Learning Verbs Through Action vs. Gesture

Casey Hall[1], Elizabeth M. Wakefield[1], Karin H. James[2], Susan Goldin-Meadow[1]
[1]University of Chicago, [2]Indiana University, Bloomington

Verb learning is difficult for children (Gentner, 1982). Part of this difficulty stems from children's bias to associate a novel verb not only with the action it represents, but with the particular object with which it is learned (Kersten & Smith, 2002). Here, we investigate how asking children to perform or observe actions on objects versus gestures off objects while learning novel verbs differentially impacts learning (Study 1), as well as generalization of verbs to new contexts and retention of verbs across time (Study 2). Based on previous literature, we predict:

1. **Children will learn novel verbs more quickly through action experience, but will be more likely to extend verbs after gesture experience** (Novack et al., 2014).
2. **Children will learn novel verbs more effectively through experience producing actions or gestures, rather than observing these movements** (James, 2010).

Method

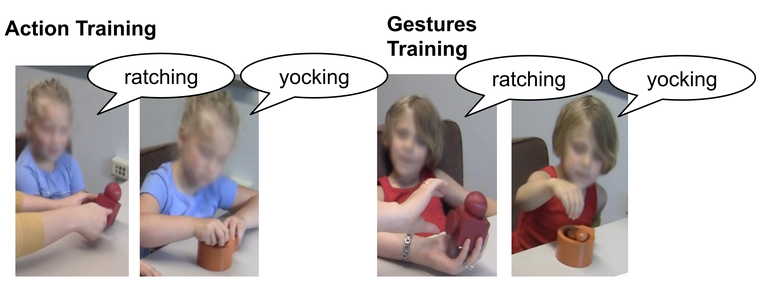
Participants

- Study 1: 48 children (*M* = 58.3 mo, *SD* = 3.7 mo)
- Study 2: 27 children (*M* = 57.2 mo, *SD* = 4.9 mo)

Procedure

Training

Children were randomly assigned to learn novel verbs (*Study 1: 8 verbs; Study 2: 4 verbs*) through either *action* or *gesture* experience. Regardless of condition, children learned half of the verbs through doing movements themselves, and half through seeing an experimenter's movements.



For each round of training, children were asked to say each novel verb while doing or seeing the associated movement 5 times. This procedure was used for each novel verb.

Assessment

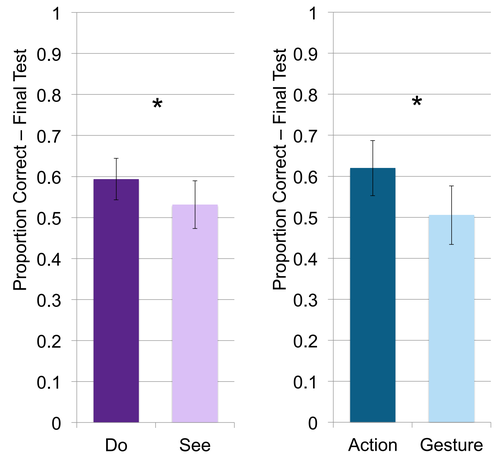
Study 1:
Children's knowledge of verbs was assessed after each of 4 training rounds. The 4 toys being used during training were placed in front of the child and he or she was asked to show the experimenter each of the novel verbs (e.g., "*Can you show me ratching?*")

Study 2:
Children received training rounds until they could correctly recall the novel verbs. Children then completed an alternative forced choice task to assess generalization ability. Two videos were displayed and the child was asked to point to the video that showed a prompted verb (e.g., "*See how 2 movements are happening? Can you point to which one shows ratching?*"

Results: Study 1

Can you show me ratching?

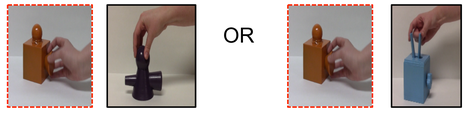
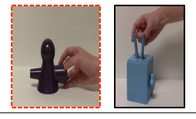
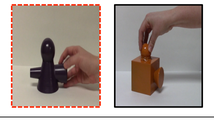
- Children learned better through doing vs. seeing movement
- Children learned better through action vs. gesture experience

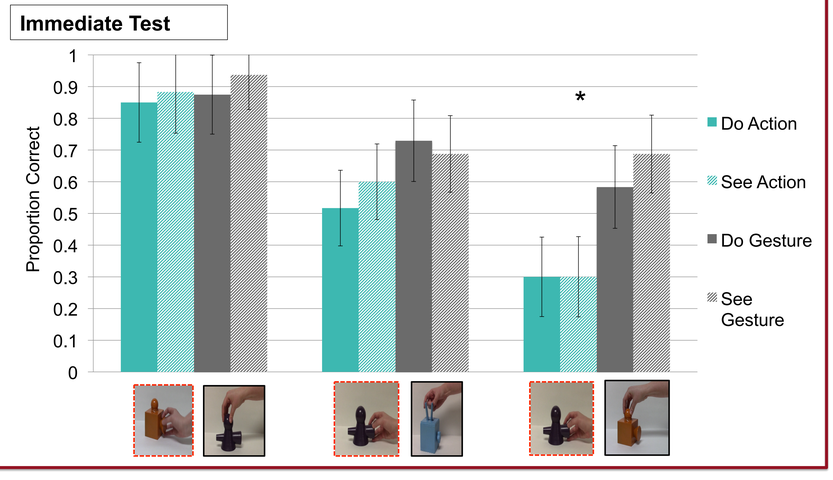


Results: Study 2

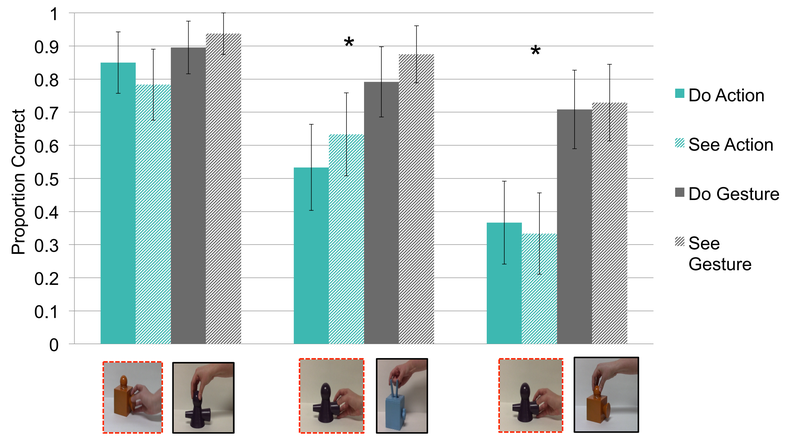
Can you point to the video that shows ratching?

Examples of Alternative Forced Choice Types

Concept Tested	Example of Video Pairs Shown (------- = Correct Choice)
Basic Learning	 OR
Generalization	 Object match absent
Difficult Generalization	 Object match present



Results: Study 2 (Continued)



- Children generalized verbs better after learning through gesture vs. action experience
- This pattern held when children were retested after 24 hours

Conclusions

- Children learned novel verbs better through action experiences, but were still able to learn through gesture experiences (Study 1). In both conditions, self-produced movements facilitated learning better than observing movements.
- Though action experience provided an advantage for verb learning in Study 1, children who received gesture experience during learning generalized verbs to new contexts better than children who had action experience (Study 2).
- Gesture is itself an action, and thus, may facilitate learning through cognitive processes similar to those of action, as evidenced by the fact that in Study 1, children in the gesture condition showed the same pattern of verb learning for production and observation of movements as children in the action condition.
- Unlike action, however, gesture can highlight important components of an action without being tied to a specific object, a quality that may be particularly beneficial for generalization of novel verbs.
- Together, findings from Studies 1 and 2 suggest that gesture's impact on verb learning stems not only from the properties gesture shares with action, but also from the properties that make it distinctively different from action.

References

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