



Contents lists available at ScienceDirect

Journal of Experimental Child Psychology

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



Evaluations of epistemic and practical reasons for belief in a predominantly White U.S. sample of preschoolers



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ARTICLE INFO

Article history:

Received 18 May 2021

Revised 2 June 2022

Available online 9 July 2022

Keywords:

Testimony

Epistemic trust

Belief

Individual differences

Authoritarianism

Early childhood

ABSTRACT

Parents and educators commonly seek to influence children's behavior by providing them with practical incentives, but how should we understand the influence of such incentives on children's beliefs? Are children capable of distinguishing between speech acts that provide practical reasons for believing, such as requests and offers, from speech acts that provide straightforward epistemic reasons, such as simple acts of telling? To investigate these questions, we randomly assigned 3- to 6-year-old children ($N = 97$) to one of two conditions (Request or Offer) in which two speakers each commented on a series of four exotic animals. In each condition, an agent who stated what an object was called with a simple telling ("This is a tanzer") was contrasted with an agent who made either a doxastic request ("I want you to think that this is a tanzer") or a doxastic offer ("If you think that this is a tanzer, I'll let you play with this new toy"). We then measured children's endorsement of and semantic memory for the claims as well as their knowledge attributions and resource allocation decisions. Our results suggest that children appreciate the epistemic reasons inherent in acts of telling when contrasted with doxastic requests, as evidenced by their general preference to learn from, attribute knowledge to, and share with the teller in the Request condition. When tellings were contrasted with doxastic offers, children were less systematic in their preferences. We

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discuss various interpretations of this finding and offer suggestions for future research.

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Introduction

Imagine that a speaker wants you to believe that there is a pink elephant in the room and even offers to give you a large sum of money if you believe that there is a pink elephant in the room. In an attempt to get the money, you might say that you believe that there is a pink elephant in the room and even *act* as if you believe it. Yet, no matter how much you might want to believe that there is a pink elephant in the room, it seems that you cannot believe the claim because epistemic reasons have not been given to you. On the contrary, the only reasons you have been given are practical incentives offered by the speaker. Do children distinguish between epistemic and practical reasons when evaluating a speaker's testimony? Are certain practical reasons harder to resist than others?

This distinction between epistemic reasons for belief (reasons that bear on the question of whether a claim is true) and practical reasons for belief (reasons that bear on the different question of whether the belief carries personal, social, or prudential value) has implications for how we think about children's social learning. A speaker's telling an addressee something clearly gives the addressee an epistemic reason for believing that claim. The speaker's testimony is a consideration that bears on the question of whether the content of the claim is true. At the same time, and in the same utterance, a speaker's testimony is often delivered with authority, with intentions to persuade or manipulate the listener by way of non-epistemic means, in a social transaction that carries implications for the relationship. Given that testimony is a powerful means of both epistemic and practical influence, we set out to investigate whether child learners can distinguish certain forms of epistemic and practical influence in simple testimonial exchanges. By identifying practical influences on children's learning decisions, we gain further insight into sources of vulnerability that are present in testimonial learning.

Indeed, in our everyday interactions with one another, we commonly use testimony to influence one another by expressing our desires and intentions and by manipulating practical consequences for others. We give orders, make requests, threaten consequences, and offer benefits, and in these ways we potentially manipulate listeners using non-epistemic means. Testifying (telling another that something is true) differs from these other speech acts in virtue of the way in which it aims to provide an addressee with an epistemic reason to believe the claim (Koenig, Li, & McMyler, 2021). Nevertheless, a speaker's testimony also expresses a speaker's desire and intention that the addressee believe the claim, and it too creates possible costs and benefits for the addressee going forward. From this perspective, the ability to appreciate the distinctive epistemic import of the speech act of testifying (or telling) in contrast to the practical consequences given by other speech acts, such as requests and offers, looks to be an important cognitive achievement, one that requires an appreciation of not only the pragmatic differences between these speech acts but also the conceptual distinction between epistemic and practical reasons embedded within the pragmatics.

The extant literature gives us several reasons to question whether children's learning decisions might be particularly susceptible to practical inducements. Parents and educators commonly seek to influence *children's behavior* by providing children with practical reasons in the form of requests, praise, bribes, threats, rewards, and punishments (Cimpian, Arce, Markman, & Dweck, 2007; Deci, Koestner, & Ryan, 2001; Gunderson et al., 2013). There is evidence that infants are adept at comprehending requests for action (Grosse, Moll, & Tomasello, 2010; Tomasello & Haberl, 2003), and young children are disposed to comply with a range of request forms (Dixon, 2015; Wootton, 2005). Furthermore, preschoolers accurately judge whether an addressee complied with an indirect request from a third party (Leonard, Wilcox, Fulmer, & Davis, 1978), and by 3 years of age they actively protest against listeners who failed to comply with direct imperatives (Rakoczy & Tomasello, 2009). Even

without an overt request, 12-month-old infants recognize that speech vocalizations are communicative, enabling speakers to provide information to listeners who in turn are expected to respond appropriately (Martin, Onishi & Vouloumanos, 2012; Vouloumanos, Martin, & Onishi, 2014). Toddlers often help agents spontaneously—with no verbal prompting—and cooperate in appropriate ways (Warneken & Tomasello, 2009). We might expect that *children's learning decisions* also reflect cooperative or compliant responses to the practical inducements that are present in communicative exchanges.

Although children's understanding of the distinction between epistemic reasons and practical manipulations has yet to be directly investigated in this literature, there is evidence that preschool-aged children consider differences in the epistemic quality of claims adults make. For example, Koenig (2012) presented 3- to 5-year-olds with speakers who provided either good epistemic reasons for belief (e.g., "I looked and I saw a ball in the box") or poor epistemic reasons for belief (e.g., "I'm going to guess that there's a toy in the jar"). Regardless of age, children preferred to learn from speakers who provided good reasons for belief, and they judged these speakers as having better ways of thinking (Koenig, 2012). Other work shows that 4- and 5-year-olds avoid learning from speakers who make logically inconsistent statements (Doebel, Rowell, & Koenig, 2016) and that 3- and 5-year-olds avoid learning from speakers who justify claims using circular reasoning (Corriveau & Kurkul, 2014). Taken together, these studies indicate that by the preschool years children reason about the *epistemic* quality of the statements that speakers make, including the reasons and type of explanations that are given.

Preschoolers also consider a speaker's intentions and possible biases for the claims the speaker makes. For example, Liu, Vanderbilt, and Heyman (2013) found that 5- and 6-year-olds took into account an agent's intentions when determining from whom to learn new information. Specifically, children preferred to learn from a character with a history of positive intentions (e.g., to help someone find something) regardless of the outcome (Liu et al., 2013). In addition, children understand that others' decisions and claims can be biased. By 6 years of age, children understand that claims may be distorted when speakers have reason to persuade or convince others of something to fulfill their own self-interests (Mills & Elashi, 2014) and that relationships (e.g., best friends, enemies) can lead to biased decision making (Mills & Grant, 2009). This work suggests that children appreciate some of the practical incentives that motivate speakers to testify as they do.

At the same time, a growing body of evidence suggests that non-epistemic considerations feature in children's selective learning decisions. Indeed, whereas children's learning decisions are often sensitive to a speaker's prior reliability and expertise, children also defer on the basis of other non-epistemic characteristics of speakers, including whether an informant is attractive (Bascandziew & Harris, 2014), prosocial (Landrum, Mills, & Johnston, 2013; Landrum, Pflaum & Mills, 2016), or an ingroup member (MacDonald, Schug, Chase, & Barth, 2013). Such deference might be interpreted as children's response to variable forms of practical inducement. In another recent study, children's testimonial learning was affected by social considerations, such as group membership and social exclusion status, highlighting that affiliative considerations play a role in children's selective learning decisions (Li & Koenig, 2022). Together, this work suggests that social and interpersonal considerations bear on children's decisions to endorse claims (Jaswal & Kondrad, 2016; Koenig et al., 2021; Pesch, Suárez, & Koenig, 2018) and highlights that testimony functions differently from other impersonal forms of knowledge. Indeed, when a speaker testifies to a claim, the speaker makes a commitment to the addressee. When the claim is a simple act of telling, a commitment is made to the truth of the claim to another person. When practical incentives are offered, listeners are asked to consider a practical commitment made to oneself or another's well-being. Understanding how children view acts of telling in contrast to practical manipulation has important theoretical implications for understanding what types of communicative messages are accepted by young children as reasons to believe a claim and what types of decisions they affect.

In the current study, we investigated whether young children appreciate the difference between claims that provide straightforward epistemic reasons for belief and claims that provide practical incentives for belief. We examined this by presenting 3- to 6-year-olds with speech acts that expressed an epistemic reason, such as an assertion or a simple telling, in contrast to speech acts that expressed a practical reason, such as a request or an offer. Specifically, we contrasted the speech act of telling with two other speech acts in which the speaker intentionally aimed to get the child to believe

something: (a) overt requests that the child believe something (doxastic requests) and (b) offers of a material benefit in exchange for believing something (doxastic offers) (see Table 1). When a speaker shares information in a simple act of telling, the speaker presents a simple epistemic reason for belief (namely, by attesting to it). In the case of both requests and offers, although the speaker clearly intends to influence the addressee's belief in the claims, the speaker does not present an epistemic reason, a consideration that bears on the truth of the content of the intended belief. Instead, the request or offer provides a practical reason, one that bears on the consequences of holding the belief (i.e., that holding the belief will satisfy the speaker or earn the addressee a benefit). By varying only the reasons embedded within the speech acts, we directly tested children's ability to distinguish epistemic reasons from practical reasons for belief in communicative exchanges.

To examine whether children treat the epistemic reasons inherent in basic acts of telling as distinct from the practical reasons for belief offered in requests and offers, we investigated the following questions. First, do children better learn and remember claims from tellers over non-tellers? To examine this question, children were asked to endorse the label provided by the teller or the non-teller on four label endorsement trials, and then at the end of the study children's memory for these four labels was assessed. If children learn from simple tellings over requests and offers, then this would suggest that children appreciate how the speech act of telling provides an epistemic reason for belief beyond whatever practical reasons are provided by a speaker or by whatever benefits might accrue from endorsing the claim. In addition, if children respond differently to tellings in the context of requests and offers, it would help to specify how different kinds of practical inducements influence children's testimonial learning.

Second, what kinds of credit do children give to tellers and non-tellers? To examine the epistemic credit children give, on three occasions we asked children, "Who do you think knows more?" We also asked children to indicate which speaker had knowledge about other animals (within generalization) and artifacts (outside generalization) to better understand how children generalize knowledge to speakers who offer different reasons for belief. If children infer that there are epistemic reasons inherent in basic acts of telling that are absent in statements that involve requests or offers, then we expected them to credit the teller as being more knowledgeable than the non-teller. To examine the non-epistemic credit children give, on three occasions we asked them to allocate a limited resource to each speaker: "How many coins should this person get?" We anticipated that practical incentives would cause children to share more with the non-teller.

Finally, we examined individual differences in parent authoritarianism (Feldman & Stenner, 1997) and social conformity values (Feldman, 2003) to better understand the extent to which children's performance was related to their family's orientation toward authority and respect for social norms. Recent work reports that individual differences in parenting affect children's testimonial learning. Reifan Tagar, Federico, Lyons, Ludeke, and Koenig (2014) found that children were more likely to endorse novel labels offered by conventional sources (i.e., accurate agents over inaccurate agents) when their parents valued deference to authority and social conformity. Thus, we included these questionnaires in the current study to explore the extent to which children's ability to distinguish epistemic reasons from practical incentives is associated with the value parents place on authority and social conformity.

Table 1
Agent statements for each trial by the teller and the non-teller in the request and offer conditions.

	Teller	Request condition Non-teller	Offer condition Non-teller
Trial 1	"That's a zorchie"	"I would really like it if you think that it's a boskot"	"I'll let you play with a fun toy later if you think it's a boskot"
Trial 2	"That's a blicket"	"I will be happy if you think that it's a tanzar"	"I'll show you a cute picture later if you think it's a tanzar"
Trial 3	"That's a koba"	"I really hope that you will think that it's a virdex"	"You can look inside our secret box later if you think it's a virdex"
Trial 4	"That's a pizer"	"I really want you to think that it's a toma"	"You can color a picture later if you think it's a toma"

Method

Participants

A total of 97 children participated (50 girls and 47 boys). Children were aged 3 and 4 years ($n = 47$; mean age = 49.45 months, range = 37–60; 25 girls and 22 boys) and 5 and 6 years ($n = 50$; mean age = 73.52 months, range = 61–83; 25 girls and 25 boys). The sample was drawn from a university-maintained database of children from a midwestern city in the United States. Children in this database are predominantly White native English speakers from middle- to high-socioeconomic-status households. One additional participant was removed from the study because the child was diagnosed with a developmental disorder after the study visit. Each participant's parent or guardian completed two questionnaires: a parent authoritarianism questionnaire and a social conformity questionnaire.

Procedure

Children were randomly assigned to either the Request condition ($n = 47$; 23 girls and 24 boys) or the Offer condition ($n = 50$; 27 girls and 23 boys). All children watched a video in which two informants made contrasting statements about four novel animals. In the Request condition, the teller stated a label for the novel animal (e.g., "That's a zorchie"), in contrast to the requester, who offered a label paired with a personal request to adopt their label, (e.g., "I would really like it if you think that it's a boskot"). In the Offer condition, the offering informant offered the child a reward or positive consequence as a practical reason (e.g., "I'll let you play with a fun toy later if you think it's a boskot"), whereas the teller made the same claims as in the prior condition (e.g., "That's a zorchie"). The labels were consistent across conditions and were always the last word in each statement. Thus, only the practical reasons provided by the non-tellers' claims varied across the two conditions, whereas the teller's statements were identical (see Table 1). Whether the teller or non-teller spoke first was counterbalanced across participants and trial. We also counterbalanced whether the teller was the agent on the right side of the screen or on the left side. Children did not receive the rewards offered by the non-teller in the Offer condition, although the items (pictures, coloring book, small box, and fun toy) were available if children requested them. No child made this request. All children received a small prize at the end of the testing session as compensation for their participation.

Introduction to task

While seated next to an experimenter, participants viewed a laptop that displayed a video of two speakers discussing a series of novel animals. First, participants viewed a still image of both informants seated side by side and the experimenter said, "These people are going to talk about many different animals. I want you to listen very carefully to what they say and then I'm going to ask you what you think the animals are called, okay? So I want you to tell me what you really think the animals are called." The experimenter then played a series of four label endorsement videos.

Label endorsement

Across four trials, the informants made a series of labeling statements about four novel animals (a pangolin, an axolotl, an okapi, and a wombat). Before the start of each trial, the experimenter paused the video, placed a laminated photograph of the novel animal referred to on that trial, and said, "Look at that! I wonder what that's called. Let's see what these two people say." The experimenter paused the video after each trial and repeated verbatim what each informant said while pointing to her (e.g., "She said 'That's a zorchie' and she said 'I would really like it if you think that it's a boskot'"). The experimenter then asked children to endorse one of the labels: "What do you think? Is it a zorchie or a boskot?".

Explicit judgment trials

Children were asked to credit more knowledge to one of the informants on three explicit judgment trials (EJTs). Children viewed a still image of the speakers seated side by side (with no photographs

between them). The experimenter said, “Wow, these people told you a lot of things. Who do you think knows more?” Children were asked the first EJT after each informant had made two statements and were asked the second EJT after each informant had made four statements, and the final EJT came at the end of the study (after four semantic memory trials).

Resource allocation trials

Immediately following each EJT, children were asked to share five coins with the informants. The experimenter placed two cups in front of children: one with a picture of the teller and one with a picture of the non-teller. She then placed five yellow coins in front of children, centered between the two cups, and said, “Here are five coins for you to share. How many coins should this person [non-teller] get? How many coins should this person [teller] get?” The side that the experimenter pointed to first alternated each trial.

Knowledge generalization trials

After the second EJT, participants were asked to generalize a speaker's knowledge to claims about two novel animals (within generalization) and two novel artifacts (outside generalization). On each trial, the experimenter presented a still image of the two informants with a photograph of a new item (animal or artifact) placed between them. Children were also presented with an identical photograph of the same animal or artifact. The experimenter said, “I wonder what this is called. Who do you think knows?” The two within-generalization trials were always given first, followed by the two outside-generalization trials.

Semantic memory trials

After the knowledge generalization trials, the experimenter checked children's memory for the four novel animal labels given during the labeling trials phase. For each trial, children were shown each of the original animals. The experimenter first reminded them that they had seen each animal previously and then asked them for its label (e.g., “Here is an animal you saw before. Is it a boskot or a zorchie?”).

The entire session lasted about 10 min and was videotaped. Children received 1 point for indicating the teller across all test questions, reported below.

Parent measures

Parent authoritarianism

Parents responded to a 4-item forced-choice questionnaire (Feldman & Stenner, 1997; Stenner, 2005). For each item, parents were asked to circle which of two child-rearing values they found more important. The pairs were the following: (1) independence versus respect for elders, (2) obedience versus self-reliance, (3) curiosity versus good manners, and (4) being considerate versus being well-behaved. The values respect for elders, obedience, good manners, and well-behaved were scored as high authoritarian responses. Scores were calculated by summing the number of authoritarian responses and dividing by 4 to allow scores to range from 0 to 1.

Social conformity scale

Parents responded to a 17-item forced-choice questionnaire (Feldman, 2003; Stenner, 2005). For each item, parents were asked to circle which of two statements, one prioritizing social conformity and the other prioritizing personal autonomy, they agreed with more, for example, “It's best for everyone if people try to fit in instead of acting in unusual ways” (social conformity) versus “People should be encouraged to express themselves in unique and possibly unusual ways” (autonomy). Scores were calculated by summing the number of social conformity responses and dividing by 17 to allow scores to range from 0 to 1.

Results

Descriptive analyses

To begin, we report descriptive statistics for all our measures by condition in Table 2. For the label endorsement, EJT, resource allocation (RA), and knowledge generalization tasks, a score was calculated by summing the number of times the teller was selected and dividing by the total number of trials (three or four trials, depending on the task). A semantic memory score was calculated for children by summing the number of times children recalled the label they had endorsed and dividing by 4. Thus, scores closer to 1 indicate stronger preference for the teller and scores closer to 0 reflect stronger preference for the non-teller.

One-sample *t* tests showed that participants selected the teller at above-chance levels on all tasks in the Request condition. In contrast, children selected the teller at chance levels in the Offer condition except for the within generalization trials. Children were above chance in both conditions in their recall of the label they had previously endorsed.

Label endorsement and semantic memory

Children's label endorsements and memory for the information serve as ways in which to assess their willingness to learn new information from the speakers. First, we examined children's label endorsements. A series of mixed-effects logistic regression analyses were conducted to predict agent selection (1 = teller vs. 0 = non-teller). Model 1 included age (months), condition (Request vs. Offer), and the interaction between age and condition. Model 2 removed the interaction term. Random intercepts were included for participant and trial in both models. The interaction model was not significant, $\chi^2(1) = 2.693$, $p = .100$; therefore, Model 2 is reported here. There was a significant effect of condition ($b = -0.69$, $SE = 0.27$, $z = -2.530$, $p = .011$). Age was not significant ($b = -0.003$, $SE = 0.009$, $z = -0.342$, $p = .732$). Children endorsed the teller's labels more frequently in the Request condition ($M = 0.60$, $SD = 0.49$) compared with the Offer condition ($M = 0.44$, $SD = 0.49$) (see Table 2).

Next, we examined children's semantic memory. A score was calculated by averaging the number of times (out of 4) that children's responses matched the label they had previously endorsed. A linear regression analysis was conducted with memory consistency score as the dependent variable and age (months), condition, and the interaction between age and condition entered as predictors. There were no significant effects or interactions. The average proportion of children who recalled the label they had previously endorsed was above chance in both the Request condition ($M = 0.62$, $SD = 0.23$) and Offer condition ($M = 0.63$, $SD = 0.23$) (see Table 2). Taken together, these results suggest that children tended to recall, or re-endorse, the claims they had initially selected at label endorsement.

Table 2
Descriptive statistics by condition with chance comparisons.

	Condition	
	Request [<i>M</i> (<i>SD</i>)]	Offer [<i>M</i> (<i>SD</i>)]
Age (months)	62.77 (14.10)	61.00 (13.72)
Label endorsement (out of 4)	0.60 (0.26)*	0.44 (0.32)
Explicit judgment trial (out of 3)	0.70 (0.33)***	0.54 (0.36)
Resource allocation (out of 3)	0.64 (0.33)**	0.46 (0.35)
Semantic memory (out of 4)	0.63 (0.24)***	0.63 (0.24)***
Within generalization (out of 2)	0.63 (0.34)*	0.60 (0.36)*
Outside generalization (out of 2)	0.62 (0.39)*	0.49 (0.34)
Parent authoritarianism	0.19 (0.24)	0.27 (0.29)
Parent social conformity	0.27 (0.18)	0.29 (0.22)

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

Knowledge generalization

To assess the scope of children's knowledge generalizations, we asked children to indicate which agent would know more about two novel animals (within generalization) and two novel artifacts (outside generalization). A series of logistic mixed-effects models were conducted to predict agent selection (1 = teller vs. 0 = non-teller). Model 1 included age (months), condition, generalization type (within vs. outside), and their interactions. Model 2 removed the interactions. Random intercepts were included for participant and trial in both models. The interaction model was not significant, $\chi^2(4) = 3.974$, $p = .409$. Model 2 is reported here. There were nonsignificant effects of age ($b = 0.001$, $SE = 0.010$, $p = .89$), condition ($b = -0.389$, $SE = 0.302$, $p = .19$), and generalization type ($b = 0.310$, $SE = 0.227$, $p = .17$). Collapsing across these variables, children generalized knowledge to the teller at rates significantly above chance ($M = 0.58$, $SD = 0.31$), $t(96) = 2.62$, $p = .01$.

Epistemic and non-epistemic credit

Children were asked to give two types of credit to the speakers: epistemic and non-epistemic. We assessed children's epistemic credit on three EJT ("Who knows more?") and assessed their non-epistemic credit on three RA trials ("How many coins should each person get?"). Of interest was the extent to which children would attribute knowledge to the teller and share resources with the non-teller and whether this differed as a function of condition (Request vs. Offer), credit type (epistemic: EJT vs. non-epistemic: RA) or the interaction between condition and credit type. We conducted a series of mixed-effects logistic regression analyses with agent selection (1 = teller vs. 0 = non-teller) as the dependent variable. A random intercept for participant was included in both models. Model 1 included condition (Request vs. Offer), credit type (EJT vs. RA), and the interaction between condition and credit type as predictors. Model 2 removed these interactions. The models were not significantly different, $\chi^2(1) = 0.014$, $p = .90$; therefore, we report the simpler model here. We found a significant effect of condition ($b = -0.967$, $SE = 0.35$, $z = -2.708$, $p < .01$) and credit type ($b = -0.416$, $SE = 0.198$, $z = -2.095$, $p < .05$). There were no other significant effects. Children were more likely to select the teller over the non-teller in the Request condition ($M = 0.67$, $SD = 0.47$) than in the Offer condition ($M = 0.50$, $SD = 0.50$). In addition, children were more likely to attribute knowledge than to share a limited resource with the teller (EJT: $M = 0.62$, $SD = 0.49$; RA: $M = 0.55$, $SD = 0.50$).

Relationship between parenting values and children's preferences for tellers

Recent work has documented individual differences in children's willingness to learn new information from speakers based on parenting values (Corriveau & Harris, 2009; Reifen Tagar et al., 2014). Thus, in the current study, we explored the extent to which parent views on authority and social conformity were related to children's inferences about the speakers and their learning and memory for information from the speakers. Consistent with previous work (Reifen Tagar et al., 2014), a score was calculated for each questionnaire by summing the responses indicating high authoritarian views (coded as 1) and high priority on social conformity (coded as 1) and dividing by the total number of questions (4 for authoritarianism and 17 for social conformity). Scores ranged from 0 to 1, with higher scores indicating stronger authoritarian values ($M = 0.23$, $SD = 0.26$) and social conformity values ($M = 0.28$, $SD = 0.20$). Parent authoritarianism and social conformity scores were highly correlated, Pearson's $r(89) = .58$, $p < .001$. We report the intercorrelations between measures of parenting and child measures separately for each condition in Table 3. There was a significant positive correlation between social conformity and semantic memory in the Offer condition, Pearson's $r(48) = .31$, $p < .05$. No other significant relationships between parenting values and child responses emerged.

Discussion

Much empirical research has shown that children's testimonial learning is sensitive to considerations of speaker behavior and characteristics, including prior accuracy, reliability, and helpfulness (for

Table 3

Means, standard deviations, and correlations by condition.

<i>Request condition</i>									
Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7
1. Age (months)	62.77	14.10							
2. Authoritarianism	0.19	0.24	.08						
3. Social conformity	0.27	0.18	-.11	.49**					
4. Label endorsement	0.60	0.26	.15	.00	-.16				
5. EJT	0.70	0.33	.14	-.18	-.20	.59**			
6. RA	0.64	0.33	.13	-.08	.09	.48**	.55**		
7. Semantic memory	0.63	0.24	.00	.01	.07	.21	.17	.21	
8. Generalization	0.62	0.32	.13	-.11	-.09	.49**	.78**	.42**	.09
<i>Offer condition</i>									
Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7
1. Age (months)	61.00	13.72							
2. Authoritarianism	0.27	0.29	.24						
3. Social conformity	0.29	0.22	.20	.65**					
4. Label endorsement	0.44	0.32	-.17	-.01	-.03				
5. EJT	0.54	0.36	-.02	-.05	-.03	.36*			
6. RA	0.46	0.35	.07	-.09	-.11	.46**	.70**		
7. Semantic memory	0.63	0.24	.08	.23	.31*	.19	-.14	-.01	
8. Generalization	0.54	0.30	-.11	-.01	-.01	.46**	.61**	.61**	-.17

Note. EJT, explicit judgment trial; RA, resource allocation.

* $p < .05$.

** $p < .01$.

a review, see [Harris, Koenig, Corriveau, & Jaswal, 2018](#)). Within this research, less is known about how children understand simple acts of telling in comparison with other motivations that speakers might have for testifying to a fact. When a speaker states a claim, the speaker expresses a desire and intention that the addressees believe the claim. In addition to these social or practical aspects of testifying, the speaker also offers an epistemic reason that bears in favor of the proposition. How much of this do children understand? More specifically, when children endorse what a speaker tells them, are they responding to the speaker's desire that they believe her claim, perhaps in the hope of pleasing or gaining favor from the speaker? Or are they responding to the epistemic reason that acts of testifying present? We attempted to disentangle this in the current study by presenting children with two speakers, each of whom intended to influence children's testimonial learning. One speaker—the teller—did so by presenting an epistemic reason in a simple act of telling. The other speaker—the non-teller—did so by providing distinct practical reasons (material offers in the Offer condition and personal requests in the Request condition) that bear on the consequences of endorsing the claim. We assessed children's willingness to learn from such speakers using label endorsement questions and semantic memory assessments. We then measured children's epistemic and non-epistemic *appraisals* of the agents across a set of explicit knowledge judgments and resource allocation decisions.

Children's selective learning from speakers who present epistemic versus practical reasons

By manipulating the nature of the reason that speakers gave to children, we offer a direct test of their ability to distinguish epistemic reasons from practical reasons in communicative contexts. We contrasted simple acts of telling ("That's a zorchie") with non-telling statements that provided different practical reasons for belief (Request: "It would make me happy if you think that it's a boskot"; Offer: "I'll let you play with a fun toy later if you think it's a boskot"). By pitting two positive statements against each other, we were positioned to investigate whether children selectively learn from one of the two speakers for epistemic reasons or for practical reasons. In the Request condition, children were significantly above chance in their selection of the teller's novel animal labels. This selective learning preference suggests that children in the Request condition endorsed the teller's claims for

epistemic reasons and not for other practical reasons such as reasons to affiliate or gain favor with the speaker. Indeed, if children were moved to comply or affiliate with the non-teller in the Request condition, then we would have expected them to be less systematic in their label endorsement decisions. In fact, children were above chance in their selection of the teller over the non-teller on all our measures—label endorsements, semantic memory, knowledge generalizations, explicit knowledge judgments, and resource allocation judgments—suggesting that children are capable of distinguishing epistemic reasons from certain practical reasons. These results align with prior work by Koenig (2012), where children were presented with speakers who offered their personal desires as a reason for their own beliefs by stating, “I like puppets and I want there to be puppets in that box. So I think there are puppets in there.” In that study, 3- to 5-year-olds showed their disfavor for such speakers by failing to endorse their claims and by crediting alternative speakers with “better ways of thinking.” The lack of age-related differences in children’s endorsements and memory in the current study further suggests that by 3 years of age children are not persuaded by doxastic requests as reasons for belief both when requests are directed to them, as in the current study, and when they observe speakers use personal desires to justify their own beliefs, as in Koenig (2012). Taken together, our results point to the possibility that during the preschool years children might not view requests, or an agent’s simply wanting something to be true, as being a good reason to learn from that agent.

In contrast to the Request condition, the material reward offered in exchange for belief in the Offer condition seemed to provide more compelling reasons for children to endorse the non-teller’s labels. That is, in the Offer condition, children were not systematic in their selection of either the teller or the non-teller and were less likely to endorse the teller’s labels compared with the Request condition. Again here, the lack of age-related differences suggests that this was true for 3- to 6-year-olds. Furthermore, the high degree of consistency between children’s endorsements and semantic memory suggests that children learned from both tellers and non-tellers. What this learning reflected, however, is open to various interpretations. First, it is possible that children viewed non-epistemic reasons as providing good valid reasons to believe a claim. If true, then children’s learning from the non-teller (in cases involving offers and requests) would be considered epistemically mistaken because offers and requests do not provide epistemic reasons for belief. Another possibility is that children were moved to believe a claim for non-epistemic reasons from the non-teller because children’s beliefs were influenced by non-epistemic considerations (e.g., desire for social connection). Finally, it is possible that children did not believe the claim at all but were acting as if they believed it in response to practical or non-epistemic reasons, perhaps to gain favor or affiliate with the speaker. Here, endorsement of a speaker’s label for a practical reason would not reflect genuine belief; rather, endorsing the claim would reflect acting as if one believed or pretending to believe. Thus, it is possible that children viewed some reasons to be good epistemic ones to *believe* a claim and other reasons to be good practical ones to *endorse* a claim.

Epistemic and non-epistemic credit given to the speakers

In addition to measuring children’s learning, we examined their epistemic and non-epistemic appraisals of tellers and non-tellers. We measured the epistemic credit children gave by asking them to indicate which adult knew more, and we measured non-epistemic credit by asking them to allocate a limited resource to the two adult speakers. We had the following predictions. First, we anticipated that if children infer that there are epistemic reasons inherent in basic acts of telling that are absent in statements involving requests and offers, they would credit tellers as more knowledgeable. Second, we expected that practical reasons would move children to give non-epistemic credit to non-tellers. Our results generally align with these predictions. First, we found a significant effect of condition such that children were more likely to attribute knowledge to and share resources with the teller in the Request condition compared with the Offer condition. This aligns with our expectation that children would credit tellers as more knowledgeable, but it applies to the teller only in the Request condition. At the same time, children in the Request condition were also above chance in their allocation of non-epistemic credit to the non-teller, contrary to our prediction that non-tellers (in both conditions) would receive non-epistemic credit. But we also found that, overall, children gave more epistemic credit than non-epistemic credit to the teller. In other words, children were more likely to indicate

that the teller knew more and were more likely to share a limited resource with the teller regardless of condition. Consistent with our predictions, tellers tended to receive more epistemic credit and non-tellers tended to receive more non-epistemic credit.

The main effect of credit type suggests that children's epistemic and non-epistemic evaluations of adult speakers vary. Specifically, children's divergent responses across the two tasks suggest that epistemic attributions and resource allocations may be influenced by distinct considerations. In support of this, recent work reports that children's epistemic decisions (e.g., to learn) often dissociate from their practical decisions (e.g., to share) (Hetherington, Hendrickson & Koenig, 2014; Landrum et al., 2016; Pesch & Koenig, 2018), suggesting that preschoolers' appraisals of speakers depend on the judgments they are being asked to make. In the current study, the only difference between the two speakers was the epistemic versus practical reasons they provided in support of their testimonial claims. Given this, children's greater tendency to attribute knowledge to the teller suggests that children viewed simple acts of telling to be an indicator of knowledge and a better indicator of knowledge than requests or offers. Differently put, children's reduced rates of allocating resources to tellers suggests that practical inducements, in the form of both requests and offers, presented reasons to share with the adult, perhaps to return or gain favor. In future work, it will be important to clarify the impact of familiarity on children's learning as well as their knowledge attributions and resource allocation decisions. In addition, future research could examine how children view doxastic requests and doxastic offers by pitting them against each other or by presenting them to children using a single-speaker design. Such work could reveal more about these different types of speech acts, including the function of these communicative acts and how they are interpreted by children.

Relations between parenting values and children's preferences for the speakers

Finally, we investigated relations between children's preferences for different speakers and parent authoritarianism and social conformity values. We found a significant positive correlation between parental social conformity values and children's memory for the speakers' labels in the Offer condition. That is, children whose parents prioritized values consistent with social conformity were more likely to recall the labels they had previously endorsed. This relationship emerged only for those children in the Offer condition, where labels made by the speaker who offered a practical incentive for belief were frequently endorsed. Previous work has found that parental authoritarianism and social conformity predicts preschoolers' learning from more conventional sources (i.e., sources who provide conventional names for familiar objects) (Reifen Tagar et al., 2014). Our results expand on this finding by suggesting that individual differences in parenting might relate to how children respond to speakers who use practical reasons to manipulate their beliefs. However, we interpret this cautiously without further research. Indeed, it is likely that parents differ in the kinds of reasons they offer and the frequency with which they use practical incentives with their children. To better understand the role this plays in children's own learning and memory, future work could examine differences in the rates at which, and the conditions in which, parents offer practical and epistemic reasons in their own testimonial exchanges with their children and how that relates to their children's learning decisions.

Limitations

Limitations that merit discussion were present in our work. Although we were interested in examining how children reason about different types of claims that adult speakers make, it is possible that the statements we used appear infrequently in everyday discourse, raising questions about the ecological validity of our findings. To an adult ear, doxastic requests or offers like those used in this study might sound odd. However, we wanted to know whether children also recognize the oddity of requesting belief or offering benefits for belief, an oddity that stems from the distinction between epistemic and practical reasons. Indeed, note that adults also sometimes make similar requests that do not sound odd, for example, "Please, I'm begging you, you have to believe me" and "Would you please just believe me?" (for a review of such speech acts, see McMyler, 2016). In future work, it will be important to clarify how children reason about different considerations for belief with more ecologically grounded statements. For example, it would be useful to document in a descriptive study

the types of statements for belief that are made to young children and use those to inform experimental design.

Another limitation is that our sample was predominantly White and from highly resourced communities. This limits our ability to generalize our findings to other populations. In addition, the averages on our parent-reported measures of social conformity and authoritarianism were lower (i.e., parents in our sample were less authoritarian and less likely to value social conformity) compared with other research using these questionnaires. Due to this, our results may be skewed by the low levels of reported authoritarianism and social conformity values. As such, our findings on this issue should be interpreted with caution until further work is conducted. This limits our ability to reason about the role that individual differences play in children's evaluations of a speaker's reasons for their claims. A more representative and diverse sample is needed to strengthen our understanding of how individual differences affect children's reasoning about claims.

Conclusion

Much research has examined children's reasoning about testimony by manipulating epistemic characteristics (e.g., reliability, expertise, certainty) of the speaker as well as other socially or culturally favored characteristics (e.g., group membership, dominance) (Harris et al., 2018; Mills, 2013). Understanding how children's learning is influenced by these factors will depend on better understanding how children interpret any given speaker characteristic. For example, when children believe the claims of in-group members, familiar agents, or prosocial agents, are these agent-based characteristics functioning for children as epistemic reasons (as considerations that they take to speak to the truth of the claims), are they functioning as practical reasons for complying with what these speakers say, or are they functioning as nonrational causal influences on children's beliefs (e.g., bias, prejudice)? The study presented here does not settle these questions, but it suggests that children are capable of distinguishing certain epistemic reasons from practical reasons from their own first-personal perspective. When children's beliefs are influenced by a speaker's simply telling children that something is the case, it is natural to conclude that this speech act is functioning for children as an epistemic reason for believing what it is that they are told. However, in those instances where children are influenced by a speaker's offers or requests, things are less clear. It is less clear that their beliefs are actually being influenced, and if they are it is unclear whether the practical consideration (the request or offer) is functioning for children as an epistemic reason or as a non-epistemic practical response. Our results help to clarify the challenge of determining those characteristics that feature as *epistemic reasons* in children's own deliberations about what to believe, as distinct from those characteristics that feature as *practical reasons* or inducements to comply.

Acknowledgements

We thank our undergraduate research assistants for their lab assistance as well as the parents and children who participated in this research. This research was supported by the Office of Vice Provost for Research (Grant No. 22890) to MAK and by the Institute of Child Development Small Grant to KER.

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