Cross-linguistic influence in multilingual speech rhythm

Research on bilingual speech rhythm has mostly focused on identifying differences between native and non-native languages (e.g., Algethami and Hellmuth 2023; Ordin and Polyanskaya 2015). On the other hand, multilingual research on speech rhythm has aimed at establishing sources of cross-linguistic influence in the L3 by examining the rhythmic patterns in the non-native language(s) (Gabriel et al. 2015; Gut 2010). We would like to extend this line of investigations by exploring cross-linguistic influence between three languages in a multilingual repertoire. The following research questions were posed in this study:

RQ1: Do speech rhythm patterns differ between L1, L2 and L3?
RQ2: What are the sources and manifestations of cross-linguistic influence in L3 Norwegian?
RQ3: What are the sources and manifestations of cross-linguistic influence in L2 English?
RQ4: Do the speakers experience L1 drift?

26 trilingual speakers with L1 Polish, L2 English and L3 Norwegian were recorded reading aloud *The North Wind and the Sun* in all the three languages. The recordings were carried out in three separate language blocks. Additionally, three control groups consisting of 22 native Polish speakers, 18 native English speakers and 18 Norwegian native speakers were included in the design. The recordings were forced aligned following manual correction by two trained phoneticians. A PRAAT script was used to obtain segment duration data. Rhythmic patterns were measured with standardized metrics: %V, ΔV, ΔC (Ramus et al. 1999), VarcoV (White and Mattys 2007), VarcoC (Dellwo 2006) and speech rate (number of phonemes per second). Mann-Whitney U tests were performed to verify differences between the groups.

The results indicate cross-linguistic influence from the native language to the L2 and L3 in the form of a significantly lower ΔV in both foreign languages in comparison to the control data suggesting little differentiation of vowel length and/or little vowel reduction that is typical for Polish but not for English and Norwegian. The multilingual participants also demonstrate some degree of L1 drift visible in a lower ΔC and speech rate and a higher %V when compared with the Polish controls. Although the participants speak at a slower rate, they reduce consonant clusters which results in a greater percentage of vocalic segments in the signal when compared to the controls. Consequently, all three languages in the trilinguals' repertoire are produced with more syllable-timed rhythm which is especially visible in differences in ΔV.

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