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Word accent gestures in West Swedish

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The generally accepted knowledge of the word accent manifestations in West Swedish (prototype Gothenburg) predicts a specific pattern of the word accent gestures common to a great variety of dialects within Götaland. The generally accepted picture of the word accent distinction is that it is clearly manifested in the different pitch contours. The main purpose of the present study was to verify this and gain further insight into *how* the distinction is manifested in West Swedish. Contrary to our predictions, the nine different dialects examined showed no clear word accent distinction concerning the timing and shape of the pitch contours.

1. Introduction

With the exception of Finland Swedish, Swedish (as well as Norwegian and Danish) is renowned for having two distinctive prosodic patterns connected with primary stressed syllables, i.e. accent I (acute) and accent II (grave). The word accents play a leading part in Swedish intonation and constitute part of the tonal identity of a dialect (Bruce, 2002). In her description of Swedish intonation Gårding writes: "Typical of Swedish are the word accents. They cause the intonation to go up and down more often than it does in an intonational system like English, for instance, which gives the language and its dialects some of their most striking melodic characteristics" (Gårding, 1998:127).

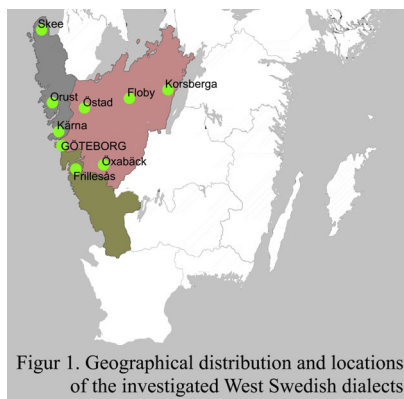
While the distribution rules and the word accent patterns are similar in most Swedish dialects, the phonetic realization of the tonal patterns differs. As opposed to stress (stressed/unstressed), accentuation and focus constitute the higher levels of prominence in Swedish and are mainly cued by pitch (Bruce, 1998).

When describing the dialectal variation of accentuation the evident point of departure is Gårding's typology for dialectal manifestations of Swedish accents (1970, 1973, with Lindblad, 1975). The typology is based on Meyer's collection of bisyllabics spoken with statement intonation (Meyer, 1937, 1954) and was further developed into a prosodic typology combining word and sentence prosody (Bruce & Gårding, 1978). Depending on the number and relative location of the peaks in a bisyllabic word, four main dialect types were discriminated (south, prototype Malmö, central, prototype Dalarna, east, prototype Stockholm and west, prototype Gothenburg) and further grouped and divided into two major groups: one-peaked and two-peaked dialects. This division is based on whether the pitch contour of a disyllabic accent II word has one or two pitch peaks. For each dialect type, the word accent distinction is signaled by the different timing of the word accent peak in relation to the stressed (accented) syllable, i.e. the pitch gesture is earlier for accent I words than for accent II words. In the light of the accent typology, West Swedish is characterized by a two-peaked pitch contour of the word accents and an earlier timing of the pitch contour of accent I words.

With this generally accepted knowledge in the back of our minds, the fundamental purpose of the present study is to verify the existence of a distinguishable difference between the pitch contours of the word accents in West Swedish by means of 24 speakers representing 8 West Swedish dialects and Gothenburg Swedish. Consequently our first hypothesis is that the pitch gesture of accent I clearly differs from that of accent II. Our second hypothesis is that the pitch peak of accent I has an earlier timing than that of accent II. Finally, since accent I generally is more variable (and more difficult to pin down) than accent II, which has a more stable and consistent pattern in relation to the stressed syllable (Gårding, 1973), our third hypothesis is that accent I will show a greater dispersion than accent II.

2. Investigation

The speech material consists of the accent I word *dollar* and accent II word *kronor* produced by 24 elderly male speakers (55-75 years old) representing 8 different West Swedish dialects (in Halland, Bohuslän and Västergötland) and Gothenburg Swedish. The geographical distribution of the dialects and their locations is shown in Figure 1. There are 3 speakers per dialect except in two cases: Öxabäck dialect (2 speakers) and Gothenburg Swedish (1 speaker). With the exception of Gothenburg Swedish, the speech samples (elicited material) were extracted from the SweDia 2000 phonetic database (Aasa et al., 2000). For each speaker 2-6 productions of each word were chosen for the investigation (a total of 153 tokens). In an ideal world, at least 5 tokens of each word per speaker would be a satisfying number for the analyses, but unfortunately, due to creaky voice quality, some words are only represented by 2 tokens. Pitch contours of every token for every speaker were produced by means of Pitchmatcher, a Unix-based program designed by Johan Frid (Dept. of Linguistics and Phonetics, Lund University), which enables the display of several pitch contours at the same time as well as the alignment of segments according to various specific criteria (see Figures 2-4).



Figur 1. Geographical distribution and locations of the investigated West Swedish dialects

Measurements of f_0 in the beginning of the stressed vowel of every token were made by hand in the speech analysis program PRAAT. The reason for measuring the beginning of the vowel is due to the generally non-existing peak in the pitch contours of the investigated speech material.

3. Results and discussion

Contrary to our first and second hypotheses, it is generally difficult, if not impossible to visually discern a systematic and clear difference between the word accents with respect to the timing and shape of the pitch gestures. This is true for each speaker, for speakers within the same dialect and for each dialect. In some cases there is only a slight difference, as is shown in Figure 2, where the pitch contours of 2 tokens of *dollar* and 3 tokens of *kronor* produced by a speaker from Orust are displayed. In other cases the difference is less hard to detect, as is shown in Figure 3, where the pitch contours of 4 tokens in each category

produced by a speaker from Skee are displayed. Notice that in the Gothenburg Swedish case (our prototype), there is no evident difference in the timing and shape of the pitch contours (Figure 4).

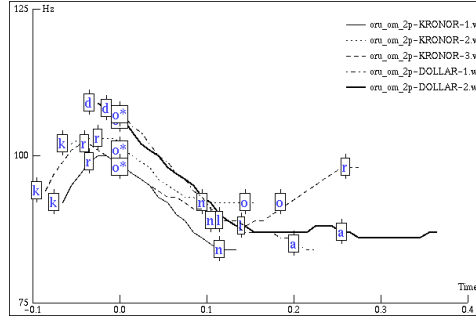


Figure 2. Pitch contours of *kronor* and *dollar* produced by male speaker from Orust.

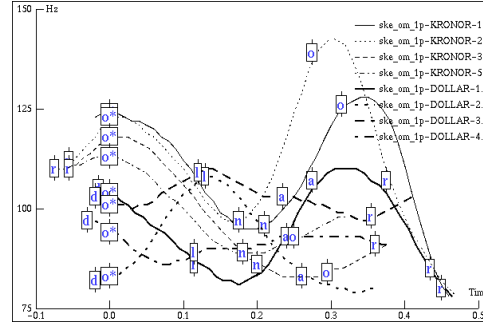


Figure 3. Pitch contours of *kronor* and *dollar* produced by male speaker from Skee.

Göteborg			
	Mean f_0	Std	N
om 1 Accent I	165	4	2
Accent II	185	4	2

Table 1:a. Mean (and standard deviation) of Gothenburg Swedish tokens. Mean f_0 is related to beginning of stressed vowel (Hz)

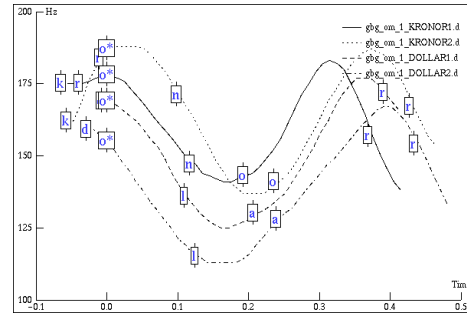


Figure 4. Pitch contours of *kronor* and *dollar* produced by male speaker of Gothenburg Swedish.

There is, however, a slight, but yet unexpected general difference between the accents regarding the height of f_0 in the beginning of the stressed vowel. Tables 1:a-b account for the results in terms of the f_0 mean (and Std) of every speaker's production of *dollar* and *kronor*, respectively. The results show that 19 of the 24 speakers have a higher f_0 mean in the accent II word than in the accent I word in the great majority of the investigated material.

4. Conclusion

Contrary to our predictions, the 8 different West Swedish dialects and Gothenburg Swedish that were investigated showed no clear and systematic distinction between the word accents regarding the timing and shape of the pitch contours. In fact, it proved to be hard to visually detect any clear difference. However, measurements of f_0 in the beginning of the stressed vowel showed a generally higher f_0 for accent II than for accent I in the investigated material. So far, the word accent distinction in West Swedish is not very clear, but nevertheless, it involves a crystal clear indication: further investigation required!

		Floby			Frillesås			Korsberga			Östad		
		Mean f ₀	Std	N	Mean f ₀	Std	N	Mean f ₀	Std	N	Mean f ₀	Std	N
om 1	Accent I	158	4	2	127	10	3	104	1	3	130	4	2
	Accent II	186	3	2	153	36	4	162	36	3	132	8	4
om 2	Accent I	120	7	3	125	9	4	118	5	2	111	9	2
	Accent II	120	9	4	131	10	4	141	14	3	139	21	2
om 3	Accent I	138	7	2	120	4	3	129	9	3	133	5	2
	Accent II	145	7	3	124	7	4	159	9	3	144	4	2
		Öxabäck			Orust			Skee			Kärna		
		Mean f ₀	Std	N	Mean f ₀	Std	N	Mean f ₀	Std	N	Mean f ₀	Std	N
om 1	Accent I	155	3	2	159	6	2	98	10	4	103	7	5
	Accent II	163	9	4	153	13	3	120	4	4	129	10	4
om 2	Accent I	117	1	2	110	1	2	145	16	4	133	22	3
	Accent II	120	4	3	102	2	3	171	5	6	120	7	5
om 3	Accent I				117	8	4	131	19	3	119	10	5
	Accent II				113	2	3	143	8	4	137	14	5

Table 1:b. The table shows the measured and calculated results of the speakers' (om 1, om 2, om 3) production of the accent I and accent II words in chosen locations (Floby, Frillesås, Korsberga etc). Mean f_0 refers to the value of the beginning of the stressed vowel, in Hz.

5. Acknowledgements

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