Subtle changes in L1 consonants of late Salento Italian-French bilinguals: an acoustic study

This talk concerns the native language (L1) of Italians from Salento (South of Italy) who have started to learn French, i.e., their second language (L2), mostly in adolescence and have moved to the Paris region as adults; they have been living in the same region by different amounts of time using French on daily basis (hereafter late Salento Italian-French Bilinguals - B). Authors have already studied the phonetic changes in L1 of adult bilinguals induced by the influence of their L2, (for an overview see, De Leeuw, 2019). However, few have addressed (1) the L1 of adult bilinguals whose L1 or L2 is not English, and (2) the L2-L1 influence with the focus on the length of stop consonants. This study fills these gaps dealing with Salento Italian as the L1 of B and focussing on Italian stops: the L1 speech of B is compared with that produced by a group of controls composed of matching Italians born and living in Salento.

Italian phonologically contrasts geminate and singleton stops (e.g., *papa* in Italian means 'Pope', while *rappa* means 'pap'). The contrast mainly lies in consonantal length, even though the duration of the preceding vowel also changes; singleton stops are shorter than geminate stops in both Italian and Salento dialects, while the vowel preceding singletons is longer than that preceding geminates (see, e.g., Loporcaro, 1996). In French, there are single and double consonants in orthography, but they do not differ in pronunciation (e.g., *salle*, meaning 'room' in French, and *sale*, meaning 'dirty', are both pronounced as /sal/). On the basis of this difference between the languages and the results of studies of Celata & Cancila (2010), Ciccone, Hanini, & Sciannantena (2020) and Rafat, Mohaghegh & Stevenson (2017), we hypothesise that L1 stops of B will differ from L1 stops of controls because of an L2 influence on their acoustic duration.

In order to elicit the speech of B and controls, we created a set of pictures evoking mostly two-syllable Italian words with target stops /p/, /pː/, /t/, /tː/, /k/, /kː/, /b/, /bː/, /d/, /dː/, /g/, /gː/ placed in the medial intervocalic stress-controlled position; the singleton and geminate stops forming a pair (e.g., /t/ vs /tː/) were placed in similar vocalic context (e.g., for the pair /t/ vs /tː/, we had Italian words /sete/, /setːe/, /rete/ and /retːe/). Each target stop occurred in two words. A word X, shown on the PC screen, was produced by speakers in the carrier sentence 1) 'I say X', and 2) 'I put X next to Y. I moved X' to describe the way the experimenter was moving X on the screen. The recordings of L1 of 15 B (9M, 6F; mean age = 41.13 y.o.; SD = 10.39, mean length of residence in France = 14.4 years, SD = 9) and L1 of 15 controls, matched for age, sex and education level, were orthographically transcribed. Automatic labelling and segmentation of syllables and words were corrected manually in PRAAT (Boersma & Weenink, 2024). We used a PRAAT script to measure the duration of target stops, preceding vowels and words containing these stops; if a word started by a voiceless stop, its duration was automatically adjusted using AutoVOT (Keshet, Sonderegger & Knowles, 2014); hence all initial voiceless stop of the words were composed of 40 milliseconds of silent portion and the voice onset time.

The statistical analyses were carried out in R: we computed the normalised duration of target stops and vowels preceding these stops (see Eq. 1) that we compared by building two linear mixed-effects models: one for vowels and another for stops. For both models, we had intercepts for SPEAKERS and WORDS as random effects. As fixed effects tested with interaction, we entered GROUP (B *vs* controls), CONSONANT STATUS (singleton *vs* geminate), and PAIR of stops (p-consonants, t-consonants, k-consonants, b-consonants, d-consonants and g-consonants). The random effect SPEAKERS had random slope CONSONANT STATUS. The comparison of estimated means was carried out with *emmeans* (Length, 2021). Significant results ($p < .05$) on stop duration show that B and controls differ in the duration of some, but not all the investigated stops. The analysis of vowels preceding the target stops did not show any significant result. More detailed results will be presented and discussed in relation to our hypothesis with reference of previous studies on L2-L1 influence that concerns geminate, i.e. Celata & Cancila (2010), Ciccone, Hanini, & Sciannantena (2020) and Rafat, Mohaghegh & Stevenson (2017).

Eq. 1

$$Normalised\ duration = \frac{Vowel\ duration}{Word\ duration} * Mean\ word\ duration * Number\ of\ syllables$$

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