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Calabrian migrants in Argentina: assessing first language phonetic attrition

This paper discusses the research plan and first results of the CMA project (*Calabrian Migrants in Argentina*), aimed at exploring linguistic interaction processes active in first generation Italian-Argentinian migrants from Central-South Calabria and living in the provinces of Buenos Aires, Córdoba and Santa Fe from the 1950s onwards. These are the last living people who offer evidence of linguistic maintenance/attrition processes affecting both L1 Calabrian dialects¹ and L2 Calabrian regional Italian (both homeland linguistic resources) after decades of permanence in their L3-dominated (Spanish) host country.

Keywords: language contact, Italian migrants in Argentina, heritage languages, L1 attrition, VOT.

1. Introduction

The massive migratory waves, which affected the global population between the 19th and 20th centuries, lasting until almost thirty years after the end of the Second World War (1876-1978), saw a huge number of Italians leaving their native country to reach the coasts of Argentina. Among these, more than 450,000 came from Calabria, which has been the region of origin for the majority of Italian-Argentines for generations (in 1973, 60 Italian immigrants out of 100 were from Calabria, and 42 ten years later). They settled mainly in Buenos Aires, in the territories of Pampa Gringa, spreading up to the littoral zone of the Paraná River (Rosario) and the cities of Córdoba, Mendoza and Tucumán. Many people moving in their early adulthood with the very last wave (1946-1960) still live there with their families experiencing a long-lasting language contact process, started at the time of their settlement and continuing over the years.

These speakers can be referred to as first generation migrants (Nagy, 2015), speakers who had lived at least until the age of puberty in their homeland, subsequently moved to Argentina, where they still live. These immigrants can be identified as trilingual speakers, since their linguistic repertoire involves at least: a heritage language² (Calabrian dialects of Area 3 or 4, according to Trumper's (1997) parti-

¹ Coeval geographical varieties of the dialect from which the standard language descends, *primary dialects* in the sense expressed by Coseriu (1980).

² Language acquired spontaneously and available to young children, which is spoken at home but which is not a dominant language within the social community. See Bayram, Pascual y Cabo & Rothman (2019) for broader definitions of heritage language and heritage speakers.

tion) acquired as mother tongue; Calabrian regional variety of Italian – acquired and/or learned in Italy – and Argentinian Spanish, being the language of their host country. Despite the minority-language status and the unofficial role generally ascribed to heritage languages (as commented by Rothman, 2009 or Nagy, 2015), Calabrian dialects for these migrants represent the first language acquired at home while they accessed to regional Italian at school or in formal situations, and only some among them still maintain a passive competence mainly through exposure to media (such as Tv programs).

Thus, from a chronological perspective, Calabrian dialects are informants' L1³; nevertheless, Spanish has turned to be the dominant code across their life span both in private and public domains. Consequently, various kinds of linguistic change may have occurred. These processes have been scarcely investigated for late Italian-Argentinian speakers so far. As a matter of fact, greater attention has been addressed to language contact phenomena as far as *cocoliche* or *lunfardo* are concerned (see Cancellier, 1994). Therefore, it could deserve attention the extent to which heritage languages have experienced change: namely in what direction and under what specific conditions Spanish has affected migrants' linguistic resources (dialects and Calabrian Italian) mainly as far as interlanguage phonology is concerned.

In Section 2 of this paper, the research plan for the CMA project will be outlined. In Section 3, the materials and methodological framework of the entire project will be presented. In Sections 4 and 5 the very first experimental analysis on phonetic-acoustic data (VOT measurements) will be described and results will be discussed within the scope of L1 phonetic attrition.

2. *An outline of the CMA project*

The *Calabrian Migrants in Argentina* (CMA) project focuses on the linguistic interaction processes active in Italian migrants from Central-South Calabria who have been living in Argentina from the second half of the 19th century onwards. CMA is the acronym used along this paper to refer to the research project “Effects of intragenerational linguistic contacts on Italian migrants in Argentina”, carried out by the author of this paper as Principal Investigator.

2.1 Scientific national and international background

The starting point for this research is a study by Romito, Graziano, Frontera, Tarasi, Ciardullo, Piemonti and Strano (2016) which investigates the linguistic contaminations of Calabrian dialects in contact in Argentina. This study outlined both cases

³ A language acquisition chronological criterion is adopted along the whole article to identify informants' L1, L2 and L3. This classification is functional in order to analyse and interpret all possible outcomes of language interference. On this regard, it is worth mentioning that the distinction between local dialects and regional Italian is not always clear to speakers, who do not properly identify definite boundaries within their regional linguistic space (see Romito et al., 2016).

of maintenance and apparent change of typical morpho-syntactical and phonological Calabrian dialect features, not only due to interference from other dialects of the same area, but also to attrition triggered by Spanish. This evidence has given rise to other research questions related to long-lasting plurilingual contact. Since L1 phonetics and phonology are the most resistant levels to be affected when acquiring other languages in adulthood (see Romaine, 1984), attrition in this area has been considered worth-noting. Though much research has been conducted in this field, only few studies have focused on phonetic/phonological attrition concerning Italian varieties and Italian dialects. Moreover, studies carried out so far have considered productions by Italian migrants in Australia and in North America, therefore focusing on the linguistic couple Italian-English, while the Italian-Argentinian community has not been investigated from this phonetic-phonological perspective. Some inspiring works, such as Avesani, Galatà, Vayra, Best, Di Biase, Tordini & Tisato (2015) and Avesani, Galatà, Best, Di Biase, Vayra & Ardolino (2017), observe phonetic attrition in Italian-Australian immigrants' production of coronal obstruents, taking into account possible effects of English as L3 on both dialect L1 (varieties of Veneto) and L2 Italian, as well as convergence in terms of standardization/dialectisation phenomena between immigrants' heritage and homeland languages. Thus, they show the importance of evaluating every possible evidence of phonetic drifts from/to each variety used in the first-generation community's repertoire. Nagy, Nodari, Celata (2018), Nodari, Celata, Nagy (2019) and Nagy (2015) examine voice onset time values across generations of various immigrants, including Italians (from Calabria), in Toronto. The latter includes a comparison as far as the null subject structure use is concerned, so presenting a multi-faceted approach to the study. More recently, De Iacovo, Mairano and Hajek (2020) explore levels of gemination produced by Italian migrants in Australia. Attrition has also been explored on the front of perception and foreign accent detection. In a pioneering work by Major and Baptista (2009)⁴, levels of attrition in terms of change of native-like pronunciation in the L1 of bilingual speakers were measured. Any study on Italian attrition has been based on such an approach that it will be applied in this work to contribute to the problem of the dearth of evidence in this field.

2.2 Theoretical framework: cross-language interference processes

The informants engaged in the present research are all trilingual speakers, first generation migrants, who moved to a new country and had to acquire another language in their adulthood. This gives rise to some brief, but necessary, considerations on the interference dynamics involved during the acquisition process of other languages⁵. Moreover, typological markedness (Maddieson 1984; Eckman 1977, 2008) may affect the acquisition and L1-L2 distance between the systems may slow down,

⁴ Followed by de Leeuw et al. (2010), Hopp & Schmid (2013) and Bergmann et al. (2016), for example.

⁵ References to L2 acquisition process throughout the paper are to be intended to refer to the natural acquisition process of languages (L2, L3, L4, etc.) other than the L1.

and even hinder, the acquisition process (Major 2014; Derwing and Munro 2015, among others).

Theories on maturational constraints and critical or sensitive period/s hypotheses state that interference can be stronger and more prolonged if associated with adult learners (see Lenneberg 1967; Patkowski 1994; Ellis 2003; Long 2008; de Leeuw, Mennen & Scobbie, 2013).

Nevertheless, these claims are counter-balanced by extensive research, which demonstrate the fundamental role of psycho-social factors, such as speakers' attitudes, motivation, or sense of identification/assimilation (see Weinreich 1957; Bongaerts et al. 1997; Moyer, 2007; Major 2014, among others), as well as extra-linguistic variables relevant to second language acquisition: age of acquisition, length of residence, sex, usage of L1 and L2 (Flege et al. 1997; Piske et al. 2001; Flege 2009).

A native-like phonological competence represents the most challenging achievement for non-native speakers, whose perceptual and productive (both at phonological and phonetic level) are guided and deeply filtered by their native language and languages previously acquired (Best, 1995; Best, Tyler 2007; Mori 2007; Flege 1987, 1995; Brown 2000; Kuhl 2000). It has been demonstrated, however, that late bilinguals, create new phonological spaces through merging and equivalence classification processes (*Speech Learning Model* by Flege, 1987) and, in cases of constant and prolonged contact with both languages, they may suffer a bidirectional interference: from L1 to L2 and vice versa (Flege 1987; Major 1992). Moreover, the lack of L1 use in a non-native environment, counter-balanced by a largely widespread use of the L2 – especially within a multilingual context – may provoke functional and structural changes in the L1. This condition may lead to the construction of mid-point systems (see Mori, Barkat, 2005) intermediate realisations between L1 and L2 and complete or partial modifications of L1, in terms of shift (inter-generational) or attrition (intra-generational) (see Bartoli 1945; Cook 2003; Pavlenko 2004; de Leeuw et al. 2010; Schmid and Köpke 2013; Schmid et al. 2013, among others).

Language change is a wide-ranging phenomenon, which can act at different linguistic levels, from phonetics/phonology and morphology to syntax, semantics and lexical units (better defined as restructuring or borrowing). According to van Els' taxonomy (de Bot, Weltens, 1985), evidence can be observed both on L1 affecting L2 and viceversa. When this latter takes place, first language attrition is reported in literature: this is generally the consequence of a progressive overuse of, and increasing proficiency in L2, stronger in casual than in formal speech (see Major, 1992), but somehow reversible by training (Schmid, Köpke, 2013).

Therefore, L1 attrition can be considered as a complete or partial modification of L1 features, as a result of the interaction with another language, in post-adolescence (de Leeuw, 2019). Again, it is important to note that, in phonology, if it is so difficult to control L1 interference on L2, the same L1 mature phonological system will be much more stable and inaccessible to L2/L3 influence. That is why there exist some essential ideal conditions for attrition to occur: emigration, extensive use of the FL/reduced use of L1 in daily life and a long-time span (Schmid, Köpke, 2013;

Major, 1992). Moreover, any linguistic domain is differently affected by attrition (see Schmid, Köpke, 2019, for an exhaustive review), even if recent literature proposes the existence of a trickle-down effect of phonetic changes on other linguistic domains (*ibidem*).

2.3 Research scope

The CMA project aims at:

- a. detecting contact phenomena in the heritage dialects, in order to find evidence of maintenance/substitution/alternation of peculiar phonological, morphological and morpho-syntactical traits (see Frontera, in preparation);
- b. assessing L1 phonetic attrition, in order to understand to what extent Argentinian Spanish influences migrants' heritage code (local dialect) as far as a salient phonetic feature, such as voiceless stop aspiration, is concerned (see Section 4);
- c. evaluating foreign accent perception, in order to check the degree of perceived nativeness of heritage speakers' production in local dialects and regional Italian by native-Italian listeners.

The project is multidimensional, aiming at focusing both on production and perception. As far as the former is concerned, the analysis has been divided into two steps: the first explores the effects of intra-group language contact between migrants' Calabrian dialects and/or between these and regional Italian. Namely, by focusing on possible convergence or interference phenomena, occurring in their local dialects, at morpho-syntactical and phonological levels. The second one concerns a specific phonetic feature, the cross-linguistic VOT values of L1/L2/L3, and it will be dealt with in the preliminary analysis presented in this paper (Section 4 and 5). The aim is to verify whether attrition has occurred, so that the aspirated voiceless stops /p t k/ of dialect (realised as such in specific phonological contexts) are reduced to short-lag productions under the effect of Argentinian Spanish.

As for the perception analysis of L1 attrition, this will be tested in the near future by asking native Italian subjects (from the same areas of Calabria of Italian-Argentinian migrants) to judge levels of foreign accent detected in L1/L2 productions by the same migrants.

3. Methodology

The CMA project comprises 29 hours of recorded speech: spontaneous, semi-spontaneous and read in Calabrian dialects, regional Italian and Argentinian Spanish⁶, as well as oral translations from Italian/Spanish to dialects. The recordings were con-

⁶ All subjects gave their informed consent for inclusion before they participated in the study. The study was conducted in accordance with the Declaration of Helsinki, and the protocol was approved by the Ethics Committee of the University of Calabria, Italy (project identification code CALA171337, n°4087).

ducted by means of a Shure WH20 headset microphone, a Tascam DR-100mkIII recorder, with a sampling frequency of 44.100 Hz, 24-bit, mono-channel.

3.1 Tasks and materials

Spontaneous and semi-spontaneous speech was collected through the accomplishment of two tasks: a questionnaire and an interview. The former was conceived in order to extract information related to age, sex, place of origin, education, occupation, age of immigration, LOR (length of residence in Argentina), L1 dialect, age of first contact with Italian, age of first contact with Spanish, formal instruction in Italian/Spanish. The latter was designed to derive information on migrants' psycho-social profile (L1/L2/L3 use, attitudes towards dialects and degree of integration in the host country culture).

Read speech was elicited via two tasks consisting of a 54-item wordlist and 12 sentences (containing the same target words) both in Italian and Spanish, respectively. These materials were chosen to perform the analyses on VOT durations, so the selected words were balanced in order to include /p/, /t/ or /k/ in any phonetic context of interest, as detailed in §4.3.

Translated speech was elicited through two translation tasks from Italian/Spanish, as source language, to informants' native dialects, as target language. The first task consisted of a word list of 36 items and 13 sentences containing the same words. These words subsumed the same target sounds and phonetic contexts as the ones used for the above-mentioned reading tasks. The second translation task was conceived to elicitate 30 isolated real words and 20 sentences. These words were partially selected from the Italian Linguistic Atlas (ALI, Aa.Vv., 1995) referring to villages and towns of the third corridor of Calabria, in order to control and check the glottalization/aspiration of /f/ (see Falcone, 1976; Rohlf, 1966; Trumper, 1997) and Latin LL outcomes (see Romito, Milelli, 1999; Romito, Sorianello, 1998). The sentences were conceived in order to get other target features such as the enclitic possessive for singular forms (like in *sorma*, 'my sister'; see Krefeld, 2007; Manzini, Savoia, 2005), and the periphrastic infinitive constructions using the modal particles *ma/mu/u* + V (e.g. *hai ma/mu/u chiudi a porta*, 'you have to close the door'; see Damonte, 2009; De Angelis, 2014).

Trilingual speakers were asked to face three different recording sessions, one for each language involved. All sessions were preceded by a phase of attunement to the language under investigation.

As for the study of the perception side, sentences in dialect and Italian (the same used for the elicitation of VOT occurrences) by our informants and by a group of monolingual Italians (control stimuli, see §) will be used to build our future test on perceptual attrition. This test will be performed by Calabrian monolingual listeners, with the aim of verifying whether they still perceive them as Italians or, conversely, identify their voices as belonging to foreign speakers.

3.2 Participants

In order to lead our production analyses (i.e. (a and (b in § 2.3), 37 late trilingual first-generation Italian immigrants (23 females and 14 males, aged 70-88) were selected. All these speakers acquired Spanish at the moment of migration, which took place during or after their puberty. The trilingual participants were recruited among the members of five Italian-Argentinian associations, two in the province of Córdoba, two in the province of Santa Fe, one in Buenos Aires.

Two other groups were involved: the first is a control group of 6 monolingual Italian adults, males and females from the geographical areas of origin of the Italian-Argentinian migrants involved, and of similar age and level of education; the second control group comprises 6 Argentinian Spanish monolingual speakers, adult males and females living in Argentina. Control group participants were selected by means of a questionnaire (see 3.1) including questions about speakers' sociolinguistic profile (age, sex, place of origin, education, occupation, L1, other languages acquired, age of first contact with Italian and Spanish respectively). The control group of Italians was recruited in two villages in Calabria, one in Area 3, the other in Area 4 while the informants for the Spanish control group were from the capital city of Santa Fe.

As for the fulfilment of c) (see § 2.3) a group of 30 native Italian adult listeners from the same target dialectological areas of Calabria will be further selected to perform the perceptual test on foreign accent detection.

4. *Assessing L1 phonetic attrition: a preliminary analysis*

The aim of this first experiment is to verify the hypothesis of phonetic attrition (as explained in §2.3) in the production of late trilingual Italian-Argentinian migrants. Due to a massive and prolonged use of Argentinian Spanish, Voice Onset Time values produced by elderly Italian-Argentinian speakers may have suffered a structural reduction within their heritage language speech (see Flege, 1987; Major, 1992; de Leeuw, 2019).

In the present research, the first parameter used to “assess” a possible drift of Calabrian dialect L1 towards Spanish L3 values is voiceless stop consonants' aspiration. The acoustic correlates of VOT have shown themselves to be a precious index of specificity at a cross-linguistic level, being language-specific (see Cho, Ladefoged, 1999), thus they play a role for detecting degrees of interference or shift in cross-linguistic studies, above all when bilingual or plurilingual speakers are involved.

4.1 Evidences of stop aspiration in Calabrian varieties

Recent studies have confirmed acoustically the presence of stop aspiration within the Central-Calabrian language varieties, when the voiceless stops /p t k/ are geminated or in post-liquid (-lC-, -rC-) and post-nasal (-nC-, -mC-) position, in regional Italian (see Stevens, Hajek, 2010; Nodari, 2015; Frontera, 2018) as well as in dialect-

tal speech (Frontera, Tarasi, Graziano, 2019). According to the above-mentioned studies, post-aspiration seems to be a peculiar feature of two main dialectological areas of Calabria, namely Area 3 and 4 (see Trumper, 1997, 2016), even though this trait is sometimes associated with Calabrian regional Italian as well (Telmon, 1993; Fanciullo and Librandi, 2002; De Blasi, 2014). Nevertheless, the dialectal varieties across Areas 3 and 4 are the ones in which aspiration remains stable and stronger in every given phonetic context, even if long lag VOT (see Lisker & Abramson, 1964)⁷ still appears in Area 5 and Area 2, in post-nasal context (see respectively Frontera et al. 2019; Romito, Ciardullo, Tarasi, 2015). In addition, aspiration is found in Area 2 when stops are geminated or follow a rhotic sound (Sorianello, 1996). Moreover, elderly speakers seem to retain this acoustic trait more than adolescents (Frontera, 2018; Nodari, 2015) and to preserve it even in cases of long-term immersion in another linguistic context, namely in the case of Italian speakers of L2 English living in Canada (see Nagy, Nodari, Celata, 2018; Nodari, Celata, Nagy, 2019).

On the other hand, long lag VOT is not present for unvoiced stops in the Argentinian Spanish variety, where only short lag VOT realisations are attested (Borzone, 1980). Long VOT realisations in initial, non-initial or intervocalic position are not reported neither for the American varieties of Spanish (see Lisker and Abramson, 1964; Abramson and Lisker, 1973; Borzone and Guerlekian, 1980; Flege and Eefting, 1987; Roldán and Soto-Barba, 1997; Soto-Barba and Valdivieso, 1999) nor for Peninsular Spanish (see Castañeda Vicente, 1986; Asensi et al., 1998; Amengual, 2012; Martínez Celdrán, 2013). According to previous research, Spanish VOT durations fluctuate between 8 and 28 ms on average, remaining stable under the limit of aspiration and in compliance with the variability related to the stop constriction point (VOT durations are very low in /p/, slightly higher in /t/ and significantly longer in /k/).

4.2 Research hypotheses

For first generation Calabrian migrants in Argentina, from the central area of the Italian region, the presence of unaspirated voiceless stops in Spanish L3 has already been reported (Frontera, 2019), even if their VOT values are, in some cases, significantly higher than those produced by native Argentines. These VOT values are extremely lower if compared to those evidenced, in the same phonetic contexts, within the Italian speech of Calabrian peers who had always been living in Italy (Frontera, 2018; Frontera et al., 2019). However, this former reference work lacks primary acoustic data in Italian language and dialect. So, in order to confirm whether attrition has occurred or not, the ongoing research will improve and implement data from the aforementioned study, by adding a comparison between VOT values produced in dialectal voiceless stops by the same heritage speakers in Argentina. Thus,

⁷ According to Lisker and Abramson's taxonomy, the world languages all belong to three main VOT categories, where the long lag category is the one entailing post-aspiration, with VOT durations equal or superior to 60 milliseconds.

the hypothesis for the present research is that, due to a massive and prolonged use of Spanish, Voice Onset Time values in the production of elderly Italian-Argentinian speakers may have suffered a structural reduction in their heritage language speech. As far as Spanish as L3 is concerned, effects of this heritage phonetic correlate could not be evident, though it is possible that VOT values do not reach the low degree of aspiration featuring Argentinian Spanish native productions⁸. The attested variability at intra-personal and inter-personal levels in attrition studies, however, may lead to unexpected results or exclude a unidirectionality. In order to take in due consideration all this, Argentinian Spanish and dialectal realisations of /p t k/ will be investigated in relation to VOT durations and a comparison among the two varieties will be outlined.

4.3 Selected materials

The sample for this preliminary research comprises 10 (out of 37) trilingual migrants, 5 females + 5 male speakers aged 80 (on average) and living in Córdoba, Santa Fe, Rosario and Buenos Aires. They all belong to the dialectological area 3 of Calabria (see Table 1). Their age of arrival (AoA) in Argentina varies from 9 to 20 years, while their LoR (length of residence) amounts to 65 years averagely. Most of these speakers can be also referred to as *late child L2 learners*, “children monolingual in the HL⁹, who received some elementary schooling in their home country” before migration (Montrul, 2011: 157). Indeed, they all learnt formally Italian at least for three years, only one among them attended secondary school in Italy (length of education in the country of origin).

Table 1 - *Informants' sociolinguistic information*

ID ¹⁰	Age	Dialect	AoA	LoR	LoE
TRFIII2	77	Badolato (CZ)	13 y	54 y	4 y
TRMIII1	73	Gasparina (CZ)	9 y	63 y	3 y
TRFIII4	74	Petronà (CZ)	9 y	63 y	4 y
TRFIII5	75	San Sostene (CZ)	10 y	64 y	3 y
TRMIII4	80	San Sostene (CZ)	16 y	65 y	4 y
TRFIII6	85	Davoli Marina (CZ)	20 y	65 y	7 y
TRMIII6	88	Satriano (CZ)	17 y	71 y	5 y
TRMIII7	85	Falerna (CZ)	16 y	70 y	3 y
TRMIII8	87	Nicastro (CZ)	16 y	71 y	9 y
TRFIII11	77	Conflenti (CZ)	11 y	65 y	5 y

⁸ For a review of the assimilation effects between L1 and L2 VOT of plosives in phonetic attrition, see de Leeuw (2019).

⁹ Heritage Language.

¹⁰ Every ID acronym indicates: informant's group (TR=trilingual speakers); sex (M/F); Calabrian dialectological area (III or IV); sequential number.

VOT values are extracted from productions in Argentinian Spanish and dialect elicited through read and translated speech, respectively (see §).

Spanish VOT productions are elicited via two reading tasks, consisting of a wordlist of 36 words and 12 sentences containing the same words.

Dialectal speech was elicited by translating to dialect a word list covering 36 items and 13 sentences containing the same words. The offered words encompassed a targeted sound, /p/, /t/ or /k/, in post-liquid or post-nasal contexts (-rC-, -nC-, -mC-), equally alternating point of articulation, stressed/unstressed syllables and adjacent vowels (/i, a, u/), as illustrated in (a), since each of these contexts intrinsically determines higher or lower VOT values:

e.g.	DIALECT	SPANISH
	<i>mancava</i>	<i>roncado</i>
	<i>urtimu</i>	<i>ártico</i>
	<i>‘mpurnare</i>	<i>computar</i>

Spanish post-liquid occurrences here only included post-rhotic sounds. This choice was motivated by the observation that in the Calabrian dialects of interest, pre-consonant /l/ can undergo assimilation, velarization or rhotacism processes, namely if followed by dental or velar sounds (Rohlf, 1966; Falcone, 1976). For this reason, and in order to ensure the comparability of our data, only those occurrences resulting from rhotacism were analysed.

A total amount of 1,210 target sounds were selected for the acoustic analysis, detailed as follows (see Table 2.):

Table 2 - Number of occurrences used for acoustic measurements

	/k/	/t/	/p/	N
Argentinian Spanish (L3)	165	156	145	466
Heritage Dialect (L1)	193	376	175	744
TOT.	358	532	320	1210

4.4 First analyses and results

All target productions were labelled and phonetically annotated using Praat (Boersma, Weenink, 2018). Voice Onset Times were measured starting from the first release burst of the stop consonant under investigation up to the acoustic periodic onset of the following vowel (Harrington, 2013). Thus, measures are automatically extracted¹¹, summing up REL (release) and ASP (aspiration) durations in each annotated sound, then checked manually.

¹¹Through the *get_vot_praat* script, created by J. Kang and D.H. Whalen.

Global mean durations and standard deviations associated to different consonants and contexts are extracted and compared between the groups. Thereafter, statistical analyses are implemented by means of the SPSS software (IBM, v. 25) in order to:

1. show significant drifts in VOT as regards the two language varieties (Argentinian Spanish and dialects), for the whole group as well as for each speaker;
2. examine variability related to linguistic factors (phonetic segment and context, task).

The descriptive analyses performed and presented in Table 3 as regards point 1) show how similar are VOT duration ranges for each language considered.

Table 3 - *Descriptive statistics*

Phone	N°	Mean	St. Deviation
/k/_HD	193	45,0187	19,36019
/k/_AS	165	44,9382	19,00226
/t/_HD	376	28,9226	13,48924
/t/_AS	156	24,1378	10,43352
/p/_HD	175	27,0091	18,47986
/p/_SPA	145	23,7903	13,98316

Global VOT duration means, calculated for each voiceless stop in heritage dialect(s), are included in a 27-45 ms range, where /p/ and /t/ are featured by very similar values (/p/_HD12 = 27 ms, st. d. 18,5 *vs.* /t/_HD = 29 ms, st. d. 13,5), while /k/ productions are consistently longer (/k/_HD VOT = 45 ms, st. d. 19,4). If we compare data produced by Calabrian elderly speakers who have never leaved Italy (see Frontera, 2018), it is worth-noting how these informants' VOT productions consistently outdistance values extracted by trilingual migrants' speech as being much longer¹³.

Global VOT values, calculated for each voiceless stop in Argentinian Spanish, range between 23-44 ms. As for /p/ and /t/ almost equal results are reported (/p/_AS¹⁴ = 24 ms, st. d. 14 *vs.* /t/_AS = 24 ms, st. d. 10,4). VOT values for /k/ in AS amount to 45 ms (st. d. 19), being equal to those in HD. It is self-evident how similar global VOT mean values are between the two languages involved (HD and AS), even in terms of internal variability, as standard deviations clearly show.

After examining general trends related to the whole group, global /p t k/ VOT values are contrasted for each trilingual speaker. In particular, five case-studies were carried out considering those speakers (five out of ten) who completed the elicitation tasks entirely. Therefore, cross-linguistic comparisons at the intra-speaker level were performed for TRFIII2, TRMIII1, TRMIII4, TRFIII6 and TRFIII11 (see Table 1). By observing Table 4, we can state that VOT values in HD are almost constantly higher than the AS counterparts, except for /k/ elicited by speakers TRFIII2,

¹² Heritage Dialect.

¹³ Mean global values extracted from the above-mentioned study (Frontera, 2018): /k/ = 87ms; /t/ = 61ms; /p/ = 59ms.

¹⁴ Argentinian Spanish.

TRMIII4 and TRFIII6, who tend to produce longer VOTs in Argentinian Spanish rather than in their local dialect. Moreover, standard deviations show a remarkable VOT variability. It is worth-noting that VOT standard deviations for /t/ show a trend opposite to /p/ and /k/, being less dispersed and more consistent.

Table 4 - *VOT durations and standard deviations for /p t k/ produced by five trilingual speakers in their heritage dialect (HD) and Argentinian Spanish (AS).*

** Values are significantly higher (unpaired t-tests).*

	HD			AS		
	/p/	/t/	/k/	/p/	/t/	/k/
TRFIII2	17,04 (13)	24 (7,3)	39 (15,9)	15,7 (10,1)	23 (8)	45,8 (24,2)
TRMIII1	29 (11,5)	31 (12,6)*	51,5 (18,6)*	23,9 (13)	22 (7)	36,8 (11,7)
TRMIII4	34,7 (29,1)	27 (11,3)	46 (22,8)	26,6 (14,7)	23,3 (10,4)	52,5 (20,2)
TRFIII6	42,3 (18,2)	29 (13)	42 (21,5)	32 (18,2)	25 (13,3)	51 (17)
TRFIII11	34,4 (15,4)	20,7 (6,8)	36,2 (11,5)	23,8 (11,7)	19,9 (6)	34,4 (10,5)

Unpaired t-tests assuming unequal variance between /p t k/ global VOT durations featuring in heritage dialect(s) and Argentinian Spanish for each informant were run. Only one speaker produced stop consonants with significant cross-linguistic differences in VOT lengths while, in spite of the high degree of internal variation, the other 4 informants did produce voiceless stops with similar VOT durations for L1 and L3 productions. In particular, speaker TRMIII1 still seems to retain long lag /k/ in his heritage language speech (51,51 ms – st. d. 18,6 versus 36,78 ms – st. d. 11,7) and, consequently, to discriminate them from aspirated dialectal sounds from less aspirated velar stops of Argentinian Spanish. This occurs in a significant way both for velar stops ($t(32)=2,03$, $p<.01$) and alveolar ones (HD L1=30,94 ms – st. d. 12,6; AS L3=22 ms, st. d. 7, so $t(41)=2,01$, $p<.01$).

As for point 2) above, the total means reported in Table 5 highlights a clear-cut distribution between VOT durations associated with the task: word-list (WL) *vs.* sentences (SNT).

Table 5 - *VOT duration for /p t k/ elicited through wordlist (WL) and from words in sentences (SNT)*

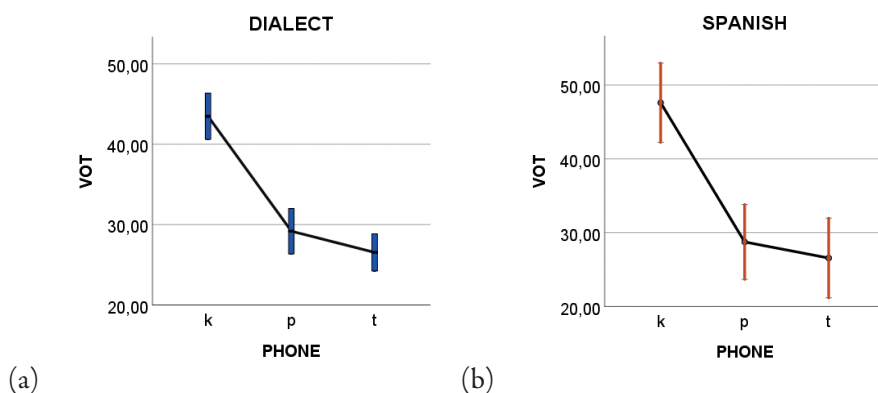
	Heritage Dialect		Argentinian Spanish	
	SNT	WL	SNT	WL
/k/	42,26126	48,75122	43,91744	46,04937
/t/	29,85751	27,3993	23,15926	25,19467
/p/	26,37857	27,81169	23,00694	24,56301

As it can be noted, the two tasks seem to trigger very slight divergences: apart from /t/ (HD), voiceless stops elicited through the wordlist entail longer release phases than those in words elicited in sentences, both in HD and in AS. Other linguistic factors are then examined as far as point 2) is concerned. Within this scope, VOT values are used as dependent variable in an UNIANOVA test, where *language*, *phone*, *context* and *task* are the factors selected to explore VOT variability, while the variable *subjects* represents the random effect.

A significant effect on the main variable is reported only for the following factors: *phone*, $F(2, 1422) = 229,3$, $p = .00$, and *context*, $F(8, 1422) = 19.4$, $p = .00$. This result could be easily associable to the intrinsic articulatory and acoustic features of the three stops. What strikes the attention more is the fact that *language*, the key factor of this first investigation, does not seem to entail any significant variability (as well as the factor *task*): HD mean value = 32,6 ms (st. d. 18) *vs.* AS mean value = 31,1 ms (st. d. 17,7).

The marginal means extracted through the Anova and displayed in Graph 1. show that estimated /p/ values, on average, have longer VOT durations than /t/. This seems to contradict the common trends reported by literature (see, for example, Lisker, Abramson, 1964 or Cho, Ladefoged, 1999). On the other hand, this trend is in line with what found by Frontera et al. (2019) in the dialectal speech by native Calabrian speakers: /k/ > /p/ > /t/. This evidence is contemplated both in DIA L1 and SPA L3. Graph 1 shows how the highest estimated value of aspiration can be ascribed overall to Spanish productions (1b), whose post-sonorant /k/ reaches the maximum peak, >45 ms duration.

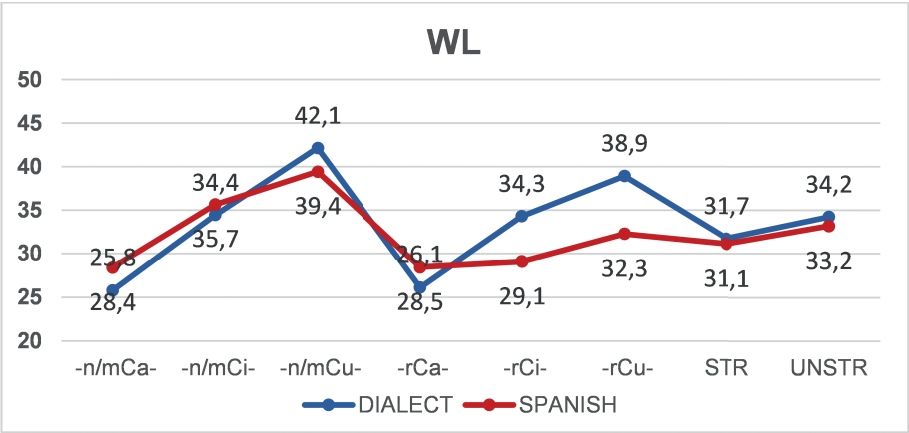
Graph 1 - Estimated marginal means and standard deviations for /p t k/ VOTs in HD and in AS



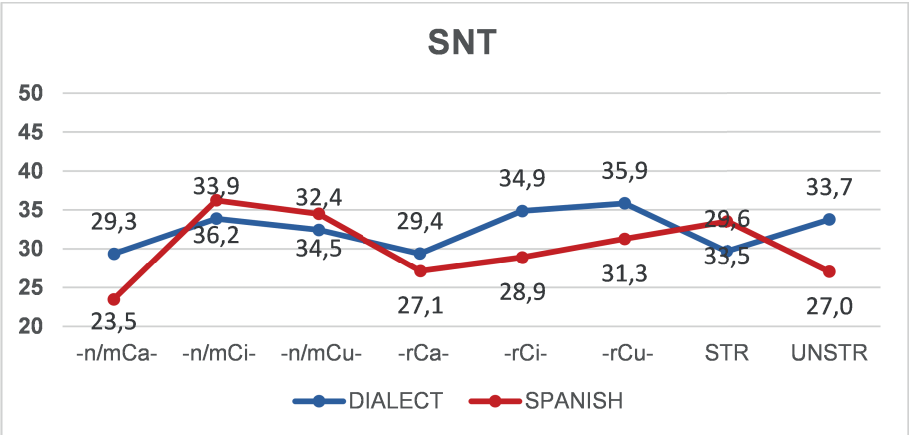
Given the significant effect of *context*, further t-tests are performed, in order to explore differences implied between Heritage Dialect (HD) and Argentinian Spanish (AS). Despite the clear distinctions that every context brings about at the intra-linguistic level (Graph 2.), the phonetic contexts here examined do not trigger any

significant variation in VOT values between L1 and L3. Nonetheless, it is necessary to observe that when high vowels (/i u/) follow the target segment they normally trigger longer VOT durations if compared to what occurs when with /a/. Moreover, as evidenced by acoustic data on Italian and Calabrian speech, stops in unstressed context are generally longer than in pretonic position. This was confirmed by our results related to WL and SNT tasks, both for HD and AS (see Graph 2x, 2y).

Graph 2 - Mean VOT durations of /p t k/ in all post-sonorant contexts, produced in HD and AS in isolated words (x) and words extracted from sentences (y)



(a)



(b)

5. Discussion and conclusions

This preliminary study allowed us to explore phonetic properties of VOT in the production of first-generation Italian-Argentinian migrants, as far as their heritage Calabrian dialect and L3 Argentinian Spanish are concerned.

First results suggest that migrants produced very similar VOT durations in their dialectal speech and in Argentinian Spanish. Apparently, VOT values are lower than those ascertained in monolingual Calabrian elderly speakers (see Frontera, 2018). Even if this trend needs to be verified through direct acoustic comparisons to data elicited by a monolingual Italian control group, it seems as if the acoustic correlate of VOT for voiceless stops for our trilingual speakers has reached a sort of convergence point, by constantly negotiating between the long lag realisations of HD and short lag releases of AS.

This last consideration is supported by evidences of /p/ release phases which are slightly higher than those reported for /t/, which is a peculiar trend acoustically confirmed by previous research on VOT aspiration (see Frontera et al., 2019) on native Calabrian speakers. This cue features VOT of Argentinian Spanish produced by our Italian-Argentinian migrants. Thus, in compliance with Flege's *merging hypothesis*, both first and third language phonetic traits of our informants seem to be deviant from the respective monolingual norms. Further acoustic VOT data on L2 Italian could provide a broader interpretation of these first results. In fact, it could be interesting to see to what extent the presence of a dominant code (AS) within migrants' linguistic repertoire has undermined the aspiration heritage trait as far as Calabrian dialects and regional Italian are concerned.

As reported by Cho and Ladefoged (1999), after examining a set of 18 different languages, the boundary between unaspirated (short lag) and aspirated stops can be set at 50 ms. As regards Spanish varieties, this threshold is placed at 40 ms by Martínez Celdrán (2013) while, more recently, in a study by Nodari, Celata and Nagy (2019) Calabrian stops are included in a VOT investigation of different languages by proposing to consider voiceless stops as aspirated when VOT ranges from 30 to 100 ms. By assuming their criterion, we can set 30 ms as a benchmark to classify our HD and AS results as slightly aspirated consonants. The assumed change in the phonetic realisations of voiceless stops could be interpreted as a cue of phonetic attrition. However, VOT undergoes a great variation across our speakers, both at the inter-personal and the intra-personal level (see standard deviation values reported in Graph 1 and Table 4). This could be due to the task (see Major's, 1992): the translation task, here used to elicit dialectal speech, may have triggered longer VOT realisations compared to reading, assuming a higher degree of accuracy for the latter. As a matter of fact, the highest VOT values are reported when translating into their heritage dialect. Nonetheless, mean global values confirm the vulnerability of the phonetic trait here investigated. Within the scope of language attrition studies, it is known that "L1 is malleable upon competition from a new language or dialect in adulthood" (de Leeuw, 2019: 215). In this framework, these very preliminary results suggest that attrition may have occurred. This may be seen in the conver-

gence of VOT values reported for languages comprised within the first-generation speakers' repertoires (see Flege, 1987).

The attested variability at intra-personal and inter-personal levels in attrition studies, however, may lead to unexpected results or exclude a univocal direction for drift. Therefore, these data need to be enriched and strengthened through deeper analyses, using normalized VOT durations (see Mori, Barkat, 2005) and further comparisons with the monolingual control groups. Moreover, further analyses on the whole group of 37 speakers may reveal a stronger effect of extralinguistic factors on language attrition, such as AoA, LoR, also considering the potential effect of education in Italy (number of years and education degree): a probable use and/or identification of Italian as the 'prestigious' code may lead to even lower aspiration values in L2 productions.

It will be interesting, furthermore, to explore possible correlations between acoustic data and other parameters such as in-groupness, use of L1-L2-L3 and attitudes toward dialects indicators, elaborated through responses to our interviews (see §). In addition, considered that acoustic realisations of VOT itself may also depend on variables of a sociolinguistic nature (thus conveying information about the potential presence of variation dynamics and/or about the speakers' status, see Nodari, 2015), future research could entail additional analyses, dealing with other segmental and/or suprasegmental elements.

In line with the future developments of the reference projects, if this first results of attrition in VOT values will be confirmed, aspiration may turn to be a relevant cue for accent detection by native listeners (see task (c in § 3.2): the trilingual speakers are then likely to be recognised as foreign speakers of their own heritage languages (dialects) and/or regional Italian.

To conclude, our whole research aims to provide new original data on outcomes of long-lasting contact between three close languages within migrants' trilingual repertoires in order to feed the scientific discussion on Italian and its varieties world-wide as far as L2/L3 language acquisition, L1 attrition and sociolinguistic dynamics are concerned.

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