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Kindergarteners’ statistical learning is influenced by instruction
Sybren Spit, Sible Andringa, Judith Rispens & Enoch O. Aboh, University of Amsterdam

**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 & Abubaker, 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

‘Maria rigarda tra nutro’
‘Maria rigarda pli wiro’

**Results**

**Eye tracking**

**Replication?**

<table>
<thead>
<tr>
<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>9.8%</td>
<td>1.515</td>
<td>2.178</td>
<td>0.029</td>
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<tr>
<td>Study 2</td>
<td>7%</td>
<td>1.347</td>
<td>1.843</td>
<td>0.065</td>
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<tr>
<td>Current study</td>
<td>7.4%</td>
<td>1.359</td>
<td>1.414</td>
<td>0.152</td>
</tr>
</tbody>
</table>

**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

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