

An acoustic analysis of the Norwegian merger of /f/ and /ç/

Norwegian has a contrast between the voiceless fricatives /f/ and /ç/, as seen in the minimal pairs /fin/ *skinn* ‘skin’ and /çin/ *kinn* ‘cheek’. One of the most debated language changes in Norwegian is the ongoing merger of these phonemes (Papazian, 1994; Dommelen, 2019), and impressionistically, the outcome of the merger is /f/. Previous research has assumed that this impression holds true, and in accounting for the merger, only instances of /ç/ pronounced as [f], but not of /f/ pronounced as [ç], have been investigated (Dommelen, 2019). Although this assumption may be accurate in most cases, the outcome of the merger has not actually been documented acoustically. The aim of the current study is to conduct such an acoustic analysis.

To do so, it is first necessary to find an objective method for separating two groups of speakers, *mergers* and *non-mergers*. That is, to determine whether the outcome of the merger resembles [f] or [ç] more, it is first necessary to investigate the acoustic characteristics of these sounds among the speakers that do not have the merger, the *non-mergers*. Subsequently, the productions of the *mergers* can be compared with those of the *non-mergers*.

To this end, 38 native speakers of Norwegian were recorded reading a series of nonce words. The nonce words were of a CV structure, with all possible consonants of Norwegian in the onset position, followed by the cardinal vowels /i a u/. To identify speakers as *mergers* and *non-mergers*, a perceptual identification task was conducted. In this task, listeners were presented with the recorded nonce words containing /f/ and /ç/ and asked to identify which sound they heard. If, for a given speaker, listeners perceived intended /f/ as /f/ and intended /ç/ as /ç/ in a majority of cases, this speaker is classified as a *non-merger*. If, in a majority of cases, listeners identified intended /f/ as /f/ but intended /ç/ as /f/, or the other way around, this speaker is a *merger*.

Finally, expecting that the results of the identification task will identify the *mergers* and the *non-mergers*, acoustic analyses of their productions can be conducted. Using acoustic measures such as centre of gravity and spectral peak (Jongman et al., 2000), the /f ~ ç/ productions of the *mergers* can be compared to the productions of /f/ and /ç/ among the *non-mergers*.

This talk will present the results from the identification task and the acoustic analyses. In documenting the outcome of the merger of /f/ and /ç/ acoustically, then, this study fills a gap in the literature on the most debated sound change in Norwegian. It thus paves the way for a more informed analysis of the merger and further investigations of its motivation.