Effects of L2 Experience on the Realization of L1 Phonological Neutralization: Incomplete Devoicing in Bulgarian-English Bilinguals

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A large body of work has investigated the extent to which word-final devoicing, in languages that feature this phonological process, is phonetically complete ([1–9]). Where incompleteness occurs, it takes the form of small durational differences in the direction of the underlying contrast—for example, shorter closure duration for the final obstruent and longer duration for the vowel preceding it, in German /ʁaːd/ *'wheel'* versus /ʁaːt/ *'advice'* ([6,10]). Though small, the differences in question have been found statistically significant in the majority of studies with enough power to reasonably detect them ([10,11]). In the present study we investigate the phonetic realization of final devoicing in Bulgarian, which, to our knowledge, has not been reported on in the incomplete neutralization literature previously.

In addition to confirming the existence of incomplete neutralization in this language, we sought to explore the extent to which it is sensitive to speakers' contact with English, a language lacking final devoicing. Although researchers have often noted the likely relevance of second language (L2) experience in incomplete neutralization ([5,12]) we are aware of only one study that investigated it systematically. In particular, [13] compared the productions of Russian monolinguals with Russian(L1)-English(L2) bilinguals and found that, while multiple acoustic measures showed monolingual Russian speakers' final devoicing to be incomplete, native Russian speakers with proficiency in L2 English showed even less completeness. In our study, we compared the productions of native Bulgarian speakers residing in Bulgaria versus those residing in the US.

Data come from a production study that is part of a larger investigation into phonological neutralization in Bulgarian. Thirty-four native Bulgarian speakers (half residing and recorded in the United States, half in Bulgaria) produced 13 minimal pairs contrasting in the voicing status of a final stop or fricative (e.g., /rɔg/ *'horn'*, /rɔk/ *'rock'*; /kub/ *'cube'*, /kup/ *'bunch'*; /ʃɛv/ *'seam'*, /ʃɛv/ *'boss'*). Speakers read 3 repetitions of a stimulus list presented sequentially on a computer screen, on each trial reading the item both in isolation and in a carrier sentence. The following acoustic measurements were taken for targets words: duration of the final obstruent's closure/frication; duration of voicing into closure/frication (calculated as a proportion of the obstruent's duration); duration of the vowel preceding the final obstruent; and the duration of a release burst (for final stops, when present). As analysis is still in progress, we preview patterns rather than statistical results, and do so for a subset of the data (N=6 out of the 17 speakers recorded in Bulgaria; 17 out of 17 of the speakers recorded in the US).

First, although still exploratory at this point, durational patterns consistent with incomplete neutralization were apparent for speaker groups in both locations, and of the small magnitude that is typically reported in studies of this phenomenon. Speakers residing in the US, however, showed less complete neutralization than speakers residing in Bulgaria, on three of the four acoustic measures—all but release burst duration. Second, among speakers residing in the US, the length of residence was correlated with two measures of incompleteness, namely preceding vowel duration and the duration of the final obstruent itself (Figure 1). Notably, these results very much resemble the patterns reported for Russian incomplete neutralization in [13]. We will discuss the implications of such findings for theories of the mechanism underlying subphonemic differences like incomplete neutralization, which have been argued to reflect lexical activation rather than a functional/communicative function (e.g., [14]).

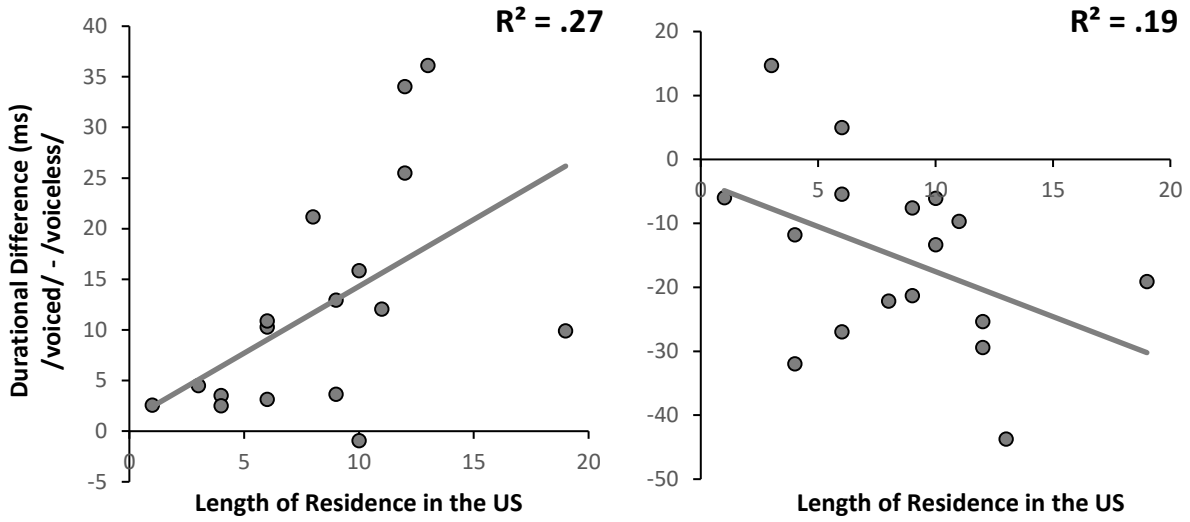

Figure 1. *Degree of incomplete neutralization as a function of residency in the US: Mean differences in preceding vowel duration (left) and final obstruent duration (right) for tokens with underlyingly voiced final obstruents relative to those with final voiceless ones.*

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