Perception and production of Swedish word accents by Somali L1 speakers

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Abstract

According to the feature hypothesis, a phonological feature of the L2 is easier to acquire if the L1 of the speaker contains the same feature. Both Swedish and Somali are languages with word accents and therefor it is, according to this hypothesis, assumed that L1 speakers of Somali will acquire the word accents of Swedish easier than L1 speakers of languages without word accents. This study shows that Somali L1 speakers with Swedish L2 produce the Swedish word accents accurately but are not, as a group, better than chance in a perception test of the same accents. This study contradicts the feature hypothesis when it comes to perception but confirms it when it comes to production.

Introduction

The purpose of this study is to investigate if a speaker with word accents in their L1 has an easier time perceiving and producing the word accents in an L2. This is all based on the feature hypothesis, which states that "L2 features not used to signal phonological contrast in L1 will be difficult to perceive for the L2 learner and this difficulty will be reflected in the learner's production of the contrast based on this feature" (McAllister et al., 2002).

The hypothesis has been tested on both segmental and suprasegmental features (see Flege, 1995) and previous studies of the L2 acquisition of tone do conclude that it is easier to perceive and produce the tones of an L2 if the L1 makes use of tone (e.g. Gottfried & Suiter, 1997; Schaefer & Darcy, 2013; Burnham et al., 1996). Schaefer & Darcy's study is particularly interesting since it connects the bias for acquiring intonational features with the tonal prominence hierarchy.

The tonal prominence hierarchy is a hierarchy of salience of intonational features in languages. Highest in the hierarchy are tone languages (Mandarin, Thai), second are word accent languages (Swedish, Japanese, Somali), third are word stress languages (German, Farsi) and fourth are intonation only languages (French, Korean). The results of their study on the perception of Thai tones showed that L1 speakers of languages higher up in the hierarchy were more accurate in perceiving the tones than L1 speakers of languages lower in the hierarchy. However, Tronnier & Zetterholm (2013a) tested L2-acquisition of Swedish word accents with L1 speakers of languages on different steps of this hierarchy. Their results showed that L1 speakers of languages higher than Swedish in the hierarchy (Vietnamese and Thai) did not produce the word accents, but L1 speakers of Somali, a language placed on the same level as Swedish in the hierarchy did. The speakers of a language lower in the hierarchy, Farsi, did not either produce the word accents. This study is an attempt to develop their results with new Somali L1 informants and also with an addition of a perception study.

There is not a lot of literature on the cross-linguistic acquisition of word accents, but there are some studies on the acquisition of Scandinavian word accents that should be mentioned: Tronnier and Zetterholm (2013a) is already discussed above. In addition there is a study by Kaiser (2011), who investigated perception and production of Swedish word accents by German L1-speakers and concluded that they did not perceive or produce them. Another is Van Dommelen & Husby (2009) who compared the perception of Norwegian word accents by Mandarin and German L1 speakers. They concluded that Mandarin L1 speakers were better at perceiving the word accents than the German L1 speakers.

Looking at the litterature, more studies are done on the L2 acquisition of tone compared to L2 acquisition of other kinds of intonational features such as word accents, and more research is focused on perception compared to production. This study is an attempt to study both the L2 production and the L2 perception of such a system: Swedish word accents.

Swedish word accents

There are two different word accents in Swedish, Accent 1, below A1 and Accent 2, below A2. The tones are assigned to the syllable and the f0 pattern differs between different varieties of Swedish. However, the common denominator is that A2 has a later tonal peak than A1. In some regional varieties A2 is realized with a second peak (Bruce, 2010). This study deals with two of the varieties, the South Swedish and the Central Swedish, whose f0 contours look like figure 1 and 2.

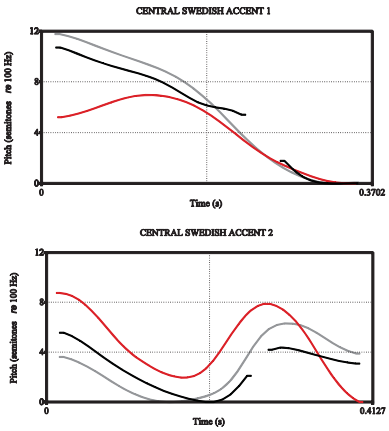

Figure 1. Central Swedish A1 and A2.

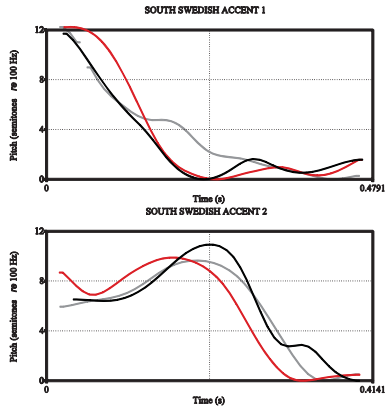

Figure 2. South Swedish A1 and A2.

The distribution of the word accents is fairly predictable, with different suffixes and morphological categories assigned to the different accents. A1 is more common and is usually described as the unmarked one. There are also varieties of Swedish that do not distinguish between the word accents, e.g. the Finland Swedish varieties. The word accent distinction has been shown to not to be critical for the perception of Swedish and many speakers of L2 Swedish omit the distinction (Thorén, 2005).

Somali word accents

Somali word accents are assigned to the mora, and only vowels are assigned with morae. They only occur where

there are two morae as in long vowels and diphthongs. There can only be one high tone per word and there are three accent patterns that are available: high tone on the last mora, low elsewhere; high tone on the penultimate mora, low elsewhere; or low tones on all morae. The different accent patterns are related to different grammatical functions, such as gender, number and case on NPs (Saeed, 1999).

There are both differences and similarities between the systems. One difference is the notion that the Swedish word accents are assigned to the syllable whereas the Somali word accents are assigned to the mora. Another difference is that Somali only allows one high tone for each word, while some of the Swedish varieties allow two.

The Somali word accents are described as having grammatical function, while the Swedish ones mostly are described as lexical, however, as stated before, Swedish word accents are affected by morphological affixes so there might not be a clear dichotomy.

Material and Method

This section contains information about the informants, and descriptions of the two tests, starting with the perception test, followed by the production test.

Informants

Three informants with Somali L1 and Swedish L2 participated in this study. They were between 28-38 years old, one male and two females. One of the female lived and had acquired Swedish in Helsingborg, where the South Swedish variety is used, and one female and one male lived and had learnt Swedish in Sundsvall, where the Central Swedish variety is used. They had started learning Swedish from age 17-25. None of the informants had had been taught about the word accents in Swedish.

The session with the informant in Helsingborg took place in a school environment, and the sessions with the informants in Sundsvall took place in a home environment.

In addition, there was a Swedish L1 control group for the perception test, described below. This group consisted of five people, three females and two males between 20 and 25 years old.

Perception test

The perception of the Swedish word accents was tested with a discrimination test, constructed and executed in Praat (Boersma & Weenink, 2014). The task was to report if two sentences following each other without a break were the same or different. There were two different boxes to click. Each sentence contained the carrier sentence *"Det var X jag menade"* 'It was X that I meant'. The target word was a word from a minimal pair of either */ánden/ 'the duck' - /ànden/ 'the spirit'; /sté:gen/ 'the (foot) steps' - /stè:gen/ 'the ladder'; or /pó:len/ 'Poland' - /pò:len/ 'the pole'. There were three versions of each sentence to avoid that the informants listened to other cues.* In total 36 sentence pairs were played. 9 instances of A1+A1; 9 of A2+A2; 9 of A1+A2; and 9 of A2+A1. There were two tests. One with a South Swedish speaking female and one with a Central Swedish speaking female. The informants in Sundsvall were only tested on the Central Swedish test.

The results of the L2 informants were also compared with those of a Swedish L1 control group. These results were analyzed statistically to check for statistical significance in the difference between the L2 and the L1 group.

Production test

The production test was executed with read sentences. Each sentence contained a target word, expected to be focused. The target word was a two syllable verb with infinite with A2 and present tense with A1. The sentences were recorded with a TASCAM DR-07 recording device and later analyzed in Praat. The fundamental frequency was analyzed with a script that normalized the curves by putting the minimum Hz

value of each word at a baseline with the value 0 on a semitone scale. The script was originally developed by Susanne Schötz and used in e.g. Schötz et al. (2011), but modified and adapted for this particular study by the author.

The word accents were considered accurate if there was a distinction, if A2 had a later intonational peak and if they resembled the patterns displayed in figure 1 and 2.

Results

Perception test

First, an average number for all participants was calculated for both varieties. No significant difference was found (t = -0.143, p = 0.888). The results are shown in figure 3.

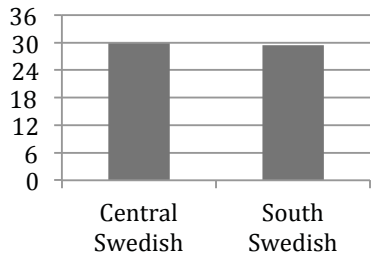

Figure 3. Average results for all participants on both tests.

Next, the mean scores of the two different groups, L1 and L2, were compared. The results are shown in figure 4.

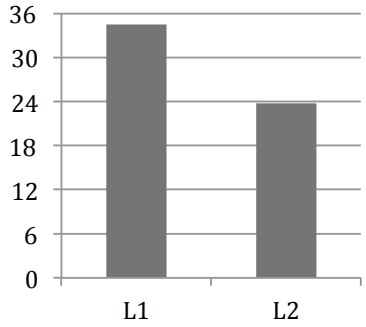

Figure 4. Comparison of results of L1 and L2 group.

The L1 group had an average score of 34.5 and the L2 group had an average score of 23.75. The L2 group was then compared to the L1 group with a t-test and the difference was significant (t = -7.259, p = 0.000).

To have a better than chance score on the test one would have to have at least 24 correct answers. The L2 groups show results that are not above chance. However, the data is very small and the individual difference was large. The L1 group performed significantly above chance.

Production test

The results of the production test showed that the L2 group did differentiate between the two word accents, according to the pattern expected of the area where they acquired Swedish. Figure 5 and 6 shows the speaker with South Swedish like word accent distinction:

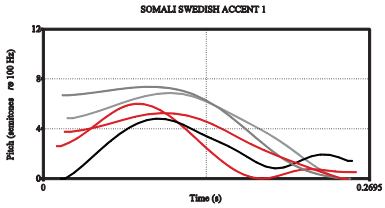

Figure 5. L2 A1, speaker in Helsingborg.

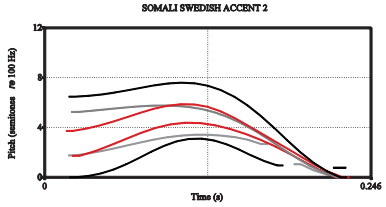

Figure 6. L2 A2, speaker in Helsingborg

As can be seen the intonational peak is later in the A2 examples than in the A1. Figure 7 and 8 shows examples from one of the informants in Sundsvall.

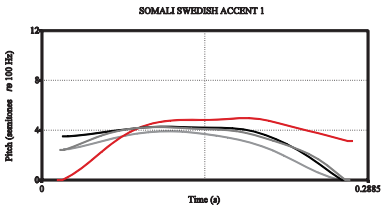

Figure 7. L2 A1, speaker in Sundsvall

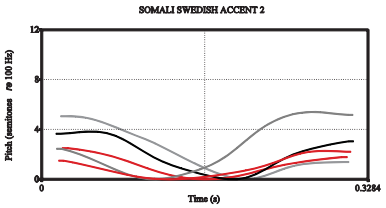

Figure 8. L2 A2, speaker in Sundsvall

Figure 7 shows the early peak expected to be found in A1 and figure 8 shows the double-peaked pattern expected for A2.

The results did show some variation in terms of tonal gesture, but there was always a distinction between A1 and A2.

Discussion

First, a reminder of the feature hypothesis: "L2 features not used to signal phonological contrast in L1 will be difficult to perceive for the L2 learner and this difficulty will be reflected in the learner's production of the contrast based on this feature" (McAllister et al., 2002). The hypothesis emphasizes that the perception of the L2 feature will be reflected in the production, but in this study, that was not the case. In the perception test, the L2 informants did not show better than chance results, but contradictory, the production test showed that the speakers did differentiate between the word accents, and that they did so somewhat consistently. One question to be posed though, is how Swedish L1 speakers would evaluate these accents, just as Tronnier & Zetterholm (2013b) have done as a follow-up study. The best method would be a discrimination test, but that is not possible with this material since it does not consist of minimal pairs.

There could also be other reasons for why the results of the perception test showed up like it did. One is the construction of the test. The instructions could have been too unclear or misleading, and the minimal pairs used are not that common and especially not in that kind of context. Since the informants did not know what was looked for, maybe they missed the target completely. However, the L1 control group got almost all instances correct with the same instructions.

The word accents are shown to be somewhat redundant (Thorén, 2005), and none of the informants informed that they had been taught anything about them when they learned Swedish in the first place. However, van Dommelen & Husby (2009) showed that training in perceiving the Norwegian word accents did not improve the results.

This study confirms the findings of Zetterholm & Tronnier (2013a) in that Somali L1 speakers with Swedish L2 do produce the word accents. This implies that the word accents are more easily accessible for speakers of languages at the same step in the tonal prominence hierarchy. However, further research might want to focus on speakers of different languages with word accents and study if they learn the word accents of other word accent languages. More evidence for cross-linguistic tone production and perception is also needed.

Another thing to look more into is the connection between production and perception, and reasons for why the results showed up like they did.

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