Toddlers flexibly interpret novel verbs in different syntactic contexts

de Carvalho A.*, Dautriche I.* and Christophe A.
x.de.carvalho@gmail.com or isabelle.dautriche@gmail.com
LSCP (ENS, EHESS, CNRS), Département d’Etudes Cognitives (Ecole Normale Supérieure - PSL Research University), Paris

Background

- To understand sentences, adults integrate their prior expectations about likely utterances (e.g., world-knowledge, linguistic regularities) with the information they extract from the input (e.g., auditory, visual).
- Depending on the level of uncertainty of a given environment (noise, accents, new talker), adults adjust their prior linguistic expectations to weigh the plausibility of different information sources [1].

Research question

Do toddlers learning their language weigh different information sources while interpreting novel verbs?

Previous results

[2] shows that French 2-year-olds correctly interpret known verbs embedded in right-dislocated sentences:

elle, mange, la souris,
it, is eating, the mouse,

But incorrectly interpret novel verbs embedded in these sentences as a causal action:

elle, dase, la souris,
it, is dasing, the mouse,

Interpreted as: X is dasing the mouse

- Children fail to integrate prosodic cues to dislocation (an intonational phrase boundary placed after the verb, [3]) when interpreting novel verbs.
- Their failure is not a failure to interpret prosody per se (they correctly interpret known verbs) but a reflection of their prior syntactic expectations.
- Default interpretation of NP-verb-NP sentence = causal action where an agent (the first NP) acts on a patient (the second NP). Indeed, several studies (e.g., [4]) suggest that toddlers use the number (and the position) of noun phrases (NP) in the sentence to guide verb learning.

Hypothesis

- Enriching the learning context of the novel verb may help toddlers to depart from their default interpretation. In particular, the set of syntactic frames in which a verb appears, rather than a single frame, may help toddlers to infer its meaning [8].
- For example hearing “She, blicks, the baby! Oh, she, blinked!” may increase the probability of “blick” being considered intransitive, and hence refer to a non-causal action (since ‘blick’ also appeared in an intransitive sentence).

Method

Participants: 80 28-month-olds (20 condition)


Dialogue phase (4 conditions)

<table>
<thead>
<tr>
<th>Condition</th>
<th>Dialogue</th>
</tr>
</thead>
<tbody>
<tr>
<td>He will dase the dad! Really, he will dase? Yeah! And they dased the boys. That’s right, they dased</td>
<td></td>
</tr>
<tr>
<td>He will dase the dad! Really, he will dase? Yeah! And they dased, the boys. That’s right, they dased</td>
<td></td>
</tr>
<tr>
<td>He will dase the dad! Really, he will dase the dad? Yeah! And they dased the boys. That’s right, they dased, the boys</td>
<td></td>
</tr>
<tr>
<td>He will dase! Really, he will dase? Yeah! And they dased. That’s right, they dased.</td>
<td></td>
</tr>
</tbody>
</table>

Test phase (same for all 4 conditions) – 8s display

Two-participant action

<table>
<thead>
<tr>
<th>Condition</th>
<th>Dialogue</th>
</tr>
</thead>
<tbody>
<tr>
<td>He will dase! Really, he will dase? Yeah! And they dased. That’s right, they dased.</td>
<td></td>
</tr>
<tr>
<td>He will dase! Really, he will dase? Yeah! And they dased. That’s right, they dased.</td>
<td></td>
</tr>
</tbody>
</table>

Analysis: We performed a cluster-based permutation test [6] during the whole duration of the test trial to identify a significant time window ([p < .05] where the proportion of looks towards the two-participant action, averaged across all four conditions, was above chance level.

Results

Proportion of looks to the two-participant action from the onset of the novel verb (Look at the one who dases!).

- Children in the transitive-intransitive condition associated the novel verb to the two-participant action, which is not surprising, given that many verbs relating two participants (e.g., eat) can enter an alternating pattern between transitive and intransitive sentences in which the object is sometimes dropped. Yet, children in the dislocated only condition did the same, which shows that they have interpreted a novel verb in right-dislocated sentences as transitive (a replication of [2]).
- Crucially, children in the dislocated-intransitive condition, behaved as in the intransitive only condition: they did not show any preference for the two-participant action.

Conclusions

- Toddlers can adjust their interpretation when given more information in the input.
- The presence of intransitive sentences in the dialogue increased the plausibility of the non-causal interpretation, only when combined with dislocated sentences.

References
