Marked Coda Clusters are learnt more easily when they are morphonotactic

Irene Böhm & Nikolaus Ritt

University of Vienna

We report an iterated learning experiment designed to test the hypothesis that coda consonant clusters – particularly highly marked ones – are learnt more easily when they occur exclusively across morpheme boundaries and thereby function as unambiguous signals of morphological complexity (cf. Dressler & Dziubalska-Kołaczyk 2006).

The experiment adopts a design developed in the Language Evolution and Computation Research Group at Edinburgh University (cf. Kirby, Cornish & Smith 2008). Participants are asked to learn word forms of an artificial mini language that end in a coda consonant cluster and to reproduce these pseudo-word forms from memory. The outputs of one participant serves then as learning inputs to the next one, and the procedure is repeated 9 times, simulating a sequence of 10 iterated learning events. The iteration of learning events typically amplifies the effects of even weak preferences.

To test the hypothesis that coda clusters will be learnt more easily if they occur exclusively across morpheme boundaries, the participants in our experiment had to learn both singular and plural forms of the artificial words we had designed. In the first of three experimental conditions, our artificial language included singular word forms that ended in morpheme internal (highly marked) /tk/-clusters, and plurals that were formed with vocalic suffixes. For example, a word for 'mouse' would be /potk/, and its plural /potk+a/. In that condition, all final /tk/ clusters were phonotactic. In a second condition, our language included singular forms that ended in voiceless obstruents, and plurals that were formed with a consonantal /-k/ suffix: for example, the word for 'mouse' would be /pot/, and its plural /pot+k/. In that condition, all final /tk/-clusters were morphonotactic and unambiguous signals of morphological complexity. In a third condition, we also included plurals that were formed by /-k/ suffixation, again yielding plurals such as /pot+k/ mice' from singular /pot/ 'mouse'. However, condition 3 also included singular forms that ended in stem-internal /tk/ and that took zero plurals, e.g., /ma:tk/ 'frog' vs. /ma:tk-Ø/ 'frogs'. Thus, in condition 3, there were both phonotactic and morphonotactic /tk/ codas, which reduced their ability to signal morphological complexity.

The results of our experiment provided unambiguous support for the hypothesis we intended to test. In all conditions except condition 2, final /tk/ clusters were lost within few participant generations, and only when they occurred exclusively across stem-suffix boundaries, were they retained throughout the learning chain.

After reporting our results, we discuss a few limitations of the method, such as the fact that all participants were adults, so that any conclusions about first language acquisition must remain tentative.

References:

Dressler, Wolfgang U.; Dziubalska-Kołaczyk, Katarzyna. 2006. "Proposing morphonotactics". *Wiener Linguistische Gazette* 73, 69–87.

Kirby, Simon; Cornish, Hannah; Smith, Kenny. 2008. "Cumulative cultural evolution in the laboratory: An experimental approach to the origins of structure in human language". *Proceedings of the National Academy of Sciences* 105(31), 10681–10686.