The perception of Norwegian retroflexes by L1 Polish L3 Norwegian speakers: Discrimination and rated dissimilarity tasks

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This study focuses on the perception of retroflex consonants across Polish, English and Norwegian systems. The degree of perceived cross-linguistic similarity between the learner's L1 and L2 is claimed to mediate discrimination of L2 sounds (Flege & Bohn 2021; Cebrian 2022). The present study takes the idea further to apply in multilingual phonological acquisition of retroflexes and to assess whether the perceived similarity of Norwegian, Polish and English consonants is mediated by presence or absence of retroflexion.

Cross-linguistically, retroflexes are considered to be marked (Greenberg 1966), as they occur relatively infrequently and only in large inventories (Maddieson 1984). Norwegian has a series of coronal consonants which are distinguished by retroflexion: alveolar /t, d, s, l, n/ and retroflex /ʈ, ɖ, ʃ, ɭ, ɳ/, whereas English only has /ɹ/ and Polish sibilants and stops have a controversial retroflex status -- some cues to retroflexion are argued to be manifested in /ʂ/, /ʐ/, /t͡ʂ/ and /d͡ʐ/ and cues to allophonic retroflexion – in /ʈ/ and /ɖ/ (Żygis 2005; Żygis, Pape & Jesus 2012).

33 L1 Polish, L2, English and L3 Norwegian listeners (all advanced classroom setting learners) participated in two perceptual tasks: an oddity categorial discrimination and a rated dissimilarity task (RDT). 180 triads in the L3 Norwegian discrimination task were made up of tokens of consonant categories that contained both retroflexes (i.e., /ʈ ɖ ʂ ɭ ɳ/) and non-retroflexes (i.e., /t d s l n/) in inter-vocalic position. In the cross-linguistic RDT, participants rated (dis-)similarity between Norwegian and English/Polish retroflexes and non-retroflexes in 160 diads, on a scale from 1 to 7.

We aimed to investigate how L1 Polish / L2 English / L3 Norwegian instructed learners rate the differences in retroflexion and place and/or manner of articulation (P&MoA). We hypothesized a hierarchy which demonstrates the gradation of phonological proximity based on four conditions: (1) matching with regard to retroflexion and the same P&MoA, (2) matching with regard to retroflexion and with different P&MoA, (3) non-matching with regard to retroflexion and the same P&MoA, (4) non-matching with regard to retroflexion

with different P&MoA. The results of the RDT confirmed that dissimilarity ratings were arranged according to the above hierarchy.

Further, we investigated the role of language status (L1 and L2) in affecting dissimilarity ratings within each condition. The RDT demonstrated that for L2 English matching retroflexion yielded lower similarity ratings than non-matching retroflexion in the case of different P&MoA. Comparing matching retroflexion with non-matching retroflexion, we found that the perceived similarity of retroflexion is more prominent for L1 than for L2. The listeners were more sensitive to differences in Polish vs. English (2.08 vs. 1.53).

The findings from the discrimination task showed ceiling discrimination of /ʂ/-/s/ (96%), highly accurate scores for /ʈ/-/t/ and /ɖ/-/d/ pairs (both 87%) and 81% for /ɳ/-/n/. Below chance level discrimination was obtained for /ɭ/-/l/ (39%). The results can be accounted for by familiarity with L1 and L2 retroflexion patterns.

We hope to have shed novel light on the non-native speech perception from the multilingual acquisition perspective.

Keywords: crosslinguistic similarity, perception, discrimination, rated dissimilarity, Polish, Norwegian, English, retroflexes

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