

## The perception of French nasal vowels by Belgian Dutch listeners

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Several models have been proposed to study the production and/or perception of non-native phonemes by L2 learners (cf. L2LP, Escudero, 2005; PAM-L2, Best & Tyler, 2007; SLM-r, Flege & Bohn, 2021). These models generally assume that the identification of L2 phonemes depends on their phonetic similarity with phonemes of the L1. In this light, the perception of nasal vowels by L2 learners is a particularly interesting subject, because unlike nasalized vowels, nasal vowel phonemes are quite rare in the world's languages. In fact, the phonemic contrast between oral and nasal vowels exists in only 22,6 % of them (Maddieson & Precoda, 1990). To our knowledge, little research has focused on the perception of nasal vowels by L2 learners (but see e.g., Detey & Racine, 2015; Inceoglu, 2016). This paper aims to contribute to our knowledge of the acquisition of nasal vowels by investigating how Belgian Dutch listeners perceive French nasal vowels. While Dutch has no nasal vowels in its inventory, present-day Hexagonal (Parisian) French has three, being /ɛ̃/, /ɑ̃/ and /ɔ̃/.

To this purpose, twenty-one native speakers of Belgian Dutch who were intermediate learners of French performed two categorization tasks, namely a cross-linguistic task and a French task. In the cross-linguistic task, participants matched French nasal vowels to their closest Dutch equivalents and rated these vowels on a category goodness scale. In the second (French) task, they classified French nasal vowels. The target stimuli were French CV and CVC sequences containing either /ɛ̃/, /ɑ̃/ or /ɔ̃/ as their syllable nucleus. Stimuli were produced by two native speakers of Hexagonal French.

The results of the French categorization task indicated that the French nasal vowel /ɔ̃/ was identified significantly more often than /ɛ̃/ and /ɑ̃/. This can be linked to a chain shift affecting nasal vowels of present-day French. Moreover, participants rarely categorized French nasal vowels as oral vowels, but displayed asymmetric patterns of confusion between French nasal vowels. Finally, the outcomes of the cross-linguistic categorization task revealed perceptual assimilation patterns that clarify the asymmetric patterns of confusion. These perceptual assimilation patterns are discussed in the light of two theoretical models, namely the Perception Assimilation Model for L2 listeners (PAM-L2; Best & Tyler, 2007) and the Second Language Linguistic Perception model (L2LP; Escudero, 2005).

### References

- Best, C.T., & Tyler, M.D. (2007). Nonnative and second-language speech perception: Commonalities and complementarities. In: O.-S. Bohn & Munro M.J. (Eds.), *Language experience in second language speech learning: in honor of James Emil Flege* (pp. 13-34). John Benjamins.
- Detey, S., & Racine, I. (2015). Does perception precede production in the initial stage of French nasal vowel quality acquisition by Japanese learners? A corpus-based discrimination experiment. In: *Proceedings of ICPHS 2015*, Glasgow, 10-14 August.
- Escudero, P. (2005). *Linguistic perception and second language acquisition: explaining the attainment of optimal phonological categorization*. PhD dissertation. University of Utrecht.

- Flege, J., & Bohn O. (2021). The revised speech learning model (SLM-r). In: R. Wayland (Ed.), *Second language speech learning: theoretical and empirical progress* (pp. 3-83). Cambridge University Press.
- Inceoglu, S. (2016). Effects of perceptual training on second language vowel perception and production. *Applied Psycholinguistics*, 37(5), 1175-1199.
- Maddieson, I. & Precoda K. (1990). Updating UPSID. *UCLA Working Papers in Phonetics*, 74, 104-111.