THE INTONATION OF YES-NO QUESTIONS IN THREE VARIETIES OF BRAZILIAN PORTUGUESE

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INTRODUCTION

- The main goal of this study is to provide a phonological analysis of the information-seeking yes-no questions of Brazilian Portuguese as spoken in Aracaju, Rio de Janeiro and Florianópolis.

The Dialectal Division of Brazilian Portuguese (Nascentes, 1953)
STRUCTURE OF THE PRESENTATION

- Introduction
- Background
- Research Questions
- Corpus and Methods
- Results and discussion
- Conclusions
Background

- Intonation of yes-no question across languages: low/falling (Catalan, Chickasaw, Palermo Italian); High/rising (Dutch, Standard Italian, Standard European Portuguese, Japanese); Peak alignment (Southern Italian varieties).
  

- The yes-no question is the main *locus* of intonational variation across varieties in many languages, like in Portuguese, Catalan and Italian.

  (Frota et al. in press; Prieto 2014; Grice et al., 2005; Savino 2012)
Background

- The intonation of yes-no question in Portuguese

(Silva, 2011; Vigário & Frota, 2003; Cruz, 2013; Frota et al., in press)

<table>
<thead>
<tr>
<th>European Portuguese</th>
<th>Brazilian Portuguese</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northern (Rising-falling)</td>
<td>Northern (Rising)</td>
</tr>
<tr>
<td>central-southern (Rising)</td>
<td>Southeastern (Rising-falling)</td>
</tr>
<tr>
<td>L* HL% (Braga)</td>
<td>L+H*L% (Rio de Janeiro)</td>
</tr>
<tr>
<td>H+L*LH% (Lisboa)</td>
<td>L*+HL% (São Paulo e Minas Gerais)</td>
</tr>
<tr>
<td>L*+HH% (Algarve)</td>
<td>L*+HH% (João Pessoa, Salvador)</td>
</tr>
<tr>
<td>L*H% (Alentejo)</td>
<td>L*H% (Alentejo)</td>
</tr>
</tbody>
</table>

Background
RESEARCH QUESTIONS

- What are the **nuclear contours** of yes-no questions in Aracaju, Rio de Janeiro and Florianópolis?
- Does the **phonetic implementation** of tunes in the segmental string indicate any systematic differences among varieties?
- What is the phonological structure of the **nuclear pitch accent** and **boundary tone** that accounts for the differences observed in the surface F0 contour?
THEORETICAL SUPPORT

- **Autosegmental Metrical Model and Intonational Phonology**: intonation has a phonological organization, based on relations of prominence determined by the prosodic structure of each language.  
  (Pierrehumbert, 1980; Ladd, 1996, 2008; Gussehoven, 2004; Frota, 2000, 2014)

- In Portuguese, the **nuclear contour of the intonational phrase** is composed by two elements: pitch accent and boundary tone.
CORPUS AND METHODS

- **Sentences:** 27 sentences, varied in lexical stress (Frota, 2002; Silva, in progress).
  - Ela foi ver [o mar?]
  - Ela foi ver [a Marina?]
  - Os rapazes compraram [lâminas?]

- **Subjects:** 4 female native speakers per region, aged between 20 and 45.

- **Data:** 648 utterances (27x2x4x3) produced in reading task.

- Utterances were analysed according to the Portuguese ToBI System (Frota, 2014), with three annotation tiers: Orthography, Tones and Break Indices.
Results

**F0 ALIGNMENT IN PAROXITONE NUCLEAR WORDS**

A rising contour through the stressed syllable in **Rio de Janeiro**

A rising contour along the stressed and post-stressed syllable in **Florianópolis**.

*Figure 1: F0 contour of utterance “Did she go to see Marina?”*, produced by speaker from Rio de Janeiro.

*Figure 2: F0 contour of utterance “Did she go to see Marina?”*, produced by speaker from Florianópolis.
RESULTS

- F0 alignment in proparoxitoner nuclear word

A rising contour at the stressed syllable in Rio de Janeiro.

A rising contour along the stressed and post-stressed syllable in Florianópolis.

Figure 3: F0 contour of utterance “Did the boys buy blades?”, produced by speaker from Rio de Janeiro

Figure 4: F0 contour of utterance “Did the boys buy blades?”, produced by speaker from Florianópolis.
**RESULTS**

- F0 peak alignment per variety
- F0 peak alignment per subject

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
<th>95.0% Confidence Interval for B</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
<td>Lower Bound</td>
</tr>
<tr>
<td>1 (Constant)</td>
<td>-10.844</td>
<td>4.963</td>
<td>-0.2185</td>
<td>.031</td>
<td>-20.666</td>
</tr>
<tr>
<td>Localidade</td>
<td>43.688</td>
<td>7.019</td>
<td>.485</td>
<td>6.224</td>
<td>0.000</td>
</tr>
</tbody>
</table>

a. Dependent Variable: H_distance_onset
RESULTS

- F0 alignment in proparoxitone nuclear words

A low tone on the stressed syllable and rising-falling contour in the last post-stressed syllable in Florianópolis and Aracaju.

Figure 5: F0 contour of utterance “Did the boys buy blades?”, produced by speaker from Florianópolis.

Figure 6: F0 contour of utterance “Did the boys buy blades?”, produced by speaker from Aracaju.
Results

**Boundary Tone Variation in Aracaju**

A rising-falling contour

![A rising-falling contour diagram](image)

Figure 7: F0 contour of utterance “Did the boys buy blades?”, produced by speaker from Aracaju.

A rising contour

![A rising contour diagram](image)

Figure 8: F0 contour of utterance "Did she go to see Débora?", produced by speaker from Aracaju.
Results

Truncation of L boundary tone in Rio de Janeiro and Aracaju

Figure 9: F0 contour of utterance “Did the boys buy blades?”, produced by speaker from Rio de Janeiro.

Figure 10: F0 contour of utterance “Did the boys buy blades?”, produced by speaker from Aracaju.

Figure 11: F0 contour of utterance “Did she go to see André?”, produced by speaker from Rio de Janeiro.

Figure 12: F0 contour of utterance “Did she go to see André?”, produced by speaker from Aracaju.
Results

- Phonological Analysis

<table>
<thead>
<tr>
<th>Aracaju</th>
<th>Rio de Janeiro</th>
<th>Florianópolis</th>
</tr>
</thead>
<tbody>
<tr>
<td>...[ σ'σ σ σ]_w]_IP</td>
<td>...[ σ'σ σ σ]_w]_IP</td>
<td>...[ σ'σ σ σ]_w]_IP</td>
</tr>
<tr>
<td>L*</td>
<td>L + H*</td>
<td>L* (+H)</td>
</tr>
<tr>
<td>HL%</td>
<td>L%</td>
<td>HL%</td>
</tr>
</tbody>
</table>


**DISCUSSION**

- These results confirm previous observations on the melodic shape of yes-no questions in some Southern varieties.
  
  (Cunha, 2000; Moraes, 2008; Silva, 2011, Nunes 2011)

- The phonological analyses for rising-falling contour of yes-no questions across languages.

  (Grice et al., 2000; Grice et al., 2005, Vigário & Frota, 2003)
CONCLUSION

- Yes-no questions involve a LHL tune in the three analyzed varieties, with truncation of the L tone in cases of final stress in Rio de Janeiro and Aracaju.

- Systematic differences among varieties: alignment of the peak, which is explained by differences in phonological association between the tone and the segmental string.

- These systemic differences need further investigation in additional varieties.
ACKNOWLEDGEMENTS

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FCT Fundação para a Ciência e a Tecnologia
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