Sentence processing in 19-month-olds: The role of abstract word order representations

FRANCK, Julie, et al.
Background and goal of the study

The debate
Children demonstrate knowledge of word order as soon as they start to speak
What is the nature of this knowledge?

Hypothesis 1: Lexical, verb-specific knowledge (e.g., Tomasello 2000)
Hypothesis 2: Syntactic, abstract knowledge (e.g., Gertner et al 2006)

Critical test: interpretation of sentences with pseudo-verbs
→ English-speaking 21 month olds show preference for the SVO interpretation of NVN sentences as compared to OVS (Gertner et al 2006)

But this preference may reflect the universal Agent-Patient (Subject-Object) order found in natural languages and grounded in conceptual knowledge.

How do 19 mo interpret ungrammatical sentences?
We ran 2 experiments on 19 month old infants involving grammatical (NVN) and ungrammatical (NNV) sentences with pseudo-verbs

Exp1: causative target video vs. non causative distractor video
Exp2: causative target video vs. causative with reverted thematic roles distractor video

Lexical hypothesis predicts no preference for target in NVN and NNV
Syntactic hypothesis predicts above chance preference for target in NVN, no preference in NNV
Conceptual preference predicts above chance preference for target in NVN and NNV

Two eye-tracking experiments on word order processing

Familiarization Phases
“Regarde, c’est le lion!”
(Look, it’s the lion!)

“Regarde, qu’est-ce qu’il se passe?”
(Look, what’s happening?)

Test Phase

<table>
<thead>
<tr>
<th>« Look, what is it? » Sentence</th>
<th>Sentence</th>
<th>Sentence</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4 sec</td>
<td>4-8 sec</td>
<td>8-12 sec</td>
</tr>
</tbody>
</table>
| NVN: “(Regarde,) la vache dase le lion.”
NNV: “(Regarde,) la vache le lion dase.”

Exp1: Causative vs. Non causative
N=19 infants

Exp2: Causative vs. Causative Reverted
N=15 infants and N=10 adults

Results: Proportion of looks to the target video

Exp1 (Franck et al., in press)
- More looks to target video in NVN than NNV in window 12-16s (p<.05)
- Looks above chance in NVN in 12-16s (p<.05)

Exp2: Infants
- No difference between NVN and NNV
- Chance level in NVN

Exp2: Adults
- More looks to target video in NVN than NNV from 8-12s onwards (p=.06; .08; <.05)
- Looks above chance in NVN from 8-12s onwards (p<.05)

Discussion and conclusion

Success in Exp1, failure in Exp2?
- Role of similarity of the videos (both causative) in Exp2?
  → But Gertner et al. found a preference for target video!

- Role of attention getter in Exp2 (‘Regarde’ at onset of sentences)?
  → Was the subject of the test sentence temporarily analyzed as object, yielding a reanalysis difficulty? (e.g., Trueswell et al 1999)
  → Delayed onset of the target; less time to process the sentence?

Tentative conclusion
- The preference for the target video in NVN but not in NNV in Exp1 provides evidence against the lexical and conceptual hypotheses and supports the syntactic hypothesis
- Further empirical work is needed to understand results from Exp2!

References

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