

Prosody outweighs statistics: evidence from German



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Introduction

- It is well established that infants are able to segment fluent speech into words from about 7-8 months of age (Gout, 2001; Höhle & Weissenborn, 2003; Jusczyk & Aslin, 1995).
- There is evidence that they use at least two mechanisms: prosodic cues, especially the word stress pattern (Jusczyk, Houston & Newsome, 1999, Höhle et al., 2009), and statistical learning, i.e. transitional probabilities (Aslin, Saffran & Newport, 1998; Saffran, Aslin & Newport, 1996).
- However, the weight of these two mechanisms differs, and this also varies with age (Thiessen & Saffran, 2003).

Main goal and hypothesis

- Following the results from Thiessen & Saffran (2003), the purpose of the study is to figure out the use of these mechanisms in German, in infancy as well as in adulthood.
- We expect adults to segment according to prosodic cues, as well as 9-month-olds. At 7 months of age, we expect infants to rely more on the statistical cues.

Methods and procedure

Participants: German monolingual adults (n=23), a group of 9-month-olds (n=24) and a group of 7-month-olds (n=22).

Stimuli: 2-min artificial iambic language string (as in Thiessen & Saffran, 2003) where the prosodic and the statistical cues conflict. The language was created from natural language recorded syllables.

Test words:

Prosodic words: DEgo, BUta taDE#goBU#puDA#biDO#taDE#puDA

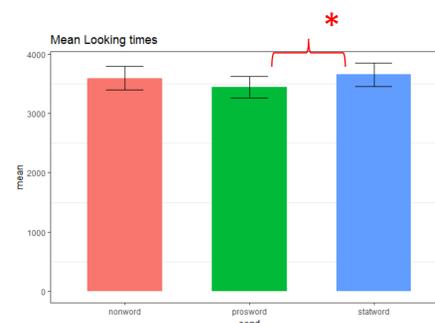
Statistical words: biDO, puDA #taDE#goBU#biDO#goBU...

Non-words: puDE, Dabi

Methods: adults were tested in a forced-choice task (yes/no). Both infants groups were tested in the Head-Turn-Preference procedure (familiarized to the same string).

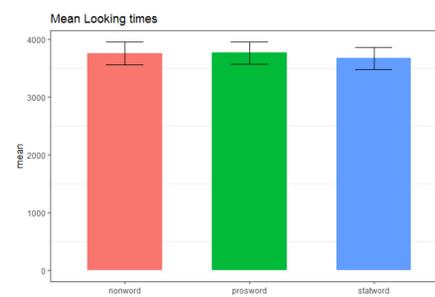
Results

When the statistical and the prosodic cues conflict...



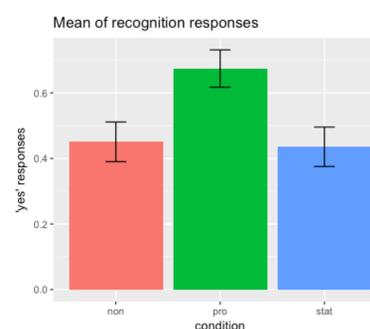
At 7 months of age:

- Higher looking times for statistical words in contrast to prosodic words ($p = .032$)
- No difference between:
 - statistical words and non-words ($p = .068$)
 - statistical words and prosodic words ($p = .58$)



At 9 months of age:

- No difference between the conditions



Adults:

- High rate of recognition of the prosodic words
- No difference between the non-words and the statistical words

Conclusions

- Results showed that German monolingual adults rely more on the prosodic cues to segment words from the string.
- At 9 months of age, infants do not show any preference for the different types of words.
- In contrast, at 7 months of age, they look longer to the statistical words, and show the same tendency for the non-words. These results can be interpreted as a novelty effect and a preferential use of prosodic cues for segmentation.

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