Acoustic characteristics of filler particles in German

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Data

- Pool2010-Corpus: semi-spontaneous speech of 100 native German males in two conditions: Lombard and normal speech (appr. 13 h) [1]. Results are pooled over both conditions.
- Annotations of filler particles (FPs) (*uh*, *uhm*, *hm*) + their pause context (+ for speech, - for pause), glottalised FPs (*gl*) and tongue clicks (*cl*)
- Here: details of 17 selected example speakers

How do speakers vary in their disfluency patterns regarding their frequency? Do speakers use individual vowels in *uh/uhm*?

Disfluency patterns

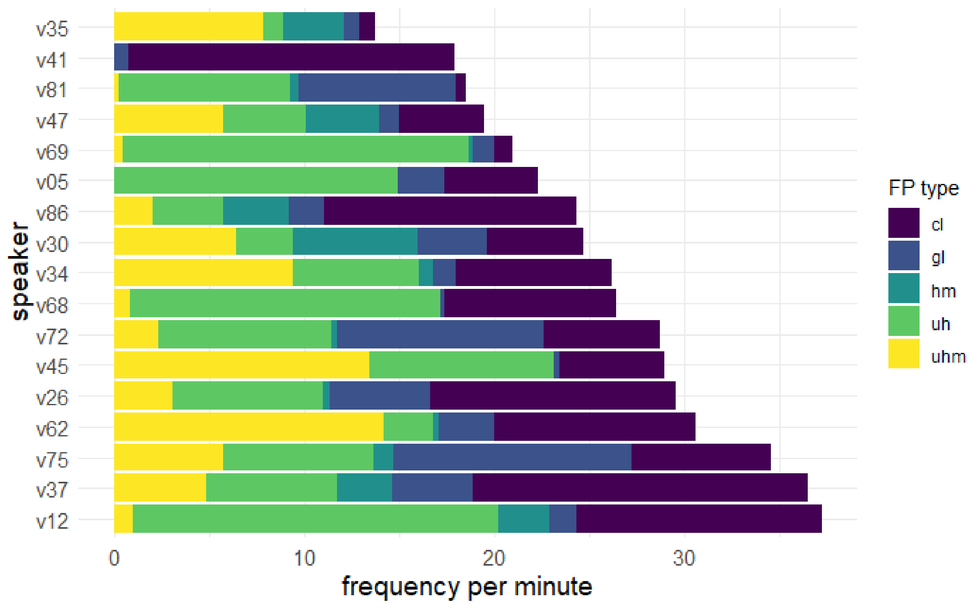

Fig.1: Distibution of FP types per speaker (ordered by total number of FPs). Speakers vary in the use of the different FPs also shown by [2] for other disfluencies in English.

Vowel quality in *uh/uhm*

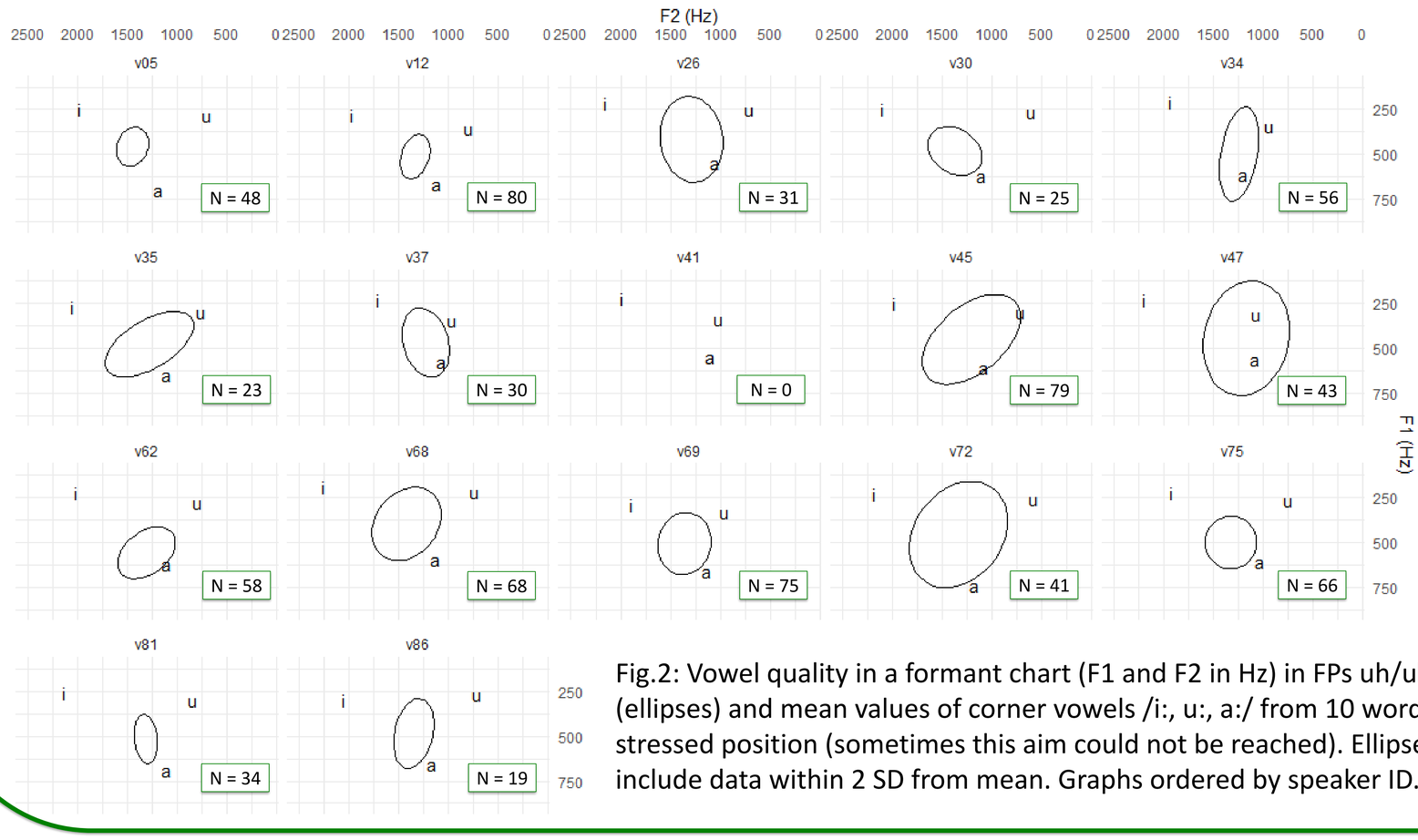

Fig.2: Vowel quality in a formant chart (F1 and F2 in Hz) in FPs uh/uhm (ellipses) and mean values of corner vowels /i:, u:, a:/ from 10 words in stressed position (sometimes this aim could not be reached). Ellipses include data within 2 SD from mean. Graphs ordered by speaker ID.

- All speakers use central vowels in their FPs
- They vary in the extent of the FP-vowel space they use (also reported for German in [3])

→ e.g. v05/v12 very small space; v47/v72 very large space

- No visible correlation between number of tokens and magnitude of FP vowel space

Fundamental frequency

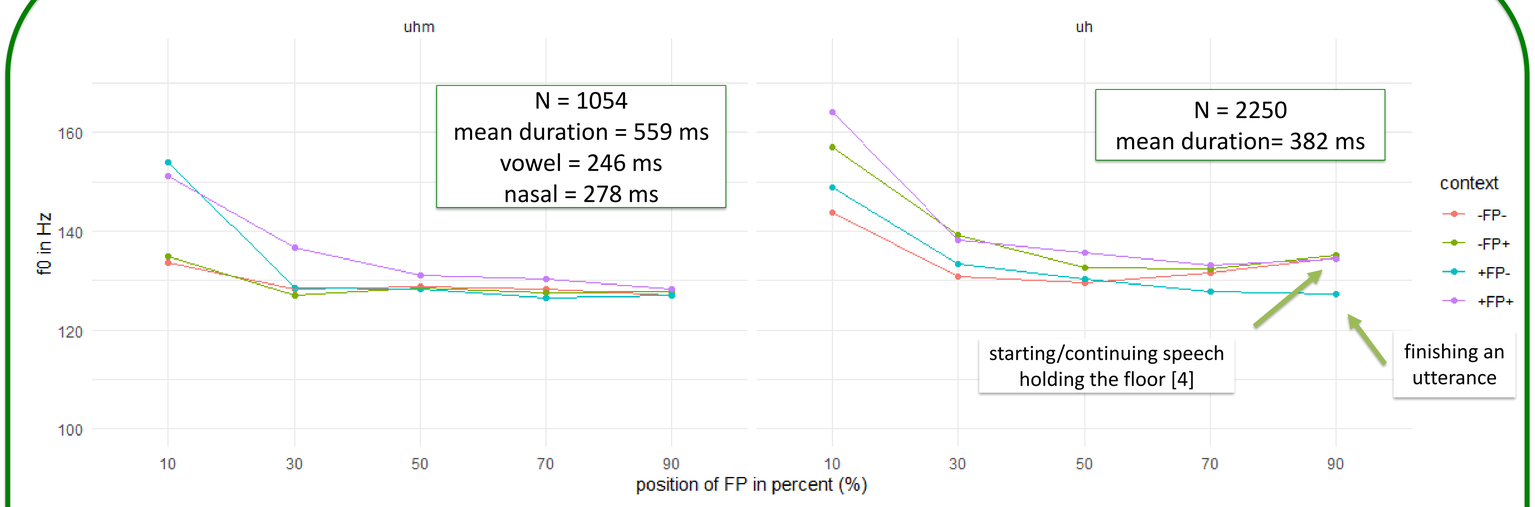

Fig.3: Mean pitch contours of FPs per context (for data of all 100 speakers). All mean pitch values lie within a range of 40 Hz. According to [4], most FPs are produced with a steady contour while rising and falling contours have been reported for specific functions (e.g., holding the floor). (Mean vowel/nasal durations are measured without the creaky voice portions of the vowel.)

Conclusion

- High variation between speakers regarding disfluency pattern and vowel space
- Next step: Is there within-speaker consistency?
- F0 contour is mostly falling for the FPs uh and uhm. Pitch differences across pause contexts occur in a range of 40 Hz.

References:
[1] Jessen, M., Köster, O., & Gfroerer, S. (2005). Influence of vocal effort on average and variability of fundamental frequency. International Journal of Speech Language and the Law, 12(2), 174–213. **[2]** McDougall, K., & Duckworth, M. (2018). Individual patterns of disfluency across speaking styles: A forensic phonetic investigation of Standard Southern British English. International Journal of Speech, Language and the Law, 25(2), 205–230. **[3]** Belz, M. (2021). Die Phonetik von äh und ähm: Akustische Variation von Füllpartikeln im Deutschen. In *Die Phonetik von äh und ähm*. Metzler. **[4]** Belz, M., & Reichel, U. D. (2015). Pitch Characteristics of Filled Pauses. Proceedings of the 7th Workshop on Disfluency in Spontaneous Speech (DiSS 2015).