

This study examines the production of Italian and English affricates and fricatives by child Heritage Speakers (HSs) of Italian growing up in the UK with English as their Majority Language (ML). The main aim is to better understand phonological and phonetic category formation in bilingual acquisition. Focusing on alveolar and post-alveolar affricates - segments that are cross-linguistically documented as challenging from an acquisition perspective - the study adapts Flege's SLM predictions regarding the acquisition of 'new' versus 'similar' categories by considering 'new' as the sounds that are in the HL rather than the majority language. In particular, the study examines whether HSs show more target-like acquisition patterns for Italian alveo-dental affricates (/ts, dz/), which lack phonological or acoustic equivalent in English and thus constitute 'new' categories, compared to Italian and English post-alveolar affricates (/tʃ, dʒ/). The latter occur in both languages and differ primarily in their gradient phonetic realisation rather than categorical status and are therefore predicted to pattern as 'similar' categories, leading HSs to show reduced cross-language separation and greater convergence toward English-based representations. Twenty HSs aged 6–11yrs, born and raised in Newcastle upon Tyne, completed picture-naming tasks designed to elicit the targeted phonemes across several controlled phonological contexts in Italian and English alongside 13 monolingual English and 20 monolingual Italian control speakers matched for age and language background. Acoustic data were first transcribed with ASR-assisted scripts, manually labelled and segmented following a four-tier annotation protocol (word, phone, acoustic phases, voicing), before extracting phoneme and phase duration, Centre of Gravity and other spectral correlates, voicing, Amplitude rise time and affricate VOT; the resulting dataset was analysed using Linear Mixed-Effects Models, allowing for fine-grained comparisons across languages and groups. Models included children's variation as random effect and language, phoneme and exposure level as fixed effects. Heritage language exposure was quantified using parental questionnaire data reporting the proportion of Italian input in the home. This measure was converted into a categorical variable and included as a fixed effect in the linear mixed-effects models, with interactions between exposure and phoneme category to assess its effect on acoustic production measures.

Results show that HSs produce robust contrasts for Italian alveo-dental affricates, consistent with SLM predictions for 'new' categories. On the other hand, post-alveolar affricates and fricatives exhibited convergent or merged acoustic realisations in both languages, suggesting bidirectional cross-linguistic influence. HSs appear to map these segments onto English-based 'similar' categories, requiring higher levels of heritage input for accurate realisation. Exposure measures support this pattern: 'similar' categories showed greater sensitivity to HL input than 'new' categories.

The findings contribute to debates on bilingual phonetic category formation by showing that HSs establish 'new' consonant categories for heritage-specific segments such as Italian alveo-dental affricates rather than for ML sounds as typically seen in L2 phonology. This highlights how complex, HL-unique sounds can remain distinct despite limited input, while 'similar' consonantal segments remain vulnerable to convergence.

More broadly, the results underscore the value of child HSs for testing phonetic models in contexts where consonant category formation does not follow standard L2 trajectories and where exposure plays a more primary role than order of acquisition.

#### References:

Celata, C. (2004) 'Acquisizione e mutamento di categorie fonologiche', in *Le affricate in italiano*. Pavia: Franco Angeli.

Chang, C.B. (2021) 'Phonetics and Phonology of Heritage Languages', in *The Cambridge Handbook of Languages and Linguistics*. Cambridge University Press, pp. 581–612. Available at: <https://doi.org/10.1017/9781108766340.027>.

Flege, J.E., Schirru, C. and MacKay, I.R.A. (2003) 'Interaction between the native and second language phonetic Speech Communication', [https://doi.org/10.1016/S0167-6393\(02\)00128-0](https://doi.org/10.1016/S0167-6393(02)00128-0).