What is the relative contribution of speech rate, rhythm and intonation to perceived non-nativeness in a speaker's native language? A study of native English speakers in Austria.

Robert Mayr[1], Ulrich Reubold[2] and Ineke Mennen[2]

[1]Centre for Speech, Hearing and Communication Research, Cardiff Metropolitan University
[2]Department of English Studies, University of Graz

Although research has established that L2-immersed late bilinguals may be perceived as non-native in their L1 (e.g. Mayr et al., 2020), and that listener impressions align with specific acoustic features (Ditewig et al., 2025), no study has yet determined how different prosodic cues contribute to this perception. The present study addresses this gap by investigating the relative contribution of speech rate, rhythm and intonation to perceived non-nativeness in the speech of L1 attriters. Using the prosodic transplantation paradigm, we transferred these prosodic features (and their combinations) from monolingual English speakers in England (*n*=7) to the segmental materials of late bilingual English speakers in Austria (*n*=7), and vice versa (Boula de Mareüil & Vieru-Dimulescu, 2006). The materials consisted of 12 sentences of varying types (e.g., statements, internal continuations, wh-questions, Y/N-questions and declarative questions) elicited via a reading task.

The two groups of speakers differed on all three prosodic cues. Bilinguals showed a higher speech rate, greater rhythm variability, and distinct intonation, including early peaks (H!H*L) – a feature of Austrian German not found in English – and differences in boundary tones and pitch accent frequency. Their speech also contained non-native segmental features. Using Praat's PSOLA method, we transplanted these prosodic cues between monolingual and bilingual speakers, creating eight conditions (one original, seven manipulated). These were fed into an accent rating experiment. A total of 160 monolingual native English listeners from England evaluated the nativeness of each production on a 6-point scale ranging from '1' (certainly native) to '6' (certainly non-native).

Results (Fig. 1) revealed an asymmetric pattern. Transferring monolinguals' speech rate improved the perceived nativeness of bilinguals' speech, while transferring their intonation or rhythm did not. Conversely, transferring bilinguals' intonation or rhythm reduced monolinguals' perceived nativeness, but their speech rate had no such effect. Furthermore, combining cues enhanced these individual effects, and sentence type significantly mediated the ratings. We interpret this as evidence that listeners weigh prosodic cues differently based on segmental quality. With native-like segments (as in monolingual speakers), listeners are sensitive to non-native intonation and rhythm, but not a slower rate. With non-native segments (as in bilingual speakers), their salience overshadows native-like prosody; a faster rate, however, may reduce the salience of these segmental deviations.

References

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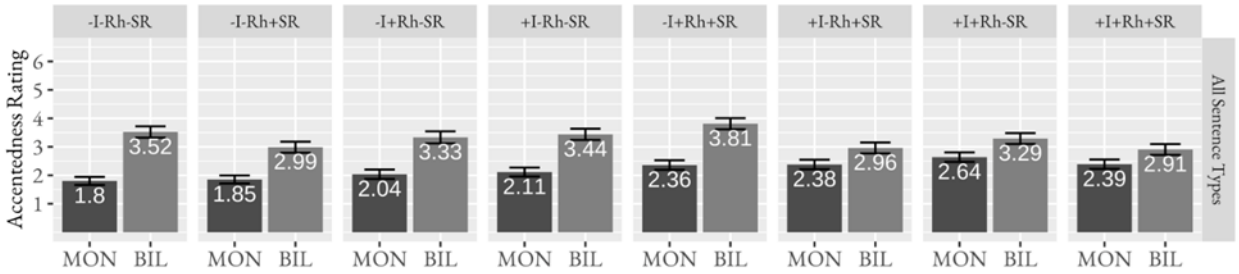

Fig. 1. Mean accentedness ratings (including 95% CIs) by condition; ±I, ±Rh, and ±SR denote whether Intonation, Rhythm, and/or Speech Rate were manipulated (+) or not manipulated (-).