

**More than Meets the Eye:  
Young Children's Trust in Claims that Defy their Perceptions**

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### **Abstract**

Children and adults often encounter counterintuitive claims that defy their perceptions. We examined factors that influence children's acceptance of such claims. Children aged 3 to 6 years were shown familiar objects (e.g., a rock), were asked to identify the objects, and were then told that each object was something else (e.g., that the rock was soap). For some children, informants explicitly stated that the objects were different from what they appeared to be, whereas other children received testimony about the objects' identities without any reference to the discrepancy between appearance and reality. Children also completed standard tasks measuring appearance-reality understanding. When later asked about the objects' identities and properties, children who had a firm understanding of the appearance-reality distinction and those who heard informants mention that distinction were more accepting of the informants' counterintuitive claims. Thus, receptivity to counterintuitive claims can reflect conceptual growth rather than simple deference or conformity.

## **More than Meets the Eye:**

### **Young Children's Trust in Claims that Defy their Perceptions**

The world is full of things that defy our perceptions. Our eyes and bodies tell us that we walk on flat ground, but Earth is really a sphere. When we look up at the sky, it appears that the sun is revolving around the Earth, but the opposite is true. Many animals are different species than what they appear to be. How do we come to believe such things that defy our perceptions? We might seek first-hand confirmatory evidence. Yet, most people do not possess the know-how, technologies, or opportunities to verify these ideas. Indeed, we often have little evidence for such “counterintuitive” ideas except for the testimony that others provide. However, not all testimony is reliable, and this is something that even young children realize (Gelman, 2009; Harris, 2007, 2012; Harris & Koenig, 2006; Sperber et al., 2010). So how do we sort through counterintuitive testimony to differentiate what to believe from what to reject? Two factors seem particularly important: (a) our understanding that reality does not necessarily correspond to appearance, and (b) the credibility of informants, which may be enhanced when they acknowledge the distinction between appearance and reality. In the current study, we assess how these two factors influence young children's willingness to accept claims that defy their perception specifically when they are shown ordinary familiar objects (e.g., a rock) but are then informed that the objects are different from what they appear to be (e.g., soap).

When asked to believe something that does not accord with our initial perceptions, we are asked to go beyond appearances to consider a non-obvious reality. If we treat reality and appearance as the same (without some understanding of the appearance-reality distinction) and someone offers testimony that runs counter to what things appear to be, we may be especially inclined to reject the testimony. Thus, learning from counterintuitive testimony seems to call for

an ability to entertain a distinction between appearance and reality. There are robust findings about preschoolers' developing understanding of the appearance-reality (AR) distinction—an initial understanding of this distinction is evident in children by 2.5 years, and it continues to develop throughout childhood (see Woolley & Ghossainy, 2013). Similarly there are robust findings about preschoolers' learning from testimony (see Harris, 2012). Surprisingly, however, there has been little consideration of how these two skills interact.

Young children typically resist claims that completely defy their perceptions. For example, when told that a cup is a shoe, toddlers display signs of disbelief by staring at the informant or making counter claims (Koenig & Echols, 2003; Pea, 1982). Sensibly, when told that objects are of a different color than they appear to be, preschoolers reject these claims (Clément, Koenig, & Harris, 2004). Similarly, when an adult looks inside a familiar toy box and reports that something unexpected is contained in the box, many 4-year-olds reject the adult's claim (Robinson, Mitchell, & Nye, 1995). However, some claims that defy ordinary perception (e.g., that germs exist; that Earth is round; that whales are mammals) are true and thus worth believing. Rational acceptance of such claims seems to depend on realizing that reality can be hidden rather than visible and apparent. In the current study, we ask if children's understanding of the AR distinction relates to their acceptance of counterintuitive claims.

A counterintuitive claim may indicate the truly counterintuitive state of the world, or it may alternatively reflect the informant's incompetence, ignorance, or misperception. When learning about new entities, even preschoolers are less trusting of individuals who are ignorant, unintelligent, or consistently inaccurate (Koenig & Harris, 2005; Lane, Wellman, & Gelman, 2013; Pasquini, Corriveau, Koenig, & Harris, 2007; Sabbagh & Baldwin, 2001). Thus, it is likely helpful for informants to signal to a learner that they are aware of the counterintuitive nature of

their testimony and are intentionally conveying a counterintuitive claim. Consistent with this account, Jaswal (2004) found that 4-year-olds more often believed unexpected claims about hybrid animals and objects (e.g., that a cat-like animal with some dog-like qualities was really a dog) when the informant said, "You're not going to believe this, but this is actually an X" compared to when the informant simply said, "This is an X." Although this finding is open to multiple interpretations (e.g., perhaps children were more trusting simply because they heard a more elaborate statement), a plausible interpretation is that such a statement implies that the real identity of the entity is not as it appears and also that the informant is aware of this discrepancy.

In the current study, we directly examine: (i) children's sensitivity to such signals by an informant, together with (ii) children's understanding of the AR distinction in order to illuminate the early development of children's acceptance versus rejection of counterintuitive information, specifically information that contradicts their immediate perceptions. We ask children to reason about simple objects (e.g., an apple, a rock) because children are familiar with these types of objects, and have likely developed firm intuitions about what they are and what they are capable of. Additionally, unlike more complex scientific or religious entities, children as young as 3 years (the youngest children in the current study) have some initial understanding that objects may appear different from what they really are (Flavell, Flavell, & Green, 1983; Flavell, Green, & Flavell, 1986; Hansen & Markman, 2005; Woolley & Wellman, 1990). Importantly, children's understanding of the AR distinction continues to develop over the course of early and middle childhood (Woolley & Ghossainy, 2013). Thus, we include children from a relatively broad age range, 3 to 6 years, to assess if and when in early development these two factors influence children's belief in counterintuitive claims.

## Method

### Participants

Participants included 105 children between 3 and 6 years of age (36 – 74 months). Of these, two were excluded from analyses because they were not fluent in English, and three did not complete the interview. An additional five children were not included because they could not identify at least four of the six focal objects, reducing the final sample to 95 children (42 girls, 53 boys). Children were interviewed for approximately 10-15 minutes in a quiet, familiar room in the laboratory or at school. Children lived in or near a Midwestern university town, were primarily Caucasian, and were of middle to upper-middle socioeconomic status.

### Procedure and Measures

Children first received the testimony tasks and were then tested for their understanding of the appearance-reality distinction. We describe each phase of the procedures in turn.

**Testimony.** Presentation of the objects for the testimony tasks involved three phases: child identification of an ordinary object based on its appearance; informant presentation of testimony contradicting the object's appearance (and, in fact, contradicting its true identity); child opportunity to endorse or reject this counterintuitive testimony.

Children were tested individually in a session that began with the experimenter saying, "We're going to watch some videos where people say things about objects. They're going to hold the objects in the video, and we'll have those same exact objects right here [experimenter points to the table top]." For each of six ordinary objects (drawn from a pool of nine objects; see the leftmost column of Table 1) children were questioned about the object's apparent identity. Each object's actual identity was just as it appeared—e.g., the rock was a rock. The experimenter held the object and, following phrasing used in prior AR literature (e.g., Flavell et al., 1983,

1986) asked children to identify the object: “What does this *look like* to your eyes?” For three objects (either the first three or the last three), children additionally touched the objects and were asked, “What *thing* does this *feel like* in your hands?” Children who answered any of these questions incorrectly were corrected.

In the next phase, children were shown a video where a young adult held the object and claimed that it was something different. Half of the children ( $n = 47$ ) received testimony in which the informant explicitly mentioned the AR distinction for all objects; children were shown an object and told, “This looks [and feels] like [real object]. But really and truly it's not [real object]. Really and truly this is [purported object].” The other half of the sample ( $n = 48$ ) received testimony of approximately the same length, but the AR distinction was not mentioned for any object; for example, children were shown the rock and told, “This is soap. Soap gets bubbly in water. People use it to wash their hands.” For a list of testimony that did not include mention of the AR distinction, see the rightmost column of Table 1.

In the final, third phase, the experimenter held the object and children were asked about the object’s label (“What do *you* think this is *really*?”) and function (e.g., “People use soap to wash their hands. Could someone wash their hands with this?”).

This procedure was followed for each of the six objects. So that children would not interpret any informant as being consistently inaccurate, and to reduce carryover effects from one trial to the next, a different informant provided testimony for each of the six objects; none of the informants was the experimenter. Children were given testimony by filmed informants, rather than the experimenter, to reduce the social pressure that children might feel to agree with the adult experimenter’s testimony. Videos have commonly been used in prior testimony research (e.g., Koenig & Harris, 2005; Pasquini, Corriveau, Koenig, & Harris, 2007; Vanderbilt, Liu, &

Heyman, 2011) and have the advantage that testimony for all children and all items is comparable in terms of wording, intonation, and gaze.

Because we were interested in children's trust in claims that defy their initial perceptions, we limited our analysis to those trials for which children had initially identified the objects correctly (ranging from 4-6 trials). Preliminary analysis indicated that children performed similarly on trials when they had initially looked at the objects and on trials when they had initially both looked at and touched the objects. Children's testimony-consistent judgments were calculated as a proportion of the objects that they had initially identified correctly. We calculated *label* scores, *function* scores, and *total* scores (the average of children's label and function scores). To improve the normality of these three measures, we computed new *label*, *function*, and *total* scores using arcsine square root transformations.

To verify that children understood that the objects that they had seen in the videos were the same as those on the table, children were shown an object that they had only looked at (not touched) for the testimony trials and were told at the conclusion of the interview, "Remember this? This person said [experimenter replays video of informant making counterintuitive claim]. But look [experimenter hands child object], it's really a [actual identity]." The experimenter gave children several seconds to explore the object and asked, "Why did that person [pointing to video] say this [pointing to object in child's hand] was a [purported identity]?" This procedure was followed for each of the three objects that children had not yet touched. Only 3 children speculated that the objects in the videos were different from the objects on the table.

**Appearance-reality (AR) Understanding.** Following the testimony tasks, children's understanding of the AR distinction was assessed with procedures used in classic studies (e.g., Flavell et al., 1983, 1986). Each child was asked about the appearance and identity of three



*deceptive* objects, which had not been presented for the testimony tasks. Approximately half of the children ( $n = 49$ ) were asked about a candy-magnet, block-soap, and shell-candle; the other children ( $n = 46$ ) were asked about a cookie-magnet, rock-soap, and crayon-candle (for photographs of these objects, see Figure 1). Pretesting with adults indicated that these items were indeed deceptive; e.g., the soap appeared to be a real rock. The experimenter held one of the objects and asked, “What does this look like to your eyes?” Children were corrected when necessary. Then, the experimenter told children that the object was really different from what it appeared to be; for example, “This *looks* like a rock. But really and truly it’s not a rock. Really and truly this is soap [experimenter turns soap over to show that the bottom is flat, and slides finger across the surface]. See, it feels like soap.” The object was then handed to the child, who had several seconds to explore the object and confirm its true identity. The object was held upright by the experimenter, who asked three questions about the object: (1) its label (“What do *you* think this is *really*?”), (2) its function (e.g., “People use soap to wash their hands. Could someone wash their hands with this?”), and (3) its appearance (“What does this [object’s true identity] *look like*?”). The phrasing for this latter question was borrowed from Hansen and Markman (2005). This procedure was used for each of the three objects. For any given child, none of his/her AR object-types had been presented for the preceding testimony tasks; e.g., if a child had been presented a rock for the testimony tasks, she was not asked about the rock-soap for the AR tasks. For each object, children received 1 point if they correctly reported all of the following: (a) the actual label, (b) the actual function, and (c) the appearance. Scores were summed across the three objects for an *AR understanding* score ranging from 0 to 3.

## Results

Preliminary analysis revealed no significant differences in the performance of boys and girls. Children performed equally well on the traditional AR tasks whether they had earlier been presented with testimony that mentioned the AR distinction ( $M = 1.85$ ,  $SD = 1.25$ ) or not ( $M = 2.13$ ,  $SD = 1.00$ ),  $t(88) = 1.18$ ,  $ns$  (correcting for unequal variances between groups). This is consistent with work demonstrating that AR understanding is a conceptual insight that cannot be taught in a single training session (Taylor & Hort, 1990). As expected, AR understanding correlated significantly and positively with age,  $r(93) = .48$ ,  $p < .001$ .

Two of our independent variables were continuous—age and AR understanding. Thus, we first examined children’s testimony-consistent judgments about objects’ labels and functions (i.e., their *total* scores) using ordinary least squares regression. The first step of this analysis included age, which was not predictive of children’s testimony-consistent judgments ( $\beta = -.12$ ,  $t = -1.15$ ,  $ns$ ). The second step additionally included the two focal variables—children’s AR understanding and informants’ mentioning of the AR distinction (a dichotomous variable). This step accounted for significant additional variance in children’s judgments ( $R^2_{\text{change}} = .10$ ,  $F_{\text{change}}(2, 91) = 4.86$ ,  $p < .01$ ). In this step, age was negatively related to children’s testimony-consistent judgments ( $\beta = -.22$ ,  $t = -1.92$ ,  $p = .06$ ). More critically, children’s AR understanding was significantly positively related to their testimony-consistent judgments ( $\beta = .27$ ,  $t = 2.38$ ,  $p < .05$ ), and informants’ mentioning of the AR distinction was also significantly positively related to children’s testimony-consistent judgments ( $\beta = .22$ ,  $t = 2.16$ ,  $p < .05$ ).

To illustrate these effects, Figure 2 depicts the mean frequency of children’s testimony-consistent judgments (i.e., their untransformed *total* scores) as a function of AR understanding and testimony type. In this figure, children were grouped on their AR understanding based on a

median split, which yielded a group with a robust understanding of the AR distinction (all of whom scored a perfect 3.00 on the AR tasks,  $n = 43$ ) and a group with an emerging understanding of the AR distinction ( $M = 1.15$  on the AR tasks,  $n = 52$ ). Children were often skeptical of informants' claims. Indeed, when children possessed only an emerging AR understanding, they accepted the counterintuitive claims significantly below chance (50%), when the AR distinction was not mentioned ( $t(26) = -3.25, p < .01, \text{Cohen's } d = 1.27$ ), and marginally below chance when it was mentioned,  $t(24) = -1.95, p = .06, \text{Cohen's } d = .80$ . Children with a robust AR understanding were significantly more accepting, as evident in the regression analysis above. At the same time, increased acceptance was balanced with skepticism; children with a robust AR understanding accepted the counterintuitive claims no different from chance (50%) whether the AR distinction was mentioned ( $t(21) = 1.45, ns, \text{Cohen's } d = .63$ ) or not mentioned ( $t(20) = -.87, ns, \text{Cohen's } d = .40$ ). Comparison of the four subgroups indicated that children with a robust AR understanding who heard the AR distinction mentioned accepted no more claims than children with a robust AR understanding who did not hear AR mentioned ( $t(41) = 1.62, ns, \text{Cohen's } d = .51$ ); but they did accept more claims than children with only an emerging AR understanding, when the AR distinction was mentioned ( $t(45) = 2.37, p < .05, \text{Cohen's } d = .71$ ) and especially when it was not mentioned,  $t(47) = 3.25, p < .01, \text{Cohen's } d = .95$ .

To examine whether children's trust in counterintuitive labels differed from their trust in counterintuitive functions, we conducted a mixed-effects ANOVA including testimony type (2: mention of AR, no mention of AR), AR understanding (2: robust, emerging), and age (2: 3-4.5 years,  $n = 48$ ; 4.6-6.2 years,  $n = 47$ ) as between-subjects factors, and judgment type (2: labels, functions) as a within-subjects factor. In this analysis, we use children's transformed *label* and *function* scores. Consistent with the least squares regression, this analysis yielded effects of

testimony type,  $F(1, 89) = 4.42, p < .05, \eta_p^2 = .05$ , AR understanding,  $F(1, 89) = 9.48, p < .01, \eta_p^2 = .10$ , and age,  $F(1, 89) = 3.66, p = .06, \eta_p^2 = .04$ . In addition, there was a main effect of judgment type,  $F(1, 89) = 5.08, p < .05, \eta_p^2 = .05$ , as well as an interaction between age and judgment type,  $F(1, 89) = 8.49, p < .01, \eta_p^2 = .09$ . The main effect of judgment type and the interaction of Age X Judgment type are depicted in Figure 3; we present the untransformed data for illustrative purposes. On average, participants were more skeptical of counterintuitive functions versus labels, but, as the interaction effect indicates, this difference was moderated by age. Whereas older children were significantly more skeptical about object functions than labels, ( $t(46) = 3.70, p < .001, \text{Cohen's } d = .55$ ), younger children were equally credulous about object functions and labels,  $t(47) = 0.02, ns, \text{Cohen's } d = .00$ .

In summary, young children were often skeptical of counterintuitive testimony, especially testimony about counterintuitive object functions. However children's grasp of the AR distinction and informants' mention of that distinction reduced skepticism.

### Discussion

A hallmark of human cognition is our ability to imagine entities and events that we have not perceived first-hand. Often, the way that we encounter these ideas is through others' testimony. Yet not all testimony is reliable. So, how do we sort through testimony about the unseen or counterintuitive to figure out what is true? Our findings show that the way information is presented to young children and children's ability to mentally represent that information each play a role in their belief in certain counterintuitive claims.

During the preschool years, children come to appreciate the distinction between appearance and reality (Woolley & Ghossainy, 2013). We asked whether children who have a better grasp of this distinction are more accepting of counterintuitive claims. Children were

shown ordinary, familiar objects and were told that each was really something else. For example, they were shown a rock and were told that it was soap. Some of the youngest preschoolers performed well on our AR task, consistent with the findings of Hansen and Markman (2005). Nevertheless, there was variability in children's performance across the age range tested, which is likely due to the nature of our AR objects. These objects were chosen specifically because they did not look like scale models or toys, but appeared to be genuine objects other than what they really were; indeed, in pretesting most adults were fooled by their appearances. Variability in children's grasp of the AR distinction using these objects was predictive of their willingness to believe testimony about the counter-perceptual properties of a different set of objects, irrespective of children's age. By implication, this conceptual insight helps children mentally represent the counterintuitive ideas that they encounter, thereby making them more credible.

We also asked whether informants' mention of the AR distinction—explicitly acknowledging that objects appear different from what they really are—would influence children's acceptance of counterintuitive claims about the objects. Indeed, children were more accepting of those claims when informants acknowledged the distinction between objects' appearances and reality. Such an acknowledgement signals to the learner that the informant is aware that the objects are misleading, thus the informant is not simply mistaken but is intentionally conveying counterintuitive information. Alternatively or perhaps additionally, informants' mention of the AR distinction may serve to remind children that there are things in the world that appear different from what they really are, prompting them to apply their AR understanding to the testimony they receive. Note that, in an effort to equate the amount of testimony provided in each condition, children who were presented testimony without mention of AR were told about the objects' supposed functions. In principle, such testimony might have

increased children's trust in the counterintuitive claims, but children were still more trusting in the condition in which AR was mentioned but functions were not. This further highlights children's receptivity to testimony that includes mention of AR. Although we found no age differences among 3- to 6-year-olds in their receptivity to claims for which informants referred to the AR distinction, it is likely that children need to appreciate certain aspects of the mind before this sort of reference to AR influences their epistemic trust—children must appreciate that informants are *knowledgeable* about the AR discrepancy before them, and are *intentionally* conveying information that contrasts with reality. Arguably, still younger children, without these understandings, might show little acceptance of informants' counterintuitive testimony that includes mention of the AR distinction.

Young preschoolers often resist claims defying their perceptions, and this resistance increases throughout early childhood (see Jaswal, 2004; Jaswal & Markman, 2007). We observed that older children were more skeptical of counterintuitive object functions than counterintuitive object labels, whereas younger children were equally credulous toward both. Perhaps older children are more accepting of counterintuitive labels because the same object can be referred to in multiple ways (a rock can be called a rock, a stone, etc.), and people who speak different languages have very different labels for the same object. Also, labels can refer to *representations*—e.g., a toy phone is called a “phone”, even though it cannot function like a real phone. In contrast, objects' properties are constant across individual people, and they typically serve similar functions across individual people. So, children are reasonably more accepting of new counterintuitive labels, as opposed to functions, for the same object.

However, despite this skepticism for object functions among older participants, the current findings also underline the important point that the developmental story is not simply one

of an age-graded decrease in acceptance of counterintuitive claims. If that were the case, older children and adults would certainly not accept many widely-held counterintuitive ideas. Our data show how children's developing conceptual abilities influence their credulity towards counterintuitive testimony. Specifically, children who have a better grasp of the AR distinction are more trusting of counterintuitive claims. Our interpretation is that correct AR judgments reflect the child's increasing ability to mentally represent (imagine) objects' conflicting appearances and realities. This is the interpretation adopted by Flavell and colleagues as well (Flavell et al., 1983, 1986). In our data, children who could mentally represent that objects can have identities that are dramatically different from their appearances were more willing to believe testimony that objects were different from what they appeared to be (and indeed what they really were). These findings join others in challenging accounts of knowledge transmission whereby individuals believe information first and then, upon deeper consideration, may reject it (e.g., Gilbert, 1991)—if this account were true across development, young children should be especially trusting of claims about entities and phenomena that they cannot yet deeply consider. However, young children often demonstrate an initial *skepticism* toward information that contradicts appearances (for review, see Woolley & Ghossainy, 2013). Here, we find that children's ability to reason about or imagine the information helps them *overcome* an initial skepticism towards counterintuitive claims. Thus, factors that facilitate mental representation of counterintuitive phenomena play an important role in fostering belief. This argument is consistent with findings from the adult literature. Adults who are prompted to imagine plausible events—e.g., election outcomes, their own behavior, and others' behavior—become more likely to believe that those events have taken place or will take place (Garry, Manning, Loftus, & Sherman, 1996; Koehler, 1991). By contrast, when adults are asked to imagine events or entities

that are *difficult* to cognitively represent, they become more *skeptical* of their existence or likelihood (Koehler, 1991).

Children's ability to mentally represent counterintuitive ideas likely has a broad influence on their epistemic trust, beyond their trust in claims about counterintuitive objects. In our study, we examined how children's representational capacities—specifically, their AR understanding—influence their belief in claims about object identities that contradict their immediate perceptions. Children also hear people talk about entities that violate their perceptions in that they have no tangible and immediate evidence of their existence; these include invisible germs, oxygen, deities, and souls (Braswell, Rosengren, & Berenbaum, 2012; Harris & Koenig, 2006; Harris, Pasquini, Duke, Asscher, & Pons, 2006; Lane, Wellman, & Evans, 2012; Richert & Harris, 2008). Whether AR understanding also facilitates children's contemplation and belief in these entities remain open empirical questions. Counterintuitive phenomena include more than entities that simply violate our immediate perceptions. They also include complex scientific concepts like biological evolution and string theory, and religious concepts like God's omnipotence and omniscience (e.g., see Evans, 2001; Norenzyan, Gervais, & Tresniewsky, 2012). It is likely that representational capacities beyond AR understanding are needed to conceptualize these ideas. Other questions that are ripe for future investigations include how other representational capacities, including a domain-general ability to reason about the improbable (Shtulman & Carey, 2007), and domain-specific understandings of biology, physics, and psychology, influence children's and adults' belief in counterintuitive scientific and religious concepts.

Thus, a variety of developments—a theory of mind, intuitions about the physical world, and an ability to reason about and mentally represent the improbable or counterintuitive—likely play a role in children's assessment of counterintuitive testimony. These various competencies



do not combine to yield a neat, linear developmental story. Rather, they may pull children's epistemic trust in different directions. Whereas a developing theory of mind may increase children's suspicion that counterintuitive claims come from deceptive informants (Mascaro & Sperber, 2009; Vanderbilt et al., 2011), an ability to mentally represent and reason about appearances and realities seems to increase children's credulity towards counterintuitive testimony.

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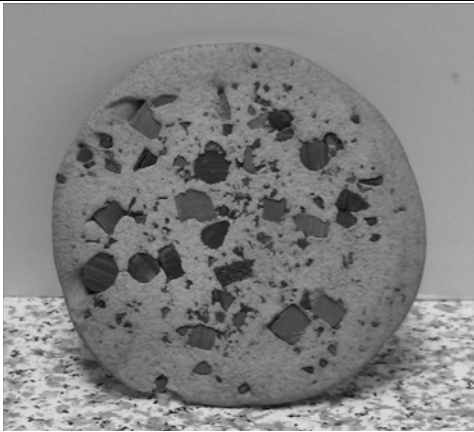
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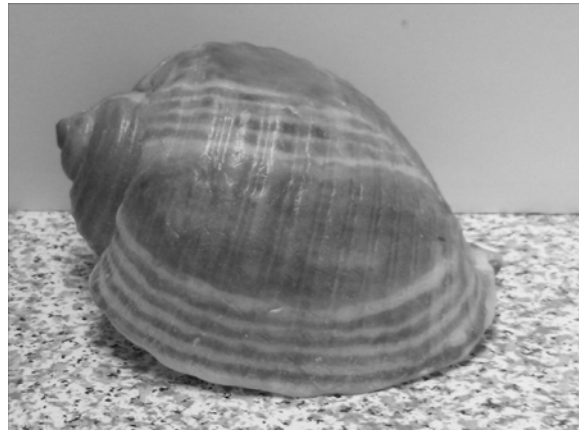
Table 1

*Ordinary Objects used in Testimony Task, and Testimony Provided to Participants Who did not hear Mention of the AR Distinction*

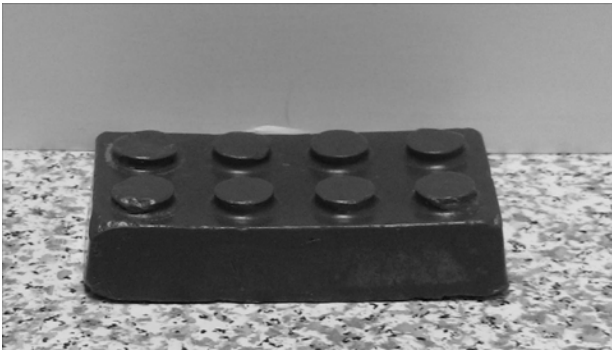
<u>Real Object</u>	<u>Purported Identity</u>	<u>Testimony without Mention of AR Distinction</u>
Apple	Coin bank	This is a coin bank. Coin banks hold money; people put pennies and nickels in them.
Lemon	Rattle	This is a rattle. Rattles are toys, and they make noise when people shake them.
Paint tube	Pen	This is a pen. Pens make marks on paper, and people use them to write.
Crayon	Candle	This is a candle. When people light them, candles get bright, and become warm.
Shell	Candle	This is a candle. When people light them, candles get bright, and become warm.
Rock	Soap	This is soap. Soap gets bubbly in water, and people use it to wash their hands.
Block	Soap	This is soap. Soap gets bubbly in water, and people use it to wash their hands.
Cookie	Magnet	This is a magnet. Magnets stick to metal, and people put them on refrigerators.
Candy	Magnet	This is a magnet. Magnets stick to metal, and people put them on refrigerators.



Cookie-magnet



Shell-candle



Block-soap



Candy-magnet



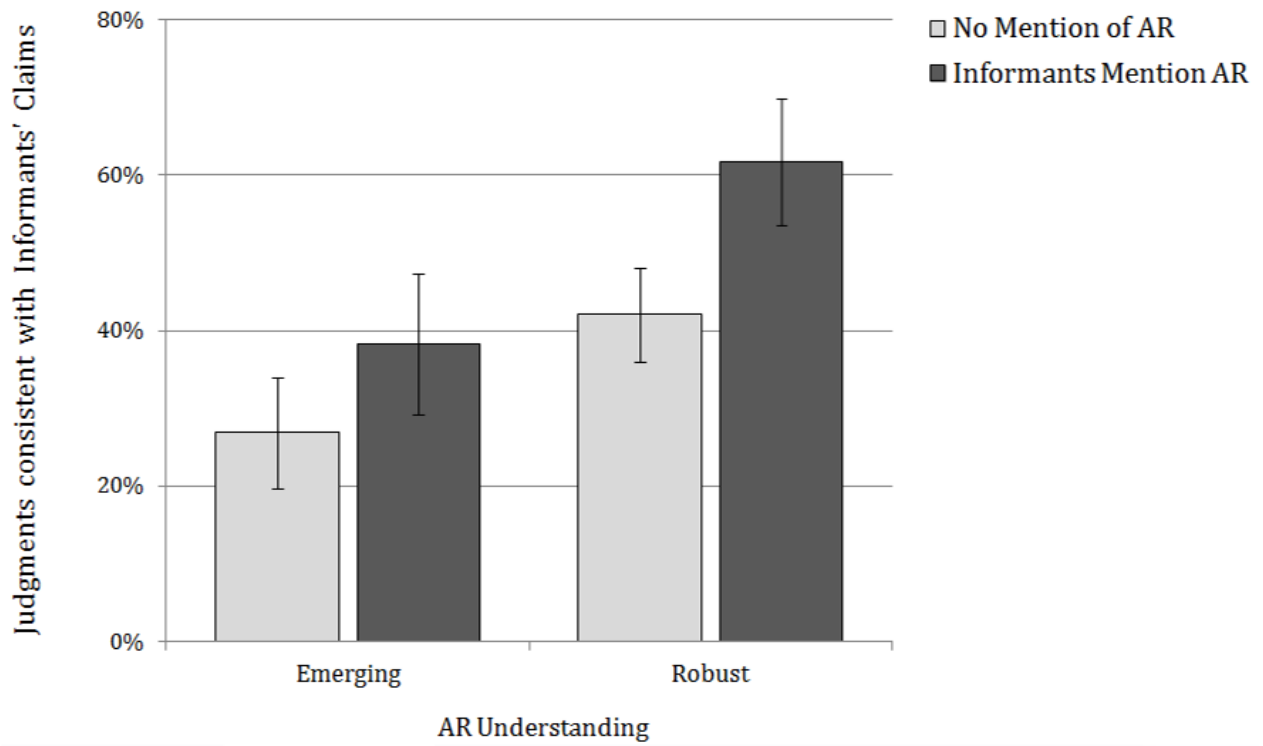
Crayon-candle



Rock-soap

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*Figure 1.* Deceptive objects used in the appearance-reality (AR) tasks.



*Figure 2.* Children's testimony-consistent judgments as a function of their understanding of the AR distinction and informants' mention of the AR distinction. Error bars represent standard errors of the mean.



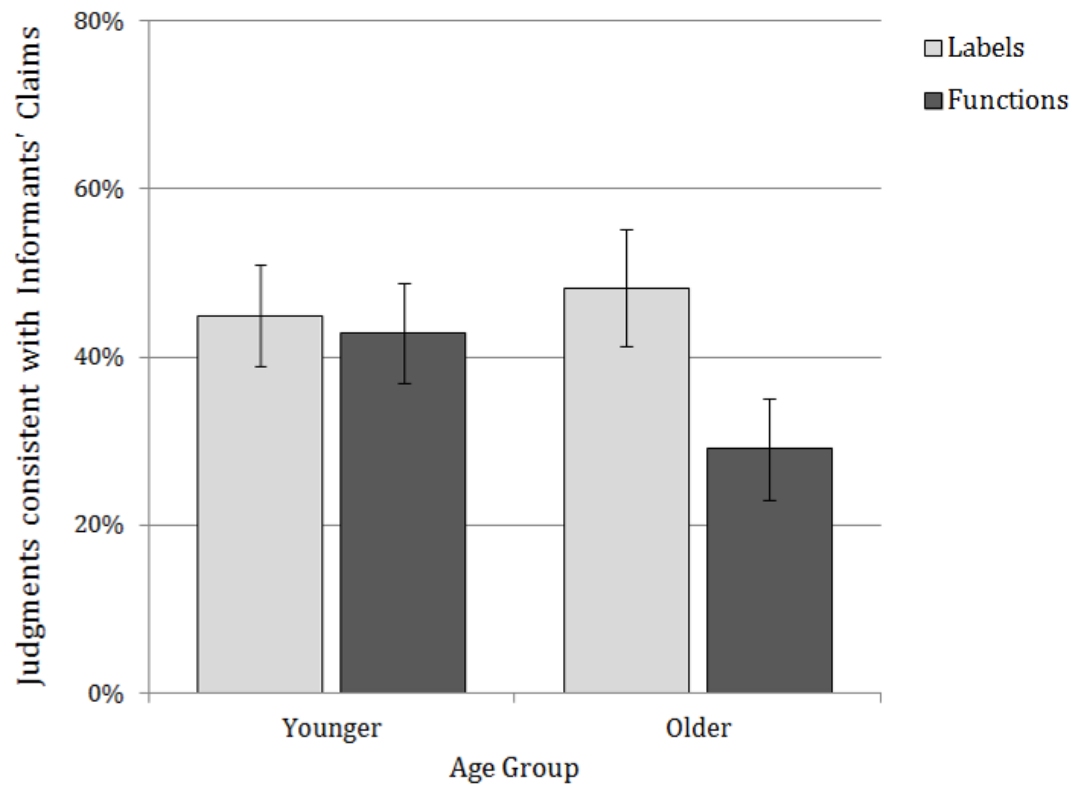


Figure 3. Children's testimony-consistent judgments as a function of age and judgment type.

Error bars represent standard errors of the mean.