Reduplication facilitates early word segmentation

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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, Cogo, 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, & Schwanenfeldt, 2000; Marcus, Vijayam, Rao, & Yaffton, 1999).
- Early-acquired words often contain repetition of whole syllables or consonants, as in daddy, baa-baa and yumyum (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

<table>
<thead>
<tr>
<th>Set</th>
<th>Reduplicated</th>
<th>Nonreduplicated</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>neenee, tini/</td>
<td>neefoo, hitu/</td>
</tr>
<tr>
<td>B</td>
<td>bolay, lebe/</td>
<td>bloo, loob/</td>
</tr>
<tr>
<td>C</td>
<td>yihihi, jajj/</td>
<td>yeedaw, jadja/</td>
</tr>
</tbody>
</table>

RESULTS

Familiarization
- 6 trials:
  - 3 x passage with reduplicated word (e.g., 8 x neenee)
  - 3 x passage with nonreduplicated word (e.g., 8 x bolay)

Test
- 12 trials:
  - 3 blocks with 4 conditions
    - neenee, neenee, neenee ... (15x)
    - bolay, bolay, bolay ... (15x)
    - yeedaw, yeedaw, yeedaw ... (15x)

* Passages adapted from Juczyk and Aslin (1995).

Reduplication bias from input?
- Not likely: Immediate repetition of syllables in infant-directed speech is typically not higher than chance level.

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., Bili-Avedyan & Kager, 2014). A conflict between constraints on learning and constraints on linguistic systems?