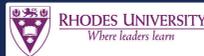


Phonology or Morphology: Inter-speaker differences in Xhosa Labial Palatalization

Aaron Braver
Texas Tech University
aaron.braver@ttu.edu

Wm. G. Bennett
Rhodes University
w.bennett@ru.ac.za

LSA Annual Meeting 2015
Portland, Oregon
8 January 2015



Slides online at: aaronbraver.com/slides

Introduction to the pattern

- Labial palatalization in Xhosa (Bantu)
- Passivizing suffix: /-w/
- Root bilabials palatalize when preceding the passive suffix /-w/
- Schematically:
 - /B/ + /-w/ → J-w
 - labial +labial → palatal (!) + labial

Introduction to the pattern

- Normal structure for passive verbs:
 - uku-fuⁿd-a 'to study, read'
 - i-ja-fuⁿd-w-a 'it is being studied' (passive = /-w/)
- Palatalization in passives containing bilabials:
 - uku-ʃa^mb-a 'to wash'
 - i-ja-ʃaⁿd₃-w-a 'it is being washed' (m^b → ⁿd₃)
 - NOT *ijaʃa^mbwa

It's atypical for palatalization...

- Apparent universals of palatalization:
(from Bateman 2007, Kochetov 2011)
 1. If labials palatalize, then coronals/dorsals do too
 2. If back vocoids cause palatalization, then front vocoids do too
- ...But in Xhosa:
 - In passive verbs, *only bilabials change*
ijafuⁿdwa → *ijafuⁿd₃wa
 - *Only [w] causes palatalization* (not [i] or [j])
ijakx' oʃisa → *ijakx' oʃ₃isa ijaʃuʃa → *ijaʃ₃uʃa

...It's also phonetically "unnatural"

4

- [w] has no palatal constriction
 - Expectation: [w] should *reinforce* the labiality of labials rather than palatalize them (Ohala 1978)
- When the passive suffix surfaces as [-iw] (in monosyllabic roots), palatalization does not apply:
 - uku-^{mb}-a 'dig' i-ja-^{mb}-iw-a 'it is being dug'
 - *i-ja-^ɲdz-iw-a
- → Why should palatalization occur (only) in the *absence* of anything like a palatal?

The puzzle

5

- How does the pattern in Xhosa really work?
- One view: it's a phonological process
 - [LAB] → [COR, -ant] / __w (in various formulations)
 - (Stahlke 1976, Khumalo 1987, Gorecka 1989, Beckman 1993, Chen & Malambe 1998, Vondrasek 2001, Naidoo 2002, Bennett 2013/in press)
- Alternative view: it's really not phonology
 - It's a historical relic, and/or morphological in nature
 - (Louw 1975; Herbert 1977, 1990; Ohala 1978; Van der Spuy 2014; see also O'Bryan 1974, Anderson 1992)

Structure of the talk

6

1. Background from the literature
2. Our experiment
3. Data and results
4. Analysis and discussion
5. Summary and conclusion

1. Background and context

7

About isiXhosa

8

- =Xhosa; Southern Bantu language, Nguni group
- Prototypically spoken in Eastern Cape in South Africa (≈5m speakers, out of ≈8.2m speakers total)



Labial palatalization (1/2)

9

- Labials shift to the nearest palatal equivalent (other features mostly stay the same)

[pʰ]	→ [tʃʰ]	p	→ tsh
[pʰ]	→ [tʃ]	ph	→ tsh
[b]	→ [c]	b	→ ty
[bʰ]	→ [dʒ]	bh	→ j
[m]	→ [ɲ]	m	→ ny
[mb]	→ [ɲdʒ]	mb	→ nj

(Doke 1954)

- Related patterns are found in related languages, albeit with some minor differences

Labial palatalization (2/2)

10

- Found in a few morphological contexts
 - Passive /-w/, locative suffix /-ini/, diminutive /-ana/ (We'll only talk about passives for now)
 - Also evident in historical changes: Proto-Bantu *m^hwa* > Xh. *i^hndʒa* 'dog'
- Sometimes long-distance
 - sebenza 'work' → sec'en^hzwa 'be worked'
- Why: previous literature is mixed

Explanation #1: phonology

11

- A synchronic phonological process turns labials into palatals
- One version: Labial dissimilation
 - Avoidance of two Labials; supported by absence of Bw elsewhere
 - (Doke 1954, Gorecka 1989, Beckman 1993, Selkirk 1993, Bennett 2013/in press)
- Another version: a floating palatal feature, or assimilation to a covert /i/ or /j/
 - (Stahlke 1976, Khumalo 1987, Chen & Malambe 1998, Poulos & Msimang 1998, Jokweni 1999, Vondrasek 2001, Naidoo 2002)

Explanation #2: history

12

- A string of historical changes
(Louw 1975; Herbert 1977, 1990; Ohala 1978; Bateman 2010; see also O'Bryan 1974, Anderson 1992, Van der Spuy 2014)
- /p+jw/ → p̥jw → p̥ʃw → t̥ʃw → /t̥ʃ/
- Passive suffix /-w/ used to have a front glide [j]
- Voicelessness of [p] gets extended, devoices the [j]
- Voiceless glide [ʃ] misperceived as a fricative [ʃ]
- Labial component of [p̥ʃ] is reanalyzed as an coarticulatory effect of following [w]
- End result: active verb has /p/, passive has /t̥ʃ/
(similar pathway for other bilabial sounds)

History → ¬Phonology

13

- For the historical account, palatalization is NOT necessarily an active part of phonology
 - Speakers learn active forms with labials, learn passive forms with palatals, switch them as needed
- Both good and bad sides to this story:
 - Phonological changes involved are weird; but the historical steps are very reasonable, and some intermediate steps are attested in dialect variation
 - Doesn't clearly explain forms where palatalization is long-distance, e.g. sebenza ~ sec'enzwa

Recap: two competing hypotheses

14

- Phonological hypothesis: Palatalization is part of the phonology of the language; learned as a rule
- Lexical hypothesis: Palatalization is in the lexicon, not phonology; no rule for the change

Recap: two competing hypotheses

15

- If palatalization is phonological, then speakers will apply the change in novel words
- If palatalization is just in the lexicon, speakers will *NOT* apply the change in novel words
- A wug test (Berko 1958) should tease them apart

2. Our Experiment

16

Method: stimuli

17

- 40 nonce verb roots, all with CVC structure
 - Vowels were all either /a/ or /o/
 - Last consonant {mb, m, nj, ny} = [ᵐb, m, ɲdʒ, ɲ]
 - Ex: *hlama, famba, foma, komba*
- 40 real verbs, used as fillers
- Stimuli shown to speakers on a laptop, in randomized order
- Participants saw 3 real verb examples in the instructions, and did 9 practice items first

Method: task

18

iya-famba → *iya___wa*

- Task: fill in the blank
 - Stimuli presented in a frame typical of active verbs (in Xhosa orthography)
 - Speakers read the active form, then made a passive form of the verb
- Participants were instructed that some words might be unfamiliar, and that they should take their best guess at what sounds most natural

Method: participants

19

- 10 native speakers of isiXhosa
 - 5 male, 5 female; Age range 21–42 (mean =26)
 - 9 from Eastern Cape; 8 grew up at least partly in Grahamstown
 - All 10 identified Xhosa as the language they spoke the most at home
 - Other lgs: English (everyone), Afrikaans, Zulu
- Participants also did 2 other experiments in the same session (order of tasks was counterbalanced)

Method: recordings and coding

20

- Speakers were recorded using a 'head'-mounted microphone, in the sound laboratory of the Rhodes University linguistics department
- Responses were coded for:
 - target consonant palatal?
 - appropriate application of passive /-w/
- Analysis excluded forms with reading errors, and those that didn't add [-w] in the passive form

3. Data and results

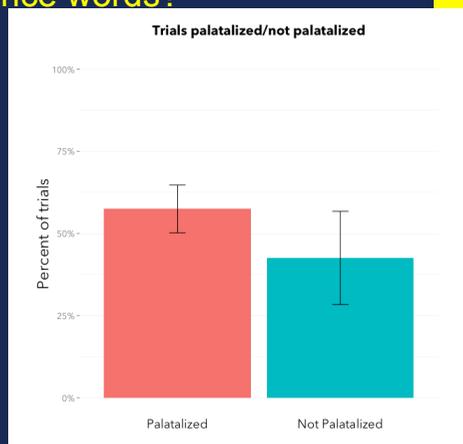
21

Q1: Do speakers ever palatalize in nonce words?

22

- Average over all speakers: palatalize in ~60% of trials
- Answer: *Yes!*

Binomial test: proportion of palatalized tokens (.575) is greater than expected (.5), $p < .05$ (1-sided)

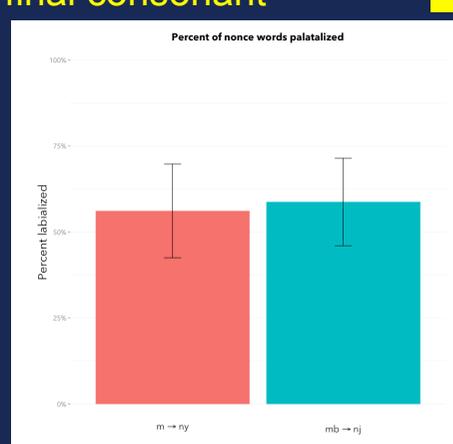


Effect of final consonant

23

- /mb/ vs. /m/: no significant effect
- Speakers didn't treat the different labial consonants differently

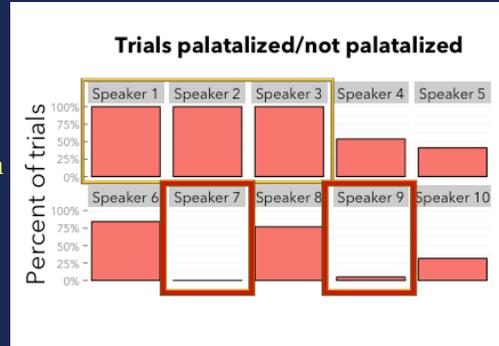
Two-sample proportions test: proportion of /m/ tokens palatalized (.791) is not significantly different from proportion of /mb/ tokens palatalized (.793)



Cross speaker differences

24

- Differences between speakers are extreme
- Rate of palatalization ranges from 100%...
- ...to 0%



Long-distance productivity?

25

- Is palatalization also productive in long-distance cases?
- Some speakers added the suffix /-is/ into passive forms; this separates the [-w] from the root
iyakhoma → iya___wa 'iyakhonyiswa'
- Speaker 4 palatalized ~50% of time overall
 - 14/20 labial forms had something added before /-w/
 - 7 of those had palatalization, 7 did not
 - ~50% palatalization rate in long-distance cases
- Tentative answer: yes?

26

4. Interpretation and discussion

27

Which hypothesis is right?

- The phonological hypothesis predicts speakers **WILL** apply palatalization to nonce words
 - Speakers 1, 2, 3 bear this out: 100% palatalization
 - Speakers 6 & 8 are close too: ~70% palatalization
- The lexical hypothesis predicts that speakers will **NOT** apply palatalization to nonce words
 - Speaker 7 bears this out: 0% palatalization of labials
 - Speakers 9 & 10 are similar: < 30% palatalization

What does it mean?

28

- For some speakers, palatalization is phonological
 - Speakers couldn't have memorized palatalized forms for nonce words they'd never heard
 - Speakers who systematically palatalize nonce words must be applying a general phonological rule
- For other speakers, palatalization is lexical
 - 'Non-palatalizing' speakers DID still palatalize in at least some of the real-word practice and filler items
 - They DO use palatalization sometimes, but apparently only in words that they already know
 - Palatalized forms are lexically stored

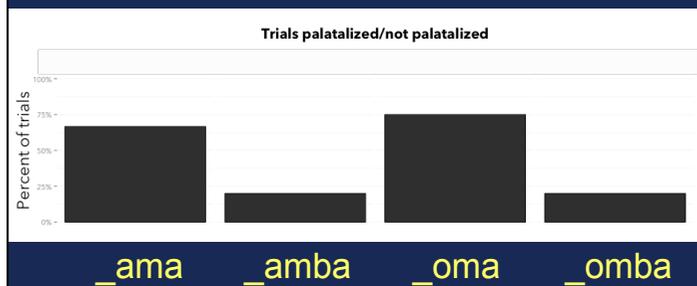
Analogy?

29

- Speakers who palatalize ~100% → phonological
- Speakers who palatalize ~0% → lexical
- Speakers in the middle → analogy strategy?
 - Don't have a clear phonological rule
 - Don't just have palatalization lexically stored
 - They palatalize nonce words by analogy with words they already know

Speaker 5 (~30%) by ending

30



31

5. Summary and conclusions

Summary

32

- We've wug-tested labial palatalization
 - It's productive for some speakers, not others
 - This suggests that it's a genuine phonological pattern for some speakers, but not for others
- The different accounts of palatalization proposed in previous work are both right for some speakers, but not for all of them
- This variation does not appear to correlate with any of the sociolinguistic factors we asked about

Broader implications

33

- A single linguistic pattern can be learned/analyzed very differently by different speakers
- Xhosa labial palatalization is typologically unusual. But the reason for this weirdness ISN'T that it's really a morphological pattern.
 - It's genuinely phonological for at least some speakers
 - This means that even 'phonetically unnatural' patterns can be learned as real phonology

34

Siyabulela!

For helpful discussion and/or assistance in collecting data, we want to thank: Msindisi Sam, Mbuleli Mpokela, Seunghun Lee, Andrew Van der Spuy, Shigeto Kawahara, Olona Tywabi, Danica Kreusch, Kelly Goldstuck, Mark de Vos, Lionel Posthumus, Hazel Mitchley, Jochen Zeller and the audience of the 2014 Tromsø Palatalization Conference.

References

35

- Anderson, S. R. (1992). *A Morphous Morphology*. Cambridge University Press, Cambridge.
- Bateman, N. (2007). A crosslinguistic investigation of palatalization. PhD dissertation, University of California, San Diego.
- Bateman, N. (2010). The change from labial to palatal as glide hardening. *Linguistic Typology*, 14:167–211.
- Beckman, J. N. (1993). Feature organization and the strong domain hypothesis in Zulu [labial] phonology. *UMass Occasional Papers*, 16:1–26. GLSA, University of Massachusetts-Amherst.
- Bennett, Wm. G. (2013/in press). Dissimilation, Consonant Harmony, and Surface Correspondence. PhD thesis, Rutgers University. To appear from CUP.
- Berko, J. (1958). The Child's Learning of English Morphology. *Word* 14:150–177.
- Chen, S.-I. and Malambe, G. (1998). Palatalisation in Siswati: An Optimality Theoretic approach. In Maddieson, I. and Hinnebusch, T. J., editors, *Language history and linguistic description in Africa*, pages 137–146. Africa World Press, Trenton, NJ.
- Doke, C. M. (1954). *The Southern Bantu Languages*. Oxford University Press, London.
- Gorecka, A. (1989). The phonology of articulation. PhD thesis, MIT.
- Herbert, R. K. (1977). Morphophonological palatalisation in southern Bantu: A reply to segmental fusion. *Studies in African Linguistics*, 8(2):41–63.
- Herbert, R. K. (1990). Labial palatalization in Sotho and Nguni languages: internal and external evidence. *South African Journal of African Languages*, 10:74–80.

References (cont.)

36

- Jokwani, M. (1999). Deviating from identity: syntagmatic constraints in Xhosa nasal assimilation and palatalisation. *South African Journal of African Languages*, 19(3):149–154.
- Khumalo, J. S. M. (1987). An autosegmental account of Zulu phonology, PhD thesis, University of Witwatersrand.
- Kochetov, A. (2011). Palatalisation. In *Companion to Phonology*, ed. Colin Ewen, Elizabeth Hume, Marc van Oostendorp, and Keren Rice, 1666–1690. Oxford: Wiley Blackwell.
- Louw, J. A. (1975/76). Palatalisation of bilabials in the passive, diminutive and locative in Xhosa and Tsonga. *Afrika und Übersee*, 61(4):241–278.
- Naidoo, S. (2002). The palatalisation process in isiZulu revisited. *South African Journal of African Languages*, 1:59–69.
- O'Bryan, M. (1974). The role of analogy in non-derived formations in Zulu. *Studies in the Linguistic Sciences*, 4(1):144–178.
- Ohala, J. J. (1978). Southern Bantu vs. the world: The case of palatalization of labials. *Berkeley Linguistics Society*, 4:370–386.
- Poulos, G. and Msimang, C. T. (1998). *A Linguistic Analysis of Zulu*. Via Afrika, Cape Town.
- Selkirk, E. (1993). [labial] relations. Ms. University of Massachusetts, Amherst.
- Stahlke, H. F. W. (1976). Segment sequences and segmental fusion. *Studies in African Linguistics*, 7:41–63.
- Van der Spuy, A. (2014). Bilabial Palatalisation in Zulu: A morphologically conditioned phenomenon. *Stellenbosch Papers in Linguistics Plus*, 44:71–87.