Suprasegmental Cues in L2 Processing of English-German Cognates: An Eye-tracking Study

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Suprasegmental information can serve as a cue in word recognition, particularly in languages with lexical stress [1]. Previous studies on word processing in English and German have shown that listeners of both languages utilize suprasegmental stress cues for word recognition. Studies have further shown that native speakers of languages such as English and German use lexical stress information as it becomes available when recognizing words [3, 4]. For example, in a visual-word paradigm, English native listeners fixated target words with initial primary stress (e.g., *Analog*; capital letters indicating primary stress) more than stress competitors (e.g., *anaLYtic*), even before distinguishing segmental information was available [3]. However, it has been suggested that English native listeners are less sensitive to lexical stress than listeners of other Germanic languages [2, 6]. German words often feature full vowels in unstressed syllables, whereas English words mostly have full vowels in stressed syllables and reduced vowels in unstressed syllables. Consequently, German native speakers have been shown to be more sensitive to suprasegmental stress cues in fragment recognition tasks, even when tested in English as a second language (L2) [6]. In the present experiment, we examined whether the early processing of lexical stress in L2 English comprehension is influenced by the consistency of stress patterns across English-German cognates. English words that either share the stress pattern of the German equivalent (e.g., *anaLYtic – anaLYtisch*) or differ in stress position (e.g., *Analog - anaLOG*) were selected. Note that derived words from Romance origin never carry primary stress in the word initial syllable in German and therefore, the manipulation of English words (initial primary vs. secondary stress) coincides with stress match and mismatch across English-German cognates. Since suprasegmental information is more important in German than in English, we expect German L2 English listeners to use stress information for disambiguation before segmental information becomes available. However, words with initial primary stress show a mismatch in the stress pattern across cognate words in the two languages. Therefore, potential interference between German and English could lead to suprasegmental information being less helpful in such words.

In a visual-world paradigm, twenty-four German learners of English followed the auditory-presented instructions "Click on the word X", while their eye fixations to two displayed critical words and two distractor words were tracked. Frequency-matched critical word pairs showed segmental overlap in their first two syllables but differed in stress. One word had initial primary stress; the other one had initial secondary stress and primary stress on the third syllable. Participant's L2 proficiency was assessed via the LexTALE test [5]. Results for German L2 learners indicate disambiguation of a critical pair (Figure 1), before the end of segmental overlap for targets with initial primary stress. This finding suggests that the different stress patterns in the German and English version of these words do not lead to an interference effect in word recognition for German native listeners. German learners of English demonstrate the same early disambiguation advantage for words with initial primary stress as previously found for native English listeners.

References

[1] Anne Cutler and Alexandra Jesse. Word Stress in Speech Perception. In *The Handbook of Speech Perception*, chapter 9, pages 239–265. John Wiley & Sons, Ltd, 2021. ISBN 978-1-119-18409-6. doi: 10.1002/9781119184096.ch9.

[2] Anne Cutler and Dennis Pasveer. Explaining cross-linguistic differences in effects of lexical stress on spoken-word recognition. In *3rd International Conference on Speech Prosody*. TUD press, 2006.

[3] Alexandra Jesse, Katja Poellmann, and Ying-Yee Kong. English Listeners Use Suprasegmental Cues to Lexical Stress Early During Spoken-Word Recognition. *Journal of speech, language, and hearing research: JSLHR*, 60(1):190–198, January 2017. ISSN 1558-9102. doi: 10.1044/2016_JSLHR-H-15-0340.

[4] Alexandra Jesse, Julia Sigg, and Ulrike Domahs. Use of lexical stress information in German learners of English. In *Speech Prosody 2024*, pages 235–239. ISCA, July 2024. doi: 10.21437/SpeechProsody.2024-48.

[5] Kristin Lemhöfer and Mirjam Broersma. Introducing lextale: A quick and valid lexical test for advanced learners of english. *Behavior research methods*, 44(2):325–343, 2012.

[6] Jenny Yu, Robert Mailhammer, and Anne Cutler. Vocabulary structure affects word recognition: Evidence from German listeners. In *Speech Prosody 2020*, pages 474–478. ISCA, May 2020. doi: 10.21437/SpeechProsody.2020-97.

Figures and Tables

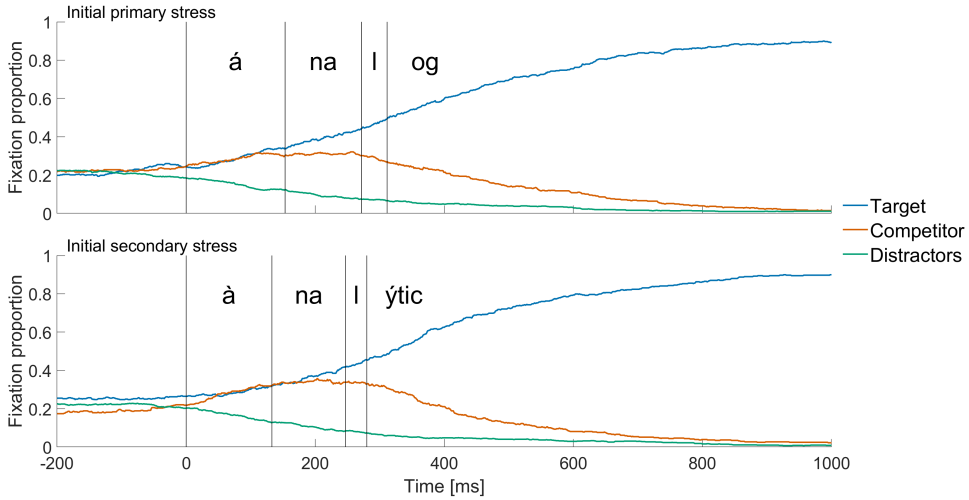

Figure 1: Fixation proportions of L2 listeners (German L1) during audio presentation of the critical word. Vertical lines indicate the average onset times of the first and second syllable, the overlap after the second syllable, and then the rest of the word. When the target word had initial primary stress, German listeners fixate the English target word earlier, preferring it to the competitor in the second syllable. When the target had initial secondary stress, early disambiguation is not found.