# Individual Differences in Preschoolers' Categorization Biases

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## INTRODUCTION

- Prior work has asked two separate questions about how preschoolers categorize objects:
    1) Do children use taxonomic (e.g., dog-pig) *OR* thematic relations (dog-doghouse)?
    2) Do they use similarities in shape *OR* function?
- We bridged these questions together and asked whether individual children show systematic biases across these tasks.
- We also explored how categorization biases relate to language development.

## METHOD

- 13 three-year-olds, 22 four-year-olds, and 13 five-year-olds participated.
- Children were tested individually at their preschool.
- Children completed two categorization tasks: a taxonomic-thematic task and a shape-function task.
- Tasks were completed at least 1 week apart.
- Order of tasks was counterbalanced.

## Vocabulary Assessment

- Participants completed the Peabody Picture Vocabulary Test (PPVT) in their first session.

## Taxonomic-Thematic Task

- Participants were shown a target image (artifact or living thing).
- They were then asked to choose "Which one goes best with this one?"(referring to target).
- They chose from three options: Taxonomic-match, Thematic-match, and Non-match.
- Each participant completed 12 trials.

**Sample item set from taxonomic-thematic task**
*Top*: target. *Bottom* (L to R): taxonomic-match, thematic-match, non-match.

## Shape-Function Task

- Participants viewed a novel object and were shown its function.
- Next, they saw three choice objects: Shape-match, Function-match, and Non-match.
- Experimenter demonstrated functionality of choice objects and also allowed child to try them.
- Participants were then asked to choose "another one" (referring to target) from the choice items.
- Participants completed 6 trials.

**Sample item set from shape-function task**
Left picture, *Top*: target, *Bottom* (L to R): shape-match, function-match, non-match.
Right picture, function apparatus used to carry out target function for this set (hangs on hook and swings, hitting chimes).

## PREDICTIONS

- Some children will show a perceptual/identity bias and will categorize according to taxonomic and shape similarities.
- Other children will show a relational bias and will categorize according to thematic and function relations.
- There may be associations between a child's categorization bias, age , & vocabulary development.

## RESULTS

- All age groups showed an overall thematic bias in taxonomic-thematic task.
- They also showed an overall function bias in shape-function task.
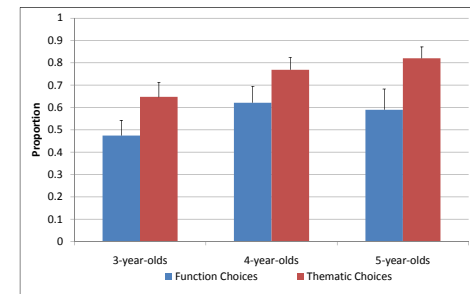


- Only 5-year-olds exhibited a correlation between the two categorization tasks (see chart below).
    - More function choices correlated with more thematic choices, especially for artifact sets.
    - More shape choices correlated with more taxonomic choices.
- Both 3- and 5-year-olds exhibited a correlation between verb vocabulary and proportion of function choices.
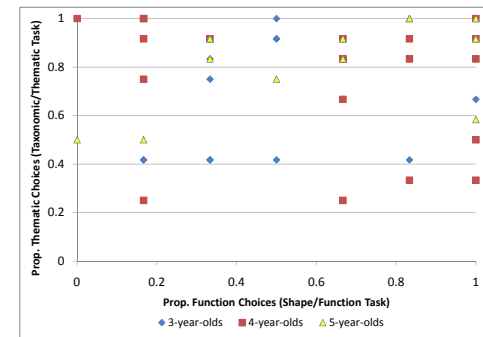


## CONCLUSIONS

- Categorization biases within individual tasks emerge early.
- By age 5, children exhibit individual differences in broad, across-task categorization biases.
- Children who tend to categorize taxonomically and by shape, may focus more on attributes of objects (what it is, what it looks like).
- Children who tend to categorize thematically and functionally may focus more on relations between objects.
    - This relational bias may promote verb learning.