The effects of L1/L2 phoneme inventories on L3 perception

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Third language (L3) learners, who have more than one linguistic system from which to draw knowledge in the acquisition of an additional language, may have a learning advantage over L2 learners. In the syntactic and lexical domains, this possible advantage may possibly be attributed to greater metalinguistic awareness, while in the phonological and phonetic domains, such an advantage may exist due to the prior acquisition of relevant phonological and phonetic categories [1,2]. This may also suggest that L3 learners whose L1 and L2 share similar phonological systems may not be at an advantage compared to L2 learners.

To address this hypothesis, the current study examines vowel, fricative, and affricate perception by L3 English speakers in Barcelona and Manresa, Catalonia and Donostia, Basque Country. These speakers acquired Castilian Spanish either natively as the L1 or sequentially as a child L2, alongside the local minority language: Catalan or Basque, respectively. Regarding the vowel systems of the relevant languages, Spanish and Basque share a 5 vowel system (/i, e, a, o, u/) whereas the vowel inventory of Central Catalan is larger and shares more similarities with English (/i, e, ɛ, a, ɔ, o, u/) than either Spanish or Basque. Both Catalan and Basque, however, share the palatal fricative /ʃ/ with English, which is absent from the regional Spanish dialects. Therefore, due to the previously acquired categories, it may be expected that both groups of speakers would perform similarly at distinguishing the fricative, while Catalan speakers may have high accuracy with vowel contrasts, specifically with the mid front vowels and schwa.

Six Catalan-Spanish bilinguals and twelve Basque-Spanish bilinguals were recruited. Participants first completed a language background questionnaire [3] and independent lexical tests of proficiency[4,5]. The Catalan bilinguals were all Catalan dominant, which may assist in countering the previously reported accounts of perceptual "deafness" to the mid-vowel contrasts, following results from Amengual (2016) [6]. The Basque group was more evenly distributed between Basque-dominant and Spanish-dominant speakers. Both groups demonstrated similar intermediate to upper intermediate levels of L3 English. Participants then completed a categorical ABX discrimination task. The phones included in this study were /i, i, ɛ, ɛ, ʌ, æ, ɔ, o, u, (t)s, f, and tf/. Each vowel or fricative/affricate contrast was presented through minimal pairs in two possible combinations: AAB and ABB, three times each. The stimuli were recorded by two female native English speakers; one speaker produced the first and second stimuli in the ABX sequence, and the second speaker provided the third stimulus.

Preliminary results show that both Catalan and Basque bilinguals are highly accurate in distinguishing between fricatives and affricates in English. However, the only vowel context in which Catalan bilinguals appear to have a slight advantage is in discriminating between the mid-front vowels; for example, they do not appear to outperform Basque bilinguals in discriminating /ʌ/ from /ɛ/ or /æ/. The results will be analyzed in more detail, along with results from a production task that was also completed by the same participants. The preliminary results suggest that acquisition of the relevant L3 phones through a previously acquired language may not always confer a significant advantage on the perception of L3 contrasts, and whether L3 learners do indeed demonstrate an advantage in phonological acquisition, and in which contexts, must be further examined.
Phoneme discrimination accuracy

Figure 1. Percent accuracy in ABX discrimination task by Catalan-Spanish bilinguals and Basque-Spanish bilinguals (mean represented by dashed line).