

Trusting others: shared reality in testimonial learning

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Much of early learning depends on others, and the transmission of testimony presents children with a range of opportunities to learn about and from other people. Much work has focused on children's ability to select or prefer particular sources of information based on various epistemic (e.g. accuracy, reliability, perceptual access, expertise) and moral (e.g. benevolence, group membership, honesty) characteristics. Understanding the mechanisms by which such selective preferences emerge has been couched primarily in frameworks that treat testimony as a source of inductive evidence, and that treat children's trust as an evidence-based inference. However, there are other distinct interpersonal considerations that support children's trust towards others, considerations that influence who children learn from as well as other practical decisions. Broadening our conception of trust and considering the interpersonal reasons we have to trust others can both strengthen our current understanding of the role that trust plays in children's learning and practical decisions as well as provide a more holistic picture of how children participate in a shared reality with their family, peers, and communities.

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Briefly reflect on information you have recently acquired, and you'll likely find it stems from what someone told you—a reporter who told you a piece of news, a mechanic who told you about your car, a doctor who told you about your health. Much (if not most) of our knowledge about the world is gathered in this way. Testimony is a promiscuous source of knowledge that helps us construct and engage in a shared reality with our family, community, and culture. In fact, we could not participate in our shared cultural and social practices without testimony. As infants begin engaging with and observing the people around them, their interest in others is met with a broad range of interests, competencies, and intentions.

Thus, the ubiquity of testimony in social interactions underscores children's reliance on others as listeners, and the variability of testimony underscores children's opportunities to reason about their sources. Here we examine the case of child listeners to call attention to the broad range of ways in which children reason about other people.

A relatively new field in developmental psychology investigates how children reason about sources of information that vary across a range of characteristics. In one measure of selective testimonial learning, children are presented with two agents who differ on at least one dimension (e.g. accuracy) and are later asked to indicate which agent they would like to learn novel information from [1,2]. This paradigm has many instantiations, and reveals conditions under which preschoolers selectively learn from some agents over others. At its inception, studies focused on the various epistemic attributes that children can evaluate, including accuracy, expertise, and perceptual access, but today research also examines children's learning from speakers who vary in consensual support, benevolence, honesty, ingroup membership, logical coherence, and more (for reviews, see [3–5]).

Children's selective learning decisions have been largely interpreted in an 'evidential' framework, in which children make inductive inferences about others' epistemic reliability based on various speaker statements, characteristic and behaviors, and use this to determine whom to learn from [6,7,8*,9–11]. That is, children's learning is interpreted as variably responsive to evidence indicating that a speaker is reliable or trustworthy, such as a speaker's history of speaking truthfully, with expertise, or by making rational arguments. We do not deny that much can be learned about the giving and receiving of testimony by modeling this transaction in terms of the giving and receiving of ordinary inductive evidence. Indeed, testimony is a source of inductive evidence both about the world and its speakers [12,13], and child listeners would not be wrong to treat it this way. However, epistemologists (since [14]) and social psychologists [15] have noted that decisions to trust or believe a speaker are often made without reference to such evidence and is more complicated than it might at first appear. In addition to evidential forms of trust, scholars argue that there are often interpersonal epistemic reasons to believe, reasons that are not solely based in a listener's ability to predict a speaker's knowledge or goodwill. For example, when we take the word of a climate scientist who tells us 'anthropogenic climate change is real' without receiving any supporting explanations, arguments or

demonstrations, we have acquired knowledge by taking her at her word rather than by gathering evidence [16]. In fact, simple acts of telling may give us a distinct kind of epistemic license to believe a speaker, one that does not reduce to evidential considerations. We argue that evidential and interpersonal forms of trust rest on distinct routes through which children use testimony to establish a shared reality, routes that are based in distinct evidential and interpersonal decisions and practices — each of which warrants empirical study (for discussion, see [16,17]). This idea is further supported by Echterhoff, Higgins, and Levine [18], who argue that in establishing shared reality, we have epistemic motives to achieve a reliable understanding about the world, but also interpersonal motives, such as desires to affiliate. Indeed, there are many instances in which groups who are affiliated to some degree share similar attitudes [19], suggesting that evidence is not the only route by which we come to adopt certain beliefs.

In an evidential framework, children's epistemic trust appeals to the various sources of evidence they have about a speaker's knowledge or goodwill, and research demonstrates that children take into account both moral and epistemic evidence about others when deciding whom to learn from. For example, children prefer learning from speakers who were previously benevolent over malevolent [20] and neutral speakers [21]. When prior benevolence is crossed with prior accuracy, children are willing to learn from either agent, and do not fault a malevolent agent if she is nonetheless an accurate source [22]. In a similar vein, preschoolers have been shown to attribute knowledge to others based not only on evidence of a person's expertise but also her 'niceness' [23]. Such work has been integrated into more recent evidential frameworks of testimonial learning, with the inclusion of knowledgeability and intent into prediction models [24], and an emphasis on the possibility that children's social goals might help explain certain misattributions of trust in learning situations [25]. To this, we would add that there are certain speech acts, situations, and personal relationships that support speakers' interpersonal decisions to trust and believe a speaker. For example, certain speech acts that function like simple tellings or promises require that children decide whether to trust the speaker and believe her deferentially. Other speech acts like explanations and arguments allow children to evaluate a set of considerations that have been put on display, arriving at conclusions for themselves. By investigating the kinds of reasoning that support interpersonal decisions to trust, we hope to better understand the varieties of trust that children extend to others without reducing these decisions to inductive inferences about whom is a better source of information.

When the interpersonal reasons we have to trust a speaker's testimony are taken into consideration, children's

learning decisions can be understood as influenced by considerations other than inductive evidence. Consider the case of two speakers, one who mistakenly labels a few common objects and one who professes her ignorance by saying, 'I don't know what that is' (see also [2]). Kushnir and Koenig [26] found that preschoolers chose to learn new information from previously ignorant agents, but rejected new information from previously inaccurate ones. On evidential accounts, perhaps evidence of ignorance does not defeat a speaker's future claims like evidence of inaccuracy does. That is, they may understand that ignorance is evidence of what you do not know, but it does not automatically count as evidence against what you claim to know. In addition, however, children may trust previously ignorant speakers because they appreciate that such speakers cooperate when they can, sharing knowledge only when they have it. By distinguishing various interpersonal reasons for trusting speakers from the evidential bases for belief, we take into account the greater stock of reasons that young learners consider in their decisions. We also take more seriously the role that trust can play in learning from others, and better characterize the developmental task facing infants and young children: to discern the extent to which it is appropriate to take an interpersonal or an evidential view of another person and her communication.

Another case worth considering is that of children's testimonial learning from a parent or caregiver. In a longitudinal study of attachment in relation to children's testimonial learning, Corriveau and colleagues [36] examined 4- and 5-year-olds' trust in their mother's claims, as opposed to a stranger's. Children generally sided with their mother when perceptual evidence was consistent with both the mother and stranger's claims, and they generally sided with a stranger when perceptual cues favored the stranger's claims. However, children's selective learning strategies were moderated by their attachment status. While securely-attached children relied on speakers flexibly in ways responsive to the perceptual evidence, insecure-avoidant children displayed *less* reliance on their mother's claims and insecure-resistant children displayed *more* reliance on their mother, irrespective of the perceptual cues. These two cases highlight a different way in which trust may influence learning decisions, evoking the interpersonal relationships that we share with others as distinct from the inductive evidence that bears on their claims.

More recent work has begun to document how various types of decisions are differentially affected by epistemic and interpersonal reasons and an increasing stock of evidence suggests a set of dissociated judgments. For example, when children interacted with an agent who either fulfilled or broke her promises, their decisions to wait and share were reduced but decisions to learn from the agent were not (Pesch and Koenig, unpublished data).

In addition, despite children's unwillingness to share with immoral in-group members, they were willing to learn from them [27]. And despite their uncertainty about inaccurate in-group members as sources of information, they were willing to be friends with them [28,29]. Children used both epistemic and social information in their knowledge attributions, but only used relevant socio-moral information about an agent when making interpersonal judgments [23]. On accounts that treat testimony solely in terms of its evidentiary value, it will need to be explained first, why an agent's unreliability is registered in certain decisions but not others, and second, why the interpersonal reasons to trust play no explanatory role in their learning decisions.

In order to account for children's epistemic practices across a range of interactions and learning opportunities, we consider the possibility that children's ability to flexibly accept and share information interpersonally with others develops in conjunction with their evaluation of evidence that is made available by observing testimony. As toddlers, children learn words from observing others across a range of contexts and speech acts [30,31]. Indeed, infants by 12 months understand that certain word-like vocalizations communicate information between third parties [32]. The range of contexts that support learning in early childhood suggest that direct address or joint dyadic attention is not a necessary condition for learning from others. However, the reasons that children have for accepting someone's testimony may differ across these contexts, with interpersonal reasons featuring prominently in cases of direct address.

A child's appeal to evidential or interpersonal considerations — or some combination of both — are likely to vary across speech acts, age, situations, culture, and individuals. For example, children with more authoritarian parents may more often use status-based heuristics in their learning decisions compared to peers from non-authoritarian parents [33]. While such decisions could be given an evidential reading, examining children's interpersonal attributions could give further insight into the development of individual differences in testimonial learners' decisions to trust. Thus, the varieties of trust endorsed here along with the varieties of testimonial exchanges that children encounter speaks against treating testimony in a homogeneous or unitary way. Rather, an interest in identifying the conditions under which interpersonal trust supports children's learning will allow us to better identify cultural and individual differences which contribute to children's decisions to learn from others in more complex and natural situations [34,35*]. Thus, we believe an important future direction will be to identify what influences children to 'take someone's word' on the basis of interpersonal factors, or take a more evidential approach toward their claims, to establish a shared reality with others.

Conflict of interest statement

Nothing declared.

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