

Fast Mapping from Argument Structure Alone

When children encounter a new word, they immediately posit at least a rudimentary representation of its meaning (e.g., Carey & Bartlett, 1978). But words are often uttered when their referents are not co-present. This may be particularly true for verbs: 60% of the verbs that mothers produce in conversations with their children refer to absent events (Tomasello & Kruger, 1992). How can children posit a meaning for a new verb from such an encounter?

To learn from such an encounter with a new verb, children must be able to glean at least some aspects of its meaning from its linguistic context alone. Strikingly, by 27 months of age, children are up to this challenge: They use a novel verb's argument structure to determine aspects of its meaning, even in the absence of an accompanying event (Arunachalam & Waxman, 2010; Yuan & Fisher, 2009).

Here, we advance this finding by asking whether children as young as 21 months can also use argument structure cues to assign verb meaning without an accompanying event. We chose this age group because (a) although 21-month-olds have begun adding verbs to their productive vocabularies, their productions do not yet show command of syntactic constructions (e.g., Braine, 1976), and (b) while previous evidence suggests that children under 2 years are sensitive to word order cues (Gertner et al., 2006), we have as yet no evidence that they use argument structure to determine a novel verb's meaning (Hirsh-Pasek & Golinkoff, 1996).

We first presented 21-month-olds with dialogues in which a novel verb occurred in either transitive sentences (e.g., "The boy dacked the baby") or conjoined-subject intransitive sentences (e.g., "The boy and the baby dacked"). See Table 1. They then viewed two test scenes, one depicting a causative event (e.g., man spins woman) and the other a synchronous event (e.g., man and woman each wave). Children's eye-gaze was recorded as they heard "Where's dacking?"






	DIALOGUE	TEST			
		SALIENCE		RESPONSE	
					
		Causative	Synchronous	Causative	Synchronous
Transitive Condition	A: Guess what? John <i>mooped</i> my brother. B: Really? John <i>mooped</i> your brother? A: And the man is going to <i>moop</i> the lady. B: Oh yes, he is going to <i>moop</i> her.	Look! Wow!		Where's <i>mooping</i> ?	
Intransitive Condition	A: Guess what? John and my brother <i>mooped</i> . B: Really? John and your brother <i>mooped</i> ? A: And the man and the lady are going to <i>moop</i> . B: Oh yes, they are going to <i>moop</i> .				

Table 1. Representative trial. Children viewed 4 such trials.

We predicted that children in the Transitive condition would devote more visual attention to the causative test scene than those in the Intransitive condition. Based on the time-course of children's response to novel *nouns* (Booth & Waxman, 2009), we expected their response to become evident 2 to 3 sec after the onset of the novel verb at test.

This prediction was borne out: Within 2.5 sec of the novel verb's onset, children in the Transitive Condition reliably preferred to look at the causative scene ($t(38) = 2.03$, $p < .05$). This is striking because the test query was the first time children heard the novel verb in the context of the visual event, and further, they were hearing it in an uninformative syntactic context that did not distinguish between the two candidate scenes.

These results make three contributions. They provide the first evidence that (1) 21-month-olds use argument structure cues to establish an initial representation of a novel verb's meaning, (2) they do so even when this syntactic information is presented in the absence of a relevant visual scene, and (3) the time-course with which 21-month-olds process novel verbs and attend to their visual referent is similar to that for novel nouns.

References

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