

On-going developments in the analysis of on-going sound change: answering new questions using new methods

This paper reports on the results of a four-year project investigating language variation and change in Dutch, focusing on how methodological innovations can help us linguists answer new questions. The phenomenon under study is an on-going vowel shift whereby /e:,ø:,o:/ are becoming diphthongs [ei,øy,ou], resulting in a push chain which subsequently moves /ei,øy,ou/ towards [ai,øy,au]. These two phonetic shifts are blocked before coda /l/, giving rise to new allophone pairs such as [ei#~e:t]. In addition, this vowel shift remains confined to the variety of Dutch spoken in the Netherlands, whereas the (mutually-intelligible) Dutch spoken in Flanders (the northern half of Belgium) has not been affected by these changes.

The project investigated the diffusion of these sound changes throughout both social structure, i.e. the regional differences between and within the Netherlands and Flanders, and linguistic structure, i.e. individuals' phonological and phonetic grammars. Regional differences were assessed by means of the 'teacher corpus', a comprehensive data set collected by Adank (2003), sampling 160 individuals from four regions in the Netherlands and four regions in Flanders. A comparison is made of the phonological behavior of the vowels in question before /l/ versus before nonapproximant consonants. This is a phonetically challenging enterprise, because it turned out impossible to segment the vowel-[l] sequences. I will show that (and how) the formant trajectories can nonetheless be compared by modeling the vowels' whole formant trajectories within a generalized additive model (Wood 2017) and comparing trajectories and peaks of trajectories.

Following the results of the corpus analysis, the perception and production of these vowels was investigated in lab experiments. This time, the object of investigation was the diffusion of the sound changes throughout the linguistic systems of individuals, particularly of Flemish individuals who have lived in the Netherlands for a long time (years -- decades), and who therefore might have accommodated to these sound changes (cf. Evans & Iverson 2007). Participants were 45 speakers of Netherlandic Dutch, 45 speakers of Flemish Dutch, and 18 speakers of Flemish Dutch who had migrated to the Netherlands up to 30 years ago. Production (word-list) and perception data (phoneme decision along a continuum) were collected. Analyses were performed not at the group level, but at the individual level, by looking for clusters in the random effects obtained from a mixed-effects model. The production data show that eight of the eighteen Flemish Dutch speakers have accommodated to the sound changes in Netherlandic Dutch. In perception, no clear results are found at the individual level, but at the group level, significant effects emerge. In addition, significant correlations are found between production and perception.

The results from the production data give rise to a further question: what factors separate the individuals who have acquired the sound changes from those who have not? This is investigated by means of a background questionnaire; results from a linear regression analysis on the responses reveal significant effects of length of stay, physical factors such as concentration, and the number of friendships. These results expand on previous findings by Yu (2013) on the role of socio-cognitive processing in sound change and Lev-Ari (2018) on social network size.

In sum, the present study shows how recent innovations in linguistic and statistical methodology make it possible to answer new questions. This has implications for our analysis of linguistic data, but also for our knowledge of the processes underlying language variation and change.

References

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