

The impact of the L2 experience on the production accuracy of non-native sounds

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Abstract

This study aims at observing how accurate French learners of Italian as L2 are when they produce the Italian geminates/affricates (non-natives sounds) considering two different proficiency levels as for the differences in time exposure and L2 use (advanced/beginner). Target words were elicited both in a carrier phrase and in minimal pairs to force learners to be as accurate as possible to keep the distinction between the two words. Results show that the factors considered play an important role in production as beginners' production are mainly guided by the influence of the L1 as they produce more reductions and/or substitutions. Further, it seems that even the elicitation task plays a role as beginners, as for geminates, do better in minimal pair.

Keywords: Italian as L2, geminates and affricates, L2 experience

Introduction

The Italian phonological system has four affricates: the voiceless /tʃ/ and the voiced /dʒ/ postalveolars (e.g., **c**ena - *dinner*; **g**elo - *frost*); the voiceless /ts/ and the voiced /dz/ alveolars (e.g., marzo - *March*; **z**ero - *zero*) (Mioni 2001). Further, consonant germination is linguistically a relevant cue as words differ in their meaning in case a singleton or a geminate consonant appears (Esposito, Di Benedetto 1999). Affricates and geminates are both considered as marked sounds as they are uncommon in consonant inventories of world languages. Indeed, only 18% of languages (on 451 languages) have affricates at two places of articulation; the consonant length is observed at 3.3% (Maddieson 1984).

On the contrary, in French language does not exist the affricates as well consonant germination. Thus, the production of affricates and geminates may be problematic for French learners of Italian as L2, possibly depending on the proficiency level and on the time exposure and L2 use. All these factors can have an impact on the pronunciation accuracy.

The learning process can be affected by the markedness, as the case of the geminates and affricates, as well as by the perception and the L2 experience. According to the Markedness Differential Hypothesis by Eckman (2008), a marked sound will be more difficult to be acquired than the unmarked one. One of the most influential L2 models is The Speech Learning Model by Flege (1995) which takes into account the similarity between the L1 and L2 sounds. The formation of a new phonetic category depends on the perceived phonetic

distance between the L1 and L2 sounds. It does not occur in case of the equivalence classification as a single category will represent perceptually both the L1 and the L2 sounds. In this case, the errors in production linked to the influence of the L1 will be greater (substitution of the L2 sound with the L1 sound). On the contrary, a new category will be established when the L2 and L1 sounds are dissimilar, as the learners is able to detect some phonetic differences. However, as the learners progress in their L2 experience (amount of exposure to L2 and the use of the L2), the perception of the L2 sounds will be more accurate and even their pronunciation can improve (Flege et al. 1997).

Thus, this study aims at observing how accurate the French learners are when they produce the Italian affricates and geminates (non-native sounds) considering two different proficiency levels as for a different L2 experience, in terms of time exposure and L2 use (beginner and advanced learners). It is expected a stronger influence of L1, above all, in beginners' productions due to their limited exposure to and use of Italian. Thus, beginners may show a higher number of substitutions/reductions than the advanced learners' productions.

Method

Eight French learners of Italian as L2 were recruited among the Erasmus students at University of Salento (Southern Italy): 1) four beginners (A1/A2 level; females, mean age 21; 3 from Nantes and 1 from Nancy) who studied Italian up to 2 years; they were exposed to Italian variety spoken in Lecce for 3-4 months and during their stay they preferred to speak in English or French; and 2) four advanced learners (C1 level; females; mean age 22, 2 from Nancy and 2 from Paris) who studied Italian from 5 to 7 years; they were exposed to local Italian variety for 5-6 months and they spoke Italian during their stay. Further, 3 Italian students (females, mean age 23.6) as control were recruited to.

The Italian phonemes of interest were /d,ɫ,n,r,s,t/ for geminates (singletons as control) and the affricates /tʃ,dʒ,ts,dz/ (/s,ʃ/ as control). For each phoneme two minimal pairs were found and elicited both in a carrier phrase (e.g., *Ho detto sete/sette - cena/scena di nuovo a Maria - I told Mary thirst/seven - dinner/scene again*) and in minimal pair (e.g., *sete-sette - thirst-seven; cena-scena - dinner-scene*), where learners were forced to be as accurate as possible to distinguish the words as for their meaning. Acoustic data were collected and segmented in PRAAT labelling all segments of the target word. A perceptual check was performed to observe the realization of both singleton/geminate and fricative/affricate consonants. Then, the normalized duration of the target segments was measured and statistically analysed by means of mixed models and t-test. Due to limit of space, statistical results will not be reported here.

Results

As for the geminates, the perceptual check showed that beginners realize more degemination cases in both tasks (51.52% carrier phrase and 37.12% in minimal

pair) than the advanced learners (3.04% in carrier phrase and 6.06% in minimal pair). As for singleton, it is observed some gemination cases above all in carrier phrase by both learning groups (26.89% for advanced and 30.69% for beginners). Native speakers realized accurately both singletons and geminates.

Table 1. Percentages of realization of CC and C in carrier phrase (left) and in minimal pairs (right).

Task	Carrier phrase				Minimal pair			
	Geminate		Singleton		Geminate		Singleton	
Realization	CC	C	C	CC	CC	C	C	CC
Advanced	97.96	3.04	73.11	26.89	93.94	6.06	88.64	11.36
Beginner	48.48	51.52	69.31	30.69	62.88	37.12	84.84	15.16

As for the affricates, beginners realized more deaffrication cases (/dʒ/-> /ʒ/ at 4% in both tasks; /tʃ/-> [s] at 20% in carrier and at 12% in minimal pair; /dz/-> /z/ at 21% in carrier phrase) than the advanced learners who, on the contrary, never reduced the affricates to a fricative in line with natives' productions. The affricates /dz/ and /ts/ were always realized as voiced by the natives, according to the characteristics of their linguistic variety; on the contrary, learning groups' productions are more variable in both tasks.

Table 2. Percentages of realization of affricates in carrier phrase (upper) and in minimal pair (bottom).

Carrier phrase										
Phoneme	/dʒ/		/tʃ/		/dz/			/ts/		
Realization	[dʒ]	[ʒ]	[tʃ]	[s]	[dz]	[ts]	[z]	[ts]	[dz]	[z]
Advanced	100	0	100	0	52	42	0	50	50	0
Beginner	96	4	80	20	54	25	21	50	44	6
Minimal pair										
Realization	[dʒ]	[ʒ]	[tʃ]	[s]	[dz]	[ts]	[z]	[ts]	[dz]	[z]
Advanced	100	0	100	0	76	24	0	66	34	0
Beginner	96	4	88	12	54	42	4	58	42	0

Finally, beginners found some difficulties also in producing the postalveolar fricative /ʃ/ which was realized at 12% as [s] or [tʃ] in carrier phrase and at 13% and 10% as [s] or [tʃ] respectively in minimal pairs. On the contrary, the advanced learners show no difficulty. Both learning groups produce accurately the alveolar fricative /s/.

Discussion and conclusions

The impact of the L2 experience, in terms of amount of time exposure and the use of the L2, has been observed as for the pronunciation accuracy of both geminates and affricates (non-native sounds) by French learners of Italian as L2 (beginner and advanced learners).

As expected, advanced learners are very accurate when realizing the Italian non-native contrasts as their productions are very close to natives' ones. On the contrary, beginners realize more degemination (reduction of geminates to singleton) and deaffrication (substitution of affricates with a fricative) cases. Further, they also show some difficulties in producing the postalveolar fricative which is realized as [s] or [tʃ]. As for the postalveolar affricates/fricatives in particular, the influence of the L1 and their limited L2 experience is also evident as for the grapheme-phoneme correspondence. In Italian the graphemes <ce/ci> and <sce/sci> are realized as [tʃ] and [ʃ] respectively, while in French the alveolar fricative is realized instead. Thus, beginners' productions are mainly guided by the L1 orthography. As for the alveolar affricates, they are realized as voiced by the natives while both learning groups show a greater variability due to the fact that both /dz/ and /ts/ have the same grapheme <z> which is not informative enough on its own.

To conclude, results are in line with the Flege's model. The advanced learners, with a greater L2 experience, produce both affricates and geminates close to natives. This means that they have established a new phonetic category for the L2 sounds. On the contrary, beginners' productions are characterized by a higher number of segmental errors due to their limited L2 experience and, as a consequence, the influence of the L1 is predominant. Thus, the categorization process is still in progress. Finally, it is evident for geminates that the elicitation task is important too as the minimal pair makes clearer the differences between the two terms consistent with a reduction of the degemination cases.

References

- Boersma, P., Weenink, D. 2020. Praat: doing phonetics by computer, version 6.1.09.
- Eckman, F.R. 2008. Typological markedness and second language phonology, in Hansen, E., Zampini, J. M. (Eds.), *Phonology and second language acquisition*, 95-115, Benjamins, Amsterdam.
- Esposito, A., Di Benedetto M.G. 1999. Acoustical and perceptual study of gemination in Italian stops, *JASA*, vol. 106, 4, 2051-2062.
- Flege, J.E. 1995. Second language speech learning: findings and problems, in Strange, W. (Ed.), *Speech perception and linguistic experience, Issues in cross-languages research*, 233-277, York Press, Timonium, (MD).
- Flege, J.E., Bohn, O.S., Jang, S. 1997. The effect of experience on nonnative subjects' production and perception of English vowels, *Journal of Phonetics*, 25, 437-470.
- Maddieson, J. 1984. *Patterns of sound*. Cambridge University Press.
- Mioni, A. M. 2001. *Elementi di fonetica*, Unipress, Padova.