

Vocabulary Development and Word Learning Strategies: A Solid Connection

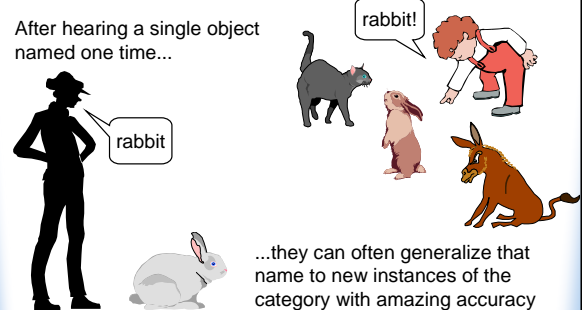
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Introduction

- Young children are skilled name learners

After hearing a single object named one time...



- This is remarkable given the many different kinds of things to be named.

- objects, substances, people, animals and places

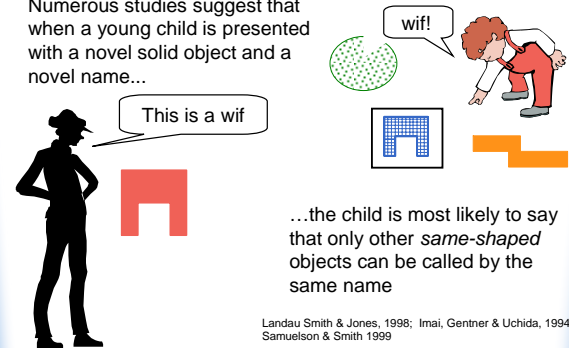
How do they do it?

Experiments suggest the task of learning nouns is made easier by biases or constraints that reduce the problem of finding the correct word-referent mapping to a solvable size.

This research focuses on one such word learning bias
→ the shape bias

Shape-Bias

Numerous studies suggest that when a young child is presented with a novel solid object and a novel name...



Landau Smith & Jones, 1998; Imai, Gentner & Uchida, 1994, Samuelson & Smith 1999

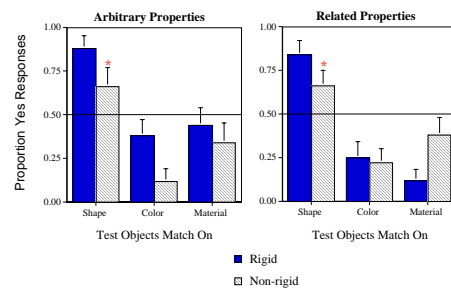
- The shape-bias is a useful word learning strategy for many of the nouns children typically learn early

- nouns such as table, hammer and key that name solid objects in shape-based categories (Samuelson & Smith, 1999).

But,

Not all the nouns children learn are names for solid objects in shape-based categories
for example: snow, wood, metal, honey, wax, cake

A recent study suggests children sometimes *overgeneralize* the shape-bias (Samuelson & Smith, 2000)



Why did children overgeneralize?

- **Samuelson & Smith (2000)** suggested three (related) **possibilities**:
 - Specific to 36-month-olds
 - children older and younger than 36mo would not overgeneralize the shape bias to non-rigid stimuli
 - Due to count noun syntax
 - children would not overgeneralize in other syntactic contexts
 - Based on dominate segment of the vocabulary
 - children learn many count nouns that name solid objects in categories organized by shape (Samuelson & Smith, 1999)
 - this influences how they generalize names for deformables
- **The studies presented here test these possibilities**

Experiment 1

- **Is overgeneralization specific to 36 mo?**

- **Participants:**

- 16 24-, 16 36-, & 16 48-month-olds

- **Stimuli:**

- same as those used in Samuelson & Smith 2000

- **Task:**

- Yes/No name+demo

"This is a wug,
it can fit in the cup."

"Is this a wug?"



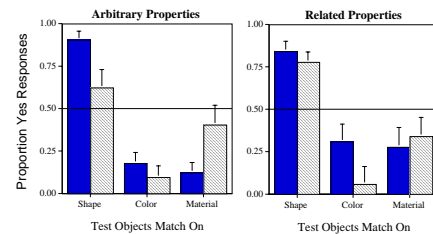
"Is this a wug?"

Design

- **rigid & non-rigid stimuli**
- **2 kinds of properties:**
 - related - causally related to shape or material
 - arbitrary - not related to shape or material
- **Children saw all four sets**
 - rigid+related (nr)
 - non-rigid+related (nrr)
 - rigid+arbitrary (ra)
 - non-rigid+arbitrary (nra)

Exemplar	green bumpy wood	yellow sponge	blue clay	pink plastic bean bag
Rigid	Roll	Squish	Sticker	Glow
Same Shape	pink sponge	dk red wood	green sponge	yellow sponge
	purple Styrofoam	green mash-covered wood	yellow wax	dk green clay
Same Color	green bean bag	yellow Styrofoam	lt. blue Styrofoam	pink Styrofoam
	green Styrofoam	yellow bean bag	lt. blue plastic bean bag	pink wood
Same Material	yellow bumpy wood	blue sponge	purple clay	cream plastic bean bag
	blue bumpy wood	green sponge	red clay	blue plastic bean bag

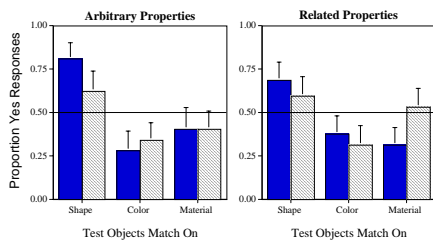
36-month-olds



rigidity x TO interaction, no others

sh r, nr above
co r, nr, ma r below
ma n at chance

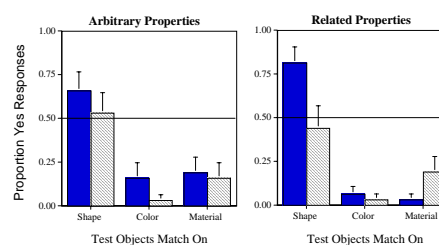
24-month-olds



rigidity x TO interaction, no others

sh r above
rest at chance

48-month-olds



rigidity x TO interaction, no others

sh r above
sh nr at chance
rest below

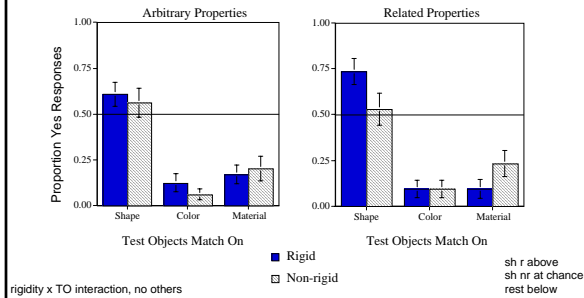
- **Conclusions:**
 - replicated overgeneralization in 36-month-olds
 - 48-month-olds do not overgeneralize, although they did not generalize novel names for non-rigid stimuli by material either
 - 24-month-olds also did not overgeneralize, however high attrition rate makes conclusions tentative.

Experiment 2a

- **Q: Is overgeneralization due to the use of count noun syntax?**
 - Further, did count noun syntax reduce material responding in 48-month-olds?
- **Participants:**
 - 16 36- and 16 48-month-olds
- **Stimuli:**
 - same as those used in Experiment 1
- **Task:**
 - Yes/No name+demo
 - mass noun syntax (i.e. "some wug")

Results

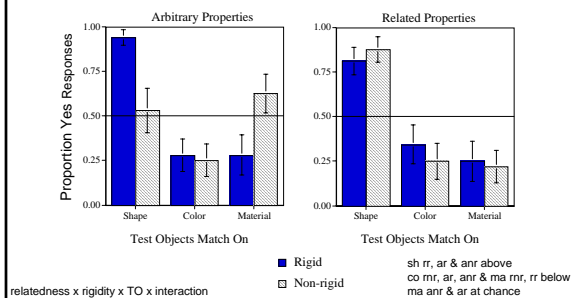
• No age differences



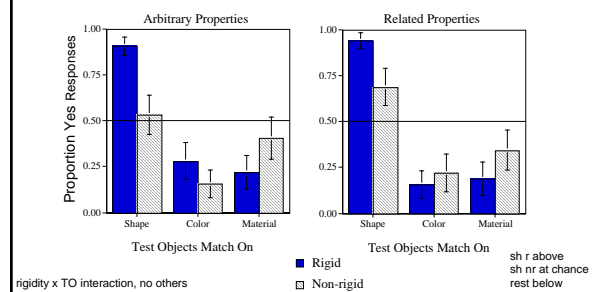
Experiment 2b

- **Question: Were children's generalizations affected by knowing the words "sponge," "clay," "wood" & "bean bag"?**
- **Participants:**
 - 16 36- and 16 48-month-olds
- **Stimuli:**
 - same as those used in previous experiments
- **Task:**
 - Yes/No name+demo
 - mass noun syntax, "animal talk"

36-month-olds



48-month-olds



• **Conclusions:**

- 36-month-olds still overgeneralize sometimes
 - Overgeneralization with related but not arbitrary properties
 - Generalizing names for non-rigid stimuli by material more (with arbitrary properties), but not above chance levels
- 48-month-olds still *not* generalizing by material.
 - Possible "no" bias? (see Fritzeley & Lee, 2003)

• **Overall, it is clear that syntax & known words influence generalizations**

Experiment 3a

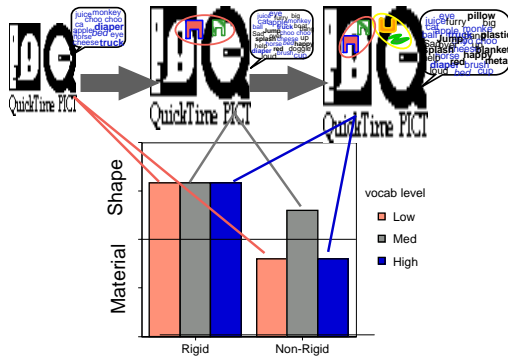
• **Question: Is overgeneralization related to vocabulary development?**

- Early noun vocabulary contains many count nouns that name solid objects in shape-based categories (Samuelson & Smith, 1999)
- Overgeneralization is based on this dominate segment of the vocabulary

• **Prediction:**

- ➔ curvilinear trend in overgeneralization

Curvilinear Trend



• **Participants:**

- 51 children between 18- and 22-months-of-age

• **Stimuli:**

- same as those used in Experiment 1
- color-matching test objects removed (to reduce the number of trials)

• **Task:**

- forced-choice name+demo



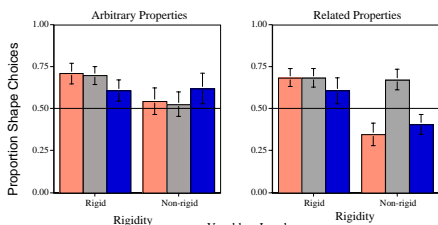
"This is a wug, it can fit in the cup."



Get the Wug!

Results

by number of names for solid objects in vocabulary



relatedness x rigidity x TO interaction

Vocabulary Level
 Low (0-24)
 Med (25-44)
 High (45+)

arl, arm, rrl, rrm & mrm above
 rml below
 rest at chance

• **Analysis by age:**

- no age effects
- rigidity effect only (more shape with rigid)

• **Curvilinear trend in overgeneralization as predicted**

- Overgeneralization linked to vocabulary not age

• **Fit with Experiment 1?**

- The oldest children in this study were only 22 months!
- 24-month olds in E1 did *not* overgeneralize!

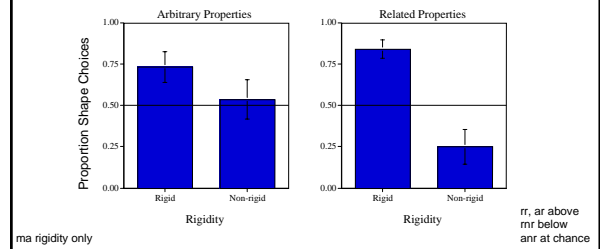
• **Task effects??**



Experiment 3b

- **Question: Do older children overgeneralize in forced-choice task?**
- **Participants:**
 - 14 30-month-olds (halfway between 24 & 36)
- **Stimuli:**
 - same as those used in Experiment 3a
- **Task:**
 - forced-choice name+demo

Results



- **Conclusions:**
 - 30-month-olds do not overgeneralize in forced-choice task
 - suggests that the specifics of the task also influence performance

General Discussion

- **Replicated overgeneralization of shape-bias**
 - 36-month-olds in a yes/no task
 - 18-22-month-olds in a forced-choice task
- **Clear syntax & vocabulary effects**
 - mass noun syntax reduces overgeneralization
 - however, does produce generalization by material
 - curvilinear trend in overgeneralization based on number of names for solid objects in the productive vocabulary
- **What children “know” about naming non-rigid things depends on the task**
 - see effect of vocabulary earlier in easier forced-choice task

References

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Thanks...

👉 The children and parents who participated 👈

To the members of the Language & Category Development Lab:

- | | |
|-----------------|-------------------|
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