

Aspirated voiceless stops in elderly speakers from Calabria: a pilot study

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Abstract

The aim of this preliminary study is to depict a first sketch of VOT realizations of elderly speakers from the province of Catanzaro (central Calabria, southern region of Italy), to be compared in the near future with data belonging to the Italian-Argentinean community. Thus, the present work represents the starting point of a broader research, aimed at exploring possible cases of phonetic attrition in VOT values of Calabrian migrants in Argentina. Focusing on elderly speakers, /p t k/ stop consonant productions will be analysed within different linguistic contexts. Long lag VOT values are expected to be found, especially if compared to those belonging to adolescent speakers of the same province.

Key words: voiceless stops, VOT, Calabrian varieties

Introduction

Post-aspiration of voiceless stop consonants in Calabrian regional variety is a reported feature since the late 60's. The first studies on the case were based on a perceptual approach, by which the phenomenon seemed to intrude upon the main regional provinces in different ways and diverse phonetic contexts (see Rohlf's, 1966; Falcone, 1976; Canepari, 1986). Later on, acoustic studies on the production of geminated /p t k/ consonants across Italy have demonstrated that adult speakers from the city of Catanzaro show the longest VOT values at all (Stevens, Hajek, 2010). Nevertheless, the unique study focused on VOT analysis in other productive phonetic contexts (post-nasal and post-liquid /p t k/), in the same area, has been led on adolescent speakers only, and from a socio-phonetic perspective, showing an attitude to "control" aspiration (considered as spy of a stigmatized variety), in favor of a more standardized pronunciation (Nodari, 2015).

Hence, it has been considered appropriate to try to offer a wider and complete view of this feature in the aforementioned area. Thus, a focus on a more conservative age range seems likely to provide a more objective view of the phenomenon. The present study represents, then, a first step into this new investigation.

Methods

Participants

This work reports the case of the first two speakers involved in the ongoing research, a male and a female, aged 70 and 82 and living in the province of Catanzaro. They have spent their whole life in the same country (Settingiano), speaking dialect as a first language and Italian as a L2, which are the only languages they know and speak.

Corpus

Speakers were recorded using a Scarlett CM25 microphone and a Focusrite Scarlett 2i2 audio interface via Sony Sound Forge Pro 11, with a sampling frequency of 44.100 Hz and a 24 bits resolution.

Speech material is elicited through a reading task consisting of 54 isolated words and 12 sentences in Italian language (232 stimuli). The target words all contain voiceless stops /p t k/ and subsume geminate, post-liquid (-lp, -lt, -lk, -rp, -rt, -rk) and post-nasal (-mp, -nt, -nk) contexts, equally alternating point of articulation, stressed/unstressed syllables (pre-tonic and post-tonic position in paroxytones and proparoxytones) and adjacent vowels (/i/, /a/, /u/), since each of these contexts intrinsically determines higher or lower VOT values.

Analysis

All productions are labelled and phonetically annotated, following Abramson and Whalen (2017)'s procedure. Measures are automatically extracted in Praat (Boersma & Weenink, 2018), summing up REL (release) and ASP (aspiration) durations in each target sound (Kang, Whalen, 2017). VOT is measured starting from the first release burst of the stop consonant up to the acoustic periodic onset of the following vowel (Harrington, 2013). Global mean values and standard deviations associated to different consonants and contexts are then calculated.

Results

The extracted values are compared according to C place, adjacent vowels, phonetic contexts and stress position in the target word. In the present study, geminate stops will be analysed only within the phrasal context. Further analyses and possible interactions between variables will be taken into account in future investigations.

Consonant place

In line with what found by Cho & Ladefoged (1999), the more backward the consonant place of articulation is, the longer lasts its VOT duration:

/k/ mean duration in isolated words is of 78 ms (st. dev.=23) against the pick of 87 ms (st. dev.=26) in /k/ consonants pronounced in phrasal context. The sound /t/ gets a 61 ms mean VOT in the word list (st. dev.=20) and 54 ms (st. dev.=19) in the sentences, while /p/ mean duration is equal to 59 ms (st. dev.=19) in isolated words, 52 ms (st. dev.=22) in phrasal context.

Almost all consonants show long realizations, notably higher than those found both in the spontaneous speech of adolescent speakers from the same Calabrian province (Nodari, 2015) and in the word list from adult speakers of Catanzaro (Stevens, Hajek, 2010).

Adjacent vowel

Mean VOT values show longer durations when the consecutive vowels are /i/ and /u/, in both diaphasic contexts: 76 ms vs. 66 ms for /i/ (st. dev.=29 and 28), 74 ms and 70 ms for /u/ (st. dev. =21 and 27). VOT before /a/ is averagely equal to 59 ms (st. dev.=21) in the isolated words, 51 ms (st. dev.=21) in phrasal context. Thus, this data mirrors the trend of stop consonants to reach longer VOT durations if followed by closed or high vowels (Morris, McCrea, Herring, 2008). Even in this case, post-aspiration is greater than the one produced by younger speakers (max. value=43 ms).

Phonetic context

Among the main contexts of aspiration, the post-lateral position (-LC) seems to intrude upon VOT values slightly more than the post-nasal and post-rhotic ones, above all in isolated words (Table 1). The obtained values almost double the means found in Nodari (2015).

Table 1. Voiceless stop consonants' VOT in different phonetic contexts.

CONTEXT	VOT MEANS (MS)	
	WORD LIST	SENTENCES
-NC/-MC	67 (18)	60 (27)
-LC	72 (23)	66 (24)
-RC	69 (20)	65 (28)
CC	-	58 (27)

Stress position

Dealing with the differences between stressed and unstressed syllables, the data from elderly speakers confirms the presence of longer VOT values in post-tonic position, both in paroxytones (73 ms, SD=28; 63ms, SD=26) and proparoxytones (72 ms, SD=26; 67ms, SD=47), with respect to the pre-tonic positions (min value=59 ms).

Conclusions

The reported results give rise to some noteworthy remarks: firstly, the obtained data matches the trends tested in the previous works on VOT variation, and confirms the effects of post-liquid/post-nasal positions on /p t k/'s degrees of aspiration. Second, most importantly, elderly speakers seem to show post-aspiration levels definitely higher with respect to their younger compatriots, in every investigated context. In order to confirm these important preliminary results, data from a greater amount of speakers and further specific analyses will be provided in future investigations.

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