

Processing of Lexical Stress in L2 English: Investigating Stress Level Differences with EEG and Word Fragment Priming

Jonas Gerards (jonas.gerards@uni-marburg.de)^{1,2}, Michelle Morgenstern^{1,2}, Ulrike Domahs^{1,2,3}

¹University of Marburg, ²RTG2700 “Dynamics and stability of linguistic representations”, ³Center for Mind, Brain and Behavior (CMBB)

Lexical stress is one type of information that is used as a cue in the identification of a target word [2]. Numerous studies examined the role of suprasegmental information in word access with word fragment priming (e.g. [1, 4, 5, 7, 8]) and found not only that it affects word identification but also that it is used to different degrees based on the prosodic properties of a speaker's linguistic background. German and English are a well-suited case for further research in this regard as both have lexical stress and share words with similar forms and meanings (“cognates”). In addition, the higher amount of full vowels in unstressed syllables in German has been suggested to give German native speakers an advantage over English native speakers in using suprasegmental cues in word recognition, even when tested in English as their second language (L2) [9]. Against this backdrop, our study examines whether prosodic differences between different stress levels at word onset are used in word recognition in L2 English. To this end, we perform a word fragment priming experiment with simultaneous EEG recording, in which participants are presented with a primary-stressed, a secondary-stressed or an unstressed truncated initial syllable as a prime followed by a target word that either matches with the prime syllable or differs in prosodic strength. Prior studies found a facilitatory priming effect for stress matching between prime and target [1] which is associated with a reduced amplitude of the P350 component [3, 4]. We aim to expand this literature by examining German listeners in L2 English and comparing three stress levels while examining processing with EEG.

In our ongoing experiment, native speakers of German participate in a lexical decision task with acoustic word fragment priming. Subjects took the LexTale [6] to assess their language proficiency. While performing the task, 32-channel EEG data are recorded and potentials analyzed time-locked to the onset of the target word. The English target words are taken from a set of word triplets, where each word is a German-English cognate and all the words in a triplet share the first syllable with identical segments. As a further constraint, one word of the triplet has initial primary stress (e.g. *díalog*, accent indicating stress), the other initial secondary stress (e.g. *diagnósis*), and another an unstressed first syllable (e.g. *diágonal*). Truncated first syllables of words serve as fragment primes, and each stress level of the primes is presented prior to each target word, leading to nine conditions with matching and non-matching stress between prime and target in total. EEG data analysis will be performed with linear mixed-effects models to model the fixed effects of prime-target-stress-contrast, region and time window, as well as the random effects of item and participant.

Data is currently being collected, and the results will be presented and discussed at the conference. We expect to reproduce facilitatory priming effects for stress matching primes and targets accompanied by a reduction in the P350 component. Furthermore, we expect inhibitory effects for mismatching primes and targets, and aim to elucidate whether such effects are similar for all stress levels or occur asymmetrically, e.g. with the difference between matching and mismatching stress being stronger for targets with initial weak syllable compared to those with initial stress.

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