

## **Dental affricates variation in Italian regional varieties: introducing the ZIta corpus**

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**Introduction:** Dental affricates are one of the most marked phonemes and Italian is one of the 30 languages considered by Ladefoged & Maddieson (1996) to present both the voiced and the voiceless variants in its phonological repertoire. Various phonetic descriptions of these phonemes have been provided by different scholars (Canepari 1979, Celata 2004, Loporcaro 2009), without the support of a stratified sociolinguistic sample. For this reason, project ZIta will represent a sociophonetic corpus of dental affricates: in this poster, we present the full project and some preliminary results.

**Aims:** ZIta aims at fulfilling three major objectives: (1) document synchronic and diachronic variation of Italian regional varieties; (2) offer a fine-grained stratified survey of dental affricates; (3) prepare an instrument for studies on acquisition of Italian L2, and for the logopedic treatments of speech pathologies, in order to distinguish sociophonetic variations from “errors”. Thus, ZIta is not intended for corpus linguistic analysis but for sociophonetic research, and it will indeed represent a small but well balanced corpus of dental affricates, stratified for phonological contexts, frequency of the words in spoken Italian, for style and for speakers’ age, sex, place of origin and dialectal background.

**Methods:** Controlled speech is elicited through sentence reading, whereas map-tasks are used for semi-spontaneous speech. Each task consists of 54 tokens of real words containing a dental affricate equally distributed in four phonological contexts, that is word-initial (#C-), post-sonorant (SCV), and intervocalic singleton (VCV) and geminate (VCCV). Tokens are annotated in PRAAT following the annotation protocol for dental affricates firstly introduced by Meluzzi (2014, 2016), who distinguishes among three sonority degrees (voiceless, voiced, and mixed), that is with voicing in the occlusion followed by a voiceless fricative segment (see also Nese & Meluzzi 2018); the protocol annotates the two segments of the dental affricate (i.e., occlusive and fricative), also labelling the possible pause between the two parts (the so-called post-burst aperiodicity, cf. Foulkes et al. 2011).

**Data:** For this poster, we present the firsts results from the controlled speech of 4 male speakers, students of the University of Pavia, aged between 19 and 21, coming from two different linguistic areas, Sicily and Lombardy, whose dialects they know and speaks. We choose these groups as representatives of two very different Italian regional varieties, which present an opposite distribution of sonority and place of articulation of dental affricates especially in the intervocalic and post-sonorant contexts. This first sample consists of 216 tokens, which have been annotated in PRAAT; two PRAAT scripts were then used to automatically extract the duration of the segments, including both the occlusive and the fricative parts, and the values of the center of gravity as measured on the central point of the fricative segment, with a FFT spectrum (pre-emphasis = 6 db) on a 20ms Hamming window (Jongmann et al. 2000). Other measures will be considered, but not yet included in this poster.

**First results:** The realization of dental affricates in the controlled speech of the 4 male subjects has shown differences with respect to the origin of the speaker but also of the phonotactic contexts. Data in Fig. 1 highlights how Sicilian speakers prefer mixed affricates in the post-sonorant context (SCV, 66,7%), whereas Northern speakers present the mixed variant in word-initial position (#C-, 40,9%); moreover, the geminate intervocalic realization is more likely to be realized as voiced by Southern speakers and as voiceless by Northern speakers.

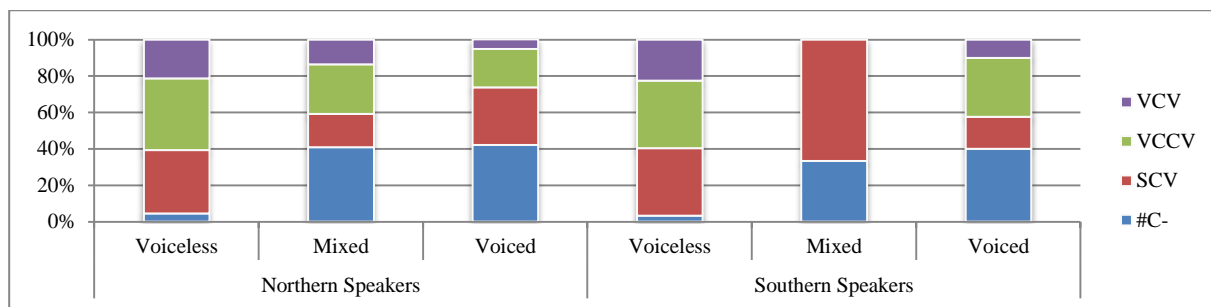


Fig. 1 Variation in the realization of the sonority of the dental affricate for phonological contexts and origin of the speaker (Northern s.:  $\chi^2(6)=24,146$ ,  $p<,01$ , Cramer's  $V=,336$ ; for Southern s.:  $\chi^2(6)= 29,612$ ,  $p<,001$ , Cramer's  $V=,370$ ).

A t-test independent analysis has been carried out on the mean values of affricate, stop and fricative duration, and on the mean values of the center of gravity. Because of the limited sample size, it was impossible to calculate these values for the mixed affricates. For voiced affricates, the means of duration and center of gravity were statically significant only in word-initial context, with the Northern speakers showing a more advanced place of articulation of the fricative segment (MD= 904,17 Hz,  $t(22)=2,398$ ,  $p=,025$ , Cohen's  $d=1,02$ ) and with slightly longer realization of the voiced dental affricate (MD= 36,137 msec,  $t(22)=3,210$ ,  $p=,004$ , Cohen's  $d=1,3$ ). Conversely, the center of gravity shows no variation for the voiceless affricates.

**Conclusions and further perspectives:** The preliminary results have illustrated the fine-grained variation in the realization of dental affricates, which ZIta aims at documenting on many other Italian regional varieties, by also taking into account different sociolinguistic variables.

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