



Contents lists available at ScienceDirect

# Journal of Experimental Child Psychology

journal homepage: [www.elsevier.com/locate/jecp](http://www.elsevier.com/locate/jecp)



## Creature feature: Preschoolers use verbal descriptions to identify referents



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### ARTICLE INFO

#### Article history:

Received 24 November 2015

Revised 8 July 2016

Available online 26 August 2016

#### Keywords:

Language development

Cognitive development

Preschoolers

Language comprehension

Word learning

Reference

### ABSTRACT

Representations formed on the basis of verbal descriptions may be fleeting and relatively weak or robust enough to support identification of referents. We investigated these two possibilities. Children (2.5- and 3.5-year-olds) were read verbal descriptions of unusual animals and were asked to choose the described animal from a pair of items. Sometimes the features (prototypical color and prototypical location) were distinctive (only present for the target), and sometimes one feature was present for both animals (both were yellow or on leaves). Both age groups were best able to identify the described animal when the features were distinctive, and 3.5-year-olds identified the target when both color was distinctive and a delay was inserted between the description and test.

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### Introduction

Using language as a source of new information is a critical achievement that supports the acquisition of knowledge across a variety of domains (Harris, 2002). For example, children's knowledge of science and religion may be built, in part, on the testimony of adults (e.g., Harris & Koenig, 2006). A more mundane example comes from everyday conversations with parents and others that involve references to absent, not previously seen, entities such as a new sibling or distant relatives. The ability

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to use language to form representations of absent things is likely a critical first step in children's ability to use testimony as the basis of new knowledge. That is, using language to form representations without the support of a visual model will enable the generation of new knowledge that is not accessible directly. The current research investigates an early form of this skill by probing the specificity of the representations preschoolers form on the basis of verbal descriptions.

Although there is relatively little research on the representations children form on the basis of verbal descriptions, research with adults suggests that object labels can elicit detailed representations of referents (e.g., Barsalou, 1999; Kaschak & Glenberg, 2000; Stanfield & Zwaan, 2001; Zwaan, Stanfield, & Yaxley, 2002). Adults use verbal information to locate described items and form representations of objects that include rich information about the referents even when such information is not explicitly provided. For example, adults represent the shape and orientation of mentioned objects; those who hear a description of “an eagle in the sky” respond more quickly and more accurately to a line drawing of an eagle with outstretched wings than to a drawing of an eagle standing with wings folded down (Zwaan et al., 2002), and those who hear a sentence such as “John put the pencil in the cup” are faster to respond to a depiction of a pencil that is placed vertically (Stanfield & Zwaan, 2001). These findings are consistent with the possibility that adults' representations of referent objects are relatively rich and include perceptual information about the orientation and shape of mentioned objects (see also Barsalou, 1999; Kaschak & Glenberg, 2000).

Far less is known about the content and quality of the representations children build based on verbal descriptions. Several lines of research suggest that the building blocks of this ability should be available to preschoolers. A set of necessary skills for forming representations based on verbal information likely includes the ability to use language to access stored representations (i.e., to understand words in the absence of visual input) and to manipulate or modify formed representations based on subsequent linguistic input (i.e., verbal updating). Research on infants' understanding of references to absent things and their updating of existing representations supports the claim that preschoolers have the requisite skills to use verbal descriptions to build representations (Galazka & Ganea, 2014; Ganea, 2005; Ganea & Harris, 2010, 2013; Ganea & Saylor, 2013b; Ganea, Shutts, Spelke, & DeLoache, 2007; Osina, Saylor, & Ganea, 2013, 2014; Saylor, 2004).

As infants near their first birthday, they use labels to access representations of absent things (e.g., Ganea, 2005; Ganea & Saylor, 2013b; Osina et al., 2013, 2014; Saylor, 2004). A typical procedure involves a researcher introducing an infant to an object (e.g., a stuffed dog) and talking about it using its name (“dog”) while the referent is in full view. The object is then hidden and mentioned (“What about the dog?”). The researcher then measures whether the infant orients to the hiding location when prompted with the verbal label. In these studies, babies are not asked to build representations of referents based on language alone. Instead, they use a label as a retrieval cue to access a prior representation that was formed via experience with a visually available object.

Retrieving representations of mentioned absent objects sets the stage for using language to update existing representations based on new verbal information (Ganea & Harris, 2013). In one study, toddlers were taught a proper name (Lucy) for a stuffed frog (Ganea et al., 2007). While Lucy was left to sleep, children were taken into another room and were told that Lucy got wet. When they were subsequently asked to choose between a wet frog, a dry frog, and a wet pig, 22-month-olds selected the wet frog. Because the only information children could use about the change of state was offered verbally (with the referent out of sight), the findings suggest that 22-month-olds used verbal information to modify their existing representation of the described item (see also Galazka & Ganea, 2014; Ganea & Harris, 2010, 2013). Altogether, this work suggests that preschoolers should have access to a set of skills that are necessary for building representations based on language alone; they should be able to use language to manipulate representations and use labels to retrieve representations of referent objects.

Research on verb learning provides some evidence that toddlers also use verbally presented information to guide their search for possible referents (e.g., Arunachalam & Waxman, 2010; Yuan & Fisher, 2009). For example, in Arunachalam and Waxman's (2010) study, 27-month-olds used syntactic information offered with a novel verb in the absence of visual information to infer that the verb referred to a causative event. In particular, when children heard a novel verb offered in a transitive frame, “The boy is going to moop the lady,” and were prompted to find “mooping,” they subsequently looked longer at a causative event (i.e., a man spinning the woman in a chair) than at a non-causative event

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