

In the Absence of Conflicting Testimony Young Children Trust Inaccurate Informants

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Abstract

The present research investigated the kinds of inferences young children make about informants with a prior history of inaccuracies. Across three experiments, 3- and 4-year-olds (total $N = 202$) reacted to previously-accurate and previously-inaccurate informants who offered testimony in an object-labeling task. Of central interest was children's willingness to accept information provided by a single inaccurate informant. Experiments 1 and 2 showed that when a previously-inaccurate informant was alone and provided testimony that was not in conflict with the testimony of another informant, children systematically accepted the testimony of that informant. Experiment 3 showed that children failed to systematically reject information from an inaccurate informant even when given the option of asking a new informant instead. These results suggest that even though young children use prior history of accuracy to determine the *relative* reliability of informants, they are quite willing to trust the testimony of a single informant alone, regardless of whether that informant had previously been reliable.

In the Absence of Conflicting Testimony Young Children Trust Inaccurate Informants

As humans, we rely heavily on others for information that would be too time-consuming or difficult to acquire firsthand. Children, especially, learn a great deal of natural and cultural knowledge from others (Gelman, 2009). Although social learning allows children to acquire knowledge quickly, there are obvious drawbacks. Others sometimes provide information that is inaccurate—informants might lack knowledge, have deceptive intentions, or simply make errors. As such, it is critical for children to develop abilities and approaches to critically evaluate both the trustworthiness of informants and the information they provide. Recent research suggests that young children critically evaluate the trustworthiness of testimony (Koenig & Harris, 2005, Sabbagh & Baldwin, 2001). Numerous studies have demonstrated that a primary way in which children decide whom to trust is by monitoring informants' previous history of accurate and inaccurate testimony (Birch, Vauthier, & Bloom, 2008; Koenig, Clement, & Harris, 2004; Koenig & Harris, 2005; Pasquini, Corriveau, Koenig, & Harris, 2007). For instance, in a typical study (Koenig & Harris, 2005), children observed an informant label familiar objects correctly and another informant label familiar objects incorrectly (e.g., calling a ball a shoe). When the two informants then provided different labels for a novel object, children chose to accept the label of the accurate informant over that of the inaccurate informant. This finding has been well replicated (see Harris & Corriveau, 2011 for review). Nevertheless, the reasoning underlying children's decision of whom to trust is not well understood. The present research seeks to help fill this gap by examining what inferences children make when evaluating informants with a history of inaccuracy.

Children's acceptance of an accurate informant's testimony over an inaccurate informant's testimony is consistent with two possible underlying inferences about the inaccurate informant. One possibility is that children infer that someone who has previously provided inaccurate information is *absolutely* unreliable and should be strongly distrusted. Another possibility, however, is children infer that someone who has previously provided inaccurate information is *relatively* less reliable than someone who has previously provided accurate information, but is still generally trustworthy.

In order to effectively evaluate inaccurate informants, children must first be able to identify inaccuracies and track them. Prior research suggests that these skills are in place early in life. Infants as young as 16 month of age look longer at, respond differently to, and correct speakers who labeled familiar objects incorrectly (Koenig & Ecols, 2003; Koenig & Woodward, 2010; Pea, 1982). Beyond identifying inaccuracies, Corriveau, Meints, and Harris (2008) observed that children as young as 3 years of age track informants' inaccuracies. They presented 3- and 4-year-olds with one of three conditions: an accurate speaker paired with an inaccurate speaker, an accurate speaker paired with a neutral speaker, or an inaccurate speaker paired with a neutral speaker. Accurate speakers labeled familiar objects correctly, whereas inaccurate speakers labeled familiar objects incorrectly; neutral speakers simply drew attention to objects in uninformative ways. Replicating other studies, 3- and 4-year-olds in the accurate-inaccurate condition trusted the accurate informant over the inaccurate informant. In addition, 3- and 4-year-olds in the inaccurate-neutral condition trusted the neutral informant over the inaccurate informant. In the accurate-neutral condition, the 4-year-olds trusted the accurate informant over the neutral informant, but the 3-year-olds were not selective between the

accurate and neutral informants. The results suggest that 4-year-olds track informants' accuracies and inaccuracies, but 3-year-olds only track informants' inaccuracies (Corriveau et al., 2008). Nevertheless, prior research does not allow for a determination of whether children view inaccurate informants as unreliable only in a relative sense or also in an absolute sense.

Although both hypothesized inferences about the inaccurate informant are consistent with the observed results of children trusting accurate informants over the inaccurate ones (Birch, et al., 2008; Koenig, Clement, & Harris, 2004; Koenig & Harris, 2005; Pasquini, et al., 2007), they predict very different responses when children are deciding whether to trust a single inaccurate informant. If children infer that someone who got a few things wrong is absolutely unreliable, they will distrust testimony from the single inaccurate informant. Conversely, if children infer that someone who got a few things wrong is less reliable than others, but still generally reliable, they will trust testimony from the single inaccurate informant. In Experiment 1, we sought to investigate which of the two hypothesized inferences children make when they are presented with an inaccurate informant by comparing children's responses when presented with a single inaccurate informant alone versus when presented with an inaccurate informant alongside an accurate informant.

Experiment 1

In a between-subjects design, we presented 3- and 4-year-olds with one of three conditions: 1) an accurate informant paired with an inaccurate informant, 2) a single inaccurate informant alone, or 3) a single accurate informant alone (as a control condition). Following previous selective trust studies (Koenig, Clement, & Harris, 2004;

Koenig & Harris, 2005), children in the paired accurate-inaccurate informants condition observed an informant label familiar objects correctly and the other informant label familiar objects incorrectly. Children in the single inaccurate informant condition observed only an informant label familiar objects incorrectly, and children in the single accurate informant condition observed only an informant label familiar objects correctly. Then, importantly, children in all three conditions were tested with the same question with regards to their trust of the informants' labels for novel objects.

Method

Participants

Eighty-six 3- and 4-year-olds participated in Experiment 1; there were forty-three 3-year-olds (27 females and 16 males; M age = 3.6 years, age range: 3.0 to 3.9 years) and forty-three 4-year-olds (20 females and 23 males; M age = 4.4 years, age range: 4.0 to 5.0 years). Children were recruited from preschools and museums in southern California. The sample was approximately 68% Caucasian, 14% Asian, and 18% Hispanic.

Materials and Procedure

In the familiar objects history phase, children were introduced to two puppets or a single puppet, depending on the condition, and two pairs of familiar objects: a car with an apple and a ball with a crayon. In the *paired accurate-inaccurate informants* condition, children were introduced to a boy and a girl puppet; children observed one puppet demonstrate accuracy by correctly calling a car a "car" and a ball a "ball" and the other puppet demonstrated inaccuracy by incorrectly calling an apple a "car" and a crayon a "ball." The gender of the accurate and inaccurate informants was counter-balanced between subjects. In the *single inaccurate informant* condition, children were introduced

to either a boy or a girl puppet (counter-balanced between subjects); children observed the one puppet demonstrate inaccuracy by incorrectly calling an apple a “car” and a crayon a “ball.” To control for equal attention for the other object in each pair, the puppet also touched the car and the ball while saying, “There it is! Look at that thing.” In the *single accurate informant* condition, children were introduced to either a boy or a girl puppet (counter-balanced between subjects); children observed the one puppet demonstrate accuracy by calling a car a “car” and a ball a “ball.” To control for equal attention for the other object in each pair, the puppet also touched the apple and the crayon while saying, “There it is! Look at that thing.”

In the novel objects test phase of the task, children were presented with three test trials; on each trial, children were introduced to a pair of novel objects. For each test trial, in the paired condition, the accurate puppet referred to one of the two objects with a novel label (by touching it and saying, e.g., “That is a blicket! Look at the blicket.”), whereas the inaccurate puppet referred to the other object with the same novel label (by touching the other object and saying, e.g., “That is a blicket! Look at the blicket.”). In both the single inaccurate and the single accurate conditions, the puppet called one of the two objects a novel label (by touching it and saying, e.g., “That is a blicket! Look at the blicket.”) and, to control for equal attention for the other object in each pair, the puppet also touched the unlabeled object while saying, “There it is! Look at that thing.”

Next, for each test trial, and for all three conditions, children were asked to select the object associated with the novel label (e.g., “Can you put the blicket in this box?”). *Importantly*, note that children in all three conditions were asked the same question in a two-object situation. Across three test trials, their responses indicated whether they

trusted the informants' labels for novel objects in order to allow for clear comparisons between conditions.

At the end, we asked children a follow-up question about each informant: "If you wanted to know what this new thing was called, would he/she be a good person to ask?" Children in the paired condition were asked this question for both the accurate and the inaccurate informants separately. Children in the single inaccurate and the single accurate conditions were asked only for informant in their respective condition.

Results

All children completed three test trials, and each child's trust of a particular informant's labels was scored from zero to three. Preliminary analyses indicated no significant effects of participant age or gender; analyses also indicated no significant effect of puppet gender. Consequently, these variables were excluded from further analyses.

In a replication of prior research (e.g. Koenig, Clement, & Harris, 2004; Koenig & Harris, 2005), in the paired condition, children trusted the accurate informant ($M = 2.38$; 79% of the trials overall) over the inaccurate informant ($M = 0.62$; 21% of the trials overall). Of central theoretical interest is whether children distrust inaccurate informants in an absolute sense, such that they systematically reject the testimony of inaccurate informants. In order to address this issue, we determined that children's level of trust in the single inaccurate condition ($M = 2.46$; 82% of the trials overall) was significantly greater than would be expected by chance performance, $t(25) = 5.17$, $p < .001$.

Additionally, we compared the two conditions (paired and single inaccurate) with a previously-inaccurate informant. We found that children's trust of the inaccurate

informant was significantly greater in the single inaccurate condition than in the paired condition, $t(53) = 7.37, p < .001$. Finally, we compared children's level of trust in the single inaccurate condition with the single accurate condition ($M = 2.61$; 87% of the trials overall) and found no difference, $t(55) = 0.67, ns$. These results showed that children trusted the inaccurate informant when he or she was not paired with an opposing (accurate) informant, and they did so at the same level as their trust of the accurate informant.

On the follow-up question, children overwhelmingly judged that both accurate and inaccurate speakers would be good people to ask about the label of a novel object. Specifically, 85% of the children in the single inaccurate condition and 84% of the children in the single accurate condition reported that the informant in question would be a good person to ask. This same general pattern was also seen in the paired condition where 86% of the children reported that the accurate informant would be a good person to ask compared to 79% of the children who reported that the inaccurate informant would be a good person to ask, McNemar's $\chi^2(1) = 0.73, ns$. In addition, children's explicit judgment of the inaccurate informant did not differ between the paired and single inaccurate conditions, $\chi^2(1) = 0.26, ns$.

Overall, the results suggest that although children trusted the accurate informant over the inaccurate informant when asked to choose between them, they nevertheless considered the inaccurate informant to still be generally trustworthy. This was evident both in their willingness to accept information provided by the single inaccurate informant and by their explicit judgments that an inaccurate informant would be as good of a person to ask about a novel object label as an accurate informant.

Discussion

In Experiment 1 children accepted the novel labels of the inaccurate informant more often when he or she was the only informant than when he or she was paired with an accurate informant. Furthermore, children accepted the novel labels of the single inaccurate informant at a level greater than chance. These findings suggest that children's specific inference about the inaccurate informant is that someone who got a few things wrong is less reliable than an accurate informant, but still generally reliable. That is, it appears that children lower their level of trust in inaccurate informants only slightly. As such, our results suggest that children will tend to trust testimony from a single inaccurate informant alone long after they have acquired the ability to encode and track an informant's previous inaccuracies (Corriveau et al., 2008; Koenig & Ecols, 2003; Koenig & Woodward, 2010; Pea, 1982). This decision to accept information from a single inaccurate informant stands in contrast to their tendency to reject information from the inaccurate informant in our paired condition, as well as in previous selective trust studies that have provided participants with contrasting informants on a within-subjects basis (Birch, et al., 2008; Koenig, Clement, & Harris, 2004; Koenig & Harris, 2005; Pasquini, et al., 2007).

One interpretation of our results is that children are generally quite willing to accept information from inaccurate speakers, unless their testimony conflicts with that of accurate (and perhaps neutral) speakers. Specifically, this account explains the difference between reasoning about inaccurate speakers in the single versus paired conditions during the test phase of the task. However, an alternative possibility is that during the history phase children need to observe the contrast between accurate and inaccurate speakers

(which occurred in the paired but not the single inaccurate condition) to highlight the inaccurate speaker's deficits. Experiment 2 tested this possibility by presenting children with the contrast of accurate and inaccurate informants during the history phase, but then testing children on only one of the informants.

Experiment 2

In a between-subjects design, we presented 3- and 4-year-olds with paired accurate and inaccurate informants during the history phase, but with only one of those informants during the test phase. In one condition, the informant during the test phase was the one who had been accurate, and in the other condition, the informant was the one who had been inaccurate.

Method

Participants

Forty-four 3- and 4-year-olds participated in Experiment 2; there were twenty-two 3-year-olds (7 females and 15 males; M age = 3.5 years, age range: 3.0 to 3.9 years) and twenty-two 4-year-olds (10 females and 12 males; M age = 4.5 years, age range: 4.0 to 4.9 years). Children were recruited from preschools and museums in southern California. The sample was approximately 77% Caucasian, 9% Asian, and 14% African-American.

Materials and Procedure

The materials for Experiment 2 were identical to Experiment 1. The familiar objects history phase of the paired condition in Experiment 1 was combined with the novel objects test phase of either the single inaccurate condition in Experiment 1 (for the Experiment 2 *paired-single inaccurate* condition) or the single accurate condition in

Experiment 1 (for the Experiment 2 *paired-single accurate* condition). Lastly, as in Experiment 1, children were asked an explicit follow-up question about the informant.

Results

Preliminary analyses indicated no significant effects of participant age or gender; analyses also indicated no significant effect of puppet gender. Consequently these variables were excluded from further analyses. Results showed that children systematically accepted the testimony of the inaccurate informant. Children trusted the inaccurate speaker at a rate ($M = 2.76$; 92% of the trials overall) that was significantly greater than chance performance, $t(20)=10.73$, $p<.001$. Additionally, their trust of the informant in the paired-single inaccurate condition was not significantly different than in the paired-single accurate condition ($M = 2.35$; 78% of the trials overall), $t(42) = 1.55$, *ns*. As in Experiment 1, on the follow-up question, children in both conditions reported that the informant would be a good person to ask for labels of novel objects; 76% of children in the paired-single inaccurate condition and 78% of children in the paired-single accurate condition judged that the informant would be a good person to ask.

A goal of Experiment 2 was to test the possibility that having the contrast between an accurate and an inaccurate informant highlights the inaccurate informant's inaccuracies compared to only observing the inaccurate informant alone during the history phase. Thus, we compared children's trust of the single inaccurate informant in the paired-single inaccurate condition of Experiment 2 and the single inaccurate condition of Experiment 1. Children's trust of a single inaccurate informant did not differ between the conditions, $t(45) = 1.29$, *ns*. It appears that having the contrast of an accurate

informant during the history phase did not impact children's inference about the reliability of the inaccurate informant.

Discussion

The results of Experiment 2 showed that the 3- and 4-year-olds accepted the novel labels of the single inaccurate informant as often as the novel labels of the single accurate informant. This was the case even though they observed the contrast between the accurate and the inaccurate informants during the history phase. Also, children accepted the novel labels of the single inaccurate informant as often in the paired-single inaccurate condition of Experiment 2 as in the single inaccurate condition of Experiment 1. That is, children trusted the single inaccurate informant regardless of whether there was an opposing accurate informant during the history phase to highlight the inaccuracies. Lending further support for these findings are children's explicit judgments on the follow-up questions. Across Experiments 1 and 2, children judged the inaccurate informant as someone who would be good to ask for information regardless of whether there was an opposing accurate informant during the history or the test phase.

Experiment 3

In Experiments 1 and 2, we demonstrated that young children readily accepted information from an informant with a history of inaccuracy unless they were presented with conflicting information from an accurate informant during test trials. Corriveau et al. (2008) showed that the inaccurate informant does not even need to be opposed by an accurate informant; children trusted an informant with a neutral history over the inaccurate informant. Nevertheless, in these situations, the information from the inaccurate informant was opposed by information proactively provided by the other

informant. What if the other source did not actively offer conflicting information but was simply *available* to offer information, would children still readily accept information from the inaccurate informant? It is possible that children in single-informant situations had difficulty recognizing that there were other available options, and the simple presence of another potential informant during the test phase would have cued children away from accepting information from the inaccurate informant.

In Experiment 3, to examine this possibility, we presented children with a single inaccurate informant during the history phase, but added a potential neutral informant during the test phase. Unlike in Corriveau et al. (2008), however, the neutral informant did not proactively provide conflicting information, but was presented to children as someone they could ask to get more information.

Method

Participants

Seventy-two 3- and 4-year-olds participated in Experiment 3; there were thirty-one 3-year-olds (24 females and 7 males; M age = 3.5 years, age range: 3.0 to 3.9 years) and forty-one 4-year-olds (16 females and 25 males; M age = 4.5 years, age range: 4.0 to 5.0 years). Children were recruited from preschools and museums in southern California. The sample was approximately 83% Caucasian, 4% Asian, 4% African-American, and 9% Hispanic

Materials and Procedure

The materials for Experiment 3 were identical to Experiment 1. The familiar objects history phase was identical to that phase of the single inaccurate condition in Experiment 1. During the novel objects test phase, a second (neutral) puppet was

presented. In each of three test trials, as in Experiment 1, the inaccurate puppet called one of two novel objects a novel label. Children were then asked whether they would like to accept the information already provided by the inaccurate puppet or ask the neutral puppet for information. Children's responses were coded for whether they accepted the novel labels of the inaccurate informant.

Results

Preliminary analyses indicated no significant effects of participant age or gender; analyses also indicated no significant effect of puppet gender. Consequently these variables were excluded from further analyses. Children trusted the inaccurate informant a little under half of the time ($M = 1.36$; 45% of the trials overall). Because we wanted to understand the effect of a potential neutral informant during the test phase, we compared children's trust of the inaccurate informant in Experiment 3 and with their trust in inaccurate condition in Experiment 1. The results showed that children's trust of the inaccurate informant was significantly greater in the single inaccurate condition of Experiment 1 than in Experiment 3, $t(96) = 4.47$, $p < .001$. However, children's trust of the inaccurate informant was significantly less in the paired condition of Experiment 1 than it was in Experiment 3, $t(99) = 3.17$, $p = .002$. These results indicate that although having a potential neutral informant during the test phase did have some effect, it takes opposing information that is proactively provided for children to systematically reject advice from an inaccurate informant.

Discussion

In Experiment 3, children were given the choice to accept a label from an inaccurate speaker or to seek information from another, available source. In this scenario,

children still chose to accept the testimony of the inaccurate speaker about half of the time. This finding suggests that children did not infer that the inaccurate informant was untrustworthy in an absolute sense.

The results of Experiment 3 also reveal the contexts in which children might be dissuaded from choosing the testimony of the inaccurate informant. The results suggest that the availability of another source dissuades children from accepting testimony from the inaccurate informant only a little. It appears conflicting testimony is needed to dissuade most children from trusting inaccurate informants.

General Discussion

The present research examines young children's inferences about informants who provide testimony, with a focus on informants who have shown a history of inaccuracies. We observed whether children trusted the testimony of speakers who had been accurate or inaccurate in the past. In Experiment 1, children selectively distrusted inaccurate informants when accurate informants provided conflicting information, but they trusted inaccurate informants who were presented alone. In Experiment 2, children who had previously observed the contrast between inaccurate and accurate informants again systematically trusted inaccurate informants when presented alone. Finally, in Experiment 3, children failed to systematically reject the testimony of inaccurate informants even though they had the opportunity to seek out additional information. Taken together, the present results demonstrate that young children's inferences about inaccurate informants are of their *relative* reliability, not their absolute reliability.

Explicit judgment data also supports our claim that young children generally trust inaccurate informants. In both Experiments 1 and 2, a consistently high percentage of

children judged that it would be good to ask inaccurate informants for novel object labels, and this did not differ from the percentage of children who judged that it would be good to ask accurate informants. This was the case even in the paired condition of Experiment 1, when children were asked about both an accurate and an inaccurate speaker. In this case, 79% of the children reported that the inaccurate informant would be a good person to ask, which was not significantly different than the 86% of the children who reported that the accurate informant would be a good person to ask. These explicit judgments likely differ from what have been observed in prior research (e.g., Koenig, Clement, & Harris, 2004; Koenig & Harris, 2005), because we asked children to rate the absolute reliability of each individual informant, rather than to make a relative comparison between the two informants.

Our results suggest that young children may not assign a large penalty in response to past inaccuracies and instead lower their level of trust only slightly. Therefore, although children encode and track inaccuracies (Corriveau et al., 2008) and trust inaccurate informants relatively less than accurate informants (Birch, Vauthier, & Bloom, 2008; Koenig, Clement, & Harris, 2004; Koenig & Harris, 2005; Pasquini, et al., 2007), they are generally quite willing to accept testimony from inaccurate informants when that is the only testimony presented to them.

Why might children fail to appropriately question what they learn from previously-inaccurate individuals when conflicting testimony is not explicitly available to them? One possibility is that this is part of a broader tendency to view people in a positive light (Boseovski, 2010; Boseovski & Lee, 2008; Heyman & Giles, 2004; Lockhart, Chang, and Story, 2002). For example, children require less behavioral

evidence to make positive attributions than negative attributions (Boseovski & Lee, 2006). It may be that children are reluctant to view people in negative terms without very strong evidence. A related possibility is that children have learned that people's testimony is usually accurate and that their default assumption is to accept what they hear in the absence of explicit alternatives.

We believe that it is especially important to understand how children evaluate testimony from individual informants, because this is arguably a more common situation than having to resolve simultaneously conflicting testimony between two or more informants. Although young children may have to resolve discrepancies in testimony provided at different times, they probably hear most inaccurate testimony without the concurrent benefit of explicit, conflicting testimony. Of course, as in Experiment 3, children are likely to have opportunities to seek out additional information when an informant has a history of inaccuracy, but our results suggest that they often fail to do so even when they are specifically told that such an option is available. This points to the possibility that in everyday interactions children receiving testimony from inaccurate informants would be even less likely to seek out additional information, because they would have to generate the option of seeking out additional information. Furthermore, in everyday interactions, the actual process of seeking out information can involve multiple cognitive demands, such as the ability to formulate appropriate questions (Mills, Legare, Bills, & Mejias, 2010). Thus, the present research suggests that young children receiving information from inaccurate informants will often fail to seek out alternative information in everyday situations.

Future research is needed to examine whether circumstances that can help explain an informant's prior inaccuracies, such as lack of perceptual access to the information in question (Nurmsoo & Robinson, 2009), might affect the inferences young children make about inaccurate informants. In the critical condition of Nurmsoo and Robinson (2009), 3- to 5-year-olds discounted the past inaccuracies of an informant because the informant had the wrong type of perceptual access to hidden objects (e.g., providing color information after touching, but not seeing the objects). Interestingly, in the other condition of this study, children were asked to reason about an inaccurate informant (who provided inaccuracies but had the correct type of perceptual access) alone, and children did not systematically trust the single inaccurate informant. This finding appears to be inconsistent with the findings of the present research. However, we believe this apparent inconsistency can be explained by the fact that in the test trials presented in Nurmsoo and Robinson (2009), children were asked children to guess the feature (e.g., the color) of each object before the inaccurate informant provided testimony that always contradicted the children's guess. That is, the children were instructed to overtly generate, ahead of time, an alternative to the testimony of the inaccurate informant. This interpretation is consistent with our suggestion that children require explicit alternatives to dissuade them from trusting the inaccurate informant. Additional studies are needed to examine what forms such explicit alternatives can take.

In the present research, we asked children to reason about informants with reference to learning about object labels. We investigated testimony about object labels because a substantial amount is known about children's selective trust in this domain (Harris & Corriveau, 2011; Koenig & Harris, 2005), and our use of object labels

facilitates comparison with this body of work. However, further research is needed to extend this work to other domains, such as learning how things work. In addition, more work is needed to understand the precise circumstances that affect children's willingness to seek out information from others.

In sum, our results suggest that young children do assign some consequence to informant's inaccuracies, lowering their relative level of trust in these individuals. However, at least when there is only a single informant present to provide information, children do not appear to consider previously inaccurate sources to be unreliable in an absolute sense. It seems that children are generally trusting of a single informant alone, regardless of the informant's prior history of reliability.

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