

Bilingualisms and phonetic compliance

Marie Philippart de Foy¹, Véronique Delvaux^{1,2}, Kathy Huet¹, Myriam Piccaluga¹,
Rima Rabeh¹ & Bernard Harmegnies¹

(1) Institut de Recherche en Sciences et Technologies du Langage, Service de Métrologie et
Sciences du Langage, Université de Mons, Belgique

(2) Fonds National de la Recherche Scientifique, Belgique

Certain types of bilingualism could facilitate the acquisition of a third language (Cenoz, 2003; Sanz, 2000) and more specifically, may improve phonetic learning, at least for certain foreign phonetic contrasts (Antoniou et al., 2015). This advantage in foreign language learning could be due to specific experience with two phonemic systems as well as to cognitive advantages generally associated to bilingualism, such as increased executive functioning (Barak & Bialystok, 2011) and/or greater functional awareness of language (Rutgers & Evans, 2015), likely to have an impact on speech perception and production skills. Following this, it may be assumed that some bilinguals could demonstrate enhanced phonetic compliance – the inherent ability to produce speech sounds unusual in their native language(s) (Delvaux et al., 2014) – in comparison to monolinguals, or at least that this ability would develop differently in bilingual and monolingual speakers.

In order to assess phonetic compliance in bilingual and monolingual adults, we collected data from four Dutch-French Belgian bilingual participants that were subsequently compared to the data of four monolingual participants gathered from a previous study (Delvaux et al., 2014). The data collection paradigm was based on 10 repetitions of French and Dutch vowels and 6 reproductions of 94 synthesized vowel-like stimuli distributed across the entire vocalic space. Formants values were automatically measured in the middle of productions and manually verified. Following Delvaux et al. (2014), three indices were computed to : (i) assess the distance between the stimuli and the corresponding productions, (ii) take account of the structure of each individual's native phonological system(s), (iii) assess the participants' degree of phonetic control.

Results revealed no significant difference between monolinguals and bilinguals but still, proved interesting. Indeed, the ranking of bilingual participants differed across the three indices, suggesting more diversified profiles than among monolingual participants. Actually, the productions' distributions over the vocalic space demonstrated differences in performances among bilinguals, that were captured by the indices. In conclusion, these results confirm the multidimensionality and complexity of phonetic compliance, particularly in bilingual speakers, and emphasize the interest of a multi-componential approach in assessing phonetic compliance, as well as the need for further refinements of the theoretical underlying reflection.

References

- Antoniou, M., Liang, E., Ettliger, M., & Wong, P. C. (2015). The bilingual advantage in phonetic learning. *Bilingualism: Language and Cognition*, 18(04), 683-695.
- Barak, R., & Bialystok, E. (2011). Cognitive development of bilingual children. *Language Teaching*, 44(01), 36-54.
- Cenoz, J. (2003). The additive effect of bilingualism on third language acquisition: A review. *International Journal of Bilingualism*, 7(1), 71-87.
- Delvaux, V., Huet, K., Piccaluga, M., & Harmegnies, B. (2014). Phonetic compliance: a proof-of-concept study. *Frontiers in psychology*, 5.
- Rutgers, D., & Evans, M. (2015). Bilingual education and L3 learning: metalinguistic advantage or not?. *International Journal of Bilingual Education and Bilingualism*, 1-19.
- Sanz, C. (2000). Bilingual education enhances third language acquisition: Evidence from Catalonia. *Applied psycholinguistics*, 21(1), 23-44.