ACOUSTICS2008/2017
Acoustic consequences of gestural intrusion errors

Stefania Marin[a], Marianne Pouplier[a], Jonathan Harrington[a] and Susanne Waltl[b]

[a]Institute of Phonetics and Speech Processing, University of Munich, 80799 Munich, Germany

[b]IPS, LMU, Schellingstr. 3/II, 80799 München, Germany

An increasing number of studies have elicited speech errors in articulatory experiments, and thus evaluated errors on the basis of their articulatory properties, yet there has been no study that relates the articulatory variability observed in errors to the acoustic consequences. The present study aims to evaluate the acoustic properties of errorful/error-free [k] and [t] stimuli with known articulatory configurations (and articulatorily categorized as errorful/error-free), and determine the extent to which articulatory errors have acoustically observable consequences. The most frequent error observed in the articulatory data is an intrusion of a second gesture, resulting in a simultaneous presence of both tongue tip and tongue body gestures during production of [k] or [t]. Spectral analysis of these stimulis' bursts shows that [k] and [t] are differently affected by intrusion gestures: intrusion errors during intended [k] tokens are more robustly grouped with error-free [k] across speakers, while intrusion errors during intended [t] tokens are more variable, some being acoustically like [t], some like [k], and some like neither category, matching previous perceptual results (Pouplier & Goldstein 2004, Journal of Phonetics). These results will be discussed in the context of different timing patterns between the two co-occurring gestures during intrusion errors.