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## How children use accuracy information to infer informant intentions and to make reward decisions



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### ABSTRACT

The ability to assess the value of the information one receives and the intentions of the source of that information can be used to establish cooperative relationships and to identify cooperative partners. Across two experiments, 4- to 8-year-old children ( $N = 204$ ) received a note with correct, incorrect, or no information that affected their efforts on a search task. Children were told that all informants had played the game before and knew the location of the hidden reward. In the no information condition, children were told that the informant needed to leave before finishing the note and, thus, was not intentionally uninformative. Children rated the note with correct information as more helpful than the note with no information; incorrect information was rated least helpful. When asked about the informant's intentions, children attributed positive intentions when the information was correct and when they received unhelpful information but knew the informant was not intentionally uninformative. Children attributed less positive intentions to the informant when they received incorrect information. When given the chance to reward the informant, children rewarded the informant who provided correct information and no information equally; the informant who provided incorrect information received fewer rewards. Combined, these results suggest that young children assume that informants have positive intentions even when they provide no useful information. However, when the information provided is clearly inaccurate, children infer more negative intentions and reward those

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informants at lower rates. These results suggest that children tend to reward informants more based on their presumed intentions, placing less weight on the value of the information they provide.

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## Introduction

Information is an essential resource that humans acquire and transmit across generations (Boyd & Richerson, 1985; Tomasello, 1999). It is valuable in part because it can improve decision making (Allen, 1990). In fact, among adults, information that is important for job success is highly valued and shared selectively (Kamakau, 1976; Palmer, 1991). Accurate information saves time and effort and, in some cases, can ensure survival. Inaccurate information can be costly to the receiver and can be a sign of negative intentions or ineptitude on the part of the informant. Thus, tracking information quality and agents' communicative intentions is valuable because it can be used to establish cooperative relationships and to identify cooperative partners (Alexander, 1987; Brown & Moore, 2000; Dunfield, Kuhlmeier, & Murphy, 2013; Vaish, Carpenter, & Tomasello, 2010). However, little is known about when and how children use the quality of the information they receive to make inferences about cooperative partners.

A primary way in which we evaluate information is by judging the helpfulness of the information we have been given. For example, when asking for information about the best place to buy a local item in a foreign city, adults might be inclined to trust the information provided by a source who is likely to be knowledgeable and well intentioned—a local guide. Taking the guide's advice, the traveler would learn whether the information was accurate only after using the information and going to the recommended store. This outcome, perhaps finding that the store is a tourist trap with very high prices, is then likely to influence the traveler's perception of that informant's intentions—"What a helpful guide!" versus "I can't believe he told us to go there! He must be getting paid by that store!" Such assessments of the informant's intentions might in turn dictate future actions toward that informant such as engaging the informant's services again and recommending them to others or avoiding the informant and steering others away.

In this study, we examined preschool and elementary school children's ability to evaluate and reciprocate toward informants on the basis of the information they provide. Specifically, we asked the following three questions. First, when are children capable of evaluating the accuracy of information based on their use of it? Second, what inferences do children draw about the informant's intentions based on the accuracy of the information? Third, how does this affect subsequent cooperation with the informant?

To understand how children evaluate information in the context of cooperation, using the information provided should carry a benefit or cost. We know from prior work that children can evaluate information using diverse cues. To determine whether information is reliable, they can use information about their informant (the informant's prior accuracy, traits, accent, etc.), their prior knowledge and perceptions, and their intuitions about what makes a good explanation (e.g., Harris, Koenig, Corriveau, & Jaswal, 2018; Lombrozo, 2016). However, prior work has not focused on children's evaluation of information in contexts where the information they have been given alters the amount of effort that children need to expend to complete a task. Thus, we developed a novel effortful task to make the information provided valuable or costly.

Once children determine the accuracy of the information they have been provided, they can infer the intentions of the informant. Existing research on the connection between information accuracy and informant intentions has revealed a complex relationship. By about 5 years of age, children can use information about an informant's past accuracy and prior intentions to make decisions about whose information to endorse (e.g., Birch, Vauthier, & Bloom, 2008; Couillard & Woodward, 1999; Gillis & Nilsen, 2013; Jaswal, Croft, Setia, & Cole, 2010; Koenig & Harris, 2005; Landrum, Mills, &

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