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Proof**CONTROL ID:** 1534606**PRESENTATION TYPE:** Paper 2**TITLE:** One-to-one biases in a non-linguistic and non-communicative domain: 30-month-olds map novel animal vocalizations to unfamiliar animals

ABSTRACT: The disambiguation bias in referent selection has been characterized in various ways - as motivated by lexical-specific constraints or principles (Markman, 1991; Mervis & Bertrand, 1994), by pragmatic inferences about speakers' communicative intentions (Clark, 1990; Diesendruck & Markson, 2001), or by domain-general learning mechanisms that favor simpler hypotheses in complex learning tasks (McMurray et al., in press). Lexical-specific accounts predict that one-to-one biases are unique to word learning, pragmatic accounts predict that they generalize to communicative acts more broadly, and domain-general accounts predict that they apply to any domain in which consistent one-to-one mappings are observed. To explore the domain-general account, this study investigated whether children show one-to-one biases in a domain that is non-linguistic and non-communicative for them, but in which consistent regularities between sounds and objects can be found: the vocalizations that animals produce.

First we asked how quickly 30-month-olds ($n=19$) are able to use three different acoustic cues in real-time identification of a familiar target animal. Using the looking-while-listening procedure, we measured children's mean reaction time to orient to familiar target animals in response to three types of auditory stimuli: the animal name (e.g., dog), the lexicalized animal sound (e.g. woof-woof), and the natural animal vocalization (e.g., dog barking). On 32 trials, children saw pictures of two familiar animals on a screen (e.g., dog and cat) and heard one of the three sounds associated with the target animal (see Figure 1A). Figure 2A shows the time course of children's orienting to the target over a 1500 ms window from sound onset. Children were significantly faster to orient to the correct animal in response to animal names ($M=601$ ms) than to natural animal vocalizations ($M= 748$ ms). These differences in mean RT can be explained both by differences in signal characteristics (e.g., higher information density at signal onset for words than natural animal sounds), and by massive differences in frequency of exposure between animal names and animal vocalizations.

Next we asked whether children showed one-to-one biases for animal vocalizations similar to biases in word learning. On 14 trials children saw pictures of a familiar and a novel animal (see Figure 1B). On disambiguation trials in the critical condition, children heard either a novel animal name (e.g., nadu) or a novel animal vocalization (e.g., gorilla vocalization). 30-month-olds looked reliably to the familiar animal when hearing the familiar animal name or vocalization, and also looked equally reliably to the novel animal when hearing the novel animal name or vocalization. This is the earliest age at which one-to-one biases have been observed in a domain other than word learning. Crucially, our results cannot be easily explained by pragmatic or lexical-constraints accounts, and seem to favor a domain-general learning mechanism that seeks simple regularities in complex learning tasks.

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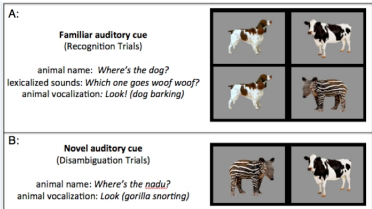


Figure 1. Trials organized by type of auditory cue. The target animal for each trial type is on the left and the distractor is on the right. (A) On Familiar Animal Recognition trials, children heard a familiar auditory cue in the presence of either two familiar or a familiar and a novel animal. (B) On Novel Animal Disambiguation trials, children heard either a novel animal name or a novel animal vocalization in the presence of a familiar and novel animal.

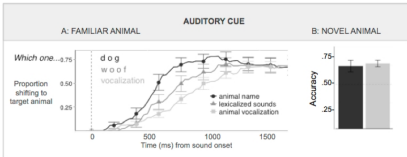


Figure 2. (A) Familiar animal trials: On trials when two familiar animals were shown, children were fastest to orient to the target animal in response to the animal name, and slowest in response to the natural animal vocalization. (B) Disambiguation trials: On trials when a novel animal was paired with a familiar animal, children were significantly above chance and equally accurate in choosing the novel animal in response to a novel animal name and novel animal vocalization, assessed over a 4500 ms window from target sound onset)

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