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Children's recall of generic and specific labels regarding animals and people

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ABSTRACT

Although children tend to categorize objects at the basic level, we hypothesized that generic sentences would direct children's attention to different levels of categorization. We tested children's and adults' short-term recall (Study 1) and longer-term recall (Study 2) for labels presented in generic sentences (e.g., *Kids* like to play jimjam) versus specific sentences (e.g., *This kid* likes to play jimjam). Label content was either basic level (e.g., cat, boy) or superordinate (e.g., animal, kid). As predicted, participants showed better memory for label content in generic than specific sentences (short-term recall for children; both short and longer-term recall for adults). Errors typically involved recalling specific noun phrases as generic, and recalling superordinate labels as basic. These results demonstrate that language influences children's representations of new factual information, but that cognitive biases also lead to distortions in recall.

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1. Introduction

Young children, despite their limited experiences, rapidly acquire a vast amount of world knowledge. For example, although children never interact with dinosaurs, they may become dinosaur experts (Chi & Koeske, 1983). Language is thus an important mechanism for transmitting knowledge (Gelman,

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2009; Harris & Koenig, 2006). However, in order to understand how language input contributes to children's knowledge representations, one must ask how children recall the information conveyed by language and whether they do so with equal accuracy under different conditions. We examine this question, with a focus on children's representations of two forms of language: generic noun phrases (e.g., "Birds lay eggs"), which refer to categories as a whole, and specific noun phrases (e.g., "These birds lay eggs"), which refer to particular individuals.

A growing literature indicates that young children understand the differences in meanings conveyed by generic and specific noun phrases (NPs), and that information learned through generic language is especially robust. By 2(1/2) years of age, children differentiate generic and specific NPs and use this distinction to guide their inferences, extending facts learned via generic NPs more broadly than facts learned via specific NPs (Graham, Nayer, & Gelman, 2011). By 4 years of age, children distinguish generics from indefinites ("Some birds lay eggs") or universal quantifiers ("All birds lay eggs"; Cimpian & Markman, 2008; Gelman & Raman, 2003; Hollander, Gelman, & Star, 2002). Generic NPs also lead to stronger conceptual ties between a property and the corresponding category, implying that members of a category share important, stable features (Cimpian & Markman, 2009, 2011; Gelman, 2003; Gelman & Raman, 2003; Gelman, Ware, & Kleinberg, 2010; Rhodes, Leslie, & Tworek, 2012). When children hear a novel property in generic form, they are more likely to extend it to a larger category than when they hear it in specific form (Gelman, Star, & Flukes, 2002). When children hear generic properties about a novel kind, they are more likely to use this property to explain the behavior of a new member of the kind, compared to when they hear specific properties (Gelman et al., 2010; Rhodes et al., 2012). Finally, generic information is better remembered than specific information. Three-year-olds show better recall for labels used in generic sentences ("Hippos like to swim") than in specific sentences ("This hippo likes to swim"; Gelman & Raman, 2007). When 4- to 7-year-old children hear novel properties, they show better recall on generic trials ("Boys like a fruit called mod") than specific trials ("He likes a fruit called mod") for several aspects of the sentences provided, including whether sentences are generic or specific, the gender or animal referred to, verb content (e.g., "like"), verb valence (positive vs. negative), object noun (e.g., "fruit"), and novel word (e.g., "mod"; Cimpian & Erickson, 2012).

Despite the wealth of research regarding children's representations of generics, one key unexplored question is how generic NPs affect recall of category labels. Although researchers have examined children's recall of the referent of an NP (e.g., dog vs. cat), they have not examined children's recall of which label a speaker chooses to use to refer to a given referent (e.g., dog vs. animal). One recurring challenge children face is that any object can be classified in multiple ways and correspondingly have multiple labels (e.g., dog/animal; boy/child). For adults, labels function differently depending on whether they are presented in a generic or specific context. In specific sentences, the label serves primarily to identify the relevant instance, and the particular label used does not affect the interpretation (e.g., when the referent is a boy, "This **boy** is thirsty" is roughly equivalent to "This **child** is thirsty"). In contrast, for generic sentences, the conceptual information in the label is crucial in conveying the predicate being expressed (e.g., "Boys have hemoglobin in their blood" is not equivalent to "Children have hemoglobin in their blood"). Yet it is not known whether young children are sensitive to these differing implications of generic vs. specific language. For example, when children hear a generic sentence, do they keep track of the label provided by the adult speaker when storing this information in memory? And when children hear a specific sentence, do they keep track of the information as tagged to a particular individual, or do they store it as generic? Answers to these questions have implications for how children construct and represent knowledge systems, based on the language they hear from parents and others.

Children may be biased to recall labels at the basic level. For hierarchically organized categories, children focus on basic-level categories (e.g., dog) to the exclusion of other category levels (e.g., Dalmatian, animal; Golinkoff, Shuff-Bailey, Olguin, & Ruan, 1995; Markman, 1989; Mervis & Crisafi, 1982). Basic-level labels are learned earliest and most easily (Rosch, Mervis, Gray, Johnson, & Boyes-Braem, 1976). Even when hearing new information involving a non-basic label, children tend to generalize primarily to other basic-level instances (Gelman & O'Reilly, 1988). Similarly, when adults are asked to remember subordinate- or superordinate-level labels, they tend to remember the basic level instead (Pansky & Koriat, 2004). Despite children's basic-level bias, language can direct children's attention to

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