

Final devoicing in German is incomplete – but the mental lexicon has to agree

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Phonological neutralization occurs, when a contrast between two sounds is canceled out in certain environments, so that both sounds are realized the same. A textbook example for neutralization is German final obstruent devoicing: The phonemic contrast between voiced (lenis) /b d g v z/ and voiceless (fortis) obstruents /p t k f s/ is neutralized in syllable- and word-final position, so that both series are realized as voiceless [1]. Various studies have repeatedly questioned, whether the voicing contrast is truly neutralized, with experimental evidence suggesting that a difference is still present in production – mainly evident in the duration of the preceding vocalic portion [2, 3, 4]. Another line of research is concerned about whether such alternation rules really apply without exception, arguing for phonological similarity and knowledge of phonotactics within the mental lexicon actually determining whether an alternation takes place or not [5, 6].

The present pilot study attempted to bring both incomplete neutralization and phonological similarity together, by testing whether underlying voiced final plosives /b̥ d̥ g̥/ and underlying voiceless final plosives /p t k/ in German indeed differ in production, by taking the distribution of the plosives into account. More specifically, whether complete or incomplete neutralization would occur was speculated to depend on the number of voicing alternations in German for a given context. If words sharing a specific final rhyme often alternate between voiced and voiceless plosives (= plosives are underlying voiced), neutralization should be incomplete (due to information about the voiced segment resonating in the mental lexicon). If words sharing a specific final rhyme rarely alternate (= plosives are underlying voiceless), neutralization should be complete, as the voiceless series is highly favored within this context.

13 German native speakers listened to auditorily presented plural pseudowords, for which they had to produce the corresponding singular forms (e.g. /kʊmbə/ → [kʊmb̥] vs. /kʊmpə/ → [kʊmp]). The participants utterances were recorded and the vocalic portions before the final plosives were measured with Praat [7]. The results for devoiced and voiceless items, separated by alternation-context (more often alternating rhymes vs. less often alternating rhymes) are shown in 1. For both contexts a separate linear mixed effects model was fitted, to test for incomplete neutralization effects. While the difference between underlying voiceless and voiced plosives was significant for the more often alternating rhymes ($p = 0.02151$), no difference was found for the less often alternating rhymes ($p = 0.1449$). These results suggest that German native speakers are aware of the phonotactic distribution of voiceless and voiced final plosives and that these distributional differences affect whether the voicing contrast is truly neutralized or not: Final devoicing is therefore complete, but only in contexts, where underlying voiceless plosives are more frequent. Contexts, in which underlying voiced plosives occur more often resist complete neutralization. To conclude, the production results suggest that incomplete neutralization effects arise due to the distribution of underlying voiced and voiceless plosives in the mental lexicon.

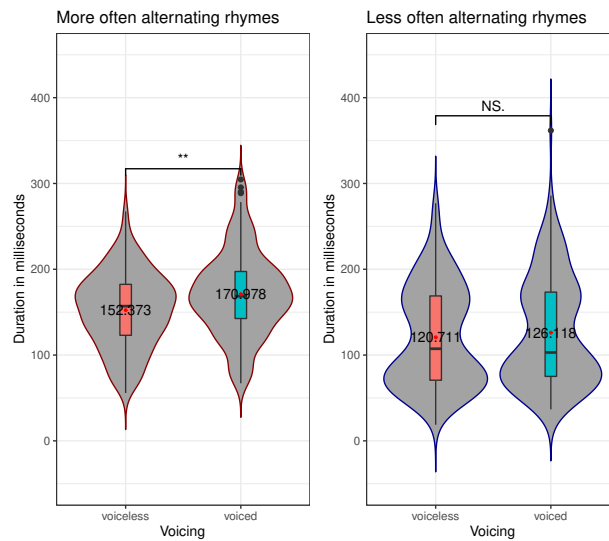


Figure 1: Measured durations for underlying voiced and voiceless plosives for more often alternating rhymes (left) and less often alternating rhymes (right).

References

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