

Exploring the relationship between tongue shape complexity and coarticulatory resistance

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Coarticulation, the influence of one segment on another, is extensive in speech, and is a major source of the great variability found in speech (e.g., Iskarous, et al., 2013; Öhman, 1967). Consonants have been found to allow or “resist” coarticulation to varying degrees (e.g., Fowler, 2005; Recasens, 1985). Correlates of coarticulatory resistance have been found in tongue position (Recasens & Espinosa, 2009) and jaw height (Recasens, 2012). Our aim in the present study is to see whether there is a relationship between tongue shape and resistance to coarticulation. To this end, we have collected data from one speaker of English (with three more planned) producing VCV nonsense strings. The Vs were symmetrical /a/, /i/ or /u/. The Cs were one of the group /m p n t k r l s ʃ/. These were repeated 20 times in random order with optically corrected ultrasound imaging (HOCUS; Whalen, et al., 2005). Tongue shapes were measured with GetContours (Haskins Labs) and quantified via the measures described in Dawson et al. (submitted). The nine consonants will be ranked by the quantified measures of tongue shape and complexity, and that ranking will be compared with the ranking of coarticulatory resistance generated from the various articulatory and acoustic studies of that phenomenon.

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