

THE HIERARCHY OF TIMING STRATEGIES IN CONNECTED SPEECH: PATTERNS AND CONSEQUENCES

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1. INTRODUCTION

The present study further explores the durational patterns observed in the spontaneous conversation of six speakers of Skolt Sámi (a Finno-Ugric language). The objective of the research reported on here is to examine the constraint of keeping characteristic durational ratios constant in relation to employing certain temporal strategies observed during the course of a controlled experiment. It will be argued that this constraint overrides timing strategies aimed at significantly reducing durations while keeping to a durational target in connected speech.

2. METHOD AND EXPERIMENT

The material analyzed here consists of recordings of the spontaneous conversation of six speakers of Skolt Sámi (all female). Only those sections of spontaneous conversation were considered in which certain durational targets (e.g. paragraphs) were identified. Durational measurements were made of the relevant segments within the disyllabics, and ratio values were analyzed with reference to those obtained by two of the speakers during the course of a series of controlled experiments. A total of 240 utterances was analyzed (84 and 56 respectively for the two speakers with whom the controlled experiments were conducted, and 15-30 utterances for each of the other four speakers). These utterances were selected from a much larger corpus on the basis of durations of disyllabics falling into the range of 177 to 302 msec (varying by morphological type). Those disyllabics with durations not falling into this range were excluded from the analysis in order to restrict variation in speech tempo. [1] The same types of disyllabics have durations between 550 and 720 msec in citation forms.

3. DISCUSSION AND RESULTS

The four timing strategies observed in larger grammatical units during the controlled experiment are as follows: (i) the employment (or not, as the case may be) of the optional vowel reduction or vowel drop rule, (ii) shorter word durations in paragraph-final sentences, (iii) shorter pause durations in paragraph-final sentences, and (iv) shorter absolute segment durations achieved by keeping the characteristic ratios constant. [2] While no particular hierarchy could be observed during the controlled experiments, it was noted that in the spontaneous conversations the speakers hardly ever resorted to the non-employing of vowel reduction or vowel drop option while keeping to a durational target. It is all the more interesting because this strategy appears to be consistently employed during the controlled experiment, and thus was considered as evidence pointing to the fact that speakers tend to conform to a durational target. In connected speech, shorter absolute

word durations and shorter pause durations were consistently apparent in paragraph-final sentences. Because the relevant segments -- first syllabic vowel and the consonant(s) following -- also had considerably shorter durations in words occupying positions near paragraph boundaries, it was important to examine the consequences of significant decrease in absolute duration with regard to the segment ratios that have linguistic significance. A comparison of ratio values apparent in spontaneous conversation with those in the controlled experiment suggests that the tendency to maintain durational ratios appears to be an important goal even during spontaneous conversation. The durational measurements representing this tendency are summarized in Figure 1. These values confirm results of an earlier study using material produced by the two speakers referred to above.

4. CONCLUSIONS

The four timing strategies observed in the controlled experiment have a definite hierarchy in terms of their occurrence in connected speech. Acoustic analysis of durational patterns apparent in this speaking mode reveals that (i) the apparent constraint for maintaining characteristic durational ratios constant overrides the strategy aiming at significant durational decrease close to boundaries; (ii) only three of the four strategies attested in the controlled experiment were consistently employed, the option available for not employing the vowel reduction rule thus was not being utilized. The latter fact indicates that different temporal strategies may be associated with different speaking modes.

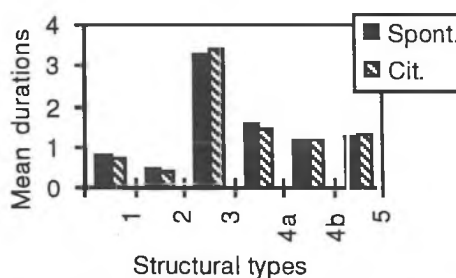


Figure 1. Durational ratios in two speaking modes

REFERENCES

- [1] McRobbie, Z. "The maintaining of durational ratios in quantity distinctions in conversational speech," in *Proceedings of the XIIIth International Congress of Phonetic Sciences, Stockholm*. 166-169. 1995.
- [2] McRobbie, Z. "Timing strategies within the paragraph," in *Proceedings of the 1994 International Conference on Spoken Language Processing, Yokohama, Japan*. 382-386. 1994.