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Lexical access in Italian: Words with and without palatalization

(work in progress)

1. *Introduction*[*]

Velar palatalization is a fairly common process in Romance. Its roots are to be found in late Latin, although its distribution (as well as its phonetic implementation) differs from variety to variety, suggesting that the process was still expanding at the time when Romance languages arose. The phonetic trigger is quite obvious, for it consists in the advanced point of articulation induced by front vowels on preceding velar consonants. One may thus reasonably assume that this phonological process was fairly regularly applied at some point in time (and possibly for an extended period). Indeed, this has left abundant traces in the phonology of most Romance languages, specifically in root-internal positions, as shown by the following Italian examples: [tʃ]*elo* 'heaven', *la*[tʃ]*erto* 'biseps', *auda*[tʃ]*e* 'bold', from Latin CAELUM, LACERTUM, AUDACEM. However, the present distribution in most Romance varieties shows that palatalization is no more active as an across-the-board phonetic process. This is certainly the case in Italian, where palatalization (as an active phonological mechanism) is now restricted to inflectional and derivational processes, apart from its presence as a result of historical change, as reflected in the lexical shape of existing words like the ones quoted above, whose phonological representations involve palatal phonemes. Moreover, palatalization in Modern Italian is only triggered by the front high vowel /i/, whereas the examples quoted show that in the past it was also caused by front mid vowels. Most importantly, one now observes a somewhat capricious distribution, as witnessed by examples such as:

(1)

a. *medico* /ˈmɛdiko/ 'physician', *medici* /ˈmɛditʃi/ 'physicians' or *filologo* /fiˈlɔlogo/ 'philologist', *filologi* /fiˈlɔlodʒi/ 'philologists',

AS OPPOSED TO:

b. *buco* /ˈbuko/ 'hole', *buchi* /buki/ 'holes' or *lago* /ˈlago/ 'lake', *laghi* /ˈlagi/ 'lakes';

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c. *induco* /inˈduko/ ‘induce.1SG’, *induci* /inˈdutʃi/ ‘induce.2SG’ or *prediligo* /prediˈligo/ ‘(strongly) prefer.1SG’, *prediligi* /prediˈlidʒi/ ‘(strongly) prefer.2SG’

AS OPPOSED TO:

d. *predico* /ˈprɛdiko/ ‘preach.1SG’, *predichi* /ˈprɛdiki/ ‘preach.2SG’ or *indago* /inˈdago/ ‘investigate.1s’, *indaghi* /inˈdagi/ ‘investigate.2SG’.

As may be seen, one and the same inflectional operation (plural formation in a-b, person inflection in c-d) produces different results, so that the speaker cannot foresee the correct output on mere phonotactic grounds. Things get only apparently better with derivation, for although most derivational affixes behave regularly, this often introduces an asymmetry with respect to the behavior of one and the same basis as far as inflectional processes are concerned. For instance, both *–ità* and *–izia* yield palatalization disregarding the possible absence of palatalization in the plural of the bases they are attached to, as in (2a,c) as opposed to (2b,d):

(2)

a. *pratico* /ˈpratiko/ ‘practical’, *pratici* /ˈpratitʃi/ ‘practical.PL’, *praticità* /pratitʃiˈta/ ‘practicalness’

AS OPPOSED TO:

b. *mendico* /menˈdiko/ ‘mendicant’, *mendichi* /menˈdiki/ ‘mendicant.PL’, *mendicità* /menditʃiˈta/ ‘mendicity’;

c. *amico* /aˈmiko/ ‘friend’, *amici* /aˈmitʃi/ ‘friends’, *amicizia* /amiˈtʃitːsja/ ‘friendship’

AS OPPOSED TO:

d. *impudico* /impuˈdiko/ ‘wanton’, *impudichi* /impuˈdiki/ ‘wanton.PL’, *impudicizia* /impudiˈtʃitːsja/ ‘wantonness’.

In the next section we shall provide an overview of the morphological impact of palatalization in Italian. Here, we would like to anticipate that, given the situation, it is interesting to investigate its possible consequences in terms of lexical access. In this regard, one may formulate three different hypotheses. If palatalization were an absolutely regular phenomenon, one might suggest (HYPOTHESIS 1) that its implementation should bring about a measurable processing cost, due to the morphophonological operation involved in it. Thus, for instance, producing the plural *ami*[t°S]*i* (from *ami*[k]*o* ‘friend’) should yield a higher cost, hence take longer, than producing the plural *tavoli* (from *tavolo* ‘table’), where no change occurs in the root. If, on the other hand, palatalization is an unpredictable process – as is ostensibly the case in Italian – to the extent that the speaker cannot decide on

the basis of phonotactic information whether the plural of *amico* is actually **ami*[k]*i* or *ami*[tʃ]*i*, then the expectation might be (HYPOTHESIS 2a) that the speaker must directly access the plural of any noun or adjective whose root ends in a velar stop. In other words, the plural allomorph of the latter words should be explicitly listed in the mental lexicon, as opposed to the regular plural of non-velar-ending words, which would be computed compositionally. The processing cost inherent in producing *tavoli* from *tavolo* would thus be higher than the cost involved in producing both *ami*[tʃ]*i* (from *ami*[k]*o*) and *sara*[g]*i* (from *sara*[g]*o* 'type of fish'). Alternatively, one might claim (HYPOTHESIS 2b) that the speaker only applies a thoroughly regular (thus, compositional) morphological operation in non-palatalizing words (e.g., plural formation in *tavoli* from *tavolo* and *sara*[g]*i from sara*[g]*o*), while having direct, thus faster, access to the inflected forms in the case of words diacritically marked for palatalization (as in *ami*[tʃ]*i* from *ami*[k]*o*). Although it is not clear what advantage the speaker could derive from the last solution, this is a theoretically conceivable option. One reason (admittedly, one among other possibilities) to believe that this might the case would be to find out that, e.g., the plurals of palatalizing nouns and adjectives (and possibly even their singulars) are accessed faster than plurals of words with non-palatalizing velar-ending roots.

In the next section, we provide some preliminary data about the morphological distribution of velar palatalization in Italian (§ 2), with respect to the three processes involved in it, namely, plural formation (§ 2.1), derivation and verbal declension (§ 2.2). In this survey, we will make reference to both ancient and contemporary Italian. In the following parts we will deal with the experimental investigation (§ 3), where a lexical decision task is performed on nouns with and without morphophonological palatalization. Materials (§ 3.1), methods (§ 3.2) and participants (§ 3.3) are presented, then statistical analyses and results are illustrated (§ 3.4). The last section contains the general discussion and conclusions (§ 4).

2. *An overview of the morphological distribution of palatalization in Italian*

2.1. *Palatalization in plural formation*

Velar palatalization in Romance was once a phonetically grounded process and as such it generalized to every position in the word and applied throughout the whole lexicon. However, it now appears to be lexicalized and mostly unproductive. For this reason, the process of plural formation of words ending in a velar consonant represents a highly problematic area as far as its occurrence and distribution in contemporary Italian are concerned.

As hinted at above, masculine nouns and adjectives ending in [ko] and [go] in the singular do not constitute a homogeneous inflectional class in Standard Italian, since their plural formation (by *–i* suffixation) can yield two different results with respect to the preceding consonant. Some words retain the velar in plural formation ([ki] and [gi], orthographically *–chi* and *–ghi*); others change it into palatoalveolar affricates ([tʃi] or [dʒi], orthographically *–ci* and *–gi*).[1] Examples are *baco – bachi* 'worm(s)' and *lago – laghi* 'lake(s)' for the first type, *amico – amici* 'friend(s)' and *filologo – filologi* 'philologist(s)' for the second.

Traditionally, the forms with palatalization were considered to be the regular output of the rule of plural formation, and the forms with velar retention were regarded as exceptions. Thus Meyer-Lübke (1901, § 339) related the palatalized forms to the Late Latin rule of palatalization that affected any velar stop before palatal vowels, and suggested a case by case explanation for the forms with velar retention, considering them as pertaining to ancient inflectional classes with different plural formation (e.g. *fichi* 'figs' from Lat. FICUS, 4^{h} conjugation; *antichi* 'ancient.pl' from Lat. ANTIQUI with labiovelar; *fuochi* 'fires' from Ancient Italian *f(u)ocora*), or late formations (e.g. *carichi* 'loads', a Romance deverbal formation from *caricare*; *fondachi* 'warehouses' from Ar. *fondog* etc.). From a radically different perspective, Goidanich (1940) argued that the [ki]/[gi] forms represented the ordinary outcome in ancient Italian in view of their wide diffusion in the vulgar speech of Tuscan rural areas, while the forms with palatalization had purportedly been restored by the upper class as Latinized prestigious forms.

The hypothesis that the palatalized forms used to be the regular output can be supported by the analysis of some derived forms. Consider the adjective *pudico – pudichi* 'modest' as an example. Although the adjective is an inherited form (from Lat. PUDICUS, -I), it presents velar retention in the plural. However, the derived noun *pudicizia* 'modesty', which also has a Latin origin (suffixation through –ITIA was very common in Latin), shows palatalization. There are just three nouns ending in *–izia* in Italian: *amicizia* 'friendship' (with its opposite *inimicizia*), *sporcizia* 'dirtiness' and *pudicizia* itself (with its opposite *impudicizia*), all with palatalization; no word ends in *–chizia*. In *amico–amici – amicizia* 'friend–friends–friendship' we have regular palatalization in both inflected and derived forms, thus this series constitutes no problem. On the other hand, *sporcizia* alternates with *sporco–sporchi* 'dirty' (Latin precursors: SPURCITIA and SPURCUS, -I, respectively), following the same pattern of *pudico–pudichi–pudicizia*:
(3)

[1] Considering that we are often going to quote the examples in orthographic form, the reader not familiar with the Italian orthography should be aware that the conventions are somehow reversed with respect to the English standard, inasmuch as <ch> and <gh> stand for the non-palatalized phonemes, while <c> and <g> stand (before <i>) for the palatalized ones.

Adj. Sg.	*Adj. Pl.*	*Noun*	*Gloss*
Sporco	Sporchi	Sporcizia	'dirty, dirtiness'
Pudico	Pudichi	Pudicizia	'modest, modesty'
		AS OPPOSED TO:	
Adj. Sg.	*Adj. Pl.*	*Noun*	*Gloss*
Amico	Amici	Amicizia	'friend, friendship'

However, as far as *pudico–pudichi–pudicizia* is concerned, we have evidence of a different situation in ancient Italian. The palatalized form *pudici* is used by Dante (Convivio 4, 25.5), Boccaccio (both 14th Century) and Tasso (16th Century), while *pudichi* appears in works by Arienti, Berni, Guicciardini and Tasso again (all 16th Century); as to the 17th and 18th centuries, we find alternations between the two forms in writers such as Marino, Vico and Metastasio. We might then conclude that the form *pudici* with palatalization, that we would expect on the basis of the regular derivation from Latin, existed in ancient Italian, but soon entered in competition with a newly restored non-palatalized form, possibly arising as analogical formation on the singular. The non-palatalized form represents today the only possibility for the plural of *pudico*. On the other hand, we have no evidence of a form **sporci* in ancient Italian, and we may reasonably suppose that it never existed. We are thus faced with a case of lexical idiosyncrasy, which seems to be widespread in Italian morphophonological palatalization.

Quite significantly, it is very difficult to establish which type of plural formation prevails in quantitative terms in Ancient as well as Contemporary Italian. As Rohlfs (1966) points out, cases like A.It. *pudici* (for Mod.It. *pudichi*) are rather common and many adjectives and nouns ending in *–chi* in the contemporary language are attested with palatalization in some ancient literary texts: cf. *antici* 'ancient.pl', *caduci* 'transient.pl', *vinci* 'wickers.pl', *bieci* 'sullen.pl', *cuoci* 'cooks', as opposed to Mod. Italian *antichi*, *caduchi*, *vinchi*, *biechi*, *cuochi*. On the other hand, most adjectives ending in *–ico* now have a plural in *–ici* (like *fantastico–fantastici* 'fantastic', *pubblico–pubblici* 'public', *autentico–autentici* 'authentic'), while in past centuries the witers frequently used *fantastichi* (Sacchetti, 14th century), *pubblichi* (Boccaccio, 14th century), *autentichi* (Tasso, 16th century). In some cases we find free oscillation between the two forms, as in Boccaccio where we read both *magnifici* and *magnifichi* 'beautiful.pl', *poetici* and *poetichi* 'poetic.pl' (where only the palatalized forms have survived). Historians and grammarians of the 16th century used both *ecclesiastici* and *ecclesiastichi* 'ecclesiastic.pl' (Guicciardini), *pacifici* and *pacifichi* 'peaceful.pl' (Machiavelli), *selvatici* and *selvatichi* 'wild.pl' (Cellini, Bembo) and so on. Alternating forms for one and the same lexical item are also common in the contemporary language, as we shall see below.

For words ending in *–go* the situation is equally confused. Adjectives and nouns attested without palatalization in the contemporary language, like *guardinghi* 'cautious.pl' and *dialoghi* 'dialogues', frequently appeared as *guardingi* and *dialogi* in the past centuries (cf. Varchi, Tasso). Furthermore, the class of fem. nouns and adjectives in *–ca*, that nowadays shows without exception the ending *–che* [ke] in the plural, sporadically presented palatalization in Ancient Italian: cf. *amice* 'friend.fem.pl', *formice* 'ants', *lunge* 'long.fem.pl)', *biece* 'sullen.fem.pl', *force* 'forks' as opposed to contemporary *amiche*, *formiche*, *lunghe*, *bieche*, *forche* (Rohlfs 1966). In addition, Rohlfs suggests that the preference for the *–che* form should to be related to the persistence of the *–ca* < -CAS plurals in Tuscany untill recent times (cf. Florentine *le formica* 'the ants').

The process of plural palatalization mostly shows a lexically idiosyncratic distribution in Mod. Italian, and this can lead to uncertainty in plural formation by native speakers. The quantitative data collected through the scrutiny of electronic databases are revealing. According to the DISC dictionary (Sabatini & Coletti 1997), 4013 nouns and adjectives with singular in *–co* have palatalization, while only 797 have velar retention. Among nouns, the situation is more balanced (715 with palatalization, 525 with velar retention), whereas among adjectives palatalization largely prevails (3880 vs. 374). As to words pertaining to both lexical classes, i.e. words that may be both adjectives and nouns, palatalization wins again (582 vs. 102).

Note that the vast majority (3922 out of 4013) of words with *–co*/*–ci* alternation are formed by means of the highly productive *–ico*/*–ici* termination (mostly from Lat. –ICUS, e.g. *poetico-poetici* 'poetic', *tragico-tragici* 'tragic'). These words are predominantly adjectives; their morphotactic complexity (suffixation through *–ico*) can be either low, as in transparent words such as *poetico* 'poetic' from *poeta* 'poet', *germanico* 'Germanic' from *Germania* 'Germany', or relatively high, as in opaque words such as *medico* 'doctor' < Lat. MEDICUM from MEDERI 'to take care'. Words ending in *–ico* presenting velar retention are no more than 66 out of 797, mostly deverbal formations as in the case of *valico-valichi* 'mountain pass' from *valicare* 'to cross over', *carico-carichi* 'load' from *caricare* 'to load'.

Another interesting subset is represented by words ending in *–sco* [sko]. The plural of these words involves velar retention ([ski]) in all cases, e.g. *brusco-bruschi* 'rude'. The only exceptions are two words in which palatalization involves the change of the sequence 'sibilant + velar stop' into the palatal fricative [ʃ]: cf. *fali*[sk]*o-fali*[ʃ:]*i* and *vol*[sk]*o-vol*[ʃ]*i*, both nouns referring to Italic populations (also used for the corresponding adjectives).

As far as the voiced velar is concerned, the two opposing classes (palatalizing and non-palatalizing) are numerically equivalent: 239 plurals (of nouns and adjectives) present a palatal affricate, 242 retain the velar stop. Note however that composition through *–logo* leads to palatalization more often than velar retention (195 vs. 40), so that plurals like in *filologo-filologi* 'philologist(s)' appear to be more frequent than plurals like in *eterologo-*

eterologhi 'heterologous(sg., pl.)' or *catalogo-cataloghi* 'catalogue(s)'. The same is true for compounding through *–fago*: 31 plurals present palatalization (e.g. *esofago-esofagi* 'esophagus/i'), while only 2 retain the velar (i.e. *polifago-polifaghi* 'polyphagous(sg., pl.)' and *sarcofago-sarcofaghi* 'sarcophagus/i'; however, the latter appears also as *sarcofagi*). On the contrary, the suffixes *–fugo* and *–gogo* show velar preservation in every instance (N= 14).

This indicates that the lexical distribution of the two types of plural appears to be skewed in the case of most morphological endings. This obviously must have a consequence also in terms of processing.

A summarizing table follows. We provide three example for every inflectional subclass: one for nouns, one for adjectives, and one for lexically ambigous items.

(4)

Terminations	NOUN	Example	ADJECTIVE	Example	AMBIGUOUS[2]	Example
-ci	715	basilico	3880	ciclico	582	amico
-chi	525	affresco	374	adunco	102	bianco
-ici	661	bonifico	3820	allergico	559	amico
-ichi	54	fico	24	antico	13	carico
-sci	2	falisco	2	falisco	2	falisco
-schi	102	affresco	266	brusco	41	etrusco
-gi	226	biologo	29	ematofago	16	antropofago
-ghi	215	ago	67	oblungo	40	casalingo
-logi	195	astrologo	0		0	
-loghi	38	apologo	3	analogo	1	omologo
-fagi	18	esofago	24	ematofago	11	antropofago
-faghi	2	sarcofago	1	polifago	1	polifago
-fugi	0		0		0	
-fughi	9	profugo	14	centrifugo	9	profugo

[2] Ambigous items refer to items that figure both as noun and as adjective; thus, they are already considered in the noun and adjective totals.

According to the same source (DISC), the items attested with both forms of plural consist of 22 roots ending in voiceless velar and 32 roots ending in voiced velar (within the latter group, 22 are *–logo* compounds). Common examples are *farmaci*/*farmachi* 'drugs', *manici*/*manichi* 'handles', *monaci*/*monachi* 'monks', *stomaci*/*stomachi* 'stomachs', *intonaci*/*intonachi* 'plasters', *chirurgi*/*chirurghi* 'surgeons', *sarcofagi*/*sarcofaghi* 'sarcophagi'.

It is worth noticing that, even though the general trends just depicted provide a realistic description of the morphophonology of plural formation for this particular type of Italian words, other sources of data would no doubt yield slightly different figures. In fact, there is some disagreement among dictionaries with respect to a number of 'critical' items, and this reflects the high degree of oscillation that exists among native speakers for some of these words. One of the more critical subset is that of *–logo* compounds (which is also characterised by high morphological productivity). Another source of unbalance derives from the uneven level of acceptance of some alternating forms. For instance, with *chirurghi*/*chirurgi* the former plural is almost universally accepted, while the latter is felt to be marginal. On the other hand, *farmaci* is definitely preferred to *farmachi*. In general, when two plural allomorphs exist, they seldom are of equal likelyhood.

An informal experiment investigating the production of plural nonsense words, embedded in sentence frames, which end in velar consonant in the singular is reported on in Dressler (1985). The results showed that palatalization was applied more frequently than velar retention in the plural formation of both nouns and adjectives, suggesting that the given lexical classes behave similarly with respect to this morphophonological process. Interestingly, stress position turned out to be a relevant parameter, since palatalization applied in 90% of nonsense words with antepenultimate stress, but only in 56% of nonsense words with penultimate stress, thus suggesting that palatalization could be influenced by the prosodic pattern of words.[3] Moreover, words ending in *–ico* strongly favoured palatalization, especially when stressed on the antepenult syllable (recall the high frequency of this prosodic pattern among palatalizing words, as shown in (4) above).

2.2. *Palatalization in derivation and verbal declension*

We saw above that the nominal suffix *–izia* from Lat –ITIA yields palatalization of the stem even if the velar consonant is retained in plural formation (e.g. *sporco-sporchi-sporcizia* 'dirty (sg., pl.)-dirtiness'). However, this is not always the case in derivational morphology. Indeed, this behaviour concerns the minority of cases.

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[3] As shown below, however, this factor turned out to be non-significant in our results.

First of all, this pattern is not widely attested in the lexicon. With respect to the suffix *–izia*, there are just three words ending in *–cizia*, all mentioned above: *amicizia*, *sporcizia* and *pudicizia* (plus the prefixed forms: *inimicizia*, *impudicizia*). Among them, *amicizia* has palatalization in plural formation as well (*amici* 'friends'). There are no words ending in *–*chizia*, ***–*gizia* or *–*ghizia*. Consider now the verbal suffix *–icare*. According to our main source (DISC), it forms 8 verbs (plus their prefixed compounds), always involving palatalization of the velar consonant: *appiccicare* 'to stick', *biascicare* 'to mumble', *ciancicare* 'to chatter', *luccicare* 'to shine', *moccicare* 'to drop (the nose)', *spiaccicare* 'to squash', *biancicare* 'to be white', *brancicare* 'to fumble'. Among them, however, only the latter two are formed with palatalization of an etymological velar consonant (*biancicare* coming from *bianco-bianchi* 'white' and *brancicare* from A.It. *brancare* 'to grasp'), while a palatal consonant is already present in the stem of the others. As a third example, consider the nominal suffix *–ità*. There are 220 nouns with palatalization (219 with voiceless, among which only 1 with voiced affricate), and only 1 noun with velar retention (*antichità* 'antiquity' from *antico-antichi* 'ancient'). Since, however, velar retention in *antichità* follows from a diachronically different origin (< Lat. ANTIQUITATEM with root-final labiovelar), we can exclude this case and state that the suffix *–ità* yields palatalization without exception. Furthermore, 215 out of the 220 words with palatalization have a palatal consonant in their base-form as well (e.g. *malvagio-malvagi-malvagità* 'wicked, wickedness', *semplice-semplici-semplicità* 'simple, simplicity'). Thus, the truly palatalising words in derivation are only 5, namely: *caducità* 'transience' from *caduco-caduchi* 'transient', *opacità* 'opacity' from *opaco-opachi* 'opaque', *cecità* 'blindness' from *cieco-ciechi* 'blind', *parcità* 'parsimony' from *parco-parchi* 'parsimonious', and *mendicità* 'beggary' from *mendico-mendichi* 'beggar'. This leads us to the conclusion that the prevailing of palatalization with the above mentioned suffixes is largely a matter of analogical pressure stemming from the vast majority of words with an etymological root-final palatal. Broadly speaking, it is hard to find fully palatalizing suffixes and fully non-palatalizing ones. Rather, what one frequently finds in derivation is consistency between inflected and derived form.

Dressler (1985) made a distinction among always palatalizing, frequently palatalizing and never palatalizing suffixes. For example, he noted that the suffix *–ìa* always causes palatalization, with the rare exception of Greek words like *monarchia* 'monarchy'. Similarly, he stated that the elative suffix *–ìssimo* always causes palatalization, with the only exception of *sporchissimo* 'very dirty'. However, exceptions do exist; see for example *naumachia* 'ship combat', *celiachia* 'kind of disease' for the first case, and *bianchissimo* 'bright white', *antichissimo* 'very ancient' for the second. Indeed, as to elative formation, a more fruitful perspective would consist in taking the inflected form of each words as the source of the derived one. In fact, from the plurals of *sporco*, *bianco* and *antico* (i.e.

sporchi, *bianchi* and *antichi*) one can predict velar retention in the elative form.[4] As to *–ìa* words, the regularity seems to be that all words containing a voiceless consonant (cf. 31 Greek words ending in *–machia*, *–archia*, *–psichia*, *–achia* and *–trichia*, mostly philosophical or medical terms, plus *foschia* 'haze'), retain the velar; by contrast, all words containing a voiced consonant (cf. 650 Greek words ending in *–logia*, *–fagia*, *–algia* and *–gogia*) show palatalization.

Further examples of derivational suffixes could be cited, all leading to the same conclusions: namely, derivation is either coherent with inflection (cf. *–issimo*), or guided by some sort of morphophonological regularity (cf. *–ia*).

Summing up, we may distinguish the following three cases:

(a) Suffixes that always induce palatalization: *-izia*, *-ità*, *-icare*. However, as remarked above, palatalization applies to a very limited number of velar ending roots, while in the majority of cases a palatal consonant is already present in the base-form.

(b) Suffixes that never induce palatalization. Unsurprisingly, they all begin with the /e/ vowel, as Dressler (1985) already noted (cf. *–erìa*, *–etto*, *–esco*, *–ese* and *–essa* and *–eggiare*).[5]

(c) Suffixes compatible with both palatalization and velar retention. These comprise the vaste majority and may be divided in two categories: (1) Suffixes that preserve the root-final consonant also appearing in plural formation (i.e. *–ino/a*, *–issimo/a*, *–ismo*, *–ista*, *–izzare*)[6]. (2) Suffixes that behave differently in different morphophonological contexts (i.e. *–ìa*).

A similar alternation between palatalizing and non-palatalizing suffixes is also to be observed in verbal inflection, e.g. *le*[gː]*o* – *le*[dːʒ]*i* 'I read, you read' vs. *pa*[g]*o* – *pa*[g]*i* 'I pay, you pay' (cf. also (1) above). Nevertheless, we could not include verbal inflection in our analysis, because some sort of morphological regularity seems to be the ultimate source of the selection of palatalization vs. velar retention (cf. Dressler 1985:176), thus preventing the construction of balanced lists of items as required by a lexical decision task. In fact, there is a strong tendency of verbs presenting palatalization to occur in different conjugation paradigms as compared with verbs without palatalization: cf. *le*[dːʒ]*ere* 'to read' (II conjugation, with generalised palatalization before the thematic vowels [e]/[i]) vs.

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[4] Although the elative form does not sound perfectly natural with all adjectives, there is a strong tendency to prefer the form with velar retention whenever the velar appears in the plural (e.g. *bieco-biechi/biechissimo* 'sullen, very sullen').

[5] Cf. *poetico*-poetici/poeticheria 'poetic, poetic action'; *amico-amici/amichetto* 'friend(s), little friend'; *mistico*-mistici/misticheggiare 'mystical, to behave like a mystic'.

[6] Few exceptions have to be considered. Compare for example *forcina* instead of **forchina* from *forca* 'fork', *fisichino* instead of **fisicino* from *fisico-fisici* 'physic(s)'; *monachismo* instead of **monacismo* from *monaco-monaci* 'monk(s)'; *musicista* instead of **musichista* from *musica* 'music'; *opacizzare* instead of **opachizzare* from *opaco-opachi* 'opaque'.

pa[g]*are* ‘to pay’ (I conjugation, with thematic vowel [a]). Rohlfs (1966:262) suggests that the thematic vowel /a/ would have promoted the maintenance of the velar consonant before the ancient *–as* morpheme in verbal inflection as well as feminine plurals (see above).

3. *Experiment*

3.1. *Materials*

The choice of the experimental materials was severely constrained by a number of factors. In particular, due to the various restrictions recapitulated in the preceding section, words involving derivational suffixes had to be excluded from our experiment, for their behaviour is either predictable out of inflection of the base-form (plural formation), or out of the morphophonological subregularity that applies to the specific derivational class they belong to. Consequently, in these cases, palatalization could not be scrutinized independetly of other factors.

Thus, the materials consisted of Italian nouns and adjectives either with or without palatalization in plural formation. We could not oppose nouns and adjectives, since we did not want to group together items which turn out to be too similar from the phonological point of view and/or heavily influenced by some specific morphophonological subregularity (recall that adjectives with palatalization almost exclusively belong to the *–ico* subclass, highly biased towards palatalization). Note, in any case, that in Dressler’s experiment no fundamental difference emerged between pseudo-nouns and pseudo-adjectives. As a consequence, some ambiguous forms, pertaining to both lexical classes (e.g. *grafico* ‘diagram’ and ‘graphic’), were also included.

The final list was arrived at by selecting the experimental items out of a much larger initial set. First, we excluded items that tolerate plural formation with and without palatalization, as in the examples mentioned above (cf. *chirurgo – chirurgi*/*chirurghi* ‘surgeon(s)’). Second, we excluded words sharing specific morphological (and phonetic) features, due to the presence of the same suffixes. For this reason, nouns and adjectives ending in *–go*/*–gi* were excluded as they all appeared to be composed with the *–logo* and *–fago* suffixes. As a consequence, we also had to exclude the whole class of*–go*/*–ghi* words, for lack of a suitable set for comparison. Thus, we could only include items ending in voiceless velar. Third, since stress appeared to be an effective predictor in Dressler’s experiment, we contrasted words stressed on the penult and on the antepenult. Fourth, we made an attempt at controlling word length. To this aim, we removed every dy- and pentasyllabic words from our material. Finally, in order to control for the factor frequency, the initial set of candidates was submitted to a group of native speakers for subjective

evaluation. Frequency judgements had to be expressed according to a five-point scale, with 1 = very rare, 5 = very frequent, and intermediate values for response modulation. Participants were asked to provide their judgments for both the singular and the plural form. Items that received a highly divergent score for the two forms were discarded.

The two experimental classes (with and without palatalization, henceforth Class A and Class B) are shown in the Appendix. Every class comprises 16 nouns/adjectives distinguished for frequency (high vs. low), number of syllables (three vs. four), and stress position (penult vs. ante-penult). Since, however, stress position could not be balanced between the two classes (with Class A only comprising words with ante-penult stress, and Class B comprising 13 words with penult and 3 with ante-penult stress), and since moreover the total number of trisyllables exceeded that of quadrisyllables, a third group of 32 non-palatalizing nouns/adjectives whose root ends in other consonants was added (see again the Appendix), in order to have balanced sub-groups of items for the relevant parameters, and also in order to have a base-line for comparison. The latter words were of course submitted to the same type of subjective frequency rating. Finally, in each group of word, half of the items were frequent, half were rare.

The 64 non-words were obtained by modifying existing words in one or at most two phonemes. Two groups of 32 items each were created, one with items ending in *–co*, the other with items ending in other consonants. Moreover, 16 of the *–co* items presented palatalization in the plural, 16 did not. Thus, the distribution of root-final consonants, as well as the proportion of palatalizing and non-palatalizing items, was strictly balanced between words and non-words, so that participants could not rely on distributional factors in order to perform their lexical decision.

3.2. *Method*

The experiment consisted in a repetition priming task with visual lexical decision. Participants had to decide as fast as possible whether the stimulus appearing on the screen of a computer was a word or a non-word. To perform the lexical decision they had to press one of two buttons, with the YES button placed on the side of their preferred hand. The non-words, in the same number as words, were obtained by modifying one or two consonantal phonemes of real words. Targets consisted in the base-forms (singular), while primes consisted in the inflected (plural) or 'identical' (singular) forms. The prime/target distance was 10 words in the average. Words were pseudorandomly presented, with three different randomizations in order to vary the order of item presentation across subgroups of participants. The final set was composed of 256 items (of which 128 primes and 128 targets, namely 64 identical primes and 64 inflected primes, including both words and non-

words). Since each participant was supposed to respond only once to each target, we composed two balanced experimental lists, where the different types of primes were equally distributed. In the statistical analysis we randomly grouped participants from each list, in order to obtain a set of 'superparticipants'.

The experimental conditions for the two lists are illustrated in the following example:

(5)

LIST 1	*Prime*	*Target*	LIST 2	*Prime*	*Target*
inflected prime	Drasti[tʃ]i	Drasti[k]o	*identical prime*	Drasti[k]o	Drasti[k]o
identical prime	Disti[k]o	Disti[k]o	*inflected prime*	Disti[tʃ]i	Disti[k]o
inflected prime	Alter[k]i	Alter[k]o	*identical prime*	Alter[k]o	Alter[k]o
identical prime	Cari[k]o	Cari[k]o	*inflected prime*	Cari[k]i	Cari[k]o

The hardware consisted in a Mac computer and a button-box. Participants were provided with written instructions and were first introduced to a training session consisting of 8 stimuli, in order to familiarize with the experimental setting. The presentation of each stimulus was preceded by the appearance of a string of asterisks in the middle of the screen (to facilitate the individuation of the fixation area), which remained visible for 500 ms before the actual stimulus appeared. The stimulus remained visible for 1000 ms; when a slower response was detected, a warning appeared on the screen, prompting the participant to speed up the responses. There were two blocks of 128 item each, separated by a short break.

The factors of the statistical design were the following: FUNCTION (Prime / Target), STATUS (Word / Non-Word), ROOT (Velar / Non-Velar), MORPHOLOGY (base vs. inflected, namely: Identical / Different), PALATALIZATION (Palatalizing / Non-Palatalizing), FREQUENCY (Frequent / Rare), STRESS (Penult / Antepenult), LENGTH (Trisyllable / Quadrisyllable).

3.3. *Participants*

40 paid participants, all students in Pisa University, took part in the experiment. They were randomly assigned to one of the two lists, and to one of the three randomizations.

3.4. *Results*

First, we discarded the stimuli that were not correctly identified as words or non-words (9,0%). We also discarded correct target responses associated to missed primes (4,8%), for in such cases one can assume that the priming process has not been properly activated. In all (including non-words) we eliminated 13,8% of all observations.

Among words, errors hit Rare more than Frequent (7,32% vs. 1,17%), Primes more than Targets (6,20% vs. 2,67%) and Different more than Identical (4,97% vs. 3,90%; within Primes alone: 6,78% vs. 5,63%; within Targets alone 3,16% vs. 2,17%). Interestingly, Palatalizing items were hit by errors less often than Non-Palatalizing ones (1,67% vs. 3,12%).

As a preliminary step, an ANOVA was performed on the two experimental Lists. This turned out to be not far from significance ($F(1, 4125) = 3.439$, $p = .064$), with List 1 slightly faster than List 2. The test was thus extended to the three randomizations of the materials, revealing that the difference among the two lists was only significant with respect to Randomization 2 ($t(1666) = 2.452$, $p < .05$). It is reassuring to note, however, that the general orientation of Randomization 2 did not differ from that stemming from the remaining data sets with respect to the main trends to be observed in this study. Thus, the discrepancy was merely a difference of response speed. Moreover, the interaction List x Randomization was non-significant ($F(2, 4125) = 1.466$, $p > .05$). As a further preliminary step, we inspected the RTs and error rates of the individual superparticipants. As a result of this, one of the superparticipants was discarded due to unsatisfactory behavior on both errors and RTs, as measured in terms of distance from the mean values (threshold: standard deviation multiplied by a factor 2.5). Our statistical computations will thus be based on 19 superparticipants.

The overall contrast Prime vs. Target (RTs: 628 ms vs. 542 ms; $F(1, 8384) = 747{,}547$, $p < .001$) was highly significant (RTs: 592 ms vs. 654 ms; $F(1, 8384) = 728{,}551$, $p < .001$). Since the contrast Word vs. Non-Word was also highly significant, in the remainder we shall only refer to the Word subset, separately analyzing the data by participants (F1) and by items (F2). Moreover, since each superparticipant (henceforth simply called 'participants') performed the lexical decision on the whole set of experimental items, F1 involved repeated measures ANOVAs.

A highly reliable difference was observed in both types of analysis within the factors Frequency (Frequent vs. Rare: F1 (1,1820) = 136,666, $p < .001$; F2 (1, 880) = 128,007, $p < .001$) and Length (Trisyllable vs. Quadrisyllable: F1 (1, 18) = 76,804, $p < .001$; F2 (1, 880) = 60.215, $p < .001$). The factors Root (Velar vs. Non-Velar: F1 (1, 18) = 5,373, $p < .05$, F2 (1, 880) = 0,010, $p > .05$) and Morphology (Identical vs. Different: F1 (1, 18) = 5.211, $p < .05$; F2 (1, 880) = 1.924, $p > .05$) were only significant in the analysis by participants.

Finally, the factors Stress (Penult vs. Antepenult: F1 (1, 18) = 1.982, p > .05, F2 (1, 880) = 0,005, p > .05) and Palatalization (Palatalizing vs. Non-Palatalizing: F1 (1, 18) = 3.843, p > .05, F2 (1, 880) = 0.039, p > .05) were plainly non-significant. The above analyses, concerning the main factors, were however conducted on Primes and Targets together. We shall now turn to analyses were Primes and Targets are separately inspected, in order to see whether there is any sign of differential priming on specific subsets of the experimental list.

As to Primes, no significant effect or interaction was to be noted (but see below as to the factor Frequency). Among Targets only, the interaction Root x Morphology turned out to be significant in the analysis by participants and non-significant in the analysis by items (F1 (1, 18) = 0,904, p < .05; F2 (1, 438) = 0,450, p > .05). In order to investigate in more detail this issue, we performed separate post-hoc analyses for the two subsets. As it happens, Non-Velar items, as opposed to Velar ones, exhibited a significant contrast between 'Identical' and 'Different' Targets in the analysis by participants (F1 (1, 18) = 3.886, p < .050) and a marginally significant contrast by items (F2 (1, 218) = 3.644, p = .056). This finding is of foremost importance, for it shows that the priming mechanism was statistically effective only among words presenting no morphophonological irregularity in plural formation. In other words, only in this case did the inflected form (i.e., the plural) slow down the response to the base-form (i.e., the singular) as opposed to the Identical condition (where the base-form primed itself). By contrast, with words presenting the morphophonological irregularity here considered (i.e. the unpredictable palatalization among Velar words), no differential priming occurred among Targets (F1 (1, 18) = 0.167, p > .05; F2 (1, 218) = 1.699, p > .05).

Let us finally consider the behavior of the Velar words. The following table provides the disaggregated means for this class of items.

(6)

Primes 626,07	Palatalizing 623,09	Identical	616,44	Frequent	567,93
				Rare	665,69
		Different	629,68	Frequent	587,20
				Rare	664,69
	Non-Palatalizing 628,80	Identical	621,93	Frequent	598,38
				Rare	644,41
		Different	636,24	Frequent	604,24
				Rare	668,24
Targets 541,28	Palatalizing 542,50	Identical	543,14	Frequent	527,76
				Rare	556,06
		'Different'	541,86	Frequent	531,13
				Rare	550,44
	Non-Palatalizing 540,08	Identical	534,11	Frequent	529,98
				Rare	538,98
		'Different'	546,05	Frequent	527,79
				Rare	564,97

Among Velar words, the two-way interactions Function x Morphology (F1 (1, 18) = 6.119, $p < .05$) and Palatalization x Morphology (F1 (1, 18) = 3.307, $p < .05$) turned out to be significant in the analysis by participants and non-significant in the analysis by items. Even though the three-way interaction Function x Palatalization x Morphology was non-significant (F1 (1, 18) = 1.653, $p > .05$), there was some ground for supposing that the factor Palatalization behaved differently in the Identical vs. Different condition depending on whether the stimuli were Targets or Primes. Indeed, Palatalization x Morphology was non-significant as to Primes in both analyses (F1 (1, 18) = 0.109, $p > .05$, F2 (1, 221) = 0.358, $p > .05$), but significant at least in the analysis by participants as to Targets (F1 (1, 18) = 4.367, $p = .051$). Post-hoc comparisons among Velar Targets showed that the contrast Identical vs. Different was significant by participants among Non-Palatalizing Targets (F (1, 18) = 4.404, $p = .05$) but non-significant among Palatalizing ones (F (1, 18) = 1.842, $p > .05$).[7] We can thus conclude that the lack of differential priming to be found for Velar Targets was mostly due to Palatalizing items. For this class of words, it did not make any any difference whether the activation of a Target (base-form) depended on an identical or a different (i.e., plural) Prime.

Next we checked for possible effects of the factor Frequency. The three-way interaction Function x Palatalization x Frequency turned out to be significant by participants (F1 (1, 18) = 4.440, $p < .050$) but non-significant by items (F2 (1, 434) = 1.440, $p > .050$). The two-way interaction Frequency x Palatalization was thus separately analyzed for Primes

[7] This turned out to be the case for any of the three randomizations used. The lack of statistical significance in the interaction Participants x Palatalization indicates that this trend generalized over the whole set of participants.

and Targets in the analysis by participants. In the former case (Velar Primes), the interaction was marginally significant (F1 (1, 18) = 4.212, p = .055), with Frequent Primes showing a significant Palatalizing vs. Non-Palatalizing contrast (F1 (1, 18) = 6.993, p < .05) as opposed to Rare ones (F1 (1, 18) = 0.817, p > .05). In the latter case (Velar Targets), neither Frequent items nor Rare ones showed any significant difference in the contrast Palatalizing vs. Non-Palatalizing. The interaction Frequency x Morphology turned out to be non-significant as well (F1 (1,18) = 0.784, p > .05; F2 (1, 212) = 0.921, p > .05), thus suggesting that the difference between 'Identical' and 'Different' Targets did not vary with respect to the Frequency factor as far as the velar class as a whole is concerned. Similarly, the three-way interaction Frequency x Morphology x Palatalization, accounting for possible differences in Palatalizing vs. Non-Palatalizing Targets, did not show any significant effect either (F1 (1, 18) = 0.995, p > .05; F2 (1, 212) = 0.284, p > .05). We can thus conclude that Frequency did not affect the priming process of Velar items in any relevant manner.[8]

4. *Discussion*

As illustrated in the previous section, our inquiry showed that the morphophonological process of palatalization leaves clearly identifiable traces in the mental processing by Italian speakers. In our discussion of the results, we shall refer to the three hypotheses listed in sect. 1.

A preliminary observation has to be put forth with respect to HYPOTHESIS 1, whose very formulation presupposes that the process of palatalization be phonologically predictable. The analysis of the distributional data carried out in sect. 2 has, however, clearly shown that this is not the case in Italian. Palatalization has acquired the status of an irregular morphophonological process. It makes thus no sense in pursuing this hypothesis, which receives no support on either distributional or experimental ground (as shown by the significant difference observed between Velar vs. Non-Velar words). We shall therefore concentrate on the two alternative versions of HYPOTHESIS 2.

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[8] Although the overall comparison among the factor Root (Velar / Non-Velar) was not fully significant when Primes and Targets were jointly considered, a tendency towards a statistically significant contrast emerged among both Frequent items (F1 (1, 18) = 11.272, p < .005, F2 (1, 389) = 4.151, p < .05) and, at least by participants, Rare ones (F1 (1, 18) = 20.290, p < .000; F2 (1, 482) = 2.146, p > .05). Note that, although both subsets showed a more or less significant contrast, the direction diverged dramatically, with Velar roots slower than Non-Velar ones among Frequent words and Non-Velar roots slower than Velar ones among Rare words, thus accounting for the overall non-significance. The non-significance of the interaction Root x Function in the two subsets (Frequent vs. Rare) demonstrates however that the above differences were not dependent on the Prime / Target contrast, indicating that this datum was a possible artefact of our lexical selection.

The first datum worth noting is that Velar and Non-Velar words (namely, words whose root ends or, respectively, does not end in a velar stop) behaved differently, inasmuch as there was no reliable differential priming effect within Velar words, whereas an observable effect of this sort was found with Non-Velar words, where 'Different' Targets presented a significant disadvantage as compared with 'Identical' Targets. This shows that the absolutely regular plurals of Non-Velar words are most probably computed on-line by the speakers as contrasted to the directly accessed plurals of Velar words. This lends clear support to HYPOTHESIS 2a, inasmuch as the unpredictable plurals of the latter words (where the actual manifestation of the root-final consonant cannot be computed on the basis of any phonological evidence) prevents the speakers from exploiting an automatic, compositional strategy. Hence, the lack of differential priming for 'Identical' vs. 'Different' Targets. It is worth stressing that the contrast between Velar and Non-Velar words was the only one, in the crucial subset of the statistical computations, to turn out significant in both types of analyses. We may thus conclude that Velar words are, so to say, diacritically marked in the mental lexicon, in accordance with the assumption that irregular morpho(phono)logical processes are less likely candidates to feed a compositional mechanism. Supposedly, the unpredictability of the process of plural formation with Velar words has the consequence that the plural of each word belonging to this class is not only directly listed in the mental lexicon, but even strictly coarticulated with its corresponding singular. In other words, when reading the plurals ami[tʃ]i or sara[g]i (from *amico* and *sarago*), the speaker accesses at the same time both the plural form and the corresponding singular, so that any possible difference between the identical vs. different condition vanishes. Apparently, in the mental lexicon of the Italian speakers these irregular plurals have no independent existence with respect to their base-form (i.e., the singular).[9]

Note, however, that although we gathered clear evidence that the plurals of Velar words are directly accessed, this does not exclude the possible existence of alternative processing routes. Indeed, the relatively frequent occurrence of speech errors of the relevant type (possibly supported by the marginal existence of double-plural words, as indicated in sect. 2.1) proves that the speaker can at any moment activate the analogical path, or possibly the regular mechanism of plural formation consisting in changing the final vowel in a fairly predictable way.[10] This provides clear support to double-route models, as opposed to single-route ones.

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[9] On the other hand, one may reasonably assume that this relation is not bidirectional, in the sense that the singular of such words does not evoke the plural with equal strenght.

[10] The two authors have collected speech errors such as **reciprochi*, **ipocondriachi*, **rammarici* (for *reciproci*, *ipocondriaci*, *rammarichi*) uttered by cultivated people in formal contexts, such as lectures or conference presentations. While the first two examples are compatible with the activation of a default rule of plural formation,

Although HYPOTHESIS 2a received the strongest support in our experiment, some (admittedly weak) support emerged also in favor of HYPOTHESIS 2b. As shown in the previous section, a slight difference emerged among Palatalizing and Non-Palatalizing Targets (as opposed to Primes), although only in the analysis by participants. Furthermore, it should be pointed out that Palatalizing words showed the tendency to be less often hit by errors than Non-Palatalizing ones (1,67% vs. 3,12%), among Frequent items (0,53% vs. 1,23%), as well as among Rare ones (2,81% vs. 5,01%). It is fair to say, however, that this datum might conceal a possible bias in our materials. As shown in the Appendix, all but one of the Palatalizing words ended with the unstressed suffix *-ico*, while only 3 out of 16 among non-Palatalizing ones presented this feature (besides 4 words ending with stressed *–ico*). Now, given the strong tendency of words ending with unstressed *-ico* to present their plural with palatalization, one cannot exclude that the slight difference observed between Palatalizing and Non-Palatalizing items could be due to a sort of 'lexical gang' effect induced by this particular suffix. As a matter of fact, the Palatalizing vs. Non-Palatalizing contrast turned out to be marginally significant among Frequent Primes as opposed to Rare ones, possibly reflecting the fact that no word ending with unstressed *–ico* was comprised among Frequent Non-Palatalizing words. On the contrary, no such difference emerged between Palatalizing vs. Non-Palatalizing Rare Primes, where 3 (out of 8) words ending with unstressed *–ico* were present, although this lack of difference may possibly depend on a sort of ceiling-effect yielded by the longer latency necessary to perform the lexical decision with Rare items. Admittedly, this casts some doubt as to the real validity of the evidence in favor of HYPOTHESIS 2b. It should be pointed out that Palatalizing words showed the tendency to be less often hit by errors than Non-Palatalizing ones (1,67% vs. 3,12%), among Frequent items (0,53% vs. 1,23%), as well as among Rare ones (2,81% vs. 5,01%).

Further gound for casting doubt on the strength of HYPOTHESIS 2b stems from a possible, and unavoidable, orthographical bias in our materials. As it happens, Non-Palatalizing words present the graphematic sequence <ch> (corresponding to the phoneme /k/), which adds one character to Non-Palatalizing plurals as opposed to Palatalizing ones, where the plural is marked by the single grapheme <c> (phonemically /tʃ/). One might reasonably suppose that Non-Palatalizing plurals took slightly longer to be recognized. Note however that, this being the case, the obvious consequence can only be that the priming effect among the latter words was presumably enhanced. It follows then that the slight difference observed between Palatalizing and Non-Palatalizing Targets might ultimately be artefactual. On the other hand, the fact that the only set of words where the

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the third one may only be explained on the basis of analogical attraction. One thus cannot exclude that the analogical interpretation is involved in the former cases as well.

priming effect turned out to be statistically fully reliable was the Non-Velar set (where the sequence <ch> did not occur) shows that this orthographical bias did not pollute our results.

There is an additional caveat connected with the phonotactic nature of the materials that we need discussing. One might in fact raise the objection that the Velar vs. Non-Velar classes diverged dramatically as far as the final part of the word is concerned. While the root-final consonant of Velar items was either [k] (always in the singulars, half of the times in the plurals) or [tʃ] (in the remaining half of the plurals), the equivalent consonant(s) of Non-Velar items could be any one(s) out of the following consonants or biconsonantal clusters: [d l n: ns nt nts p r rn rt s st t]. Moreover, the penultimate vowel in the Velar class was often [i], whereas no such homogeneity was to be observed in the Non-Velar class (see the Appendix). One might thus suggest that the Velar class gave rise to a sort of 'rhyme effect', with the consequence that RTs were artefactually speeded up by a purely phonotactical type of priming. Although a list effect of this sort cannot be excluded, it is nevertheless worth underlining that Non-Words were constructed exactly in the same way as Words, so that an almost identical amount of Velar non-words presented the same type of 'rhyme' as Velar words. In fact, the items ending with stressed or unstressed *–(i)co* were 22 among Velar words and 19 among Velar non-words. Thus, it is unlikely that the participants could develop a specific strategy with respect to Velar items, to the effect that these could be recognized as words faster than Non-Velar items.

In any case, in order to check whether the responses to Velar words, as opposed to Non-Velar ones, were possibly speeded up by the unnatural proportion of the *–(i)co* termination ('rhyme effect'), we carried out a series of control analyses among Word Targets with respect to the mean RT difference between the first vs. second half of the experimental list. The logic of this is the following. As is usually the case in lexical decision tasks, participants are expected to respond faster, due to acquired experience, on the second half of the list than on the first one. Thus, if there were any advantage for one of our experimental subsets, this should have emerged in terms of differential acceleration in task performance. Here is what we found. There was indeed a difference between the first vs. second half of the list for each of the three Randomizations,[11] and this effect was found for both Velar ($F1 (1, 18) = 11.124$, $p < .005$; $F2 (1, 108) = 24.766$, $p < .005$) and Non-Velar Targets ($F1 (1, 18) = 9.245$, $p < .005$; $F2 (1, 108) = 16.836$, $p < .005$), but also, and crucially for our purpose, for Palatalizing ($F1 (1, 18) = 15.736$, $p < .005$; $F2 (1, 108) = 23.575$, $p < .001$) and Non-Palatalizing Targets ($F1 (1, 18) = 4.124$, $p < .05$; $F2 (1, 108) = 6.909$, $p < .05$). Thus, the effect appeared to be homogeneously distributed within the experimental subsets. In addition, we verified whether the contrast 'Identical' vs.

[11] First Randomization: 564 ms vs. 542 ms, $F1 (1,18) = 6.987$ $p < .01$; $F2 (1, 217) = 12.145$, $p < .001$; second Randomization 553 ms vs. 536 ms, $F1 (1, 18) = 5.245$, $p < .05$; $F2 (1, 217) = 9.856$, $p < .001$; third Randomization 545 ms vs. 524 ms, $F1 (1, 18) = 7.476$, $p < .01$; $F2 (1, 217) = 8.965$, $p < .01$

'Different' among Velar Targets (including both Palatalizing and Non-Palatalizing ones), as analyzed with respect to the three randomizations, varied in the first vs. second half of the list. What we found was that the lack of differential priming effect on Velar Targets was uniformly distributed.[12] We may thus safely conclude that Velar Targets did not suffer from any 'rhyme effect'.

Summing up, our data suggest that the main effect consisted in the contrast between Palatalizing and Non-Palatalizing words. The difference is obviously due to the unpredictable behavior of Palatalizing words, namely on the irregular nature of the morphophonological process involved. Our results sharply contrast with those obtained by Jarema et al. (in press) in a cross-modal experiment relating to Polish, where no statistically reliable effect was found in the comparison between words presenting palatalization before the relevant case endings and words without palatalization. Interestingly, however, the Polish materials, as pointed out by the authors, had to do with a regular process of palatalization. Thus, the different results obtained in the two experiments appear to be perfectly justified. On the other hand, our results presents some similarity with those discussed in Sonnenstuhl-Henning (2003), relating to plural formation in German. Although the pattern of results does not look entirely clear, and although the conclusion drawn by the author might appear to be debatable to some scholars working on German morphology, the relevant fact for us is that different devices of plural formation yield contrasting results in terms of differential priming effect. Namely, the *–s* plural and the predictable *–n* plural of feminine nouns do not cause any differential priming, whereas the Umlaut-marked *–r* plural as well as the irregular *–n* plural bring about a noticeable differential priming.

As a final remark, one might observe that although the factor Stress did not yield a statistically significant effect, the interpretation of this datum is obscured by the fact that, as shown in the Appendix, a sharp contrast existed between the Palatalizing and the Non-Palatalizing sets. The former items were all stressed on the antepenult, while the latter ones were predominantly stressed on the penult. This unfortunate asymmetry was of course due, as remarked in sect. 4,1, to the severe constraints posed by the Italian lexicon. Consequently, although our experiment proved that the factor Stress did not matter in general, i.e. within the whole set of words (considering both Velar and Non-Velar items),

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[12] RTs for the 1st Randomization: 555 ms vs. 557 ms in the first half of the list, F1 (1, 18) = 0.123, p > .05; F2 (1, 108) = 1.809, p > .05 and 542 ms vs. 537 ms in the second half, F1 (1, 18) = 1.154, p > .05; F2 (1, 108) = 0.321, p > .05; RTs for the 2nd Randomization, 544 ms vs. 562 ms in the first half of the list, F1 (1, 18) = 1.707, p > .05; F2 (1, 108) = 0.196, p > .05 and 525 ms vs. 530 ms in the second half, F1 (1, 18) = 2.021, p > .05; F2 (1, 108) = 1.409, p > .05; RTs for the 3rd Randomization, 537 ms vs. 545 ms in the first half of the list, F1 (1, 18) = 1.501, p > .05; F2 (1, 108) = 1.386, p > .05 and 524 ms 530 ms in the second half, F1 (1, 18) = 0.924, p > .05; F2 (1, 108) = 1.209, p > .05

we cannot exclude that this lack of balance concealed a latent difference between Palatalizing and Non-Palatalizing words that would otherwise have emerged, as indeed it did in the elicitation experiment reported on by Dressler (1985). Nevertheless, given the total lack of significance of the factor Stress, one might reasonably claim that such possible difference is unlikely to be a major one.

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Appendix. Experimental materials

Palatalizing words							
Singular	*Plural*	*F sg*	*F pl*	*F*	*N syllables*	*Stress position*	*Lexical status*
pratico	pratici	3.9	3.5	3.7	trisyllable	ante-penult	A
storico	storici	3.6	3.4	3.6	trisyllable	ante-penult	A/N
grafico	grafici	3.4	3	3.2	trisyllable	ante-penult	A/N
tipico	tipici	3.3	3	3.15	trisyllable	ante-penult	A
classico	classici	3.2	2.8	3	trisyllable	ante-penult	A/N
drastico	drastici	2.9	2.5	2.7	trisyllable	ante-penult	A
portico	portici	2.1	2.1	2.1	trisyllable	ante-penult	N
cantico	cantico	2	1.6	1.8	trisyllable	ante-penult	N
chierico	chierici	1.5	1.4	1.45	trisyllable	ante-penult	A/N
distico	distici	1.4	1.5	1.45	trisyllable	ante-penult	N
celtico	celtici	1.5	1.2	1.35	trisyllable	ante-penult	A/N
sindaco	sindaci	3.2	2.1	2.65	trisyllable	ante-penult	N
biblico	biblici	1.9	1.5	1.7	trisyllable	ante-penult	A
acrostico	acrostici	1	1	1	quadrisyllable	ante-penult	N
anarchico	anarchici	1.4	2	1.7	quadrisyllable	ante-penult	A/N
arabico	arabici	1.7	1.5	1.6	quadrisyllable	ante-penult	A

N = 16
Frequency: mean value = 2.20, range: 3.7 – 1
Frequent words (F > 2.5) N = 7
Rare words (F < 2.5) N = 9
Trisylllables N = 13
Quadrisyllable N = 3
Nouns = 5
Adjectives = 5
Nouns/Adjectives = 6

Non-palatalizing words							
Singular	*Plural*	*F sg*	*F pl*	*F*	*N of syllables*	*Stress position*	*Lexical status*
elenco	elenchi	3.5	3.4	3.45	trisyllable	penult	N
antico	antichi	3.4	3.4	3.4	trisyllable	penult	A
opaco	opachi	2.7	2.5	2.6	trisyllable	penult	A
imbarco	imbarchi	2.7	2.4	2.55	trisyllable	penult	N
pudico	pudichi	2	1.9	1.95	trisyllable	penult	A
bifolco	bifolchi	1.7	1.7	1.7	trisyllable	penult	A/N
azteco	aztechi	1.5	1.7	1.6	trisyllable	penult	A/N
alterco	alterchi	1.7	1.4	1.55	trisyllable	penult	N
macaco	macachi	1.6	1.1	1.35	trisyllable	penult	N
paranco	paranchi	1.5	1	1.25	trisyllable	penult	N
valico	valichi	2.6	1.9	2.25	trisyllable	ante-penult	N
carico	carichi	3.5	3.2	3.35	trisyllable	ante-penult	A/N
pizzico	pizzichi	2.7	2.4	2.55	trisyllable	ante-penult	N
ubriaco	ubriachi	3.1	3.1	3.1	quadrisyllable	penult	A/N
bolscevico	bolscevichi	1.6	1.7	1.65	quadrisyllable	penult	A/N
ombelico	ombelichi	2.8	1.5	2.15	quadrisyllable	penult	A/N

N = 16
Frequency: mean value = 2.27, range: 3.45 – 1.25
Frequent words (F > 2.5) = 7
Rare words (F < 2.5) N = 9
Trisyllables N = 13
Quadrisyllable N = 3
Nouns = 7
Adjectives = 3
Nouns/Adjectives = 6

Control words						
	F sg	*F pl*	*F*	*N of syllables*	*Stress position*	*Lexical status*
onesto	3.6	3.4	3.5	trisyllable	penult	A
avanzo	3.2	3.5	3.35	trisyllable	penult	N
futuro	3.6	2.9	3.25	trisyllable	penult	A/N
paterno	2.8	2.4	2.6	trisyllable	penult	A
dissenso	2.4	1.6	2	trisyllable	penult	N
scudiero	1.6	1.5	1.55	trisyllable	penult	N
verboso	1.1	1.1	1.1	trisyllable	penult	A
normanno	1.7	2	1.85	trisyllable	penult	A/N
pensoso	2.5	2.1	2.3	trisyllable	penult	A
sincero	3.6	3.2	3.4	trisyllable	penult	A
sincrono	1.5	1.1	1.3	trisyllable	antepenult	A
pulpito	2.4	1.3	1.85	trisyllable	antepenult	N
bradipo	1.4	1	1.2	trisyllable	antepenult	N
impeto	2.4	1.5	1.95	trisyllable	antepenult	N
madido	1.5	1.2	1.35	trisyllable	antepenult	A
scricciolo	2.1	1.5	1.8	trisyllable	antepenult	N
passero	2.3	2.3	2.3	trisyllable	antepenult	N
mestolo	2.7	2.4	2.55	trisyllable	antepenult	N
papero	2.8	2.8	2.8	trisyllable	antepenult	N
ripido	3.5	2.8	3.15	trisyllable	antepenult	A
merito	3.2	3.3	3.25	trisyllable	antepenult	N
zucchero	4.4	2.4	3.4	trisyllable	antepenult	N
rigido	3.5	3.4	3.45	trisyllable	antepenult	A
tenero	3.6	3.4	3.5	trisyllable	antepenult	A/N
valido	3.4	3.3	3.35	trisyllable	antepenult	A
prestito	3.6	3.4	3.5	trisyllable	antepenult	N
sincopato	1.3	1.2	1.25	quadrisyllable	penult	A
diluito	2.4	2.3	2.35	quadrisyllable	penult	A
censimento	2.6	2.2	2.4	quadrisyllable	penult	N
termostato	2.2	1.4	1.8	quadrisyllable	antepenult	N
patogeno	1.6	1.7	1.65	quadrisyllable	antepenult	A
cenacolo	1.6	1.2	1.4	quadrisyllable	antepenult	N

N = 32
Frequency: mean value = 2.29, range: 3.5 – 1.1
Frequent words (F > 2.5) = 14
Rare words (F < 2.5) N = 18
Trisyllables N = 26
Quadrisyllable N = 6
Nouns = 16
Adjectives = 13
Nouns/Adjectives = 3

Non-words
N = 64
Words ending in /–co/ N = 32
Words ending in other consonants + /o/ N = 32
Trisyllables N = 52
Quadrisyllables N = 12
Stress on the penult, trisyllables N = 20
Stress on the penult, quadrisyllables N = 6
Stress on the ante-penult, trisyllables N = 32
Stress on the ante-penult, quadrisyllables N = 6