Monsters and Growling Dogs: A Dual-Source Theory of the Child's Concept of Fear

Mary H. Kayyal, Sherri C. Widen

Boston College, USA

Abstract

Prior research suggests that young children associate fear with imaginary creatures more strongly than with realistic threats to safety. We propose an alternative: the Dual-Source Account of children's understanding of fear. In this account, as early as the age of 3 years, children associate both realistic and imaginary causes of fear with being scared, and this understanding increases with age. In the current study, children (*N*=48, 3-5 years) labeled the emotion of a story's protagonist who encountered either a realistic or imaginary fear-eliciting creature. Young preschoolers attributed fear to both imaginary and realistic creatures approximately half of the time, and their attribution of fear to both imaginary and realistic creatures increased steadily with age. Thus, as predicted by our account and evolutionary theorizing, the basis of children's understanding of fear includes both realistic and imaginary causes of fear.

Keywords: fear, realistic, imaginary, free labeling, emotion

Introduction

What do young children think is *scary*? Real threats to safety with which they have had a real experience (such as spiders or mean dogs) or imaginary causes with which they could never have had a real experience (such as monsters and ghosts)? Prior research supports the latter, showing that imaginary creatures loom large in young children's fear concept. Indeed, children think imaginary creatures are scarier

than real ones, even when they readily admit that these creatures are "just pretend" (Sayfan & Lagatutta, 2008, 2009). When asked to generate a story about a possible cause of fear, young children (4-8 years) are more likely to tell stories with imaginary causes than realistic ones (Denham & Zoller, 1991; Strayer, 1986). Children's references to such imaginary causes decrease with age (e.g., Lentz, 1985; Muris, Merckelbach, Gadet, & Moulaert, 2000). In the current study, we show that imaginary causes of fear are not primary in young preschoolers' understanding of that emotion. Instead, young preschoolers understand both imaginary and realistic causes of fear equally.

Two theoretical accounts on the relation between children's real-world knowledge and their ability to engage in pretense each explain why children are afraid of imaginary creatures. In the undifferentiated-imaginary account, preschoolers' fear of imaginary creatures reflects their undifferentiated and distorted perception of reality (Bauer, 1976). This account draws on Piaget's (1952, 1962) claim that the pre-operational child (2-7 years) is dominated by magical thinking and fails to understand that what they have merely imagined cannot become real. Recent research, however, has refuted the Piagetian claim that children younger than seven years cannot distinguish the real from the imagined (e.g., Flavell, Flavell, & Green, 1987; Harris, Brown, Marriott, Whittall, & Harmer, 1991; Samuels & Taylor, 1994; Wellman & Estes, 1986; Woolley & Phelps, 1994).

On the second account, the differentiated-imaginary account, preschoolers' fear of imaginary creatures reflects the emergence of pretend play in the second year of life and its quick development thereafter (Bleuler, 1951; Harris, 2000; Leslie, 1994). On this account, children's fear begins with realistic, experience-based causes and only later broadens to include imaginary ones as children's imaginative abilities increase during the preschool years. Specifically, before children can pretend, they must have acquired a causal understanding of the real world. For example, a young child can learn to fear hot stoves via associative learning after burning herself on one (e.g., Watson & Rayner, 1920), by watching another person get burned (e.g., Askew & Field, 2007), or by hearing information about the hazards of touching a hot stove (e.g., Muris, Bodden, Merckelbach, Ollendick, & King, 2003). Imagining that one should not approach the stove because a fire-breathing dragon lives behind it requires an advanced imagination not entailed by the other examples. The differentiated-imaginary account, which focuses on children's *experience* of fear (i.e., what scares young children and why), raises questions about children's *understanding* of fear (what children *think* is scary), and how that understanding changes with age.

We propose a cognitive-developmental account that we call the Dual-Source account that focuses on children's understanding of the causes of fear. In this

account, by three years of age, children's understanding of fear includes both realistic and imaginary causes, both of which increase with age. The Dual-Source account is consonant with evolutionary theorizing that preschoolers' fear of imaginary creatures is a byproduct of children's ability to anticipate real dangers (Barrett, 2005; Boyer & Bergstrom, 2011). On our account, neither realistic nor imaginary causes are the basis of children's understanding of fear because both reality and imagination are part of the process of producing fear. For example, there are real events – such as a snake in the grass or a charging bear in the woods – that produce startle and orienting reflexes that occur with minimal or no cognitive processing and that are labeled as fear. But aside from these reflexes, most cases labeled as fear include a cognitive appraisal of the *future* implications of a current situation. Fear typically involves anticipating the future (be it immediate, such as being mugged, or long-term, such as contemplating a major life change), thus both reality and imagination are involved. Conversely, most other emotions are caused primarily by past or current events. Typically, one is sad about a loss that already happened or angry with someone currently blocking a goal. Of course, any emotion can stem from the imagination, but the prototype of most emotions has real past or current causes, whereas the prototype of fear is about the future. These prototypes become central to the concept of each of these emotions. In this way, we assume that young children implicitly understand the role of imagination in producing fear but also understand that fear is not limited to the imagination.

That children's understanding begins with both realistic and imaginary causes – neither of which is primary – raises the question of whether one type becomes more primary than the other as age increases. Our Dual-Source account is based on a script theory of emotion concept acquisition (Fehr & Russell, 1984; Russell, 1991; Widen & Russell, 2008, 2010a). An emotion script is an ordered sequence of events that specifies, for example, the possible causes and behavioral consequences for that emotion – for fear, a negative event together with its imagined future implications (Widen & Russell, 2008, 2010a). A central assumption is that experience and age guide the acquisition of a script for each emotion. The fear script develops as children witness or experience real threats to safety, experience ambiguous situations (e.g., dark rooms, noises in the closet) that they interpret as scary, and hear culture-specific stories about the scary imaginary entities. Because the types and salience of fear-eliciting experiences vary with age, how children understand them may also vary with age. One focus of the current study is to explore how understanding of imaginary and realistic causes of fear changes with age.

Contrary to both the Dual-Source and the differentiated-imaginary accounts, prior research on children's understanding of fear suggests that imaginary creatures

are primary in preschoolers' fear concept. When children are asked to tell stories about the possible causes of a protagonist's fear, children describe events involving imaginary creatures (e.g., monsters) more often than real dangers (e.g. thunder storms; Denham & Zoller, 1991; Strayer, 1986). Preschoolers' tendency to generate imaginary causes suggests that imaginary causes come to mind more readily than realistic ones, but this finding need not imply that imaginary causes are better understood as *scary* than are realistic ones. A more sensitive measure of children's understanding of fear requires a recognition task in which children label both imaginary and realistic causes.

To our knowledge, only two studies have used a recognition task to examine children's understanding of fear (Sayfan & Lagattuta, 2008, 2009). Children (3-7 years) heard brief stories about a protagonist who encounters either imaginary or realistic fear-eliciting creatures. Children were then asked whether the protagonist was "afraid or not afraid right now" and, if she was afraid, the degree to which she was afraid (2008, p. 824; 2009, p. 1760). Three- and 5-year-olds rated both imaginary and realistic causes as equally scary (Sayfan & Lagattuta, 2008) – a finding consistent with the Dual-Source view. Seven-year-olds, however, rated fear stories with imaginary causes as scarier than those with realistic ones, suggesting that imaginary causes become primary as age increases.

The current study used a free-labeling response format. The free-labeling method investigates children's spontaneous interpretation of these different types of fear stories. This format has two advantages over the two-alternative forced-choice response format used in the Sayfan and Lagatutta studies. First, a free-labeling response format avoids the issue that people have a "yes" response bias (e.g., King, Hunter, & Schmidt, 1980) which may be exaggerated in preschoolers (e.g., Okanda & ItaKura, 2010). Second, a free-labeling response format provides additional information – specifically, what emotion, if not fear, a child attributes to a fear-eliciting cause. In addition, this format is less productively demanding than the commonly used storytelling method (e.g., Denham & Zoller, 1991; Strayer, 1986). Thus, we expected that the free-labeling task would provide a more sensitive measure of young children's understanding of fear than methods used in prior research.

The primary purpose of our studies was to examine whether young preschoolers are more likely to associate fear with imaginary causes, realistic causes, or both, and how that understanding changes with age. If children's experience of fear parallels their understanding of fear, then the differentiated-imaginary account implies that younger preschoolers will be more likely to label the realistic-fear stories as *scared* than imaginary-fear ones. Young children's labeling of the realistic-fear stories as *scared* will be high and remain relatively

stable with age whereas their labeling of the imaginary-fear stories as *scared* is expected to be low and to increase with age, particularly during the older preschool years when children's imaginative abilities increase (Harris, 2000). Our Dual-Source account implies that younger preschoolers will label both realistic and imaginary causes as *scared* with equal probability and explores possible age-related changes.

To our knowledge, the current studies are the first to use free-labeling to trace the development of children's (3-7 years) understanding of realistic and imaginary causes of fear. Children labeled four fear stories interspersed with stories for other emotions, which were included to hide the purpose of the study, and to show that children can label the emotion of a story's protagonist. After each story, children were simply asked, "How does she feel?"

Preliminary Study

In a preliminary study, children (*N*=108, 3-7 years) labeled the emotion of a story protagonist in four fear (two realistic, two imaginary) stories, shown in the appendix, and three other causes (one each of happiness, sadness, and anger). Each story also included behavioral consequences of the emotion (e.g., for fear, screams and runs away).

The results were consistent with the predictions of the Dual-Source account. Children associated fear with both imaginary and realistic causes. Of the 108 children, only 8% labeled only one type of fear cause (imaginary or realistic) but not the other. The remaining 92% either labeled neither or both types of fear stories as *scared*.

The percentage of 3-4 year olds who labeled both the imaginary (57%) and realistic (50%) fear stories as *scared* was moderate and did not significantly differ; children's performance on both types increased with age, but did so more dramatically for imaginary causes than realistic ones: 5-year-olds were more likely to label the imaginary stories (90%) as *scared* than the realistic ones (69%), but this gap was closing for the 6-7-year-olds (96% and 85%, respectively). When children did not label the fear stories as *scared*, they were most likely to label them as *sad*; this was true for all ages.

The results of the preliminary study supported the Dual-Source account by indicating that the youngest children (3-4 years) understood both realistic and imaginary causes of fear. But there were two concerns with the method of this study. First was that the ontological status of the fear-eliciting creatures was not made explicit to the child (and, in one case, may have been ambiguous: "…Sally

saw a howling ghost. She tried to touch it but her hand went right through it: It was a real ghost."). Thus, it is possible that children labeled the fear stories as *scared* because children misinterpreted the intended status of the creature. In the main study, the ontological status of the creature as real or imaginary was explicitly stated in each fear story.

A second concern was that children labeled the fear stories as *scared* based on the behavioral consequence (e.g., "She screamed and ran away"). That is, children may have been labeling the behavioral consequence rather than the situational cause. However, in two other studies children (3-7 years) labeled imaginary and realistic causes of fear as *scared*, even when a behavioral consequence was not provided (Kayyal, Widen, & Russell, 2013; Widen & Russell, 2010b). When children's understanding of the causes vs. the consequences of emotions were compared, children were more likely to label a fear cause than a fear consequence as *scared* (Widen & Russell, 2011). To rule out the possibility that children's success on the fear stories in the preliminary study was due to behavioral consequences in each story, the stories in the current study included only the situational cause.

Current Study

The current study modified the preliminary study in three specific ways: (1) The ontological status of the fear-eliciting creatures was made explicit: Children were told that the creature was either "real" or "just pretend." (2) The imaginary and realistic causes of fear were made parallel (e.g., real sharks and imaginary sea-monsters both have sharp teeth) to ensure that variations in children's responses were specifically related to the real or imaginary status of the fear-eliciting stimuli, and not to other factors. (3) Only the situational cause (and not the behavioral consequence) was presented in each story. We predicted that the age-related changes found in the preliminary study would persist given these changes: The younger preschoolers would label both imaginary and realistic causes as *scared* equally, but less often than older preschoolers, and that older preschoolers would label imaginary causes as *scared* more often than realistic causes.

Method

Participants

Participants were children (*N*=48, 3-5 years) recruited from the children's museums in Boston. All children were proficient in English. There were 24 young preschoolers (38 to 53 months, mean=46.0 months) and 24 older preschoolers (54 to 70 months, mean=62.4 months). Each age group was evenly divided by sex.

Materials

Stories of emotional events. There were four fear stories (two imaginary and two realistic) describing stereotypical emotion-eliciting events, shown in the appendix. Each story explicitly stated whether the creature was imaginary or real. Also included were stories (1 each) for happiness, sadness, anger, surprise, and disgust.

Procedure

Each child was tested individually in an area of the museum designated for testing.

Priming. In order to prime the child's emotion vocabulary, the experimenter and child had a conversation in which the words *happy*, *sad*, *mad*, *scared*, *surprised*, and *disgusted* occurred. This priming procedure gave the child an opportunity to become more comfortable with the experimenter, and made it more likely that the relevant emotion labels were accessible. The experimenter began: "First we are going to talk about feelings. Feelings are like when you feel happy or sad. Do you ever feel happy?"… "Sad is another feeling. Have you ever felt sad?", etc. The experimenter did not discuss *when* or *why* these emotions might occur. After each question, the child was given the opportunity to respond. If the child spontaneously offered an example of when someone had felt a particular emotion, the experimenter listened but did not comment on the child's story or encourage further explanation. Every effort was made throughout the experiment to use a neutral tone of voice when presenting the emotion words.

Animal labeling task. Next was an animal labeling task, which served as a practice trial and a comparison task for the free-labeling of the emotion stories. The child heard brief descriptions of three common animals (cat, dog, rabbit; e.g., "This kind of animal can purr and likes to catch mice") and were asked to label it before

the experimenter showed them the corresponding picture. The animals were presented in random orders.

*Story labeling task***.** Finally, the experimenter introduced the story labeling task as a new game in which the child would hear brief stories about a girl named Sally. There were nine emotion trials, two for fear with realistic causes and two for fear with imaginary causes, and one each for happiness, sadness, anger, surprise, disgust. The happy trial was always first, and served as a gate-keeping trial: The child had to label this trial as *happy* (or some close synonym) to be included in the sample. The other stories were presented in a random order with the proviso that no more than two fear stories were presented consecutively. The first story began, "Once upon a time," and the other stories began, "One week later…" After each story, the experimenter asked, "How do you think Sally feels?"

At no time during the labeling trials did the experimenter use the word *emotion*, provide any emotion labels, or otherwise direct the child to try to use an emotion label beyond asking how Sally was feeling.

Scoring

*Animal labeling task***.** The labels scored as correct in the cat category were *cat, kitty*; in the dog category, *dog*; in the rabbit category, *rabbit*, *bunny*. Children used no other labels.

*Story labeling task***.** The participants were allowed to use any label they chose. The scoring key used in this study was drawn from Widen and Russell (2003), who described the development of a scoring key based on ratings of two judges blind to the source of the labels. Any labels that were used by children in the current study that had not been previously rated underwent the same rating procedure. The labels that occurred in this study and that were scored as correct were: for happiness, *happy, good, excited*; for fear, *scared, frightened*, *afraid*; for anger, *angry*, *mad*, *grumpy*; for sad, *sad*, *upset*; for surprise: *surprised, shocked, startled*; for disgust: *disgusted, yucky, icky, gross, nasty*. Responses could vary from what was just listed in syntax or by being embedded in a phrase (e.g., *very scared*). These were all the labels children used in the current study that came close to specifying the one of the target emotions.

Results

The 48 children had 144 opportunities to label an animal. They did so correctly on 100% of trials.

Children had 432 opportunities to label an emotion story. They did so "correctly" on 52% (226) of trials; 47% (201) were emotion labels scored as "incorrect"; 1% (5) non-responses or silly responses (e.g., *crazy*). The percentage of correct emotion labels was significantly lower than the percentage of correct animal labels, dependent samples t_{47}=12.69, p<.001. The rank order of "correct" responses to the stories was: sad, 92%; happy, 90%; scared, 56%; angry, 27%; disgusted, 27%; and surprised, 13%.

Imaginary or Realistic Fear First?

Children associated fear with both imaginary and realistic causes. Figure 1 shows that children in each age group either labeled neither or both types of fear stories as *scared*. Only 6% of children labeled only the fear stories with an imaginary cause but not those with a realistic one as *scared*, and only 6% labeled only the fear stories with a realistic cause but not those with an imaginary one as *scared*. A Chi Square test (*N*=48), comparing children who labeled neither or both types of fear stories as *scared* (42) to those who labeled only fear stories with imaginary or only realistic causes (6), confirmed that children were unlikely to associate fear with only one type of cause, χ^2(*df*=1)=27.00, p<.001. Separate Chi Square tests indicated that this difference was significant at each age: younger preschoolers, χ^2(*df*=1)=33.33, p<.001; older preschoolers, χ^2(*df*=1)=21.33, p<.001.

Figure 1. *The Percentage of Children Who Labeled the Fear Stories With Imaginary and Realistic Causes as Scared*
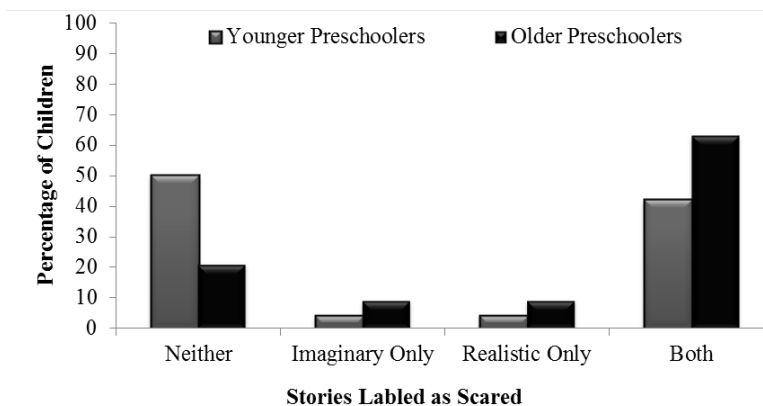
"Correct" Use of Scared

To examine the proportion of children who "correctly" labeled the fear stories as *scared*, responses to the two fear stories with imaginary causes were added together and divided by two. The same was done for the two with realistic causes. In a mixed-design ANOVA (alpha=.05), age (2 levels: younger preschoolers, older preschoolers) and sex (2 levels) were between-subjects factors, and type of cause (2 levels: imaginary, realistic) was the within-subject factor.[1]

The effects for age and type of fear are presented in Table 1. Although older preschoolers labeled the fear stories as scared more frequently than the younger preschoolers, the main effect for age was not significant, $F(1,46)=.11$, $p=.75$. Children's performance on both types of fear stories increased with age and the Age x Type-of-Fear interaction was not significant, $F(1,46)=.11$, $p=.75$. There were no significant effects involving sex.

Table 1. *Mean Proportion of Children Who "Correctly" Labeled the Fear Stories as "Scared"*

Age Group	Type of Fear		Mean
	Imaginary	Realistic	
Younger Preschoolers	.44	.46	.45
Older Preschoolers	.67	.67	.67
Mean	.55	.56	

Note. Maximum possible is 1.00. For each type of fear, there were two stories.

"Incorrect" Responses to the Fear Stories

When children did not label the fear stories as *scared*, they were most likely to label them as *sad*. Indeed, 57% of children's "incorrect" responses to the fear stories were *sad* (17% *angry*, 16% *happy*, 5% *surprised*, and 5% non-responses). For each age group, the most frequent "incorrect" response to the fear stories was *sad;* children's use of *sad* remained stable with age (25% for the younger children, 21% for the older children) as their use of *scared* increased with age (from 35% to 66%, respectively).

---

[1] When this analysis was repeated with each of the four fear stories (dragon story, sea monster story, alligator story, and shark story) included as a within-subject factor, the results were the same: There were no significant main effects and no interactions.

Summary. As in the preliminary study, the young preschoolers labeled both types of fear as *scared* at the same moderate level. The older preschoolers were more likely than the younger preschoolers to label both types of fear stories as *scared*. Unlike the preliminary study, there was no advantage of one type of fear story over the other for the older preschoolers.

General Discussion

The results of the current study support our Dual-Source account of children's understanding of fear. The youngest children associated fear with both realistic and imaginary causes with equal probability, and children's understanding of both increased steadily with age. Contrary to prior research (Denham & Zoller, 1991; Sayfan & Lagatutta, 2008, 2009; Strayer, 1986), there was no advantage of imaginary causes over realistic ones for any age group – at least when the ontological status of the fear-eliciting stimulus was explicitly stated. Thus, by the age of three years, children have already developed a script for fear that includes both realistic and imaginary causes. Children are learning about the causes of fear through first-hand (e.g., encountering a real angry dog) and second-hand experiences (e.g., hearing cultural narratives about imaginary creatures) from an early age, and both types of learning appear equally effective.

Our central assumption is that young children's fear concept includes both imaginary and realistic causes, neither of which precedes or has an advantage over the other because reality and imagination (anticipating the future) are both part of the same process of producing fear. Our assumption is consonant with evolutionary theorizing – that preschoolers' fear of monsters, ghosts, and other imaginary creatures is part of children's ability to anticipate real predators (Barrett, 2005; Boyer & Bergstrom, 2011). Preschool is when children increasingly explore their environment in the absence of a primary caregiver, a time during which anticipating and avoiding real threats becomes increasingly important. Thus, children's understanding of realistic fears must increase at the same pace as their understanding of imaginary ones; the primacy of one type of fear over the other offers no advantage. Indeed, our results supported this prediction.

The question remains as to why approximately half of the young preschoolers' responses (55%) for the fear causes were not *scared*. It is possible that (a) they did not know how to label something – but this explanation is incorrect since they labeled animals and other emotion stories. Or (b) they did not know a label for fear, even though *scared* was primed prior to the free-labeling task. This explanation is unlikely, given evidence from observational studies showing that 80% of two-year-

olds use *scared* appropriately in spontaneous conversation (e.g., Ridgeway, Waters, & Kuczaj, 1985; Wellman, Harris, Banerjee, & Sinclair, 1995). It is possible that there is a developmental lag in young children's understanding of fear: Perhaps young children can recognize what is frightening in their environment before they can recognize a description of a frightening event.

The youngest children in our studies were 3-year-olds. Three years is the appropriate age for the youngest children in a free-labeling study on fear: This is the age at which children begin to use *scared* to label stories (Widen & Russell, 2010b, 2011) and faces (e.g., Widen & Russell, 2003, 2008). Half of the three-year-olds in the current study never used *scared* for any of the fear stories. Thus, studying two-year-olds might yield more information on children's early understanding of fear, but we anticipate that two-year-olds would not label either type of fear story as *scared*. Two-year-olds are unlikely to use *scared* on a labeling task (Widen & Russell, 2003, 2008) (indeed, young two-year-olds are unlikely to provide any labels; Widen & Russell, 2010b). It remains possible that children who are younger may understand one of the types of causes – imaginary or realistic – better than the other, but this possibility is difficult to test.

Some caution is recommended in interpreting our findings as only a small sample of stories were used (2 realistic and 2 imaginary fear stories). Not all children have heard of dragons and sea monsters and fewer have encountered sharks or alligators. Thus, it is possible that children's recognition of the realistic causes of fear may have been underestimated. Future research might include a wider variety of fear stories for each type of cause.

At every age, when children did not label the fear stories as *scared*, they were most likely to label them as *sad*. Children's earlier-emerging emotion categories are broad and do not correspond to adult-like discrete emotion categories even though children use the same label (Widen, 2013; Widen & Russell, 2003, 2008). Thus, although some children labeled the fear stories as *sad*, their understanding of this label may have been more similar to *feels bad* than to the adult understanding of sadness. As age increased, children were more likely to label both realistic and imaginary causes of fear as *scared*, suggesting that their emotion concepts were becoming more adult-like.

Of course, that some children do not correctly label a protagonist in a frightening scenario – whether real or imaginary – as *scared* is discrepant with children's fearful behaviors in frightening situations. Consider, for example, a young child who hesitates to go into a dark bedroom alone. The young child's hesitant behavior is consistent with experiencing fear specifically and not simply any negative emotion, such as sadness or anger. Thus, our findings highlight a lag between the experience of fear and an understanding of a frightening event as

scary. The phenomenon in which the emotion precedes cognition has been demonstrated in various Theory of Mind domains (Bradmetz & Schneider, 1999, 2004; Ruffman & Keenan, 1996). From an evolutionary perspective, and especially for fear, it is perhaps more adaptive for the emotion (and the emotional reaction) to precede a cognitive evaluation of the event. In addition, recall that evolutionary theorizing suggests that preschoolers' fear of imaginary creatures is a byproduct of children's ability to anticipate real dangers (Barrett, 2005; Boyer & Bergstrom, 2011). Perhaps young children can anticipate dangers and feel afraid without having to understand these dangers specifically as frightening.

References

Askew, C., & Field, A.P. (2007). Vicarious learning and the development of fears during childhood. *Behaviour Research and Therapy, 45,* 2616-2627.

Barrett, H.C. (2005). Adaptations to predators and prey. In D.M. Buss (Ed.), *The handbook of evolutionary psychology* (pp. 200-223). Hoboken, NJ: John Wiley & Sons, Inc.

Bauer, D.H. (1976). An exploratory study of developmental changes in children's fears. *Journal of Child Psychology and Psychiatry, 17*, 69-74.

Bleuler, E. (1951). The basic symptoms of schizophrenia. In D. Rapaport (Ed.), *Organization and pathology of thought: Selected sources* (pp. 581-649). New York, NY: Columbia University Press. *doi: 10.1037/10584-026*

Boyer, P., & Bergstrom, B. (2011). Threat-detection in child development: An evolutionary perspective. *Neuroscience and Behavioral Reviews, 35,* 1034-1041.

Bradmetz, J., & Schneider, R. (1999). Is 'Little Red Riding Hood' afraid of her grandmother? Cognitive vs. emotional response to a false belief. *British Journal of Developmental Psychology, 17,* 501-514.

Bradmetz, J., & Schneider, R. (2004). The role of the counterfactually satisfied desire in the lag between false-belief and false-emotion attributions in children aged 4-7. *British Journal of Developmental Psychology, 22,* 185-196.

Denham, A., & Zoller, D. (1991). 'When my hamster died, I cried': Preschoolers' attributions of the causes of emotions. *Journal of Genetic Psychology, 152*, 371-373.

Fehr, B., & Russell, J.A. (1984). Concept of emotion viewed from a prototype perspective. *Journal of Experimental Psychology: General, 113,* 464-486.

Flavell, J.H., Flavell, E.R., & Green, F.L. (1987). Young children's knowledge about the apparent–real and pretend–real distinctions. *Developmental Psychology*, *23*, 816-822.

Harris, P.L. (2000). *The work of the imagination. Understanding children's worlds.* Malden, MA: Blackwell Publishing.

Harris, P., Brown, E., Marriott, C., Whittall, S., & Harmer, S. (1991). Monsters, ghosts and witches: Testing the limits of the fantasy-reality distinction in young children. *British Journal of Developmental Psychology, 9,* 105-123.

Kayyal, M.H., Widen, S.C., & Russell, J.A. (2013). *Palestinian and American children's attribution of fear to imaginary and realistic causes and the behavioral consequences associated with these causes*. Manuscript in preparation.

King, L. M., Hunter, J.E., & Schmidt, F.L. (1980). Halo in a Multidimensional Forced-Choice Performance Evaluation Scale. *Journal of Applied Psychology, 65*, 507-516.

Lentz, K. (1985). The expressed fears of young children. *Child Psychiatry and Human Development, 16*, 3-13.

Leslie, A.M. (1994). Pretending and believing. *Cognition, 50,* 211-238.

Muris, P., Bodden, D., Merckelbach, H., Ollendick, T., & King, N. (2003). Fear of the beast: A prospective study on the effects of negative information on childhood fear. *Behaviour Research and Therapy, 41,* 195-208.

Muris, P., Merckelbach, H., Gadet, B., & Moulaert, V. (2000). Fears, worries, and scary dreams in 4- to 12-year-old children: Their content, developmental pattern, and origins. *Journal of Clinical Child Psychology, 29*, 43-52.

Okanda, M., & ItaKura, S. (2010). When do children exhibit a "yes" bias? *Child Development, 81*, 568-580. doi:10.1111/j.1467-8624.2009.01416.x

Piaget, J. (1952). *The origins of intelligence in children*. New York: International Universities Press.

Piaget, J. (1962). *Play, dreams, and imitation in childhood*. New York: Norton.

Ridgeway, D., Waters, E., & Kuczaj II, S.A. (1985). Acquisition of emotion-descriptive language: Receptive and productive vocabulary norms for ages 18 months to 6 years. *Developmental Psychology, 21,* 901-908.

Ruffman, T., & Keenan, T.R. (1996). The belief-based emotion of surprise: The case for a lag in understanding relative to false belief. *Developmental Psychology, 32,* 40-49.

Russell, J.A. (1991). Culture and the categorization of emotions. *Psychological Bulletin, 110*, 426-450.

Samuels, A., & Taylor, M. (1994). Children's ability to distinguish fantasy events from real-life events. *British Journal of Developmental Psychology, 12,* 417-427.

Sayfan, L., & Lagattuta, K. (2008). Grown-ups are not afraid of scary stuff, but kids are: Young children's and adults' reasoning about children's, infants', and adults' fears. *Child Development, 79,* 821-835.

Sayfan, L., & Lagattuta, K. (2009). Scaring the monster away: What children know about managing fears of real and imaginary creatures. *Child Development, 80,* 1756-1774.

Strayer, J. (1986). Children's attributions regarding the situational determinants of emotion in self and others. *Developmental Psychology, 22*, 649-654.

Watson, J.B., & Rayner, R. (1920). Conditioned emotional reactions. *Journal of Experimental Psychology, 3,* 1-14.

Wellman, H., & Estes, D. (1986). Early understanding of mental entities: A reexamination of childhood realism. *Child Development, 57,* 910-923.

Wellman, H.M., Harris, P.L., Banerjee, M., & Sinclair, A. (1995). Early understanding of emotion: Evidence from natural language. *Cognition and Emotion, 9,* 117-149.

Widen, S.C. (2013). Children's interpretation of facial expressions: The long path from valence-based to specific discrete categories. *Emotion Review, 5,* 72-77.

Widen, S.C., & Russell, J.A. (2003). A closer look at preschoolers' freely produced labels for facial expressions. *Developmental Psychology, 39,* 114-128.

Widen, S.C., & Russell, J.A. (2008). Young children's understanding of other's emotions. In M. Lewis & J.M. Haviland-Jones (Eds.), *Handbook of emotions* (pp. 348-363). New York, NY: Guilford.

Widen, S.C., & Russell, J.A. (2010a). Children's scripts for social emotions: Causes and consequences are more central than are facial expressions. *British Journal of Developmental Psychology, 28,* 565-581. doi:10.1348/026151009X457550d

Widen, S.C., & Russell, J.A. (2010b). Differentiation in preschooler's categories for emotion. *Emotion, 10,* 651-661.

Widen, S.C., & Russell, J.A. (2011). In building a script for an emotion, do preschoolers add its cause before its behavior consequence? *Social Development, 20,* 471-485.

Woolley, J.D., & Phelps, K.E. (1994). Young children's practical reasoning about imagination. *British Journal of Development Psychology*, *12*, 53-67.

Appendix

Realistic and Imaginary Fear-Eliciting Stories Used
in the Preliminary and Current Study

Realistic	Imaginary
Preliminary Study	
"One week later, Sally was walking down the street and she saw a big, mean dog. As Sally got closer to the dog, the dog started growling, barking, and chasing Sally."	"One night, Sally was sleeping in her bed. Then something woke her up. Sally's room was dark, and she was all alone. Something was moving in Sally's closet. She thought it was a monster."
"One day Sally was playing in her sandbox. Suddenly, she felt something crawling on her leg. It was a big black spider."	"On Halloween, Sally went trick-or-treating. Sally went to the door and rang the doorbell. The door opened and Sally saw a howling ghost. Sally tried to touch it, but her hand went right though it: It was a real ghost."
Current Study	
"Do you know what alligators are? Alligators are really big reptiles that live in swamps and have lots of sharp teeth. And alligators are real. One week later, Sally was walking by a swamp. Ahead, she saw a big alligator. The alligator showed its sharp teeth and started running toward Sally."	"Do you know what dragons are? Dragons are big reptiles that can fly and breathe fire. But, dragons are just pretend. One week later, Sally was walking by a swamp. She imagined that she saw a dragon. The dragon would show its big teeth and start running toward Sally."
"Do you know what sharks are? Sharks are large fish that live in the ocean and have lots of really sharp teeth. And sharks are real. One week later, Sally was swimming at the beach. Ahead, she saw a big shark. The shark saw her and started swimming quickly towards Sally."	"Do you know what sea monsters are? Sea monsters are large monsters that live in the ocean and have lots of really sharp teeth. But, sea monsters are just pretend. One week later, Sally was swimming at the beach. She imagined that she saw a big sea monster. The sea monster would see her and start quickly swimming towards her."