Abstract morphological information cued by phonotactics: Noun class disambiguation in Xhosa

Aaron Braver (Texas Tech University) and William Bennett (Rhodes University)

Introduction: While some phonologists assume that phonotactics can provide clues to abstract morphological information (Tucker et al. 1977, Moreton & Amano 1999, Gelbart 2005), this possibility has largely gone unconsidered in work on Bantu noun classes (see, e.g., Corbett 1991, Bresnan & Mchombo 1995). We present experimental evidence from Xhosa (Bantu, South Africa), showing that speakers make use of root phonotactics when assigning noun classes to nonce words. This suggests that noun class (and other abstract morphological information) is not only stored in the lexicon, but is also indicated by phonotactic cues.

Bantu languages are widely known for their complex noun class systems. A great deal of literature has explored the role of semantics in noun class assignment (Katamba 2003, Idiata 2005, etc.), under the tacit or explicit assumption that noun class is lexically stored. We show that, at least for nonce words, speakers assign noun class based in part on root phonotactics.

Xhosa noun classes: Xhosa has 15 noun classes with associated class prefixes; here we focus on the class 5 and class 9 prefixes, both of which are sometimes realized as /i-/. Because of this potential homophony, nouns of the shape *i*-CVCV could potentially belong to either class 5 or class 9. This ambiguity can be resolved by looking at the plural form of the noun: nouns of class 5 generally mark plurality by means of the *ama-* prefix (as in (1a–b)), while nouns of class 9 generally mark plurality with the *ii(N)-* prefix (as in (1c–d)).

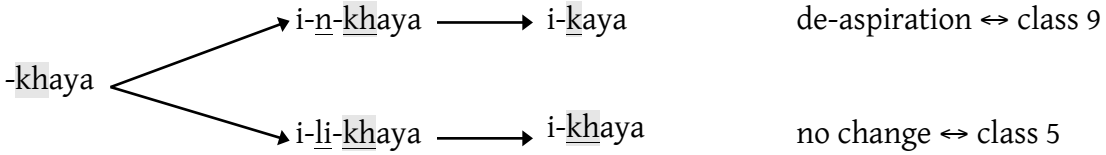
(1) Homophony and disambiguation of class 5 and class 9 with prefix /i-/

	Singular	Plural	Gloss
a.	i-khaya	ama-khaya	'home(s)'
b.	i-gama	ama-gama	'name(s)'
c.	i-moto	ii-moto	'car(s)'
d.	i-nkomo	ii-nkomo	'cow(s)'

Historically, the class 5 and class 9 prefixes were not homophonous: class 5 nouns took the prefix **li-*, while class 9 nouns took the prefix **n(i)-*. The nasal in the historical class 9 prefix **n(i)-* induced several changes to following consonants, including de-aspiration and hardening of fricatives and /l/. (This process can be seen synchronically in forms like *-hle* [-ɬe] 'good' > *entle* [en-t͡ɬ'e] 'cl.9-good'.)

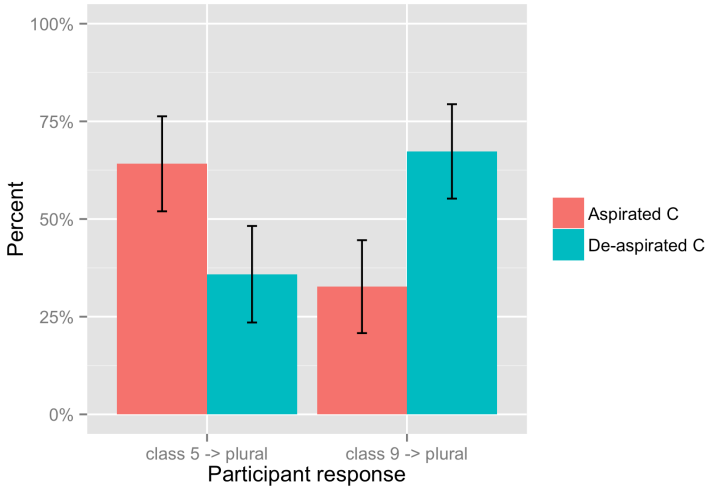
Due to the post-nasal changes that occurred historically in class 9 nouns, the first consonant of a root is a potential clue to its noun class. For example, consider the root *-khaya* in (2). If *-khaya* had received the historical class 9 nasal prefix, even if the nasal segment was subsequently lost, the synchronic form would show de-aspiration to *i-kaya*. If, however, as in the bottom branch, *-khaya* received the historical class 5 prefix **li-*, the synchronic form should not show such a change, and therefore would retain an aspirated initial stop: *i-khaya*. Speakers of modern Xhosa therefore might be able to distinguish between ambiguous class 5/9 nouns by working backwards. If the root-initial consonant is one that would *result* from de-aspiration, the noun is likely to be from class 9. Otherwise, if the root-initial consonant is one that should *undergo* de-aspiration (but has not done so), the noun is likely to be from class 5. In other words, root-initial aspirated consonants are likely to be found in class 5 nouns, whereas root-initial un-aspirated consonants are likely to be found in class 9 nouns.

(2)



Experiment and results: We conducted a wug test (Berko 1958) to determine whether speakers of Xhosa do, in fact, use the phonotactic cues from post-nasal sound changes in order to classify unknown nouns. 10 native speakers of Xhosa from the Grahamstown area (Eastern Cape, South Africa) were shown nonce nouns with an *i-* class prefix, ambiguous between classes 5 and 9. Half of the nonce nouns contained root-initial consonants that could result from the post-nasal sound change (e.g., un-aspirated segments – the predictable result of de-aspiration), and half contained root-initial consonants that could have undergone this change (e.g., aspirated segments, which must not have undergone de-aspiration). Speakers were instructed to form the plural form of these nonce nouns: if they classify a given noun as class 5, they should produce the class 5 plural prefix *-ama*, whereas if they classify a given noun as class 9, they should produce the class 9 plural prefix *ii(N)-*.

As shown in the figure below, speakers were more likely to assign the nouns to class 5 (as indicated by their use of the *ama-* plural form) when the root-initial consonant was one that might have undergone a change (e.g., un-aspirated), and were more likely to assign the nouns to class 9 (as indicated by their use of the *ii(N)-* plural) when the root-initial consonant was one that might undergo a change (e.g., aspirated).



Conclusion: These findings show that speakers of Xhosa use knowledge of phonotactic patterns in determining the noun class of nonce words. More broadly, our results support the view that speakers can use low-level phonotactic cues (in addition to lexical entries) to help determine abstract morphological information.

Selected References

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