

# English with Brazilian melody?

Effects of form similarity and stress pattern frequency in L2 acquisition of prosody.

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## INTRODUCTION

This study investigates the effect of form identity and stress pattern frequency on the acquisition of L2 prosody. The languages under investigation are Brazilian Portuguese (BP, L1) and American English (AmE), both with free word stress.

### Hypotheses:

- 1) pre-final stress as the most frequent pattern [1] – robustly engrained in both L1 and L2 - will block the acquisition of the target acoustic correlates for stress
- 2) there will be more interference from the L1 prosodic system in words that share more form similarity between L1 and L2 – stress position and acoustic realization
- 3) Co-defining representations of word identity (i.e. phonological and graphemic) are bi-directionally implicated in the acquisition of L2 prosodic system.

## MATERIALS AND METHODS

### Participants:

- 12 informants (BP L1) advanced learners of AmE
- 6 informants (AmE L1)
- 6 judges (3-AmL1 + 3-Dutch L1)

**Materials:** E-Prime 2.0, Praat, SPSS 1.8, recording both, headphones, microphone, answer sheets

### Experiments:

#### First – Production experiment

- 4 production conditions vs. 4 word types

#### Production conditions:

- i) monotonized speech\* (default Praat algorithm)
- ii) orthography only
- iii) natural speech\*
- iv) natural speech\* + orthography

\*A native speaker produced carrier sentences “Say...happily” (target in narrow focus). Participants repeated the stimuli after a beep.

**Word types:** 2- and 3- syllable cognates and 2 and 3- syllable non-cognates

- **Cognate words** – stress shifted morphologically– i.e.: *pronoun(AmE) vs. pronome(BP)*– **hypothesis:** stress would be produced on the final syllable in L2.

- L2 English, control native AmE and BP
- **Tokens** - total: 720.

#### Second – Multiple choice forced choice perception experiment

Native and non-native tokens produced in the 1<sup>st</sup> experimental part were judged as stressed on 1<sup>st</sup>, 2<sup>nd</sup> or 3<sup>rd</sup> syllables by **English and Dutch L1 listeners**.

- **Judgments** - total: 4.320.

## RESULTS AND DISCUSSION

### Perception experiment:

- Stress judged on the **pre-final syllable - 90%** (L1 and L2 English)
- the **agreement** between **Dutch and AmE** listeners,  $\alpha=0,971$ .
- tokens deviating from pre-final stress – judged as:
  - **final stress in L2 English – 2-syll cognates**
  - **antepenultimate stress in L1 English**

### Production experiment:

- L2 English **F0 contour** – deviant from the target:

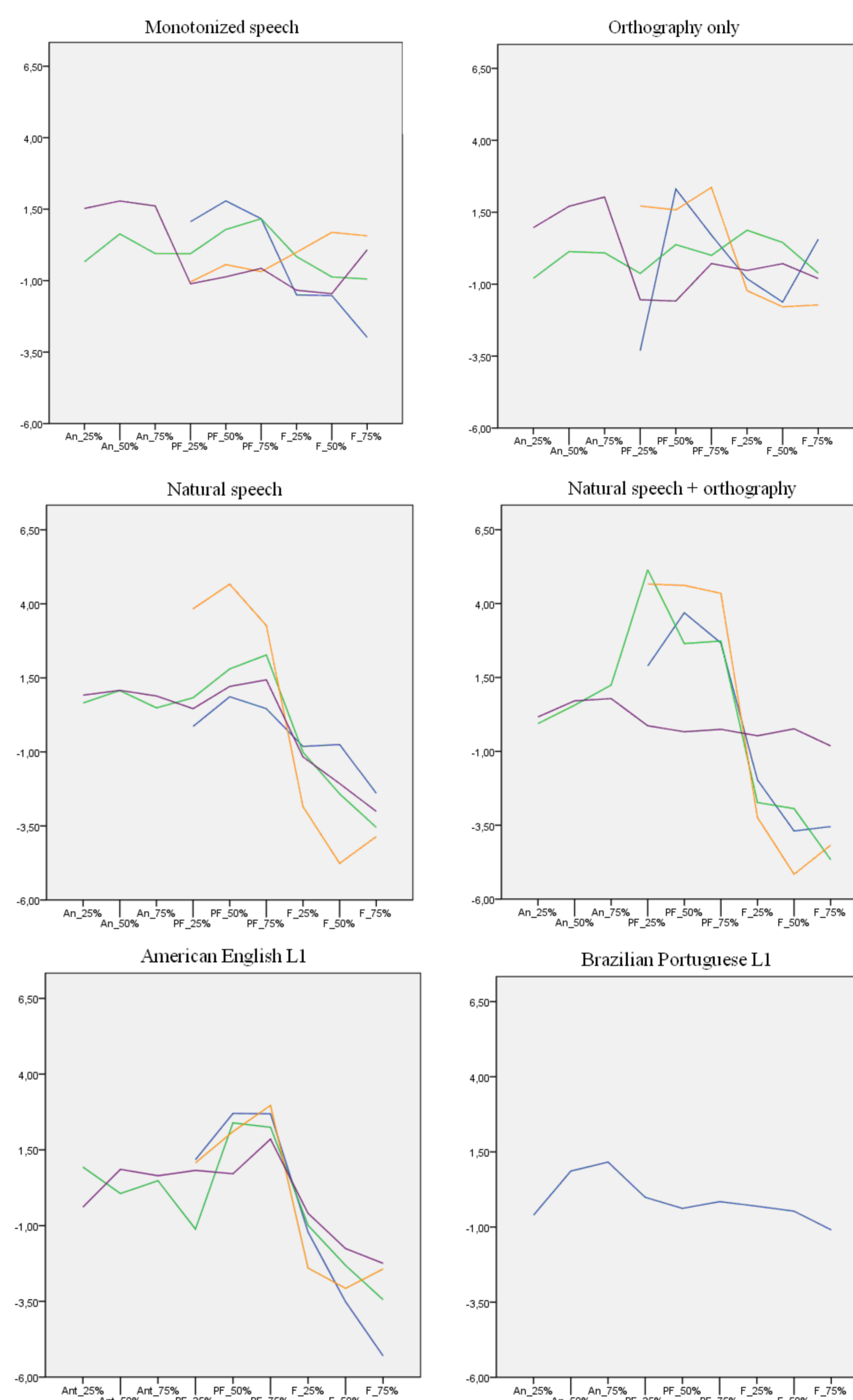


Figure 1. F0 (semitones ratio) speaker's mean F0 in utterance) at 25, 50 and 75% of syllable duration in antepenultimate (Ant, if present), in pre-final (PF) and final (F) syllable. pitch contour in non-native English, native English and Brazilian Portuguese. Blue lines: 2-syllable cognates; green lines: 3-syllable cognates; orange lines: 2-syllable non-cognates; Purple lines: 3-syllable non-cognates.

## CONCLUSION

- The **effect of the highly frequent pre-final stress** both in L1 and L2 is: **positive**) correct stress placement, according to native listeners but, **negative**) in terms of melodic production = categorization according to L1 patterns.
- **Learners are not “deaf” to L2 melody** (compare prod. cond. 1 and 3), since it is reproduced when learners are exposed to it, but L2 pitch pattern is not yet acquired.
- **Orthography plays a role** in L2 pitch contour production, which gives evidence to the hypothesis that word is a linguistic unit and its co-defining representations [2] are mutually implicated and bi-directionally activated (both from L1 and from L2 systems) in the acquisition process [3].
- **No clear effect of form similarity**, but for deviant stress placement – more experiments will be done to test this hypothesis.

### References:

- [1] Post da Silveira, A. (2011). Frequency as (dis)advantage to word stress acquisition. In Lee, W.S. & Zee, E. (Eds.) *Proceedings of the 17th International Congress of Phonetic Sciences*, 1634-1637.
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- [3] Dijkstra, T. & van Heuven, W. (1998). The BIA model and bilingual word recognition. In J. Grainger & A.M. Jacobs (Eds.), *Localist connectionist approaches to human cognition* (pp. 189-225). Mahwah, NJ: Erlbaum.