

Language Contact: Italian (?) Geminate in Faetar

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1 Introduction

Faetar, an isolated dialect of Francoprovençal spoken in one village in southern Italy, shows clear evidence of Italian influence due to extended contact.¹ One indication that Italian has influenced this dialect is the presence of geminates, as Gallic Francoprovençal had lost all length distinctions by the fourteenth century, when Faeto was founded (Bourciez 1930:305). I first discuss the results of production experiments which indicate that both the phonetics and the phonology of Faetar have undergone change due to areal contact with dialects that contain geminates.

Previous research has indicated that Faetar has geminates of two types: lexically marked geminates in medial position and either lexical or phonologically triggered geminates in initial position (Kattenbusch 1982:169, Ciociola 1972:56, Orlando 1972:36). These descriptions are not accurate. I present phonetic data which shows that there is distinctive consonant length in medial position, but not in initial position. This finding is somewhat surprising, as all transcriptions of Faetar, by native speakers and outsider linguists alike, contain initial double consonants.

After describing the distribution of geminates in the language, I examine historical sources to see if there is a pattern either in Francoprovençal or in Italian which surfaces systematically as a consonant length distinction in Faetar. For this purpose, a comparison of Francoprovençal cognates to Faetar words containing geminates is made. Neither this nor a comparison to Italian cognates provides a satisfactory explanation of the source of gemination in Faetar. It is, however, clear that a phonological structure has been borrowed from some neighboring language, as spontaneous change due to an internal factor can be ruled out, due to lack of a consistent corresponding pattern in the parent language.

2 Medial Geminates

Medial geminates in Faetar have been discussed in Kattenbusch's detailed description of the language, *Das Francoprovenzalische in Suditalien* (1982). He shows that geminates are distinctive in medial and final position, as the minimal pairs below illustrate.

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Table 1: Faetar minimal pairs showing medial length distinction (Kattenbusch 1982:169)

Single Consonant		Double Consonant	
[paniy]	<i>basket</i>	[panniy]	<i>vat</i>
[skyaf]	<i>mucus</i>	[skyaff]	<i>slap</i>
[kas]	<i>cheese</i>	[kass]	<i>frying pan</i>
[at]	<i>other</i>	[att]	<i>cat</i>
[makɣ]	<i>male</i>	[makɣkɣ]	<i>spot</i>

The following two experiments show that Faetar has a length distinction for medial consonants, providing phonetic support for Kattenbusch's claim.

2.1 Experimental Design

In the first experiment, a comparison is made of the durations of medial consonants transcribed as single and geminate in interviews conducted and recorded by Kattenbusch in the 1970's. The two speakers are men who live in Faeto, born in 1915 and in 1959. Transcriptions of the interviews, entitled *6.Text* and *9.Text*, appear in Kattenbusch (1982).

Minimal pairs were located in the text for the following consonants: [p, t, k, l, r, m, n]. Minimal pairs are defined as words which each have a medial consonant in the same phonetic environment, one word transcribed with a single consonant and one with a double consonant. Factors which were kept consistent within each minimal pair are preceding and following segment and marked syllable stress. Forty-three words transcribed with single consonants were compared to forty-seven words containing geminate consonants. A list of these words is in Appendix A. Each word in the first column is compared to the corresponding word(s) in the right column.

For this and the following experiments, recordings of each word were digitized at a sampling rate of 8000 Hz and the duration of the relevant consonants' closure and release measured, using the interactive Xwaves program, which displays sound waveforms and spectrograms. Comparisons were made between the single and geminate forms of each consonant.

Because there was a possibility of excessive variation in experiment 1 due to changes in speech rate, a second, more carefully controlled experiment was designed. In experiment 2, minimal pairs of words were selected and each word was elicited in a carrier phrase, six times, in random order, by showing pictures of the objects to the speaker. The five pairs of words shown in table 2 were elicited in the carrier phrase which follows the table.

Table 2: Stimuli for Experiment 2

	Medial single consonant		Medial geminate	
t	[atə]	'other'	[attə]	'cat'
n	[linə]	'linen'	[linnə]	'moon'
f	[lifə]	'paving stone'	[liffə]	'smooth'
kɣ	[makɣ]	'male'	[makɣkɣ]	'spot'
k	[pakə]	'Easter'	[pakkə]	'piece'

[dʒə diʃ ___ ʃi vai]

'I say ___ six times.'

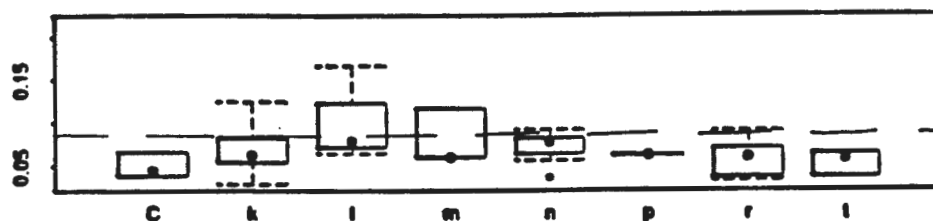
Six speakers were recorded, three women (LG, AI, MA) and three men (AM, GP, GC). They range in age from 20 to 34 years and have all lived their entire life in Faeto. Speakers were permitted to familiarize themselves with the pictures and words before beginning the recording session.

2.2 Results

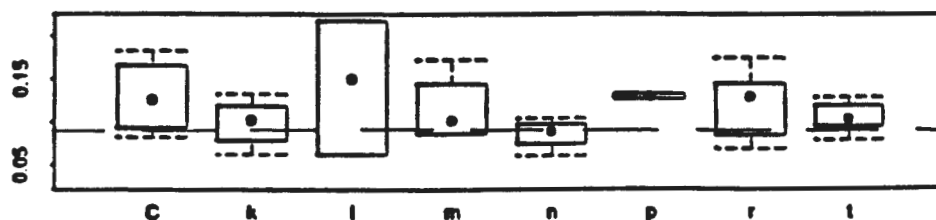
The results of experiments 1 and 2 show clearly that there is a length distinction in medial-position consonants in Faetar. Figure 1, presenting the results of experiment 1, gives the mean duration of each consonant. ("C" indicates a palatal stop.) In boxplots, the box indicates the range of the middle fifty percent of the measurements, the black dot indicates the mean of the measurements, the whiskers outline the range of all the data except outliers, which are shown by individual open circles. Even with the variation intrinsic to free-flowing speech, there are clearly two length classes for medial consonants. The dotted lines running across the graphs make it clear that, the mean duration of single consonants (top graph) is always less than 90 milliseconds, while the mean duration for geminate consonants (bottom graph) is greater than 90 milliseconds.

A similar distribution is found in the measurements from experiment 2. Figures 2 and 3 exhibit duration data of two representative speakers, AI and MA. Again, we see a clear distinction between durations of the single consonants (indicated by single letters) and the geminate consonants (indicated by double letters). The difference is significant, as shown by t-test: $s=.070$, $t=18.62$.

Figure 1: Experiment 1: Durations of medial consonants



Lengths of medial single consonants (in seconds)



Lengths of medial geminate consonants (in seconds)

Figure 2: Experiment 2: Duration of medial consonants for Speaker AI

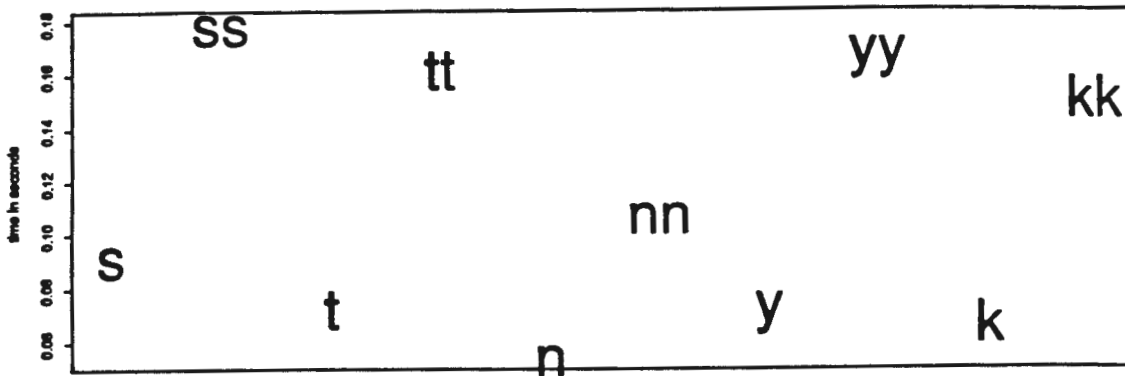
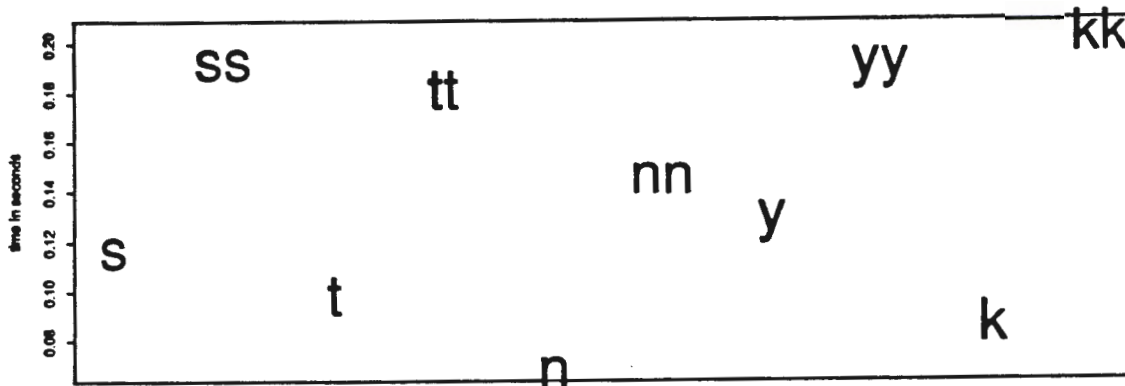


Figure 3: Experiment 2: Duration of medial consonants for Speaker MA



3 Lexical Initial Geminates

Although no speakers of Faetar are literate in the language, there have been sporadic attempts to write songs, signposts, and short stories in Faetar, always accompanied by an Italian translation since the audience is not literate in Faetar. One common thread in each of the authors' unique transcription systems is the presence of many initial double consonants. The authors are not consistent in their use of the double vs. single consonant: certain words appear transcribed both ways, and phonologic environment does not predict whether a single or double consonant will appear. Many pairs of words listed in the Kattenbusch glossary suggest that there is a phonemic distinction of consonant length, even in initial position. Table 3 shows a few such pairs.

In a preliminary elicitation task with one informant, no distinction in the initial sounds for these words was noted. One explanation is that the above citation forms may differ in Kattenbusch's glossary due to differing environments in his corpus. However, the last two listed are cases where both the transcribed geminate and single consonants follow identical definite article. Finding both forms in identical environments suggests

Table 3: Minimal pairs showing putative initial position length distinction (Kattenbusch 1982)

Single consonant			Double consonant	
b	[battə]	'to hit'	[bbavə]	'slobber'
b	[bəziyə]	'to kiss'	[bbenay(rə)]	'to bless'
tʃ	[tʃant]	'song, corner'	[tʃtʃan]	'countryside'
d	[dunk]	'then, so'	[dduppjə]	'double'
k	[lu kuorp]	'body'	[kkuolpə]	'guilt'
p	[lu pala]	'straw'	[la ppalə]	'spade'
p	[pyaiyə]	'to fold'	[ppjajə]	'wound'
r	[ra:ta]	'grater'	[rra:skə]	'scraper'
s	[la sayə]	'silk'	[ssaytə]	'sweet wine'
t	[la tantə]	'aunt'	[la ttanə]	'cave'
m	[la monəkə]	'nun'	[la mmoʃk]	'spindle top'

that Kattenbusch's description of the distribution being solely determined by preceding segment is not correct, if his transcription is accurate.

Having ascertained that speakers do have a lexical length distinction in medial position, the following experiment was conducted to determine whether such a distinction is, in fact, maintained in initial position.

3.1 Experimental Design

Experiment 3 uses a controlled environment for elicitation to ensure that no factors, other than putative lexical marking, cause length variation. This experiment was carried out in the same fashion as experiment 2, again using six speakers. The words used in this experiment are words which Kattenbusch transcribes in his glossary as minimal pairs and are listed in table 4. Results will be presented for two representative speakers, LG and AI, two 20 year old females.

Table 4: Stimuli for Experiment 3

Symbol ²	Initial single C		Initial geminate	
P	[pakə]	'Easter'	[ppakə]	'package'
p	[paluməl]	'ladybug'	[ppalutʃəl]	'little ball'
B	[barbə]	'beard'	[bbardə]	'saddle'
b	[banja]	'humid'	[bbarbiy]	'barber'
t	[tantə]	'aunt'	[ttanə]	'cave'
n	[na]	'nose'	[nna(p)]	'Naples'
r	[russə]	'red, egg yolk'	[rruʃkə]	'sediment'
s	[sierə]	'sky'	[ssirə]	'wax'

Another experiment was conducted to allow for analysis of this pattern in naturally occurring speech, because the elicitation environment used in experiment 3 may inhibit natural production. For experiment 4, minimal pairs of words from the transcribed narrative text in Kattenbusch (1982) were selected. Although minimal pairs for nearly all obstruents in initial position can be found, I show measurements only for /p/ and /t/.

²Symbol indicates the code used for the word pair in figure 2.

Durations of twenty instances of initial geminates are compared to those of fifty-six corresponding initial single consonants. These words appear in Appendix B.

3.2 Results

There is no consistent length distinction correlated to the single vs. double consonant transcriptions of Kattenbusch for any of the consonants measured in the natural speech data of experiment 4. Likewise, there is no robust lexical distinction to be found in experiment 3, where rate of speech is controlled. Figures 4 and 5 are indicative of the lack of consistent length differentiation in the minimal pairs elicited in experiment 3. Thus, there is no evidence of a lexically marked length distinction.

Figure 4: Experiment 3: Duration of initial consonants for Speaker LG

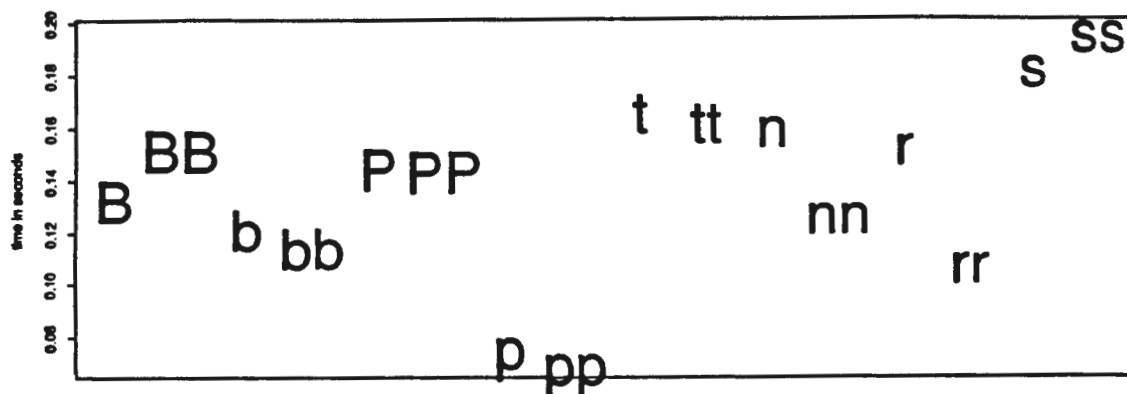
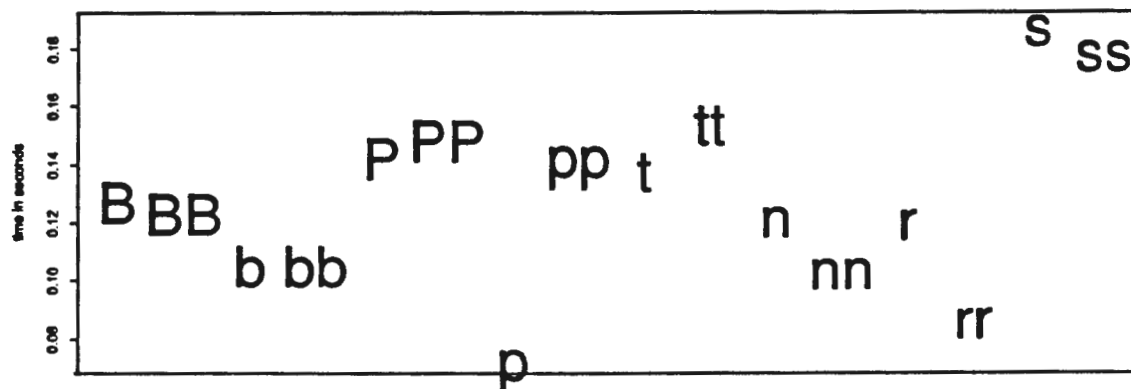


Figure 5: Experiment 3: Duration of initial consonants for Speaker AI



4 Morphosyntactic Initial Geminates

I turn now to a consideration of proposed rules governing allophonic variation in initial position. Kattenbusch, the most systematic analyst of Faetar, claims that the short and long forms of obstruents in initial position are non-distinctive allophones of the same phoneme: initial single consonants appear following a pause or a consonant and initial

geminate follow a vowel (Kattenbusch 1982:169). His claim that geminates are found in initial position following vowels is not supported by the duration data. Although the post-pausal and post-consonantal consonants measured in the experiment 4 have consistently short durations, always less than 100 milliseconds, and usually less than 50 milliseconds, the putative geminates have a broad distribution, spanning from 20 to 130 milliseconds. The difference in mean duration of the groups is not significant.

This suggests that geminates have the property of variable length, while single consonants must be short, if we are to accept Kattenbusch's transcriptions of the words. Because geminates are normally longer than single consonants, rather than being of such variable length, one must consider the possibility that the segments which we are calling geminates, but which are short, differ in some way from the long geminates.

I consider several factors which may be responsible for the length distinction in the transcribed geminates. The first potential factor is that the length of the following vowel affects the length of the initial consonant. Because there are several instances in the experiment 4 data of identical words where some tokens have long initial consonants and others have short ones, this is not a feasible explanation. For example, the word [ppa] 'not' was uttered with varying initial consonant lengths ranging from 26 to 132 milliseconds. These measurements span the range of durations measured in experiment 3.

As it stands, the description of Faetar is: initial geminates appear, but not systematically, in all written forms of the language. No one has determined exactly where or why they appear, nor what their source is. The remaining experiment is designed to address the question of whether there is a consistent morphosyntactically triggered length distinction in Faetar, and, if so, whether it is similar to the Italian process of *raddoppiamento sintattico* 'syntactic doubling.' *Raddoppiamento sintattico* is a process which causes gemination of the initial consonant in specific morphosyntactic environments. Certain proclitics and oxytonic words trigger initial gemination of the following word.

Because there were very few cases which allowed for direct comparison of words in varying contexts in experiment 4, an experiment was devised which, while still eliciting free-flowing, natural speech, controls the topic enough to cause much repetition of each word.

4.1 Experimental Design

For experiment 5, a children's picture book was used. Each page contains a drawing of a scene. Several of the objects in the scene are also shown in isolated pictures at the bottom of the page. Speakers were asked first to say the name of each object in isolation and then to describe the scene, under the pretext that I was using this method to learn Faetar. This allowed for the elicitation of a very careful pronunciation of each word in isolation and then several repetitions of the word in sentence context.

Thirty-two speakers, selected to provide a sample balanced for age (from age 9 to 87) and sex, and ranging across social classes, were recorded performing this task. The results I present here are from 1 speaker, MA, a 30 year old female, who grew up and lives in Faeto and went away only for university.

Measurements of the duration of initial consonants were made. Comparisons of mean duration were made for a number of different factors, including effect of preceding segment (consonant, full vowel or schwa), syntactic relatedness of preceding word, and following segment. The first two factors should affect the length of initial position consonantal segments, if Faetar parallels Italian with respect to *raddoppiamento sintattico*.

4.2 Results

I present data on the mean duration of initial /m/ and /f/. Figure 6 shows the lack of effect of preceding consonant. Figure 7 shows that there is no difference in duration dependent upon whether the preceding word is in the same or a different phrase. Thus, there is no support for an analysis likening the process to *raddoppiamento sintattico*. There is also no effect of following segment.

The data for /f/ and /m/ do not support an analysis of lexically marked length distinction for initial consonants. If there were a lexical distinction, we would expect the durations to exhibit a bimodal distribution. However, the durations cluster around 50-100 milliseconds, and words with tokens exhibiting longer duration also have tokens with shorter durations.

Figure 6: Experiment 5: Effect of preceding segment on duration of /f/ and /m/

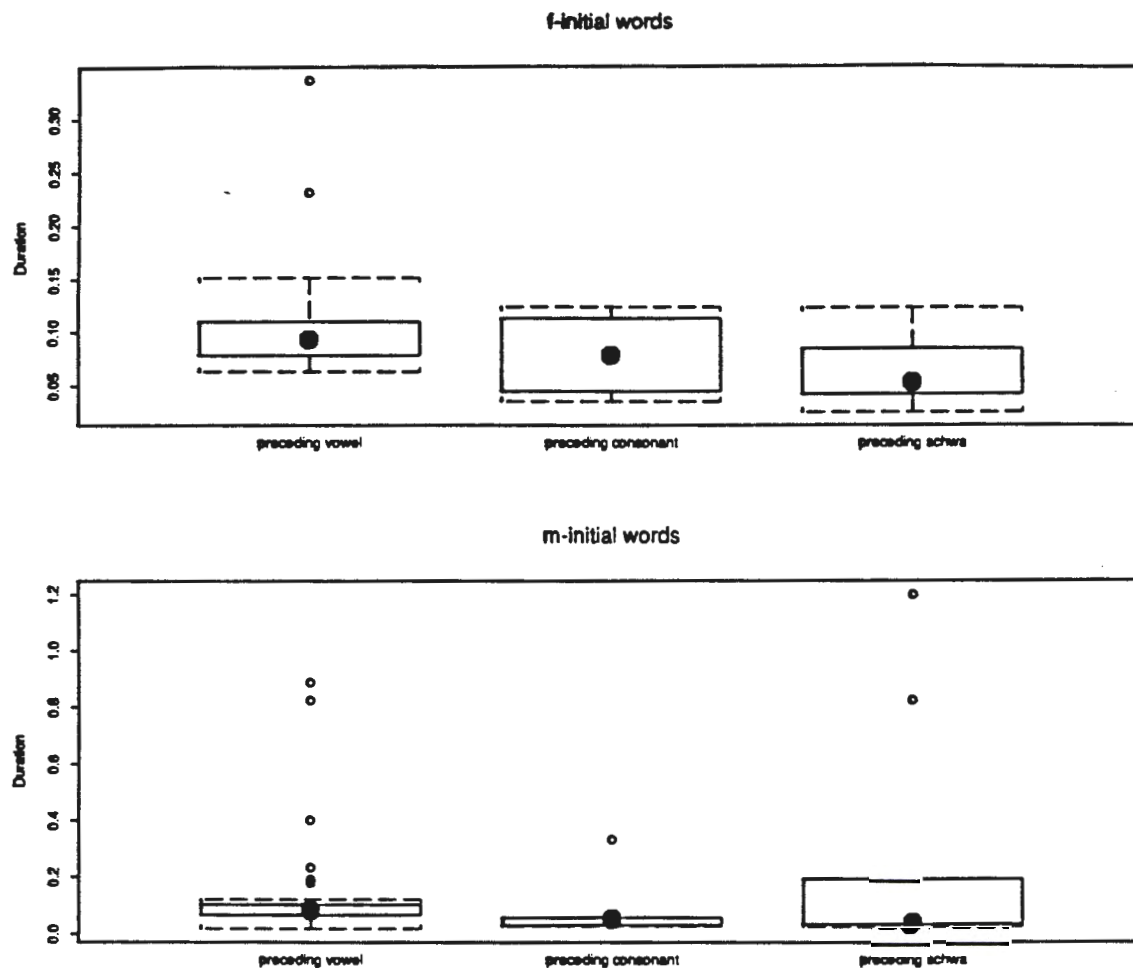
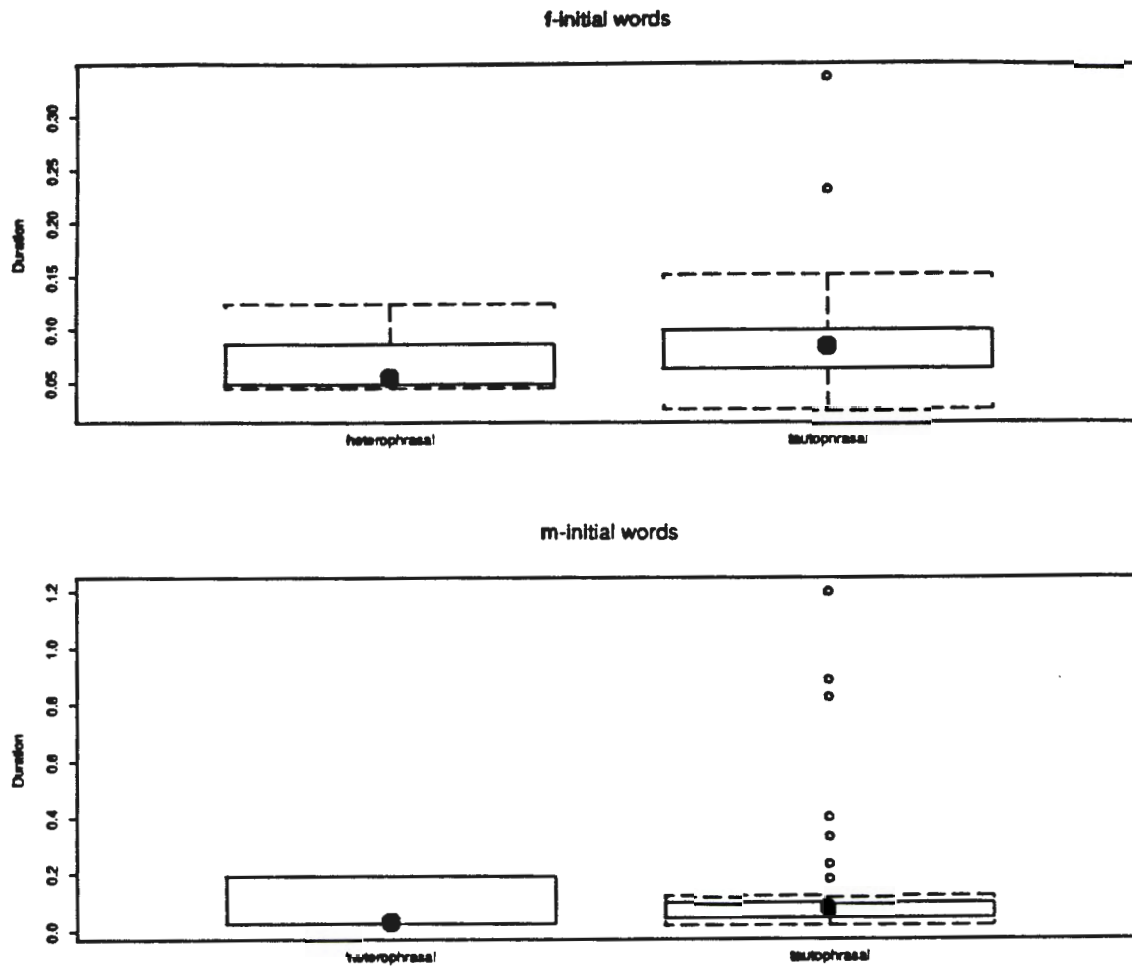


Figure 7: Experiment 5: Effect of clause boundary on duration of /f/ and /m/



5 Summary of Synchronic Analysis

These data show that there is a lexical length distinction between the consonants transcribed as single and geminate, in medial position but not in initial position. In medial position, length is distinctive: geminates are phonemically different from single consonants. The results do not show the existence of any syntactically triggered gemination: identical syntactic environments do not have a consistent effect on initial consonant length.

This supports Bybee Hooper's claim that genuine phonological rules cannot be borrowed (Thomason and Kaufman 1988:16). Although Faetar appears to have borrowed the feature of distinctive length and uses it in lexical marking, it does not extend to the full use of distinctive length in Italian, stopping short of applying the length distinction by phonological rule.

6 Historical Analysis

I turn now to possible explanations for the presence of geminates in Faetar. There are three possibilities. The first is an internal change, for which a pattern in Francoprovençal must be posited as the source for a regular sound change rule. The second is lexical borrowing, with Italian and other local dialects as the external source. The third is also an external change, where contact with Italian or other local dialects causes the introduction of a new permissible phonological structure, a form of grammatical borrowing. Francoprovençal and standard Italian are examined for possible source patterns for the medial geminates in Faetar.

6.1 Francoprovençal Geminates

Since Francoprovençal did not have geminates by the time the settlers of Faeto emigrated from what is now eastern France, one must consider the possibility that there was some other element of Francoprovençal which was systematically realized as distinctive consonant length when the language came into contact with Italian. Several possibilities of sound patterns which could change to geminates exist. The first is consonant clusters in Francoprovençal which may have undergone assimilation in Faetar. The second is that the deletion of a vowel in Francoprovençal would form a consonant cluster in Faetar, which could then undergo assimilation. The third is that a distinction in vowel length could be transformed into a distinction in consonant length. In order to see if any of these patterns exist, I have compiled a list of Francoprovençal cognates to Faetar words from Duraffour's *Glossaire des patois francoprovençaux* (1969). Because the exact point of origin of Faetar has not been determined, the lists below include forms from a number of different Francoprovençal dialects.

Table 5 lists the Francoprovençal cognates for words used in experiments 1 and 2. "CC" in the "Source" column indicates that the source language (Francoprovençal) word has a consonant cluster in the appropriate position. There are two cases where the Faetar word has a geminate and the Francoprovençal cognate has a consonant cluster. However, we find four cases where the Francoprovençal word has a consonant cluster but the Faetar word has a single consonant. There are no cases where a long vowel or vowel deletion from a Francoprovençal word formed a consonant cluster in Faetar. Thus, one must conclude the Faetar pattern of consonant length distinction is not a reflex of any Francoprovençal pattern.

6.2 Italian Geminates

In order to determine whether Italian influenced Faetar gemination, an examination of Italian cognates is necessary. If it could be shown that Italian words have geminates exactly where Faetar words do, then some form of lexical borrowing would be evident. Table 6 shows the Faetar words used in these experiments with their Italian cognates.

There are seven cases of Italian cognates with consonant clusters for which the Faetar word has a geminate. There are also seven cases of Italian cognates with consonant clusters where the Faetar word has a single consonant. These results are not supportive of the claim that geminates in Faetar are simply the result of lexical borrowing. Borrowing from Italian to Faetar is not superficially apparent in many cases. Table 7 lists a few examples of other Faetar words containing geminates where one does not find corresponding geminates in the Italian words of the same meaning, further showing that lexical borrowing cannot account for all of the geminates in Faetar.

Table 5: Francoprovençal cognates of Faetar words

Faetar	Francoprovençal	Source	Entry	English
Medial single consonants				
kakunnə	kakũ, kokjō	CC	4729	someone
cakunnə	sakō	--	8793	each one
keci:y	kasi, kassa	CC	4895	to go to bed
brəcəssyunn	prusesyu	--	7174	procession
mument	mume	--	6581	moment
dəna	dená	--	2299	gave
dʒdʒuorə	dzuor, dzwar	--	9969	day
yacetunt	atsita	--	615	they buy
atə	atr	CC	6834	other
linə	lin ^d jə, linju	--	5889	linen
lifə	loʒə	--	6043	paving stone
makʏ	makʌə	CC	6472	male
pakə	pake	--	6892	Easter

Total with consonant cluster source for geminate: 4

Medial geminates				
akkumpaŋə	akōpañi	--	213	accompany
pəccərell	petyu, ptyita	--	7193	little
məttunt	metó, metr	CC	1365, 6362	they put
pəttunt	pēdra	CC	7225	they paint
ccarrierə	θaro, θareta, fareiri	--	8657, 8851	streets
arriy	ade	--	74	anew, again
attə	ʃa, sat, ^t sat	--	8609	cat
linnə	lina	--	5815	moon
lifʃə	--	--	--	smooth
makʏkʏ	--	--	--	spot
pakkə	taku	--	9005	piece

Total with consonant cluster source for geminate: 2

Table 6: Italian cognates to Faetar words

Faetar	Italian	Source	English
Medial single consonants			
kakunnə	qualcuno	CC	someone
cakunnə	ciascuno	CC	each one
keci:y	--	--	to go to bed
brəcəssyunn	processione	--	procession
mument	momento	--	moment
dəna	dato	--	gave
dʒdʒuorə	giorno	CC	day
yacetunt	--	--	they buy
atə	altro	CC	other
linə	lino	--	linen
lifə	liscia	CC	paving stone
makʏ	maschio	CC	male
pakə	pasqua	CC	Easter

Total with source for geminate: 7

Medial geminates			
akkumpaŋə	accompagnare	CC	accompany
pæccærell	piccolo	CC	little
mættunt	mettano	CC	they put
pættunt	--	--	they paint
ccarrierə	--	--	streets
arriy	--	--	anew, again
attə	gatto	CC	cat
linnə	luna	--	moon
liŋfə	liscio	CC	smooth
makʏky	macchia	CC	spot
pakkə	parte	CC	piece
Total with source for geminate:		7	

Table 7: Faetar words without Italian cognates

Faetar	Italian	English
[ʃʃarrierə]	via, strada	'street'
[kwattra]	ragazzo	'boy'
[kæcciy]	addormentarsi	'to go to bed'
[acchetunt]	comprare	'to buy'
[arriy]	ancora	'again'

If Italian influence is to be claimed as the cause of gemination in Faetar, then it must be concluded that the pattern of distinctive consonant length was borrowed, rather than this being a simple case of lexical borrowings of words which have geminates. In hierarchies of borrowability which have been posited to account for patterns of linguistic change, the borrowing of a distinctive feature or phonological structure is considered highly unlikely, cf. van Coetsem (1988:3), Thomason and Kaufman (1988:37).

7 Conclusion

I have used acoustic evidence to illustrate the existence of a historical change in Faetar, a language descended from Francoprovençal. The analyses discussed indicate that there is a consistent length distinction for medial consonants in Faetar, while such a distinction did not exist in Francoprovençal. In this way, Faetar has become more similar to Italian, the dominant language of the region where Faetar is spoken. As there is no evidence of a lexically-marked length distinction in initial position or any morphological or syntactic effect on initial consonant length, we see that Faetar has not borrowed gemination from Italian wholesale. That is, at this point, Faetar has borrowed the structural distinction, but not the morphosyntactic rules which govern the use of the structure in the source language.

The appearance of distinctive geminates in Faetar indicates that either lexical or structural borrowing from a language containing geminates has taken place. My examination of Italian and Francoprovençal cognates in order to determine the history of the sound change indicates that there is no segmental pattern either in Italian or in Francoprovençal which surfaces systematically as a consonant length distinction in Faetar. Although Italian is the most obvious source of the phonetic length distinction in Faetar, historical analysis shows that the source of geminates in Faetar is not a direct result of lexical borrowing from Italian. It is also evident that the geminates are not reflexes of

any existing segmental pattern in Francoprovençal. While the possibility that all of the Faetar words containing geminates are the result of borrowing from another southern Italian dialect deserves investigation, it does not seem likely. Further research will consider other regional dialects as possible sources of geminates in Faetar. At this point, I conclude that Faetar has borrowed a phonological structure from Italian or another regional dialect with which it is in frequent contact. Thus, Faetar has a phonological pattern which significantly distinguishes it from its parent language, and its source can be deduced to be areal contact.

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Appendix A: Minimal pairs for Experiment 1

	Single consonant	# tokens	Double consonant	# tokens
p	kapətúmbələ	1	appəniyə	1
			ŋgappərúŋə	1
t	rumáts	1	katənátts	1
	patrunn	1	kwattra	4
	kwatraʃkunnə	1		
	yaʃʃətunt	1	məttunt	2
			pəttunt	1
k	dʒəkéllə	2	pəkké	1
	kakəʃúos	1	akkəli	1
	əmbryaká	1	makkarúŋ	1
			ntakká	1
	kakunn	3	akkussi	5
	ʃakunnə	3	akkuʒʒunnə	1
	ʃakunn	1	kwattra	1
	əmbryakunt	1	akkumpaŋə	1
	kakunnə	1	akkumpaŋi	1
	əmbryaka	2	strakka	1
m	anəmə	1	rəmmáw	1
	mument	2	kummədyə	2
n	mənəvánt	1	dənnərúntə	1
	vənəvájŋ	1		
	dəʃənərúnt	1		
	katənátts	1	mənná	1
	dəná	3		
	anəmə	1	mannərúnt	1
	dəna	1	yənnə:rə	1
l	kapətúmbələ	1	əllərúŋ	1
	stábbələ	1		
	byáɪndələ	1		
	ʃʃiələ	1	krapariellə	1
			passariellə	1
r	passariellə	1	ʃarrivəvánt	1
	dʒdʒúorə	1		
	mmúorrə	1		
	dʒdʒú:orə	2	mmuorrə	5
	fəssari:y	1	ʃʃarrierə	1
			arri:y	1
ʃ	kəʃi:y	1	kəʃʃiy	1
	mʃratʃəda	1	yaʃʃətunt	1
	brəʃəssyunn	1	pəʃʃərell	1

Appendix B: Minimal pairs for Experiment 4

Single consonant	# occurrences	Double consonant	# occurrences
pə	12	ppə	1
pəʃʃərell	1	ppəʃə	1
pəʃúnnə	1	ppa	8
pəkke	7	ppaiʎə	1
pəkki:y	1	ppátts	1
pəʃa:t	1	ppa:k	3
pəriwdə	1	ppa:rə	1
pəró	2	ppa:y	1
pərsú	1	ppareʃʃə	1
pərsunaʃʃ	1	ppó	1
pəttúnt	1	ppú:rə	1
pá	3	ttáwlə	1
párt	1	tténn	1
páss	2	tténnə	2
pássə	1		
pá:sə	2		
paĩ:y	5		
paĩ:yə	3		
panətto:nə	1		
pareççə	1		
partikolá:rə	1		
passá	4		
passatéll	1		
passúnnə	1		
passúnt	1		
patrúnn	1		
pó	3		
póy	1		
pu:	1		
pu:rə	1		
tantə	1		
tardə	2		
tennə	1		