Interaction of initial geminates and stress: a case study of Pattani Malay

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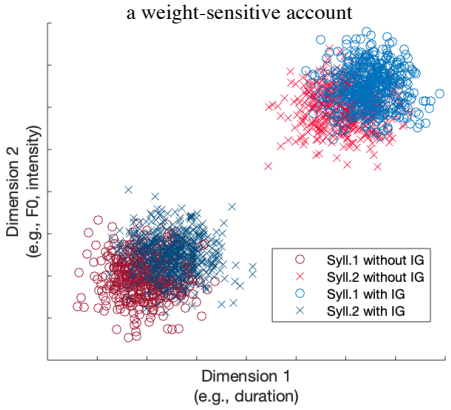
Pattani Malay (PM), a Malay dialect spoken in Southern Thailand, is an oft-cited example of a language with moraic initial geminates (IG). PM is claimed to have final stress, except for words with IG which display initial stress, e.g. ɟa'**lɛ** 'path' vs '**ɟɟa**lɛ 'to walk' (Yupho 1989). This alleged stress shift process is adduced as evidence that stress in PM is weight-sensitive and that geminate onsets contribute to weight computation (Hajek & Goedemans 2003; Topintzi 2008). In this paper, we show that, based on the acoustic data, there is no difference in the prominence profile of words with and without IG.

Predictions. If stress in PM is weight sensitive and IG are moraic, the initial syllable of words with IG and the final syllable of words without IG should be more prominent in some acoustic dimensions cueing stress. On the contrary, we expect the final syllable of words with IG and the initial syllable of words without IG to be less prominent (Fig. 1).

Figure 1: Prediction of a weight-sensitive account



Methodology. 14 speakers (6M; 8F) of PM were asked to produce 14 CVCV minimal pairs (e.g., ɟalɛ/**ɟɟa**lɛ). Stimuli were recorded six times in a carrier sentence. Participants were cued with the whole sentence in Thai, as PM is not widely written, and had to produce the sentence in PM.

Analysis. Three acoustic correlates of prominence were measured: syllable duration (raw and relative within a word), vowel RMS intensity (relative to mean RMS intensity within a word) and syllable F0 (relative to mean F0 within a word). For each acoustic parameter, we conducted the following pair-wise comparisons: (i) initial and final syllable within each word, (ii) initial syllable in words with and without IG, (iii) final syllable in words with and without IG. T-tests were conducted adopting a conservative significance level $\alpha = .001$.

Results. Contrary to the predictions of stress shift, words with and without IG display similar acoustic profiles. ***Duration:*** Final syllables are similar regardless of IG (Fig. 2 row 1, panel 1). Initial syllables are marginally longer when the onset consonant is IG (Fig. 2 row 1, panel 2), as expected. When the initial and final syllable are compared, the final syllable is always longer regardless of an IG onset (Fig. 2 row 2). This similarity across both conditions also emerges from the duration ratio of syll.1/word and syll.2/word: syll.2/word is significantly higher than syll.1/word in both conditions (Fig. 2 row 3). ***Intensity:*** RMS intensity of final syllables are not significantly different across both conditions, but initial syllables have marginally higher intensity when the onset is an IG (Fig. 3, row 1). Comparing the initial syllables and the final syllables, the RMS intensity of the initial syllables is higher in both conditions (Fig. 3, row 2). ***F0:*** F0 patterns with RMS intensity. Final syllables do not display significant differences, whereas F0 of initial syllables of words with IG is marginally higher than their non-IG counterpart (Fig.4). When comparing the initial syllable and the final syllable, words with and without IG have higher F0 on the initial syllables. This may be due to F0 declination.

Conclusion. This study shows that, as far as acoustic prominence is concerned, words with and without IG display similar acoustic profiles, contrary to previous impressionistic analyses (e.g., Yupho 1989). Neither duration, nor intensity, nor F0 point to stress shift. Based on acoustic data, since no stress shift is observed, IG cannot be shown to attract stress. Accordingly, their moraic status should be called into question.

Figure 2: Duration.

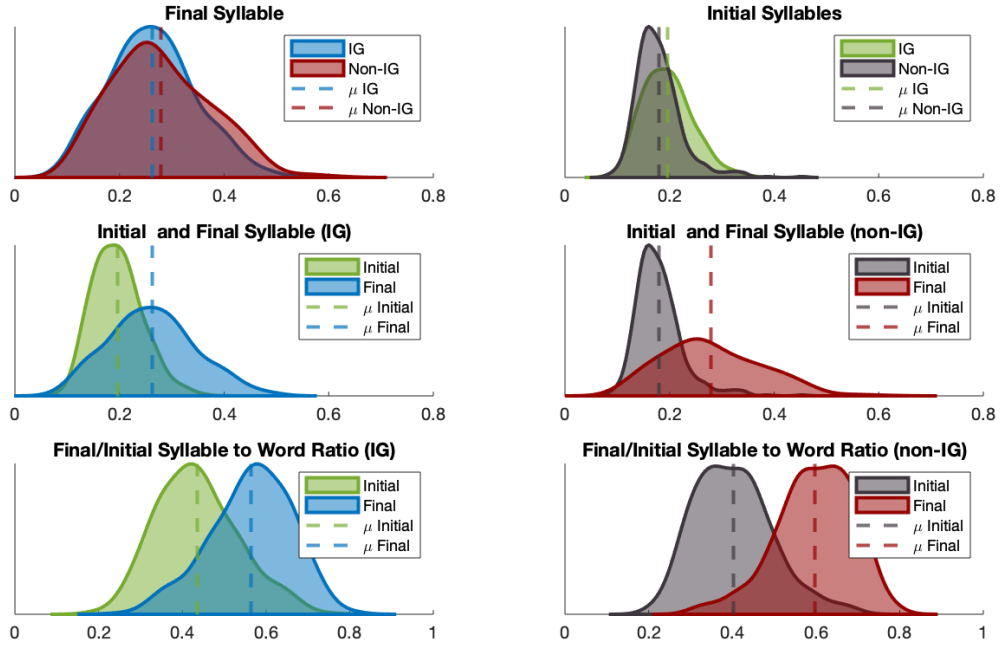


Figure 3: Mean re-centered RMS intensity.

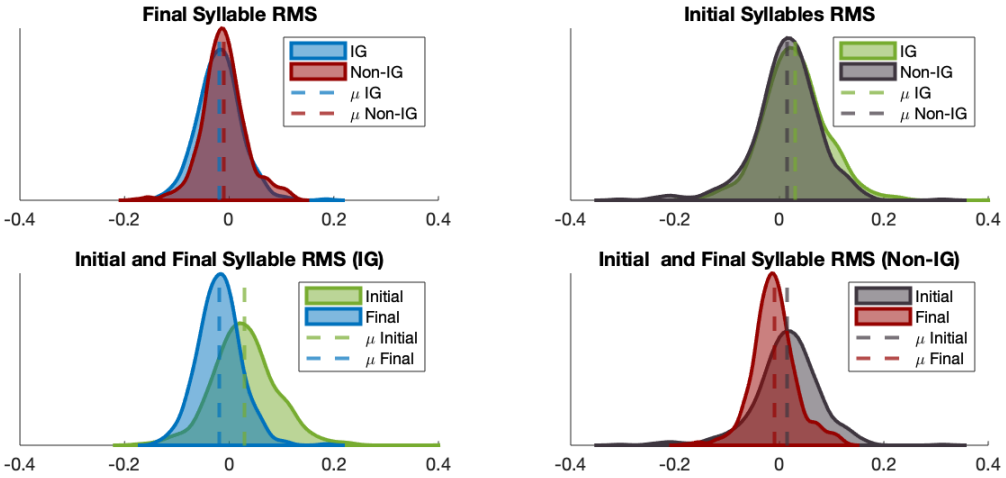


Figure 4: Time-warped F0 pattern (Male speakers).