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CAN YOU HAVE STRESS WITHOUT FEET?

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1. INTRODUCTION

- English (non-verbs): **moraic trochees** built R-L + final syllable extrametricality [1]; see (1a)
 - Binary feet also regulate **minimal word size**: no sub-minimal (CV_μ) lexical words, and truncation, including hypocorization, **never** results in monomoraic forms (1b)

(1) English (a) $[\partial_\mu ('d\zeta\varepsilon_\mu n_\mu)_{Ft} (d\partial_\mu)]_{PWd}$ 'agenda' (b) chemistry → [kɛm], *[kɛ]
 $[(kæ_\mu n\partial_\mu)_{Ft} (d\partial_\mu)]_{PWd}$ 'Canada' Elizabeth → [lɪz], *[lɪ]

- French: stress obligatory at right edge of phrase, not word [2] (2a)
 - Sub-minimal lexical words freely tolerated (2b); truncation/hypocorization can yield sub-minimal forms [3], [4] (2c)
 - Since lexical words must contain a binary foot to be well-formed [5], this, coupled with the absence of word-level stress, has led to proposal that French is **footless** [6]

(2) French (a) [lə grã gar'sõ], *[lə 'grã gar'sõ] (b) [li] 'bed' [fɛ] 'done'
 'the big boy' (c) chimie → [ki] Dominique → [do]

- Portuguese (non-verbs): Looks like English, aside from extrametricality: moraic trochees built R-L (3a)
 - But**: (i) Portuguese has a number of subminimal words (3b); and word-minimality can be violated in vowel fusion and hypocorization (3c). (ii) The patterns found in the language **cannot** be accounted by a single foot type: trochees [7], trochees and iambs [8], or trochees and dactyls [9] have been proposed

(3) Portuguese (a) $[pa_\mu ('p\varepsilon_\mu l_\mu)_{Ft}]_{PWd}$ 'paper' (b) [pa] 'shovel' (c) dou → [do] '(I) give'
 $[sa_\mu ('pa_\mu t\varepsilon_\mu)_{Ft}]_{PWd}$ 'shoe' [fɛ] 'faith' Fernanda → [fɛ]

- Proposal**: You can have stress without feet
 - Evidence from **violations of word-minimality** and **indeterminacy of foot types** challenges the presence of the foot in Portuguese, in contrast to in English
 - We experimentally show that a third difference seals the fate for the foot in English and against the foot in Portuguese: **antepenultimate weight effects**

2. WEIGHT EFFECTS IN ANTEPENULTIMATE (APU) SYLLABLES

- APU stress in 12% of Portuguese non-verbs ~ exceptional extrametricality: $[pa_\mu ('t\varepsilon_\mu ti_\mu) (ko_\mu)]$ 'pathetic'
- If Portuguese builds feet**: should not find **HLL > LLL**
 - Why?** Because weight effects are problematic in APU position: marked metrical structure unavoidable
 $HLL \rightarrow (H\acute{L})(L)$ (uneven trochee) or $HLL \rightarrow (H\acute{L})L(L)$ (medial unfooted syllable)
- If Portuguese does NOT build feet**, weight-sensitivity should not be blocked in APU σ

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3. METHODS

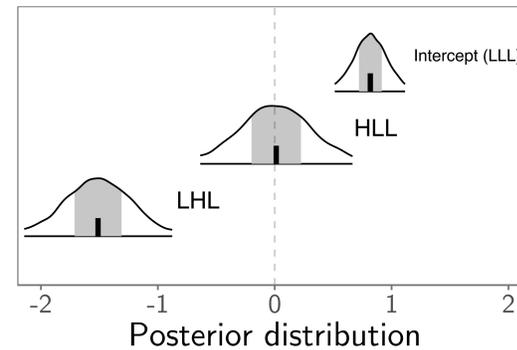
Experimental design: Two forced-choice tasks involving nonce words

- Native speakers of Brazilian Portuguese ($n = 27$) and North American English ($n = 13$)
- Pairs of nonce words differing only in stress location: $n = 240$ (Portuguese), $n = 180$ (English)
- Three **weight profiles**: LHL, HLL, LLL
- Portuguese stimuli: [gu.pla.ro] (LLL) [bron.da.le] (HLL) [bo.gren.da] (LHL)
 English stimuli: [ki.mɛ.sər] (LLL) [lm.sɛ.kəf] (HLL) [tɛ.priŋ.kəl] (LHL)
- Participants were asked to choose which version of each minimal pair sounded more natural to them
- Data modelled with hierarchical logistic regressions using Stan in R:
 $\text{response} \sim \text{weight} + (1 + \text{weight} \mid \text{speaker}) + (1 \mid \text{word})$
 (by-speaker random effects (weight) and intercept, and by-word random intercept)

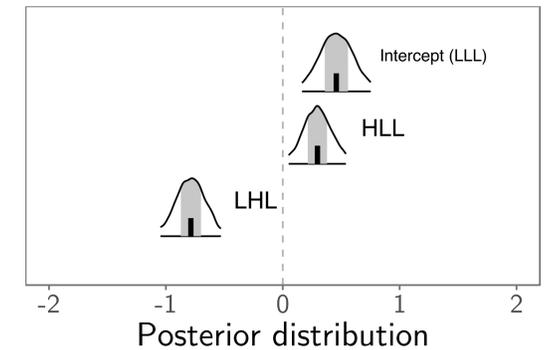
4. RESULTS AND ANALYSIS

Experimental results: Posterior distributions + 50% and 95% Highest Density Intervals

English weight effects: $HLL \sim LLL$



Portuguese weight effects: $HLL > LLL$



- Positive distributions → preference for APU stress relative to baseline (intercept = LLL)
- English: HLL distribution centered around zero ~ not statistically different from LLL
- Portuguese: HLL distribution positive ~ HLL favors APU stress (more so than LLL)

5. DISCUSSION AND CONCLUSION

- The results above expand on weight effects exhibited in (3a): H syllables more likely to attract stress in antepenultimate as well as penultimate and final positions in **Portuguese**
- In **English**, no weight effects detected in antepenultimate position
- This is **predictable** if feet play no role in **Portuguese**, but do play a role in **English**
 - Portuguese: Weight effects not regulated by footing; predicts subminimal words
 - English: Weight effects regulated by moraic trochees + $\langle \sigma \rangle]_{PWd}$; predicts **no** subminimal words
- In **conclusion**, despite similarities in their stress patterns, Portuguese and English are fundamentally different: whereas English builds feet, Portuguese does not
- In this way, Portuguese is more like French than it is like English