

Articulatory Implementation of phrasal accents in spoken English

This paper examines the articulatory implementation of phrasal accents in English utterances. The term “phrasal accent” is used here to refer to hierarchically derived increases in syllable magnitude, which are outputted by metrical phonology, and it contrasts with the term “lexical accent/stress”, which is assigned by the lexicon. In terms of acoustics, both phrasal accent and lexical stress are manifested by changes in F0, duration, intensity and vowel quality (e.g., Lehiste, 1970). In terms of (supraglottal) articulation, recent studies by Erickson (e.g., 2010) have focused on the role of the jaw in implementing phrasal accent. She reports that (a) the larger the syllable magnitude, as in contrastively emphasized utterances, the greater the amount of jaw opening for that syllable, regardless of the quality of the vowel (Erickson, 2002) and (b) the amount of jaw opening significantly correlates with the hierarchical levels of sentence stress (Erickson et al, in press).

Thus, our assumption is that the amount of jaw opening directly relates to syllable magnitude; however, vowel height also affects jaw opening. The studies done so far have analyzed utterances containing the same low vowel. This paper reports on an EMA study of short 3-word sentences in which 11 English vowels were spoken in initial, middle and final position. The results showed that jaw opening is significantly different depending on (a) the vowel quality, with low vowels having more jaw opening than high vowels, and (b) position of the target word in the sentence. Future work will involve using this information to develop an algorithm for neutralizing vowel quality in order to further study the relationship between jaw opening and phrasal accents for all English utterances.

References

- Erickson, D. (2002). Articulation of extreme formant patterns for emphasized vowels. *Phonetica*, **59**, 134-149.
- Erickson, D. (2010). More about jaw, rhythm and metrical structure. *Acoust Soc Japan, fall meeting*, p. 103.
- Erickson, D., Suemitsu, A., Shibuya, Y. and Tiede, M. (In press). Metrical structure and production of English rhythm. *Phonetica*.
- Lehiste, I. 1970. *Suprasegmentals*. MIT Press, Cambridge, MA