Grammar but not vocabulary learning at 17 months predicts language skills at 54 months.

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**Introduction**

- Children’s early language skills profoundly affect later academic achievement\textsuperscript{1}.
- How do we identify children at risk of language delay, to target interventions effectively\textsuperscript{2}?
- Children’s language development is usually tested with ability measures\textsuperscript{3}, can an early test of artificial language learning predict later language skills?

**Measures**

**17 months**

Artificial language learning task, based on \textsuperscript{4,5}.

- AXC language containing 2 nonadjacent dependencies \{\texttt{ba-x-so} [\texttt{x-li-fo}]\}

After training for 15 minutes of continuous speech, tested on head turn looking paradigm for:

- Vocabulary test: Testing words in the speech: Distinguishing AXC from XCA
  - \texttt{e.g. ba-x-so} vs. \texttt{-x-so-li}
- Grammar test: Testing generalisation over the structure: Distinguishing AYC from YCA (Y is a novel syllable)
  - \texttt{e.g. ba-y-so} vs. \texttt{-y-so-li}
- Measure was the effect size of looking time difference for vocabulary and for grammar (for each child\textsuperscript{6})

**Results**

- Pre-registered SEM, with latent variables of vocabulary and grammar at 54 months, and ALL vocabulary and grammar at 17 months as predictors
- TROG-2 was omitted because of covariance with BPVS
- Model is a good fit, RMSEA = .000, CFI = 1.000, TLI = 1.130, $\chi^2(5) = 2.459$, $p = .783$
- Grammar learning but not vocabulary learning predicts later language skills

**Conclusions**

- Early grammar learning on an artificial language predicts language ability 3 years later
- Frost et al.\textsuperscript{6} found that early vocabulary learning predicted vocabulary up to 30 months
- Later language skills, which are more complex\textsuperscript{7}, may require grammatical learning skills to support acquisition
- Our early test of language learning in the laboratory may be useful as a diagnostic test of language skills early in child’s development

**Participants**

- Language 0-5 Project: n= 70
- Monolingual English, full-term infants, with normal hearing and vision
- Tested at 17 and 54 months

**References**

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\textsuperscript{6}Frost et al. (2020). Cognitive Psychology, 120, 101291.
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