See *what I mean?* Learning verbs from their observational contexts

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Background

- Across languages, verbs tend to be underrepresented in children's early vocabularies[1, 2]

- Previous research suggests that one candidate explanation is that the information needed to acquire noun meanings – their observational context – is accessible earlier in development than the information needed to acquire verb meanings – their linguistic context[3]

- Further, previous research has shown that the acquisition of mental state verbs from observational context may be particularly difficult, as compared to the acquisition of more concrete, action verbs[4]

The current study investigates whether:

1) Assessments used in previous research **underestimate the contributions of observational context for verb learning** by masking partial knowledge of verb meanings

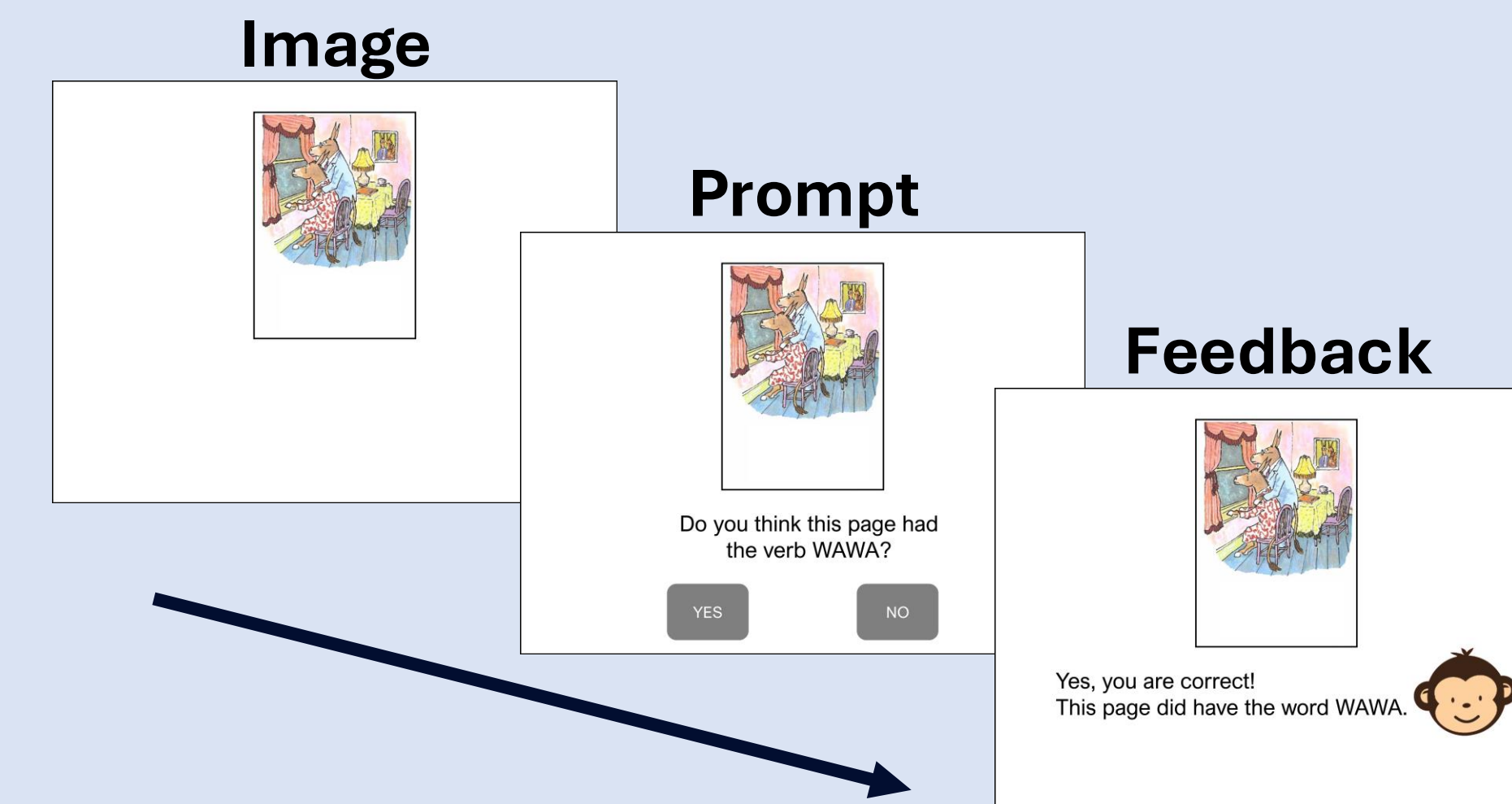2) Partial learning of verb meanings via observational context is **possible *even* for mental state verbs**

Methods

Stimuli & Task

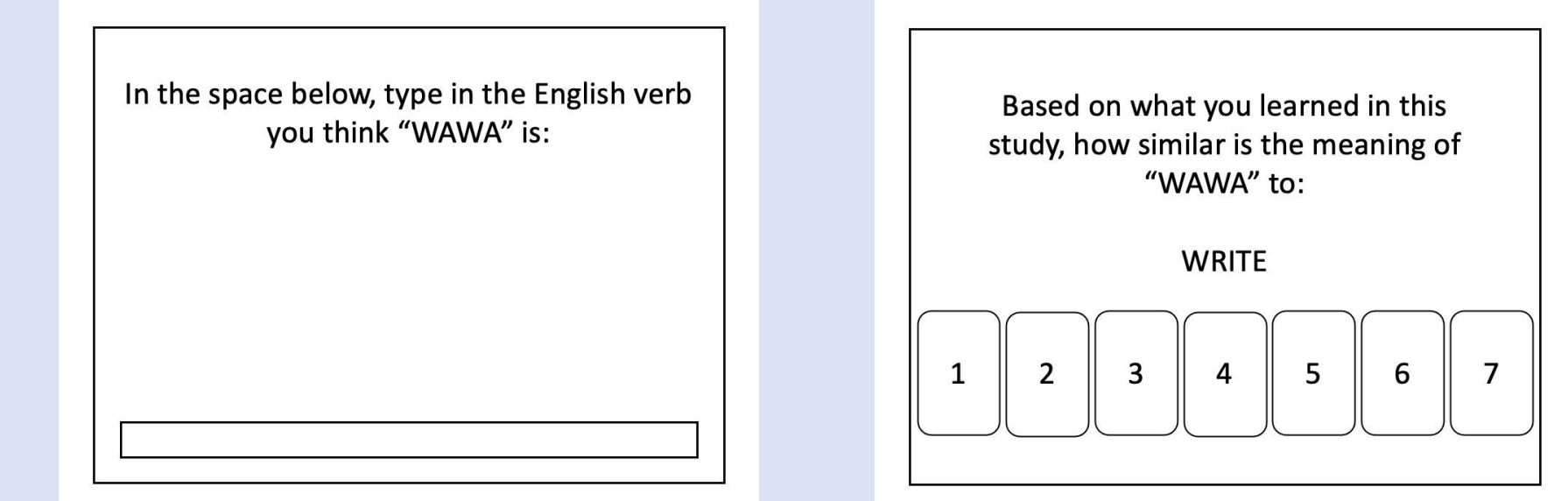|		
Action	reciprocal	*catch*
		throw
	motion	*run*
		walk
	stationary	*sit*
		sleep
Mental	belief	*think*
		know
	attitudinal	*love*
		like
	perceptual	*look*
		see

Example Stimulus for *Run*
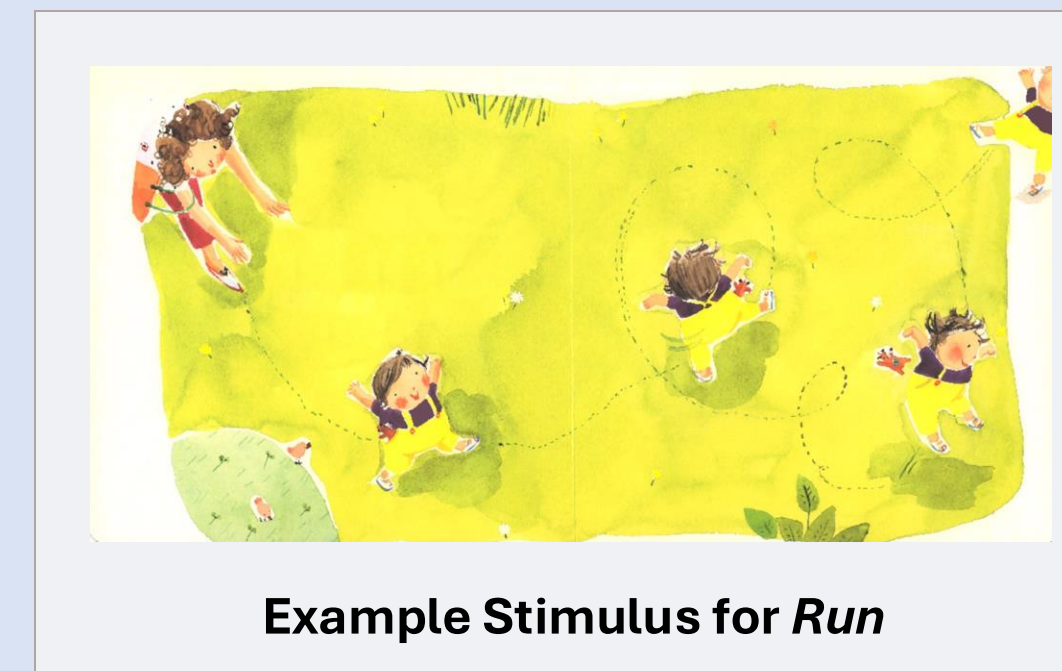
- 2 conditions: Mental Verb and Action Verb (n = 120 adult participants, 60 per condition)
- Stimuli are children's picture book pages without text
- Participants completed a verb learning task in which they were exposed only to the observational contexts in which verbs occurred
- Learning was assessed via categorization, free response, and semantic ratings

Categorization Phase

Image

Prompt

Do you think this page had the verb WAWA?
YES   NO

Feedback

Yes, you are correct!
This page did have the word WAWA

- Participants were asked whether each of 32 stimuli (16 targets and 16 distractors) had originally contained a "mystery verb"
- The "mystery verb" was either a mental or action verb (varied by condition)
- Order of target and distractor stimuli was randomized across participants
- Feedback was provided on each trial

Test Phase

In the space below, type in the English verb you think "WAWA" is:

Based on what you learned in this study, how similar is the meaning of "WAWA" to:

WRITE

1 2 3 4 5 6 7

Target	Close Distractor	Same Category	Different Category
Walk	*Run*	*Sleep, Wake, Sit, Throw*	*Love, Like, See, Look, Think, Know*
Love	*Like*	*See, Look, Think, Know*	*Walk, Run, Sleep, Wake, Catch, Throw*

- Free Response: Participants typed the English verb they thought the mystery verb was
- Semantic Ratings: Participants rated the relatedness of 12 verbs to the mystery verb
  - Rating list included the target verb as well as 11 verbs that were not the target in their condition

Results

Free Response Accuracy

Categorization Performance

Semantic Similarity Ratings
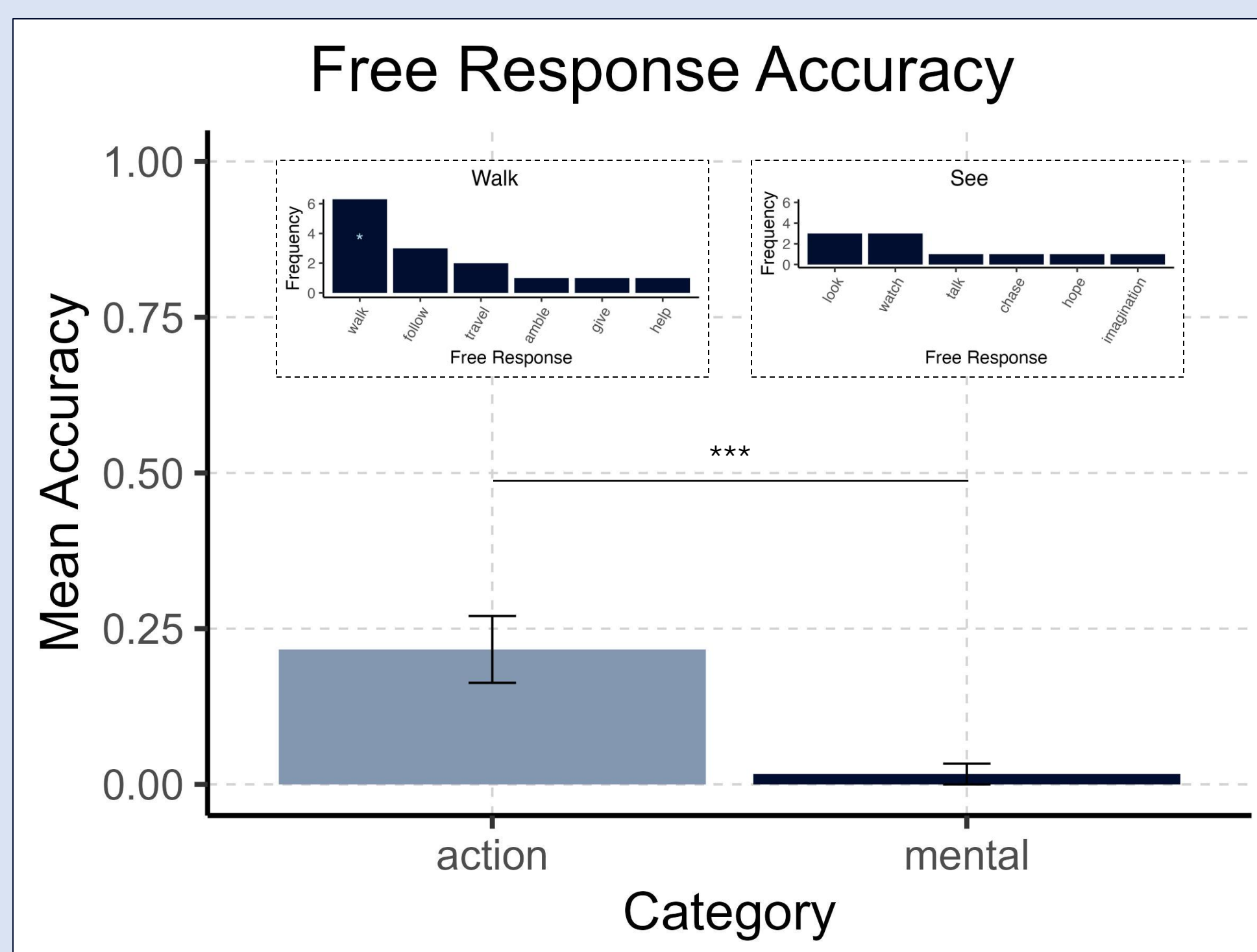
- As predicted, free response performance was low [M_{action} = 0.22, SD = 0.42; M_{mental} = 0.02, SD = 0.13]
- In two cases (*walk* and *throw*), the most frequently guessed verb was the target verb
- Incorrect guesses were often semantically related to the target verb (e.g., "look" for target word *see*)
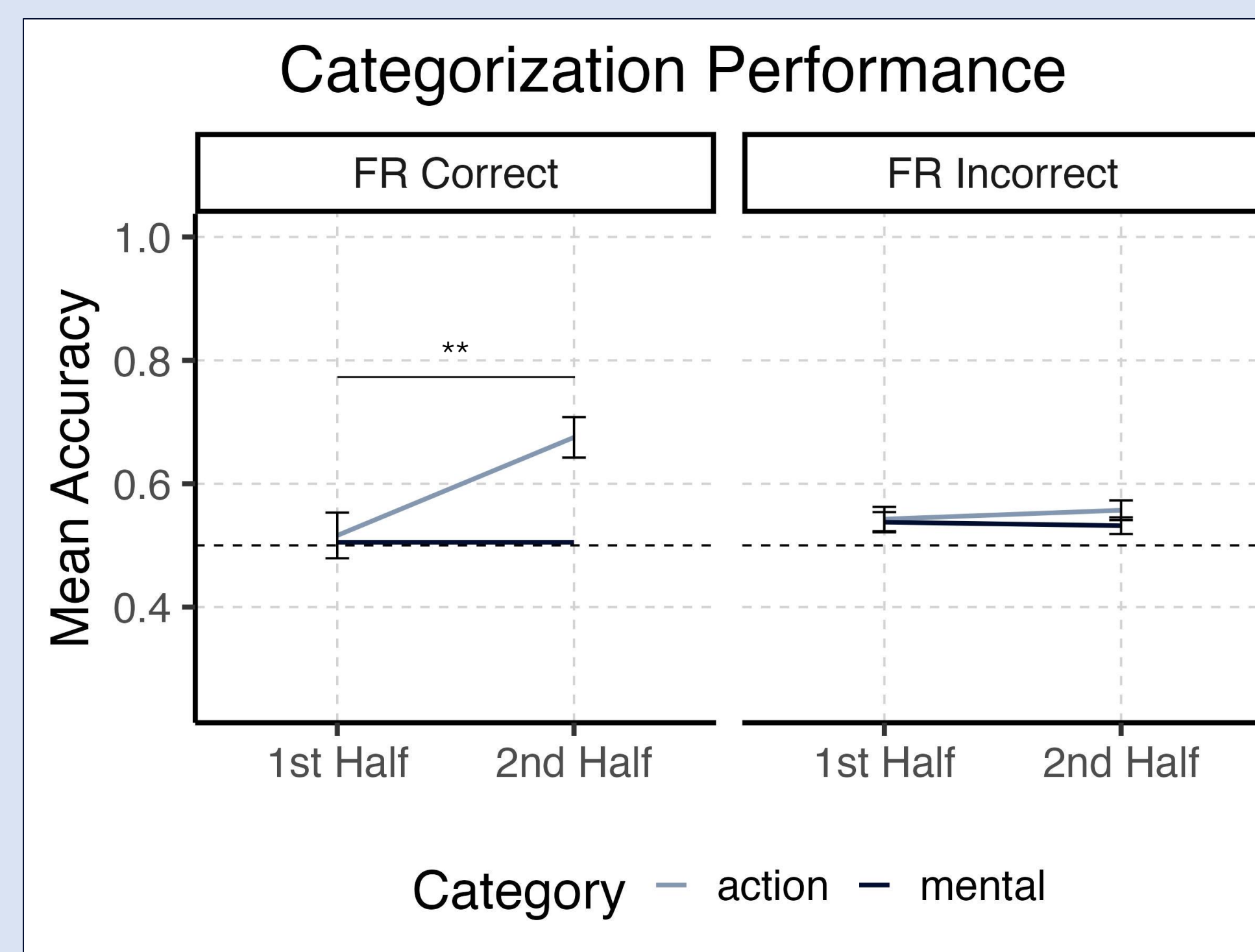
- Participants performed above chance at categorization for both action and mental verbs even in cases when their hypothesis was incorrect
- Categorization performance did not significantly increase over time in cases when participants' hypotheses were incorrect
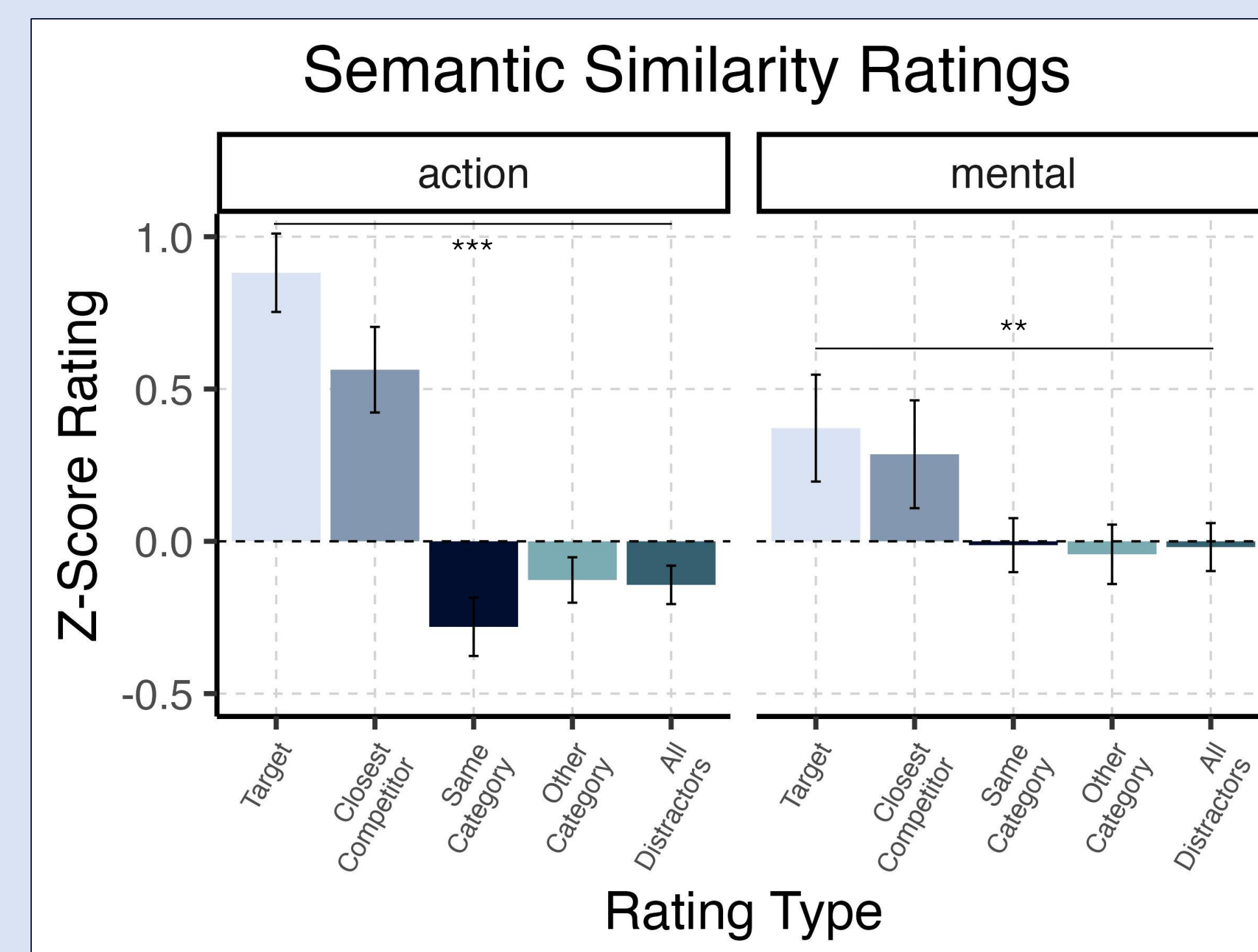
- Participants believed the meaning of the mystery verb to be more similar to the target than distractors
- Distractors of the same category were not generally seen as more similar to the mystery verb than those from the other category

Discussion

- The potential for verb acquisition from observational context may have previously been underestimated

- Our results demonstrate that observational context contributes to the acquisition of partial verb meanings in a cross-situational paradigm

  - Despite low free response accuracy, participants who had not acquired the precise verb meaning nonetheless demonstrated partial knowledge in the semantic ratings task

- Further, evidence of partial learning from observational context was observed even for mental state verbs

References & Acknowledgements

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