Why can *tigers* be *pigers* but *babies* not *dabies*?
An eye-tracking study investigating the emergence of coronal underspecification in the developing lexicon of 24-months-old Dutch toddlers

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Mapping sounds onto meaning relies on detecting subtle but meaningful contrasts in the speech signal. As the lexicon grows, purely acoustic processing becomes insufficient for rapid and efficient word access. A central question is, therefore, whether infants transition from an acoustically grounded system to one that relies on abstract phonological representations, in which only marked contrastive features are stored in the mental lexicon.

A key model in this debate is the Featurally Underspecified Lexicon model (FUL; Lahiri & Reetz, 2010), which proposes that some phonemes, such as coronals, are underspecified in the mental lexicon for place of articulation (PoA). As a result, such phonemes would be more tolerant of PoA changes, whereas others, such as labials, are fully specified and, therefore, less tolerant of mispronunciations (MPs). Adult studies consistently support this asymmetry, with coronal MPs hindering word recognition less than labial MPs (e.g., Roberts et al., 2013). Developmental findings, however, are less consistent: some report asymmetries (e.g., Feest & Fikkert, 2015, for Dutch toddlers) while others do not (e.g., Ren et al., 2019, for American toddlers). However, methodological inconsistencies (e.g. audio- vs picture-first paradigm designs), together with differences in the age and native language of the toddlers tested, make it hard to disentangle whether these discrepancies in the results reflect task demands, cross-linguistic differences in the phonological systems, actual developmental changes in the speech processing system, or growing lexicons containing more words with onsets that contrast in PoA.

While most previous MP studies employ a picture-first design, Althaus et al. (2024) employs an innovative audio-first intermodal preferential looking (IPL) paradigm, claiming that whereas a picture-first design may encourage surface-level sound-matching strategies, an audio-first design may more directly tap into toddlers' stored phonological representations. Interestingly, their results in 24- months-olds align with FUL predictions: labial-to-coronal MPs (e.g., *[daby] for /baby/) hindered lexical access more than coronal-to-labial MPs (e.g., *[piger] for /tiger/). No asymmetry, however, was observed in the younger group of 18-month-olds. This methodological innovation is particularly relevant for Dutch, where Fikkert and colleagues have consistently reported coronal underspecification from as early as 4 months through the second year of life (Dijkstra & Fikkert, 2011; Altvater-Mackensen et al., 2014; Tsuji et al., 2015, 2016; Feest & Fikkert, 2015) – but always using picture-first paradigms.

The present study addresses this methodological gap by replicating the audio-first IPL paradigm used by Althaus et al. (2024) with 24-month-old Dutch toddlers, testing whether this asymmetry generalizes cross-linguistically within the same age range. Participants heard either correct or mispronounced labels (8 coronal-onset, 8 labial-onset target words) before viewing paired target and distractor images (see Figure 1 for trial timeline). Target-looking proportions from image onset to offset (3000 ms window) will be analysed using growth curve analysis, comparing coronal vs labial MPs over time. Following FUL, we predict reduced target-looking proportions following labial-to-coronal as compared to coronal-to-labial MPs. In addition, to investigate whether lexicon size plays a role, we examine individual differences in MP sensitivity in relation to (theta) values of lexical development obtained from the NL-CDI:CAT (Sametoğlu et al., 2025).
Data collection is currently ongoing (approximately 40% of the target sample tested to date) and is expected to be completed by the time of the event, when preliminary results will be presented.

Figure 1. Trial timeline.

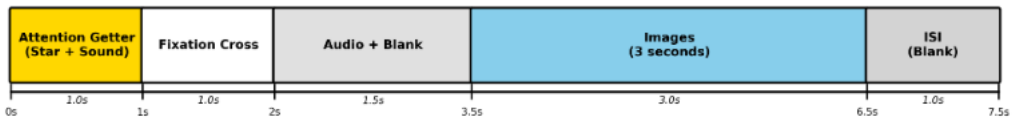


Figure 2. Examples of trials with target and distractor images.





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