J. Phonetics
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"The link between tongue root advancement and the voicing effect" (S. Coretta)
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Recommendation: Reject, or very major revisions. In my view, the study is neither well thought out nor executed.

1. What is the research question and the hypothesis?

The research question seems to be this: When tongue root advancement (henceforth here ATR) provides an active mechanism for facilitating voicing of voiced stops, does it trigger vowel lengthening? This is an interesting, novel, and not implausible, idea. However, the specific hypothesis tested here is a relatively weak one: When vowel lengthening is seen, tongue root advancement will also be seen. This is a qualitative hypothesis; there is no quantitative prediction about the amount of vowel lengthening vs the amount of ATR, and no explicit reason for why the vowel must be lengthened to allow ATR. Indeed, on p. 7-8 the author states that no "mechanic condition" is hypothesized.

Presumably the only reason to lengthen the vowel for ATR is if the ATR starts during the vowel, and continues until or into the stop closure. Thus the time interval of interest is during the vowel – does the tongue root advance during the vowel, making the vowel longer? The hypothesis should be explicit about this.

2. Problems with the study

The paper never mentions, let alone takes into account, the distinction between active and passive tongue root movements, discussed at length by e.g. Rothenberg 1967 and Westbury 1983. Again, the only time interval of interest is during the vowel, since during the vowel any ATR is unambiguously active. In contrast, during the stop, ATR could be passive (though controlled by vocal tract wall tension), or active. Passive expansion helps voicing, but is entirely in response to the rise in oral pressure, so is necessarily entirely within the closure interval. Westbury distinguishes between shorter passive expansion, where the vocal tract tension has not changed so the expansion is small, vs. longer actively-passive expansion, where the vocal tract tension has been relaxed to allow larger passive expansion.

Another major gap here is the existing popular account of vowel lengthening, the so-called "duration compensation" view of the relation of vowel to consonant duration. This relation will be seen in languages whose prosody favors keeping a constant VC duration. On this account, vowel and closure durations are negatively correlated – because voiced closures are typically short (so that closure will be largely voiced), preceding vowels are made long; and because voiceless closures are typically long (because glottal spreading takes time), preceding vowels are made short. The proposed ATR account has to be compared with this existing account.

The choice of Italian and Polish as the test languages can be considered relative to the existing literature on duration compensation. Ideally, neither language should show duration compensation, so that this alternative account is not available. Of course this can, and should, be tested in the present dataset, but it would also have been advisable to check previous studies on this point. The literature suggests that:

- In Italian, closure durations of voiced and voiceless stops do NOT differ, so probably there is not fixed VC duration – this language is a good one for this study.

- In Polish, however, closure durations do differ, so there may be compensation, and thus a potential counter-explanation for the vowel duration difference found here.

In any event, the choice of Polish is problematic in a more obvious way. Polish is supposed to represent languages in which vowel duration does not differ before voiced vs. voiceless consonants. However, a literature review on this point would have shown that this null result is not so secure. True, the 24 pairs of words Keating measured showed no difference, but some later studies have found a difference. Also, it has been suggested that Polish dialects differ in this respect (and the speakers in this study come from different dialects). If the literature had been reviewed, then the result in the present study, that Polish does show a difference, would not have come as a surprise, and rendered the intended test mostly moot.

Summarizing the points made above, on three crucial issues the prior literature was not consulted.

As noted above, the hypothesis is entirely qualitative, and therefore the analysis is too: yes/no there is an overall acoustic vowel lengthening effect, and yes/no there is an overall ATR. Even with this very coarse analysis, the results are quite mixed in each language. The discussion then seems to pull the rug out from under even the weak hypothesis – there may or may not be some sort of relation between the two measures.

3. Smaller points

The speech materials used in the study need to be described better. First, where was stress placed by the Italian speakers? (It's crucial that it be on the initial syllable, just like in Polish here, and while that is very likely the case, it needs to be said.) Second, the word after the test word in the frame sentence is longer in Italian than in Polish. It is therefore possible that Italian speakers made a small phrase break after the test word. Again we need to be reassured that this was not the case. Finally, we are never told whether all of the 288 voiced stops in the sample were, in fact, voiced (and whether they are voiced throughout the entire closure). While Table 2 lists various acoustic measures that are not reported in the paper, closure voicing is not among them.

3.2. I would need to read the references cited here to understand the methods for ultrasound analysis.