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Children's sensitivity to error magnitude when evaluating informants

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ABSTRACT

Three experiments examined children's ($N = 80$; 40; 48) sensitivity to error magnitude as a measure of informants' past accuracy, and indication of future reliability. Experiments 1 and 2 assessed whether, in a forced-choice task, children would evaluate as better and show greater trust in an informant whose previous errors were consistently within close range of the correct answer than one whose errors were more extreme. Six-to-seven-year olds displayed such sensitivity in an animal-labeling context (Experiment 1), whereas 4–5-year olds did so only in a number context, where the magnitude of errors was more obviously quantifiable (Experiment 2). Given a free choice in Experiment 3, 6- and 7-year olds preferred to guess the answers themselves rather than accept the claims of either informant. Only the older children's guesses, however, were informed by the testimony of the previously closer informant, indicating an increased awareness that this informant's claims could guide them toward the correct answers.

Children's knowledge acquisition depends heavily on others' testimony, particularly regarding facts or events that are non-obvious or beyond a child's direct experience (Harris & Koenig, 2006). Testimony is often accurate and reliable, but not always; even well-intentioned individuals can be mistaken, misremember, or offer information they are unsure about (Koenig & Harris, 2005). Moreover, some individuals are better sources of information than others within a particular knowledge domain. Therefore, children must reason critically about informants' reliability, rather than trust claims indiscriminately. How children master evaluative skills that facilitate efficient social learning is therefore an important developmental question.

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Recent evidence suggests that children adopt a critical stance toward others' testimony from an early age. Preschoolers show selective trust based on speakers' expressed confidence, age, familiarity, and area of expertise (Corriveau & Harris, 2009; Jaswal & Malone, 2007; Jaswal & Neely, 2006; Lutz & Keil, 2002; Sabbagh & Baldwin, 2001). Even 2-year olds attend to others' non-verbal confidence cues as a sign of credibility (Birch, Akmal, & Frampton, 2010). Another key finding is that young children use informants' past accuracy as a predictor of reliability of their current and future testimony (Koenig, Clement, & Harris, 2004; Koenig & Harris, 2005). They prefer to seek help and accept information from individuals who have been accurate in the past rather than ones who have been inaccurate or have declared ignorance. For example, when 4-year olds (and, under some circumstances, 3-year olds) are presented with contradictory labels for unfamiliar objects, they are more likely to select the label given by a speaker who has accurately named familiar objects than one given by a previously inaccurate or ignorant speaker (Birch, Vautier, & Bloom, 2008; Scofield & Behrend, 2008). A precursor to this ability has been shown in 14-month olds, who prefer to follow the gaze of a person who has displayed reliable gaze behaviour in the past (Chow, Poulin-Dubois, & Lewis, 2008). These findings indicate that children's appreciation of the continuity between individuals' past and future epistemological competence emerges early and guides their social learning.

A prerequisite of this type of selective trust is differentiation between informants in terms of their accuracy. Koenig et al. (2004) found that only children who were able to report which informant provided right and wrong labels for familiar objects could then selectively endorse novel information provided by the previously reliable informant (Koenig & Harris, 2005; Pasquini, Corriveau, Koenig, & Harris, 2007). Birch et al. (2008) confirmed that the majority of 3–4-year olds display appropriate selective trust even when not explicitly asked to appraise speakers' past performance, suggesting that they spontaneously evaluate and keep track of such accuracy information (Corriveau, Meints, & Harris, 2009; Scofield & Behrend, 2008).

All of these studies involved a contrast between a speaker who was consistently accurate across a series of trials and one who was consistently inaccurate (or ignorant). Therefore, children's selective trust in these cases shows only that they are less likely to trust someone who has *always* made mistakes in the past compared to someone who has *never* made mistakes. In everyday life people do not fall into such rigid categories. It is thus important to establish whether young children's ability to differentiate between informants is limited to situations in which one is always right and the other is always wrong. Are children sensitive to more subtle, and arguably more naturalistic, differences in the accuracy of people's testimony?

Findings by Pasquini et al. (2007) suggest that from the age of 4, children can differentiate between informants on the basis of *how many* errors they make. Children observed speakers who varied in the number of accurate and inaccurate object labeling responses they made, with one speaker producing a greater number of errors. Four-year olds could identify the better informant in all cases by attending to their relative frequency of errors and were more likely to endorse novel information provided by this person. In contrast, 3-year olds showed reliable discrimination and selective trust only when one of the informants was 100% accurate. These results indicate a developmental shift from a simple binary coding strategy that regards informants who make no errors as reliable and informants who make one or more errors as unreliable, to a more flexible strategy sensitive to the relative reliability of individuals (Pasquini et al., 2007).

In addition to quantitative differences in error frequency, the accuracy of people's testimony can also vary in terms of proximity to the truth. Errors differ in magnitude – some assertions are slightly off-target but within close range of the correct answer (e.g., that 65 million people live in the United Kingdom instead of 61 million) while others are quite far off (e.g., that the UK population is approximately 8 million). Degree of error serves as an important credibility cue because it gives an indication of the relative extent of an individual's knowledge. A person who consistently makes slight errors is likely to be more knowledgeable about a particular topic than one who consistently makes grave errors. Consequently, children stand to benefit from being sensitive to the degree of error displayed by informants when evaluating their competence.

To the best of our knowledge, there is no empirical evidence that speaks directly to children's perception of the magnitude of errors. It is not clear whether young children categorize errors only as