Spontaneous Hungarian: Locality Restrictions on Vowel Harmony

Izabel Ilie & Juliette van Steensel (UCL)

This paper investigates the effect of locality on the learnability of front-back vowel harmony in an artificial language learning experiment. We found that, unlike what has been shown to be the case for consonant harmony, vowel harmony is not learned in either local or unbounded patterns. The learnability pattern we found resembles vowel harmony patterns found in Hungarian and confirms previous research on the impact of intervening, non-participating vowels on the learnability of vowel harmony.

Many of the world's languages feature vowel or consonant harmony (Rose & Walker, 2011:240). Locality plays a role in these harmony processes; harmony can be either adjacent or non-adjacent. Adjacent does not mean that harmonising segments have to be right next to each other; rather, it means for no non-participating consonants or vowels to intervene between the harmonising segments.

In consonant harmony, locality patterns seem to be restricted to only two types: *local* harmony or *unbounded* harmony. In local patterns, consonant harmony applies only to adjacent consonants, as CVCV**C**V-**C**V, wherein the emboldened consonants assimilate. In unbounded patterns, harmony applies in adjacent consonants and also when any number of other consonants intervene between the triggering and undergoing consonant, as in CVCV**C**V-**C**V as well as CV**C**VCV-**C**V.

McMullin & Hansson (2014) suggest that the locality restrictions may be explained by the learnability of these patterns in consonant harmony. By exposing learners to an artificial language with sibilant harmony, McMullin & Hansson find that if learners are exposed to only local consonant harmony, they learn only a local harmony pattern. In other words, they do not generalise the harmony pattern to cases of non-adjacent harmony. However, if a learner is exposed to non-local harmony, but not to adjacent harmony, they will nevertheless generalise this to acquire a pattern of unbounded harmony, applying across the entire domain. McMullin & Hansson thus suggest that learnability plays a role in the observed typological distribution of consonant harmony patterns.

Vowel harmony and consonant harmony seem like similar processes on the surface. However, Finley (2015) found that though non-local vowel harmony could be learned in an artificial language learning experiment, these were more difficult to acquire than local vowel harmony patterns. Though this suggests learnability differences between vowel and consonant harmony, no direct comparison was made between vowel and consonant harmony in this paper.

To determine if there are learnability differences between vowel and consonant harmony, our paper explores whether McMullin & Hansson's findings for consonant harmony can be replicated for vowel harmony. Learners were exposed to front-back suffix-to-stem vowel harmony with the triggering vowel at different distances from the suffix. Participants were split into three groups, receiving different types of exposure to vowel harmony: a short-distance (SD) group was exposed only to local vowel harmony and a medium-distance (MD) group was exposed to vowel harmony with one intervening non-participating vowel. Finally, a control

group (controls) was used to determine any underlying bias towards a particular vowel harmony system. Learners were then tested on items with SD, MD, and long-distance (LD) harmony triggers.

We hypothesised that the same pattern would be observed as was found by McMullin & Hansson (2014). Namely, that participants exposed to a SD harmony pattern would acquire only local harmony, and that the MD would generalise the harmony pattern they learned to be unbounded, applying regardless of the number of non-participating intervening vowels.

Our results were unexpected. Unlike what was found for consonant harmony, the SD group showed learning of both SD and MD harmony, but not of LD harmony. Additionally, the MD group did not learn any vowel harmony. These results disprove our hypothesis that the SDs would acquire a local harmony pattern and that the MDs would acquire unbounded harmony, as McMullin & Hansson (2014) found for consonant harmony.

There is indication in the literature and intuition among linguists that vowel harmony and consonant harmony, despite being superficially identical processes, are far from identical. Though results were not as we anticipated, work on transparent vowels (Finley, 2015) as well as data on patterns found in Hungarian vowel harmony (Hayes & Londe, 2006) is in line with our findings. The fact that our results are so different from McMullin & Hansson's findings on consonant harmony, despite a very similar methodology, thus suggests that vowel harmony and consonant harmony may indeed be fundamentally different, even though the processes appear similar. Despite possible limitations, these results open many interesting avenues for future research.

References:

Finley, S. (2015). Learning Nonadjacent Dependencies in Phonology: Transparent Vowels in Vowel Harmony. *Language*, *91*(1), 48-72.

Hayes, B., & Londe, Z. C. (2006). Stochastic phonological knowledge: the case of Hungarian vowel harmony. *Phonology*, *23*(1), 59–104.

McMullin, K., & Hansson, G. Ó. (2014). Locality in long-distance phonotactics: evidence for modular learning. In *Proceedings of NELS* (Vol. 44, pp. 1-14).

Rose, S. & Walker, R. (2011). Harmony Systems. In J. Goldsmith, J. Riggle & A. C. L. Yu (Eds.), *The Handbook of Phonological Theory* (2nd ed., pp.240-290). Blackwell Publishing.