

The origins of /u/-fronting: A cross-linguistic study

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This talk presents a cross-linguistic analysis of /u/-fronting based on acoustic and lexical data. /u/-fronting is a sound change whereby a back /u/ shifts towards a front realisation. We examine three potential conditioners of /u/-fronting: (i) the prevalence of preceding coronals/palatals; (ii) high front rounded competitor vowels; and (iii) language contact. We aim to determine the extent to which language-internal and external factors can impact the actuation of sound change.

The question of actuation is fundamental to the study of sound change: why does a given change occur in one language but not another (Weinreich et al., 1968)? Models of sound change actuation often favour predominantly internal or external modes of explanation (cf. Stevens & Harrington, 2014 *vs.* Cohen Priva, 2017). Since claims about the conditioning of sound change are rarely based on quantitative evidence from a robust cross-linguistic sample, it is difficult to adjudicate between different models (but see e.g. Wedel et al. 2013).

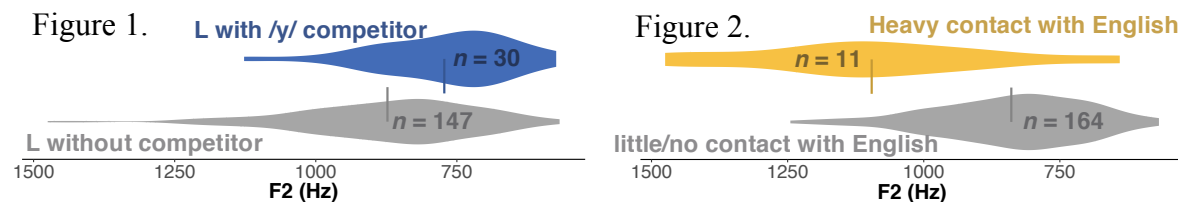
We address this issue by testing hypotheses about sound change in a database of vowel formant measurements from more than 180 languages (compiled by Becker-Kristal, 2010) and lexical statistics from around 40 languages (Key & Comrie, 2015). Our focus is on F2 measurements for vowels transcribed as /u/ and lexical statistics about their typical phonological contexts.

Hypothesis I is that /u/-fronting is more likely to occur in languages where /u/ is frequently preceded by coronals/palatals (Harrington et al., 2011). This hypothesis was tested in two ways. First, we looked for a correlation between the phonetic realisation of /u/ (as reflected by F2) and the relative frequency of preceding coronals/palatals. There is no evidence of a correlation between these two measures ($r = -0.2$, with 0 well within the 95% Bayesian CI). We then compared the proportion of preceding coronals/palatals in 7 languages where /u/-fronting is historically attested (e.g. French, Albanian) and 34 languages where it is not. The average proportion is 58% in /u/-fronting languages and 49% elsewhere. Although no strong conclusions can be drawn from such a small data set, this difference provides some degree of evidence for *Hypothesis I* (95% Bayesian CI = [3.5%, 10.0%] in a Bayesian logistic regression model).

Hypothesis II is that high front rounded competitor phonemes (/y, ʉ/) inhibit /u/-fronting (Harrington et al., 2011). Figure 1 shows the distribution of by-language F2 averages for /u/ grouped by presence of /y, ʉ/ in the same inventory. Languages with /y, ʉ/ show substantially *less* fronting of /u/ than languages without these vowels ($\beta = -80$ Hz, 95% Bayesian CI = [-21, -127]).

Hypothesis III is that heavy contact with English (a language with a high degree of /u/-fronting) leads to more /u/-fronting. We compared F2 values for /u/ in 11 languages spoken in countries where English is used regularly by the majority of the population *versus* 164 languages spoken in countries where English is not the primary language. Figure 2 shows this comparison: contact with English has a strong favouring effect on /u/-fronting ($\beta = -254$ Hz, 95% CI = [164, 347]).

Our results suggest that internal and external factors play important and complementary roles in conditioning /u/-fronting. They therefore support models of sound change actuation that do not overemphasize social or structural modes of explanation.



References

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