Preschoolers Refer to Adult’s Timing of Intentional Actions for Object Categorization

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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 (Williams, Jawo, & Menlo, 2009).
- 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 explored its effects on children’s sorting strategies.

EXPERIMENT 1a

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

- **Test**
  - **Sort by sound:** shake-first > shake-last
  - **Sort by color:** shake-first < shake-last

- **Results**
  - **Number of toys shaken:** shake-first > shake-last (p < .005)
  - **Conclusion**
    - Four-year-olds were more likely to sort objects by causal property when the demonstrated causal action preceded, rather than followed, the sorting process. They use the timing cues to determine which properties are relevant to categorization.

- **Conclusion**
  - Four-year-olds were more likely to sort objects by causal property when the demonstrated causal action proceeded, rather than followed, the sorting process. They use the timing cues to determine which properties are relevant to categorization.
  - They were also more likely to investigate the causal property when it is shown to be relevant to categorization.

EXPERIMENT 1b

- **Question:** What factors affect children’s sorting of objects with different properties? How does the timing of causal actions influence children’s sorting of novel objects?
- **Participants:** 30 4-year-olds (15 boys, age 4.0–5.0 y). All in shake-first condition.

- **Demonstration**
  - **Original trial:** same as Exp 1

- **Test**
  - **Original trial:** same as Exp 1
  - **Generalization trial:** new set of toys with different color and sound

- **Results**
  - **Number of toys shaken:** shake-first > shake-last (p = .04)
  - **Children’s reaction in generalization trial**
    - **Children’s sound**: 21 0 0
    - **Children’s color**: 0 8 1

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

EXPERIMENT 2

- **Question:** Labels signify non-obvious commonalities among objects (Gelman 2003, Gopnik & Sobel, 2000). How does the timing of causal actions influence children’s sorting of labeled objects?
- **Participants:** 40 4-year-olds (20 boys, age 4.0–5.0 y). All in shake-first condition.

- **Demonstration**
  - **Original trial**: shake-first
  - **Generalization trial**: shake-last

- **Test**
  - **Original trial**: shake-first

- **Results**
  - **Number of toys shaken:** shake-first > shake-last (p = .017)
  - **Children’s sound**: shake-first > shake-last (p < .003)

- **Conclusion**
  - Although labels may signify causal properties, the effect of timing of causal action was still significant for categorization of labeled objects.

EXPERIMENT 3

- **Question:** Do 3-year-olds use the timing of demonstrator’s causal action as a cue to guide their sorting strategy?
- **Participants:** 40 3-year-olds (20 boys, age 2.9–4.0 y). a = 20 for each group (shake-first and shake-last).

- **Procedure:** same as Experiment 1

- **Test**
  - **Sort by sound**: shake-first > shake-last (p = .04)
  - **Sort by color**: shake-first < shake-last (p = .02)
  - **Children in 3-year-olds**: shake-first < shake-last (p = .02)

- **Conclusion**
  - Overall, younger children were less likely to sort by sound than 4-year-olds.
  - Children who sorted by sound were more likely to shake the toys.

CONCLUSION

- Both 3- and 4-year-olds were attentive to the demonstrator’s social cues when they learn to categorize novel objects.
- When the demonstrator performed the causal action before rather than after sorting, children infer that causal properties were relevant to the sorting process, and were more likely to sort by the causal property during their turn.

REFERENCES