Acquisition of variable input in Brazilian Portuguese: Gradience in the production of number agreement by preschoolers

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Structure of the presentation

- Variable number agreement in BP
  - Sociolinguistic factors
- Bidialectalism
  - Representation of Variation
- Experiment
  - Elicited Production task
  - Results
  - Discussion
- Preliminary conclusions
- Challenges
Theoretical Background: Number agreement in BP

The person/number inflectional paradigm in BP

<table>
<thead>
<tr>
<th>Person/Number</th>
<th>Subject Pronoun</th>
<th>Paradigm 1</th>
<th>Paradigm 2</th>
<th>Paradigm 3</th>
<th>Paradigm 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt; sing.</td>
<td>eu</td>
<td>am-o</td>
<td>am-o</td>
<td>am-o</td>
<td>am-o</td>
</tr>
<tr>
<td>2&lt;sup&gt;nd&lt;/sup&gt; sing.</td>
<td>tu</td>
<td>am-a-s</td>
<td>am-a-Ø</td>
<td>am-a-Ø</td>
<td>am-a-Ø</td>
</tr>
<tr>
<td></td>
<td>você</td>
<td>am-a-Ø</td>
<td>am-a-Ø</td>
<td>am-a-Ø</td>
<td>am-a-Ø</td>
</tr>
<tr>
<td>3&lt;sup&gt;rd&lt;/sup&gt; sing.</td>
<td>ele/ela</td>
<td>am-a-Ø</td>
<td>am-a-Ø</td>
<td>am-a-Ø</td>
<td>am-a-Ø</td>
</tr>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt; pl.</td>
<td>nós</td>
<td>am-a-mos</td>
<td>am-a-mos</td>
<td></td>
<td>am-a-Ø</td>
</tr>
<tr>
<td></td>
<td>a gente</td>
<td></td>
<td>am-a-Ø</td>
<td>am-a-Ø</td>
<td>am-a-Ø</td>
</tr>
<tr>
<td>2&lt;sup&gt;nd&lt;/sup&gt; pl.</td>
<td>vós</td>
<td>am-a-is</td>
<td></td>
<td></td>
<td>am-a-Ø</td>
</tr>
<tr>
<td></td>
<td>vocês</td>
<td>am-a-m</td>
<td>am-a-m</td>
<td>am-a-m</td>
<td>am-a-Ø</td>
</tr>
<tr>
<td>3&lt;sup&gt;rd&lt;/sup&gt; pl.</td>
<td>eles/elas</td>
<td>am-a-m</td>
<td>am-a-m</td>
<td>am-a-m</td>
<td>am-a-Ø</td>
</tr>
</tbody>
</table>

Costa & Figueiredo (2002)

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Theoretical Background: Sociolinguistic factors

- Variable number agreement distinguishes BP and European Portuguese (EP) (Costa & Figueiredo Silva, 2002; Brandão, 2013; Vieira & Brandão, 2014):
  - EP: redundant nominal and subject-verb agreement;
  - BP: redundant and non-redundant nominal and subject-verb agreement; plural markers obligatory only in D

  - Variable number agreement part of BP grammar but frequency of markedness varies according to social variables

<table>
<thead>
<tr>
<th>Os filhos estão pedindo dinheiro</th>
<th>Os filhoø táø pedindo dinheiro</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘The children are asking for money’</td>
<td></td>
</tr>
</tbody>
</table>

Standard form; written language; variety associated with high educational / socio-economic level

Non-standard form; variety associated with low educational level or socio-economical background (stigmatized)

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Theoretical Background: Setting the scene

- Rio de Janeiro is a large and diverse urban center
  - Socio-educational division (Alves, Soares, Xavier, 2014)
    - Public municipal schools: students from low socioeconomic level;
    - Private schools: students from medium to high socioeconomic level;

- Standard and non-standard varieties coexist closely
  - Professional relations between people from different socio-economic and educational levels
  - Family relations, social mobility

- Hence, children receive variable input though in different degrees and dominance

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Theoretical Background: On variation

“[…] every speaker is a member of many nested and intersecting speech community.” (Sankoff & Labov, 1979: 202)

Types of variation (Pires & Rothman, 2009; Adger & Smith, 2010)
  ▶ Parametric (cross-linguistic)
  ▶ Feature specification (within one language)
  ▶ Intra-individual: idiolects or grammar representations are not identical (Dąbrowska, 2012; Henry, 1998; Mufwene, 2008; Smith et al. 2013)

Diglossia (Fergusson, 1959)
  ▶ Compared to bilingualism (Fishman, 1967)

Universal Bilingualism (Roep, 1999)

External factors contribute to language variation
  ▶ Social networks (Barnes, 1954; Milroy & Milroy, 1985; Bortoni-Ricardo, 1985)
  ▶ Ecology of language (Mufwene, 2001)
Bidialectalism

Language vs. Dialect debate

- Dialect: mutual intelligibility (Chambers & Trudgill, 1980)
  - European Portuguese vs Brazilian Portuguese
    - Null subjects, null objects, bare nouns, clitics, number agreement, pronominal paradigm and others (cf. Castro, 2016) - Vulnerable to change


- There is not a clear-cut distinction between monolinguals and bidialectals and between varieties (Cornips, 2014)

- Boundaries between variants are blurred (Grohmann et al., 2016)
How do children represent variation?

- Children tend to reproduce the rates of variation in adults’ speech (Smith et al., 2013; Henry, 2016; Vieira, 2006; Gomes et al., 2011)
  - Morphosyntactic variation is early detected (Smith et al., 2013; Henry, 2016)

- Acquisition of Portuguese
  - By 2 years old, both Portuguese and Brazilian children identify plural number markings only in D (Castro & Ferrari, 2007)
    - Portuguese children are exposed to more consistent input in terms of morphological number agreement (Brandão, 2013)
  - Variation within Brazilian Portuguese

  How do Brazilian children grammatically represent the variable plural agreement given the presence of both standard and non-standard variants in the input of BP?
Language acquisition and language variation

Bidialectalism
Sociolinguistic transfer; socio-syntax (Grohmann et al., 2012, 2014, 2016; Smith et al., 2013; Cornips, 2014)

Bilingualism
Interfaces vs. input quantitative aspects (Sorace & Serratrice, 2009)
Language proximity (Rothmann, 2013; Tsimpli, 2014)
Gradience; optionality (Sorace, 2005, 2011)
Morphology as source of variability -> located at PF (Lardiere, 2005)

Language acquisition
Mapping of interface information; feature specification of functional categories
How do children represent variation?

- Working hypothesis
  - Variable input for number agreement leads to feature underspecification of morphological features for plural number agreement in BP (Corrêa, 2009; Adger & Smith, 2010; see also Miller & Schmitt, 2010, 2012)

- Prediction: optionality in redundant number marking prevails in children mainly exposed to the non-standard variety;
  - Plural number marking:
    - Obligatory in D;
    - Optional in N, Adj, TP (where the verb raises to in BP) and predicative
Experiment

Aim

to verify the extent to which optionality in the morphological expression of number marking varies as a function of social group;

Participants

Preschoolers: not exposed to formal teaching of standard BP from two schools in a suburban neighborhood in RJ city (distance between schools 850m):

- Private school: n = 20 (5;0 - 5;11, mean age 5;7 years old)
- Public school: n=16 (5;0 - 6;3, mean age 5;9 years old)

Task

Elicited Production: retelling what a robot who do not speak exactly like us had said
### Experiment

- **Independent variables**
  - Redundancy within the DP; Redundancy in TP

<table>
<thead>
<tr>
<th>Condition</th>
<th>Stimuli</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - DP redundant + TP redundant</td>
<td>Os cachorros encontraram o leão</td>
</tr>
<tr>
<td>2 - DP redundant + TP non-redundant</td>
<td>Os cachorros encontrou o leão</td>
</tr>
<tr>
<td>3 - DP non-redundant + TP redundant</td>
<td>Os cachorro encontraram o leão</td>
</tr>
<tr>
<td>4 - DP non-redundant + TP não-redundant</td>
<td>Os cachorro encontrou o leão</td>
</tr>
</tbody>
</table>

- **4 items per condition**

- **Dependent variable:** number of responses that matched the morphological markers provided in the stimuli
## 1. Type of school: Responses per condition

### 1. Mean target responses per condition (max. score = 4)

<table>
<thead>
<tr>
<th></th>
<th>Private school (n=20)</th>
<th>Public school (n=16)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cond 1 (DP r/TP r)</td>
<td>3,20</td>
<td>2,50</td>
</tr>
<tr>
<td>Cond 2 (DP red/TP non-red)</td>
<td>2,25</td>
<td>1,31</td>
</tr>
<tr>
<td>Cond 3 (DP non-red/TP red)</td>
<td>1,94</td>
<td>0,75</td>
</tr>
<tr>
<td>Cond 4 (DP non-red/TP non red)</td>
<td>1,88</td>
<td>0,95</td>
</tr>
</tbody>
</table>

*U = 109.5; p = .109; r = .28*

*U = 97.5; p = .046; r = .33*

*U = 68; p = .003; r = .50*

*U = 86; p = .018; r = .40*

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2. A continuum of number morphological agreement

2. Plural redundancy continuum in number in BP based on mean scores in each experimental condition per group

Private (n=20) | Public (n=16)
---|---
redundant | 3.2 | 2.5
DP redundant | 2.3 | 1.3
TP redundant | 1.9 | 0.8
non redundant | 1.9 | 1.0

Maximum score

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3. Type of school: Redundancy in DP and in TP

2. Mean target responses related to redundancy in DP (max. score = 8)

<table>
<thead>
<tr>
<th></th>
<th>Redundant DP</th>
<th>non-redundant DP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private (n=20)</td>
<td>5.45</td>
<td>3.81</td>
</tr>
<tr>
<td>Public (n=16)</td>
<td>3.81</td>
<td>1.7</td>
</tr>
</tbody>
</table>

Independent-sample Mann-Whitney U

- $U = 91$; $p = .028$; $r = .37$
- $U = 68.5$; $p = .003$; $r = .49$

3. Mean target responses related to redundancy in TP (max. score = 8)

<table>
<thead>
<tr>
<th></th>
<th>Redundant TP</th>
<th>non-redundant TP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private (n=20)</td>
<td>3.95</td>
<td>4.44</td>
</tr>
<tr>
<td>Public (n=16)</td>
<td>3.2</td>
<td>3.19</td>
</tr>
</tbody>
</table>

Independent-sample Mann-Whitney U

- $U = 113$; $p = .140$; $r = .26$
- $U = 159.5$; $p = .987$; $r = .002$
5. Alternative non-matching responses provided

<table>
<thead>
<tr>
<th>Condition</th>
<th>Type of correction</th>
<th>Number of occurrences</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Private school</td>
</tr>
<tr>
<td>1. DP red/TP red</td>
<td>DP n-red/TP red (=2)</td>
<td>6</td>
</tr>
<tr>
<td>2. DP n-red/TP red</td>
<td>DP red/TP red (=1)</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>DP n-red/TP n-red (=4)</td>
<td>0</td>
</tr>
<tr>
<td>3. DP red/TP n-red</td>
<td>DP red/TP red (=1)</td>
<td>51</td>
</tr>
<tr>
<td>4. DP n-red/TP n-red</td>
<td>DP red/TP n-red (=2)</td>
<td>23</td>
</tr>
</tbody>
</table>

Alterations to the standard form:
private school (66) and public school (24)

Alterations to non-standard forms:
private school (29) and public school (50)

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Continuum of proximity between varieties

The variants for morphological number agreement in BP are very closely related (cf. Rothmann, 2013 for Typological Proximity and Tsimpli, 2014, Grohmann, 2016, Westergaard et al., 2016 for structural linguistic proximity)

- All languages share syntactic agreement (*Agree*), however differences lay on morphological realization (cf. Miyagawa, 2010)

- It is hypothesized that Brazilian children from private school stand in between Portuguese children in one extreme and Brazilian children from public school in the other extreme

![Diagram with color-coded areas for Spanish, EP, 22%, 50%, 28%, and Norwegian, with BP - RJ as closely related varieties (suburbs).]
Discussion

According to the Sociolinguistics literature, BP presents different continua:

- A continuum from rural to urban (Naro, 1981);
- A continuum inside the urban speech (Scherre & Naro, 2006);
- A continuum inside the suburban speech in RJ as far as preschoolers are considered, as suggested by the present results.

Thus, a plural number morphology scale seems to be shared among different varieties of spoken BP.
Discussion

- There seems to be two grammar representations in terms of morphological agreement for BP for preschoolers:
  - A fully specified grammar for standard variant
  - An underspecified grammar for non-standard variant (where optionality emerges)
- Formal introduction to the prestige norm for written Portuguese at school tends to rescue what is not naturally acquired (Pires & Rothmann, 2009, see also Kato, 2005);
  - Training in standard form writing may change the frequency rates for each variant for each child;
Preliminary conclusions

- Exposure to variable input leads to underspecification in the mapping of the morphological expression of number agreement in BP onto morphosyntactic features (Corrêa, 2009; Adger & Smith, 2010), where people from different socioeconomic levels interact on a daily-basis;

- In sum:
  - Brazilian children may stand at different points along a gradient *continuum* depending on their individual sociolinguistic experience (Squires, 2014)
  - grammar representation in terms of number agreement
  - production of morphophonological marks for plural number, as redundant or non-redundant
  - Therefore, the alternation between variants may be a result of schooling (in the lines of L2 acquisition) or exposition to both variants from birth (*BFLA*, De Houwer, 2009).
Analysis in process...

- Same experiment conducted with 50 elementary school children (12-13 years old) from a public municipal school in a suburban neighborhood in RJ
  - All exposed to standard written variant of BP and formally exposed prescriptive grammatical rules of singular and plural forms
  - 24 students affirmed that the robot spoke “in a wrong way”
    - “he drops the ‘s’”, “he does not speak the plural”, “he should speak like this (redundant) but he speaks like that (non-redundant)”, “he alternates between present and past tenses”; “he speaks in plural and diminutive forms”; “he forgets the plural”; “he should pay attention to singular and plural forms”; “young children do not know grammar”
  - Still, most of these students also produced the “wrong way”
Analysis in process...

- Before formal grammatical learning at school, around 5 years old
  - Underspecified grammar

- Before formal grammatical learning at school, around 12 years old
  - Half of the students notice the missing plural
    - Metalinguistic awareness due to formal schooling;
    - Variant competition: they also produce non-redundant forms
  - Whereas the other half does not notice the missing plural
    - External factors
  - Blurred border between variants affect perception and production (cf. Leivada et al., 2017)
    - Bidialectalism does not seem to involve discrete, separate grammars (cf. Cornips, 2014)
Challenges

- Who are the BP monolinguals after all? Speakers of non-standard variants would be considered the BP monolinguals? Is it possible to talk about monolingualism in this scenario?

- The socioeconomic environment
  - Lack of resources for education (health as well)
  - Social issues affecting schoolyear and children’s attendance to school
  - High number of illiterates
  - Socioeconomic level and parental style may affect children’s executive functions (Stephan & Fichmann, oral presentation at PUC-Rio in oct., 2017)
    - Would it affect language? How?
Challenges

- Most of the elementary school teachers in Brazil come from low/middle-class and are speakers of both variants (Bagno, 2005 - Interview: https://www.brasildefato.com.br/node/5396/)

  - How to measure this index in such a vast territory which concentrates so much variability among family environments?

- Socioeconomic variability seems to pressure language
  - Language change
  - Identification of language disorders
    - An issue for SLI
      - Brazilian SLI children tend to omit determiners, exactly where plural number is obligatorily marked in BP (Corrêa, in development)

- Learning written standard BP would work as L2 acquisition
  - Similarities between simultaneous/ consecutive bilinguals and bidialectals

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Obrigada!
Thank you!
Takk!

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