Onset cluster repair in Turkish: an ultrasound study

Phenomenon: Native Turkish phonology prohibits complex onsets, and onset clusters in loanwords are repaired with a vowel previously described as epenthetic (Clements & Sezer (C&S) 1982, Yıldız 2010). C&S report that the inserted vowel systematically participates in vowel harmony, taking its backness and rounding from the vowel that follows it. This suggests harmony in Turkish can act from right to left, contrary to the common claim that Turkish harmony is left to right only (e.g. Underhill 1986), and in accordance with Bakovic's (2000) proposal that directional harmony does not exist.

However, the onset-repairing vowel offers some surprises. Turkish epenthetic vowels are present in orthography; stable across speech styles; and consistently harmonic. But the onset-repairing vowel is unwritten; absent in careful speech; and often disharmonic. The TELL¹ corpus shows that [ɯ] is often inserted before /i/ and /e/, violating backness harmony, as well as before /o/, violating rounding harmony, in both cases creating vowel sequences that occur nowhere else in Turkish. I hypothesize that the onset-repairing vowel is intrusive (Hall 2006) – inserted post-phonologically, during articulation. Intrusive vowels, having no phonological presence, lack gestural targets, unlike phonologically present epenthetic vowels.

Experiment: To test this hypothesis, I conduct an ultrasound study of Turkish complex onsets – the first instrumental study of this topic. I follow the methodology of Davidson & Stone (2003; D&S). Their ultrasound study of English articulation of illicit voiced fricative-stop clusters demonstrated that the schwa in the pronunciation of zgama as [zagama] is intrusive, by comparing the gestural targets in the articulation of triplets like succumb ~ scum ~ zgama.

This study compares the gestural trajectories of minimal pairs like pratik [pɯratik] 'practical' and pirasa [pɯrasa] 'leek', to determine whether the [ɯ] in pratik has a gestural target like the /ɯ/ in pirasa. In addition, I manipulate speech style and word familiarity to determine how these factors affect the rate of vowel insertion. Finally, I investigate the strength of vowel harmony in the inserted vowel by varying the lexically present vowel, and follow up on C&S's report that the consonants in the cluster play a role in determining the quality of the inserted vowel by using words with different initial consonants.

Significance: This study contributes in three areas. First, it probes the phonological status of the Turkish onset-repairing vowel, thereby testing the validity of phonological arguments that have been made on the basis of its harmonic behavior. If the onset-repairing vowel has its own gestural target and is not affected by speech style or word familiarity, it is epenthetic, and its behavior does bear on questions about harmony as a phonological process. But if the onset-repairing vowel lacks a gestural target, it is intrusive, and its harmonic behavior is due to coarticulation, not phonological harmony. Alternately, if the vowel has a gestural target but is still affected by speech style and word familiarity, this would reveal an interesting case of a phonological process being affected by paralinguistic factors.

Second, this study provides new, reliable Turkish data, by collecting repeated productions by multiple speakers of methodically chosen minimal pairs of words.

Lastly, my study bears on the extensibility of the D&S methodology to other phonological problems. The use of ultrasound in addressing phonological questions is relatively new, and little work in the style of D&S has been done on any language. Methodological contributions in this area of phonetics/phonology are therefore valuable.

¹ Turkish Electronic Living Lexicon (Inkelas et al. 2000)
References


