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Speaker reliability guides children's inductive inferences about novel properties

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ABSTRACT

Prior work shows that children can make inductive inferences about objects based on their labels rather than their appearance (Gelman, 2003). A separate line of research shows that children's trust in a speaker's label is selective. Children accept labels from a reliable speaker over an unreliable speaker (e.g., Koenig & Harris, 2005). In the current paper, we tested whether 3- and 5-year-old children attend to speaker reliability when they make inductive inferences about a non-obvious property of a novel artifact based on its label. Children were more likely to use a reliable speaker's label than an unreliable speaker's label when making inductive inferences. Thus, children not only prefer to learn from reliable speakers, they are also more likely to use information from reliable speakers as the basis for future inferences. The findings are discussed in light of the debate between a similarity-driven and a label-driven approach to inductive inferences.

1. Introduction

Words are often described as cognitive tools. On the basis of a label, a learner can extend information about a given exemplar to novel instances. For example, the fact that two animals are both labeled in the same way suggests that properties of one will be shared by the other. Like most other tools, we generally use those that our language and culture provide. The child relies on others to learn the appropriate ways to use words. This combination of social origin and individual application presents

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some characteristic challenges to the developing child. In particular, the sources of social information about labeling may vary in reliability. Given this, the characteristics of the people who provide a novel label may affect how the label is acquired and used. The current paper investigates whether the inductive role of a label depends on the reliability of the speaker who provides the label. Specifically, we ask whether children expect novel labels from informants who have been reliable in the past to have stronger inductive potential than labels from previously unreliable informants.

Gelman and her colleagues (e.g., Gelman, 2003; Gelman & Markman, 1986) showed that preschoolers make label-based inductive inferences. Children used a shared label, rather than a shared appearance, as the basis for property predictions. For instance, when two animals shared the same label, young children predicted that they shared the same unobservable property (e.g., having hollow bones) even though the two animals differed in appearance. Further, Jaswal and colleagues (e.g., Jaswal, 2004; Jaswal & Markman, 2007) showed that children rely upon label information over perceptual information when making inferences about a property of an animal. When an animal that looked like a dog was called a cat, children made inferences (e.g., it drinks milk) based on the label (cat).

Although this evidence shows that children use labels provided by others to make inferences, a separate line of research reveals that children do not treat all labels equally. A growing body of research suggests that children selectively learn from others. Children around the age of four preferentially acquire novel labels from a reliable speaker who provided correct labels in the past over an unreliable speaker who provided incorrect labels in the past (e.g., Birch, Vauthier, & Bloom, 2008; Koenig, Clément, & Harris, 2004; Koenig & Harris, 2005). Children are also more likely to acquire labels from a speaker who expressed labels with confidence (Sabbagh & Baldwin, 2001) and from a speaker who knows the conventions for labeling (Diesendruck, Carmel, & Markson, 2010). Indeed, this selective trust guides children's subsequent learning from the same speakers even after a 1-week delay (Corriveau & Harris, 2009). This work has focused on the acquisition of labels – how a child decides what something is to be called. Thus, children are more likely to agree that a novel object is called a "dax" if a reliable, confident, conventional speaker provides the label. Our question is whether this sensitivity to speaker reliability extends to future inferences from the new label.

Thus, the current paper brings two research domains together by examining whether children's selective trust in others' testimony guides their inductive inferences. Will children infer that two objects that share a label but differ in appearance share novel properties when the label is provided by a reliable speaker but not when the label is provided by an unreliable speaker? Does the past reliability of the informant influence children's expectations that two objects both called "dax" will share novel properties? Below we review these two lines of research in more detail before describing the way that we sought to bring them together.

Previous work by Jaswal and his colleagues has documented the impact of the speaker on young children's willingness to make inductive inferences with familiar categories (Jaswal, 2004, 2006; Jaswal & Malone, 2007). For example, Jaswal and Malone (2007) demonstrated that the confidence of a speaker influences children's label-based inferences. They presented 3-year-olds with a hybrid picture in which appearance indicated membership of one category membership whereas a label indicated membership of another. For instance, children were shown a picture of an object that looked like a key but was labeled as a spoon. Then, children were asked to infer the function of the object (e.g., "starts the car" vs. "used to eat cereal from the bowl"). Critically, when the speaker expressed uncertainty about her claim (e.g., "*I think* this is a spoon") along with other behavioral cues such as furrowing the brow and hesitancy, children's inference were less likely to be based on the provided label than when a speaker provided the label without such uncertainty cues (e.g., "This is a spoon").

However, despite a growing body of work on children's selective learning from reliable speakers (e.g., Birch et al., 2008; Koenig & Harris, 2005), very little prior work has investigated the effect of speaker reliability on children's novel inductive inferences. For example, Jaswal and Malone's study was designed to look at whether children were willing to accept *familiar labels* from speakers who varied in confidence when the labels that they provided were unexpected and conflicted with children's own appearance-based expectations. The child had to decide whether the object was a key or a spoon and having done so, could infer the properties normally associated with that category. The child did not learn any new properties of keys or spoons. By contrast, we asked how children use *novel labels* from reliable as compared to unreliable speakers to guide their future learning. Additionally, although