

## Everything You Always Wanted to Know About VOT in Hungarian

In generative phonology, there has been considerable interest in what features are involved in laryngeal contrasts and what types of assimilations occur. Many claims in the literature have been based on impressionistic transcriptions or on vague descriptions, making it difficult to determine what the phonetic facts are. Careful acoustic studies often show that the data are very different from what might be expected, given discussions in the literature. Consider German, Swedish and Dutch. Lombardi (1999), among many others, claims that German word internal clusters may contain stops that disagree in voice. Yet as shown in Jessen & Ringen (2002), all such clusters are voiceless (either with or without aspiration of the second stop). Helgason & Ringen (2008) show that Central Standard Swedish has both prevoicing and aspiration, a type of laryngeal system that has been claimed not to exist by Lisker & Abramson (1964), among many others. And, finally, van Alphen & Smits (2004) show that in Dutch prevoicing is only present in 75% of the word-initial lenis stops in productions of their subjects when reading a word list, a surprising result for a language which is supposed to contrast prevoiced stops with short-lag stops in word initial position. There has been no phonetic study of the two-way laryngeal contrast in Hungarian. Without such data, it is impossible begin to make cross-linguistic comparisons. For example, is it usual for a language with a [voice] contrast (such as Dutch) rather than an aspiration contrast (as in German) to have prevoicing in only 75% of word-initial lenis stops?

In this paper we present the results of our investigation of VOT in Hungarian initial, medial and word-final stops, as well as in stop clusters and on difference between males and females. We recorded 18 speakers of Hungarian, 9 males and 9 females in Budapest, Hungary. Some of our results are as follows: We found the expected VOT durational difference in the fortis stops:  $k > t > p$  (mean VOT for fortis stops was: velars, 37.6 ms; dentals, 16.0, ms; and bilabials, 9.7 ms.). But the expected durational difference for the lenis stops,  $b > d > g$  was not found; although the velars were shorter than the dentals and bilabials, the differences were not significant (mean VOT for lenis stops was: velars, -89.6 ms; dentals, -95.1 ms; bilabials -94.6 ms.) Prevoicing was found in of all word-initial lenis stops; these results are similar to those found in Swedish (Helgason & Ringen, 2008) where 93% of the subjects' stops had prevoicing longer than 10 ms and rather strikingly different from the results for Dutch (van Alphen & Smits, 2004). We found that females had significantly longer prevoicing than did the males (females -100.9 ms, males -84.3 ms.) which is different from what was found by Helgason & Ringen (2008) where men had longer prevoicing than did women.

Some studies of intervocalic voicing in German report that speakers sometimes have fully or partially voiceless lenis stops in intervocalic position (see Jessen 1998, pp. 57-8). It may be that a difference between languages that have *active* voicing of stops (as in Hungarian) and one with *passive* voicing (as in German) is that intervocalic stops show significant variation in voicing (as in German) when the voicing is passive, and less variation when the voicing is active. Since it is clear that Hungarian is a language with active voicing, one of the questions we wanted to investigate was the amount of variation of intervocalic lenis stops. In intervocalic position, 95.5% of lenis stops were fully voiced. This is in contrast to what has been found in German. For example, Bothorel-Witz & Pétursson (1972) report that in intervocalic position before schwa, one third of the lenis stops /d/ were voiceless for most of the closure duration.

## References

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