Experimentally assessing length-based noun class prefix alternations in isiXhosa

Kelly Goldstuck*  
Wm. G. Bennett*  
Aaron Braver†  

WOCAL 8

Xhosa: Language background

• South Africa’s Eastern Cape and surroundings  
• Approximately 8.2 million speakers  
• Bantu (Nguni)

Overview

• Certain Xhosa noun class prefixes alternate based on the length of the following root  
• The Question: are these alternations synchronically productive, or just the remnant of historical change?  
• We argue that these alternations are part of speakers’ synchronic grammars

Length-based allomorphy in class 10

• Class 10:  
  − izi(N)- before 1-syllable roots  
  − ii(N)- elsewhere  

<table>
<thead>
<tr>
<th>Singular (9)</th>
<th>Plural (10)</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>in-to</td>
<td>izin-to</td>
<td>‘thing(s)’</td>
</tr>
<tr>
<td>in-dlu</td>
<td>izin-dlu</td>
<td>‘house(s)’</td>
</tr>
<tr>
<td>in-dlela</td>
<td>in-dlela</td>
<td>‘road(s)’</td>
</tr>
<tr>
<td>in-tombi</td>
<td>in-tombi</td>
<td>‘girl(s)’</td>
</tr>
</tbody>
</table>

Length-based allomorphy in class 5

• Class 5:  
  − ili- before 1-syllable roots  
  − i- elsewhere  

<table>
<thead>
<tr>
<th>Singular (5)</th>
<th>Plural (6)</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>ili-fu</td>
<td>ama-fu</td>
<td>‘cloud(s)’</td>
</tr>
<tr>
<td>ili-tye</td>
<td>ama-tye</td>
<td>‘stone(s)’</td>
</tr>
<tr>
<td>i-cephe</td>
<td>ama-cephe</td>
<td>‘spoon(s)’</td>
</tr>
<tr>
<td>i-dada</td>
<td>ama-dada</td>
<td>‘duck(s)’</td>
</tr>
</tbody>
</table>

Length-based allomorphy in class 11

• Class 11:  
  − ulu- before 1-syllable roots  
  − u- elsewhere  

<table>
<thead>
<tr>
<th>Singular (11)</th>
<th>Plural</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>ulu-vo</td>
<td>izim-vo</td>
<td>‘opinion(s)’</td>
</tr>
<tr>
<td>ulu-su</td>
<td>izin-su</td>
<td>‘skin(s)’</td>
</tr>
<tr>
<td>u-phando</td>
<td>ilim-pando</td>
<td>‘horn(s)’</td>
</tr>
<tr>
<td>u-cango</td>
<td>ilin-gcango</td>
<td>‘door(s)’</td>
</tr>
</tbody>
</table>
Possible representations

a. Remnant of a historical process; only in the lexicon (learned for each word)

b. Synchronic phonological pattern; active in the grammar (learned as a rule)

2. Experiment

Experiment design

- Wug task
  - Nonce items aren’t stored lexically, so any alternation must be a synchronic pattern
  - Singular ↔ Plural

- Block 1: ii(n) vs. izi(n) (9/sg → 10/pl)
- Block 2: i- vs. ili- (6/pl → 5/sg)

Block 1 (class 9/sg. → 10/pl.): Stimuli

- Singular class 9 → plural class 10
  - 10 monosyllabic roots
  - 10 disyllabic roots

  - 20 filler/distractor items (part of a separate experiment)
    - 10 monosyllabic, 10 disyllabic

Block 1: Task

- Block 1 (9/sg. → 10/pl.)
  - On each trial, speakers see a singular nonce noun with the class 9 prefix i(N)-
  - Speakers produce the plural of that nonce noun, with one of the two class 10 allomorphs, izi(N)- or ii(N)-
Block 1 (9/sg. → 10/pl.): Examples
- into → izinto or iinto
- indlu → izindlu or iindlu
- indlela → izindlela or iindlela
- intombi → izintombi or iintombi

Block 2 (class 6/pl. → 5/sg.): Stimuli
- Plural class 6 → singular class 5
  - 10 monosyllabic roots
  - 10 disyllabic roots
  - distinct from block 1
- 20 filler/distractor items (part of a separate experiment)
  - 10 monosyllabic, 10 disyllabic
  - distinct from block 1

Block 2 (6/pl. → 5/sg.): Examples
- amafu → ilifu or ifu
- amatyel → ilitye or itye
- amacephe → ilicepe or icepe
- amadada → ilidado or idada

Block 2: Task
- Block 2 (6/pl. → 5/sg.)
  - On each trial, speakers see a plural nonce noun with the class 6 prefix ama-
  - Speakers produce the singular of that nonce noun, with one of the two class 5 allomorphs, ili- or i-

Participants
- 10 native speakers of isiXhosa
- 5 male, 5 female
- Age
  - Range: 21–42
  - Mean: 26
- Other languages
  - English (2)
  - Afrikaans (2)
  - Zulu (2)
  - Sotho (2)

Data capture
- Stimuli presented on a laptop in random order
- Participants saw 3 real-noun sg/pl examples in the instructions, then did 14 practice items
- Audio recorded, responses coded for class prefix added
Results

• In both blocks, speakers’ knowledge of length-based prefix alternations extends to novel words

Results: Block 1 (9/sg. → 10/pl.)

• Speakers were more likely to use izi(N)- with short roots and ii(N) with long roots

The “other” category

• Real class prefixes, but not izi(n)- or ii(n)-
• Most common: ama- (class 6 pl.)
• Two likely reasons for ama- responses
  – i-CVCV forms may be ambiguous between class 5 (i)– and class 9 (i(n))–
  – Some common nouns in class 9 have class 6 plurals (a 9/sg.~6/pl. paradigm exists)
    ex: in-doda → ama-doda ‘man’ / ‘men’

Results: Block 2 (6/pl. → 5/sg.)

• Speakers were more likely to use ili- with short roots and i- with long roots

um-

• “Other”: responses other than i- and ili-
• Most common responses:
  – um- (class 1 or 3)
  – u- (class 1a or 11)
• A likely explanation for um-s:
  – Most clan names and other ethnonyms follow an irregular 1/sg. → 6/pl. paradigm
  – ex: um-Xhosa → ama-Xhosa ‘Xhosa person/people’

Summary and Conclusion
Summary

• Xhosa speakers use root length to decide between class prefix allomorphs

• This alternation is represented in speakers’ synchronic grammars

Conclusion

• Length-based alternations are not just a historical vestige
  – Speakers have some linguistic awareness of length as the basis for the allomorphy
  – They can extend that knowledge to the treatment of novel words; it’s not lexicalized

• Consistent with other phonological evidence for bisyllabic minimal stem