The prosody of yes/no-questions in German first language acquisition

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Background

Intonation in adult speech

	declarative statements (DCLs)	yes/no-questions* (YNQs)
pitch contour	mostly falling	mostly rising
most common nuclear tune	H* L-%	L* H-^H%
pitch range	relatively small	relatively large

(e.g. Grice et al. 2005, Van Heuven & Haan 2000, Wochner et al. 2015)

* focus on information-seeking YNQs

Pitch contour in child YNQs

- Evidence from English children (Patel & Grigos 2006)
  - 4 years: longer final syllable duration than in DCLs
  - 7 years: longer final syllable duration and rising f0
  - 11 years: rising f0
- German and Spanish 2- and 3-year-olds show good control of rising contours (Lleó & Rakow 2011)

Pitch range in child YNQs

- English 4-year-olds fail to realise rises with an adult-like pitch range (Snow 2002, 2004)
- German and Spanish 2- and 3-year-olds produce target-like pitch ranges (Lleó & Rakow 2011)

Research questions:

- Do German children use rising vs. falling contours to distinguish YNQs from DCLs at different stages of development?
- Does age affect their realisation of pitch range for YNQs?
- Is the final boundary tone a crucial marker for children to distinguish YNQs and DCLs?

Method

Participants:

12 monolingual German children (5 females), 3 age groups:

1) 2;8 – 2;10 (M = 2;9)
2) 3;1 – 3;4 (M = 3;2)
3) 3;10 – 4;0 (M = 3;10)

Procedure:

Elicited production/imitation task

Materials:

16 target sentences (8 YNQs, 8 DCLs)

- YNQs and DCLs in direct and indirect speech
- main/modal/copula verbs in present tense

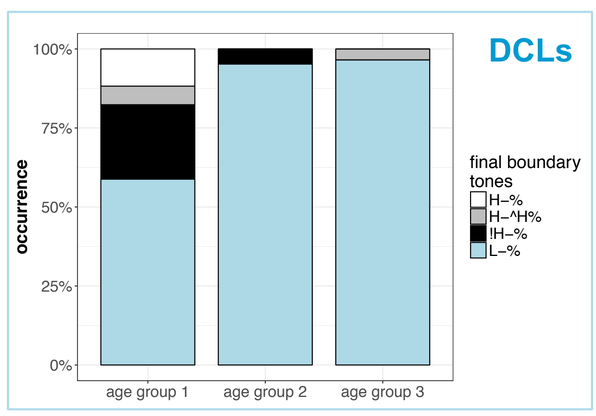
Bitte frag Max: Tut das weh?
'Please ask Max: Does it hurt?'
Bitte sag Max, dass er bald wieder gesund ist.
'Please tell Max that he will recover soon.'

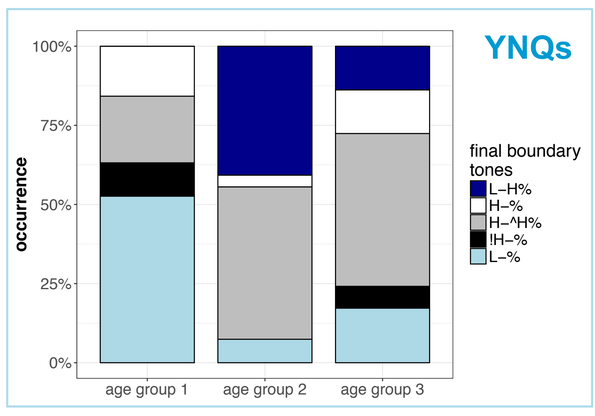
Data analysis:

- GToBI annotation (Grice et al. 2005)
- Determination of f0 minimum and maximum between final accented syllable and right boundary tone → range in st

Results

Pitch contour:





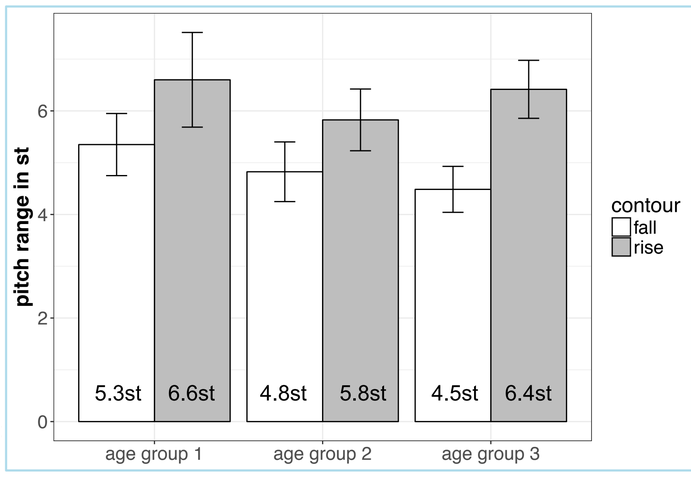
Pitch range:

Linear mixed effect model (DV: range; IVs = contour, age group) (Baayen 2008)

- Significant effect of contour (p = 0.03)
  - M_{fall} = 4.6st, SD = 2.9
  - M_{rise} = 6.1st, SD = 2.7

→ range in rises larger than in falls

- No effect of age group (p = 0.7)
- No interaction between contour and age group (p = 0.4)



Whiskers represent standard errors.

Discussion

Pitch contour:

- DCLs are predominantly produced with a falling contour with an L-% boundary tone, independent of age.
- YNQs are produced more consistently with a rising contour and with an H-^H% boundary tone in age groups 2 and 3 than in age group 1.
- Children of age group 2 and older also produce YNQS with a rising contour realised by the boundary tone L-H%.
- The final boundary tone is a crucial marker at least for age groups 2 and 3 to distinguish YNQs and DCLs.

Pitch range:

Higher range for rises than for falls in all age groups

- No evidence that age affects the realisation of pitch range for rises in the tested age range
- Evidence that rises are produced with a larger range than falls from a relatively early age on

Conclusions

- The production of rises *per se* is not a problem.
- The youngest children rather seem to have problems selecting the appropriate contour for YNQs.

Future work will address…

- how intonation and syntax interact in the acquisition of YNQs.
- the comprehension of rising/falling intonation in short sentences.

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- Baayen, R. H., Davidson, D. J., & Bates, D. M. (2008). "Mixed- effects modeling with crossed random effects for subjects and items," *Journal of Memory and Language,* vol. 59, 390-412.
- Grice, M., Baumann, S., & Benzmüller, R. (2005). German intonation in autosegmental-metrical phonology. *Jun, Sun-Ah (ed.): Prosodic typology. The phonology of intonation and phrasing., Oxford University Press*, 55-83.
- Lleó, C., & Rakow, M. (2011). Intonation targets of yes/no questions by Spanish and German monolingual and bilingual children. In E. Rinke & T. Kupisch (Eds.), *The development of grammar. Language acquisition and diachronic change. In honour of Jürgen Meisel* (pp. 263-286). Amsterdam/Philadelphia John Benjamins.
- Patel, R., & Grigos, M. I. (2006). Acoustic characterization of the question–statement contrast in 4, 7 and 11 year-old children. *Speech Communication, 48*(10), 1308-1318.
- Snow, D. (2002). Intonation in the monosyllabic utterances of 1-year-olds. *Infant Behavior and Development, 24*(4), 393-407.
- Snow, D. (2004). Falling intonation in the one- and two-syllable utterances of infants and preschoolers. *Journal of Phonetics, 32*(3), 373-393.
- Van Heuven, V.J. & Haan, J. (2000). Phonetic correlates of statement versus question intonation in Dutch. *Intonation*. Springer: Netherlands. 119-143.
- Wochner, D., Schlegel, J., Dehé, N., & Braun, B. (2015). The prosodic marking of rhetorical questions in German. *Speech Prosody*, [no page numbers].

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