

## Beyond the midsagittal plane.

### Lateral and labial reflections of /l/-vocalisation

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Allophonic processes affecting /l/ in English can be modelled in terms of positionally conditioned variants, ranging from relatively more consonantal (word-initial) to relatively more vocalic (word-final). In gestural terms, this is reflected in relative magnitude and timing of the (vocalic) tongue dorsum gesture and (consonantal) tongue tip gesture. However, on this C-V continuum, vocalised [w] is also distinguished among additional phonetic dimensions: it may involve a loss of tongue lateralisation, and increased labialisation (Wrench & Scobbie 2003). In this study, we consider whether such secondary phonetic features of /l/-allophony indeed correlate with the loss of vocalic lingual gesture.

**Data** We present EMA data from 7 native speakers of New Zealand English from the South Island, where /l/-vocalisation is found in final position, although it varies depending on dialect and speech style (Hay 2008). The speakers read test items including /l/ preceded by the FLEECE, KIT (which is mid and central in NZE) or THOUGHT vowel. The morpho-syntactic boundary following /l/ was systematically varied, following the design by Sproat and Fujimura (1993). Each speaker read 20 repetitions, which yielded 300 tokens per speaker. For each speaker, five EMA sensors were placed on the tongue surface: three midsagittal sensors (TT, TB and TD), and two parasagittal sensors (TR and TL). In addition, we placed sensors on the upper and lower lip, as well as on the lower incisor, and the nasal bridge.

For each token, we measured the maximum TT raising (maximum vertical TT displacement) maximum lateralisation (based on the measure by Ying et al. 2017) and maximum lip protrusion (horizontal distance from lower lip sensor to lower incisor sensor). All measures were scaled within speaker, and modelled using linear mixed-effects regression.

**Findings** The mean magnitude of TT gesture decreases in word-final pre-consonantal /l/. TT magnitude is also highly variable in this context, consistent with the generalisation that /l/-vocalisation is variable. Degree of lateralisation decreases in word-final pre-consonantal /l/. Loss of lateralisation is positively correlated with the gradient reduction in TT magnitude, but there is no significant correlation between lip protrusion and TT magnitude.

**Discussion** We propose that decrease in lateralisation is a direct result of TT reduction, and that it is a gradient and persistent feature of /l/-vocalisation. In contrast, lip protrusion, may develop as a feature of /l/-vocalisation in some varieties, but it is not intrinsically linked to the loss of the TT gesture.

### References

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