Toronto Heritage Italian (r): Maintaining homeland patterns

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Abstract. Contrary to experimental research, comparative variationist approaches find for heritage speakers many cases of maintenance of the homeland grammar. We analyze patterns of rhotic production in spontaneous speech of the heritage Calabrese Italian community of Toronto, Canada, and its homeland counterpart in Calabria, Italy. 1,555 tokens of word-internal, singleton /r/ were collected from the HLVC corpus and analyzed using mixed-effects models. Results show an ongoing pattern of lenition for both homeland and heritage speakers. Heritage speakers further develop this language internal trend, indicating grammar boosting. Homeland social constraints are maintained by heritage speakers. We find no evidence of transfer from English or simplification in the heritage language. Similar patterns of rhotic lenition are found in heritage Tagalog (Umbal & Nagy 2021) and Russian (Nagy 2024), though with different social constraints. Cross-linguistic comparison proves that variation in heritage languages is not necessarily caused by contact, and that change needn't be related to indexicality.

Keywords. heritage languages; lenition; rhotics; comparative variationist sociolinguistics; language contact; Italian; maintenance; grammar boosting

1. Introduction. Grammars of heritage languages (HL) are often described as simplified due to attrition, incomplete acquisition, or language transfer (Benmamoun et al. 2013; Polinsky 2018). Comparative variationist research, instead, finds many cases of maintenance of the homeland grammar among heritage speakers (Nagy 2015, 2024). Findings of either maintenance and/or complexity in HLs have also been reported in work that is not strictly variationist (Bousquette & Putnam 2020; Andriani et al. 2022). The case we report here illustrates variation without transfer from the majority language. We compare rhotics in spontaneous speech in the Italian of the Calabrese community of Toronto, Canada, and its homeland counterpart in Calabria, Italy. Sociolinguistics research on rhotics is plentiful due to their disposition towards indexicality. Moreover, the range of crosslinguistic variation makes rhotics ideal for cross-linguistic comparison.

There is additional motivation for this study. Although trills and taps (/r/ and /ɾ/) are the standard Italian rhotics, approximant variants ([ɹ], for example) are also part of the homeland repertoire. Toronto's majority language, Canadian English, also employs an approximant rhotic. That both varieties share rhotic approximants makes the variable (r) particularly revealing. Our parallel analysis of homeland and heritage speakers assesses whether the coincidence of [ɹ] in both Italian and English affects the heritage variety. As the homeland and heritage Italian varieties behave the same (stable or changing in parallel), the variation can be attributed to language-internal processes; otherwise, it might be attributed to grammar simplification or transfer.

* We are grateful for the generous contributions of our speakers and the hard work of the RAs who recruited, interviewed and transcribed the speech data we use here. RAs are listed at https://ngn.artsci.utoronto.ca/HLVC/3_2_active_ra.php; https://ngn.artsci.utoronto.ca/HLVC/3_3_former_ra.php.
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2. Rhotics and rhotic lenition. While phonetic classes are usually based on articulatory or auditory properties, rhotics (r-sounds) do not share a single manner or place of articulation (Ladefoged & Maddieson 1996). Variants of r-sounds are plentiful and sometimes coexist within one variety (van Hout & Van de Velde 2001). Their articulatory complexity and flexibility may account for their propensity for indexicality, variation and change (Scobbie 2006), often interpreted diachronically as lenition.

Lenition is "synchronic alternations, as well as diachronic sound changes, whereby a sound becomes 'weaker', or where a 'weaker' sound bears an allophonic relation to a 'stronger' sound. […] some reduction in constriction degree or duration" (Kirchner 2013: 3); "the failure to reach a phonetically specified target: articulatory undershoot or under-achievement. […] It is only if we view the process diachronically that we can see what looks like lenition" (Bauer 2008: 611, 615). This definition implies a universal mechanism causing lenition, i.e., effort minimization. Several phenomena have been classified under the label of lenition, including reduction from stops, affricates or rhotics, to fricatives or approximant continuants (Honeybone 2008). Some contexts seem to encourage lenition, and others to block it. The former include syllable codas and word-final and intervocalic positions. The latter include word-initial positions and stressed syllable onsets (Kirchner 2013).

Trills and taps are complex segments that require articulatory precision and effort. Cases of "failed" trills resulting in rhotic variants like approximants are frequently described (Lindau 1985: 161). Hence, many authors describe rhotic variation as lenition, since it is plausible that complex segments undergo target undershoot and weaken. As a consequence, fricatives and approximants are considered lenited rhotic variants (Celata 2014; Kirchner 2013; Sebregts 2014). Barry (1997), Jaworski (2010), and Rennicke (2015) suggest a *continuum* of rhotic reduction on a scale from most to least sonorous:

trill > tap > fricative > approximant

Empirical diachronic or apparent-time studies of rhotic variation and change can further support this type of analysis.

2.1. RHOTICS IN ITALIAN. Apical trills ([r]) and taps ([ɾ]) are the standard Italian rhotics (Canepari 1999). A range of additional realizations are heard in spontaneous spoken Italian but not mentioned in canonical descriptions of the language. Many are regional features, but some, including approximants, are so diffused that they cannot be ascribed to diatopic variation (Romano 2013). Nor is there agreement on their sociolinguistic status.[1] Vietti et al.'s (2010) study of speakers from 14 Italian cities reports the approximant as the most frequent non-standard rhotic (25% of tokens). Rhotic fricatives, also found in our data, have been reported in Sicilian varieties (cf. Celata et al. 2016) and in Western Tuscan regional Italian (Spreafico et al. 2015).

2.2. RHOTICS IN CANADIAN ENGLISH. Consonantal rhotics (that is, excluding "r-dropping" heard in some eastern seaboard dialects) in North American English are associated with multiple articulatory realizations, varying intra- and inter-speaker; however, none seem indexical and all are voiced approximants, [ɹ] (Wells 1982).

3. Research questions and hypotheses. Our present analysis is an application of the comparative variationist framework (Rickford & McNair Knox 1992) to the study of rhotics in Italian,

[1] Compare Ladefoged & Maddieson (1996: 226) and Chambers & Trudgill (1998: 191) with Romano (2013).

comparing homeland and heritage varieties. We consider the following phonetic realizations of word-internal singleton /r/ as variants of (r):

- prescriptive tap [ɾ] or trill [r];
- approximant [ɹ], the canonical Canadian English rhotic and a variant of spoken Italian;
- fricative [ɾ̝̊], also a variant of spoken Italian.

Our research questions are:

- Does (r) exhibit systematic patterns of variation in spontaneous speech?
- What linguistic and social factors constrain selection among the (r) variants? Do these differ between homeland and heritage speakers?
- Is it possible to classify the source of variation as either contact-induced or language-internal?

As approximants are considered the endpoint of a pattern of rhotic lenition, if they appear consistently in both homeland and heritage varieties, this may indicate an ongoing internal process of lenition. On the other hand, extensive contact with English, only in the heritage variety, could trigger contact-induced change. This would be reflected by an increase of approximant variants in Heritage compared to Homeland Italian.

These questions will be answered by testing these hypotheses:

1. Approximant and fricative variants are articulatory weaker variants of trills and taps that naturally emerge in contexts of relaxed speech (Lindblom 1990), and therefore appear in homeland and heritage varieties.
2. Approximant and fricative variants are favored in coda position, a linguistic context favoring weaker/lenited variants.
3. No generational differences and no homeland vs. heritage differences exist, providing evidence that heritage speakers are not transferring phonetic details from English, nor simplifying their grammar.
4. Heritage and homeland speakers maintain similar rates of variant use and distributional patterns, providing evidence that not even the distributional patterns of English are transferred: contrast Canadian English [ɹ], produced as an approximant categorically in both onsets and codas.

4. Methods. Data comes from the Heritage Language Variation and Change project's (Nagy 2009, 2011, 2024) multilingual corpus that documents variation in ten HLs in Toronto. All the Italian speakers have family origins in southern Calabria. The convergence of multiple Calabrese dialectal features on a base clearly identifiable as Italian allows us to categorize the variety of the recordings as Calabrese regional Italian (De Blasi 2014). Speakers are categorized as follows:

- Homeland: speaker has always lived in Calabria, Italy, and has parents from the same area;
- Generation 1 (Gen1): speaker lived at least their first 18 years in Calabria and in Toronto for 20^{+} years;
- Generation 2 (Gen2): speaker was either born in Toronto or arrived before age six and parents qualify as Gen1 (even if not in the corpus);
- Generation 3 (Gen3): speaker was born in Toronto and parents qualify as Gen2.

29 speakers (16 males, 13 females), age 19 to 75, provide data. Table 1 summarizes their distribution, grouping them by age decades, which produced the clearest analysis.

Generation	Sex	Age					
		18-30	*30-40*	*40-50*	*50-60*	*60-70*	*70-80*
Homeland	Male	3	1	1	1	2	
	Female	4	1		1		
Gen 1	Male					3	1
	Female				1		2
Gen 2	Male			2	2		
	Female			2	2		

Table 1. Distribution of Italian speakers selected from the HLVC corpus

Speech in the corpus was collected via relaxed guided conversations conducted according to standard sociolinguistic interview protocol (Labov 1984), then transcribed using ELAN (Wittenburg et al. 2006). Tokens of (r) for each speaker were coded for variant produced and linguistic predictors, also in ELAN. 1,540 tokens of (r), all in word-internal position, were drawn from the 20 most frequent words containing word-internal singleton /r/ in the corpus. The variables were coded auditorily,[2] with visual inspection in Praat (Boersma & Weenink 2021) helping with unclear cases. Table 2 details the social factors.

Factor	Levels
Sex	Male; Female
Age by decade	Teens & 20s, 30s, 40s, 50s, 60s, 70s
Generation	Homeland; Gen1; Gen2
Speaker	29 speakers (random)

Table 2. Social factors

Linguistic factors are listed in Table 3. Phonological factors were coded based on phonetic realizations, not citation form. Coded tokens were exported from ELAN and the resulting token file analyzed using Rbrul (Johnson 2009), for descriptive statistical analysis and mixed-effects modeling (see details in Nagy & Meyerhoff 2015).

Factor	Levels	Example
Lexical class	Verb	*ero*, 'I was'
	Noun	*genitori*, 'parents'
	Pronoun/Adjective	*loro*, 'they/them/their/theirs'
	Adverb/Conjunction/Preposition	*però*, 'but'
Preceding phone	Obstruent	[pɾ]*oprio*, 'really'
	Vowel	*all*[ɔɾ]*a*, 'then'
Following phone	Obstruent	*fo*[ɾs]*e*, 'maybe'
	Sonorant	e[ɾn]o, 'they were'[3]
	Vowel	*fa*[ɾe], 'to do'
Syllable position	Onset	*ge.ni.to.**r**i*, 'parents'; *p**r**i.ma*, 'before'
	Coda	*pe**r**.ché*, 'because'
	Nucleus	[ˈfɾ̩.se], 'maybe'[4]

[2] The first author is responsible for any bias in the coding, coding has not been cross-checked.

[3] This example represents a reduced form of the word *erano*: vowel deletion caused [ɾ] to be followed by [n].

[4] This example represents a reduced form of the word *forse*, where vowel deletion made [ɾ] syllabic.

Stress	Unstressed	*ero* [ˈɛːɾo] 'I was'
	Stressed	*ricordo* [ɾiˈkɔɾdo], 'I remember'
	Monosyllabic	*per* [peɾ], 'for'
Word	20 most frequent words (random)	

Table 3. Linguistic factors

Logistic regression analysis includes social and linguistic factors as fixed effects, and speaker and word as random intercepts. To construct a binary dependent variable, we merged levels of our (r) variable, comparing reduced (approximant&fricative) variants to non-reduced (tap&trill). In models, tap&trill is the application value.[5]

Step-up/step-down comparison of models determined the best-fitting model for a given set of factors. Best-fitting models including different sets of factors were compared, to assess which factors improve the model, a necessary procedure to avoid collinearity among simultaneously-tested factors. We present one-level models with only those factors in the best-fitting model for each group. To evaluate our hypotheses, we use the three lines of evidence (Poplack & Tagliamonte 2001: 92) to show inter-group similarities or differences.

5. Results. Table 4 presents the distribution of variants across all speakers.

	Taps&trills	**Approximants**	**Fricatives**
n	1102	360	78
Portion of sample	72%	23%	5%

Table 4. Distribution of (r) variants (n = 1,540)

Figure 1 shows the distribution of (r) across generations, showing strong cross-generational similarity. The frequency of reduced variants ranges across speakers from 3-68% and across words from 9-58%.

[5] Inter- and intraspeaker variability make trills difficult to distinguish from taps in fast speech.

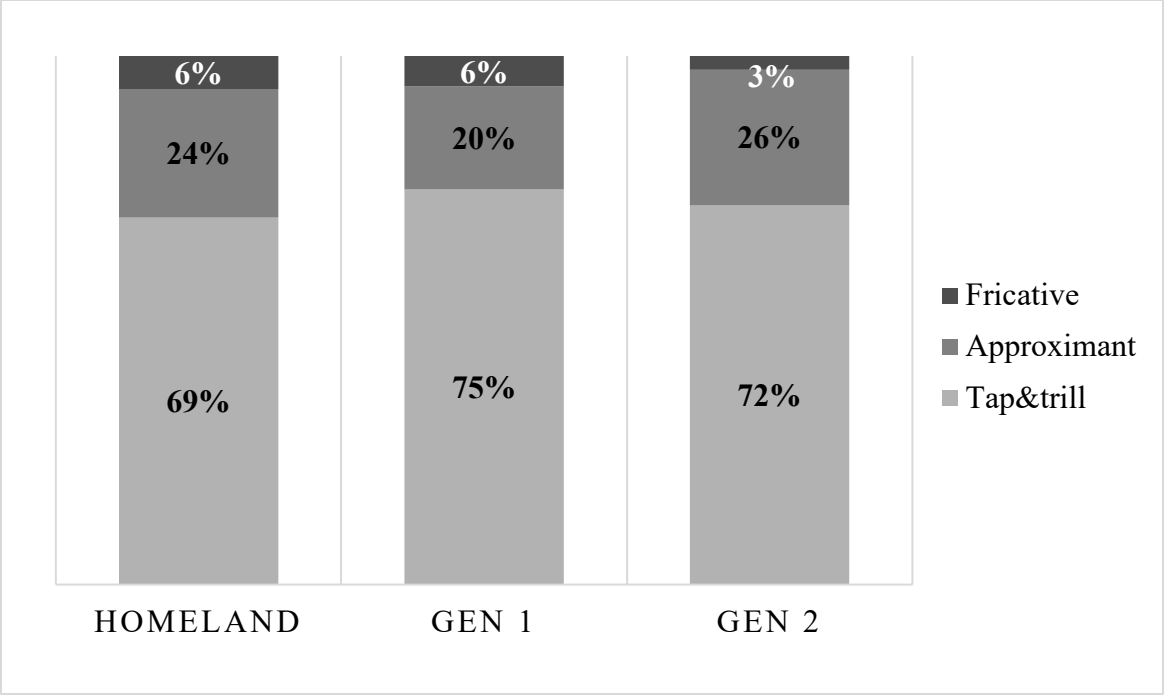

Figure 1. Rates of (r) variants across generations (n = 1,540)

However, Figure 2 shows a striking effect of speakers' sex. In every generation, males produce more approximants than females.

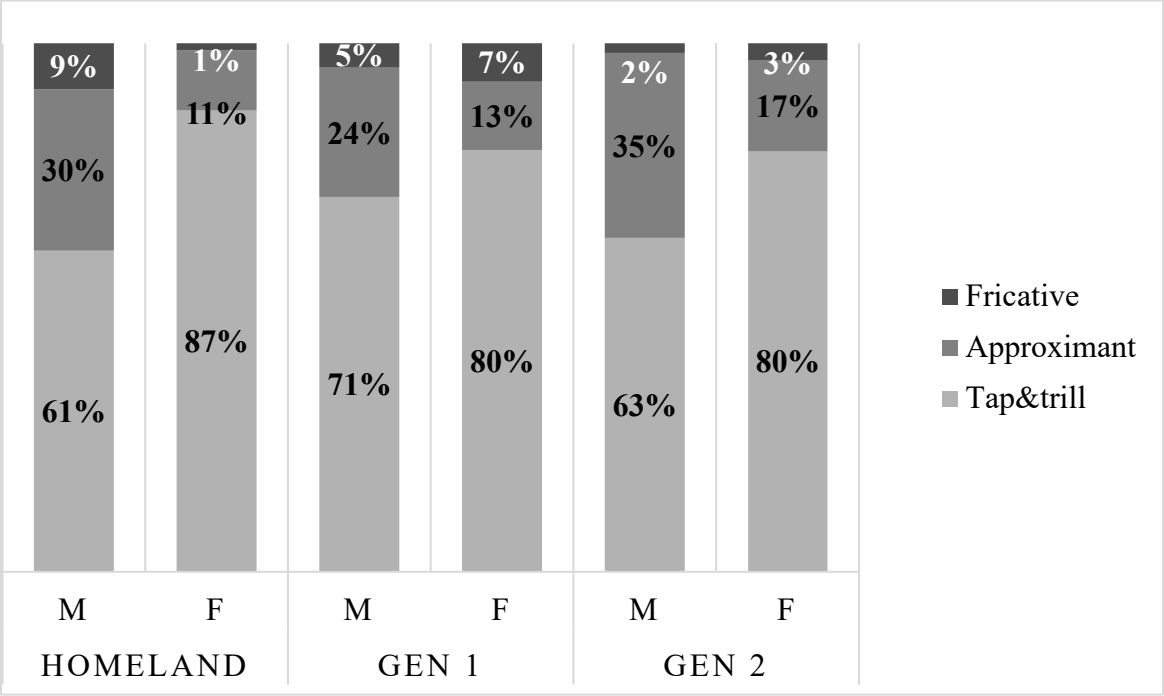

Figure 2. Rates of (r) variants per generation and sex (n = 1,540)

The strongest predictors of reduced variants in the full dataset are Syllable position and Sex (Table 5). No other linguistic factors tested were significant. As expected, we see more reduced tokens in

codas than onsets. As Figures 1 and 2 suggested, neither generation nor decade are significant, but sex is.

Predictor	n	% reduced	Factor weight	Range
Syllable position (p < 0.001)				*34*
Coda	431	41%	0.67	
Nucleus	23	26%	0.50	
Onset	1086	24%	0.33	
Sex (p < 0.001)				*28*
Male	903	36%	0.64	
Female	637	18%	0.36	

Table 5. Best-fitting model for all speakers (n = 1,540)

We compare models for homeland, Gen1 and Gen2 speakers, to assess differences in their constraint hierarchies.[6] The strongest predictors among homeland speakers are Syllable position and the interaction factor Sex*Decade (see Table 6). Younger speakers of both sexes disfavor reduced variants but the effect is bigger among males. The direction of the effects of Sex and Syllable position are as in the full dataset. The Gen1 model (Table 7) produces the same significant factors and ranking.

Predictor	n	% reduced	Factor weight	Range
*Sex*Decade (p < 0.01)*				*52*
Male*30s, 40s, 50s, 60s	292	48%	0.70	
Male*Teens&20s	147	22%	0.53	
Female*50s	59	17%	0.39	
Female*20s&30s	157	12%	0.27	
Syllable position (p < 0.05)				*17*
Coda	213	33%	0.58	
Onset	442	29%	0.42	

Table 6. Best-fitting model for homeland (n = 655)

Predictor	n	% reduced	Factor weight	Range
*Sex*Decade (p < 0.01)*				*52*
Male*70s	60	38%	0.74	
Male*60s	175	26%	0.53	
Female*70s	113	25%	0.52	
Female*50s	58	10%	0.23	
Syllable position (p < 0.001)				*47*
Coda	116	51%	0.74	
Onset	290	16%	0.26	

Table 7. Best-fitting model for Gen1 (n = 406)

[6] For these sub-analyses, a few tokens coded as nucleus for Syllable position (10 homeland; 9 Gen1; 4 Gen2) were excluded, since there were too few to provide reliable results.

For Gen2, the strongest predictors are interaction factors Stress*Syllable position and Sex*Decade. While we again see more reduced tokens in coda than onset position, this factor shows a finer-grained distinction here.[7] The effect of Sex*Decade is as above.

Predictor	n	% Reduced	Factor weight	Range
*Stress*Syllable position (p < 0.001)*				*43*
Stressed*Coda	53	59%	0.75	
Monosyllabic	29	38%	0.55	
Unstressed*Coda	20	25%	0.38	
Onset	354	23%	0.32	
*Sex*Decade (p < 0.01)*				*36*
Male*50s	109	40%	0.68	
Male*40s	108	33%	0.57	
Female*50s	120	23%	0.42	
Female*40s	119	18%	0.33	

Table 8. Best-fitting model for Gen2 speakers (n = 456)

6. Findings for Italian. Our results confirm hypotheses 1 and 2: approximants and fricatives behave as lenited variants of (r). We linked the production of reduced (r) variants to universal tendencies, and not to variety-dependent phonological representations (e.g., their realization as a product of contact with English). In fact, reduced variants constitute a similar proportion of tokens and are constrained by the same factors in every generation. The constraint hierarchy does not change across generations: coda contexts systematically favor reduced variants compared to onset contexts (as hypothesized). Our results thus also confirm hypotheses 3 and 4: there are no generational effects: the homeland grammar is maintained for heritage speakers.

We interpret these results as proof of the absence of both contact-induced effects and simplification. Neither the prevalence of the approximant variant, nor its different distributional pattern in English, have influenced Heritage Italian rhotics in this regard. The larger of the phonological factor in the heritage versus the homeland variety indicates that, more than maintenance, there is a boosting effect. As noted by Flores & Rinke (2020: 25), "heritage speakers may boost and further develop tendencies of language (internal) evolution inherent to variable phenomena." This effect size, calculated as the difference between the most-favoring and least-favoring level's factor weight, is shown in Figure 3. Homeland speakers already reduced more in codas than in onsets, but heritage speakers reduced codas even more, and onsets even less - while maintaining a steady overall rate of reduction. Given these results, we can confidently claim that Heritage Italian rhotics are affected by a language internal process, i.e., not due to contact or attrition, but a process applicable to any language, answering our last research question. We argue that the change is internal to the HL, but not for reasons tied to inherent properties of the HL itself. In fact, we argue that this internal change is ascribable to ease-of-articulation-based explanations, which are by definition universal causes and apply independently from the social context[8].

[7] Monosyllabic tokens are all tokens of the word *per*, "for", i.e., tokens of coda (r), and all tokens of Unstressed*Coda are from *perché*, "why"/"because."

[8] See also Polinksy's (2018: 36) "Universal Principles of Language Structure".

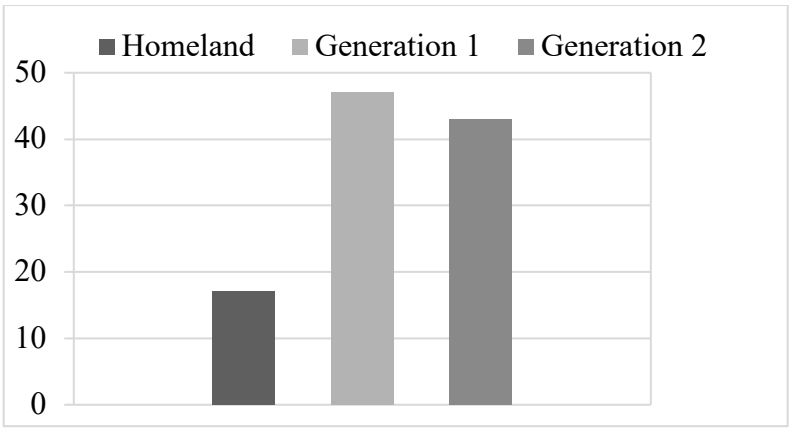

Figure 3. Effect size of Syllable position for homeland and Gen1, and Stress*Syllable position for Gen2, from three mixed-effects models (n = 1,540)

7. Cross-linguistic comparison of (r). As cross-linguistic comparison is a goal of the HLVC project, we compare Italian (r) with (r) in two other HLs of Toronto, Tagalog and Russian (Umbal & Nagy 2021; Nagy 2024) We thank Julia Petrosov for her analysis of Russian rhotics.

Tagalog (r) is usually realized as a tap or a trill, but an approximant variant exists in the homeland, attributed to contact with English in the Philippines. There is evidence that it has a positive social meaning. All variants are also used by Heritage Tagalog speakers. Comparing Italian (r) to Tagalog (r) as reported by Umbal and Nagy (2021), we see:

1. The innovative (approximant) variants are already present in the homeland grammar. However, while approximants are evaluated as prestigious in Homeland Tagalog, they apparently stay below the level of awareness in Homeland Italian.
2. Ethnic identity and sex do not play a role in Tagalog (r), while they do in Italian. Additional analysis showed ethnic orientation as a significant predictor, with more Italian-oriented heritage speakers favoring taps&trills more than English-oriented speakers.
3. Both languages favor reduced variants in coda position. We interpret this as evidence of a language-internal lenition process.
4. Both studies reveal boosting of language-internal patterns among heritage speakers, supporting Flores and Rinke's (2020) claim.

Approximant variants emerged in Homeland Italian and Homeland Tagalog, in addition to the prototypical tap or a trill rhotic, confirming that contact is not necessary to cause variation inside the rhotic system. Furthermore, the fact that reduced variants can be attributed to lenition in both languages, given their phonotactic pattern, reinforces the already rich literature describing lenition as a universal mechanism with roots in universal tendencies to minimize articulatory effort.

For Heritage Russian, in contrast, two linguistic factors and two social factors constrain rhotic variation. Word and syllable position patterns exactly reflect the coda-effect in the other two HLs, again pointing towards lenition from taps/trills to approximants as being a universal and mechanical trend. Additionally, Heritage Russian shares with Italian a sex pattern. Unlike the other two languages, however, it shows generation as a significant constraint, and cross-generational differences in the constraint hierarchy.

From these comparisons we conclude that:

- Not all heritage varieties experience cross-generational change and grammar simplification.

- Change is not necessarily related to indexicality, as the Tagalog case shows.
- It is possible to have variation that uses an English variant without English being a cause, as the Italian case shows.

Even given the cross-generational differences in Russian, we cannot automatically assume they are due to interference or attrition. They may also be language-internal, maybe even as-yet undiscovered indexicals.

8. Conclusion. This study utilized the literature regarding rhotic lenition and its connection to phonotactic structure, both summarized in detail in Cristiano (2022), to highlight identical linguistic trends in three HLs. This enriches research on cross-linguistic tendencies, showing how they are manifest in contact varieties of a particular type, i.e., HLs.

A comparative variationist approach, the tested methodology of the HLVC Project, and ecologically valid data, produced empirical evidence of heritage speakers having intact homeland grammars in this respect, rather than the incomplete grammars so often ascribed to them. While this study focuses exclusively on the grammar governing rhotics, comparable analyses of other features of the same linguistic variety, such as apocope, prodrop and VOT, also reject hypotheses of attrition or contact-induced simplification and highlight patterns of stability (Baird et al. 2021; Nagy 2024). Regarding the production of rhotics, heritage speakers acquire phonetic details of their HL, reproduce them during adulthood, and transmit them to the next generation. As similar instances of heritage speakers lacking attrited or simplified grammars increase, alternative explanations to changes in HLs beyond straight-forward contact with the majority variety must be explored, such as Flores and Rinke's (2020) grammar-boosting, as shown here. Future studies may further test this hypothesis, which has the advantage of considering grammar maintenance as likely for heritage speakers while also recognizing the potential impact of a majority environment. Finally, we showed that heritage speakers acquire not only linguistic constraints but social ones, such as sex-based production patterns.

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