German Final Devoicing revisited:
Perceptual effects from a voicing continuum

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Final consonant devoicing in German is seen in syllable-final (coda) position, where voiced consonants surface as voiceless consonants (e.g. German Ra[t] ‘advice’ vs. Ra[t] ‘wheel’, from original [d], Brockhaus, 1995). The nature of final devoicing is still debated: Is the devoicing process complete or does it leave traces of the original voicing? In this study, we were interested whether final devoicing would show lexical (top-down) effects in a typical consonant discrimination task commonly used to illustrate categorical perception. We expect that if final devoicing is indeed of phonological nature, the category boundary in a voicing continuum will shift towards the voiceless end when acoustically identical consonants are presented in coda position, compared to onset position (similar to a lexical effect in Ganong, 1980). We therefore created a voicing continuum between [t] and [d] and applied a novel method of parametrically changing not only voice-onset times (VOTs), but also further relevant acoustic cues for voicing perception: preceding vowel duration, closure duration, and amount of aspiration after closure release. The 10-step continua (from [t] to [d] and from [d] to [t]) was based on naturally-produced pseudo-words, where the consonants either occurred in coda (e.g. “Möt”) or onset position (e.g. “Möti”). A total of three different pseudo-words with four different word endings were used (no vowel, [i], [u], [o]), yielding 264 different stimuli that were repeated 5 times for each participant (N=12). Discrimination results showed a category boundary after the 5\textsuperscript{th} continuum exemplar in the pseudo-words with syllable-onset consonants. This boundary was significantly shifted towards the voiceless end in pseudo-words with coda consonants. That is, acoustically identical, ambiguously voiced consonants were more readily identified as voiceless when they occurred in coda position. We thus provide evidence for a lexical effect in German final devoicing and interpret this as indication for a phonological process.