

Underlying vs. derived palatals in Xhosa: Neutralization of an ‘unnatural’ pattern

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Xhosa (Bantu) has an “unnatural” pattern of palatalization in which, contrary to typological tendencies, is triggered only by [w] (and not [i] or [j]), and applies only to labials (and not coronals). This paper compares these derived palatals with their underlying counterparts by means of a production task. Derived and underlying palatals show similar F2 patterns, with no significant differences in F2 means or F2 slopes between the two groups.

Xhosa labial palatalization

The process of Xhosa labial palatalization, when triggered by a labial [-w], results in the constellation of sound changes given in (1), with labials shifting to the nearest palatal, along with manner changes in some cases (McLaren 1942, Doke 1954):

- (1) [pʰ] → [tʃ] [β] → [cʰ] [m] → [ɲ]
[pʰ] → [tʰ] [b] → [dʒ] [ᵐb] → [ᵐdʒ]

The Xhosa passive consists of a suffix -w (shown in (2a, b), which triggers palatalization in preceding labial segments (shown in (3) and (4)):

- (2) Passive suffix -w following non-labials (no palatalization)
(a) uku-fund-a (b) uku-fund-w-a
INF-study-FV INF-study- PASS -FV
‘to study’ ‘to be studied’
- (3) Passive suffix -w triggers palatalization (ᵐb → ᵐdʒ)
(a) uku-ɬa^{mb}-a (b) uku-ɬa^{ndʒ}-w-a (*uku-ɬa^{mb}-w-a)
INF-wash-FV INF-wash-PASS-FV
‘to wash, cleanse’ ‘to be washed, cleansed’
- (4) Passive suffix -w triggers palatalization (m → ɲ)
(a) uku-lu^m-a (b) uku-lu^ɲ-w-a (*uku-lum -w-a)
INF-bite-FV INF-bite-PASS-FV
‘to bite’ ‘to be bitten’

Method

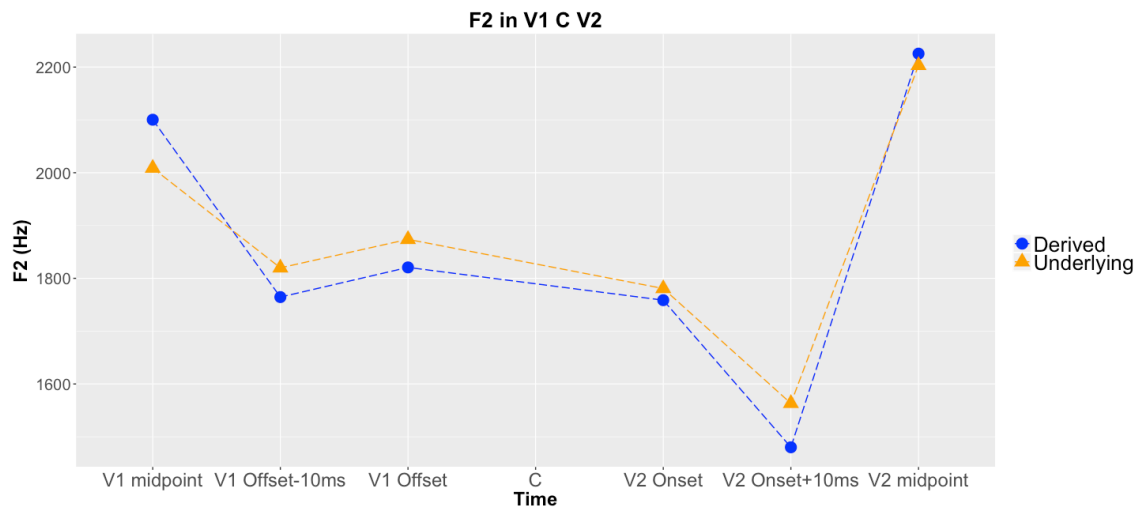
40 nonce words were created, half of which ended in [m, ᵐb] (segments which undergo palatalization), and half of which ended in [ɲ, ᵐdʒ] (underlyingly palatal segments). Verbs took were put into a frame of iya-____-a, which is approximately analogous to the present progressive. 40 real word fillers were included, most of which contained no palatals and segments which undergo palatalization. 6 native speakers of Xhosa read the words from a screen in random order, and were asked to provide the passive form of the verb, with the passive [-w] suffix triggering palatalization in the “undergoers”, leading to words of the form iya____-w-a.

Measurements

Since F2 is a major cue to palatal place, F2 was measured at various locations surrounding the target consonant. For the vowel preceding the target consonant, F2 was measured at the midpoint, 10 ms before the boundary with the target consonant, and at the consonant boundary. Because of unclear boundaries between the passive [-w] suffix and the following vowel, the entire [-wa] sequence was segmented as a single unit. Within this second vowel unit, F2 was measured at the boundary with the target consonant, 10 ms later, and at the midpoint. The slope of F2 was calculated between the V1 offset and 10 ms prior, as well as for between the V2 onset and 10 ms later.

Results

No statistically significant differences were found between derived palatals and underlying palatals for any of the F2 measures indicated above. This is shown graphically in the figure below, in which it can be seen that the trajectory of F2 during the VCwV sequence is nearly identical across both conditions. The biggest differences between derived and underlying segments were found in F2 at V1 midpoint (82.37 Hz, $t=-.79$, n.s.) and V2 10ms after onset (79.78 Hz, $t=1.14$, n.s.).



Discussion

Derived and underlying palatals in Xhosa appear to be produced in an almost identical fashion. While it is true that “absence of significance is not significance of absence”, the current data would indicate that the neutralization between derived and underlying palatals in Xhosa is complete. While further data (currently under analysis) are needed to strengthen the claim of complete neutralization, if confirmed, this palatalization process would join the ranks of a relatively limited set of neutralizations experimentally confirmed to be complete (e.g. Korean manner neutralization, Kim and Jongman 1996).

References

- Doke, C. M. (1954). *The Southern Bantu Languages*. Oxford University Press, London.
- Kim, H. and A. Jongman (1996). Acoustic and perceptual evidence of complete neutralization of manner of articulation in Korean. *Journal of Phonetics* 24, pp. 295–312.
- McLaren, J. (1942). *A Xhosa Grammar*. Longman, Green, and Co., 3rd edition.