Hanna Kasperek

ABSTRACT

Jaw and lip gestures as articulatory correlates of rhythmic features of Polish utterances

The dissertation presents the first systematic study of jaw and lip movements as articulatory correlates of speech rhythm in Polish utterances, based on data obtained using electromagnetic articulography (EMA). The objective of the dissertation was to determine whether, and in what way two prosodic variables—the presence of contrastive focus (neutral utterance vs. utterance with contrastive focus) and position in the utterance (expected place of sentence stress, expected place of contrastive focus, and other positions)—affect changes in the articulatory system and selected phonetic-acoustic characteristics of vowel realization in a sentence context.

The theoretical part presents the main approaches to the study of speech rhythm in terms of acoustics and articulation, and discusses the results of previous EMA-based research conducted for English, Japanese, Spanish, Mandarin, and Brazilian Portuguese, formulating predictions for Polish.

The study involved six native Polish speakers who produced controlled utterances containing Polish oral vowels. Articulator movements were recorded using the Carstens AG501 articulograph, with simultaneous recording of the acoustic signal. Data from sensors placed on the jaw and upper and lower lips were analysed; for statistical analysis mixed models were applied.

Key findings include: (1) systematic articulatory strengthening in stressed and focused positions, (2) acoustic enhancement of contrastive focus through elevated F0 and intensity, (3) global influence of contrastive focus presence on utterance dynamics at both articulatory and acoustic levels, and (4) lengthening of the final vowel in words with contrastive focus.

The results confirm that the jaw and lips function as articulatory correlates of speech rhythm in Polish, and their movement patterns reflect the hierarchical metrical structure of utterances, thereby making a significant contribution to the development of articulatory phonetics in Polish. Methodologically, the dissertation proposes an innovative, integrated, partially automated approach that combines articulatory and acoustic data, offering a valuable framework for further comparative studies.

Hanna Kasperek