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Acoustic Characteristics of Word-Final Vowel Reduction in Skolt Saami

1. Introduction

Word-final vowel reduction plays an important role in the prosody of Skolt Saami rhythmic units. The optional phonological rule that reduces or drops second syllabic vowels has significant consequences with regard to the prosodic structure of the disyllabic stress-group.¹ The present study provides an account of the acoustic characteristics of vowel reduction by examining the durational and spectral properties of disyllabics in a large data base.

The data were obtained from two speakers of Skolt Saami. The degree of second syllabic vowel reduction differs according to the speaker's dialect. In the speech of one of the speakers (a representative of the Sevetijärvi, formerly Suonikylä, dialect) the process of vowel reduction appeared to be at a more advanced stage, in terms of both the durational and spectral properties of the reduced vowel. In fact, second syllabic vowel drop appears to be more common than the reduction of that vowel in this speaker's corpus. The word-final vowels of the second speaker (a representative of the Paatsjoki/Pettsamo dialect) manifested a lesser degree of reduction with regard to both duration and formant structure. Word-final vowel drop, although it does occur, is infrequent.

The present paper is part of a larger project aimed at identifying the acoustic characteristics of vowel reduction in Skolt Saami through examining data obtained

Recordings of the disyllabics examined were made according to required standards in a sound-proof phonetics laboratory. The recording was made with a Scully-Full-Track Broadcast Machine (tape speed: 7.5'' per second). The software used for analyzing the duration of the reduced vowels was the Signalyze program, Version 3.12. FFT spectra were examined for formant patterns (see below); the actual formant measurements were taken with the Praat software, Version 8.24. Formant frequency values were taken in the cycle

Most second syllabic unstressed vowels are dropped in the speech of the representative of the Sevetijärvi dialect. In those instances where a vowel is present, a considerably high degree of reduction can be observed. The resulting reduced vowel has an average duration of 36 msec. Formant frequency values average 565 Hz (F1),

F2 = 1650 Hz, F3 = 2700 Hz); (ii) those approximating a more frontal, upper-mid to high position (formant frequency values averaging F1 = 350 Hz, F2 = 2765 Hz, F3 = 3375 Hz); and (iii) those approximating a more back, lower-mid position (formant frequency values averaging F1 = 665 Hz, F2 = 1680 Hz, F3 = 2720 Hz). The latter two positions correspond to the quality of the stem vowel, i.e., the stem vowel /e/ when reduced is realized as the position described in (ii), and the two back stem-vowels when reduced are realized as the position described in (iii). It is interesting to note that there were only sporadic occurrences of vowel reduction approximating the neutral position in the speech of the Paatsjoki/Pettsamo speaker; this may be explained by the relatively longer duration of the reduced vowel (see discussion below). *Figures 4* and *5* illustrate the spectral properties of the different mani

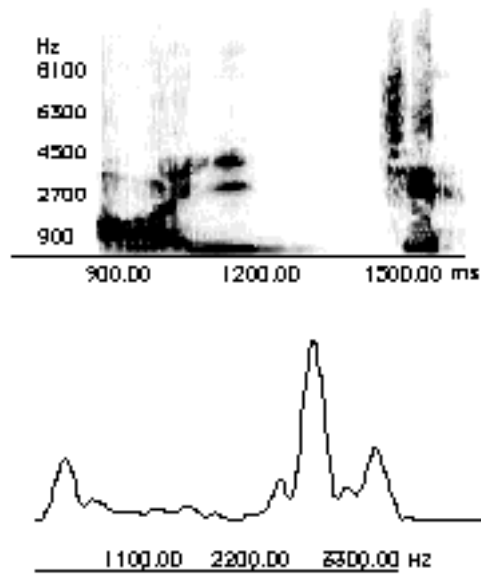


Figure 5. Broad-band spectrogram and spectrum (at 38.87 msec) of the test word *â'lgg* 'boy' (Nom.Sg.). The duration of the reduced vowel is 57.30

dialect, in terms of both the durational and spectral characteristics associated with the reduced vowel. The two different manifestations of the vowel reduction process thus may be interpreted as representing different stages of a historical change in progress, a change that through vowel reduction eliminates short unstressed vowels word-finally. Table 1 summarizes the results of the acoustic analysis of durational and spectral

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