

Young Children Use Social Cues to Infer Sorting Strategies

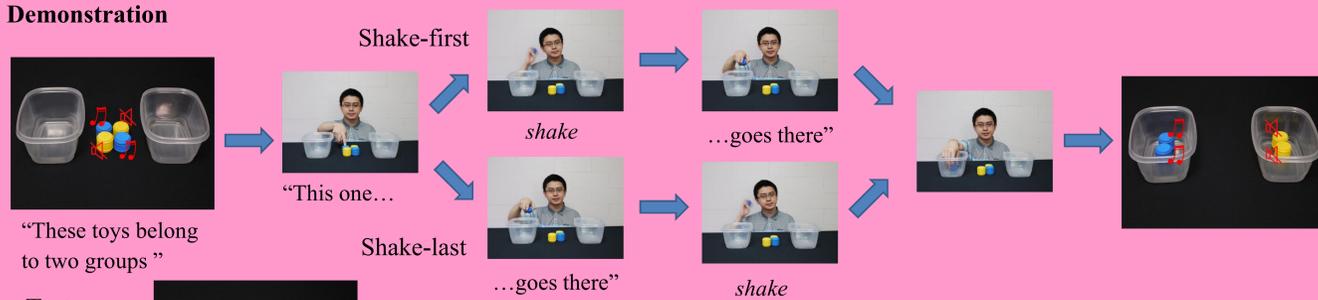
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INTRODUCTION

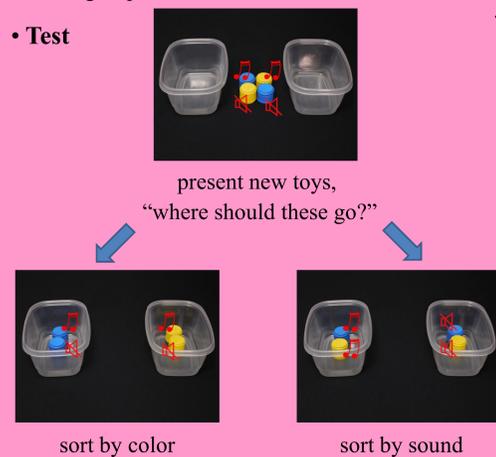
- Children are capable of using both surface features and causal properties in categorization of objects (Gelman & Markman, 1986; Gopnik & Sobel, 2000; Sloutsky & Fischer, 2004).
- One way children learn to sort objects with different properties is through observing how adults sort them (Williamson, Jaswal, & Meltzoff, 2010)
- We are interested in how adults' *social cues* influence children's sorting strategy. In particular, we manipulated *the timing of adult demonstrator's causal action* and whether a *label* was provided for each category, and explored their effects on children's sorting strategies.

EXPERIMENT 1

- **Question:** Could children use the timing of demonstrator's causal action as a cue to guide their sorting strategy?
- **Participants:** 40 4-year-olds (22 boys, age 4.0-5.0 y). $n = 20$ for each group (shake-first and shake-last).
- **Demonstration**

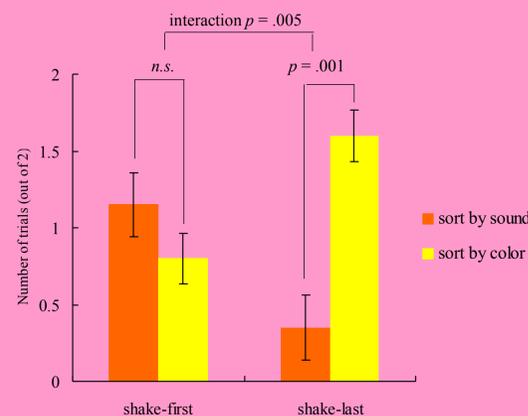


• Test



• Results

- Sort by sound: shake-first > shake last ($p = .005$)
- Sort by color: shake-last > shake-first ($p = .005$)
- Shake before sorting: shake-first > shake-last ($p = .048$)



• Conclusion

Four-year-olds were more likely to sort objects by causal property when the demonstrated causal action *precedes*, rather than *follows*, the sorting process. They use adult's social cues to determine which properties are relevant to categorization.

GENERAL DISCUSSION

- Four-year-old children were attentive to the demonstrator's social cues when they learn to categorize novel objects
 - When the demonstrator performed the causal action *before* sorting, children infer that the causal property was *relevant* to the sorting process, and were more likely to sort by the *hidden causal property* during their turn.
 - When the demonstrator performed the causal action *after* sorting, children infer that the causal property was *irrelevant* to the sorting process, and were more likely to sort by the *surface feature* during their turn.
 - The effect of timing of causal action was still significant when the categorizations were labeled.

EXPERIMENT 2

- **Question:** Are children learning to sort only objects that have been demonstrated, or to sort by surface features or causal properties more generally?
- **Participants:** 30 4-year-olds (15 boys, age 4.0-5.0 y)
- **Demonstration:** same as shake-first condition in Exp 1
- **Test:**

Original trial:
same as Exp 1



Generalization trial:
new set of toys
with different color
and sound



Free play: after children were done with the study, the tester asked them if they wanted to play more with the toys. Those who stayed played freely with all toys. Their reactions were recorded.

• Results

- 29 out of 30 children sorted the same way in generalization trial as they did in the original trial
- 9 children who sorted by sound in the test chose to play more. Among them 8 continued to sort all toys by sound.
- 3 children who sorted by color or sorted in other ways chose to play more, but non of them sorted by color or sound during free play.

		Children's reaction in generalization trial		
		sort by sound	sort by color	sort in other way
Children's reaction in original trial	sound	21	0	0
	color	0	8	0
	other	1	0	0

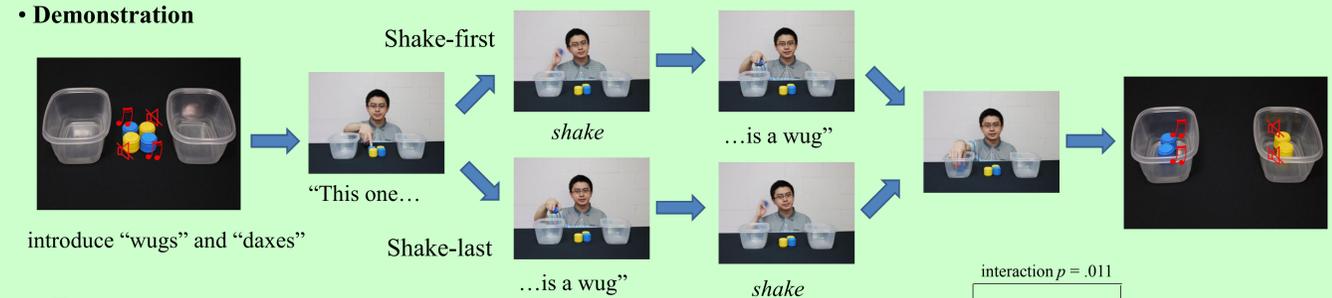
• Conclusion

Children are learning the *general sorting strategies* from the demonstration, which could generalize beyond the particular objects used during demonstration.

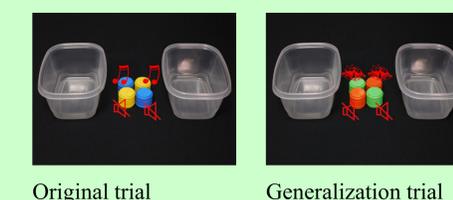
EXPERIMENT 3 (ongoing)

- **Question:** Adults commonly attach labels to differentiate different categories. How does the timing of causal actions influence children's sorting of *labeled* objects?
- **Participants (preliminary):** 21 4-year-olds, $n = 10$ for shake-first condition and $n = 11$ for shake-last condition.

• Demonstration



• Test



Original trial

Generalization trial

• Results

- Sort by sound: shake-first > shake last ($p = .011$)
- Sort by color: shake-last > shake-first ($p = .011$)
- Compared with the results of Exp 1, children in Exp 3 tend to sort more by sound in both conditions

• Conclusion

Attaching labels might prompt children to categorize more by hidden property, but the effect of relevance of causal action was still significant

