

Intra-speaker variation in the production of Austrian German rhotics

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The phonological class of rhotics is highly variable as rhotics are produced at varying places and with different manners of articulation. In Austrian German a variety of rhotic allophones has been described, including the acoustically and articulatorily vastly different alveolar trill [r] and uvular fricative [ɹ] (Moosmüller et al. 2015). Informal observation suggests that while most speakers tend to produce either alveolar or uvular variants of Austrian German rhotics, there is a considerable amount of intra-speaker variation. The goal of the present study is to assess the extent of this intra-speaker variation. Specifically, the focus is on the impact of the phonetic environment and word stress on the chosen rhotic variant and the impact of these factors on the phonetic detail of rhotic realizations (e.g., the number of vibrations in a trill or the amplitude of noise in a fricative). We will record audio and Ultrasound Tongue Imaging (UTI) data of approximately 30 participants. Participants will be aged 18–35, reside in Austria and speak Austrian German as their native language. Participants will be selected so that roughly half will mainly use alveolar variants (typically trills or taps) and half who use uvular variants in their daily lives. Each participant will read 319 German target words in a short phonetically neutral pre-context (i.e., ending on Schwa). Rhotics always occur in syllable onset (since in coda it is typically vocalized) in either stressed or unstressed word position. We will record rhotics in syllable-initial position (e.g., “Regen” (rain) or “einrahmen” (to frame)) as well as in consonant clusters (e.g., “Brett” (plank) or “einkreisen” (to circle)). The consonants include different places of articulation (labial (/p b f/), alveolar (/t d/), post-alveolar (/ʃ/), velar (/k g/)). Additionally, the target words are controlled for the vowel following the rhotic. We hypothesize that rhotics in stressed and syllable-initial positions will be produced with “stronger” variants of the rhotics than the ones within consonant clusters or unstressed position (see Reinisch and Mitterer 2023, who suggest differences in the “strengths” of rhotics). Speakers of alveolar and uvular rhotic variants may show different marking of strong rhotics, for example, by enhancing either the number of a trill’s vibrations, or the fricative’s noise amplitude. Speakers of uvular rhotics may also alter their manner of articulation by producing a uvular trill instead of a fricative to mark prominence. Additionally, the phonetic environment is expected to influence tongue placement during the articulation of rhotics. In sum, the study will explore to what extent intra-speaker variation of rhotics is constrained by phonetic context and word stress. This has the potential of creating a link between segmental variation and word-level prosody.

References

Moosmüller, Sylvia; Schmid, Carolin; Brandstätter, Julia (2015): Standard Austrian German. In: *Journal of the International Phonetic Association* 45 (3), S. 339–348. DOI: 10.1017/S0025100315000055.

Reinisch, Eva; Mitterer, Holger (2023): Are alveolar trills perceived as "strong" rhotics? In: Proceedings of the 20th International Congress of Phonetic Sciences (ICPhS 2023). Prague, 57–61.