continuing receptivity to new beings.[6]

Children's Fantasy Orientation (which was independent of their beliefs in familiar fantasy figures) affected the belief levels of children who were not visited. In this group, children with a high Fantasy Orientation had stronger beliefs than did children with low Fantasy Orientation. This finding has interesting implications for understanding the beliefs of children in families that do not support such practices. For example, Prentice and Gordon (1986) found that a sizable subset of the Jewish children they tested believed in Santa Claus. Our findings might allow us to make the prediction that the children in their sample who did believe were higher in Fantasy Orientation than were those who did not. However, the finding that Fantasy Orientation was not related to children's beliefs in familiar fantasy figures suggests limitations on these conclusions. There is much work to be done on this issue.

Our toy/candy preference variable, which was an attempt to capture one aspect of a child's motivation to believe, had a strong effect on the beliefs of older children. It is a bit odd to suggest that someone actually chooses to believe in something. In fact, from a philosophical perspective it contradicts one of the core properties of belief: that one cannot decide to acquire or reject a belief; philosophers refer to the idea that someone could do this as the 'dynamic paradox' (Mele, 1987; Williams, 1973, cited in Clement, 2002). Rather it makes more sense that children's preferences and goals affect what they pay attention to, how much weight they give to evidence, and possibly also their level of engagement in entity-related practices. As Clement (2002) describes, a person with a particular motivation might be hypersensitive to each piece of information that could strengthen his/her belief and ignore evidence that does not support it.

Finally, our findings speak to the kinds of inferences children make about novel entities. There is little knowledge about the assumptions children carry over from humans or other real entities to fictional or fantastical entities. Carey's (1985) work shows that humans provide a strong inductive base for children, from which they generalize to unfamiliar entities. Boyer (1997) suggests that young children may follow a default assumption in which all properties are carried over from humans to fantastical entities, and with development, children may become more selective in the properties they attribute, although he admits that 'there is no good understanding and very little experimental study of how this is actually

[6] It could be argued that the context sensitivity of fantastical entities makes it unlikely that children have such a network. This is an issue that could be explored in future research.

done' (p. 1013). In our study, both age and Fantasy Orientation affected children's ability to conceive of the Candy Witch as possessing non-human attributes. Younger children with low Fantasy Orientation were least likely to attribute non-human properties to the Candy Witch, that is, they did seem to adopt a default in which she possessed mostly human-like properties. As children get older, overriding this default and elaborating on known properties may become easier, and having a high Fantasy Orientation appears to facilitate this. This implies an important role for inferential abilities in the development of children's fantasy beliefs.

Children also judged the Candy Witch to be dissimilar to humans in terms of her physical properties more so than in terms of her other properties. In interpreting this finding one must consider relations between the attributes we presented to the children and the properties they attributed. Children were told that the Candy Witch flies. Children might have accessed their knowledge of other human-like entities who fly (e.g. the Tooth Fairy) and inferred that the Candy Witch had similar properties, such as the ability to travel long distances in a short time. Children were also told that the Candy Witch eats candy for every meal, which could be interpreted as a violation of biological principles, and that she relies on the telephone (vs. telepathy) for communication. To the extent that one could actually eat candy at every meal, these are both human-like properties, which could explain why children attributed more human-like biological and psychological human properties to the Candy Witch than physical human properties. However, research (e.g. Browne & Woolley, 2004) shows that children know that people do not eat candy for meals. It seems more likely to us that the patterns of attributions we observed are due to constraints on the kinds of supernatural entities that populate our culture (Boyer, 1994, 2001). Boyer proposes that a recurrent component of all religions is the existence of certain entities that are different from humans in terms of their physical properties and abilities, yet share the folk psychology of humans. These entities also are less likely to possess biological properties in concert with humans (e.g. they never get old and never die). This pattern of attributes, argues Boyer, makes it easier for people to believe in these entities; they are different enough to attract attention but similar enough to make sense. Perhaps fantastical beings are similarly constrained. If so, this would suggest continuities between fantasy and religious beliefs.

In conclusion, the present study provides evidence regarding factors related to the formation of children's fantasy beliefs. We found that the degree to which children believed in a novel fantasy figure was influenced by age, participation in practices surrounding the entity, beliefs in familiar fantasy figures, Fantasy Orientation and an implicit cost/benefit analysis. There are limitations of the present study. One is the small sample size. Studies with larger samples could enable further assessment of the interactions of the variables of interest in the emergence of these beliefs. Another limitation concerns potential difficulties inferring what children mean when they say that something or someone is real. More subtle measures might be used to determine, for example, whether, in saying that both their teacher and the Candy Witch are real, children believe that they both exist in the same sense. Such measures could include different sorts of verbal questions or even observations of behavior. Finally, researchers must work to develop a validated fantasy orientation scale for use with young children. Despite these potential shortcomings, our findings highlight the role of children's thinking and reasoning in the formation of beliefs about fantastical beings, and provide unique insight into the child's active construction of reality.

Appendix A. Candy Witch presentation script

Initial questions:

1. Who knows about Halloween?
2. What do you do on Halloween?
3. What do you say when you go to people's houses? What do they give you?
4. Who knows about the Candy Witch?

Presentation script

'Let me tell you about the Candy Witch. I have never seen the Candy Witch so I don't have a real picture of her. But somebody made a doll that looks like her, and I have a picture of that. Here it is. This is what she looks like. (Speaker shows picture of a Candy Witch doll and passes the picture around.) She's a really nice witch. And do you know what she loves best of all? Candy! She eats candy for breakfast, and candy for lunch, and candy for dinner. She has to brush her teeth a lot!

Do you know where she gets all that candy? Well, I'll tell you. Every Halloween night, after the kids are all asleep she leaves her house and flies around. And she carries with her a big bag of toys – brand-new toys. And do you know what she does with those toys? I'll tell you. Some children don't want all that candy they collected. They'd rather have a toy instead. So, their mom and dad call the Candy Witch on the phone and tell her to come. Then they leave their candy for the Candy Witch to take, and she gives them a new toy in its place. This way, she gets all the candy she wants, and the kids get new toys!

(She always leaves a few pieces of candy though; she doesn't take it all.).

Now, some kids don't want the Candy Witch to take their candy and leave a brand-new toy. So she won't come to their house. But other kids really do want the Candy Witch to come to their house and leave a toy for them. She only goes to the houses of kids who want her to come.'

Informal discussion/review (children are corrected if they give the wrong answer):

1. Is the Candy Witch a nice witch or a mean witch?
2. What is the Candy Witch's favorite thing to eat?
3. When does the Candy Witch come to kids' houses?
4. Does she come to all kids' houses or just some?
5. Does your mom or dad have to call the Candy Witch if you want her to come?
6. What does the Candy Witch do at the kids' houses?

Appendix B. Properties used in the property attribution task

Physical properties

Can the Candy Witch travel the whole world in one night?
Can someone touch the Candy Witch?
Can the Candy Witch be in different places at the same time?

Biological properties

Does the Candy Witch need to sleep sometimes?
Does the Candy Witch get older every year?
Can the Candy Witch get hurt?

Social properties

Does the Candy Witch have parents?
Does the Candy Witch eat dinner with his/her family sometimes?
Can the Candy Witch have a pet?

Psychological properties

Does the Candy Witch dream sometimes?
Can the Candy Witch know what we're thinking?
Can the Candy Witch get his/her feelings hurt?

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