

Phrase-initial pitch patterns in South Swedish

Susanne Schötz, Gösta Bruce

Dept. of Linguistics & Phonetics, Centre for Languages & Literature, Lund University, Sweden

{gosta.bruce, susanne.schotz}@ling.lu.se

Abstract

The topic of this paper is the variability of phrase-initial pitch patterns of South Swedish. Central Swedish pitch patterns for phrase-initial accent I both to the East (Stockholm) and to the West (Gothenburg) display an apparent constancy, albeit with distinct patterns: East Central Swedish rising and West Central Swedish fall-rise. In South Swedish, the corresponding pitch patterns can be described as more variable. The falling default accentual pitch pattern in the South is dominating in the majority of the sub-varieties examined, even if a rising pattern and a fall-rise are not uncommon here. There seems to be a difference in geographical distribution, so that towards northeast within the South Swedish region the percentage of a rising pattern has increased, while there is a corresponding tendency for the fall-rise to be a more frequent pattern towards northwest. The occurrence of the rising pattern of initial accent I in South Swedish could be seen as an influence from and adaptation to East Central Swedish, and the fall-rise as an adaptation to West Swedish intonation.

Index Terms: Swedish, dialectal variability, phrase-initial accent

1. Introduction

A distinctive feature of Swedish lexical prosody is the tonal word accent contrast between accent I (acute) and accent II (grave). It is well established that there is some critical variation in the phonetic realisation of the two word accents among regional varieties of Swedish. According to Eva Gårding's accent typology [6, 5] based on Ernst A. Meyer's data [7, 8] on the citation forms of the word accents – disyllabic words with initial stress – there are five distinct accent types to be recognised (see Figure 1). These accent types by and large also coincide with distinct geographical regions of the Swedish-speaking area. For accent I, type 1A shows a falling pitch pattern, i.e. an early pitch peak location in the stressed syllable and then a fall down to a low pitch level in the next syllable (Figure 1). This is the default pitch pattern in this dialect type for any accent I word occurring in a prominent utterance position. However, taking also post-lexical prosody into account, there is some interesting variability to be found specifically for accent I occurring in utterance-/phrase-initial position.

Variability in the pitch realisation of phrase-initial accent I in South Swedish is the specific topic of this paper. The purpose of our contribution is to try to account for the observed variation of different pitch patterns accompanying an accent I word in this particular phrase position. In addition, we will discuss some internal variation in pitch accent realisation within the South Swedish region. These pitch patterns of accent type 1A will also be compared with the corresponding reference patterns of types 2A and 2B characteristic of Stockholm (Svea) and Gothenburg (Göta) respectively [9]. See Figure 1 for their citation forms.

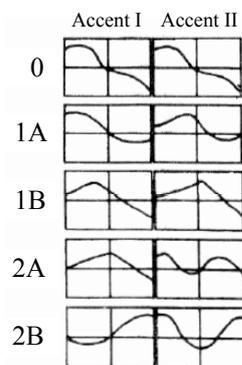


Figure 1: The five accent types in Eva Gårding's accent typology based on Meyer's original data.

1.1. Accentuation and phrasing

In our analysis [3], the exploitation of accentuation for successive words of a phrase, i.e. in terms of post-lexical prosody, divides the regional varieties of Swedish into two distinct groups. In Central Swedish, both in the West (Göta, prototype: Gothenburg) and in the East (Svea, prototype: Stockholm), two distinct levels of intonational prominence – focal and non-focal accentuation – are regularly exploited. Thus, the expectation for an intonational phrase containing for example three accented words, will be an alternation: focal accentuation + non-focal accentuation + focal accentuation. The other regional varieties of Swedish – South, Gotland, Dala, North, and Finland Swedish – turn out to be different in this respect and make up another group. South Swedish, as a case in point, for a corresponding phrase with three accented words, is expected to have equal prominence on these constituents. This means that for a speaker of South Swedish, focal accentuation is not regularly exploited as an option distinct from regular accentuation. Figure 2 shows typical examples of a phrase containing three accented words: accent I + accent I + accent II (compound), for three female speakers representing East Central (Stockholm), West Central (Gothenburg) and South Swedish (Malmö) respectively. Note the distinct pitch patterns of the first and second accent I words of the phrase in the Central Swedish varieties – as a reflex of the distinction between focal and non-focal accentuation – in contrast with the situation in South Swedish, where these two words have got the same basic pitch pattern.

Intonational phrasing is expressed in different ways and more or less explicitly in the different varieties, partly constrained by dialect-specific features of accentuation (Figure 2). The rising pitch gesture in the beginning and the falling gesture at the end of the phrase in East Central Swedish is an explicit way of signalling phrase edges, to be found also in various other

languages. In West Central Swedish, the rise after the accent I fall in the first word of the phrase could be seen as part of an initial pitch gesture, expressing that there is a continuation to follow. However, there is no falling counterpart at the end of the phrase, but instead a pitch rise. This rise at the end of a prominent word is analysed as part of a focal accent gesture and considered to be a characteristic feature of West Swedish intonation. In South Swedish, the falling gesture at the end of the phrase (like in East Central Swedish) has no regular rising counterpart in the beginning, but there is instead a fall, which is the dialect-specific pitch realisation of accent I. All three varieties also display a downdrift in pitch to be seen across the phrase, which is to be interpreted as a signal of coherence within an intonational phrase.

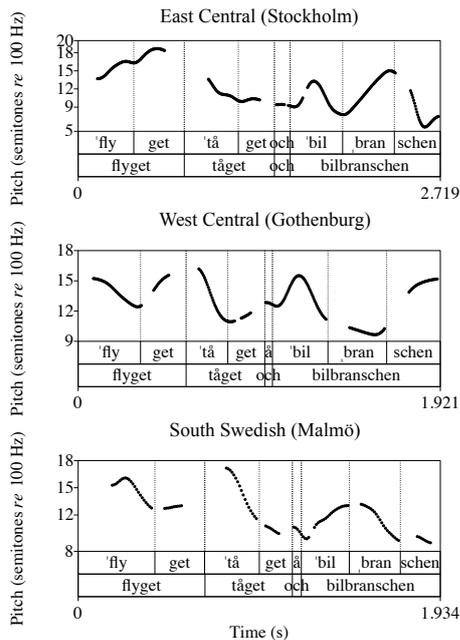


Figure 2: *Accentuation and phrasing in varieties of Swedish. Pitch contours of typical examples of a phrase containing three accented words for East Central Swedish (top), West Central Swedish (middle) and South Swedish (bottom).*

The following sections describe a small study we carried out in order to gain more knowledge about the pitch pattern variation of phrase initial accent I in South Swedish.

2. Speech material

The material for our study was taken from the Swedish *Speech-Dat* [4] speech database of read telephone speech of 5000 speakers, registered by age, gender, current location and self-labelled dialect type. We selected a fair number of productions – *SpeechDat* comprises only one production per speaker – of the initial intonational phrase (underlined below) of the sentence *Flyget, tåget och bilbranschen tävlar om lönsamhet och folkets gunst* ‘Airlines, train companies and the automobile industry are competing for profitability and people’s appreciation’. The target item was the initial disyllabic accent I word *flyget*. In order to cover a sufficient number (11) of sub-varieties of South Swedish spoken in and around defined localities (often corresponding to towns), our aim was to analyse 12 speakers from each sub-variety, preferably balanced for age and gender.

For four of the sub-varieties, we settled for a smaller and less gender-balanced speaker set, since the *SpeechDat* database did not include as many as 12 speakers. We also selected 12 speakers each from the Gothenburg (Göta) and Stockholm (Svea) areas to be used as reference varieties. Table 1 shows the number and gender distribution of the speakers. The geographical location of the sub-varieties are displayed in and around a map of the South Swedish region Skåne in Figure 3.

Table 1: *Number and gender distribution of speakers from each sub-variety of South Swedish and the reference varieties.*

Sub-variety (\approx town)	Female	Male	Total
Southern Halland (Laholm)	3	7	10
Ängelholm	7	4	11
Helsingborg	5	7	12
Landskrona	5	7	12
Malmö	6	6	12
Trelleborg	3	6	9
Ystad	7	5	12
Simrishamn	5	2	7
Kristianstad	7	5	12
Northeastern Skåne and Western Blekinge	4	5	9
Southern Småland	5	7	12
Gothenburg (reference variety)	6	6	12
Stockholm (reference variety)	6	6	12
<i>Total</i>	<i>69</i>	<i>73</i>	<i>142</i>

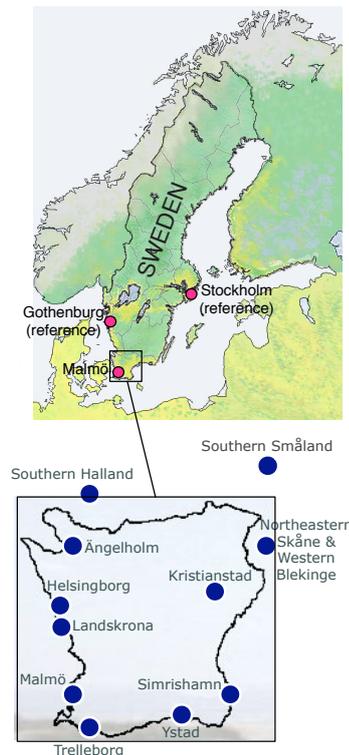


Figure 3: *Map of Northern Europe with Sweden in the middle (top) and the South Swedish region Skåne (bottom) along with the geographic location of the eleven South Swedish and two reference varieties used in the study.*

3. Method

Our methodological approach combined auditory judgment, visual inspection and acoustic analysis of pitch contours using the speech analysis software Praat [2]. Praat was used to extract the pitch contours of all phrases, to smooth them (using a 10 Hz bandwidth), and to draw pitch contours using a semitone scale. Auditory analysis included listening to the original sound as well as the pitch (using a Praat function which plays back the pitch with a humming sound).

3.1. Identification of distinct types of pitch patterns

The first step was to identify the different types of pitch gestures occurring for phrase-initial accent I and to classify them into distinct categories. It should be pointed out that our classification here was made from a melodic rather than from a functional perspective. We identified the following four distinct pitch patterns:

1. Fall: a falling pitch contour often used in South Swedish and corresponding to the citation form of type 1A
2. Fall-rise: a falling-rising pattern typically occurring in the Gothenburg variety
3. Rise: a rising pattern corresponding to the pattern characteristic of the Stockholm variety
4. Level: a high level pitch contour with some representation in most varieties

We would like to emphasise that our division of the pitch contours under study into these four categories may be considered as an arbitrary choice to a certain extent. Even if the classification of a particular pitch contour as falling or rising may be straightforward in most cases, we do not mean to imply that the four categories chosen by us should be conceived of as self-evident or predetermined. It should be admitted that there were a small number of unclear cases, particularly for the classification as high level or rising and as high level or fall-rise. These cases were further examined by the two authors together and finally decided on. Figure 4 shows typical pitch contours of one female and one male speaker for each of the four patterns.

4. Results

4.1. Categorisation of the speakers into distinct pitch pattern types

The results of our categorisation can be seen in Table 2. In the South Swedish varieties the fall pattern dominated (54 speakers), but the other three patterns were not uncommon with 17, 23 and 24 speakers respectively. In the Gothenburg variety, eleven speakers used the fall-rise intonation, and only one was classified as belonging to the level category. Ten Stockholm speakers had produced the rise pattern, while two speakers used the level pattern.

4.2. Geographical distribution

Figure 5 shows the geographical distribution of the four patterns across varieties. Each pie chart in the figure represents the distribution of patterns within one sub-variety. The southern and western varieties of South Swedish display a majority of the fall pattern, although other patterns are represented as well. In the northwestern varieties, the fall pattern is much less common (only one speaker each in Ängelholm and southern Halland), while the fall-rise pattern – the most common one in

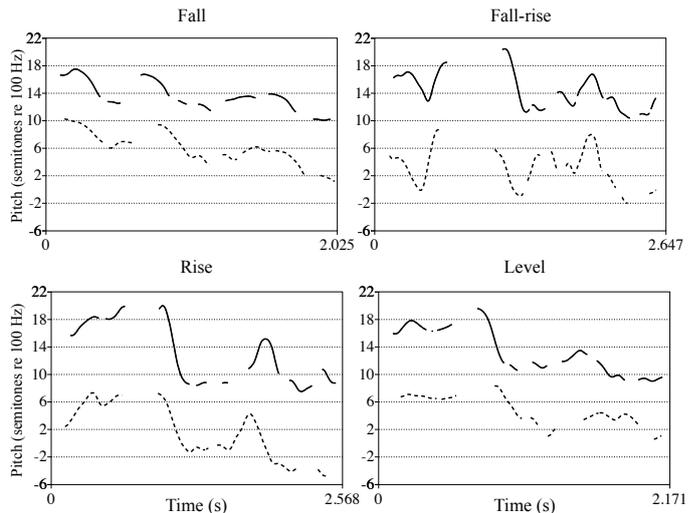


Figure 4: Two typical pitch contours of the initial phrase *Flyget, tåget och bilbranschen* ‘Airlines, train companies and the automobile industry’ for each of the four distinct pitch pattern types found in the South Swedish varieties of this study: fall, fall-rise, rise and level (solid line: female speaker; dashed line: male speaker).

Table 2: Results of the categorisation of the 142 speakers (one production per speaker) into the four distinct categories fall, fall-rise, rise and level along with their distribution across the South Swedish, Gothenburg and Stockholm varieties.

Pattern	South Sweden	Gothenburg	Stockholm
Fall	54	0	0
Fall-rise	17	11	0
Rise	23	0	10
Even	24	1	2

the Gothenburg variety – is more frequent. Moreover, the level pattern is also more common here than in the varieties further to the south. The fall pattern is also common in Kristianstad and in northeastern Skåne and western Blekinge. In these two varieties the rise pattern – the category used by most speakers in Stockholm – is also rather common. As already mentioned, no fall pattern was observed in the two reference varieties. In Gothenburg the fall-rise pattern is used by all speakers except one, while Stockholm displays a vast majority of rise patterns and two level ones.

4.3. Additional observations

While we have observed a variability for pitch patterns accompanying the accent I word in initial position of the phrase under study in South Swedish, the other two accented words of the phrase show an apparent constancy for their pitch patterns. The second accent I word *tåget* has the regular falling pattern, while the third final word of the phrase *bilbranschen* (accent II compound) displays an expected rise-fall on the sequence of syllables consisting of the primary stress (the first syllable of the word) and the next syllable. This is true of basically all productions of each sub-variety of South Swedish.

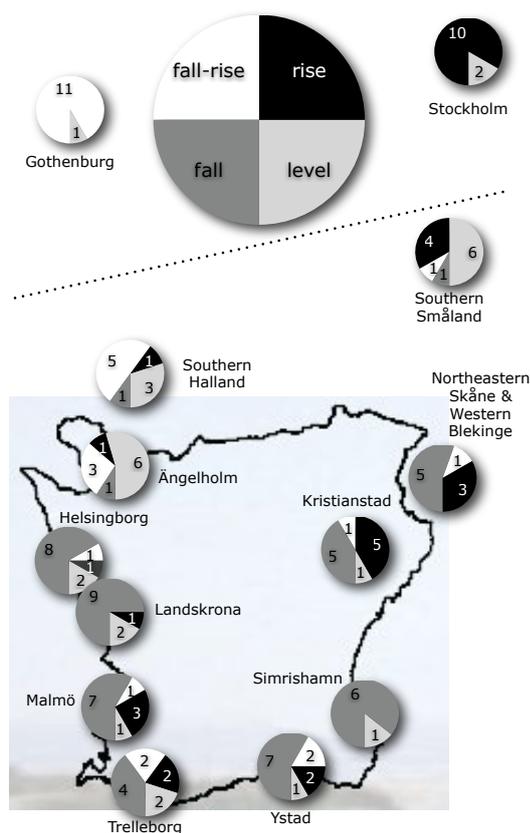


Figure 5: Geographical distribution of the four pitch patterns of phrase-initial accent I observed in South Swedish varieties and two reference varieties (Stockholm and Gothenburg Swedish). The location of the reference varieties on the map is only indicated and not according to scale.

4.4. Discussion

In our study of the phonetic realisation of an accent I word in phrase-initial position, we have observed a difference in variability for the varieties investigated. Even if it should be admitted that there may be some difficulties of classification of the pitch patterns involved, and that the data points in our study may be relatively few, the variability among pitch patterns for phrase-initial accent I is still clear. So while the Central Swedish pitch patterns for phrase-initial accent I both to the East (Stockholm) and to the West (Gothenburg) display an apparent constancy, albeit with distinct patterns – East Central Swedish rising and West Central Swedish fall-rise – the corresponding pitch patterns in South Swedish can be described as more variable. This would appear to be true of each of the sub-varieties in this group, but there is also an interesting difference between some of them. As we have seen, the falling default pitch pattern in the South is dominating in the majority of the sub-varieties examined, even if both a rising pattern and a fall-rise are not uncommon here. But there seems to be a difference in geographical distribution, so that towards northeast within the South Swedish region the percentage of a rising pattern has increased, while there is a corresponding tendency for the fall-rise to be a more frequent pattern towards northwest.

A high level pitch, which can be seen as functionally equivalent to the rising pattern (and maybe even to the fall-rise), is a relatively frequent pattern only in some northern sub-varieties of the South Swedish region.

It is tempting to interpret the occurrence of the rising pattern of initial accent I in South Swedish as an influence from and adaptation to East Central Swedish. Also the occurrence of the fall-rise can be seen as an adaptation to West Swedish intonation. The addition of a rise after the falling gesture resulting in a fall-rise (typical of West Central Swedish) would – for a South Swedish speaker – appear to be less of a concession than the substitution of a falling pitch gesture with a rising one. The added rise after the fall for phrase-initial accent I does not seem to alter the intonational phrasing in a fundamental way. But even if a rising pitch gesture for initial accent I may appear to be a more fundamental change of the phrase intonation, it still seems to be a feasible modification of South Swedish phrase intonation. The integration of a rising pattern in this phrase position does not appear to disturb the general structure of South Swedish phrase intonation. Our impression is further that having a rising pitch gesture on the first accent I word followed by a regular falling gesture on the second word (creating a kind of hat pattern as it were) does not change the equal prominence to be expected for the successive words of the phrase under study either. Moreover, a pitch rise in the beginning of an intonation unit (as well as a fall at the end of a unit) could be seen as a default choice for intonational phrasing, if the language or dialect in question does not impose specific constraints dictated for example by features of accentuation.

5. Acknowledgements

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