
ERP evidence for pre-lexical processing of word stress information

Ferenc Honbolygó^{*†1,2} and Valéria Csépe¹

¹Institute of Cognitive Neuroscience and Psychology, Research Center for Natural Sciences, Hungarian Academy of Sciences – Hungary

²Institute of Psychology, Eötvös Loránd University – Hungary

Abstract

In speech processing, the importance of prosody is often overlooked. One of the prosodic features, word stress, plays a crucial role in the segmentation of the speech stream, and in the process of lexical access. It is a debated issue how stress pattern of words is represented in the human brain, and whether the processing of stress is a lexical or pre-lexical process. In order to tackle these questions, we used a passive oddball paradigm where we contrasted two pseudowords differing in their stress patterns (stress on the first syllable vs. stress on the second syllable, which is not viable in Hungarian) in two different conditions. In the first condition, the pseudoword with the regular stress pattern was the frequently heard standard, and the pseudoword with the irregular stress pattern was the rarely heard deviant. In the second condition, we reversed the standards and deviants.

As a result, we found that the pseudoword having an irregular stress pattern elicited two consecutive Mismatch Negativity (MMN) components, similar to our previous results with meaningful words. This suggests that changes in the stress pattern of words and pseudowords are processed in a similar way, thus implying a processing mechanism that functions independently of the mental lexicon. At the same time, no MMN appeared in the reversed condition, demonstrating that pseudowords with regular and irregular stress pattern are not interchangeable, possibly because the former have a long-term representation, which forms the basis of the MMN.

*Speaker

†Corresponding author: hf@cogpsyphy.hu