Kindergarteners’ statistical learning is influenced by instruction

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Kindergarteners’ statistical learning is influenced by instruction
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Statistical learning
Inferring word boundaries (Safran, Johnson & Aslin, 1996; Endress & Bonatti, 2007; Gomez & Gerken, 1999)
Learning words and referents (e.g. Vouloumanos, 2008; Yu & Smith, 2007; Smith, Suanda & Yu, 2014)
Acquiring agreement markers (e.g. Lany, 2014; Lany & Safran, 2013; Monaghan, Mattock, Davies & Smith, 2015)
Learning a meaningful agreement marker (Spit, Andringa, Rispens & Aboh, under review)

Explicit instruction and replication
Lack of replication in general (Cumming, 2014),
and in linguistics in particular (Marsden, Morgan-Short, Thompson & Abugaber, 2018)
Reported positive effects of explicit instruction in adults (Spada & Tomita, 2010), but no studies with children

Research questions
Can we replicate our findings that kindergarteners learn a meaningful agreement marker on the basis of distributional properties?
Does explicit instruction influence the acquisition of such a marker?

Participants
102 Dutch speaking children (51 females, \(M = 5;7\)), 50 were explicitly instructed, 52 were not instructed

Method
Exposure
Miniature language:
Four proper names, three verbs, two grammatical markers,
six frequent nouns and twelve infrequent nouns
Exposure: 108 training sentences (+ 12 fillers)

Rule
Pli: probability that the noun has multiple referents = 1
Tra: probability that the noun has multiple referents = .5

Test
Picture matching task with eye tracking

Results

Eye tracking

Replication?

<table>
<thead>
<tr>
<th>Study</th>
<th>Effect</th>
<th>OR</th>
<th>95% CI</th>
<th>z</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study 1</td>
<td>9.2%</td>
<td>1.515</td>
<td>1.071…2.257</td>
<td>2.078</td>
<td>0.040</td>
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<tr>
<td>Study 2</td>
<td>7%</td>
<td>1.347</td>
<td>0.975…1.843</td>
<td>1.683</td>
<td>0.095</td>
</tr>
<tr>
<td>Current study</td>
<td>7.4%</td>
<td>1.370</td>
<td>0.927…2.019</td>
<td>1.614</td>
<td>0.107</td>
</tr>
</tbody>
</table>

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Conclusion
Explicit instruction did not increase accuracy, but it did lead to earlier predictive eye movements
In a follow-up experiment, we will test children on a delayed post-test,
to investigate the effect of sleep on the development of kindergarteners’ knowledge