LUND UNIVERSITY

An acoustic study of accentuation in Estonian Swedish compounds

Schötz, Susanne; Asu, Eva Liina

Published in:
[Host publication title missing]

2013

Link to publication

Citation for published version (APA):
Schötz, S., & Asu, E. L. (2013). An acoustic study of accentuation in Estonian Swedish compounds. In E. L. Asu, & P. Lippus (Eds.), *[Host publication title missing]* (pp. 343-352). Peter Lang Publishing Group.

Total number of authors:
2

General rights
Unless other specific re-use rights are stated the following general rights apply:
Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.
• Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
• You may not further distribute the material or use it for any profit-making activity or commercial gain
• You may freely distribute the URL identifying the publication in the public portal

Read more about Creative commons licenses: https://creativecommons.org/licenses/

Take down policy
If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

LUND UNIVERSITY

PO Box 117
221 00 Lund
+46 46-222 00 00

An acoustic study of accentuation in Estonian Swedish compounds

Susanne Schötz, Eva Liina Asu

Abstract

This study, addressing the analysis of pitch patterns in Estonian Swedish compounds, enables us to draw some preliminary conclusions about the characteristics of accentuation in this little studied regional variety of Swedish. The analysis in the first part of the paper was inspired by the classification of Edvin Lagman (1979) who on the basis of auditory analysis distinguished between four accent types for Estonian Swedish compounds. Using the same materials, the present acoustic study broadly confirms his classification. In the second part of the paper, a small set of Estonian Swedish compound contours is compared to those of other regional varieties of Swedish. The results show that the contours of Estonian Swedish resemble most those found in Finland Swedish.

1. Introduction

The Swedish word accent distinction (Accent 1 and Accent 2) is well-known phonetically as a timing difference of the pitch gesture. There is notable regional variation in its realisation, which has been captured in the prosodic typologies of Swedish tonal accents (Gårding, 1977; Bruce & Gårding, 1978; Riad, 1998; Bruce, 2001, 2007).

A variety of Swedish that is not included in these typologies is Estonian Swedish (ES) that was historically spoken on the islands and North-Western coastal areas of Estonia, but is today nearly extinct. As the prosodic features of ES have not been studied in any depth it is unclear to what extent there is an equivalent word accent distinction. The present study aims to make a first step in studying accentuation in ES by looking at tonal patterns in compounds. The prime motivation for starting the analysis of ES word accents with compounds lies in the fact that accentuation of compounds in other Swedish dialects has been shown to be particularly useful for distinguishing between prosodic dialect types (Bruce & Gårding, 1978; Bruce, 2007).

Simplex words in Swedish have one word stress, compounds typically two stresses: a primary stress on the first, and a secondary stress on the final element of the compound. Regular pitch patterns are associated with the primary stress of the compound, which by default is realised with Accent 2. Exceptions are some dialects of South Swedish where the accent of the first element determines the resulting accent of the compound (see Bruce, 2007). In most Finland Swedish dialects there is no accent distinction, one of the exceptions being West

Nyland which has a two-accent system similar to Central Swedish (Selenius, 1972, 1978).

According to Bruce (2005) it is the status of the secondary stress in determining the pitch patterns of compounds that is the main distinguisher between Swedish dialects. In e.g. East Middle, Gotland, Dala-Bergslagen, and Northern varieties of Swedish the Accent 2 pitch contour is synchronised with both primary and secondary stresses. Other varieties of Swedish (South, West Middle) lack this tonal synchronisation with the secondary stress. When describing accentuation in compounds it is useful to make a distinction between 'short' and 'long' compounds, since the contours may vary depending on whether the primary and secondary stresses are adjacent (short compounds), or whether there are unstressed syllables between the two stressed ones (long compounds) (see Bruce, 2007, 2010: 84).

ES has been characterised as only having one kind of word accent (e.g. Haugen, 1976), which in particular in disyllabic words has been called *akut jämviktsaccent* (acute balance accent) (Tiberg, 1962: 69). According to Lagman (1979) it is, however, inadequate to maintain that there is only Accent 1 (the so called 'acute accent'), or as Liberman (1982: 187) points out – the word "acute" should in this context be treated as an impressionistic epithet. On the other hand, an original opposition between Accent 1 and Accent 2 is almost certainly thought to have existed in ES (Liberman, 1982: 201), although Lagman (1979: 39) is doubtful whether it was present in all or only some of the ES dialects. As in Finland Swedish, where the accent opposition was in most dialects lost under the influence of Finnish, ES dialects have lost the accents under the influence of Estonian (Lagman, 1979: 38). The influence of Estonian on the sound system of ES is undoubtedly substantial (Danell, 1905-34, ref. in H. Lagman, 1971: 13), even if it has been said to vary considerably depending on the dialect area (Lagman, 1979: 4).

Accentuation of compound words in ES has been noted to differ from other Swedish dialects. Lagman (1979: 32ff.) distinguishes between the following four accent types that ES compounds can carry: (1) one word (simplex) accent (*enordsaccent*), (2) compound accent (*sammansättningsaccent*), (3) word group accent (*ordgruppsaccent*), and (4) final element stress (*efterledsbetoning*). He calls attention to the fact that the difference between the compound accent and word group accent is an archaic trait that the ES accent system has retained as compared to other Swedish accents.

The goal of the present study is two-fold: firstly, to clarify Lagman's classification of ES compound types by applying an acoustic analysis on the same materials, and secondly, to compare ES compound accentuation to other regional varieties of Swedish by using directly comparable speech data from earlier

research (cf. Schötz et al., 2012). It has to be kept in mind, though, that due to the limited nature of the materials the conclusions that can be drawn here are only tentative.

2. Materials and method

The first set of materials consists of an interview that Lagman conducted with his 79-year-old mother in 1965 in order to elicit compounds. Both speakers are native speakers of the Rickul variety of ES. The original reel-to-reel tape was digitised in 16 bit samples at 44.1 kHz at the Lund University Humanities Lab. The 63 compounds (26 by Lagman and 37 by his mother) used in the original auditory analysis were extracted from continuous speech, and grouped into four types following Lagman's classification (1979). The number of compounds of each type is shown in Table 1. The number of tokens in different groups is uneven, reflecting the main interest of Lagman, which was to study above all the difference between Type 2 (compound accent) and Type 3 (word group accent) compounds.

Table 1: The number of analysed tokens in each of the four compound types.

Compound type	Number of tokens
Type 1 (simplex word accent)	3
Type 2 (compound accent)	31
Type 3 (word group accent)	27
Type 4 (final element stress)	2

The F0 analysis methods from the Simulekt project (Bruce et al., 2007) were applied. These methods – implemented as a number of Praat (Boersma & Weenink, 2012) scripts – have been used to study prosodic variation in a number of other Swedish dialects (e.g. Schötz et al., 2011, 2012). Segment boundaries were manually placed at the onset of every phonologically stressed vowel, and individual F0 contours were generated for every speaker and word. In order to facilitate comparison between speakers, the contours were normalised by setting the minimum F0 for every speaker to 0 semitones (st). Mean F0 contours were computed for each variety by calculating the mean F0 in 100 evenly distributed points in each test word.

The materials used for a direct comparison of ES with other main Swedish dialect types consist of repetitions of two compounds from four elderly ES speakers of the Rickul variety (2 women and 2 men). They were recorded in

2009 in Stockholm using a Sony Portable DAT recorder TCD-D8 and Sony tie-pin type condenser microphones ECM-T140. The two compounds typically appeared in focal phrase-final position of read sentences: [ˈbiːlˌbranɧən] (‘the car industry’), the so called ‘short compound’ with adjacent primary and secondary stresses, and [mʊˈbiːltɛlɛˌfoːnən] (‘the mobile phone’), the so called ‘long compound’ with unstressed syllables between the primary and secondary stresses. Average F0 contours of in total ten tokens were plotted for each compound using the same procedure as described above.

3. Results and discussion

3.1 Acoustic analysis of ES compound accentuation types

Figure 1 shows average F0 contours for each of the four ES compound types. It can be seen in the top left panel of the figure that the contour for Type 1 compounds (simplex word accent) has a word-initial peak aligned with the primary stressed vowel followed by a fall throughout the word. According to Lagman (1979: 24) these compounds are historically most advanced in that their accentuation pattern is similar to simplex words. There were only three tokens for this type in the present data, including compounds such as *heimgiod* (‘home-made’) and *tolemod* (‘in this way’), but the shape of the individual contours was uniform: all the words were produced with a clear primary stress, while the secondary stress was not phonetically realised.

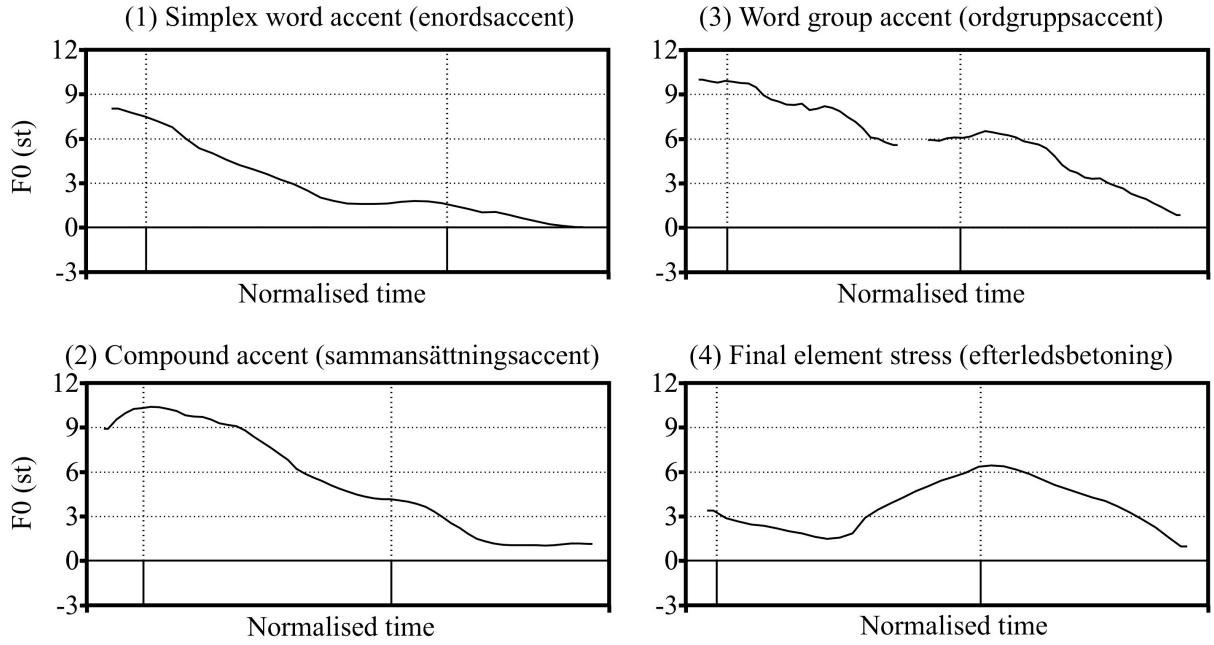

Figure 1: Average F0 contours for the four Estonian Swedish compound types (the vertical lines mark the vowel onset of the stressed syllables).

The panel on the bottom left in Figure 1 shows the average F0 contour for Type 2 compounds (the compound accent). Semantically, the first element of the compounds in this type denotes in most cases an aim or purpose expressed in relation to the second element of the compound (Lagman, 1979: 33). Examples from the present dataset include words such as *södbres-daien* ('the sour bread dough') and *målk-kanna* ('milk jug'). Like for Type 1 the average contour for this type displays an early peak and a fall throughout the word. We can argue that there is a hint to a second peak coinciding with the onset of the secondary stressed syllable, which, however, turned out to be an artefact of there being considerable variation in the individual contours (e.g. varying length of the compounds, different accentuation conditions or position in the phrase).

In order to somewhat facilitate the comparison, all the compounds of Type 2 were divided into three subgroups according to their structure: disyllabic, short polysyllabic (with adjacent primary and secondary stresses), and long polysyllabic (with at least one unstressed syllable between the primary and secondary stress) compounds. Average F0 contours for each of the subgroups are shown in Figure 2. We can see that the realisation of disyllabic and short polysyllabic compounds is rather similar to the average contour of Type 2 in Figure 1: there is an early peak aligned with the vowel of the primary stressed syllable which is followed by a fall. The contour for the long polysyllabic compounds (subgroup 2c), however, displays a small second peak, which is probably also why the average contour of Type 2 showed a peak. A closer look at the materials reveals that this subgroup only includes four individual tokens that are made up of an uneven number of syllables: *gammal-mödgorna* ('the old women'), *roa-mel* ('rye flour'), *södbres-daien* ('the sour bread dough'), and *tufol-bitar* ('pieces of potato'). Three of the words are produced with a single early peak. However, *tufol-bitar* is pronounced with a high level F0 throughout the word, which in combination with microprosodic perturbations was likely to cause the second peak in the average F0 contour.

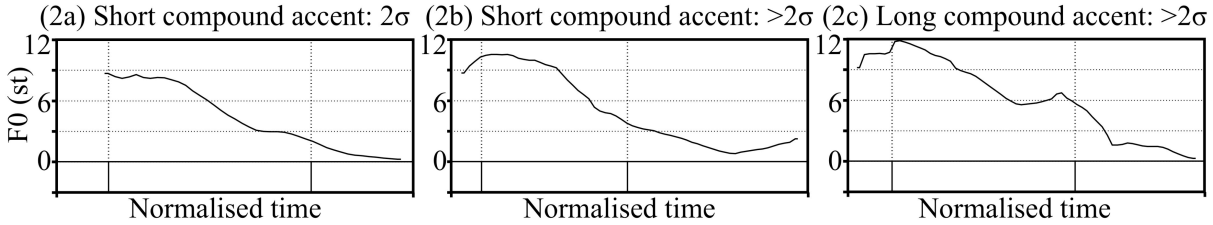

Figure 2: Average F0 contours for three subgroups of Type 2 compounds (vertical lines mark the vowel onset of the stressed syllables, σ = syllables).

Type 3 compounds (word group accent) include words where according to Lagman (1979: 24) both (or all) elements are pronounced with the primary stress, such as *korngrins korvar* ('pearl barley sausages') and *klimp supp* ('dumpling soup'). As a rule, these are compounds where the first element denotes some kind of a material (Lagman, 1979: 34). The average F0 contour for Type 3 compounds is shown in the top right panel of Figure 1. We can see that there are two peaks that are aligned with the stressed syllables. As there was also a large variation in the individual contours in this type, these compounds were divided into three subgroups along the same lines as for Type 2. The average F0 contours for each subgroup are shown in Figure 3. It can be seen that the second peak appears in all three subgroups but is clearest for the short polysyllabic compounds (subgroup 3b).

The present analysis clearly shows that there is an acoustic basis for differentiating between compounds with compound accent (Type 2) – characterised by a single-peaked contour – and compounds with word group accent (Type 3) – characterised by a double-peaked contour. As pointed out above, this distinction is not present in other varieties of Swedish.

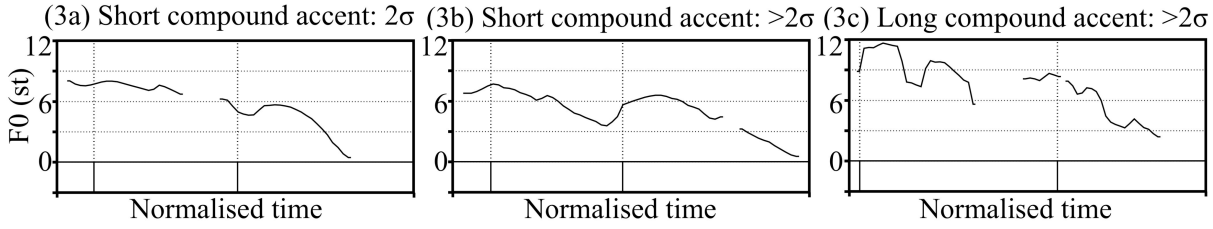

Figure 3: Average F0 contours for three subgroups of Type 3 compounds (vertical lines mark the vowel onset of the stressed syllables, σ = syllables).

The materials for Type 4 compounds (final element stress) included only two words: *tole-sa* ('such a') and *håla-mod* ('in which way'), and therefore the average contour shown in Figure 1 (bottom right) can only be interpreted as an extremely tentative result. It displays a low F0 contour in the first element, followed by a peak at the vowel onset of the stressed syllable of the second element. Nevertheless, it is interesting to note that this fairly unusual compound accent type, which is also found in some North and South Swedish dialects (see e.g. Selenius, 1972) is present in ES.

3.2 A comparison of ES with other regional varieties of Swedish

Figure 4 presents the average F0 contours for the ES compounds *bilbranschen* ('the car industry') in the left column, and *mobiltelefonen* ('the mobile phone') in the right column as compared to those of five main regional varieties of Swe-

dish that were analysed in the Simulekt project (Schötz et al., 2012). The regional varieties are numbered according to the common classification of Swedish dialects (Gårding & Lindblad, 1973). Accent type 0 is represented by Finland Swedish. It has the same pitch pattern for both Accent 1 and Accent 2, and there is no difference in the realisation of short and long compounds. Accent types 1A (South Swedish) and 1B (Gotland/Dala-Bergslagen) are characterised by single-peaked patterns for both Accent 1 and Accent 2 (with an earlier peak in 1A as compared to 1B), while types 2A (East Middle or Svea) and 2B (West Middle or Göta) have double-peaked pitch patterns in Accent 2 (with earlier peaks in 2A than 2B).

The ES average contours of both compounds resemble most their Finland Swedish counterparts. There might be some differences in peak alignment, though, as merely visually, it seems that the peaks are located somewhat later in ES than in Finland Swedish. Therefore, it could well be that the ES pattern being broadly similar to the Finland Swedish pattern is nevertheless slightly different from it, and could be classified as Type 0B. Further research into the timing of F0 peaks will have to clarify this issue.

Since the two compounds used in the comparison are both of Type 2 (compound accent), our results are only concerned with one of the four compound accent types in ES. Again, at visual inspection of the contours, there seems to be a timing difference between the dialects in that ES might have an earlier peak in the compounds with final element stress (Type 4) as compared to North Swedish. This also needs to be investigated further using a larger material.

The ES pitch patterns of compounds seem to fit in well in the geographical distribution of the Swedish compound word accents. The more peripheral varieties – including ES – are all using a single-peaked pitch pattern, while the more central varieties (East and West Middle Swedish) apply double-peaked patterns. Moreover, the relatively similar pitch patterns of ES and Finland Swedish, which are located in the Eastern part of the Swedish-speaking area, can be explained by their geographical closeness and isolation from other varieties of Swedish. One should, of course, bear in mind that the Finland Swedish contours here represent the Nyland dialect, which is spoken in the very South of Finland. The Northern (Österbotten) Finland Swedish variety displays different pitch patterns.

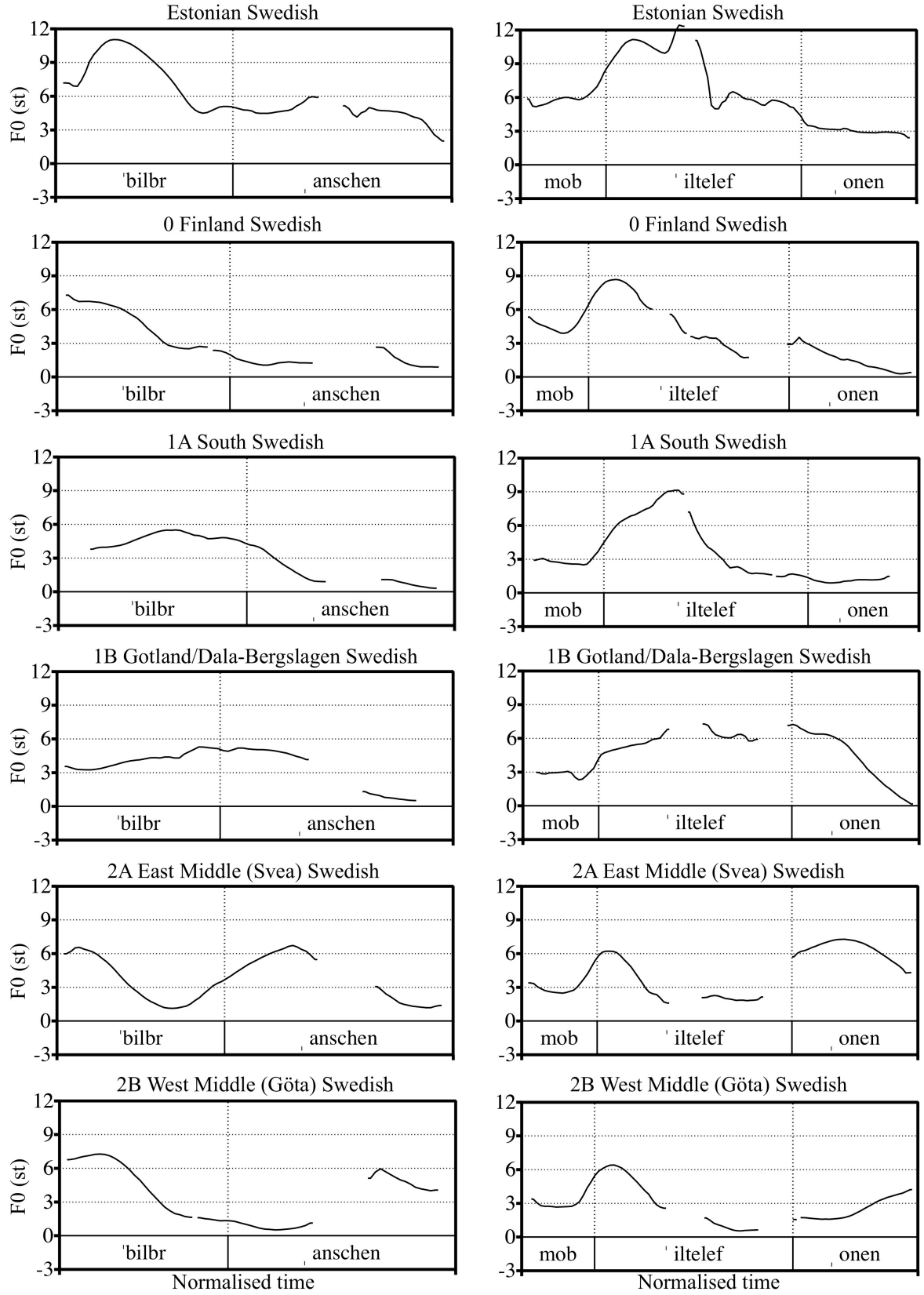

Figure 4: *Comparison of Estonian Swedish average F0 contours to five other regional varieties of Swedish for the short compound* bilbranschen *(left) and the long compound* mobiltelefonen *(right).*

4. Conclusions and further work

Due to the limited set of data the present analysis has only produced preliminary results which nevertheless enable us to draw some conclusions about ES accentuation patterns and set directions for further research. The acoustics analysis of ES compound types confirmed that there is an acoustic basis for differentiating between the four compound types as presented by Lagman (1979). Type 1 and Type 2 are rather similar in that they are both realised with single-peaked sharply falling F0 contours. The main difference in the examined data lies between Type 2 and Type 3, characterised by a single-peaked (one primary stress) vs. double-peaked (two stresses) F0 contour respectively. On the whole, there seems to be more variation in compound accentuation in ES as compared to other regional varieties of Swedish, which could partly be attributed to the influence of Estonian.

A visual inspection and comparison of ES compound contours with those of other main Swedish accents suggests that the ES contours are most similar to those of Finland Swedish. There might, however, be interesting timing-differences which need to be investigated further using a larger set of data. In the future work we plan to address this issue more closely, e.g. to look at the difference in the timing of peaks between ES Type 1 and Type 2 compounds, or between ES and other dialects of Swedish. It might be worthwhile in the future to include other ES dialects in these comparisons, on the grounds that there can be differences between the dialects in compound accentuation (cf. Lagman, 1979).

A further analysis will also have to address the issue of accentuation in simplex words in order to see whether and how their pitch patterns are distinct from those of compounds. Systematic analysis of larger sets of data containing disyllabic words in different reading styles (e.g. isolated words, words in the focal position of carrier phrases as well as spontaneous speech) is needed in order to investigate in detail if there are any traces of word accent distinction left in ES.

Acknowledgements

We would like to thank Svante Lagman for his kind permission to use his father's recordings. We are also very grateful to our Estonian Swedish informants who were recorded in 2009 in Stockholm. The present research was supported by the Swedish Research Council grant no. 349-2007-8695 (The Linnaeus Environment Thinking in Time: Cognition, Communication and Learning), the Estonian Science Foundation grant no. 7904, and the Estonian Research Council grant IUT 2-37.

References

Boersma, P., & Weenink, D. (2012). *Praat: doing phonetics by computer* [Computer program]. Version 5.3.11, retrieved 3 April 2012 from <http://www.praat.org/>.

Bruce, G. (2001). Secondary stress and pitch accent synchronization in Swedish. In W. van Dommelen & T. Fretheim (Eds.), *Nordic Prosody. Proceedings of the VIII conference, Trondheim 2000* (pp. 33–44). Frankfurt am Main: Peter Lang.

Bruce, G. (2005). Intonational prominence in varieties of Swedish revisited. In S.-A. Jun (Ed.), *Prosodic typology. The phonology of intonation and phrasing* (pp. 410–429). Oxford: Oxford University Press.

Bruce, G. (2007). Components of a prosodic typology of Swedish intonation. In T. Riad & C. Gussenhoven (Eds.), *Tones and Tunes*, Vol. 1 (pp. 113–146). Berlin: Mouton de Gruyter.

Bruce, G. (2010). *Vår fonetiska geografi*. Lund: Studentlitteratur.

Bruce, G., & Gårding, E. (1978). A prosodic typology of Swedish dialects. In E. Gårding, G. Bruce & R. Bannert (Eds.), *Nordic Prosody: Papers from a symposium. Travaux de l'Institut e Phonétique de Lund* Vol. 13 (pp. 219–228). Lund: Lund University.

Bruce, G., Granström, B., & Schötz, S. (2007). Simulating intonational varieties of Swedish. In J. Trouvain & B. Barry (Eds.), *The Proceedings of the 16th International Congress of Phonetic Sciences* (pp. 1237–1240) Saarbrücken, Germany.

Gårding, E. (1977). *The Scandinavian word accents.* Lund: Gleerup.

Gårding, E., & Lindblad, P. (1973). Constancy and variation in Swedish word accent patterns. *Working papers,* Vol. 7 (pp. 36–110). Lund: Lund University, Phonetics Laboratory.

Haugen, E. (1976). *The Scandinavian languages: An introduction to their history*. London: Faber & Faber.

Lagman, E. (1979). *En bok om Estlands svenskar. Estlandssvenskarnas språkförhållanden*, Vol. 3A. Stockholm: Kulturföreningen Svenska Odlingens Vänner.

Lagman, H. (1971). *Svensk-estnisk språkkontakt. Studier över estniskans inflytande på de estlandssvenska dialekterna*. Stockholm.

Liberman, A. (1982). *The Scandinavian Language*, Vol. 1, Germanic accentology. University of Minnesota: University of Minnesota Press.

Riad, T. (1998). Towards a Scandinavian accent typology. In W. Kehrein & R. Wiese (Eds.), *Phonology and morphology of the Germanic languages* (pp. 77–109). Tübingen: Max Niemeyer.

Schötz, S., Bruce, G., & Segerup, M. (2011). *Dialektal variation i svensk ordmelodi – sammansatta ord.* Svenskans beskrivning, Vol. 31 (pp. 314–326). Institutionen för språkstudier, Umeå universitet.

Schötz, S., Bruce, G., Segerup, M., Beskow, J., Gustafson, J., & Granström, B. (2012). Regional varieties of Swedish: Models and synthesis. In: O. Niebuhr (Ed.), *Prosodies – context, function, communication* (pp. 119–134). Berlin/New York: de Gruyter.

Selenius, E. (1972). *Västnyländsk ordaccent*. Studier i nordisk filologi, Vol. 59. Helsingfors.

Selenius, E. (1978). Studies in the development of the 2-accent system in Finland-Swedish. In E. Gårding, G. Bruce & R. Bannert (Eds.), *Nordic Prosody: Papers from a symposium*. (pp. 229–236). Lund: Lund University.

Tiberg, N. (1962). *Estlandssvenska språkdrag*. Lund: Carl Bloms Boktryckeri A.-B.

Next contribution