Extrametricality and second language acquisition

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Word-level stress a challenging task for second language learners (L2ers). Languages differ on several dimensions, such as whether (i) syllable shape (weight) affects stress and (ii) word-final syllables are extrametrical. As well, we find a rich cross-linguistic variation regarding the phonetic correlates of stress. This is especially difficult to adult L2ers, given the critical period hypothesis [2]. Such L2ers may have native-like syntax and morphology, but their prosody often reveals traces of their L1 patterns. In this paper, I investigate the second language acquisition of stress in Portuguese by native English speakers, and show that despite these difficulties, late L2ers are indeed capable of converging to a target-like grammar with respect to stress patterns—even when that requires resetting their L1 parameters [3] and acquiring subtle patterns in the L2.

PORTUGUESE stress in nouns and adjectives (non-verbs) favours final syllables (no extrametricality) when such syllables are heavy (closed), and penult syllables otherwise (1). Antepenult stress is irregular/unpredictable in the language, and is avoided in novel words [1]. ENGLISH non-verbs, on the other hand, avoid final stress (extrametricality). Penult stress is preferred when the penult syllable is heavy, and antepenult stress is preferred otherwise (1). Native English speakers (L2ers) acquiring Portuguese need to learn that the final syllable is not avoided in the language. This requires resetting extrametricality from YES to NO. As a result, as L2ers learn that stress assignment should not skip the final syllable, antepenult stress (common in the L1) should be dispreferred in the L2 (assuming binary feet), thus matching what is observed in native Portuguese speakers (2).

This study involves forced-choice judgment tasks with real (*n*=30, pre-test) and nonce Portuguese words (*n*=225). Natives (*n*=20) and L2ers (*n*=10) were shown pairs of words with different stress patterns and different syllabic profiles. They were then asked to rate (1-7) which word in the pair sounded more natural in Portuguese (3). The data were modelled with mixed-effects Ordinal Regressions (by-speaker and by-item random effects and intercepts).

L2ers' judgments were not significantly different from natives' judgments ($\hat{\beta} = -0.01, p = 0.95$)), but their responses were significantly affected by proficiency level (significant effect among near-native speakers ($\hat{\beta} - 0.90, p < 0.001$)). Extrametricality was clearly reset by more native-like L2ers, and the predicted consequence (penult stress as default) was observed in the data. Importantly, L2ers have a gradient pattern according to their proficiency level (Fig. 1), and some learners mirror native speakers even when the patterns are considerably subtle.

Examples and figures

(1)　Regular stress patterns in English (L1) and Portuguese (L2) non-verbs

a.　L1: penult if penult syllable is heavy → *agénda*. Antepenult otherwise → *cítizen*.
b.　L2: final if final syllable is heavy → *papél* 'paper'. Penult stress otherwise → *páto* 'duck'.

(2)　Extrametricality $\diamondsuit$ in English (L1) and Portuguese (L2) words (] = word edge)

a.　L1: extrametricality → $\sigma\sigma\langle\sigma\rangle$]　　　Preferred stress positions: Penult and antepenult
b.　L2: no extrametricality → $\sigma\sigma\sigma$]　　　　Preferred stress positions: Final and penult
c.　L1 → L2: L2ers need to *include* the final σ

(3)　Sample question (capital letters = stressed syllable). Different tasks controlled for different variables.
　　Which word sounds more natural?

　　　gamoDOR　　　　　　gaMOdor
　　　○　○　○　○　○　○　○

Figure 1: y-axis = speakers' responses/judgments (nonce words): 7 = penult stress; 1 = final stress; 4 = undecided/neutral. x-axis = different word-final codas in the stimuli. Squares represent median values. All nonce words in this particular task contained a heavy word-final syllable (CVC; expected: final stress). Note that L2ers mirror natives not only quantitatively, but also qualitatively. Statistical models (mixed-effects Ordinal Regression) confirm the significance of the patterns observed below.
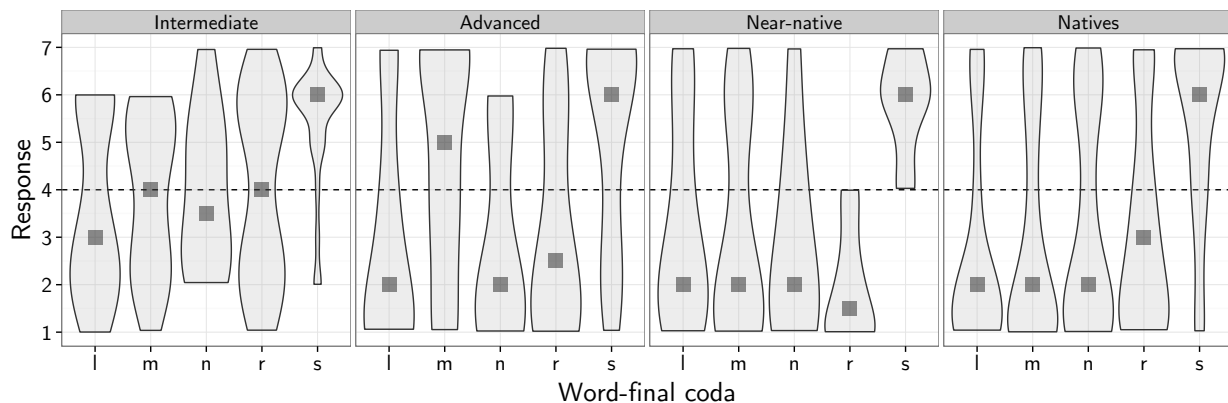
References

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