Immigrants’ speech: is phonetic attrition a necessary precondition for phonological attrition to occur?

NODARI Rosalba¹, CELATA Chiara¹, NAGY Naomi²

¹Scuola Normale Superiore di Pisa
²University of Toronto, Canada

ICLA 3
Third International Conference on Language Attrition
Talk outline

- Teasing apart phonetic from phonological attrition
  - the role of phonotactics
  - phonetic & phonological attrition of heritage languages

- Current study
  - examine VOT production by Calabrian Italian immigrants in Toronto (HLVC project)

- Findings
  - evidence of cross-generational change in the phonotactic distribution of VOT contrasts
  - individual variability

- Discussion
  - phonological attrition without phonetics
  - heritage languages, first languages, attrition
Phonetics vs. phonology in first language attrition

L1 **phonetic** attrition
- in the speech of immigrants after longstanding exposure to the dominant language of the hosting community  
  (e.g. Major 1992, Bullock & Gerfen 2004, de Leew et al. 2013 etc.)
- in L2 learners a few weeks after the beginning of contact with an L2  
  (e.g. Chang 2012)

- among the principal factors:
  - word frequency / cognate status  
    (e.g. Bullock & Gerfen 2004, Englster & Goldrick)
  - speakers’ age  
    (e.g. Bylund 1999)
  - age of arrival / length of residence  
    (e.g. Major 1992, Flores & Rauber 2011)
  - degree of contact with homeland  
    (e.g. Nagy & Kochetov 2013)

L1 **phonological** attrition
- To access the phonological system(s) of attriters, one possibility is that of investigating the distribution of phonetic features across L1 phonotactics
- e.g. vowel epenthesis  
  (Dupoux et al. 2011, Parlato-Oliveira et al. 2010, Carlson et al. 2015)
Phonetic & phonological attrition of heritage languages

1ST GENERATION speakers lived for at least the first 18 years of their lives in the Homeland

2ND GENERATION speakers have parents that qualify as 1st generation speakers and were born in Toronto or arrived before the age of 6

3RD GENERATION speakers have 2nd generation parents and were born in Toronto
Phonetic & phonological attrition of heritage languages

**Heritage Language speakers:** heritage language as a mother tongue that is neither an official language, nor an indigenous language (Canadian government, Harrison 2000, Cummins 2005)

“[.....] heritage speakers are exposed **naturalistically** to the heritage language, however, this language is by definition a non-hegemonic minority language within a majority language environment” (Rothman 2007: 360)

“people who [...] have **cultural connections** to and know languages other than English. These languages are not “foreign” to particular individuals or communities; instead, they are **familiar** in a variety of ways” (Kelleher 2010)
Long-lag VOT across the generations

- Spontaneous conversation in three heritage languages (Russian, Ukrainian, Italian)
- word-initial /p t k/ in onset of stressed syllables with following /a/ or /o/

\[\text{no attrition in L1 Italian immigrants?}\]
## Long-lag VOT across languages
### Heritage language vs. dominant language

<table>
<thead>
<tr>
<th></th>
<th>Calabrian Italian</th>
<th>Toronto English</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stressed syllable</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C.CV</td>
<td>gemination [sta'kkʰare] <em>staccare</em> ‘to disconnect’</td>
<td>[İNˈtʰɛnd] intend stancare ‘to tire’</td>
</tr>
<tr>
<td>CV</td>
<td>intervocalic short-lag VOT</td>
<td>[pəˈθeɪtou] potato, [pʰɪn] pin</td>
</tr>
<tr>
<td><strong>Unstressed syllable</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C.CV</td>
<td>gemination [ˈstakkʰo] <em>stacco</em> ‘I disconnect’</td>
<td>/</td>
</tr>
<tr>
<td></td>
<td>cluster [ˈstᵃŋkʰo] <em>stanco</em> ‘tired’</td>
<td>short-lag VOT</td>
</tr>
</tbody>
</table>

Long-lag VOT in Calabrian Italian vs. English, with examples (for Calabrian, see Nodari 2016 and bibliography therein). Green cells indicate the contexts that have been investigated in the present study.
Data

- 9 MALE SPEAKERS, 3 for each generation
- SPONTANEOUS CONVERSATION (ca 1 hour long per speaker) in the heritage language (Calabrian Italian)
- 2767 word tokens

ANALYSIS:

- AUDITORY CODING: stops impressionistically coded as aspirated and non-aspirated
- incidence of aspiration (= % of voiceless aspirated stops) in words where either English-wise or Calabrian-wise aspiration is possible:
  - CALABRIAN-WISE: unstressed geminate C:V and CCV clusters
  - ENGLISH-WISE: stressed CV
Results / 1
Cross-generation differences

1 GEN.

Calabrian aspiration
English aspiration

2 GEN.

Calabrian aspiration
English aspiration

3 GEN.

Calabrian aspiration
English aspiration

NO%
YES%
Results / 2
Cross-subject variability: 2nd & 3rd generation

PATTERN 1
high rate of Calabrian aspiration (similar to 1st generation immigrants), but evidence of English aspiration too
Results / 2
Cross-subject variability: 2nd & 3rd generation

PATTERN 2
low rate of Calabrian and English aspiration
Results / 3
Speech rate as fluency indicator

<table>
<thead>
<tr>
<th>Pattern</th>
<th>Generation</th>
<th>Speaker</th>
<th>Speech rate (syllables/sec)</th>
<th>% Calabrian aspiration</th>
<th>% English aspiration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>I1M61A</td>
<td>4.82</td>
<td>81%</td>
<td>0%</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>I1M62A</td>
<td>4.42</td>
<td>98%</td>
<td>1%</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>I1M75A</td>
<td>4.12</td>
<td>87%</td>
<td>2%</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>I2M19A</td>
<td>4.36</td>
<td>87%</td>
<td>37%</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>I2M42A</td>
<td>3.73</td>
<td>93%</td>
<td>32%</td>
</tr>
<tr>
<td>1</td>
<td>3</td>
<td>I3M28A</td>
<td>3.45</td>
<td>85%</td>
<td>23%</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>I2M14A</td>
<td>4.23</td>
<td>27%</td>
<td>13%</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>I3M18B</td>
<td>3.78</td>
<td>11%</td>
<td>15%</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>I3M22B</td>
<td>3.43</td>
<td>16%</td>
<td>15%</td>
</tr>
</tbody>
</table>

**No correlation** between fluency in Calabrian Italian and rate of Calabrian-wise and English-wise aspiration
Results / 3
Speech rate as fluency indicator

No correlation between fluency in Calabrian Italian and rate of Calabrian-wise and English-wise aspiration
Summary and discussion / 1

- Previous work showed that Calabrian Italian immigrants in Toronto did not change cross-generationally their VOT **durations** when speaking in their heritage language to approach the values of the dominant language.

- However, Calabrian Italian also possesses stops with long-lag VOT, as opposed to short-lag VOT, although with a different phonotactic distribution compared to English.

- This study: in spite of the lack of phonetic attrition, Calabrian immigrants **did change the distribution** of long-lag VOT in the lexicon, shifting away from the Calabrian-wise distribution, and partly introducing an English-like use of stop aspiration, in stressed CV syllables.

- Higher-order systematic properties of speech such as its **phonotactics** can shed light on the way attriters **restructure** phonetic features in their grammar, and use them accordingly.
### Summary and discussion / 2

<table>
<thead>
<tr>
<th>SPEAKERS</th>
<th>LONG-LAG VOT DISTRIBUTION IN THE LEXICON</th>
<th>PHONOLOGICAL ATTRITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1° generation</td>
<td>virtually always Calabrian aspiration, virtually never English aspiration</td>
<td>NO</td>
</tr>
<tr>
<td>2° &amp; 3° generation</td>
<td>pattern 1 interference from English</td>
<td>YES</td>
</tr>
<tr>
<td></td>
<td>pattern 2 interference from English + reduction of Calabrian aspiration</td>
<td>YES</td>
</tr>
</tbody>
</table>

- **pattern 1 speakers:**
  - still perceive unstressed syllable aspiration as a feature of Calabrian Italian

- **pattern 2 speakers:**
  - do not perceive unstressed syllable aspiration as a feature of Calabrian Italian

- high degree of cross-individual variation
- need of large corpora and extensive investigation
References


Dupoux E., Parlato E. et al. (2011) “Where do illusory vowels come from?” *Journal of Memory and Language*.


