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Lip protrusion and constriction in anticipation in English and French

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Though lip constriction is acoustically the most robust parameter for rounding, most studies on anticipatory coarticulation relied on the investigation of protrusion via EMG, optoelectrical systems or audiovisual processing. These various methods produced inconsistent anticipatory profiles across studies or even speakers. The Movement Expansion Model (MEM) of Abry and Lallouache has explained vocalic anticipatory coarticulation in four French adults and eight children via lip constriction, showing idiosyncratic behaviours, i.e. personal regression slopes but with a lawful variability validated by high correlation coefficients. In order to describe global anticipatory movement, the current study included measures of both protrusion and constriction over time. Four American English and four Canadian French adults were audio visually recorded, uttering [iC[n]u] sequences, in which C[n] corresponded to a varying number of intervocalic consonants. Lip protrusion was measured via an Optotrak system, and constriction via a Lip-Shape Tracker (from ICP Grenoble). We found that when tested on lip area control, English speakers joined French speakers in a regular MEM temporal pattern, displaying their own anticipatory behaviour, with personal regression slope or expansion coefficient.