

- On the distribution of velar palatalization in Italian nouns and adjectives -  
Keywords: palatalization, stress, perceptually driven reanalysis.

**The problem:**

This study analyzes the phenomenon of velar palatalization in the plural formation of Italian nouns and adjectives. Whereas in the early stages of Romance, palatalization of velar consonants before front vowels occurred across the board, in modern Italian palatalization as a synchronic phonological mechanism is restricted to morphologically derived environments--apart from its presence as a result of historical change. The phenomenon is found in the plural formation and verbal inflection of some words, but not others (1).

Recent literature (among others, Celata and Bertinetto, 2005 and Krämer, 2006) has emphasized the idea that palatalization in nouns and adjectives is unpredictable. This body of work shares two aims: (i) Given that palatalization is not predictable, how do speakers form the plurals of these words? Are the forms computed or lexically stored? (ii) What is the grammar which derives the speakers' production?

**Hypothesis (1):**

I show that velar palatalization in contemporary Italian is largely predictable as a function of stress.

I present results from a *corpus study* which suggest that palatalization is found in antepenultimate-accented words with velar-final roots. Palatalization almost never occurs in penultimate stressed words (2).

In addition, a production study with seven native Italian speakers has confirmed that Italian speakers productively apply palatalization following the same stress-based generalization: speakers were free to assign stress to stimuli of the form CVCVki. Only antepenultimate-stressed forms underwent palatalization. These results show that the distribution of palatalization, in nonce productions, patterns very much like the distribution one finds in the lexicon of the contemporary language (3).

**Hypothesis (2):**

Why should the position of stress determine whether or not velar palatalization applies (4)?

Guion (1996) shows that velar stops before a *palatal* vowel and palatal affricates are acoustically similar, both in terms of their general spectral shape and, more importantly, in the transitions of the second formant. On the contrary, if the velar consonant is not followed by such a vowel, Guion notes the absence of any acoustic or perceptual similarity with respect to its affricate counterpart (5). The change form /ki/ to /tʃi/ is allowed to occur because of the acoustic resemblance between the two sounds, which causes a process of perceptual reanalysis by the speaker/ hearer.

I surmise that the perceptual analysis described by Guion is conditional on how the velar stop is realized when preceding a front vowel. Preliminary results of a *production experiment* indicate that, in some speakers, velar stops in Italian are realized differently, depending on the stress pattern: the burst is more salient (longer) in stops far from stress, and the closure is more salient (longer) in stops either in the onset of the stressed syllable, or in the onset of an immediately post-tonic syllable. I propose that in the former case, speakers are more easily driven to re-analyze the sequence -ki as being a palato-alveolar stop followed by a front high vowel, than in the latter case.

Additional factors are being analyzed, which could determine a decreased similarity between /ki/ and /tʃi/ when the velar is immediately following a stressed vowel. Stress could have the effect of increasing the pressure buildup behind a stop closure: this would result in increased amplitude in the release noise, which is acoustically different from the evenly spread frication of the affricate counterpart. A further aspect to be taken into account is the length of the frication phase of the velar stop, once it has been distinguished from the transient and the aspiration part of the release (Hanson et al., 2006).

**Summary:**

This study suggests— in line with previous work on palatalization, e.g. Guion (1996) and Wilson (2005)-- that the phonological process under analysis is a perceptually driven change. In addition, it shows that, unlike what has been claimed in previous studies, in modern Italian, velar palatalization in plurals nouns and adjectives is *not* unpredictable. It's application is conditioned by the position of main stress.

The phonological change only occurs when the position of the main stress causes the frication phase of the release to be more salient than the closure, and more easily reanalyzed as the frication part of an affricate followed by the high, front vowel /i/.

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**Data:**

(1) Alternations in the masculine paradigms: an example

	<b>Palatalizing</b>	<b>Non-Palatalizing</b>
<b>Nouns</b>	mediko, meditʃi 'doctor'	arabesko, arabeski 'arabesque'
	filologo, filolodʒi 'philologue'	sfogo, sfogi 'rash'
<b>Adjectives</b>	antiko, antiki 'antique'	comiko, comitʃi 'comic'
	lungo, lungi 'long'	

(2) Results from the corpus study:

Nouns:

Stress Pal?	YES	NO
Antepenult	240	20
Penult	5	217

Adjectives:

Stress Pal?	YES	NO
Antepenult	1165	8
Penult	4	150

(3) Results from the nonsense-words test (across speakers):

Stress Pal?	YES	NO
Antepenult	24	2
Penult	4	75

(4) Environments of productive palatalization:

Contexts where palatalization applies:

CVCVki → CVCVtʃi

CVCVgi → CVCVdʒi

Contexts where palatalization does *not* apply:

CVCVki → CVCVki

CVCVgi → CVCVgi

\* CVCVtʃi

\* CVCVdʒi

**Selected references:**

- Celata, Chiara. 2002. Fonetica della palatalizzazione di velari in romanzo. *Quaderni del laboratorio di linguistica*. 118-137. Pisa.
- Celata, Chiara and Bertinetto, Pier Marco (2005); Lexical Access in Italian words with and without Palatalization. *Lingue e Linguaggio* IV 2 (293-318).
- Dressler, Wolfgang (1985); Morphology: dynamics of derivation. Karoma Publishers, Ann Arbor.
- Guion, S.G. (1996); Velar Palatalization: Coarticulation, Perception and Sound Change. Dissertation, University of Texas at Austin.
- Hanson, H.M. and Stevens, K.N. (2006); The nature of aspiration in stop consonants in English. 151<sup>st</sup> Meeting: Acoustical Society of America, Providence, RI.
- Krämer, Martin (2006); Italian velar palatalization, lexical exceptionality and typological redundancy in OT, University of Tromsø/ CASTL
- Rohlfs, Gerhard (1949-1954): Historische Grammatik der italienischen Sprache und ihrer Mundarten, Bern.
- Wilson, C. (2006); Learning Phonology with substantial bias. *Cognitive Science* 30 (945–982).