Chapter 8
Insights into Children's Testimonial Reasoning

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Abstract Human testimony is a rich source of knowledge about the world, enabling us to acquire information about things both near and distant, available and unavailable, known and unknown. It also provides us with an opportunity to investigate children's reasoning about the human informants who testify. In this chapter, we discuss the testimonial reasoning that supports children's knowledge acquisition. We discuss both the evidential reasons (e.g., epistemic reliability) that children have to believe what they are told and the distinct interpersonal reasons (e.g., direct address) that children have to trust others. We suggest that children engage in a flexible reasoning process that recruits children's understanding of intentional agency, one that empowers them to monitor epistemic and moral transgressions, but also to forgive excusable errors. We offer insight into new avenues for future research, with an interest in better specifying the reasoning that children apply to testimony, and the implications this has for understanding individual and cultural differences in testimonial learning.

Introduction

Children—like adults—gain vast amounts of knowledge from others' testimony (for reviews, see Gelman, 2009; Harris, Koenig, Corriveau, & Jaswal, 2017; Koenig & Sabbagh, 2013). Given the power of testimony to extend our knowledge beyond personal first-hand experiences (Quine & Ullian, 1970), recent research has uncovered insights into how children manage certain inherent risks of communication, while discerning what to believe and whom to trust. There are different ways to characterize the epistemological problem that testimony presents, and doing full justice to the problem is beyond the scope of this chapter (see Gelfert, 2014; Goldberg, 2008; Lackey, 2008; McMyler, 2011). For our purposes here, it is enough to say that understanding the epistemological problem that testimony presents runs

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deeper than appreciating the risks posed by the occasionally incompetent or deceptive speaker. To appreciate the basic epistemic situation that testimony presents, it is important to recognize that listeners encounter an opportunity for a judgment or decision *whenever a speaker offers up their claim as a reason to believe it*. Even when speakers do their very best as thoughtful believers and sincere testifiers, it falls on the listener to make some kind of judgment.

In this chapter, we draw on recent research to characterize important elements of the reasoning process that underlies children's testimonial learning decisions. In essence, we argue that when children evaluate speakers, they do so in ways that are characteristic of children's reasoning about intentional action more generally. We will suggest that key aspects of children's intentional reasoning about speakers-as-testifiers emerge quite early: Infants' sensitivity to informant reliability involves monitoring the relation between an individual agent and her intentional actions (e.g., Poulin-Dubois & Chow, 2009; Tummeltshammer, Wu, Sobel, & Kirkham, 2014), with an interest in the conditions that explain a speaker's anomalous actions or statements (Henderson, Graham, & Schell, 2015; Koenig & Echols, 2003). Children's decisions are often flexibly supported by evidence of a speaker's competencies as they relate to the specific claims being made (i.e., limits in perceptual access) (Kondrad & Jaswal, 2012; Nurmsoo & Robinson, 2009; Reyes-Jáquez & Echols, 2013). Children make epistemic inferences about speakers that are not overly broad or sweeping, but that are in line with specific forms of knowledge put on display (Brosseau-Liard & Birch, 2011; Koenig & Jaswal, 2011). Children spontaneously monitor a speaker's errors, disfluencies, bad arguments, and inconsistent statements (e.g., Corriveau & Kurkul, 2014; Doebel, Rowell, & Koenig, 2016), and sometimes give priority to epistemic considerations when put into conflict with other social preferences they might have (Castelain, Bernard, Van der Henst, & Mercier, 2016; Corriveau, Kim, Song, & Harris, 2013; Reyes-Jáquez & Echols, 2013). Taken together, one central component of children's reasoning about reliability is that it draws upon a general causal framework that aims to discern whether speakers speak freely and intentionally from knowledge.

To make this case, we focus on three types of evidence gained from research on children's testimonial learning: reliability assessments, knowledge attributions, and error forgiveness. Sources can be assessed in terms of how reliably their actions—including speech acts—relate to the world. Accuracy, fidelity, and consistency are all different forms that relations between agents and the environment can take. Infants' ability to distinguish variable from less-variable patterns of action will correspond to more intentional over less intentional actions. Second, children's learning decisions suggest that they do not attribute knowledge to speakers uniformly broadly but in ways that are circumscribed, and tailored to the specific knowledge that their testimony reveals. Third, in work on error and ignorance, children commonly show an interest in the situational constraints on knowledge, constraints that place limits on what someone can claim to know or can be faulted for not knowing.

Reliability Assessments

As mentioned above, infants and young children assess an informant's reliability (Birch, Vauthier, & Bloom, 2008; Clément, Koenig, & Harris, 2004; Koenig, Clément, & Harris, 2004; for reviews, see Harris & Lane, 2014; Poulin-Dubois & Brosseau-Liard, 2016). Twelve-month-olds preferred to seek and use information from an adult who demonstrated expertise (e.g., correctly labeling parts of a toy while correctly assembling it) over an adult who incompetently interacted with the same objects (e.g., offered no labels while failing to assemble the toy; Stenberg, 2013). By 16–18 months of age, infants recognize, show surprise, and reject false claims from adults (Koenig & Echols, 2003; Pea, 1982), actively seek information from more accurate sources (Begus & Southgate, 2012), and endorse new information from accurate over inaccurate speakers (Brooker & Poulin-Dubois, 2013). By age 3, they evaluate speakers who competently label familiar objects as "knowing more," (Clément et al., 2004; Koenig et al., 2004; Koenig & Harris, 2005; Pasquini, Corriveau, Koenig, & Harris, 2007), retain reliability information for a source over time (Corriveau & Harris, 2009), and by age 7, children (and adults) avoid learning from a speaker who demonstrates just one instance of semantic inaccuracy (Fitneva & Dunfield, 2010).

Research from outside of the labeling domain indicates that children's ability to infer a source's reliability is quite general, and extends to a wide-ranging set of behaviors. For instance, 14-month-olds selectively imitated the instrumental actions of a model who used familiar objects in a competent manner (e.g., placed a shoe on his foot) but not a model who had incompetently used such objects (e.g., placed a shoe on his hand, Zmyj, Buttelmann, Carpenter, & Daud, 2010). By 14 months, infants also infer reliability from the congruence of an adult's affective display with positive or negative events in the environment. Chow, Poulin-Dubois, and Lewis (2008) found that 14-month-olds preferentially followed the gaze of an adult shown to be a "reliable looker" based on her expression of happiness when opening a box of toys. In contrast, they were less likely to follow the gaze of "unreliable looker," who displayed happiness in response to opening empty boxes. Further evidence of sensitivity to the correspondence between an agent's looking behavior (marked by "Wow, look!") and the location of a target object was demonstrated in 8-month-old infants (Tummeltshammer et al., 2014). When presented with a (100%) reliable face and less reliable one (25%) in relation to four animated locations, infants distinguished them at test by making predictive gazes that systematically followed the direction of the reliable face to a new location more than the unreliable face. Interestingly, when the same set of predictive relations held between a non-human arrow and an object's location, children learned the correspondences but did not generalize them to new locations. Thus, it seems that infants have a general capacity to learn the statistical regularities between human faces and arrows as they relate to object locations, but the familiarity of the entity being tracked affects their generalization abilities.

Knowledge Attributions

When making epistemic evaluations about a speaker, child listeners can evaluate testimony in terms of the extent to which evidence—of various forms—corroborates the claims being made by a speaker. Testimony provides a form of evidence about the world and child listeners are right to treat it this way when appropriate (for discussion, see Koenig & McMyler in press). In developmental research that treats testimony as evidence, the main object of investigation is children's "epistemic trust"—or their ability to estimate the knowledge, competence, or reliability of a source based on the evidence they have (Coady, 1992; Harris et al., 2017; Sperber et al., 2010; Sobel & Kushnir, 2013). By appealing to evidence about speakers and their claims, children further their own goals of acquiring true beliefs and avoiding false ones. On the evidential model, to the extent that testimony requires a probabilistic weighing of evidence, stronger evidence or support for a claim (e.g., direct, perceptually-obvious support) should warrant stronger confidence in that claim.

Young children place some premium on evidence that corroborates a speaker's statements. When a speaker who referred to features of a particular animal evident in a photograph (e.g., brown scales) was contrasted with a speaker who referred to the animal's non-evident features (e.g., diet), 3- to 4-year-old children attributed more knowledge to the more verifiable speaker and preferred to learn from her (Study 1, Koenig et al., 2015). Older children, and adults, however, preferred speakers who made non-obvious claims that went beyond their current perceptual experience (Koenig et al., 2015; Ridge et al., 2016). It may be that young children place a premium on claims that receive clear, indisputable support, and so credit knowledge to a speaker whose statements reference direct evidence available to them. In contrast, 6-year-olds are more flexible in their treatment of verifiability: they rely on their own perceptual access when learning about the visible properties of unfamiliar animals, but defer to an expert when learning about invisible properties (Fitneva, Lam, & Dunfield, 2013). Therefore, children may depend less on perceptually obvious support with age and shift to a greater willingness to accept testimony that is not immediately corroborated by evidence, but still flexibly call upon their own perception or knowledge when appropriate.

In a related manner, children not only consider the question of whether a speaker's claims are supported by perceptual evidence; they also consider *how* they came to make a claim. Indeed, what may be more indicative of a speaker's knowledge-ability is not whether their specific utterances are true and evident but more generally, whether they have sufficient grounds to make a given claim. "their capacities to find out truths for themselves and their ability to organize and exploit them" (Ryle, 1949, p. 28). Children as young as 3 years of age distinguish between adequate and inadequate justifications for empirical claims: speakers who cite their own perceptual access, reliable testimony, and inference are judged by children as providing better support than speakers who cite their own desires, guesses, and pretending states of mind (Koenig, 2012). Children also judged speakers who offered good justifications for their claims (e.g., that books are in a backpack

because backpacks generally carry books) as having the "best" way of thinking and preferred to learn from these speakers over those who offer weak support for factual claims (e.g., claiming a lunch is in the backpack based on a guess).

Children learn new information judged to be relevant to a given speaker's expertise, but often not beyond (Jaswal, 2006; Koenig & Jaswal, 2011; Sobel & Corriveau, 2010; Stephens & Koenig, 2015). For example, Kushnir, Vredenburgh, and Schneider (2013) found that preschoolers sought labels for novel objects from a previously competent labeler but asked someone who had demonstrated mechanical expertise to fix malfunctioning toys, suggesting that they modify their information-seeking behaviors based on others' relevant expertise (see also, Brooker & Poulin-Dubois, 2013; Danovitch & Keil, 2004; Lutz & Keil, 2002). Children's willingness to learn from someone is often bound or limited to the specific form of knowledge that a speaker displayed in their prior language use or behavior. Such circumscribed learning patterns suggest that their learning decisions are not simply a matter of crediting more or less knowledge to a speaker, but are informed by how or why the speaker's knowledge was acquired.

Error Forgiveness

In work on accuracy, children typically watch a speaker name objects inaccurately without being provided with an explanation for that speaker's errors (e.g., Koenig & Harris, 2005; Koenig & Woodward, 2010). Research that provides such explanations by way of limitations in access or limited knowledge of English converge in showing that children do not treat mistaken speech acts uniformly—but rather, seek to determine whether errors were produced freely and intentionally by the speaker. Critical evidence stems from children's forgiveness or excusal of certain mistakes and their condemnation or blame of others. For example, children forgive errors that result from a speaker's lack of relevant perceptual access, and accept information from previously inaccurate speakers whose perceptual access was restored (Nurmsoo & Robinson, 2009; Reyes-Jáquez & Echols, 2013). Not unlike work in rational imitation, such research suggests that children's decisions to learn from a speaker depends upon their assessment of the speaker's reasons for making an anomalous statement (see also, Einav & Robinson, 2010; Kondrad & Jaswal, 2012).

An interest in whether a speaker's statements are consistent with her perceptual access is evident in infancy. In Koenig and Echols (2003), when both speakers were looking directly at familiar objects, 16-month-olds actively corrected and looked longer at speakers who incorrectly labeled the objects than one who correctly labels them. Conversely, when both speakers were turned away from the objects, infants looked marginally longer at a speaker who offered correct labels over one who offered incorrect labels. Slightly older children prefer informants who are in a better position to know, or have better access to relevant information than children do themselves. By 22 months of age, children update their representation of an absent object based on testimony from an adult with privileged perceptual access (Ganea,

Shutts, Spelke, & DeLoache, 2007) and by 3 years of age, abandon their initial beliefs in favor of a contradicting claim if that speaker is better perceptually informed than themselves (Ma & Ganea, 2010; Robinson & Whitcombe, 2003).

Children's forgiveness of errors indicates that children's testimonial reasoning is sensitive to the epistemic grounds that speakers have. By examining speakers' anomalous or false statements in a range of contexts, researchers have revealed a pattern that suggests that children base their decisions to accept or reject a claim on their assessment of whether the speaker's claims were made intentionally and knowledgably, or whether they were constrained by limits of the situation. Such reasoning bears similarity to work on rational imitation, which demonstrates infants' assessments of situational constraints in their interpretation of anomalous, unusual, or failed actions of an agent. Gergely, Bekkering, and Király (2002) found that after observing an adult freely activate a light box by deliberately touching it with her forehead, most 14-month-olds also first attempted to turn on the light using their forehead. Replicating results from Meltzoff's (1988) seminal study, infants engaged in the model's unfamiliar and less efficient strategy despite the availability of more natural or direct means (i.e., their hands). Gergely and colleagues suggest that, given no obvious situational explanation for this anomalous action, infants inferred that the head action offered some unseen advantage in operating the light, and therefore, adopted that action when given the opportunity. In fact, when another group of 14-month-olds observed an adult use her forehead when her hands were occupied by holding a blanket around herself, most infants instead used their hands to turn on the light. Presumably, in the blanket case, they inferred that the model used her forehead to operate the light-box not because it was her intention to use her head, but because her hands were unavailable in this case. In other words, 14-month-old infants took into account the situational limits on the actor's action and imitated not what agents actually did do, but made an inference about what an unconstrained agent would have done. Similarly, when children evaluate speakers who make anomalous statements, they consider various situational explanations—if available—that provide compelling grounds for that speech act.

Indeed, children show a nuanced understanding of the circumstances that can lead to excusable labeling errors: By age 3, they are willing to overlook a history of inaccuracy, but only when the informant's past mistakes were explained by limits in perceptual access to relevant information bearing on the claim (e.g., stating an object's color based on touch alone; Nurmsoo & Robinson, 2009). Importantly, children's speaker evaluations indicate their understanding that a speaker's limited perceptual access is not only a legitimate, exculpatory reason for inaccuracy, but it can be temporary and remediable, as they were willing to accept information from the same speaker when her perceptual access was restored. When inaccuracy is explained by the situational constraints placed on the speaker, children seem to treat such errors as responsive to the environment, and thus transient and reparable. In contrast, if no plausible explanation for an error exists, children are more likely to treat it as a failure of the speaker and grounds to question their competence.

Children also accept claims from forthcoming speakers who openly acknowledge their epistemic limits and profess their ignorance but reject claims from

someone with a history of inexplicable inaccuracy. When a speaker admitted ignorance to the names of familiar objects, preschoolers endorsed her later claims about a different set of objects but did not respond as charitably toward someone who inaccurately labeled familiar objects (Kushnir & Koenig, 2017). In fact, when the previously inaccurate speaker had privileged perceptual access to a hidden object, preschoolers still rejected her reports about the location of the object. However, they accepted claims of a hidden object's location from the ignorant speaker who was upfront and aware of her ignorance in the past. Ignorant speakers make no unreliable claims to know and do not make claims that conflict with reality or the child's knowledge. Indeed, children might treat certain forms of ignorance as an explanation or constraint on what someone can claim to know, whereas overt inaccuracy with no explanation invites more fundamental attributions of character—such as incompetence or malevolence.

Further evidence for children's ability to evaluate the intentionality of speakers and their claims in testimonial learning is suggested by research on error magnitude. For instance, Einav and Robinson (2010) found that 6- to 7-year-olds prefer a speaker who narrowly mislabels a butterfly as "a bee" over a speaker who grossly mislabels the butterfly "a car". Preschoolers also discriminate between serious and less serious labeling errors when given reason to avoid a speaker. Kondrad and Jaswal (2012) found that when two speakers mislabel a partially visible object (e.g., only the handle of a comb), 4- to 5-year-olds avoid those speakers whose errors seem entirely inconsistent with the partial evidence available (e.g., labeling it "a thunderstorm"). Instead, they prefer to learn from speakers whose errors were detected but in line with the available evidence (e.g., "a brush"). Thus, children overlooked a history of inaccuracy when those mistakes were explained by their access to information. Furthermore, Stephens and Koenig (2015) showed that when both speakers' access was fixed, children treated categorical, semantic errors as a more serious breach and avoided such speakers more broadly than speakers who made episodic errors about an object's variable location. It is important to note that children recognize all such mistaken statements as false. The interesting finding lies in the different inferences drawn about a speaker's reliability based on the *content and context* of their errors. When children encounter episodic or narrow errors explained by limited visual access, they appreciate that such errors are explained—folk-psychologically—by limits of the speaker's situation and in these cases, are not very informative about the competence of the speaker. Opportunities for future research include identifying various other kinds of constraints on action that explain or contextualize anomalous statements, and that spare negative attributions toward the speaker.

Taken together, such research suggests that when errors cannot be adequately explained by limits of the environment, children view these errors as more prognostic of a speaker's incompetence and future unreliability. First, such inferences offer a basic source of protection against speakers whose incompetence poses a more general threat to knowledge. Second, key aspects of this reasoning process emerge early: infants and young children are not only monitoring informants for evidence of accuracy—they show an interest in the epistemic conditions that explain a

speaker's error or anomalous statement (Brosseau-Liard & Birch, 2011; Henderson et al., 2015; Koenig & Echols, 2003). Third, this reasoning process presumably develops in tandem with children's growing knowledge base, allowing them to better check a broader range of anomalous statements for violations to their pre-existing knowledge, draw more nuanced inferences from a broader class of anomalies, and generate new explanations for errors. A key component of children's testimonial learning is their ability to determine when human agents speak intentionally, and without constraint. This supports the ability to contextualize errors—to penalize, correct, or mistrust those who err in ways that beg explanation and excuse those whose errors are warranted by the situation.

When Epistemic Reliability and Socio-Moral Information Conflicts

Children's testimonial learning in exchanges involving moral agents also recruits their more general understanding of intentional action. More recent insight into children's testimonial reasoning comes from studies that put social or moral information about informants in direct conflict with epistemic considerations. For example, in a study by Lane, Wellman, and Gelman (2013), 3- and 4-year-olds attributed knowledge to an agent with positive traits even though that agent lacked relevant perceptual access to the information. In work by Corriveau et al. (2013), 3-year-olds favored a speaker with a native accent despite her history of inaccuracy, and Reyes-Jáquez and Echols (2013) showed that 5-year-olds were more willing to excuse errors from speakers who bore some similarity to the child (see also Ma & Woolley, 2013). Similarly, Landrum, Mills, and Johnston (2013) found that 3- to 5-year-olds endorsed claims offered by a benevolent speaker with irrelevant expertise over a mean speaker with relevant expertise. Such findings suggest that children sometimes weigh information about moral and social in-group members more heavily in their learning decisions than perceptual access or expertise.

Why might children sometimes favor affiliated or similar individuals even when they have proven unreliable? Reyes-Jáquez and Echols (2013) offer an intriguing explanation—one that implicates the picture of testimonial reasoning discussed above. They argue that children's social preferences or biases for familiar or similar agents might be especially pronounced when errors go unexplained and are left open to interpretation. In a single design, they presented children with agents whose errors were explained—by wearing a blindfold, as well as agents whose errors were unexplained—by wearing the same item as a scarf. Children were familiarized to similar and dissimilar puppet agents, and preferred to ask and endorse information from the more similar agent. Afterward, children witnessed two phases, one in which both agents were accurate, followed by a phase where one was accurate, and one was inaccurate. Sometimes the similar agent was inaccurate, other times the dissimilar agent was inaccurate; and depending on condition, the inaccuracy was

explained by the blindfold, or unexplained by the scarf. When the errors were explained by the blindfold, children did not demonstrate their preference for the more similar agent—because their errors were excused. However, when the errors went unexplained by the scarf, children were more likely to endorse information from the more similar agent.

In much of the selective learning literature, failure to discredit the testimony from problematic sources, for either socio-moral or evidential reasons, has been conceptualized as reflecting children's "specific bias to trust" or an instance of "lack of distrust" (Vanderbilt, Liu, & Heyman, 2011). The prevailing evidential treatment of selective learning features only one interpretation of "trust," based on evidential considerations concerning the moral or epistemic reliability of a source. However, by treating testimony as a species of evidence, and children's trusting decisions as exclusively responsive to evidence of moral and epistemic varieties, we risk neglecting the other ways in which children trust others (Koenig & McMyler in press). For example, adults who get married promise to be with their spouse forever despite knowing the high statistical likelihood of divorce, and spouses often trust each other's claims and promises when evidence is scant or problematic (Marušić, 2015). This suggests that trust is not to be reduced to our predictions of others' behavior based on evidence; rather, we often proceed by placing our trust in them without having evidence, or even against the evidence that is available. When do children's interpersonal extensions of trust influence their moral or practical decisions? When do they influence their epistemic decisions to learn? Raising a distinction between practical and epistemic decisions to trust might explain why children are willing to learn from an agent despite evidence of their ill intentions, and their unwillingness to share with that agent. Certainly, there are cases in which it would make sense to learn from someone despite their interpersonal flaws, and there will be cases in which it makes sense to mistrust someone with expertise. Investigating the different ways in which we trust others can begin to help scientists understand how or why young children trust others interpersonally in some cases, and evaluate the evidence provided in others (Koenig & McMyler in press; Marušić, 2015).

Recent work has begun to examine children's judgments of multidimensional agents (i.e., agents that have conflicting epistemic and moral characteristics) in not only a set of selective learning decisions, but also in more practical or social decisions. This work offers a way to evaluate whether children's epistemic "trust," seen in their selective learning decisions, is reflected in other, more social judgments. In one study, Hetherington, Hendrickson, and Koenig (2014) familiarized preschoolers to either an antisocial in-group or prosocial out-group member. This design uniquely used two agents whom embodied conflicting traits across multiple domains. Interestingly, although the antisocial behavior of the in-group member reduced children's liking of and willingness to share with her compared to a neutral out-group member, it did not guide their decisions to learn new information from her. Similarly, when 18-month-old infants encountered an agent who incorrectly labeled a set of objects, their willingness to learn novel information from that agent was reduced but their willingness to share with her was not (Brooker & Poulin-Dubois, 2013). When niceness and expertise were contrasted in a single design,

children were found to base their epistemic inferences on both expertise and niceness but their social inferences were based uniquely on niceness (Landrum, Pflaum, & Mills, 2016). Pesch and Koenig (2017) investigated how direct interpersonal violations (failed promises and failed threats) are reflected in practical decisions to delay gratification and to share with an agent, as distinct from epistemic decisions learn from that agent. When the agent's promises or threats failed, 3- and 4-year-olds waited and shared less with an agent who did not keep her promises. Despite this, children were indiscriminate in their decisions to accept her claims. Taken together, these studies suggest that epistemic and practical decisions might stem from different types of appraisals that children make about agents and offers preliminary support for a distinction in the types of trust that children extend to others.

Thus, studies that look at more complex agents and interactions between the agent and child that potentially involve more than one form of trust offer a new avenue for understanding children's testimonial learning. In the traditional selective trust paradigm, children are provided with epistemic or social evidence about two agents and their decisions to learn largely reflect a preference for more positively valenced agents. However, when agents are multidimensional, children's decisions to learn are responsive to epistemic attributes, while practical decisions (sharing, helping, waiting) are responsive to the moral goodwill signaled by the agent. In future work, it will be important to more closely examine the type of information offered to children about agents at familiarization and compare it to the agent's speech acts at test, as there may be certain speech acts—promises, acts of telling—which present interpersonal considerations for trust while other speech acts—explanations, demonstrations, and arguments—that elicit evidential appraisals (for discussion, see Koenig & McMyler in press).

Individual Differences in Epistemic Trust

Does children's testimonial reasoning vary not only over development, but across individuals? Here, we review research characterizing cultural and contextual variations in children's decisions about whether or not to excuse anomalous statements when learning from speaker testimony.

Whether any given statement counts as anomalous for a child will depend upon what else they believe. In research examining the role of children's religious belief in their testimonial learning, Corriveau and Kurkul (2014) asked 5- and 6-year-old children to make judgments about the reality status of protagonists in realistic, religious, and fantastical stories. They found that children from religious backgrounds were more likely to accept that protagonists in religious stories were real people. Thus, it appears that children's skepticism towards improbable scenarios (e.g., protagonists with superhuman powers) is informed by their formal or informal experiences with religious education, in which they are be exposed to speakers who discuss and endorse various miraculous possibilities. Along these lines, Iranian

children, who are regularly exposed to religious narratives in daily life, are also prone to think of both realistic and fantastical figures in stories as real (Davoodi, Corriveau, & Harris, 2016).

In addition to religious values, recent research suggests that parents' authoritarian value influence children's decisions about whether to excuse or reject speaker errors. Reifen Tagar, Federico, Lyons, Ludeke, and Koenig (2014) found that 3- and 4-year-olds with more authoritarian parents placed a greater trust in adults who named objects accurately and showed greater vigilance against those who spoke inaccurately. Furthermore, children of parents high in authoritarianism gave greater weight to a status-based "adult = reliable" heuristic in trusting an ambiguously conventional adult. In light of the discussion above, it may be that because the inaccurate statements were unexplained by the situation, this allowed children's status-based preferences to be more clearly expressed. It is also possible that regardless of whether errors can be explained by limits of the situation or the ignorance of the agent, children from authoritarian backgrounds are especially prone to make character-like attributions to inaccurate agents. In either case, children's use of status-based or convention-based cues in testimonial learning varies as a function of parents' tendency to value deference or obedience to authority.

What other parent beliefs might explain individual differences in children's learning? Parents' epistemological values, or their beliefs about the nature and justification of knowledge, have been found to predict measures of their children's learning, including children's emphasis on evidence in discussions about science (Luce, Callanan, & Smilovic, 2013). Along these lines, parent epistemological beliefs are also predictive of children's decisions to accept or reject information from informants varying in how competently they utilized evidence to form conclusions (Suárez & Koenig, 2017). Interestingly, parents' evaluativist epistemological understanding—or the tendency to value evidence as a basis for belief—was associated with children's relative reluctance to attribute knowledge to, and endorse the conclusions of, poor reasoners. Thus, children whose parents value evidence as a justification of belief are more likely to have young children who reflect this epistemological value in their social learning decisions.

Further evidence that cultural or family values are reflected in children's testimonial learning comes from cross-cultural work on children's deference to consensus. Corriveau et al. (2013) found that deference to a group's consensus is greater among Asian-American children, who were especially deferential to group consensus in a public setting compared to Caucasian-American children. That is, children from more collectivist cultural backgrounds may rely more on group consensus in their testimonial reasoning.

Beyond cultural values, a child's spoken language may also influence their testimonial learning decisions. Lucas, Lewis, Pala, Wong, and Berridge (2013) found that Turkish preschoolers—who are exposed to language with evidential markers indicating what evidence exists for a statement—were more selective in their preferences for accurate informants relative to Chinese and English children. Thus, speaking a language that obliges speakers to state the sources of their knowledge may sensitize preschoolers to informant reliability.

In sum, it appears that cultural, family, and linguistic factors influence children's testimonial learning. Thus, a child's age is only one of the many factors that can impact the considerations he or she makes when learning from others. Children may be more or less sensitive to specific cues to reliability (or lack thereof) in accordance with cultural and family beliefs, values, and practices. Further research should clarify how contextual factors may influence children's judgments about both epistemic and interpersonal trust, as well as how enculturation interacts with cognitive developments to inform children's decisions to accept or reject testimony.

Summary

The work described in this chapter highlights important implications for how researchers conceptualize and study children's testimonial reasoning. We have outlined a growing body of literature showing that children reason about epistemic reliability with an interest in whether a given statement was produced intentionally by the agent or whether it was constrained by limits in the situation. When children receive a testimonial claim, it elicits both a check against what they know, and a form of reasoning about the speaker's epistemic conditions, credentials and their basis for knowing what they claim. In fact, as soon as infants can assess the truth of an utterance, they show an interest in assessing the grounds speakers have for their claims (Koenig & Echols, 2003; Koenig & Woodward, 2010). So in testimonial learning, as soon as children assess the meaning of a claim and can evaluate its truth value, they appear to be ready to monitor the epistemic conditions of the source who made the claims. As Gilbert Ryle (1949) was right to stress, "We are less interested in the stock of truths people acquire and retain, than in their capacities to find things out for themselves and their ability to organize and exploit them" (p. 28).

The field has continued to improve the general methodological paradigm used, shifting its focus to include more complex agents and to present more various decisions in order to comprehensively describe children's learning decisions and speaker evaluations. For example, it may be that in some cases, children attribute more knowledge to one informant but prefer to share or play or affiliate with another. The particular conditions (e.g., a speaker who is smart but mean) that elicit this type of dissociated reasoning process will likely be of special interest to researchers, but would not necessarily be captured unless studies include trials that tap into both the child's epistemic and practical judgments. In other words, study designs should account for both the epistemic and interpersonal considerations that feature in children's evaluations of others, with an eye for the range of social and cultural influences that affect their learning decisions.

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