

Perceptions of English word stress cues: ERP evidence from speakers of Slavonic Englishes

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Issue

- Word stress shifting (mis-stressing – *COMputer**, *PROfessor**) – common feature of Polish and Czech English (see e.g., Porzuczek 2008, Rojczyk 2013, Weingartová et al. 2014, Gralińska-Brawata & Rybińska 2017)
 - absence of vowel reduction in function and content words (*to, her / considered, confess*) + [unstressed] syllable reduction (*computer, professor*)
 - overlapping vowel length (e.g., FLEECE/KIT).
- Native and non-native English speakers rely on cues to word stress recognition to a **different degree** (e.g., pitch, duration, intensity, vowel quality / spectral tilt)
 - e.g., **Cantonese** EFL learners are more sensitive to information on the **variation of pitch**, while **less sensitive to information on the variation of duration** than their **Mandarin** counterparts. (Meng et al. 2020, p. 1496)
 - listeners **weigh cues** to signal processing and this “perceptual bias toward the extraction and utilization of acoustic cues during speech perception is **shaped by the native linguistic experience**” (Meng et al. 2020, p. 1496)
 - Slavic Englishes not studied enough!

Significance

- Proper word stress perception enables
 - Lexical access – eases choice between lexical competitors, e.g. /'mɪs/ → MYStery; /mɪs'/ → misTAKE (e.g., Cutler 2015)
 - Lexical segmentation (cf. “slips of the ear” – “that’s likely to boomerang on you” activates “taboo” and “meringue” (to-boo merang) (Cutler 2015, p. 120))
 - A mirrored word stress production?

→ We could use these language-specific acoustic cues to stress to create synthetic L2 English input that eases stress perception in the future!

→ In the near future, we need more basic research on:

RQ1) Which acoustic cues are used by Slavic speakers of English to perceive word stress?

RQ2) How can these cues be used to customise synthesised language input?

RQ3) How does the customised input influence word stress perception?

Behavioral perception experiment

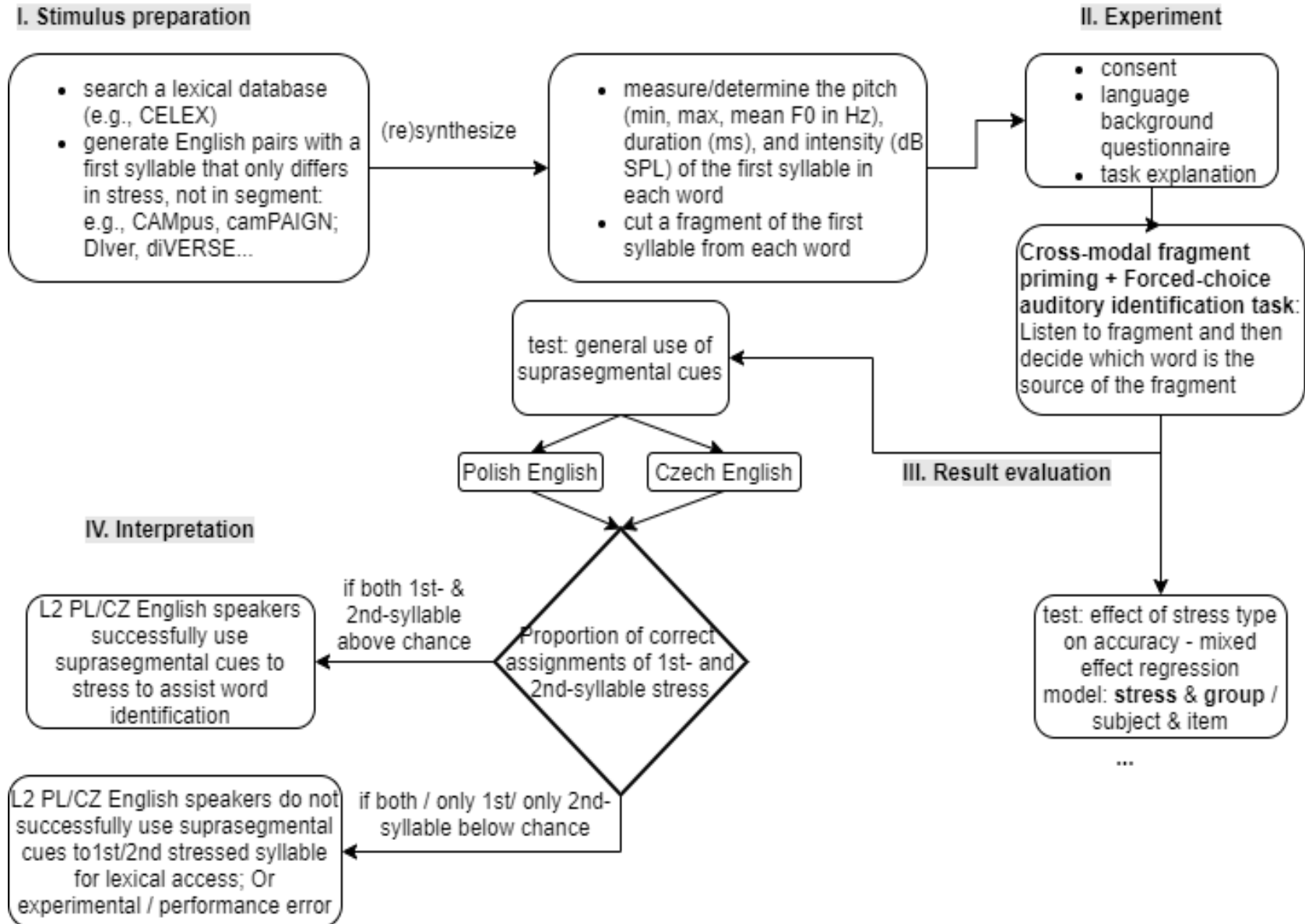
– based on Cooper et al. (2002), Tremblay (2008), Yu et al. (2020 – online!)

Do Polish and Czech learners of English use suprasegmental cues to word stress for lexical access?

+Production study

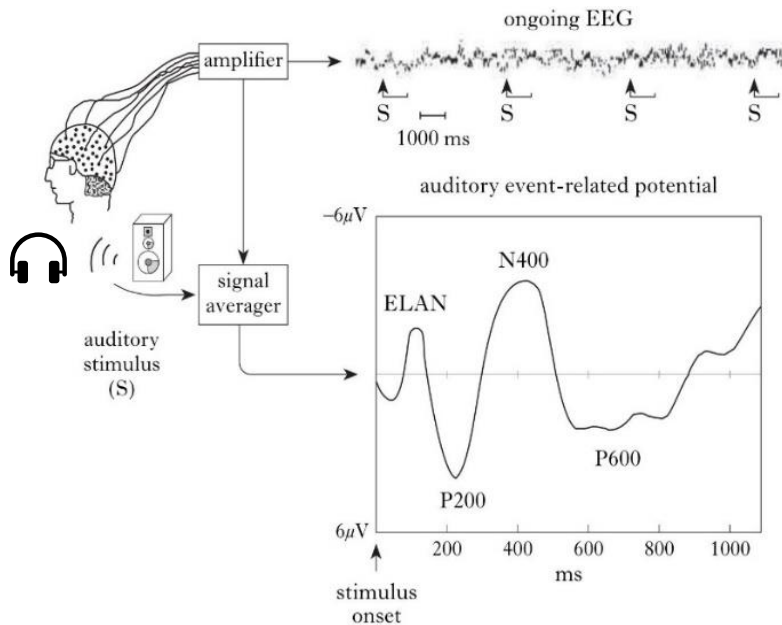
Which features characterize the Slavic (Czech/Polish) English production of English word stress?

Minimal pairs + noun-verb homograph pairs in carrier sentences with and without context + sociolinguistic interview

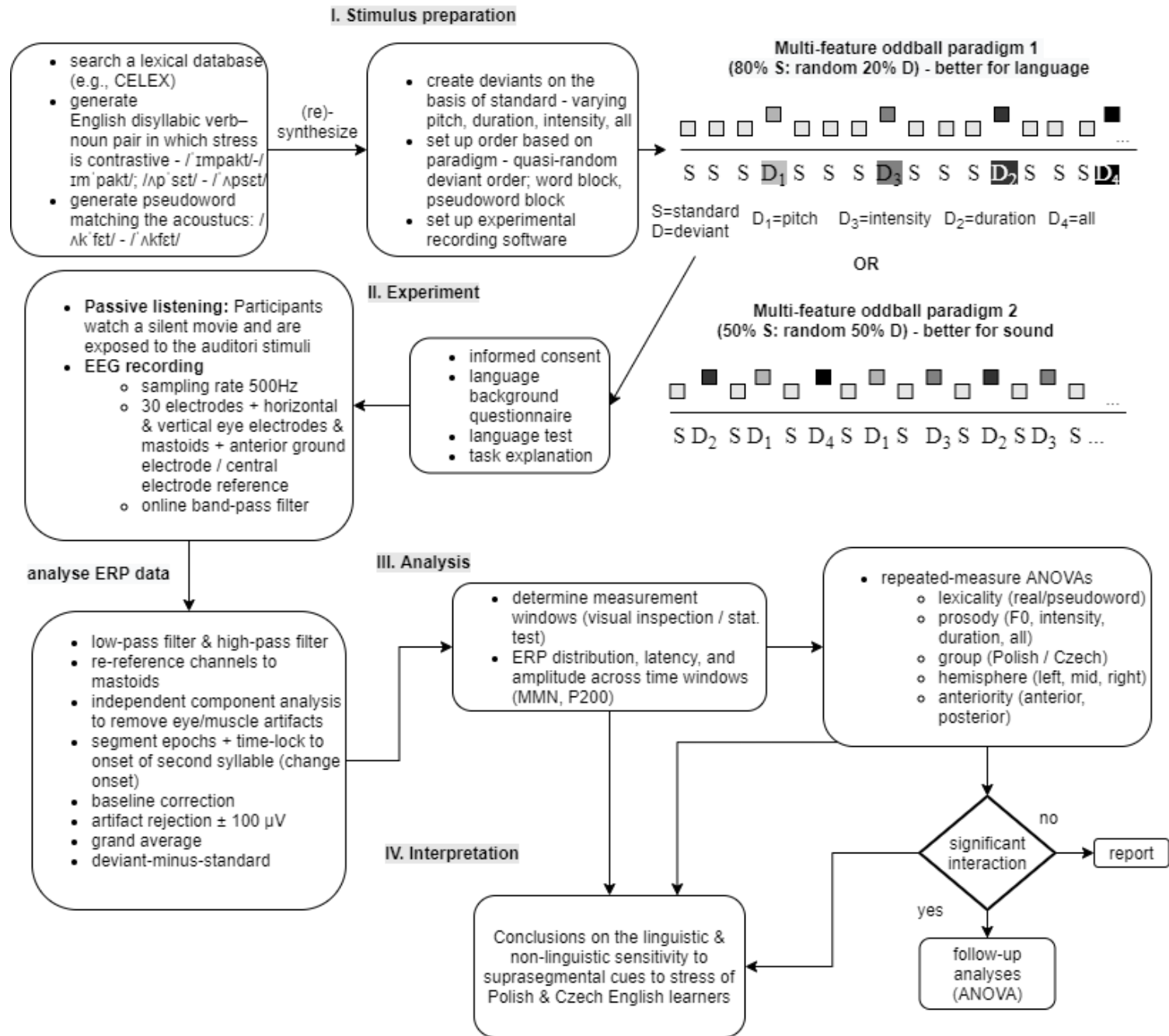


EEG experiment 1 – based on Näätänen et al. (2004), Zora et al. (2015), Meng et al. (2020)

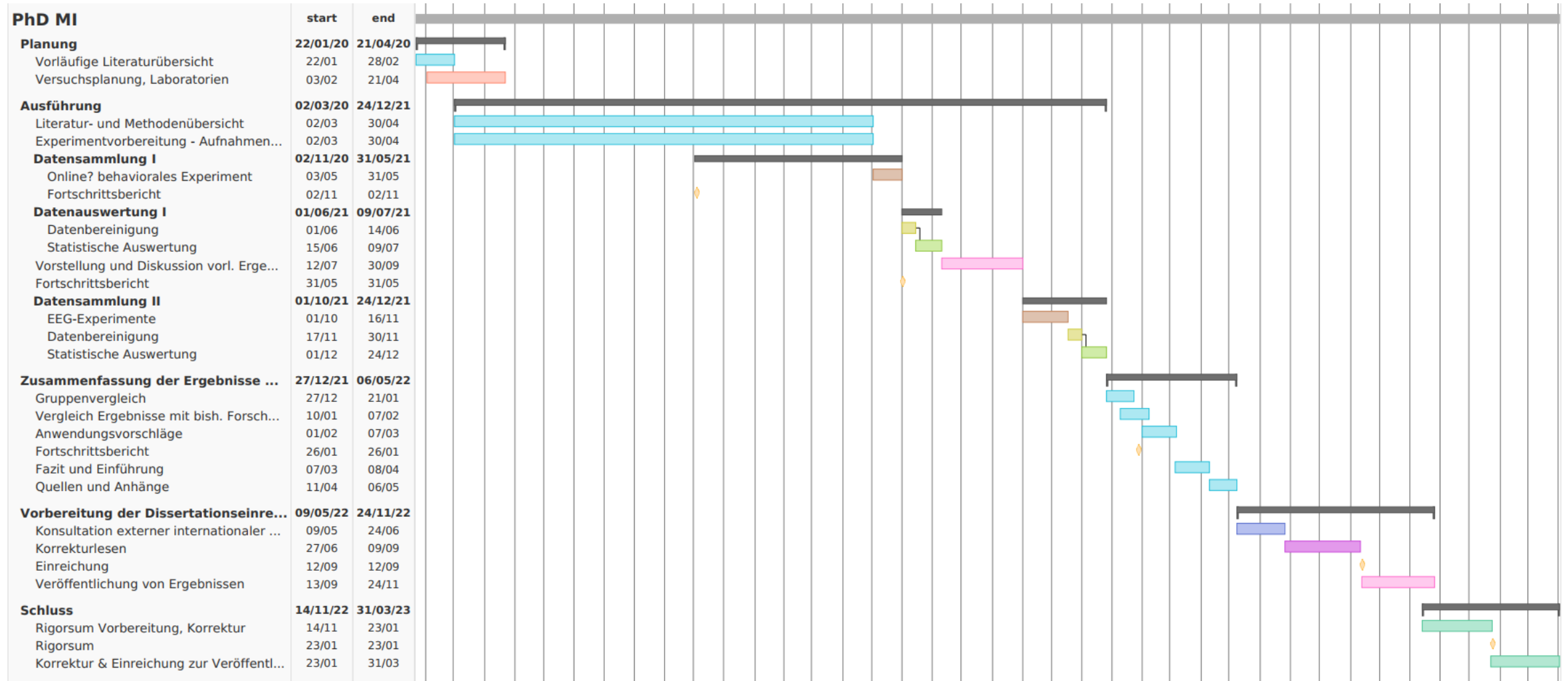
Which acoustic cues do Polish and Czech learners use to perceive English word stress?



Schematic depiction of the set-up of an ERP experiment on language processing (Domahs et al., 2008, p. 30 adapted from Coles & Rugg 1995)



Changes to original chart from April 2020: 1) (Online?) behavioral experiment May 2021; 2) EEG experiments October-November 2021; 3) Reduced thesis write-up time



References

- Cooper, N., Cutler, A., & Wales, R. (2002). Constraints of lexical stress on lexical access in English: Evidence from native and non-native listeners. *Language and Speech*, 45(3), 207–228.
- Domahs, U., Wiese, R., Bornkessel-Schlesewsky, I., & Schlesewsky, M. (2008). The processing of German word stress: Evidence for the prosodic hierarchy. *Phonology*, 25(1), 1–36. <https://doi.org/10.1017/S0952675708001383>
- Gralińska-Brawata, A., & Rybińska, P. (2017). The relationship between the production of word stress and musical abilities in Polish learners of English. *Research in Language*, 15(3), 265–283. <https://doi.org/10.1515/rela-2017-0015>
- Meng, Y., Zhang, J., Liu, S., & Wu, C. (2020). Influence of different acoustic cues in L1 lexical tone on the perception of L2 lexical stress using principal component analysis: An ERP study. *Experimental Brain Research*, 238(6), 1489–1498. <https://doi.org/10.1007/s00221-020-05823-w>
- Näätänen, R., Pakarinen, S., Rinne, T., & Takegata, R. (2004). The mismatch negativity (MMN): Towards the optimal paradigm. *Clinical Neurophysiology : Official Journal of the International Federation of Clinical Neurophysiology*, 115(1), 140–144. <https://doi.org/10.1016/j.clinph.2003.04.001>
- Porzuczek, A. (2008). Stress-dependent syllable duration variability in Polish English' and native British English pronunciation. In E. Waniek-Klimczak (Ed.), *Issues in accents in English* (pp. 64–78). Cambridge Scholars Pub.
- Rojczyk, A. (2013). Vowel quality and duration as a cue to word stress for non-native listeners: Polish listeners' peception of stress in English. In E. Waniek-Klimczak & L. R. Shockey (Eds.), *Second Language Learning and Teaching. Teaching and researching English accents in native and non-native speakers* (pp. 59–71). Springer Berlin Heidelberg. https://doi.org/10.1007/978-3-642-24019-5_5
- Tremblay, A. (2008). Is second language lexical access prosodically constrained? Processing of word stress by French Canadian second language learners of English. *Applied Psycholinguistics*, 29(4), 553–584. <https://doi.org/10.1017/S0142716408080247>
- Weingartová, L., Poesová, K., & Volín, J. (2014, May). Prominence Contrasts in Czech English as a Predictor of Learner's Proficiency. In *7th International Conference on Speech Prosody 2014* (pp. 236–240). ISCA. <https://doi.org/10.21437/SpeechProsody.2014-35>
- Yu, J., Mailhammer, R., & Cutler, A. (2020, May). Vocabulary structure affects word recognition: Evidence from German listeners. In *10th International Conference on Speech Prosody 2020* (pp. 474–478). ISCA. <https://doi.org/10.21437/SpeechProsody.2020-97>
- Zora, H., Schwarz, I.-C., & Heldner, M. (2015). Neural correlates of lexical stress: Mismatch negativity reflects fundamental frequency and intensity. *NeuroReport*, 26(13), 791–796. <https://doi.org/10.1097/WNR.0000000000000426>