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Reduplication facilitates early word segmentation
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INTRODUCTION
Background
• Infants’ word segmentation is facilitated by distributional cues and knowledge of familiar words (e.g., own names, mommy).
• Is early word segmentation also facilitated by the phonological shape of words, such as reduplication (sound repetition)?

Why reduplication?
• Neonates show greater brain activation in response to immediate repetition (e.g., mubaba cf. bamuba, mubage) (Gervain, Macagno, Cogoi, Peña, & Mehler, 2008; Gervain, Berent, & Werker, 2012).
• Repetition facilitates pattern generalization in infants and adults (Endress, Dahaene-Lambertz, & Mehler, 2007; Gomez & Gerken, 1999; Gomez, Gerken, & Schvaneveldt, 2000; Marcus, Vijayan, Raco, & Vrillon, 1999).
• Early-acquired words often contain repetition of whole syllables or consonants, as in daddy, baa-baa and yummyum (Endress, Nespor, & Mehler, 2009; Gervain & Werker, 2008).

Research question
• Are young infants better at segmenting novel words in running speech that are reduplicated than novel words that are not reduplicated?

METHOD
Participants
• 24 9-month-olds (13 ♀, M = 8m 28d, Range: 8m 12d - 9m 12d)

Materials
• 12 novel words: disyllabic CVCV structures in English
• Controlled for phonotactic and neighbourhood properties

Familiarization
6 trials:
• 3 x passage* with reduplicated word (e.g., 6 x neenee)
• 3 x passage with nonreduplicated word (e.g., 6 x bolay)

Test
12 trials:
• 3 blocks with 4 conditions
  (+/- reduplicated x +/- familiarized)

The neenee was bright and shiny. A clown drank from the red neenee. The other one picked up the big neenee. His neenee was filled with milk. Meg put her neenee back on the table. Some milk from your neenee spilled on the rug.

neenee, neenee, neenee … (15x)

The bolay ran around the yard. The postman called to the big bolay. He held his bolay on the head. The happy red bolay was very friendly. Her bolay barked only at squirrels. The neighbourhood kids played with your bolay.

bolay, bolay, bolay … (15x)

yahdaw, yahdaw, yahdaw … (15x)

Results adapted from Jusczyk and Aslin (1996).

RESULTS

Figure 1: Mean looking times by word type, familiarization and block.

Figure 2: Observed (black dots) vs. simulated (violin plots) frequency of immediate syllable repetition in the infant-directed speech of 9 mothers in the Birn-Radner corpus. Simulated = random combinations of two syllables using the Monte Carlo method.

DISCUSSION and CONCLUSIONS
• Infants are more likely to segment reduplicated rather than nonreduplicated words in running speech. They preferentially attend to repeated patterns in the context of word learning.
• It is likely that this is an inherent cognitive bias rather than an experience-based bias from the input.
• This bias may be the source of the prevalence of reduplication in baby-talk words.

Interestingly, this bias runs against the tendency to avoid adjacent sound repetition in adult language and processing (e.g., Boi-Avedyan & Kager, 2014). A conflict between constraints on learning and constraints on linguistic systems?