Words as invitations to form categories? The case of polysemy.

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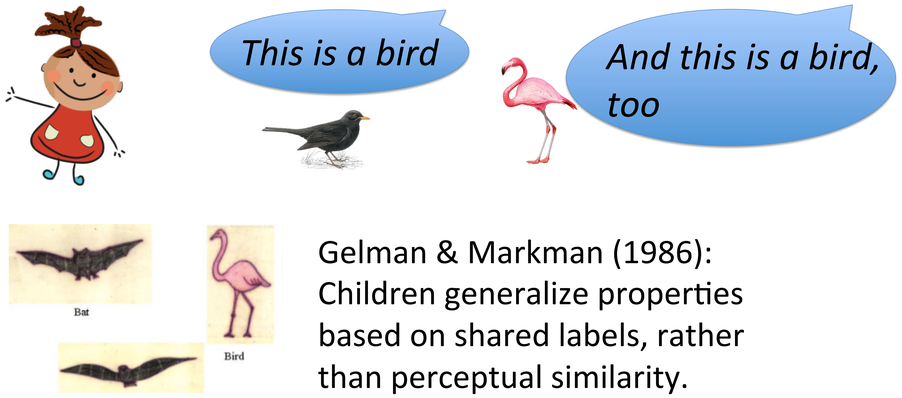
The role of labels in children's categorization



Gelman & Markman (1986): Children generalize properties based on shared labels, rather than perceptual similarity.

1) The theory-based account (Gelman, Waxman,…)

- Children's categories are partially defined by taxonomic knowledge.
- Labels indicate category membership or category essence.
- Shared labels thus allow children to ignore perceptual features and reason based on taxonomic knowledge.

2) The similarity-based account (Sloutsky, Fisher,…)

- Children's categories are defined by feature overlap.
- Labels are (important) features of categories.
- Shared labels cause children to perceive perceptually distinct objects as more similar than they actually are.

The challenge of polysemy

Most words have multiple related meanings or senses

chicken

How does polysemy affect the formation of concepts and categories?

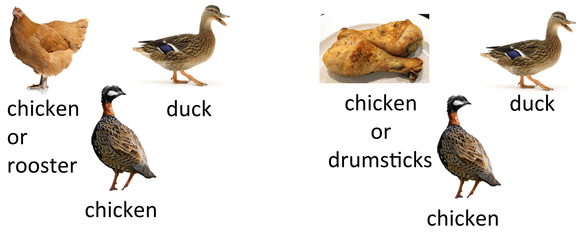
Do polysemous labels cause children to mistakenly conflate distinct concepts and kinds?
Or, do young children recognize that a single word can label multiple distinct kinds?

Previously: Young children know that polysemous senses (but not homophonous meanings) are linked (Srinivasan & Snedeker, 2011, Cog. Psych.). Is this because the meanings are in fact conflated?

Polysemy and inductive inference

Basic Paradigm

Unambiguous (Same Kinds) | Polysemous (Different Kinds)



People like to sell this CHICKEN/ROOSTER/…
But they like to feed this DUCK
What about this CHICKEN?
Do they like to sell it, or do they like to feed it?

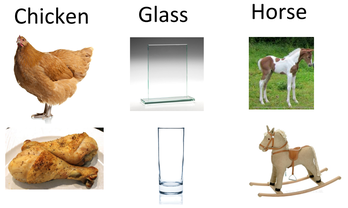
Properties were designed so that adults generalize to items of the same kind, but not items from different kinds.

Experimental Design

Dependent Variable
Choice of Critical Item.

Independent Variables:
Triad Type (between subject)*:*
Unambiguous (same kind of chicken) or
Polysemous (different kind of chicken)
Label Type (within subject)*:*
Shared label (*Chicken, Duck, Chicken*) or
Different label (*Rooster/Drumsticks, Duck, Chicken)*
Age (between subject):
Adults vs. 3- to 4-year-olds

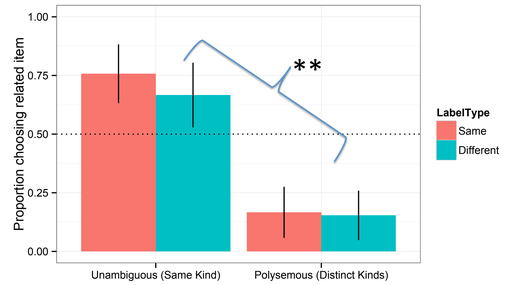
Stimuli
12 critical trials + 2 practice.
3 types of triads.



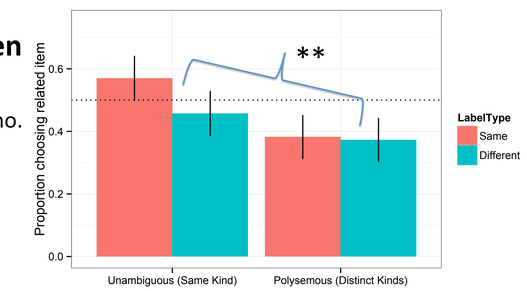
Thank you: Patricia Pierry, Jenna Feraud

Results

Adults
(n = 24)



Children
(n = 97)
M = 47 mo.



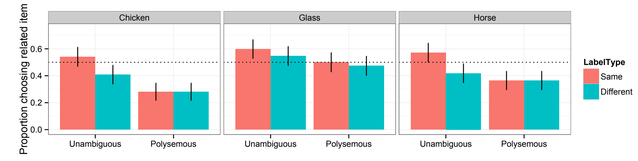
Shared polysemous labels do not lure children into incorrect inferences. No evidence for conflated meanings.

Why?

Theory-based explanation: Children's lexicons are prepared for polysemy. They recognise that it is *shared senses*, not labels, that indicate shared essences (Srinivasan & Rabagliati, 2015, Lingua)

Similarity-based explanation: Visual differences for polysemous items *overwhelm* effect of shared labels.

Similarity-based explanation predicts increased lure of shared label for perceptually similar, polysemous items (e.g., horse)



No evidence for a similarity-driven effect.

Conclusions

- Children use shared labels to infer categories in a smart fashion. Evidence for adult-like structure in early lexicons.
- Preliminary evidence against similarity-based accounts of inductive inference.

- Follow-up 1: Compare inferences with/without labels, to more directly test label effect.
- Follow-up 2: Compare inferences across more/less similar pairs.