The role of L2 English in the perception of L3 Korean sibilants by L1 speakers of French and Vietnamese

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The PAM-L2 model [1], which is based on the contrast assimilation types found in the Perceptual Assimilation Model [2], states that L2 phonological contrasts whose members perceptually assimilate to different L1 categories will be easier to discriminate. While this outcome is frequently observed (e.g., [3]), it has recently been shown that when the L2 is actually an L3, listeners may assimilate L3 sounds to either their L1 or the L2 (e.g., [4]). Given the ubiquity of English education, most "L2" learners of Korean have already, in fact, had substantial experience with English, making Korean their L3. If these listeners can assimilate Korean sounds to either their L1 or L2, exploring any differences in perceptual assimilation to their L1 and L2 can help us better understand L3 discrimination accuracy.

In this ongoing work, we tested the perceptual assimilation and discrimination of L3 Korean sibilant fricatives and affricate contrasts by L1 speakers of French and Vietnamese with respect to both their L1 and to English. Korean contrasts fortis and non-fortis sibilant fricatives /s*/ and /s/, and fortis, lenis, and aspirated alveolopalatal affricates /tɕ*, tɕ, tɕʰ/. In terms of coronal sibilants, both French and Vietnamese contain an /s/-/z/ contrast, with French also having /ʃ/-/ʒ/. And while Vietnamese has a single affricate /tɕ/, French has none.

Three female speakers of Seoul Korean produced isolated CV monosyllables combining a coronal stop or sibilant /t*, t, tʰ, s*, s, tɕ*, tɕ, tɕʰ/ with the vowels /a, i, u/. These recordings were used as stimuli in two perceptual assimilation (PA) tasks and an AXB discrimination task, administered online using Pavlovia. As analysis is still ongoing, only the results from the /a/ stimuli are presented here. In the first PA task, listeners heard the /Ca/ stimuli (n = 16) produced by two of the speakers and were asked which L1 sound (PA-L1) it was most similar to, whereas in the second PA task listeners heard the same stimuli and were asked to choose the most similar L2 (English) sound (PA-L2). In the AXB discrimination task trials (n = 40), listeners heard three /Ca/ stimuli, each one produced by a different speaker, and were asked whether the first or third sound was the same as the second.

The participants reported on here were only those participants whose English ability was assessed as high. These were advanced L3 learners of Korean whose L1 was also French (FK, n=11) or Vietnamese (VK, n=7), and also naïve listeners with no experience with Korean who were either L1 French (FN, n=11) or L1 Vietnamese (VN, n=9).

Turning first to fricatives, in the case of L1 Vietnamese, both the naïve listeners (VN) and L3 learners (VK) assimilated both /s/ and /s*/ to their Vietnamese /s/ category, but both were able to discriminate them reasonably well (71 to 83%). This can be partially explained by their PA-L2 results, in which VN listeners assimilated Korean /s/ more to English /s/, and Korean /s*/ more to English /ʃ/, but the VK listeners assimilated both Korean fricatives to English /s/ at roughly equally rates. Thus, PA-L2 seems to predict VN listeners discrimination accuracy, but that of the VK listeners is unexplained. In the case of L1 French, however, both the L3 learners (FK) and naïve (FN) listeners assimilated both Korean /s/ and /s*/ to a single /s/ category in both PA-L1 and PA-L2, and their discrimination accuracy was quite low, following PAM/PAM-L2.

Turning next to affricates, the VN listeners assimilated Korean /tɕ*/ and /tɕʰ/ to their Vietnamese /tɕ/ category, whereas Korean lenis /tɕ/ was assimilated mostly to Vietnamese /tɕ/ but also sometimes to /tʰ/. Discrimination accuracy was highest (71%) on the Korean /tɕ*-tɕʰ/ contrast, however, which again suggests a role for English: VN listeners assimilated Korean /tɕ*/ to English /ʧ/, but Korean /tɕʰ/ remained uncategorized, being perceived weakly as both English /t/ and /ʧ/. The VK listeners, on the other hand, assimilated all three Korean affricates to their Vietnamese /tɕ/ category and their English /ʧ/ category, but nevertheless exhibited very high discrimination accuracy of all three contrasts. This result is again not in line with the segment-based predictions

of PAM/PAM-L2, but it is important to note that there may be a role for perceptual assimilation on a tonal level, as Korean lenis obstruents are produced with lower f0 than fortis or aspirated ones [5].

In the case of L1 French, FN listeners assimilated all three Korean affricates mostly to French /t/, whereas their assimilation to English varied: Korean /ʨ/ to English /t/, Korean /ʨʰ/ to English /ʧ/, and Korean /ʨ*/ to no single category. Discrimination accuracy ranged from 61 to 78%. The clearest difference between FN and FK listeners was that FK listeners assimilated all three Korean affricates not to French /t/, but to French /ʃ/ (/ʨ, ʨʰ/) and /ʒ/ (/ʨ*/). Their PA-L2 results were slightly different, with Korean /ʨʰ/ assimilating to English /ʧ/, Korean /ʨ*/ to English /ʤ/, and Korean /ʨ/ to both English /ʧ/ and /ʤ/. FK listeners' discrimination accuracy was highest for Korean /ʨ*-ʨʰ/, reflecting their two-category assimilation pattern in both their L1 and their L2.

Finally, the effect of L3 experience on perceptual assimilation was most visible in the perception of Korean affricates. In Vietnamese, naïve listeners assimilated them less consistently, while L3 learners perceived them nearly categorically as Vietnamese /ʨ/. Their assimilation to English sounds also differed, with naïve listeners sometimes perceiving them as /t/ whereas L3 learners perceived them only as affricates. In French, naïve listeners perceived Korean affricates mostly as stops in both French and English, whereas L3 learners perceived them as fricatives in French and either fricatives or affricates in English.

To summarize, the results of this study suggest the following. First, accuracy on the discrimination of L3 contrasts cannot be predicted only by perceptual assimilation to L1 categories. Second, considering the case here in which /ʃ/ exists in both French and English but not Vietnamese, the existence of L2 categories can be leveraged by L3 learners to discriminate between members of a difficult L3 contrast. Lastly, as illustrated by the perceptual assimilation of Korean affricates by L1 French listeners, phonological knowledge gained early on in L3 learning can influence how L3 sounds are perceptually assimilated, supporting the main claim of PAM-L2.

References

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