
RESEARCH PAPER

The Sociolinguistic Evolution of a Sound Change

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This study focuses on the analysis of linguistic and extralinguistic factors influencing the phonological variation of vowel nasalization in the speech of bilingual speakers of Uruguayan Portuguese (UP). The setting is the city of Rivera located along the Uruguayan-Brazilian borderline. The data were collected in participant-observation and sociolinguistic interviews with fifty-four local UP speakers. Data results show that vowel nasalization is a linguistic variable constrained mainly by morphophonological and sociophonetic factors. Phonological processes interact with affixation in inflectional and derivational morphology in the process of vowel nasalization. Results show that functional category of the word and preceding phonological environment play a significant role in the distribution of nasal variation in contemporary UP in Rivera.

Keywords: language variation; apparent time; vowel nasalization; Uruguayan Portuguese

1. Introduction

In this paper I revisit Carvalho's (1998) sociolinguistic work on palatalization of /ti/, /di/ in Rivera, Uruguay. Carvalho provides apparent-time evidence suggesting that palatalization of /ti/, /di/ in Rivera is undergoing linguistic change. In fact, she argues that the young, women, and middle class-speakers are the groups leading diffusion in Rivera, which has caused the rise of this linguistic change (Carvalho, 1998: 223). The present study provides a sociolinguistic account of palatalization of dental stops before /i/ from a new set of data collected in Rivera in 2007. I add a trend component to the analysis by comparing apparent-time data from two studies collected at different points in time, 1995 and 2007. By reexamining the same speech community, it is feasible to verify whether the change in progress hypothesized has continued to advance or whether it has stabilized at the speech community level. As Labov (1972) notes, the only way to test the validity of apparent-time data and predictions is to make observations of the same community at least twice, at two different points in time.

Apparent-time evidence of both data sets corroborates that palatalization of dental stops is age-related, since the frequencies of palatalization are strongly associated with age differences. Data results confirmed the hypothesis that younger speakers tend to prefer the innovative variant. Although an increment in the use of palatalization of dental stops is found across age groups in apparent-time, cross-sectional comparisons point toward a state of relative stability at the speech-community level. Age distributions indicate that speakers of all ages participate in palatalization of dental stops in Rivera, but different age groups represent different palatalization rates.

The examination of linguistic factors reveals that 2007 data are generally consistent with previous research both in Uruguayan Portuguese (UP) and across varieties of Brazilian Portuguese (BP). As multivariate analysis results indicate, following and preceding phonological environment and tonicity of the syllable play a significant role in conditioning the variable realization of palatalization of /ti/, /di/ in contemporary UP. As expected, young people, females, and mid-middle class speakers favor the innovative variant, while older people, males, and low-middle and working class speakers tend to disfavor it. This finding signals what Labov (1972) would call a 'social marker'.

Due to complex historical, socio-economic, and political factors, several language varieties in the standard and dialectal form have coexisted along the Uruguayan-Brazilian border for centuries. While the Spanish spoken in Rivera can be classified as a variety of Uruguayan Spanish, Uruguayan Portuguese can

be characterized as a language contact variety combining southern Brazilian Portuguese and Uruguayan Spanish (Lipski, 1994). These competing varieties are part of the language admixture available to inhabitants of the speech community of Rivera according to their social and ideological characteristics. This long-standing cultural and language contact has had linguistic impact not only in the northern states of Uruguay but also in the southern cities of Rio Grande do Sul, Brazil. The Portuguese variety spoken in Brazil, like many other varieties spoken over a large territory, presents overlapping regional and social linguistic variation (Azevedo, 2005: 211).

2. Overview of the Speech Community of Rivera

The compound Santana do Livramento-Rivera is the major population center along the border. No geographical division separates the twin cities. Due to its proximity to the gigantic economic power of Brazil and its easy access, community residents cross the border to purchase groceries, work, conduct daily life activities, etc. The flow of goods and the fluctuation of currency values have been a pattern of life on the border. Both Riverans and Santana residents take advantage of changes in economic conditions and the disparate value of the currencies of both countries. The existence of duty-free shops in Rivera attracts dwellers from many Brazilian cities, thus increasing the opportunities for locals to communicate in Portuguese language. The city of Rivera and its Brazilian twin city Santana do Livramento form one urban complex; in a way, it is one city with strong historical and cultural ties.

3. Previous Studies

The dental or palatal realization of /ti/, /di/ has been a topic of interest within the domain of Portuguese linguistics in the frontier city of Rivera, Uruguay and in Brazil. Early explorations of the phonetic realizations of dental stops before /i/ in Rivera have applied interpretive, qualitative techniques to analyze this phenomenon (Rona, 1965; Hensey, 1972; Lipski, 1994). Carvalho (1998), in contrast, offers a quantitative analysis of the linguistic and extralinguistic factors that condition the palatalization of dental stops in Rivera.

While in the popular Portuguese, spoken in southern Brazil, /ti/ and /di/ are historically rendered with the conservative pronunciation, the application of the palatalization rule continues to advance. In fact, palatalization of dental stops is becoming mainstream in Rio Grande do Sul, the Brazilian state adjacent to Rivera. As Bisol's (1991: 108) research in Rio Grande do Sul shows, the palatal variant is favored by young speakers, mostly in large metropolitan cities. These findings are confirmed by a recent study conducted in Antônio Prado, a small southern city in Rio Grande do Sul. In this bilingual city, founded by Italian immigrants, it was found that the overall rate of palatalization is 29% (Battisti & Hermans, 2009).

4. Data and Methods

New data were collected in participant-observation and individual and group sociolinguistic interviews conducted by the researcher in the summers of 2006 and 2007. All interviews were digitally recorded using a SONY ICD-SX68 Digital Voice Recorder. The total computerized corpus consists of one hundred and six sociolinguistic interviews with bilingual UP and Spanish speakers. Participants were divided by gender, by three age groups ranging from 15 to 70 years old, and by socioeconomic group, working, lower-middle and mid-middle class. In order to provide a comparable sample of the speech community, fifty-four participants born or raised in Rivera were selected for phonological analysis in the present study.

4.1 The apparent-time method

The use of apparent-time differences to study language change in progress has been a useful analytical tool in quantitative sociolinguistics for more than forty years. The basic principle underlying the apparent-time construct (Labov, 1966) is that "differences among generations of adults mirror actual diachronic developments in a language when other factors, such as social class, are held constant. The speech of each generation is assumed to reflect the language as it existed at the time when that generation learned the language" (Bailey, 1991: 242). The apparent-time method assumes that individual vernaculars remain basically stable after the formative period of language acquisition. However, the main challenge of the apparent-time approach to language change relies on its interpretation. Sociolinguistic research has showed that speakers do modify their linguistic behavior over their adult lifetimes, so that generational differences might not represent an instance of language change in progress, but rather to age-grading behavior.

There are two types of studies that can help disambiguate between age-grading or change in progress, a panel or a trend study. A longitudinal or panel study involves resampling the same speakers, i.e. individuals must be followed for an extended period of time. A cross-sectional or trend study involves resampling the same age range of speakers in the same speech community at different points in time (Bailey, 2002).

	1995 sample	2007 sample
Younger speakers (Generation 1)	16–29 years old (born ~ 1979–1966)	15–29 years old (born ~ 1992–1978)
	N=18	
Young-adult speakers (Generation 2)	30–49 years old (born ~ 1965–1946)	30–49 years old (born ~ 1977–1958)
	N=18	
Older speakers (Generation 3)	50–70 years old (born ~ 1945–1925)	50–70 years old (born ~ 1957–1937)
	N=18	
	Total N= 54	Total N= 54

Table 1: Age distribution in each of three age groups for each speech sample.

Note: The 1995 sample corresponds to Carvalho's study.

While a panel study can answer questions about the stability or instability of individual vernaculars, a trend study is apt to answer questions about stability or instability at the speech community level (Labov, 1994).

Through the comparison of two sets of apparent-time data, I test Carvalho's hypothesis and determine the path of the linguistic change hypothesized. This task is performed by comparing speech samples from Carvalho's data and from my own sample, grouped in comparable age-cohorts, that is, Generation 1, formed by younger speakers aged between 15 and 29 years old; Generation 2, formed by young adults aged between 30–49 years old; and Generation 3, older speakers formed by speakers aged between 50–70 years old. It should be noted that the 1995 sample refers to Carvalho's 1998 research in Rivera. As it is customary in variationist methodology, speakers' ages are determined by the year in which the actual interviews were recorded. The year of Carvalho's recordings is 1995 and, thus, they will be referred to as such. **Table 1** outlines the age limits of the younger, young-adult, and older generations for each of the two samples under study.

It should be noted that each age group is formed by an equal number of male and female speakers, that is, nine for each gender, representing the three socioeconomic groups established for the study. The two samples shown above in **Table 1** are comparable in size, age distribution among age groups, socioeconomic class, and gender. Thus, the sample is adequate for comparability purposes in real-time sociolinguistic research (Bailey et al., 1991).

4.2 Hypothesis

Based on previous research (Bisol, 1991; Carvalho, 1998; Battisti & Hermans, 2009), I can infer that age is the strongest extralinguistic constraint conditioning palatalization of dental stops and that younger speakers tend to prefer the innovative palatalized variant. Thus, the hypothesis is that younger speakers will show an increase in the use of the palatal variant.

I also investigate whether the hypothesized change in progress has continued to advance or has stabilized at the speech community level. If the hypothesis proposed by Carvalho is corroborated, then an increment in the palatalization rate would be expected. Thus, the prediction is that there will be an increase in palatalization among the young, women and mid-middle class speakers. On other hand, if no increase in the palatalization rate is found, then I would argue that the language change in progress hypothesized has stabilized in Rivera. I will also identify the driving forces responsible for the variant selection and the linguistic factors conditioning palatalization of dental stops in contemporary UP.

5. Circumscribing the Variable Context

In order to examine the behavior of palatalization of /t/, /d/ before /-i/, it is necessary to delimit its context of occurrence. In most varieties of Brazilian Portuguese, both an underlying high vowel /i/ in stressed or unstressed positions and a phonetic [i] raised from an underlying /e/ in unstressed positions may palatalize the preceding dental stop. **Tables 2–4** show these linguistic environments (examples from Battisti & Hermans, 2009: 236).

For the present study, the envelope of linguistic variation (Labov, 1972), that is to say, the variable context, included the dental or affricate realization of /t/ or /d/ before an underlying high vowel /i/ in stressed or unstressed position or a phonetic [i] raised from an underlying central vowel /e/ in unstressed position. Hence, I incorporated tokens as a dental or affricate realization of /t/ or /d/ preceding the vowel /i/, this vowel being oral, nasal or glide. **Tables 5 to 7** show examples extracted from the data.

Stressed /i/		Glossary
<i>tio</i>	[ˈtʃiw]	‘uncle’
<i>medida</i>	[meˈdʒida]	‘measurement’
<i>ativo</i>	[aˈtʃivu]	‘active’

Table 2: Palatalization of /t/, /d/ before stressed /i/.

Unstressed /i/		Glossary
<i>diretor</i>	[dʒireˈtoɾ]	‘director’
<i>difícil</i>	[dʒiˈfisiw]	‘difficult’
<i>ótimo</i>	[ˈoʃĩmu]	‘great’

Table 3: Palatalization of /t/, /d/ before unstressed /i/.

Unstressed /e/ raised to [i]		Glossary
<i>ponte</i>	[ˈpõʃi]	‘bridge’
<i>vinte</i>	[ˈvĩʃi]	‘twenty’
<i>sede</i>	[ˈsedʒi]	‘thrust’

Table 4: Palatalization of /t/, /d/ before unstressed /e/ raised to [i].

		Glossary
<i>tia</i>	[ˈtʃia]	‘aunt’
<i>dia</i>	[ˈdʒia]	‘day’
<i>pote</i>	[ˈpoʃi]	‘pot’

Table 5: Palatalization of /t/, /d/ preceding the oral vowel /i/.

		Glossary
<i>tinta</i>	[ˈtʃĩta]	‘paint’
<i>tinha</i>	[ˈtʃĩna]	‘to have 1 st , 3 rd pers.’
<i>mandinga</i>	[mãˈdʒĩga]	‘witchcraft’

Table 6: Palatalization of /t/, /d/ preceding the nasal vowel [ĩ].

		Glossary
<i>diurno</i>	[ˈdʒjuɾnu]	‘daytime’
<i>ódio</i>	[ˈɔdʒju]	‘hate’
<i>mandioca</i>	[mãˈdʒjɔka]	‘cassava’

Table 7: Palatalization of /t/, /d/ preceding the palatal glide [j].

Rates of palatalization of dental stops differ significantly among speech varieties in Brazilian Portuguese (Bisol, 1991). Previous studies suggest that variation correlates also with social factors such as age, gender, and socio-economic status. In the present investigation the most commonly found linguistic and extralinguistic factors to condition the variability have been analyzed to examine palatalization of dental stops in contemporary UP in Rivera.

6. Exclusions

I included in the analysis all words containing underlying /t/ or /d/ followed by an underlying high vowel /i/ in stressed or unstressed position or a phonetic [i] raised from an underlying central vowel /e/ in unstressed position. In most varieties of BP, pretonic mid-vowels /e/ and /o/ rise to [i] and [u] respectively and may palatalize the preceding dental stop (Bisol, 1989; Battisti & Hermans, 2009: 236). While vowel raising is a known phenomenon in the Portuguese language and in other Romance languages, such as Spanish (Hualde, 1989; Holmquist, 2001) and Italian (Maiden, 1991), further explorations of vowel raising variation will not be included in this analysis since its inclusion goes beyond the scope of the present investigation.

As it is standard in the methodology of variationist sociolinguists, I excluded from the analysis the following: false starts or truncated utterances, repetitions, and utterances that were not understandable or not audible.

7. Linguistic and Extralinguistic Constraints

As the literature review reveals, there are three linguistic factors most commonly found to condition the variable pronunciation of palatalization of dental stops: stress and following and preceding linguistic environment (Bisol, 1991; Carvalho, 1998). These linguistic factor groups were included in the present study in direct response to the body of literature of palatalization of /ti/, /di/ in BP and UP.

Previous studies have shown the importance of social or extralinguistic factors when analyzing language variation and sound change. Social factors are essential in modern sociolinguistic research since they allow researchers to predict the choice of a linguistic variable, and to determine if the variable under consideration is undergoing change or whether there are other factors at play. The three extralinguistic factors most commonly found to constrain the variable pronunciation of dental stops are the following: age, socioeconomic status, and gender. Thus, these social factors were included in the present investigation.

8. Results

The data set amounted to 2526 tokens, which I analyzed using GoldVarbX (Sankoff, Tagliamonte & Smith, 2005). The following section presents an overall distribution of the variants, a factor-by-factor distributional analysis, and multivariate analysis of the contribution of factors in the palatalization of /ti/, /di/ in UP. An overall distribution of variants refers to the relative frequency of each variant of the linguistic variable without considering any linguistic or extralinguistic factor (Tagliamonte, 2006: 135). **Table 8** shows the overall distribution of the data grouped according to whether there was a dental or a palatalized variant. **Table 8** also shows that the overall rate of palatalization of /ti/, /di/ is 29% (N = 743) and that dental realization is 71% (N = 1783) for a total of 2526 tokens analyzed.

As **Table 8** shows, 29% of dental stops are palatal realizations whereas dental variants make up 71% of the data. This distribution corroborates empirical reports in other varieties of BP such as that of Battisti and Hermans' (2009) study and to a lesser extent that of UP research by Carvalho (1998). It is noteworthy to point out that the same frequency rate of rule application (29%) is found in the bilingual southern city of Antônio Prado in Rio Grande do Sul, Brazil. I will return to this point in the discussion section. **Table 9** replicates, as far as I can tell, the overall distribution of variants presented in Carvalho (1998: 171).

Palatal realization		Dental realization	
%	N	%	N
29	743	71	1783
		Total N	2526

Table 8: Overall distribution of the realization of tokens of /ti/, /di/ in UP (2007 data).

Palatal realization		Dental realization	
%	N	%	N
32	719	68	1529
		Total N	2248

Table 9: Overall distribution of the realization of tokens of /ti/, /di/ in UP (1995 data).

As **Table 9** shows, the overall distribution of linguistic variants identified in Carvalho (1998) are palatal realizations, 32% (N = 719), and dental realization or non-palatalization, 68% (N = 1529), out of 2248 tokens analyzed. Let's now investigate how these overall frequencies compare between the two studies.

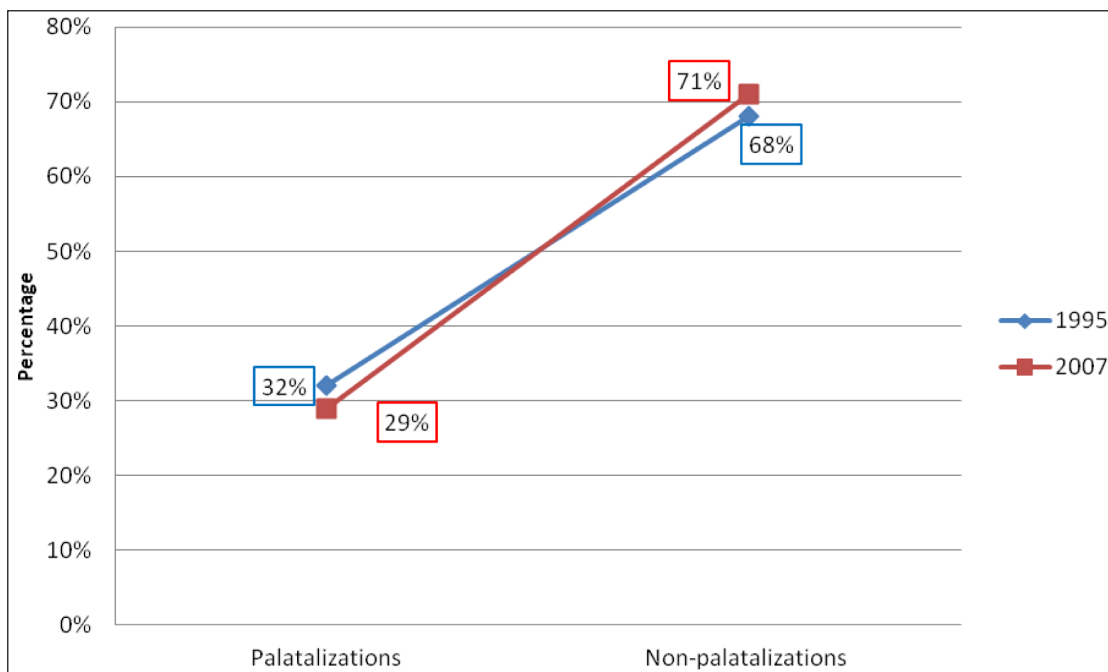


Figure 1: Overall distribution of the realizations of tokens of palatalization of /ti/, /di/ in UP 1995 and 2007 data.

Figure 1 compares the results of the overall distribution of the realizations of tokens of palatalization of /ti/, /di/ in Carvalho's (1998) findings. **Figure 1** shows that the overall frequency rate of rule application in the 2007 study is slightly lower than the one reported in 1995. By comparing the overall frequencies of palatalization, found in the 1995 and 2007 data (32% and 29% respectively), we can infer that palatalization of dental stops in the speech community of Rivera has not significantly increased over time. The overall distribution of the variants suggests a relative stability of linguistic variation at the speech community level. However, the difference in overall rate is not in itself indicative of a difference in the grammar of palatalization of dental stops (Tagliamonte, 2006). The next step is to examine the independent factors conditioning the linguistic variable under investigation.

8.1 Multivariate Analysis of the Contribution of Linguistic Factors of Palatalization of /ti/, /di/.

Table 10 shows the results of the multivariate analysis of the contribution of linguistic factors of palatalization of dental stops. The factors are selected by the stepwise multiple regression procedure incorporated in the variable rule program as significant to the probability of palatalization of /ti/, /di/ in UP.

Table 10 reports the binomial step-up and step-down analysis of the data. The linguistic factor groups selected as presenting statistically significant effects on the palatalization of /ti/, /di/ in UP are the following and preceding phonological segment and tonicity of the syllable. **Table 10** also shows that following and preceding phonological contexts distinguish segments based on manner of articulation.

For illustration purposes, let's now look at Carvalho's (1998) findings. **Table 11** replicates, as far as I can tell, the variable-rule analysis of application of the palatalization according to linguistic factors presented in Carvalho (1998: 171). **Table 11** indicates that the following phonological context and tonicity of the syllable contribute a statistically significant effect on palatalization of /ti/, /di/ in UP. Preceding phonological environment and juncture factors were eliminated in the final statistical run (Carvalho, 1998: 171).

As **Tables 10** and **11** indicate, the following phonological context is the strongest factor group conditioning palatalization of dental stops in Rivera. While tonicity of the syllable is also selected as statistically significant, its position in the ranking differs in both sets of data. The next section provides a detailed description and comparison of every factor group selected as significant in both studies.

Corrected mean			.29
Log likelihood			1494.993
Total N			2526
Following phonological segment Vowel/glide	Factor weight	%	N
	.66	42	174
Liquids (vibrant + laterals)	.65	37	67
Stop	.62	36	501
Nasal	.59	34	191
Zero/Pause	.43	26	1458
Sibilant	.38	19	135
<i>Range</i>	<i>28</i>		
Preceding phonological segment Vowel/glide			
	.53	31	474
Nasal	.53	31	872
Zero/pause	.51	30	779
Sibilant	.39	22	147
Liquids (vibrant + laterals)	.39	22	254
<i>Range</i>	<i>14</i>		
Tonicity			
Post tonic position	.54	29	1285
Stressed position	.46	30	899
Pre tonic position	.44	30	342
<i>Range</i>	<i>10</i>		

Table 10: Variable rule analyses of the contribution of linguistic factors selected as significant to the probability of palatalization of /ti/, /di/ in UP (2007 data).

Note: All factor groups selected as statistically significant.

8.1.1 Following phonological context

First, the greatest effect is presented by the following phonological context, with a relative magnitude of its effect at 28. This finding is consistent with previous studies of UP and across dialects of BP. Carvalho (1998) and Bisol (1991) found that the following environment applies the strongest effect with a 50 and 53 of relative magnitude respectively.

Vowels and liquids (laterals were collapsed with vibrants in a final run) exert the highest effect on favoring the palatalization rule with a .66, and .65 probability, respectively. This finding provides evidence to suggest that palatalization of /ti/, /di/ is more likely to occur when followed by another vowel or glide, forming a diphthong, and a lateral or a vibrant. In BP, laterals in syllable-final position are usually realized as a velar glide [w], which forms a diphthong with the preceding vowel (Azevedo, 2005: 49). Hence, it appears that diphthongs create a favorable linguistic constraint promoting palatalization of dental stops in this environment. On the other hand, stops at (.62), and nasals at (.59) favor the palatalization rule, whereas a following pause or zero phonological context (.43) and sibilants (.38) disfavor it.

Table 11 shows that in the 1995 data the following context separates nasals (including the palatal nasal) from other consonants (including stops) and distinguishes laterals from vibrants, with pause, vowels, and sibilants treated separately. The two types of following environments contributing to exert the most notable effect on palatalization of /ti/, /di/ are nasals favoring palatalization of dental stops (.63) and sibilants disfavoring it (.13). One of the most significant aspects resides in the behavior of a following sibilant. Carvalho (1998) reports a low .13 probability, which indicates an inhibitor effect on the application of the palatalization rule.

Total N			2248
Following phonological segment	Factor weight	%	N
Nasal	63	39	315
Other consonants	53	33	440
Zero/pause	52	33	918
Vowel	50	31	341
Lateral	.48	36	11
Vibrant	47	28	67
Sibilant	13	9	148
<i>Range</i>	<i>50</i>		
Tonicity			
Stressed	57	33	889
Pre tonic	54	30	461
Post tonic	41	32	898
<i>Range</i>	<i>16</i>		
Preceding phonological segment			
Lateral	[.60]	38	24
Nasal	[.56]	38	581
Vowel	[.55]	30	540
Vibrant	[.49]	27	151
Sibilant	[.44]	27	85
Zero/pause	[.43]	31	867
Juncture			
Initial	[.54]	29	840
Medial	[.54]	35	502
Final	[.44]	31	866
Clitic	[.44]	57	40

Table 11: Variable rule analyses of the contribution of linguistic factors selected as significant to the probability of palatalization of /ti/, /di/ in UP (1995 data).

Note: Factor groups not selected as significant appear in square brackets (adapted from Carvalho, 1998).

The next question to ask is how consistent the findings are in both data sets. With that question in mind, I compare the linguistic factors selected as significant in both studies. I will start with following phonological context selected as significant in both samples. **Figure 2** compares both data sets.

As **Figure 2** shows, while in the 1995 data, vowels exert a rather neutral effect on the application of the palatalization rule (.50), in the current study they exert the strongest effect (.66). However, in another variety of Portuguese, namely Portuguese Gaúcho, vowels show a neutral effect. In Bisol's study vowels show (.55) for the bilingual and a disfavoring (.40) for the metropolitan speakers.

Laterals and vibrants, collapsed into a single factor group in the present study as liquids, proved to be a strong linguistic factor favoring palatalization (.65), while Carvalho (1998) found that laterals (.48) and vibrants (.47) disfavor it. However, the present study results are consistent with Bisol's (1991) analysis. Bisol's (1991) study shows that laterals exert the most significant effect on the application of the palatalization rule (.73) for the bilingual and (.79) for the metropolitan group. Although in Bisol's analysis vibrants were coded as a separate factor group, vibrants exhibit an irregular behavior due to their low number of occurrence in the data (1991: 110).

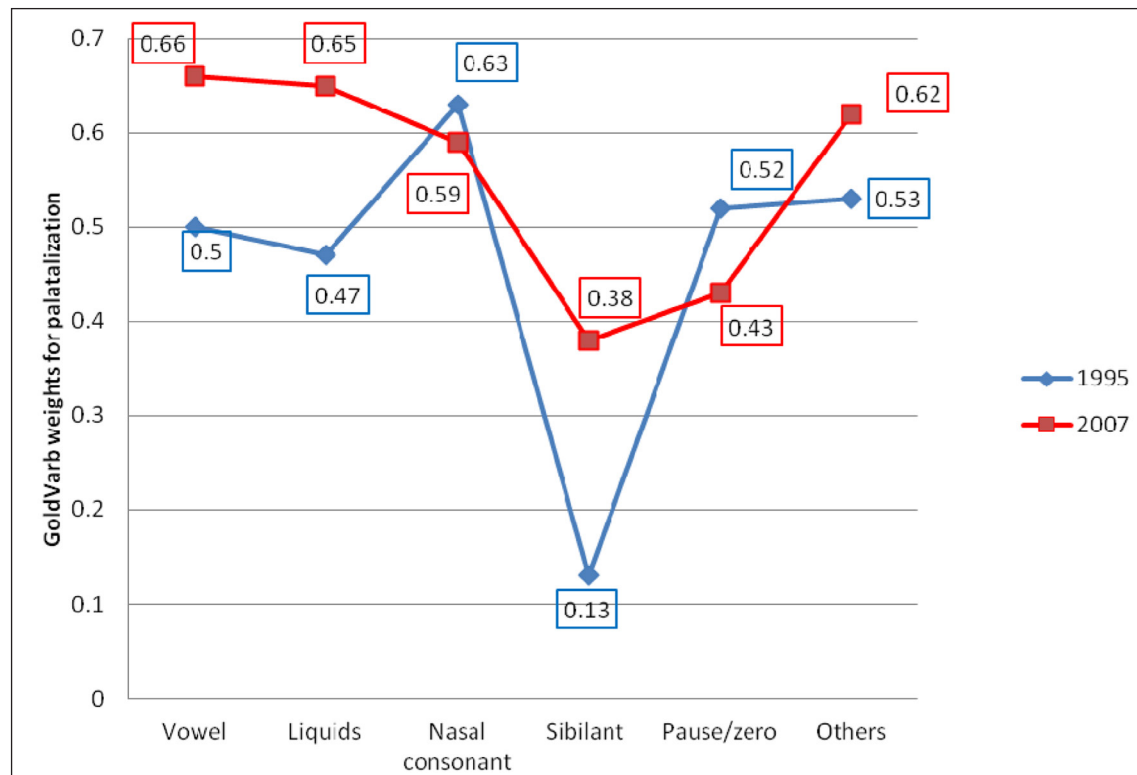


Figure 2: Probability of palatalization of /ti/, /di/ according to following phonological context.

A following nasal shows evidence of exerting the strongest effect in Carvalho's analysis (.63), while in the 2007 study nasals show a slightly lower effect, at (.59). In the present analysis, palatal nasals were collapsed with the bilabial and alveolar nasals in a final run to better account for the data. Although collapsed into a single factor group, nasal consonants exert a slightly favoring effect of the application of the palatalization rule.

Carvalho argues that the effect of a following nasal favoring palatalization could be explained as "a result of a high frequency of palatal nasals in the corpus, which because of regressive assimilation, triggered anticipation of the point of articulation of [ɲ], instigated by the environment of [i]" (1998: 174). In Bisol's (1991) study, palatal nasals (.60 and .76) for the bilingual and metropolitan group respectively, exert a strong effect on rule application. It is worth noting that the difference in probabilities between the bilingual group in Bisol's study (.60) and the current study (.59) is negligible.

As **Figure 2** shows, and consistent with previous research, a following /s/ promotes dental realizations of /ti/, /di/ in UP. The 1995 and 2007 samples exhibit a very low probability for the sibilant (.13 and .43) respectively. These results are also comparable cross-dialectally. Bisol's study reports very low factor weights (.20 and .05) for the bilingual and metropolitan groups, respectively, signaling the tendency of a sibilant to hinder the application of the palatalization rule (Bisol, 1991: 111). On the other hand, in the 2007 data, following pause strongly disfavors palatalization of dental stops (.43), while in the 1995 sample, following pause exerts a rather neutral effect of rule application (.52).

The present study shows that stops favor palatalization (.62), while in the 1995 data stops were collapsed with other consonants, providing a combined factor weight of .53. This fact obviously obscures the individual potential role of stops constraining the linguistic variable under investigation in this environment, hence impeding statistical comparisons as well.

The position of vowels at the highest position in the hierarchy requires some comment. As mentioned above, the present study examines palatalization of dental stops before /i/, where unstressed mid vowel /e/ raised to a high vowel [i] and the palatal glide /j/ are taken into account. The use of high vowels in place of mid vowels results from a phenomenon known as vowel raising (Mattoso Câmara, 1953; Bisol, 1989).¹ Vowel raising is pervasive, and its use is variable in colloquial Portuguese language, and seemingly at play in UP

¹ In Brazilian Portuguese there is a vowel raising rule which raises the pretonic /e/ and /o/ vowels to /i/ and /u/ respectively. This rule is conditioned by linguistic and social factors and thus treated as a variable rule (Bisol, 1989).

as well, as data results suggest. However, the variable use of high vowels in place of mid-vowels will not be examined in the present study.²

The point of articulation of the palatal nasal provides a favorable environment for palatalization. The extensive use of the suffix *-nho*, *-nha* in UP must be taken into account. The frequent use of diminutives in BP has already been reported (Giangola, 2001). The author points out that both young and adult Brazilians are given to the use of diminutives. The use of diminutives appears to be more frequent in conversational speech, expressing many subtle shades in meaning. Diminutives are formed by the application of suffixes. This type of productive suffixal derivation “is employed in order to indicate a greater or lesser degree, dimension, or intensity of a derivative noun or adjective with respect to the corresponding simple form” (Mattoso Câmara, 1972: 199). As Mattoso Câmara further argues, the principal diminutive suffix in Portuguese is *-inh(o, a)*, which is considered to be unrestricted in use (e.g., *casinha* ‘little house’, *gatinho* ‘little cat’). Carvalho (1998: 174) also reports a high frequency of words with the diminutive suffix *-nho* in her data. It can be argued that UP speakers have incorporated the productive diminutive suffix in their speech. However, the semantic and pragmatic functions of diminutives in UP remained to be examined.

As shown by previous studies, sibilants have an inhibitory effect on palatalization of /ti/, /di/. The 2007 results show the unfavorable role of the sibilant, restricting the palatal realization of dental stops in UP. Carvalho (1998) and Bisol (1991) report similar findings. Carvalho’s results show a strong inhibiting effect applied by the sibilant, with a probability weight as low as .13 (1998: 174). Bisol reports (.20 and .05) for the bilingual and metropolitan groups respectively, signaling the tendency of a sibilant to hinder the application of the palatalization rule (1991: 111). The behavior of a following sibilant, at the bottom of the hierarchy in both varieties, suggests that across dialects the underlying grammar producing the surface form is basically the same, at least for this linguistic factor. If two varieties share the same constraint rankings, it is an indication of the similarity of their grammars (Tagliamonte, 2006: 241).

8.1.2 Preceding phonological context

Consistent with previous studies, it was found that the effect of the preceding phonological environment was not nearly as strong as that of the following segment. This factor group exerts the second highest magnitude of effect in the analysis, obtaining a range of 14. While in the present study and in Bisol’s analysis the presence of a preceding segment proved to be statistically significant, in the 1995 sample, this factor group was eliminated in the final statistical run.

As in the following phonological context, vowels exert the most significant effect on applying the palatalization rule in this environment, with a probability of (.53). It must be noted that this is a rather neutral effect. This result is consistent across dialects as well. In fact, in Bisol’s analysis, vowels show an identical factor weight (.53) for the bilingual participants. Preceding nasal consonants apply also a rather neutral effect of rule application at (.53). In Bisol’s analysis, nasals present a slightly higher effect, at (.59) for the bilingual group.

In the present investigation, it was found that a preceding pause exerts a neutral effect of rule application (.51). This finding is consistent cross-dialectally. In fact, Bisol’s analysis reports that pause lacks statistical significance in this environment. On the other hand, liquids (laterals and vibrants) disfavor palatalization of dental stops (at .39). In line with previous research, the disfavoring role of the sibilant shows a similar pattern in UP and in BP. Bisol reports a low probability (.24) for bilingual speakers, while in the present analysis sibilants show a disfavoring role (.39). Bisol (1991) proposes a phonetically-based explanation to account for the blocking force of the sibilant in the application of the palatalization rule.

There is a physically definable connection between the stop [t,d] and the fricative [s,z] which motivates the retention of the alveolar. It is the neutral behavior of the full alveolars [s,z] which opposes the raising and fronting of the body of the tongue necessary for the articulation of the palatal, thus eliminating the physical effort involved in the articulation of the affricates [tʃ,dʒ] (1991: 113).

Bisol furthermore argues that this mutual attraction, caused by the features that the stops [t,d] and the fricatives [s,z] have in common – [-high] in distinctive feature theory – represents a mere process of minimization of articulatory effect that tends to prevent the assimilation of the high vowel that causes palatalization (1991: 113).

² The role of the high vowel feeding the palatalization rule in Portuguese has been attested (Bisol, 1991; Battisti & Hermans, 2009). Battisti and Hermans found in the community of Antônio Prado that the amount of unstressed mid vowels raised and palatalized were only 13%, most of them in final post-tonic positions. Battisti and Hermans argue that this linguistic environment is disfavorable to palatalization (.23), due to low rates of mid-vowel raising and the influence of Italian dialects spoken in the city (2009: 238).

8.1.3 Tonicity of the syllable

The last linguistic group to be selected as significant is tonicity of the syllable with a relative magnitude of 10. In Carvalho's study, tonicity of the syllable was the second most significant linguistic factor group. As in previous studies (Carvalho, 1998; Bisol, 1991), the lesser effect is contributed by tonicity of the syllable. In the present study the range (10) is very similar to Carvalho's (16) and Bisol's (14) analysis of the bilingual participants. **Figure 3** compares both data sets.

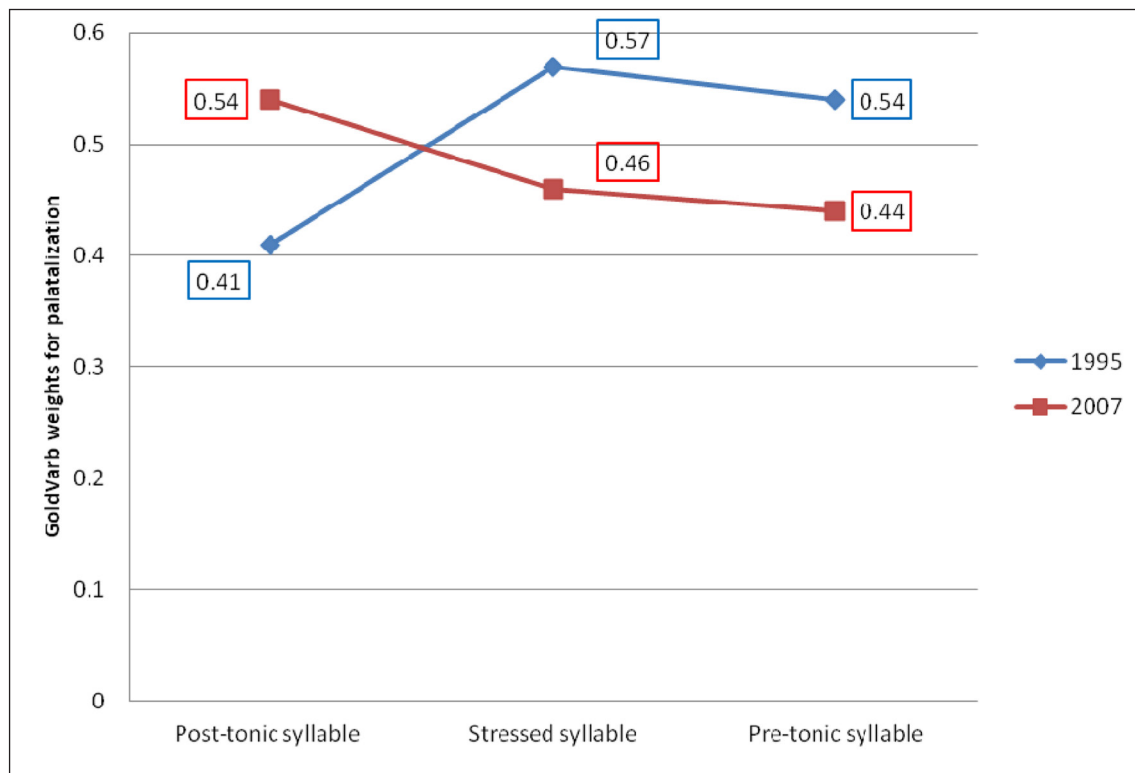


Figure 3: Probability of palatalization of /ti/, /di/ according to syllable stress in UP.

Multivariate analysis of the 2007 sample shows that post-tonic syllable stress favors palatalization (.54) while stressed (.46) and pre-tonic syllable stress (.44) disfavor application of the palatal rule. However, in the 1995 sample, results show that palatalization is more frequent in stressed syllables (.57) followed by pre-tonic (.54) and post-tonic stressed syllables (.41).

Figure 3 shows the probability of dental stops according to syllable stress across studies. The position of the post-tonic syllable at a higher point in the hierarchy in the 2007 study, however, requires some comment. Interestingly, the constraint hierarchy found in the present investigation – that is, the post-tonic, stressed and pre-tonic syllable – mirrors the constraint hierarchy of the bilingual group in Bisol's (1991) study. In fact, Bisol reports that palatalization frequencies show an inverse behavior in the dialects of the settlement area, in which the more frequently occurring environment for rule application is the unstressed syllable (**Table 12**).

As **Table 12** shows, metropolitan and border groups in Bisol's study illustrate a pattern of favoring the stronger position in the decreasing order: stressed, pre-tonic and post-tonic syllable stress. As she furthermore argues, the palatalization of dental stops is a typical case of increase in phonetic properties which applies mainly in strong positions. However, the Italian group exhibits the same syllable stress pattern as the 2007 data – that is, post-tonic, stressed, and pre-tonic syllables. Bisol (1991) notes that this contradictory pattern is based on the principle of saliency, which states that “a less prominent innovation is more likely to be successful than a more prominent innovation” (Bisol, 1991: 118). Furthermore, she argues that since the affricate realization of dental stops is a new rule, which is not existent in the Italian or German language, palatalization is fulfilled in weak syllables first, where it is less salient, and gradually spreads to other contexts. It can be argued that Rivera speakers are incorporating the palatalization rule in less complex phonological environments, in syllables with less prosodic strength, that is, in weak syllables, or in post-tonic positions where it is less evident. In doing so, speakers are minimizing the external effect and conforming to community linguistic norms. An additional factor to be considered is language contact of UP with the Spanish language, that do not palatalize dental stops, thus, inhibiting the application of the palatalization rule.

	Bilingual speakers	
	Italian settlement	Rivera speakers (2007)
Post-tonic syllable	.57	.54
Stressed syllable	.50	.46
Pre-tonic syllable	.43	.44

Table 12: Comparison of palatalization of dental stops according to syllable stress among bilingual group (Bisol, 1991) and Rivera speakers (2007 data).

In sum, as far as the linguistic constraints are concerned, the 2007 data are generally consistent with previous research both in UP and across varieties of BP. The most outstanding finding is the role of the sibilant in preventing the application of the palatal rule in both the following and preceding segments in UP and other varieties of BP. As Tagliamonte (2002: 731) argues, “the constraint hierarchy of factors provides a diagnostic for comparison.” She notes that not only rates of application of the rule or environmental constraints are critical in language change but the constraint hierarchy as well. Hence, there seems to be a language specific constraint preventing clusters where the following/preceding alveolar sibilant blocks the affricate pronunciation of dental stops before /i/. The position of /s/ at the bottom of the constraint hierarchy suggests that the underlying grammar producing the dental variant is basically the same in both UP and BP.

The present analysis highlights the fact that palatalization of dental stops is more likely to occur when followed by a vowel, glide or lateral (realized as a velar glide [w] in coda position). The preceding phonological constraint does not have nearly the effect that the following segment does. This finding patterns cross-dialectally but does not correlate with the 1995 sample. While vowels and nasals slightly favor palatalization of dental stops, liquids and sibilants disfavor it.

Tonicity of the syllable has shown to be the weakest factor group conditioning palatalization of /ti/, /di/ in UP. Multivariate results show that the more frequent environment for rule application is the unstressed syllable. The unexpected result could be analyzed as Rivera speakers' preference for adopting the palatalization rule in less complex phonological environments to signal alliance with community linguistic norms. An additional factor to be considered is the potential influence of the Spanish language, where the affricate realization of dental stops is not operative, as a contributing factor favoring a less salient environment for rule application.

8.2 Multivariate Analysis of the Contribution of Extralinguistic Factors of Palatalization of /ti/, /di/

Table 13 shows the results of the multivariate analysis of the contribution of extralinguistic factors selected as significant to the probability of palatalization of /ti/, /di/ in contemporary UP. The factors are selected by the stepwise multiple regression procedure incorporated in the variable rule program as significant to the probability of palatalization of /ti/, /di/ in UP.

As shown in **Table 13**, all the extralinguistic factors are selected as presenting statistically significant effects on palatalization of dental stops before /i/. **Table 13** also reports that the greatest and most significant effect is exerted by the factor age group with a range of .49. This is a notable finding in the study since age is the primary social correlate of language change (Chambers, 2002: 349). The cross-sectional analysis among the two samples will shed light on the process of generational preference of the palatal variant in Rivera. Thus, language change and age-grading will be analyzed as possible linguistic outcomes in the discussion section.

The last two factor groups selected as significant are socio-economic status and gender with a relative strength of 37 and 24 respectively. In order to find out how these results compare with the 1995 data, I now turn to present the multivariate analysis of extralinguistic factors in Carvalho's study.

Table 14 replicates, as far as I can tell, the variable-rule analysis of the application of palatalization of /ti/, /di/, according to extralinguistic or social factors presented in Carvalho (1998: 176). As seen below, all social factors are selected as statistically significant. Age, socioeconomic status and gender contribute statistically significant effects to palatalization of /ti/, /di/ in contemporary UP. These findings correlate with the 2007 data. As shown in **Table 14**, the most important social factor conditioning palatalization in UP is age with a relative strength of 86. The other social factors selected as significant are socio-economic status and gender with a strength of 56 and 31, respectively.

As **Tables 13** and **14** show, there is an identical pattern between the two data sets. Not only are all the factor groups selected as significant but the constraint ranking in each factor group patterns similarly. As expected, age is clearly the dominant variable, applying the strongest effect conditioning palatalization of /ti/, /di/. In what follows, I discuss each individual extralinguistic factor, comparing both samples.

Corrected mean			24
Log likelihood			1206.903
Total N			2526
Age	Factor weight	%	N
15–29	.70	45	829
30–49	.62	35	874
50–70	.21	7	823
<i>Range</i>	<i>49</i>		
Socio-economic group	.76	53	728
Mid-Middle class			
Low-Middle class	.39	25	7415
Working-class	.39	16	1083
<i>Range</i>	<i>37</i>		
Gender			
Female	.62	35	1303
Male	.38	23	1223
<i>Range</i>	<i>24</i>		

Table 13: Variable rule analyses of the contribution of social factors selected as significant to the probability of palatalization of /ti/, /di/ in UP (2007 data).

Note: All extralinguistic factor groups selected as significant.

Total N			2248
Age	Factor weight	%	N
(16–29)	.91	61	1017
(30–49)	.29	13	637
(50–70)	.05	2	594
<i>Range</i>	<i>86</i>		
Socio-economic group			
Mid-Middle	.81	52	764
Low-Middle	.34	24	693
Working	.30	19	791
<i>Range</i>	<i>51</i>		
Gender			
Female	.60	35	1166
Male	.39	29	1082
<i>Range</i>	<i>21</i>		

Table 14: Variable rule analyses of the contribution of social factors selected as significant to the probability of palatalization of /ti/, /di/ in UP (1995 data).

Note: All extralinguistic factor groups selected as statistically significant (adapted from Carvalho, 1998).

8.2.1 Age

First, the greatest effect is contributed by the factor age group, with a relative magnitude of .49. This is the strongest social constraint conditioning palatalization of stops in contemporary UP in Rivera. As expected and consistent with previous studies, the youngest speakers (15–29 years old) tend to prefer the palatal variant at (.70).

This finding mirrors previous studies of UP and different varieties of BP. In fact, 1995 data show that the youngest participants (15–29 years old) strongly favor the palatal variant at (.91). This pattern can also be found across dialects. In Bisol's (1991) study, the youngest group, formed by speakers aged 25–35 years old, used the innovative variant more often, presenting a factor weight of .63. In the Antônio Prado study, Battisti and Hermans (2009) report that the palatal variant is favored by young people who live in the city's urban area.

Figure 4 shows the distribution across ages in the 1995 and 2007 data. Clearly, younger speakers strongly favor the innovative variant of /ti/, /di/ in contemporary UP, while older speakers disfavor it. These findings are evidence that palatalization of dental stops is strongly conditioned by speakers' age. As Labov (1972) argues, when the conservative variant has a proportionately higher ratio of occurrences among older speakers, and when the innovative variant finds higher ratio of preference among younger speakers, age stratification of this sort may be interpreted as an index of change, i.e., 'change in apparent-time.' However, the synchronic generational differences found in the present study point also to the possibility of age-grading, thus, for the time being, I will consider both interpretations.

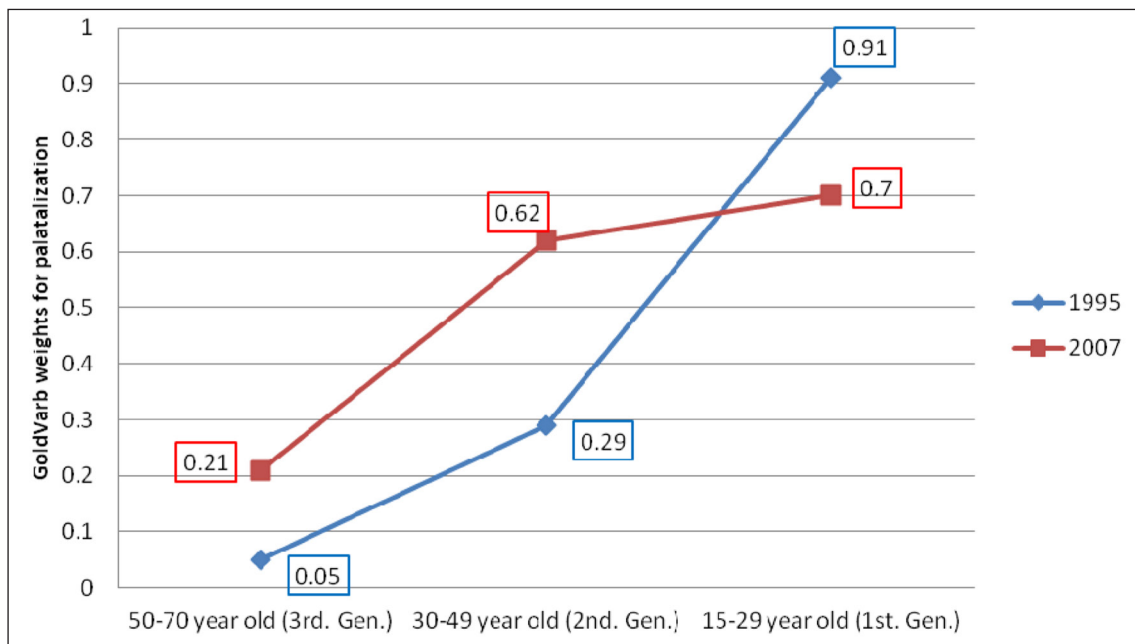


Figure 4: Comparison of rates of palatalization of dental stops followed by /i/ according to age in UP.

As **Figure 4** shows, there is a repeated age-gradient distribution among the groups. While in the 2007 sample young and young adults favor the innovative variant, older speakers disfavor it. The 1995 sample shows that while young people prefer the palatal variant, young adults and older speakers disfavor it. However, a cross-sectional analysis shows that the decreasing frequencies among the 1995 and 2007 Generation 1 group points out that the latter generation has adopted the innovative variant but at a slower pace than the former generation did.

On the other hand, the present study shows that speakers in the 2007 Generation 2 group (30–49 years old) tend to favor the innovative variant at (.62), while the 1995 data shows a different scenario: speakers in this age bracket tend to favor the dental variant showing a low probability (.29). This finding can be interpreted as a 'sustained' use of the palatal variant over time by this generation. That is, speakers in the 2007 Generation 2 group (30–49 years old) were 18 and 37 years old, respectively, twelve years earlier, which is the time depth of the study. Carvalho reports an almost categorical (.91) probability of use of the palatal variant among speakers in the 1995 Generation 1 group and (.29) for speakers in the Generation 2 group. The generational differences across studies indicate that the 1995 Generation 1 group (15–29 years old) started

out at (.91) probability of rule application. These speakers have continued favoring the palatal variant but at a much slower pace as indicated by the decrease (.62) in the 2007 Generation 2 group.

In a direction that is similar to the findings of previous research; 2007 data show that Generation 3 speakers (50–70 years old) prefer the conservative variant at (.21). Older participants in the 1995 sample show a mere (.05) of preference for the palatal variant. Cross-dialectally, the same pattern can be found. Bisol (1991) reports that the older group, speakers aged 36–55 years old, favors the conservative pronunciation of dental stops, showing a probability of rule application of (.37).

Comparing across studies, speakers in the 2007 Generation 3 group (50–70 years old) were 38 and 58 years old, respectively, in 1995. The probability of palatalization for speakers in this age-cohort in 1995 falls between Generation 2 (.29) and Generation 3 (.05). These results indicate that for speakers in this age group, the dental variant is still the norm. However, these speakers, also, slightly favor the palatal variant at very sparse rates, reaching in 2007 an unfavorable (.21) of rule application.

It is worth noting that linguistic variables undergoing change might reach a point of relative stability. In fact, this is not an unusual finding. As Chambers (2002: 364) points out, “linguists long recognized that rates of change fluctuate, and that periods of relative stability can be followed by periods of considerable flux.” Carvalho’s (1998) results show strong rates of palatalization distributed across age groups ranging from 0.05 to 0.91. Thus, the time window³ captured in the 1995 data signaled a synchronic pattern of a vigorous change. However, a generation later, comparative data indicate that the linguistic change has come to a relative pause.

In line with previous research, Battisti and Hermans (2009: 235) report that palatalization of dental stops shows signs of stabilizing in the speech community of Antônio Prado due to strong social conditioning. The fact that apparent-time data from a neighboring state in Brazil shows an identical distribution further strengthens the results. This is a worthwhile finding since it indicates that UP in the speech community of Rivera is marching in line with southern BP varieties in response to regional changes.

8.2.2 Socioeconomic group

Consistent with previous studies, the socioeconomic factor group does not have nearly as great an effect as the factor age group. The socioeconomic group demonstrates the second highest magnitude of effect in the analysis, obtaining a range of 37. This finding is consistent with previous studies of UP and across varieties of BP. Not only is this factor selected as significant but the constraint ranking mirrors that of the 1995 data.

Results show that participants in the higher socio-economic class bracket, mid-middle class, strongly favor the palatal variant (.76), whereas low-middle and working class speakers exhibit the same low probability of palatalization of dental stops (.39). It is worth noting that speakers in the low-middle and working class groups show the same tendency to use the innovative variant. This finding may indicate that palatalization of dental stops is moving along social spheres over time. Once more, these findings resemble 1995 data results. Mid-middle class speakers produced more palatalized variants (.81), whereas low-middle and working class speakers tended to favor the conservative pronunciation of dental stops at (.34 and .30), respectively.

As in previous research, palatalization of dental stops shows a clear social stratification. The wealthy and middle class inhabitants, who identify with Montevideo culture and distance themselves from UP speakers, favor palatalization of dental stops, whereas the poor and working class inhabitants, who identify with local border culture, disfavor it. Furthermore, these results are consistent across dialects of BP. Battisti and Hermans (2009) found that speakers living in the urban area give room to the innovative palatalized variants, while informants living in rural areas prefer the more conservative non-palatalized variant.

Figure 5 shows a clear pattern of social stratification in which the wealthiest speakers tend to prefer the incoming palatalized variant, while the low-middle and working class speakers favor the conservative form. The extralinguistic factor socio-economic status provides an unambiguous picture. The results of this analysis indicate that palatalization of dental stops in Rivera can be interpreted as a sociolinguistic marker since it seems to signal social class, due to the clear break among the social groups. A social marker refers to a linguistic feature whose usage *marks* or correlates with social characteristics or identity; in fact, Labov (1972: 220) argues that for a prestige marker, the higher a speaker’s socioeconomic status, the higher the frequency of use, whereas for stigmatized markers, the reverse is true. Statistical results point to the fact that palatalization of dental stops is a social marker in the speech community of Rivera.

³ For Cedergren (1987: 58), “the time window captured by synchronic studies of linguistic variation is limited by many factors, among which is the average life span of individuals of the particular time of the survey.”

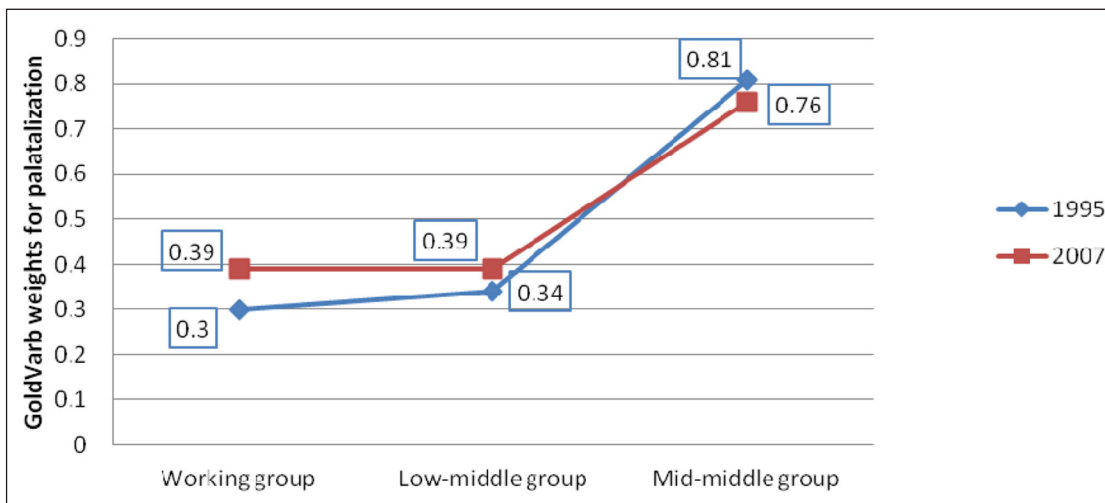


Figure 5: Comparison of rates of palatalization of dental stops followed by /i/ according to socioeconomic status in UP.

8.2.3 Gender

The last extralinguistic factor group tested was gender. This social factor showed the lesser magnitude of effect in the analysis, obtaining a range of 24. Once again, the two sets of data show consistency. As expected, statistical results clearly reveal that women tend to produce more palatalized variants (.62) than men (.38). These results also pattern with the 1995 data, where women favored the innovative variant (.60) whereas men at (.39) showed a clear preference for the conservative realization of /ti/, /di/.

Figure 6 shows the findings in both studies. As seen above, the picture is unambiguous, showing that females are clearly ahead of men in using the innovative variant. Not only do genders pattern similarly across studies, they also exhibit almost identical probability of preference for the innovative variant. Noticeably, women lead men by a considerable margin in palatalization of dental stops. These results indicate that females are leading the adoption of the innovative variant in the speech community of Rivera.

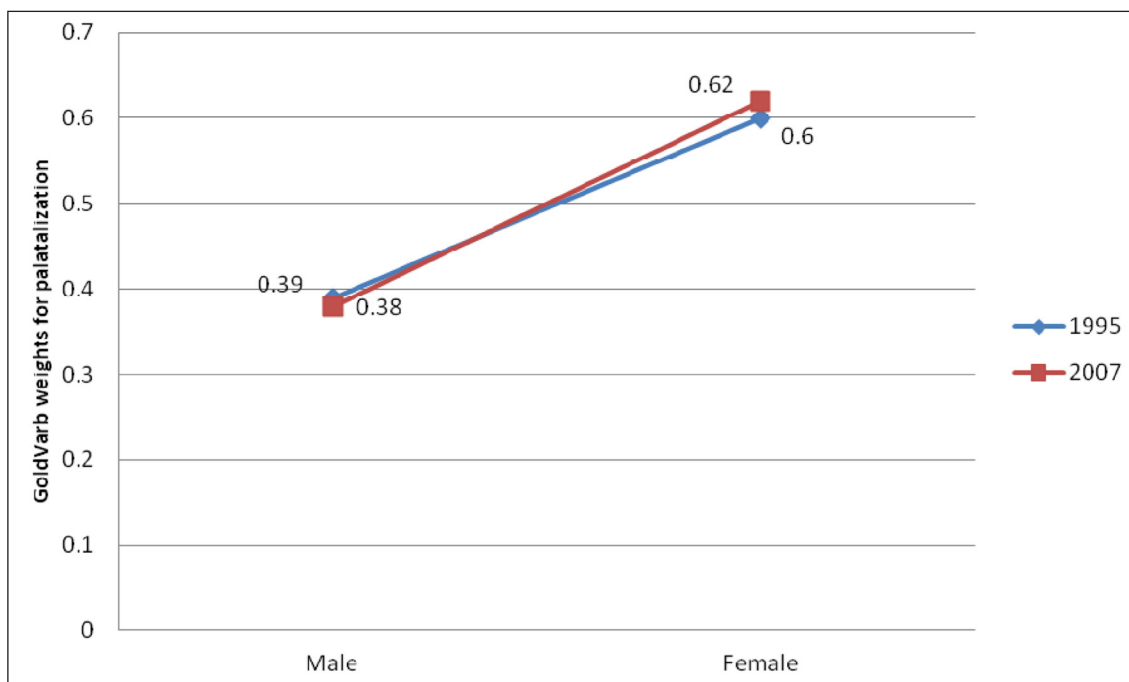


Figure 6: Comparison of rates of palatalization of dental stops followed by /i/ according to gender in UP.

The results of this analysis pattern across speech communities where sociolinguistic research has identified the important role of women in advancing language change. It is well known that women use fewer non-standard variants than men of the same social group. In fact, as Chambers (2002: 352) argues, the linguistic correlations with gender are consistent and partly predictable. Thus, unsurprisingly, women proved to be advancing the process of adoption of the palatal variant in contemporary UP in Rivera.

In sum, as far as the social factors are concerned, the 2007 data are generally consistent with previous research both in UP and across dialects of BP. As hypothesized, the factor group speakers' age proved to exert the strongest social constraint conditioning palatalization of /ti/, /di/ in Rivera. Data results confirmed the hypothesis that younger speakers tend to favor the palatal variant. However, the hypothesized increase in the use of this variant over time among the younger speakers is not confirmed in the present investigation. Cross-sectional evidence indicates that palatalization of dental stops has reached a relatively stable mode at the level of the speech community. In line with previous research, stability is also found across varieties of BP. This finding signals that UP is marching alongside southern varieties of BP.

Socioeconomic status has been found to be a strong social constraint conditioning palatalization of dental stops. As multivariate analysis results indicate, mid-middle class speakers tend to use the innovative variant more often than low-middle and working class speakers. As predicted, women are ahead of men by a considerable margin in palatalization of dental stops. These results indicate that females are advancing the adoption of the innovative variant in the speech community of Rivera.

9. Discussion

Making use of standard variationist methodology, I have put to empirical test a number of hypotheses about the nature of linguistic and extralinguistic factors conditioning the choice of the phonetic realizations of dental stops in UP. Making use of apparent-time methodology, I have compared data from two cross-sectional studies conducted at different points in time (1995 and 2007) with a time depth of twelve years. Cross-sectional studies are well suited to answer questions about language change or stability at the speech community level. As Labov (1981) points out, the most straightforward approach to the study of change in progress is to combine studies of age distribution with points in real time.

The trend methodology implemented in the study allowed us to better understand the tendencies inherent in language variation and change phenomena. By adding a longitudinal perspective to the study, it was possible to obtain a clear picture of the sociolinguistic evolution of palatalization of dental stops in the speech community of Rivera. I explored this approach with the objective of substantiating the change in progress hypothesized by Carvalho (1998). Based on this hypothesis, an increment in palatalization rates was expected if palatalization was indeed undergoing change; however, statistical analyses do not support this prediction.

As seen above, the linguistic variable under investigation has not increased over time; instead, palatalization of dental stops has reached a state of relative stability at the speech community level. The first confirmation of this conclusion is obtained from the overall distribution of the variants. In the present investigation, the overall distribution of variants shows that 29% (N = 743) of the tokens analyzed are palatal realizations, while 71% (N = 1783) correspond to the dental realizations of the variant. On the other hand, Carvalho reports 32% (N = 719) palatal realization and 68% (N = 1529) of non-palatalizations of the variant. As mentioned above, an increase of palatalization over time was expected in order to confirm the hypothesized change in progress. The overall distribution of the palatal variant points to a relative stability at the speech community level when compared at two discrete points in time 12 years apart.

As Labov (1981) discusses "if we want to propose that change in progress has been detected in a given speech community, we will need evidence to show that some variation within the community is a direct result of the fact that in the recent past language learners acquired a different form of the language than they are acquiring now" (177). The confirmation of this proposal is given by the fact that the proposed change has moved further in the same direction. In fact, results show that palatalization of /ti/, /di/ has not increased over time but rather has reached a relative stable stage.

The time window captured in the 1995 data signaled a synchronic pattern of a vigorous language change in apparent-time. Regression analyses showed that the most important social factor conditioning palatalization is age, clearly signaling change in apparent-time. Additional evidence contributing to the language-in-change hypothesis was the existence of sharp differences across age groups in the data (Carvalho, 1998: 179).

Unfortunately, one of the challenges in quantitative sociolinguistics is the scarcity of real-time data. In the specific case of Rivera, the only type of real-time data available are early qualitative descriptions of UP,

in which the dental variant is characterized as the norm among UP speakers. Therefore, taking this account into consideration as real-time evidence, it is reasonable to assert that at least in the late 1950s dental stops before /i/ in Rivera had only one linguistic variant. Linguistic variables undergoing change can reach a point of relative stability, but this stability can be followed by periods of considerably flux (Chambers, 2002: 364). In line with previous research, stability was also found in the speech community of Antônio Prado, Rio Grande do Sul. This finding signals that UP is marching alongside southern varieties of BP in response to regional changes.

The linguistic behavior of speakers in the Generation 2 group (30–49 years old) requires some comment. It can be argued that these speakers are entering a professional stage in their lives and as such are more sensitive to the social advantages of the incorporation of standard features into their speech. The linguistic marketplace concept (Sankoff & Laberge, 1978) has been applied in sociolinguistics research to examine the relationship between linguistic variation in society and speaker's economic activity or occupation. We cannot underestimate the potential role of professional pressures operating on UP speakers wishing to advance in society. The job market in the area of public school education looks promising for community members with a good command of 'standard' Portuguese; UP is not regarded as an equivalent alternative.

Self-reported data from participants revealed their opportunities to engage in daily interactions with Santana shoppers and their willingness to 'speak the language of the buyer.' In these daily commercial interactions, speakers feel compelled to approximate their variety to the standard. Above all, younger generations in Rivera are aware of the social capital attached to the standard language. In this respect, participants expressed their desire to learn standard Portuguese for practical reasons, in order to become more marketable in their professional life. One speaker expressed (1)

- (1) A gente têm que olhar para o Brasil, lá têm mais oportunidades de emprego. temos que pensar no futuro e estar preparado, não é? (YY055 m26)
'We have to look at Brazil, there are more job opportunities there, we have to think about the future and be prepared, right?'

The perception of language as a tool in order to ascend higher in society is evident among the young and young adults. Young Riverans are quite aware of the linguistic value of standard Portuguese and its potential value not only in the job market but also for educational opportunities. However, Rivera dwellers are considerably aware of the stigma attached to the variety spoken in the city. In this respect, Riverans of all social classes share a community norm of linguistic evaluation: the social evaluation of UP as a 'mixed-language' *a língua misturada*. Riverans even refer to UP speakers as *rompe-idioma* 'language-breakers'. While working class community members recognize the stigma attached to Rivera speech as part of their mixed identity and as a byproduct of conviviality with neighboring Brazil, mid-middle class speakers attach negative evaluations to the variety and express their dissociation with UP non-standard linguistic features.

10. Conclusions

The linguistic variable palatalization of dental stops in the speech community of Rivera is heavily conditioned by extralinguistic factors, but it is also linguistically constrained. As seen above, social factors, especially speaker's age, play a more significant role than linguistic factors. Results also indicate that palatalization of dental stops is a sociolinguistic marker, that is, sensitive to both linguistic and social context factors carrying both social interpretation and evaluation (Labov, 1972). Young females exhibit a considerably higher ratio of palatalization of dental stops than do older males. The youngest group presents the biggest difference between females and males in the adoption of the innovative variant. Data shows a strong interaction between gender and social status. Data results show a clear gender and socioeconomic-based pattern. Women in the highest socioeconomic group in Rivera present the highest frequency of the innovative variant, followed by females in the low-middle and in the working class groups. The social stratification in the speech of men is less dramatic. This finding conforms to the stance of sociolinguistic markers commonly found across speech communities.

Apparent-time evidence of both data sets corroborates that palatalization of dental stops is age-related, since the frequencies of palatalization are strongly associated with age differences. However, the hypothesized increase in the use of the palatal variant over time among the younger generation is not confirmed in the present study. As Chambers (2002: 360) argues, change in progress shows incremental increases in the use of a particular variant in the speech of younger people. Although such an increment in the use of

palatalization of dental stops is found across age groups in apparent-time, cross-sectional comparisons point toward a state of relative stability at the speech-community level. On the other hand, the age distributions indicate that speakers of all ages participate in palatalization of dental stops in Rivera, but different age groups represent different palatalization rates. This finding points out what Labov (1972) would call a 'social marker'.

One of the challenges in quantitative sociolinguistics is the scarcity of real-time data (Labov, 1994). In the absence of adequate real-time data, the apparent-time construct provides "an excellent surrogate for real time evidence" (Bayley, 2002: 329). The trend methodology implemented in the present analysis was critical in pointing the current linguistic stage of palatalization of /ti/, /di/ in Rivera. It was also fundamental in answering questions about the linguistic evolution of the hypothesized language change in progress. In addition, the synchronic approach implemented in the present study further supports the validity of the apparent-time construct as an essential tool in quantitative sociolinguistic research and its suitability to model community-level language change. Clearly, more sociolinguistic research needs to be conducted in urban speech communities to strengthen inferences based on apparent-time evidence.

11. Limitations and recommendations for future research

One of the limitations of the analysis of palatalization of /ti/, /di/ was the absence of preadolescents in the sample. Labov (2001) advises that we must take into account data from preadolescents from 8 to 11 years old in tracing a variable through apparent-time. On methodological grounds, adding a panel component to the study would evaluate language change at the individual level in the speech community of Rivera. As Sankoff (2006: 12) claims, in most panel studies researchers have found that when a trend study signals change in progress, grouped data from the panelists indicate a modest increase in the direction of the change.

The analysis of palatalization of /ti/, /di/ in UP provides a fruitful area for future research. A possible direction would be to determine the interaction between vowel raising and palatalization of /ti/, /di/. In most varieties of Brazilian Portuguese, both an underlying high vowel /i/ in stressed or unstressed positions and a phonetic [i] derived from an underlying central vowel /e/ in unstressed positions may palatalize the preceding dental stop. Another exciting addition to the research would be to extend the examination of palatalization of dental stops to different Portuguese speaking areas to determine its variability across speech communities.

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