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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 & Abagaber, 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

Effect | OR | 95% CI | z | p
--- | --- | --- | --- | ---
Study 1 | 9.5% | 1.515 | 1.071…2.257 | 2.178 | 0.029
Study 2 | 7% | 1.347 | 0.975…1.863 | 1.843 | 0.065
Current study | 7.4% | 1.370 | 0.927…2.023 | 1.414 | 0.157

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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