EMA analysis of anticipatory coarticulation in apraxia of speech

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Anticipatory coarticulation is considered a measure of motor speech planning / programming. Perceptual, acoustic, and electropalatographic investigations of articulation in apraxia of speech (AOS) have revealed a delayed onset of anticipatory vowel gestures; however, no research has investigated anticipatory consonantal gestures in AOS. Therefore, the current study aimed to investigate anticipatory lingual movement during consonant production in AOS. Tongue-tip movement was recorded for five speakers with AOS (age range = 35–67 years, M = 53.6 years) during the phrases 'a scarlet' and 'a sergeant' using the Electromagnetic Articulograph AG-200 system. Anticipatory lingual movement was analysed during the final CVC/C syllable in each of these phrases, where C represented an alveolar or palatoalveolar consonant. The results recorded for each of the participants with AOS were individually compared to those obtained by a control group (n = 12; age range = 29-70 years; M = 52.08 years). Three speakers with AOS exhibited reduced anticipatory coarticulation, characterised by a significant increase in tongue-tip displacement between /l, dZ/ and /t/ in "scarlet" and "sergeant". The delay in anticipatory coarticulation appeared to have differential effects on absolute and relative speech timing. The results will be discussed in the context of speech motor control theory.