Journal of Experimental Child Psychology 187 (2019) 104647

Contents lists available at ScienceDirect

Journal of Experimental Child Psychology

journal homepage: www.elsevier.com/locate/jecp

What does Mickey Mouse know about food? Children's trust in favorite characters versus experts

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ARTICLE INFO

Article history:
Received 6 September 2018
Revised 29 May 2019

Keywords:
Trust
Expertise
Familiarity
Characters
Media
Children

ABSTRACT

Children receive information from multiple sources, including people who are more or less knowledgeable and more or less familiar. In some cases, children also encounter messages from fictional characters who vary across these dimensions. Two studies investigated children's trust in a familiar animal character versus a human expert when hearing conflicting information about items related to or unrelated to the expert's knowledge. In Study 1, 3-, 4-, and 5-year-olds ($N = 60$) heard conflicting labels for unfamiliar fruits and tools from a familiar character and an unfamiliar fruit expert. They then identified which informant was correct and from whom they would seek out new information. Overall, children endorsed the fictional character's statements over the fruit expert's statements. Younger children preferred to seek out new information from the character, whereas 5-year-olds preferred the expert. In Study 2, 3-, 4-, and 5-year-olds ($N = 60$) heard similar conflicting objective statements about fruits and tools and heard conflicting subjective statements about unknown foods. The 4- and 5-year-olds trusted the fruit expert's objective statements about fruit and did not consistently endorse either informant's objective statements about tools, but they endorsed either informant when hearing subjective statements about unknown foods. Children also endorsed positive statements (e.g., that the food tastes good) regardless of the source. Taken together, these results suggest that

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https://doi.org/10.1016/j.jecp.2019.05.014
0022-0965/Published by Elsevier Inc.

when children decide who to trust, they consider both familiarity and relevant expertise and they weigh each factor differently depending on what kind of judgment is being made.

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Introduction

As part of Michelle Obama's efforts to promote healthy eating and physical activity, the Ad Council partnered with the Department of Health and Human Services to create billboard campaigns with phrases such as "Eat Right. Be Active. Have Fun" (U.S. White House Office of the First Lady, 2010). These ads featured Disney characters such as Belle and Pinocchio, whose familiar storylines are not about healthy eating or physical activity. Rather, these characters seemed to be present solely to attract children's attention. The Ad Council campaign is just one example of how media characters are used to promote a wide variety of products and behaviors that are not otherwise typically associated with the characters. In 2017, one quarter of children's products sold featured images from children's media (NPD Group, 2018). Food, beverage, and restaurant companies spend more than $1 billion annually in marketing foods to children and adolescents in campaigns that often include popular characters (U.S. Federal Trade Commission, 2012), and there is evidence that these advertising campaigns increase children's intake of unhealthy foods (see Boyland & Halford, 2013). In response, pediatricians, public health experts, and others have raised concerns over the use of characters to market food. As Moses and Baldwin (2005) proposed, young children (i.e., preschoolers) may lack the theory of mind and executive function skills needed to infer the biased intentions of characters in advertisements and to resist the messages they present. Another concern is that younger children may have difficulty in distinguishing between advertising messages and factual information, especially when familiar fictional characters are involved (see Gosliner & Madsen, 2007). Although children sometimes hear messages from parents, teachers, and other knowledgeable adults that directly conflict with those presented by characters from children's media, little is known about the circumstances under which children trust or distrust a fictional character's testimony when it is pitted against testimony from a real-life expert. Thus, the current studies examined children's trust in conflicting statements about food and nonfood items that are attributed to a favorite familiar character or to an unfamiliar food expert.

Children as young as 3 years show an understanding of expertise when they seek out information. At this age, children can match stereotypical roles or functions with appropriate experts when choosing which expert to consult (Lutz & Keil, 2002). For example, they know that doctors, and not mechanics, know more about how to fix a broken arm. Not only can young children reason about familiar experts, but they also can infer what unfamiliar experts (e.g., a bird expert) would know. By 4 years of age, children show evidence of understanding the structure of knowledge that underlies expertise, demonstrating an understanding that expert knowledge extends to related domains. For example, children are more likely to direct questions about animals to a doctor than to a mechanic (see also Aguiar, Stoess, & Taylor, 2012; Lane & Harris, 2015).

Children use their understanding of expertise to guide their trust in an informant's statements. In one study, children were introduced to an eagle expert and a bicycle expert who provided conflicting information about novel objects that either were related to each expert's area of expertise (i.e., bird-related objects or vehicle-related objects) or were neutral objects (Landrum, Mills, & Johnston, 2013, Experiment 1). In that study, 4- and 5-year-olds endorsed the relevant expert's claim when the experts gave conflicting information but did not show a preference for either expert for the neutral objects. Similarly, children endorse statements by an informant with relevant expertise, but they do not assume that the informant is knowledgeable about unrelated domains (e.g., Koenig & Jaswal, 2011; Lane & Harris, 2015).

Although children recognize the value of expertise, knowledgeability is not the only characteristic that they evaluate when choosing who to trust. Children track and prioritize characteristics such as accuracy (e.g., Birch, Vauthier, & Bloom, 2008; Harris & Corriveau, 2011; Pasquini, Corriveau, Koenig, & Harris, 2007; Vanderbilt, Heyman, & Liu, 2014), benevolence (e.g., Landrum et al., 2013; Lane, Wellman, & Gelman, 2013; Mascaro & Sperber, 2009), and familiarity (e.g., Corriveau et al., 2009). Familiarity, in particular, was critical for the current study as we compared children's trust in familiar characters versus unfamiliar experts. Corriveau and Harris (2009) found that 3-, 4-, and 5-year-olds preferred to ask for and endorse information about novel labels and functions from an accurate familiar informant (in this case their teacher) rather than from an unfamiliar one. This preference also extends to other familiar informants. For instance, 4- and 5-year-olds would rather receive information from a familiar character from children's media (e.g., Dora the Explorer) than from a perceptually similar but unfamiliar character (Danovitch & Mills, 2014). Children also frequently trusted familiar characters even after they made inaccurate statements. Thus, although children value accuracy, they are sometimes willing to prioritize familiarity when dealing with popular familiar characters from children's media.

One explanation for why children may trust a familiar character over an unfamiliar one is that they are frequently exposed to characters. They see them in media (e.g., shows, movies), in advertisements, and on products (e.g., toys, clothing, food packaging). There is evidence that simply viewing images of characters influences children's decision making. For example, children significantly prefer the taste of foods that have popular cartoon characters on the packaging compared with the same foods without characters (Roberto, Baik, Harris, & Brownell, 2010). In some cases, preschool children also prefer damaged toys bearing an image of their favorite character over new toys without a character image (Danovitch & Mills, 2014, 2017).

The more exposure children have to characters in the media, the more likely they are to form parasocial relationships with them (Brunick, Putnam, McGarry, Richards, & Calvert, 2016). Horton and Wohl (1956) defined a parasocial relationship as a one-sided relationship between the audience and a television, movie, or radio performer. Because only the viewer controls the intensity of the relationship with the performer, this relationship is one-sided. For adults, parasocial relationships also involve liking, trusting, and communicating with a media figure (Tuchakinsky, 2010). Similarly, many children develop these relationships with characters from children's media and treat them as lifelike and trusted friends, yielding highly rewarding social interactions even though the characters cannot typically respond (Bond & Calvert, 2014). Parasocial relationships are not formed simply through exposure to media characters. Rather, media exposure must be accompanied by parasocial interactions such as talking to the characters on the screen and playing with those characters as toys off the screen as well as parental encouragement of these behaviors. Meaningful parasocial relationships with familiar characters can lead to better learning (Gola, Richards, Lauricella, & Calvert, 2013). However, the research on children's parasocial relationships is limited and has not addressed how parasocial relationships influence trust. The current study examined how two key components of parasocial relationships—the belief that a character is human-like and that it is real—relate to children's trust in a familiar media character.

Study design

The studies presented here used a within-participants design to explore children's trust in a familiar character's statements or a food expert's statements about food and nonfood items. By 4 years of age, children can distinguish between real and fantasy characters (Woolley & Cox, 2007) and correctly sort them into categories based on their reality status (Weisberg, 2013). In addition, 3- to 6-year-old children view animated characters as generally trustworthy, and the more children trust these characters, the more likely they are to learn from them (Schlesinger & Richert, 2019; Schlesinger, Flynn, & Richert, 2016). These studies suggest that children trust fictional characters despite realizing that they are not real, but it is not clear whether children continue to trust a fictional character when the character's statements directly conflict with those of a "real" human expert. One possibility is that because

children appreciate the value of domain-specific expertise (Lutz & Keil, 2002), they will show diminished trust in a familiar character when expert input is available instead. The current studies were designed to examine this possibility by presenting children with conflicting statements from a familiar character and a food expert about unfamiliar foods and nonfood objects.

Food is a domain of interest for both theoretical and practical reasons. Foods have objective qualities (e.g., the name of the food) and subjective qualities (e.g., whether the food tastes good), and children may treat information about foods differently than information about other types of objects. Beginning early in life, children use social information to guide their choice of food (Shutts, Kinzler, & DeJesus, 2013) and show preferences for certain informants regarding foods. In one study, 3- and 4-year-old children preferred to seek out evaluative information about foods, but not about other types of objects (e.g., toys), from their mother or a teacher rather than from another child or a cartoon character (Nguyen, 2012). However, when the informants provided information about the taste or healthiness of a food, children's belief in each statement depended more on the type of information being provided (e.g., whether the food was described as tasting good or not) than on who provided it. Similarly, Lumeng, Cardinal, Jankowski, Kaciroti, and Gelman (2008) demonstrated that children trust informants who label a food positively even when the informants have been unreliable in the past, but they do not show indiscriminate trust in testimony about nonfood items. As they grow older, children may become more skeptical of informants in the food domain because they have encountered more deceptive messages about food. For example, a parent might state that "broccoli tastes good" even if children do not like broccoli. To test whether children are skeptical about such statements, Nguyen, Gordon, Chevalier, and Girgis (2016) asked children to endorse statements about foods' healthiness (i.e., an objective quality) and taste (i.e., a subjective quality). They found that 4-year-olds were less likely to trust an informant who was previously inaccurate compared with an informant who had no history of accuracy for both objective and subjective food properties. In a second study, 4-year-olds were more willing to trust a benevolent source's statements about food than those by a malevolent source. Together, these findings support that children evaluate testimony about food differently than other domains. Specifically, children may sometimes give more consideration to the valence of a statement about food than to the characteristics of the informant.

The current studies included familiar characters and knowledgeable adults because children are likely to encounter messages about food from both of these informants. Familiar media characters are frequently used to advertise food products (U.S. Federal Trade Commission, 2012), and these advertising messages often conflict with information children have received from other sources such as parents and educators. In fact, there are a number of widely implemented educational curricula and programs designed to teach children about healthy and unhealthy foods that feature information attributed to nutrition experts (e.g., U.S. Department of Agriculture, 2015). Thus, children may encounter situations where they receive conflicting objective and subjective information about foods from characters and experts. By comparing children's trust in a familiar character and an expert in the food domain, the current studies addressed how familiarity and domain-relevant expertise influence children's judgments about food-related information and non-food-related objects.

The current studies include data gathered from 3-, 4-, and 5-year-old children. Children in these age groups are familiar with characters from children's media and tend to trust the character's statements (Danovitch & Mills, 2014, 2017). At the same time, between 3 and 5 years of age, children's understanding of expertise improves and they show increasing trust in experts (Landrum et al., 2013). Thus, we hypothesized that older children would trust a food expert's statements about food and would trust a favorite familiar character's statements about a different domain (i.e., tools). Because younger children are less likely to understand expertise (e.g., Lutz & Keil, 2002) and are more likely to prioritize familiarity (e.g., Corriveau & Harris, 2009), we expected younger children to trust the character's statements about items from both domains. We also hypothesized that, regardless of age, children with higher scores on a measure of parasocial relationships would trust the character more often than the expert.

Study 1

Method

Participants

The minimum number of participants required was determined by a power analysis using G*Power (Faul, Erdfelder, Lang, & Buchner, 2007). Based on the effect size reported in Nguyen et al. (2016), the analysis indicated that a sample size of 60 would have adequate power to detect a significant interaction with a medium effect size (effect size of .21, power of .80, and alpha error probability of .05).

Participants included 20 3-year-olds (11 girls; M = 3.73 years, range = 3.38–3.98), 20 4-year-olds (9 girls; M = 4.55 years, range = 4.16–4.95), and 20 5-year-olds (10 girls; M = 5.38 years, range = 5.03–5.68). An additional 9 participants (8 3-year-olds and 1 5-year-old) were excluded because they could not name their favorite character, and another 6 participants were excluded because of experimenter error. Participants were recruited from preschools located in the Louisville, Kentucky area. Most (92%) participants were identified by their parents as Caucasian American, 5% were identified as belonging to two or more races, and 2 parents did not identify their children's race. Most (92%) participants were identified as non-Hispanic, 3% were identified as Hispanic, and ethnicity information was not provided for 3 participants.

Materials and stimuli

Character selection. A total of 14 popular characters from children's media geared toward preschool audiences were identified through internet searches. We limited the characters to anthropomorphized animal characters in order to have a clear distinction between the reality status of the character and the human informant. In a pilot study, 10 children aged 3 to 5 years (M = 4.23 years, range = 3.33–5.36) were shown images of the 14 characters, were prompted to identify each one by name, and then selected their top three favorites. The majority of the children were able to correctly identify Mickey Mouse and Minnie Mouse (from *Mickey Mouse Clubhouse*) as well as Chase and Skye (from *Paw Patrol*). These characters were frequently chosen as favorites and represented both female and male characters from two shows on different television networks. Additional popular characters (e.g., Elmo) were eliminated because they are known for being naïve.

Expert images. The food expert was represented by one of four women of different ethnicities and appearances. All women were dressed in a white shirt and shown smiling with fruit on a table in front of them.

Object selection. A second pilot study was conducted with a different group of 10 children aged 3 to 5 years (M = 4.16 years, range = 3.22–5.41) where children were asked to identify images of seven uncommon fruits (e.g., rambutan, cherimoya) and five uncommon tools (e.g., roman dodecahedron, thumb piano). The five fruits and five tools that were included in the final study were not correctly identified by any of the children (see Appendix A for examples).

Novel word selection. A total of 20 novel words from the Noun Object and Unusual Name Database (Horst & Hout, 2015) were matched for syllable length (e.g., Soob, Lorp) and organized into 10 pairs.

Procedure

Children were interviewed individually for approximately 10 min by a female researcher at their preschools or in a lab setting.

Informant selection and introduction. Participants were presented with images of four popular television characters (see above) and were asked to select and name their favorite one. To ensure familiarity, participants needed to accurately name the character to continue participation. After selecting their favorite character, children were shown images of four women (see above) and asked to select their favorite. Participants then saw their favorite character and were told, "This is [character name]. He/

She is a character in a show. He/She likes to play with his/her friends and go on adventures." Children then saw their favorite woman and were told, "This is Julie. She is an expert on fruit. She knows all about how fruits grow and where fruits come from." (The expert description was modeled after the descriptions given to preschoolers in previous research, e.g., Aguiar et al., 2012; Lutz & Keil, 2002.) After both informants were introduced, the image of the fruit on the table was removed, leaving only the image of the woman's torso and face. The order in which the characters were introduced and their location on the screen were counterbalanced between participants.

Labeling endorse trials. To prevent children from being biased toward consistently endorsing one source's statements, children completed all the endorse trials before the ask trial. The experimenter said, "While I was out the other day, I found some things that I had never seen before. I wanted to know what they were called, so I asked [character's name] and Julie. So, listen carefully to what they said." Children were shown images of 10 items (5 fruits and 5 tools) one at a time. Each image was displayed in the center of the screen equidistant from the image of the favorite character and the expert. When the item appeared on the screen, the experimenter said, "[Character's name] says this is a [novel word], and Julie says this is a [different novel word]. Point to who you think gave the correct answer." Items were presented in one of two random orders, and the words associated with each informant were counterbalanced between participants.

Ask trial. After 10 endorse trials, children were asked, "Next time I [the experimenter] find a new fruit, who should I [the experimenter] ask about it?" and were prompted to explain their choice. Children's responses were transcribed and coded into one of the following categories: relevant knowledge, positive characteristics, or irrelevant/no response. Relevant knowledge responses referred to the chosen informant as knowing about the topic or having relevant expertise (e.g., "Because she knows about fruits"). Positive characteristic responses included statements about the informant that referred to liking the informant (e.g., "He is my favorite"), the informant being benevolent or nice (e.g., "He's good"), and other positive statements about the informant (e.g., "She's pretty"). Irrelevant/no responses were not clearly connected to the task (e.g., "She can fly") or could not be interpreted. The first author coded all 60 responses, and a second coder blind to the hypotheses coded 25% of the responses chosen at random. Percentage agreement was 91%, and interrater agreement was good, Cohen's κ = .80.

Parasocial relationship measures. Drawing from prior research on parasocial relationships (Richards & Calvert, 2017), children were asked five questions about personhood and social realism. Personhood involves believing that the character has human-like qualities such as being a friend and listening to the child. Social realism involves believing that the character is capable of real-world experiences. Believing that the character is real may enable children to connect with the character and learn from him or her (Brunick et al., 2016). The personhood questions were (1) "Is [character name] one of your best friends, just a friend, or not a friend at all?" and (2) "Do you talk to [character name] all of the time, some of the time, or none of the time?" The social realism questions were (1) "Can you run into [character name] at the store? Yes or no?", (2) "Can you play tag with [character name]? Yes or no?", and (3) "Is [character name] real or pretend?"

Results

Character selection

In total, 8 children selected Mickey Mouse as their favorite character, 13 chose Minnie Mouse, 23 chose Chase, and 16 chose Skye. All children included in the analyses accurately named the character they chose.

Expert selection

Due to experimenter error, 15 children's expert selections were not recorded. Of the 45 selections that were recorded, 22 children selected the Caucasian blonde woman, 6 selected the Asian woman, 9 selected the Caucasian brunette woman, and 8 selected the African American woman.

Labeling endorse trials

Children received 1 point for each time they endorsed their favorite character's statement, yielding a score of 0 to 5 for fruit trials and 0 to 5 for tool trials. A mixed-measures analysis of variance (ANOVA) with age group (3-year-olds, 4-year-olds, or 5-year-olds) as the between-participants factor and item type (fruits or tools) as the within-participants factor was conducted on the average scores. (See Table 1 for means and standard deviations.) There was no significant main effect of age group, $F(2, 57) = 0.135$, $p = .874$, or interaction, $F(2, 57) = 0.381$, $p = .685$. There was a significant main effect of item type, $F(1, 57) = 5.985$, $p = .018$, $\eta^2 = .095$, where children endorsed the character's labels for tools ($M = 3.33$, $SD = 1.17$) more often than for fruit ($M = 2.90$, $SD = 1.32$) (see Fig. 1). In addition, children chose the character's labels significantly more often than chance for both fruit, $t(59) = 2.340$, $p = .023$, and tools, $t(59) = 5.498$, $p < .001$.

Ask trial

One 4-year-old and one 5-year-old refused to answer this question and were excluded from analyses. Comparisons with chance (binomial test) for children across age groups revealed no preference for their favorite character (35 preferred to ask their favorite character, $p = .148$). Children's choice of informant differed significantly by age group, $\chi^2(2, N = 58) = 6.578$, $p = .037$. The majority of 3- and 4-year-olds chose to ask the character about a new fruit, but 5-year-olds chose the expert more frequently (see Table 2).

When explaining their choices, 52% ($n = 12$) of the 23 children who preferred to ask the expert cited relevant knowledge. The rest gave irrelevant or no responses. Among the 35 children who preferred to ask the character, 17% ($n = 6$) cited the character's benevolence and the rest gave irrelevant or no

Table 1
Means (and standard deviations) for Study 1 labeling endorse trials by age and item type.

	Item type	
Age	Fruit	Tools
3-year-olds	3.00 (1.46)	3.28 (1.27)
4-year-olds	2.95 (1.00)	3.30 (1.30)
5-year-olds	2.70 (1.56)	3.35 (1.31)

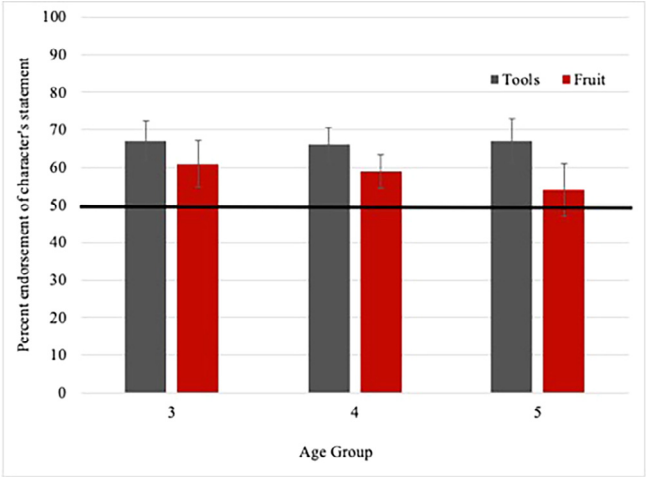

Fig. 1. Percentages (with standard errors) of labeling endorse trials in which children in each age group endorsed the familiar character's statements for tools and fruit items in Study 1.

Table 2
Number of times children cited each type of justification for responses to the ask question by study, type of question, informant choice, and age group.

	3-year-olds		4-year-olds		5-year-olds	
	Character	Expert	Character	Expert	Character	Expert
Study 1: Ask						
No answer/irrelevant	13	6	12	3	4	2
Relevant knowledge	0	0	0	2	0	10
Positive characteristics	1	0	2	0	3	0
Total	14	6	14	5	7	12
Study 2: Labeling ask						
No answer/irrelevant	12	3	13	2	7	3
Relevant knowledge	1	0	0	3	0	8
Positive characteristics	4	0	2	0	2	0
Total	17	3	15	5	9	11
Study 2: Taste ask						
No answer/irrelevant	12	6	7	7	3	5
Relevant knowledge	1	0	3	2	2	9
Positive characteristics	1	0	0	1	1	0
Total	14	6	10	10	6	14

Note. In Study 1, 1 4-year-old and 1 5-year-old did not receive the ask trial.

responses. In no case did children's responses fall into more than one category. Notably, 10 of the 12 children who cited relevant knowledge were 5-year-olds, and the other 2 were older 4-year-olds, but responses citing benevolence were more evenly distributed across age groups (see Table 2).

Relation between labeling endorse and ask trials

To examine the relation between children's responses on the labeling endorse trials and the ask trial, an independent *t* test compared scores on the endorse trials between children who preferred to ask the character about the novel fruit and children who preferred to ask the fruit expert. Children who preferred to ask the character endorsed the character's labels significantly more often ($M = 6.69$, $SD = 1.92$) than children who preferred to ask the fruit expert ($M = 5.57$, $SD = 2.29$) about a new fruit, $t(56) = -2.011$, $p = .049$.

Parasocial relationship measures

For the two personhood questions, children received no points for answers that did not endorse personhood (e.g., saying the character is not a friend at all), 1 point for somewhat endorsing personhood (e.g., saying the character is just a friend), and 2 points for strongly endorsing personhood (e.g., saying the character is a best friend), yielding a personhood score of 0 to 4 across the two items. For the three social realism questions, children received 1 point for each response indicating that the character was real, yielding a social realism score of 0 to 3. Higher scores on both the personhood and social realism measures indicated stronger parasocial relationships. For both personhood and social realism scores, children showed a wide range of responses ranging from suggesting that they had no parasocial relationship to suggesting that they had strong parasocial relationships (see Table 3).

Table 3
Means (and standard deviations) and ranges for personhood and social realism scores by age group.

	Personhood		Social realism	
Age	*M* (*SD*)	Range	*M* (*SD*)	Range
3-year-olds	1.90 (1.48)	0–4	1.50 (1.05)	0–3
4-year-olds	2.20 (1.11)	0–4	1.21 (0.933)	0–3
5-year-olds	1.91 (0.955)	0–4	1.05 (0.970)	0–3

Table 4
Correlations among age, endorsement of character statements for each type of item, and responses to parasocial relationship measures in Study 1.

	1	2	3	4
1. Exact age	–			
2. Fruit item endorsement	−.186	–		
3. Tool item endorsement	−.034	.414***	–	
4. Parasocial: Personhood	.109	.236	.141	–
5. Parasocial: Social realism	−.272*	.141	−.060	.377**

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

Children's responses did not differ among age groups for both personhood scores, $F(2, 59) = 0.883$, $p = .419$, and social realism scores, $F(2, 58) = 1.922$, $p = .156$.

Correlational analyses were used to explore the relation between the two parasocial relationship measures and how each related to children's age measured continuously (see Table 4). There was a significant positive correlation between personhood and social realism scores ($r = .377$, $p = .003$), suggesting that children who viewed the character more strongly as a friend were more likely to treat the character as real. Age was significantly negatively correlated with social realism scores ($r = -.272$, $p = .037$), such that older children were less likely to indicate that their favorite character was real. There was no relation between age and personhood scores ($r = .109$, $p = .408$).

Multiple regression analyses using personhood, social realism, and age as predictors were used to predict children's responses on the labeling endorse trials for both fruit and tool items. The regression model for fruit items was not significant, $R^2 = .319$, $F(3, 58) = 2.073$, $p = .114$, nor was the model for tools, $R^2 = .212$, $F(3, 58) = 0.865$, $p = .465$. Thus, children's parasocial relationship scores were not related to their rates of endorsing their favorite character's labels.

Discussion

Children across all age groups endorsed the character's labels over those offered by the expert at rates that exceeded chance even when the labels were related to a topic about which the expert was knowledgeable. The absence of developmental differences in the labeling endorse trials is surprising given previous work demonstrating that older children understand expertise better than younger children and place less value on familiarity (e.g., Corriveau & Harris, 2009; Corriveau et al., 2009; Koenig & Jaswal, 2011; Landrum et al., 2013; Lane & Harris, 2015; Lutz & Keil, 2002). Children who trusted the character's labels more often on the endorse trials were more likely to indicate a preference to ask the character later about a new fruit. In addition, the majority of 3- and 4-year-olds did not prefer to seek out information about a new fruit from the fruit expert; however, 5-year-olds did, and they tended to justify their choice by citing her knowledge and expertise. Children who chose to seek out information from the character primarily offered irrelevant explanations or no explanation at all for their choice. This pattern suggests that older children (i.e., 5-year-olds) who chose the expert recognized the connection between the expert's knowledge and the fruit items. Perhaps more children would have recognized this connection had they seen demonstrations of the fruit expert's knowledge or been presented with a history of accuracy (as in Koenig & Jaswal, 2011). In addition, the finding that children trusted the character's statements more often for tools than for fruit suggests that the domain of the items influenced their judgments to some extent.

The strength of children's parasocial relationships with their favorite character varied widely, but responses to the parasocial relationship measures did not relate to children's trust in their favorite character. This suggests that children's perceptions of their favorite character as being person-like or as being real did not influence their belief in that character's statements. These results support Schlesinger et al.'s (2016) finding that children's trust was not related to their rating of a character's

social realism. Instead, children's trust in the character's statements might reflect their greater familiarity with and positive feelings toward the character relative to the fruit expert.

Study 2

In Study 1, children endorsed a familiar, but ostensibly less knowledgeable, media character's labels for fruit over those of an expert on the topic. In addition, only some of the oldest children linked the expert's knowledge to identifying a novel fruit. One explanation for these findings is that the fruit items shown in the endorse trials were so unfamiliar and unusual that many children failed to recognize them as fruit or even as foods and, therefore, did not view these items as falling under the purview of the expert. To address this possibility, each unfamiliar item was explicitly identified as a fruit or a tool in Study 2. In addition, the children were asked from which source they would seek information not only about a new fruit but also about a new tool.

Study 2 also included a new set of trials that explored children's trust in each source's statements about a subjective property of an unknown food. Research on selective trust has focused primarily on objective judgments (e.g., object names; Birch et al., 2008; Koenig, Clement, & Harris, 2004; Koenig & Harris, 2005; Pasquini et al., 2007), although there is some evidence that children show similar rates of trust in a familiar character's subjective and objective statements (Danovitch & Mills, 2014). Because the current studies focused on food, and a subjective property of foods (i.e., taste) potentially has a larger influence on young children's food-related decisions than objective properties (e.g., name, healthiness), Study 2 included trials where the familiar character and the food expert gave conflicting statements about the taste of unknown foods. Therefore, Study 2 included the objective (i.e., labeling) trials used in Study 1 and a new set of subjective trials (i.e., judging the taste of novel foods). Given that people are more likely to debate whether a food is tasty than what the food is called, and that children often hear subjective information about food from multiple sources such as media characters, parents, and educators, this design was intended to mirror children's real-life experiences and make Study 2 more ecologically valid.

Because the parasocial relationship measures were not predictive of children's trust in their favorite character, they were omitted from Study 2.

Method

Participants

In total, 20 3-year-olds (6 girls; $M = 3.45$ years, range = 3.03–3.89), 20 4-year-olds (11 girls; $M = 4.53$ years, range = 4.00–4.98), and 20 5-year-olds (9 girls; $M = 5.67$ years, range = 5.22–5.99) participated. An additional 6 participants (5 3-year-olds and 1 4-year-old) were excluded because they could not name their favorite character, 1 5-year-old was excluded for being unable to finish the task, and 3 participants (1 3-year-old and 2 4-year-olds) were excluded because they did not pass the check question (see below). Participants were recruited from preschools located in the Louisville, Kentucky area. Eighty percent of participants were identified as Caucasian American by their parents, 7% were identified as African American, 2% were identified as Native Hawaiian or other Pacific Islander, 8% were identified as belonging to two or more races, and 2 parents did not identify their children's race. Nearly all (97%) participants were identified as non-Hispanic, and ethnicity information was not provided for 2 participants. No participant had completed the pilot studies or Study 1.

Study design

Materials and procedures were the same as in Study 1 with the exceptions described below.

Labeling endorse trials. The script was altered to identify items as fruits or tools. The experimenter stated that "This is a tool" or "This is a fruit" before providing the expert's and character's object names.

Labeling ask trials. The ask trial was altered to specify that information was being sought about the object's label: "Next time I find a new fruit, who should I ask what it's called?" A second question

was also added about tools: "Next time I find a new tool, who should I ask what it's called?" After the fruit labeling ask trial, children were asked to explain why they chose that informant and their responses were transcribed and coded according to the categories in Study 1. The first author coded all 60 responses for the fruit ask trial, and a second coder blind to the hypotheses coded 25% of the responses chosen at random. Percentage agreement was 91%, and interrater agreement was very good, Cohen's $\kappa = .82$.

Taste endorse trials. The experimenter introduced the taste trials by saying, "Yummy foods are foods that you like to eat because they taste good. Yucky foods are foods that you do not like to eat because they taste bad." Children then viewed images of a basket, box, bag, and container displayed one at a time on the computer screen between Julie and the character. In each of 4 trials, children were told, "Inside this [container type], there is a food. [Character's name] says it's yummy and Julie says it's yucky. Point to who you think gave the correct answer." Note that "food" was used instead of fruit to control for potential bias toward believing that fruit tastes good. Children could not view the food in question. Each informant's statements and location on the screen were counterbalanced between participants, such that each informant identified the unknown food as "yummy" or "yucky" an equal number of times.

Taste ask trial. Following the four taste endorse trials, the experimenter said, "Next time I find a new food, who should I ask if it is yummy or yucky?" Children were then asked to explain their choice. Children's responses were transcribed and coded as in Study 1. Notably, in the taste ask trial, statements coded as relevant knowledge included references to the informant's expertise about food in general or her ability to judge the taste of foods (e.g., "She knows which foods are yummy or yucky"). The first author coded all 60 responses, and a second coder randomly coded 25% of the responses. Percentage agreement was 91%, and interrater agreement was very good, Cohen's $\kappa = .82$.

Check question (from Nguyen et al., 2016). To make sure that children understood the words "yummy" and "yucky," at the end of the study the experimenter asked, "Which foods do you like to eat because they taste good, yummy or yucky foods?" and "Which foods do you not like to eat because they taste bad, yummy or yucky foods?"

Results

Character selection

In total, 13 children selected Mickey Mouse as their favorite character, 6 chose Minnie Mouse, 23 chose Chase, and 18 chose Skye. All children accurately named the character they chose.

Expert selection

Due to experimenter error, children's selection of the expert was not recorded in 7 instances. Of the 53 selections that were recorded, 23 children selected the Caucasian blonde woman, 10 children selected the Asian woman, 12 selected the Caucasian brunette woman, and 8 children selected the African American woman.

Labeling endorse trials

Using the same scoring procedures as Study 1, a 3 (Age Group: 3-year-olds, 4-year-olds, or 5-year-olds) $\times$ 2 (Item Type: tools or fruits) mixed-measures ANOVA was conducted on children's average scores. (See Table 5 for means and standard deviations.) There was a significant main effect of age group, $F(2, 57) = 8.215$, $p = .001$, $\eta^2 = .224$, which post hoc Bonferroni tests showed was driven by differences between 3-year-olds and each of the two older groups ($ps < .008$).

There was also a significant main effect of item type, $F(1, 57) = 19.966$, $p < .001$, $\eta^2 = .259$, where, across age groups, children endorsed the character's labels for tools ($M = 3.20$, $SD = 1.40$) more often than for fruit ($M = 2.45$, $SD = 1.57$) (see Fig. 2).

There was no significant interaction between age group and item type.

Table 5
Means (and standard deviations) for Study 2 labeling and taste endorse trials by age group, item type, and type of statement.

	Objective labeling statements		Subjective taste statements
Age	Fruit	Tools	Food
3-year-olds	3.40 (1.57)	4.00 (1.17)	2.95 (0.94)
4-year-olds	2.25 (1.33)	2.75 (1.29)	2.25 (0.91)
5-year-olds	1.70 (1.34)	2.85 (1.42)	2.20 (1.06)

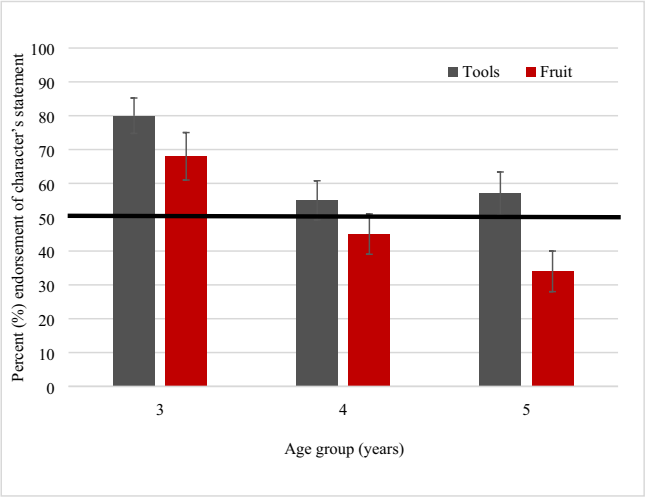

Fig. 2. Percentages (with standard errors) of labeling endorse trials in which children in each age group endorsed the familiar character's statements for tools and fruit items in Study 2.

Labeling ask trials

Overall, children selected the familiar character more often than chance (binomial test) when asked who to consult about the name of a new fruit (41 preferred to ask their favorite character, $p = .006$). There was a significant difference in children's choice of informant by age group, $\chi^2(2, N = 60) = 8.010$, $p = .018$, with younger children choosing to ask the character about a new fruit more often than older children. Of the children who chose to ask their favorite character, 17 were 3-year-olds, 15 were 4-year-olds, and 9 were 5-year-olds. When asked to explain their preference, 20% ($n = 8$) cited the character's positive characteristics, 2% ($n = 1$) cited relevant knowledge, and the other children gave an irrelevant answer or did not respond (see Table 2). Of the 19 children who preferred to ask the expert about a new fruit, 58% ($n = 11$) cited relevant knowledge and the other children gave an irrelevant answer or did not respond. Of the 11 children who cited relevant knowledge, 8 were 5-year-olds and the others were older 4-year-olds (see Table 2).

Children's choices of informant when asking about the name of a new tool did not differ from chance (binomial test, $p = .897$), nor did choices differ by age group, $\chi^2(2, N = 60) = 0.934$, $p = .627$. Of the 31 children who preferred to ask their favorite character about a new tool, 12 were 3-year-olds, 9 were 4-year-olds, and 10 were 5-year-olds.

Relation between labeling endorse and labeling ask trials

Independent-sample t tests revealed that children who preferred to ask the character about a new fruit ($M = 6.29$, $SD = 2.46$) endorsed the familiar character's labels across all 10 endorse trials more fre-

quently than children who preferred to ask the fruit expert ($M = 4.26$, $SD = 2.62$) about a new fruit, $t(58) = -2.910$, $p = .005$. In contrast, children who preferred to ask the character about a new tool ($M = 6.00$, $SD = 2.49$) did not endorse the familiar character's labels across all 10 trials more frequently than children who preferred to ask the fruit expert ($M = 5.28$, $SD = 2.84$) about a new tool, $t(58) = -1.052$, $p = .297$.

Taste endorse trials

Scoring on the taste endorse trials was similar to that on the labeling endorse trials, where children received 1 point for each time they endorsed their favorite character's statement, yielding a total score of 0 to 4. (See Table 5 for means and standard deviations.) Comparing across age groups, there was a significant difference in children's endorsement of their favorite character's statements about the taste of the unknown foods, $F(2, 57) = 3.719$, $p = .03$. Post hoc analyses using Bonferroni correction showed marginally significant differences in responses between 3-year-olds and 4-year-olds ($p = .08$) and between 3-year-olds and 5-year-olds ($p = .054$), where 3-year-olds endorsed the character's statements more often than their older counterparts. In addition, 3-year-olds endorsed the familiar character's statements more often than chance, $t(19) = 4.498$, $p < .001$, but 4- and 5-year-olds did not endorse either informant's statements at rates different from chance, $ts < 1.23$, $ps > .23$.

To evaluate whether children's judgments were influenced more by what the informant said rather than which informant said it, we examined how many times children endorsed the "yummy" response regardless of informant. Overall, children endorsed the yummy response in 175 of 240 trials (73%). Children endorsed the yummy response significantly more often than chance, $t(59) = 7.007$, $p < .001$. This pattern was consistent across age groups, with 3-year-olds endorsing the yummy response in 69% of trials, 4-year-olds endorsing the yummy response in 79% of trials, and 5-year-olds endorsing the yummy response in 71% of trials.

Taste ask trial

Although children were equally likely to choose each informant overall (binomial test, $p = 1.00$), children's responses to the taste ask trial significantly differed among age groups, such that older children chose to ask the expert more frequently than younger children, $\chi^2(2, N = 60) = 6.40$, $p = .041$ (see Table 2). Of the 30 children who preferred to ask the expert about a new food, 37% ($n = 11$) cited relevant knowledge, 3% ($n = 1$) cited the expert's positive characteristics, and the other children gave irrelevant answers or did not respond. As in the labeling ask trials, the majority of children who cited the expert's relevant knowledge were 5-year-olds. Of the 30 children who preferred to ask the character, 7% ($n = 2$) cited the character's positive characteristics, 20% ($n = 6$) cited the character's relevant knowledge, and the other children gave an irrelevant answer or did not respond.

Relation between taste endorse and taste ask trials

An independent t test showed that children who preferred to ask the character ($M = 2.67$, $SD = 0.95$) and children who preferred to ask the fruit expert ($M = 2.27$, $SD = 1.05$) about the taste of a new fruit did not significantly differ in their endorsement of the character's responses in the taste endorse trials, $t(58) = -1.542$, $p = .128$.

Discussion

In contrast to Study 1, when the object in question was explicitly identified as a fruit or a tool, 4- and 5-year-olds no longer endorsed the character's labels for fruits and instead endorsed the expert's labels at rates above chance. They also did not show a preference for endorsing either informant's labels for tools. However, 3-year-olds continued to endorse the character's labels for both types of items even when each object was explicitly identified as a fruit or a tool. These findings, together with older children's more frequent justifications involving expertise in the labeling ask trial, suggest that older children in Study 2 were more likely to understand the connection between the expert's knowledge and the domain-relevant objects. Thus, older children's responses to the fruit items in Study 1

may have reflected uncertainty that the objects were fruits rather than a lack of trust in the expert. As in Study 1, older children were more likely to endorse the character's labels for tool items than for fruit items; however, in Study 2, they were equally likely to endorse the character's or expert's labels for tools. It may be that recognizing the value of the expert's knowledge for fruits prompted older children to view the expert as more knowledgeable in general and to endorse the expert's statements more frequently for the tool items as well.

For the labeling ask trials, children in Study 2 showed a preference for asking the character about fruit but not tools. This effect was driven by the younger children, which replicates the findings in Study 1. Similarly, 3-year-olds continued to show persistent trust in the character's statements regardless of whether they involved objective or subjective information. In addition, as in Study 1, older children who preferred to ask the expert about the name of a novel fruit were more likely to justify their choice in terms of the expert's relevant knowledge, whereas children who chose the character largely cited irrelevant characteristics or struggled to explain their choice. The frequency with which children cited irrelevant characteristics also supports previous findings that children take into account characteristics that are not relevant to the task at hand when evaluating characters' trustworthiness (e.g., considering the character's gender in a task involving STEM [science, technology, engineering, and mathematics] content; Schlesinger & Richert, 2019) and that the informant's knowledge and expertise are not necessarily a primary consideration for younger children.

For the subjective items (i.e., taste trials) in Study 2, 3-year-olds trusted the character's statements more often than the expert's statements, whereas 4- and 5-year-olds did not show a preference for either informant. One explanation for this finding may be that the unfamiliar items in each container were described as "food" rather than "fruit" and, thus, the children did not view the expert's knowledge as relevant. However, this explanation seems unlikely given that 4- and 5-year-olds are capable of generalizing expertise from more specific to broader categories (Lutz & Keil, 2002). Interestingly, children's endorsements in the taste trials also seemed to be based on their preference for positive (i.e., "yummy") responses. This response pattern suggests that when children are uncertain about who to trust or when they are dealing with subjective information, they may rely primarily on their own opinions or desires. Another explanation is that children assume that experts know conventional information about objects in their domain of expertise (e.g., fruit labels), but they might not know characteristic information (e.g., taste) (see Diesendruck, 2005). In light of this finding, it might not be surprising that children did not show a preference in the taste ask trials and that children most frequently cited relevant knowledge to justify their choice of either informant.

General discussion

Children regularly encounter objective and subjective information from multiple sources, including familiar people and characters and unfamiliar people with relevant knowledge, and they must decide who to trust. The studies presented here examined children's trust when they encountered conflicting information from a favorite familiar character and an unfamiliar expert. When the nature of the items in question was unclear (Study 1), children showed greater trust in their favorite character's statements. When the items in question were explicitly identified as belonging or not belonging to the expert's domain of expertise (Study 2), the 4- and 5-year-olds showed greater trust in the expert for domain-relevant items and no longer showed a preference for either source for items that were not in the expert's domain of expertise. The 3-year-olds, however, persisted in trusting a familiar character over an expert. These findings suggest that although older preschool children understand the value of expertise (e.g., Lutz & Keil, 2002) and trust experts more than nonexperts (e.g., Koenig & Jaswal, 2011), they do so only when there is a clear connection between the item in question and the informant's expertise. In situations where children are uncertain about the nature of the information, they are more likely to trust their favorite character (Study 1). These results demonstrate that the nature of the information being provided plays a key role in children's selective trust. Children trust familiar characters (Danovitch & Mills, 2014), but when they recognize that another source knows more about the topic at hand, they trust the informant with relevant expertise. In contrast to much

of the prior research on selective trust (e.g., Koenig et al., 2004; Koenig & Jaswal, 2011), children were not presented with a history of accuracy for the expert, nor did they have a chance to observe the informant's expertise firsthand. However, they may have previously observed the character making accurate statements outside the study session (e.g., in the media). Because an informant's prior accuracy is important to children, the lack of evidence of the expert's accuracy may have contributed to children's trust in and preferences for the character in Study 1 and 3-year-olds' persisting trust in the character in Study 2. In addition, children's judgments may have been influenced by the fact that the experimenter conveyed each of the informant's statements about the objects rather than the informants producing the statements themselves. This design may have driven children to focus more on the content of the statements rather than the characteristics of the informant. In addition, the wording of the ask trials in terms of who the *experimenter* should ask about a novel object, rather than who the *child* would ask, may have contributed to children's lack of preference for either informant in the ask trials. To test this possibility, future research should emphasize who the children would want to learn from the next time they encounter a novel food or object.

Most of the justifications that children provided for their choice of informant were either irrelevant statements or no answers at all. However, some 5-year-olds and a few 4-year-olds did cite the expert's relevant knowledge when justifying their preference to seek out information from the expert about novel fruits, suggesting that older children were more sensitive to the value of the expert's expertise (see Aguiar et al., 2012; Lutz & Keil, 2002). In contrast, children across all age groups cited positive characteristics, with statements such as "Because she's pretty" and "Because she is nice," when justifying their preference to seek information from the familiar character. Previous research has demonstrated that preschoolers overgeneralize positive characteristics into irrelevant domains (e.g., believe that a child who is smart is also athletic; Stipek & Daniels, 1990; see also Cain, Heyman, & Walker, 1997; Heyman, Gee, & Giles, 2003; Saltz & Medow, 1971). Thus, children who already held a positive view of the familiar character based on previous experience may have overgeneralized the character's positive characteristics from one domain (i.e., appearance or benevolence) to an irrelevant domain (i.e., knowledge about fruit). These findings suggest that children's positive feelings about favorite familiar characters may play a key role in children's trust, such that children would not show similar trust in familiar but nonpreferred characters.

In contrast to the objective trials, 4- and 5-year-olds did not show a preference for either informant when hearing statements about a subjective quality of an unknown food (i.e., taste; Study 2). Instead, children in all age groups frequently endorsed statements that the unknown food tasted good regardless of the source. This finding suggests that when dealing with subjective information about food items, children prioritize what an informant says rather than who the informant is, and they may be prone to a positivity bias. Young children display a positivity bias when attributing traits to actors (Boseovski & Lee, 2008; Boseovski, 2010), and they are more likely to endorse informants who attribute positive traits to others (Boseovski, 2012). The preference for "yummy" responses among children in our study may reflect that the positivity bias extends beyond social attributions and contributes to children's judgments about foods as well. However, further research should investigate whether this bias applies to food categories for which children have negative associations (e.g., vegetables). It would also be interesting to see whether children's preference for yummy responses relates to individual differences in food preferences and willingness to try new foods based on responses to measures such as the food fussiness subscale of the Children's Eating and Behavior Questionnaire (Wardle, Guthrie, Sanderson, & Rapoport, 2001).

In Study 1, there was no evidence for differences in responses between age groups in endorsement of either informant's labels. Although we expected younger children to value familiarity more than older children (Corriveau & Harris, 2009), the lack of age differences in the labeling endorse trials suggests that when an informant's expertise is not clearly relevant to the items in question, even older children will trust a familiar informant over an unfamiliar expert. However, when children were asked who to consult about a new fruit, 5-year-olds preferred to ask the expert, suggesting that older children recognize the expert's superior knowledge about fruit. In addition, in Study 2, when children recognized that some of the objects were relevant to the informant's expertise, both 4- and 5-year-olds

trusted the expert's labels for those objects. Nevertheless, 3-year-olds still trusted their favorite character more often than the expert. These findings suggest that during the early preschool years, children may still be struggling to reconcile their generally positive emotions toward a favorite familiar character with their recognition that an expert may have more relevant knowledge. Older preschoolers may place more value on expertise as long as they believe that the expertise is relevant. However, older preschoolers might not think that expertise extends to subjective judgments even within a domain, such that knowing the names of fruits does not necessarily translate to accurately judging their flavor. The developmental patterns in our study may also have been influenced by children's beliefs about fruit expertise. Perhaps children think that fruit expertise is common or consider themselves to be fruit experts because they have consumed fruits; therefore, they do not place as much value on fruit expertise as on expertise in other domains. Additional research is needed to understand whether these differential patterns of children's trust when judging conflicting objective and subjective statements extend beyond the domain of food (e.g., whether children think that dog experts are also more qualified to make subjective judgments about dogs than nonexperts).

We found that the strength of children's parasocial relationships with their favorite character did not predict their trust in that character. Instead, other factors may influence children's trust in media characters, and these factors should be investigated in future work. For example, variables such as exposure (i.e., time spent watching the character), how human-like the character is, how much children like the character, and how helpful or benevolent children perceive the character to be may influence children's trust in specific characters. One would expect children to trust helpful and benevolent characters (e.g., Dora) more than mischievous characters (e.g., Swiper). In addition to children's reports, it may also be useful to collect parent data about children's exposure to, and relationships with, media characters. Children's exposure to real-life versions of familiar characters at theme parks or live shows could potentially cause confusion about the character's reality status (Richards & Calvert, 2017) and may have blurred the distinction between the fictional character and the "real" food expert. Further research should explore whether having interacted with characters such as Mickey Mouse in real life influences children to believe that they are as reliable a source of information as a human.

Despite having identified the character as their favorite, older children did not show strong trust in media characters in these studies. Rather, our results—consistent with other findings in the literature—suggest that children consider a number of factors when endorsing an informant's statements or selecting informants. These factors include expertise and the type of statement being made. Across our studies, children showed some uncertainty about who to trust. This uncertainty may be due in part to young children lacking the theory of mind and executive function capabilities that are needed to critically evaluate persuasive or informative messages from familiar characters (Gosliner & Madsen, 2007; Moses & Baldwin, 2005). To help children overcome this uncertainty, it may be helpful for adults to explain and acknowledge the limitations of individuals' knowledge or to emphasize the link between expertise and the information being provided. In addition, children who encounter familiar characters in marketing campaigns could potentially be inoculated against believing biased messages by being prompted to consider the character's relevant knowledge and expertise. Children could also be encouraged to trust a character's statements (e.g., if the character is promoting healthy behaviors) by emphasizing the character's positive qualities such as his or her benevolence or appearance. Furthermore, because children's judgments about informants may differ depending on the information at hand (i.e., statements that are objective or subjective), children may benefit from discussions of what is fact and what is opinion. As demonstrated in the current findings, even though preschool children are capable of selective trust, they may still need support in understanding who to trust and when.

Acknowledgments

We thank Aliyah Churchill, Lauren Hampton, Tanya Nagpal, Molly Schroering, and Kara Wirth for their assistance, Nicholaus Noles and Catherine McDermott for helpful feedback, and the staff, parents, and students at Adath Jeshurun Preschool, Evergreen Christian Preschool, Keneseth Israel Preschool, Sacred Heart Preschool, St. Agnes School, and St. Leonard School for their support.

Appendix A. Stimulus image examples

Tool Example: Bike Crank

Fruit Example: Rambutan

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