

Syntax Informs Two-Year-Olds' Expectations about Verb Meaning
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Syntactic information has been described as a zoom lens that aids children in discovering which part of a scene a new verb labels (e.g., Gleitman, 1990). The learner is hypothesized to zoom in on one or a few possible interpretations of a scene given the verb semantics required by the sentence structure the verb appears in. Previous research strongly supports this hypothesis, demonstrating that when a novel verb is presented in a syntactic context as children view an event, the syntactic information powerfully draws attention to the intended meaning. For example, 26-month-olds hearing the sentence “The duck is gorping the bunny” while viewing a scene in which these animals are simultaneously performing both a causative (Duck makes Bunny squat) and a synchronous action (Duck and Bunny each circle one arm around) correctly direct their attention to the causative action (Naigles, 1990). The present work goes further, demonstrating that syntax informs expectations *even before the event is viewed*. Syntactic information presented prior to the event encourages 2-year-olds to formulate specific hypotheses about verb meaning, informing their search for a referent within a subsequent visual scene.

This work builds on the recent finding that toddlers can use syntactic information they hear before viewing an event to extract some information about a novel word (Yuan & Fisher, 2006). Using a preferential-looking paradigm, Yuan and Fisher introduced 21-month-olds to a dialogue in which a novel verb was used in either an intransitive (e.g., *The boy mooped*) or transitive (e.g., *The boy mooped the girl*) sentence. Toddlers then viewed two scenes, one depicting an event with one actor, the other an event with two actors. When asked to find mooping, toddlers in the transitive condition looked longer at the two-actor scene than those in the intransitive condition. These results demonstrate that toddlers were able to match the number of participants named in the previously-heard sentence with the number of actors in the visual scene.

While matching the number of named participants to the number of actors is a useful step, it does not exhaust the potential of syntactic information to provide cues to verb meaning. As Naigles (1990) demonstrated, even with the number of named participants and actors held constant, 2-year-olds can glean information about the relation in which those participants stand to each other, simply from the syntactic positioning of those participants in the sentence. In the current experiment, we test directly whether toddlers can use syntactic information presented before viewing an event to determine a new verb’s meaning, beyond simply the number of expected actors.

Thirty-two toddlers (25-29 months, mean age 27.4 months) participated. In each of four trials, toddlers first viewed a video in which two actors were seated at a table having a conversation. Their dialogue consisted of sentences containing a novel verb used either transitively (e.g., *The boy is going to moop the girl*) or intransitively (e.g., *The boy and the girl are going to moop*). Immediately afterward, they were shown two scenes side-by-side, one depicting a causative event (e.g., a boy spins a girl around in a chair) and the other a synchronous event (e.g., the boy and girl each wave one of their hands in a circle). See Table 1. Crucially, in contrast to Yuan and Fisher, we held constant the number of participants mentioned in both linguistic conditions, and the number of actors in both test scenes. Toddlers were asked to “find mooping”. During this test scene, then, when the events were presented, no linguistic

information was present that would help the child determine which scene depicted “mooping”. Pointing responses were recorded. Toddlers who heard transitive sentences revealed a reliable preference for the causative scene when asked to find mooping ($M=67\%$; $t(15)=3.4$, $p<.01$). Those who heard intransitive sentences had no reliable preference ($M=47\%$, ns). See Figure 1. (Note that the intransitive condition appears ambiguous to adults as well; “playing” is a plausible meaning applying equally to both scenes.)

This work established that toddlers do indeed use information contained in the syntactic structure, and not simply the number of nouns and actors, in discovering the meaning of a novel verb. This work validates Yuan and Fisher’s innovative method and extends it to uncover the bases upon which toddlers begin to form representations of verb meaning. Children’s ability to use syntactic information and apply it to a subsequent visual scene may be critical. Verbs are not often uttered concurrently with the event they describe. Tomasello and Kruger (1992) analyzed corpus data, finding that mothers used verbs during an event only 18% of the time; over 60% of the time verbs were used to refer to impending actions. The present study demonstrates that 2-year-olds can establish a meaning for a new verb upon just one such encounter. This work sets the stage for pursuing important questions regarding the specificity of initial representations derived from linguistic input alone, and how these representations interact with observation.

	Familiarization		Test
Visual Stimulus			
Auditory Stimulus	<p>Transitive Condition A: You know what? B: What? A: The lady mooped my brother. B: Really? The lady mooped your brother? A: And the boy is going to moop the girl. B: Oh yes. He is going to moop her.</p>	<p>Intransitive Condition A: You know what? B: What? A: The lady and my brother mooped. B: Really? The lady and your brother mooped? A: And the boy and the girl are going to moop. B: Oh yes. They are going to moop.</p>	Find mooping!

Table 1: Sample stimulus

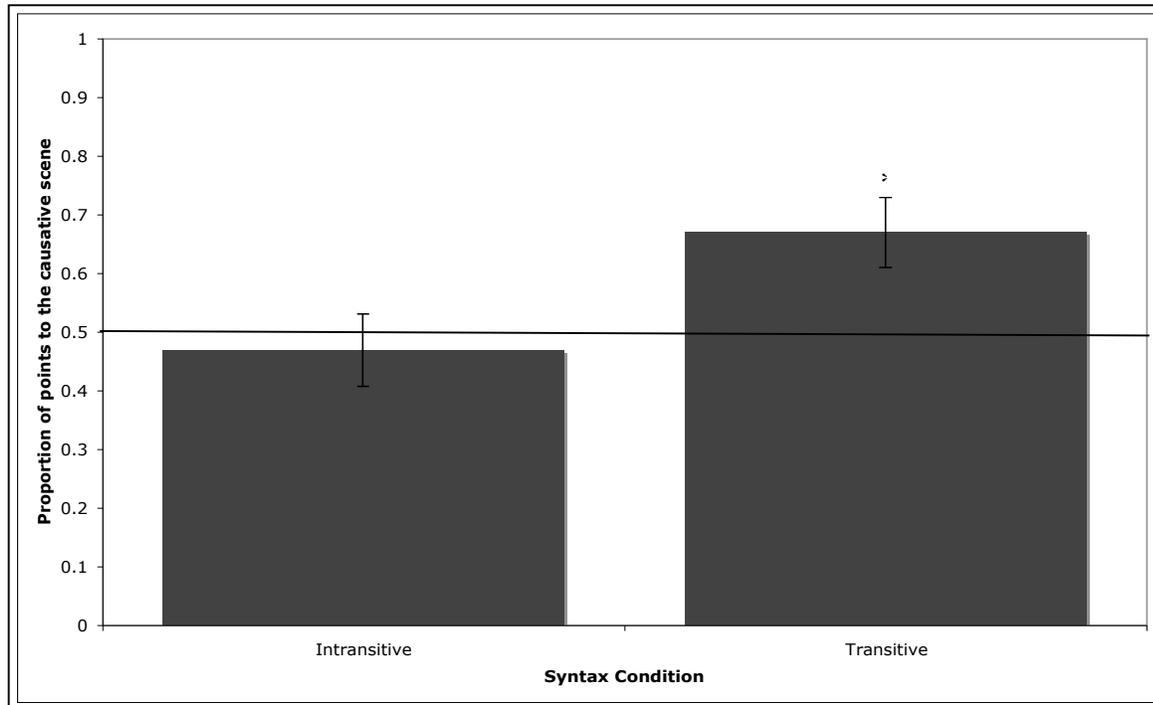


Figure 1: Results: Pointing to causative scene by syntactic condition

References

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