

# The babe with the predictive power: work in progress examining the role of prediction in early word encoding

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Error-based theories of language acquisition posit that predictions are a key part of language processing throughout the lifespan. They suggest that adults and children are constantly anticipating upcoming input and use discrepancies to update their linguistic knowledge from the very earliest stages of development. However, linguistic predictions are challenging to target experimentally, and existing studies typically focus on linguistic prediction in older age groups. As a result, there is limited evidence that prediction is a viable learning mechanism in infancy.

This study targets the role of prediction in early word encoding to assess the feasibility of this learning mechanism in infancy. We have adapted an adult EEG study focusing on syllabic prediction (Vidal et al., 2019) for an infant population. In the learning phase, 39 nine-month-old infants hear two trisyllabic pseudowords. These words are then used as standard stimuli in an oddball-phase with four new words. Two of these deviant words only share their first syllable with a familiar word, while the other two share their first two syllables. We will measure whether infants' mismatch-response (MMR) differs between standard and deviant words, to assess whether 9-month-olds make phonemic-level predictions.

We will also assess the MMR-difference between the two kinds of deviants. An MMR difference after one versus two shared syllables would suggest that cumulative congruent input reinforces prediction. To account for the variability of infants' MMR responses, we will also carry out a tone-change-detection Optimum-1 task, to determine the location, latency and polarity of the MMR for each infant separately.

#### Reference:

Vidal, Y., Brusini, P., Bonfieni, M., Mehler, J., & Bekinschtein, T. A. (2019). Neural signal to violations of abstract rules using speech-like stimuli. *Eneuro*, 6(5).

**Primary authors:** Dr FAZEKAS, Judit (School of Psychological Sciences, University of Manchester); Dr VIDAL, Yamil (Centre for Cognitive Neuroimaging - Donders Institute); Prof. PINE, Julian (Department of Psychological Sciences, University of Liverpool); Dr PERRINE, Brusini (Department of Psychological Sciences, University of Liverpool)

**Presenter:** Dr FAZEKAS, Judit (School of Psychological Sciences, University of Manchester)

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