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SWEDISH TONAL WORD ACCENTS PRODUCED BY VIETNAMESE L1-SPEAKERS

Elisabeth Zetterholm, Linnaeus University and Stockholm University, Sweden

Mechtild Tronnier, Lund University, Sweden

This study addresses the question of whether Vietnamese L1 speakers make an adequate distinction in tonal patterns when producing two tonal accent words in their L2, Swedish. Both languages use tonal features to distinguish lexical meaning. Some previous studies suggest that a lexical tonal L1 may provide L2 learners an advantage in perceptually discriminating between different tones in another tone language, while other studies show that this may not necessarily be the case. What constitutes an adequate distinction is identified as such by native speakers/listeners of Swedish. Results revealed that no adequate distinction is made between the tone accents by the L2 speakers. However, one tonal pattern is produced more frequently and it seems to resemble one of the Swedish accents, but not the other. It may be that one of the Vietnamese tones is similar to a certain accent pattern in Swedish and is therefore recognized by the L2 speakers and transferred in tonal accent production.

INTRODUCTION

Accurate word accent processing, both perception and production, is one of the obstacles for L2 learners of Swedish. There are two word accents in Swedish based on varied tonal contours aligned with the main stressed syllable in the word. They can either be lexically distinctive or prepare the listener for the following morphological suffix. According to observations made by teachers of Swedish as a second language from sessions on pronunciation training, speakers with a tonal L1 seem to be better able to cope with this obstacle. In the study presented here, the hypothesis is examined that speakers with a lexical tonal L1 have an advantage in the production of tonal word accents in the L2. However, no adequate distinction is made between the tone accents by the L2-speakers.The identification of the two accent patterns produced by L2 speakers as compared to those produced by Swedish L1 speakers is analyzed.

Tonal Perception in L2

It has been claimed that it is an advantage if the speakers' L1 has lexical tones when it comes to perceptually discriminating among tones in another tone language (Wang et al., 2004). Speakers of non-tonal L1s, on the other hand, seem to be less sensitive to lexical tone contrast (Wayland & Guion, 2004). In cases where a speaker's L1 has pitch accents, the ability to contrast tones in a foreign tone language is comparable to the abilities of L1 speakers of a tone language (Burnham et al., 1996).

A study on perception accuracy of lexical tones (Schaefer & Darcy, 2014) suggests a typology of pitch prominence, based on findings that L1 speakers of a tone language perform best when identifying tones in L2; whereas L1 speakers of a pitch accent language perform less well,

although these speakers still perform better than speakers of an L1 with word stress and 'intonation-only' characteristics.

Tonal Production in L2

In a comparative study of Swedish tone accent production (Tronnier & Zetterholm, 2013), it was shown that L1 speakers of a tone language (Thai and Vietnamese) produced a less systematic distinction when compared to Somali L1 speakers, even though Somali is a tone accent language, as is Swedish. A follow up-study (Tronnier & Zetterholm, 2014) showed otherwise: that the tonal patterns used for the systematic distinction in production was not sufficient for native speakers/listeners to identify the appropriate word equally as often as those produced by L1 speakers. In this paper, the typology presented in Schaefer and Darcy (2014) will be tested beyond the production data in that the degree of adequate L2 production of tonal accents by L1 speakers of a tone language (Vietnamese) will be investigated through perception tests with L1 informants.

Tone Accents in Swedish

The two tonal word accents in Swedish are aligned to the stressed syllable in a word. The accent types are called Accent 1 (acute) and Accent 2 (grave). Two segmentally similar words can differ in accent type on the basis of variation of the pitch contour alignment, which leads to several minimal pairs distinguished only by tone accent. If lexical stress falls on the initial syllable, which is the case for the target words in this study, both Accent 1 and Accent 2 may occur and are distinctive in meaning. The word's morphological structure, the placement of the stressed syllable and the origin of the word decide which of the two accents occurs.

Although there is variation across Swedish dialects, there is always an earlier HL-pattern (F0-fall) for Accent 1 compared to Accent 2. Very few dialects do not make any accent distinction. In Southern Swedish dialects the fall associated with Accent 1 occurs early in the stressed syllable, whereas it occurs after the stressed syllable for Accent 2 (Bruce & Gårding, 1978). Accent 2 is considered to be the marked member of the accent opposition (Riad, 1998). All speakers in this study reside in the Southern part of Sweden. Figure 1 shows one example of the two word accents in a Southern Swedish dialect.

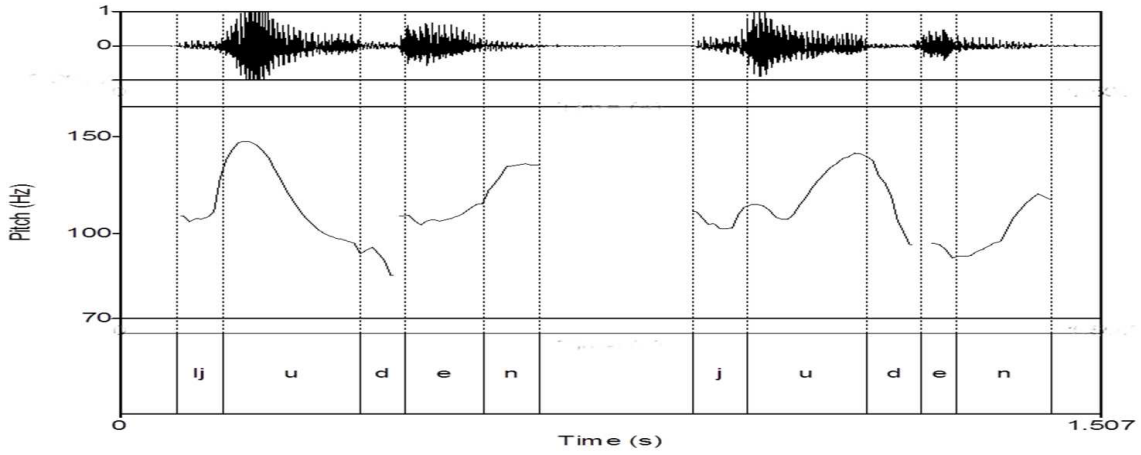

Figure 1. Realization of Accent 1 (left) and Accent 2 (right) in Southern Swedish; stress on the first syllable in both words. The words are *ljuden* (the sound) [jú:dən] to the left and *juden* (the Jew) [jù:dən] to the right.

Lexical Tones in Vietnamese

Vietnamese is a contour tone language with six lexical tones divided into two basic registers; high and low tones. See Figure 2. The high tones are high level, high rising and broken fall-rise (glottalized and abrupt rise). The low tones are gradual falling, low dropping and curve (gradual fall and rise) (Ingram & Nguyen, 2006). The pitch height and the direction of pitch movement are the two primary dimensions to contrast lexical items and words. In addition, tones are distinguished by voice quality, intensity, and duration (Nguyen & Ingram, 2005). However, direction of pitch movement, pitch height and voice quality are more important features than other tonal dimensions such as duration and intensity in tone recognition.

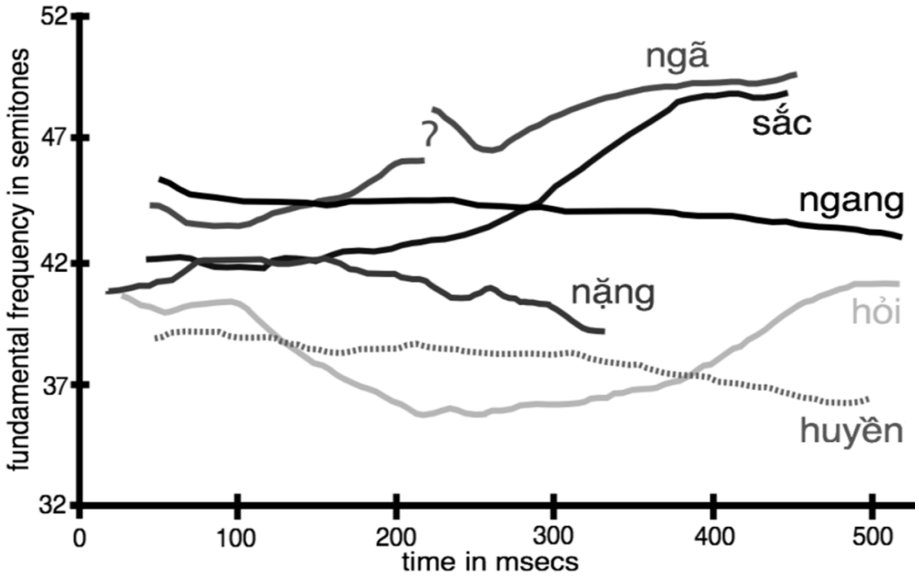

Figure 2. Vietnamese tones (adopted from Nguyen & Edmondson, 1998).

THE INVESTIGATION

The present study is concerned with the acquisition of the L2 tone accent distinction. The accuracy of the two accent patterns produced by Swedish L2 speakers with Vietnamese as their L1 is examined by means of identification tests, carried out by listeners with Swedish L1. The Swedish L2 speakers investigated here did not receive any specific training in the Swedish tone accents when studying Swedish as a second language. Therefore, the knowledge they have about the distinction between the two word accents has developed when practicing Swedish in their daily lives. It is, however, not clear whether the L2 speakers are aware of the fact that tonal accent distinction occurs in Swedish. An acoustic analysis of the Vietnamese speakers' production of the two word accents shows a mixed pattern. For some examples there is no distinction, but in most cases a pattern similar to Accent 2 is preferred (Tronnier & Zetterholm, 2013). The identification rate of the stimuli produced by Vietnamese L1 speakers is compared to the results of the identification of a matching set of stimuli produced by speakers with Swedish as their L1. In addition, listeners were asked to rank the degree of difficulty encountered when deciding which tone accent they heard during the identification test.

Recordings, test material and listeners

Recordings of two native speakers of Swedish and two native speakers of Northern Vietnamese with Swedish as their L2 were used for this study. The recordings consisted of read speech and the sentences were prepared with four minimal pairs contrasted by word accents (see Table 1). The words are quite common Swedish words but were chosen primarily because they are minimal pairs. The eight target words produced by each speaker were carefully cut out from the recordings and the resulting 32 stimuli were randomized and presented to 20 listeners with Swedish as their L1. The listeners' ages ranged from 27 to 74 and the average age was 42. About three-fourths of the listeners indicated that they speak a dialect from the Southern or the Southwest part of Sweden. They all lived in the south of Sweden, and they all speak a dialect with a distinction between the two word accents. The influence of dialectal variation among the listeners, however, will not be taken into further consideration in this study. The test was constructed in the learning platform MyMoodle. All listeners carried out the test on their own computers, using local loudspeakers or headsets. After listening to a stimulus, they had to check one of the two listed words, a forced choice test. They could listen to the stimulus as many times as they wanted, but could not return to earlier items in the test. They also had to express how difficult it was to discriminate the accent on a scale of 1-5, where 1 represented a very easy decision and 5 a very difficult decision.

Table 2

Target words and their morphological structure: all words are stressed on the first syllable, which is where the difference in tonal accent is also found.

Accent 1	Accent 2
fäster (attach) [fɛ́stər], verb, 3rd pers.sing.	*fester* (parties) [fɛ̀stər], noun, common gender, pl.indef.
Oskar (name for a boy) [ɔ́skar]	*åskar* (thunderstorm) [ɔ̀skar], verb, 3rd pers.sing.
stegen (steps) [sté:gən], noun, neutrum, pl.def.	*stegen* (ladder) [stè:gən], noun, common gender, sing.def.
tecken (sign) [tɛ́kən], noun, neutrum, pl.def.	*täcken* (bed cover) [tɛ̀kən], noun, neutrum, sing.def.

Data Analysis

The number of correct identifications and the experienced degree of difficulty of identification of the target words in relationship to the speakers' L1 obtained from the listeners were statistically analyzed using t-tests for independent samples. In addition, the influence of the individual tone accents was taken into consideration.

RESULTS

Identification

The diagrams in Figures 3-6 give an overview of the general results of this study and also provide detailed information and more specific results. In the diagrams, the mean identification rate (y-axis) of the eight target words (x-axis) across the 20 listeners is presented, where the filled part (lower) of the columns represents the correct answers and the barred part (upper) the inaccurate answers. Each diagram represents the results for one of the four speakers, who produced stimuli for this study. Furthermore, the columns are organized such that the members of a minimal pair are placed next to each other, target words carrying Accent 1 are labeled with '1', and those target words carrying Accent 2 are labeled with '2'.

Correct identification was very much dependent on the speakers' L1 in that the stimuli produced by L1 speakers of Swedish were identified significantly more often, although not in every case ($p<.005$). For either L1, no difference in identification was found between the stimuli produced by the two speakers (Swedish L1: $p>0.5$ and Vietnamese L1: $p>0.1$). None of the accents is more often correctly identified for the stimuli produced by the Swedish L1 speakers ($p>0.1$). For the L2 speakers, however, Accent 2-words were more often correctly identified than Accent 1-words ($p<0.01$). Comparing the identification rate between the two groups of speakers, Accent 1-words were more frequently identified when produced by L1 speakers ($p<0.001$) than the Accent 2-words ($p>0.5$). Accent 2-words were generally more successfully identified for L2 speakers than

their Accent 1-words, although with slightly less accuracy than Accent 2-words produced by L1-speakers.

Difficulty

Tone accent identification was significantly more difficult for the stimuli produced by the Vietnamese speakers ($p<0.005$). Within each group of L1 speakers, neither of the accents was more difficult to identify than the other (for Swedish L1: $p>0.05$ and for Vietnamese L1: $p>0.1$), although the results indicate that stimuli produced by L2 speakers were generally more difficult to identify. However, the confidence for correct identification varied between different types of word accents for the different L1s in that the marked Accent 2 was experienced to be equally difficult to identify for the stimuli regardless of the producer's L1 ($p>0.1$). This was not the case for Accent 1-words. For unmarked Accent 1-words, stimuli produced by the Swedish L1 speakers were much easier to identify than those produced by Vietnamese L1 speakers ($p<0.005$).

Correct Identification vs. Experienced Difficulty

There is a general correlation between the number of correctly identified stimuli and the degree of difficulty experienced, in that the stimuli produced by Swedish L1 speakers were identified correctly significantly more often and were experienced as being significantly easier to identify. Identification of the individual accent was equally accurate and equally difficult in the case of Swedish L1 speakers. In the case of L2 speakers, however, Accent 2-words were identified correctly more frequently than Accent 1-words, although they were experienced to be equally difficult. Accent 2-words were correctly identified to the same extent and rated as equally difficult for both groups of speakers, whereas Accent 1-words were both less correctly identified and also judged to be more difficult when produced by L2 speakers.

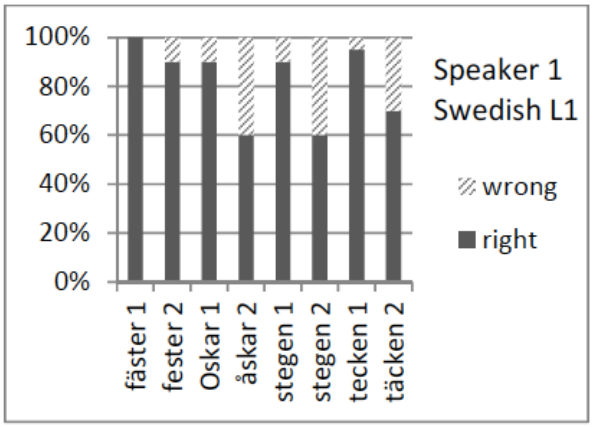

Figure 3. Mean identification rate (%) of the eight target words across the 20 listeners for stimuli produced by one of the speakers with Swedish L1, Speaker 1.

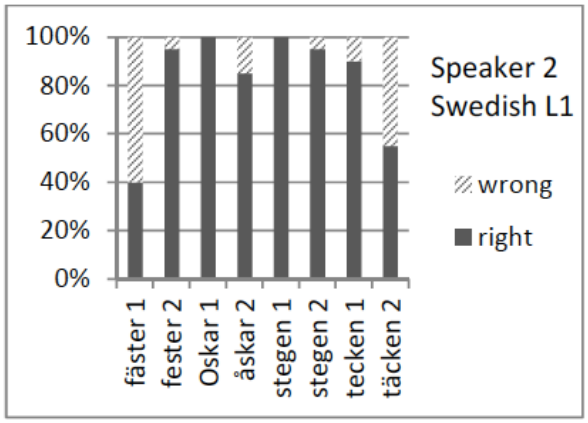

Figure 4. Mean identification rate (%) of the eight target words across the 20 listeners for stimuli produced by one of the speakers with Swedish L1, Speaker 2.

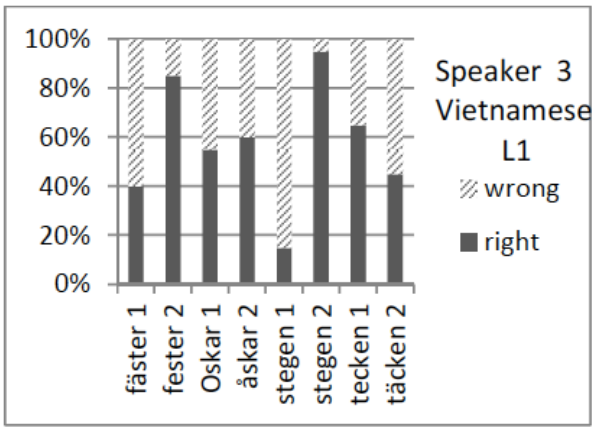

Figure 5. Mean identification rate (%) of the eight target words across the 20 listeners for stimuli produced by one of the speakers with Vietnamese L1, Speaker 3.

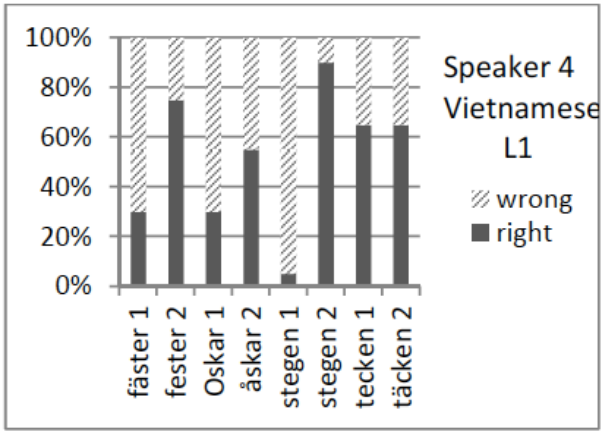

Figure 6. Mean identification rate (%) of the eight target words across the 20 listeners for stimuli produced by one of the speakers with Vietnamese L1, Speaker 4.

DISCUSSION

The tone accents were generally identified with less accuracy and were perceived to be more difficult to identify for the stimuli produced by L2 speakers. This leads to the conclusion that the tonal patterns produced to distinguish the tonal accents in L2 Swedish are not sufficiently similar to what is expected by the listeners, who are L1-speakers of Swedish. This confirms the results in Tronnier & Zetterholm (2013), which showed from an analysis of produced pitch patterns that no systematic distinction between Accent 1-words and Accent 2-words was made. Placing the current results within a typological framework similar to the one suggested in Schaefer and Darcy (2014), i.e., how L1 speakers of languages with different tone typologies process tonal characteristics in other languages of the same or different level of tonal typology, has to be investigated more systematically. Such an investigation should include comparisons between results from similar studies of L1 speakers of other languages with varied tonal typology, such as those found in Tronnier and Zetterholm (2014).

There is, however, more to say about how the individual word accents were dealt with. It is clear that most of the tonal patterns produced by the Vietnamese L1 speakers were perceived as Accent 2-patterns, and in most cases they were correctly identified as Accent 2-words, but in many cases they were misidentified as Accent 2-words that should have been Accent 1. Furthermore, Accent 2-words were rated as being easier to identify. It is therefore plausible that L2 speakers seem to be comfortable producing a tonal pattern which is closely related and acceptable for an Accent 2-contour, although it is used for the wrong words at times, i.e., the tonal pattern was overgeneralized. The question that arises here is whether one of the tones in Vietnamese resembles the Swedish Accent 2-pattern very closely. A systematic investigation is needed to relate and compare the tones in Vietnamese with the tonal patterns in Swedish. This is especially necessary for the tonal pattern of Accent 2.

It has been claimed that the Accent 2 is the marked accent in Swedish (Riad, 1998). This also means that the contour assigned to Accent 2 allows less tonal variation than it does in the unmarked case, Accent 1. In that respect, listeners indicated that some contours fit within the restricted tonal framework for Accent 2, a finding that also supports the idea that a corresponding tonal pattern adequate for Accent 2 in Swedish may exist in Vietnamese. So far, no decision can be made as to which tone in Vietnamese could be the appropriate one (see Figure 2). In contrast, it has been shown in a previous study (Tronnier & Zetterholm, 2014), that L2-speakers, with an L1 other than Vietnamese, produced tonal patterns more accurately for Accent 1-words, a finding which was interpreted as being in agreement with the hypothesis that Accent 1 is the unmarked accent.

In summary, the assignment of tonal contours in L2 Swedish produced by the L1 speakers of Vietnamese – a tone language – was not adequate. However, tonal patterns acceptable as Accent 2-contours were produced more frequently and were identified as such, although they were also incorrectly applied to Accent 1-words. In conclusion, the L1 speakers of the tone language Vietnamese do not generally produce appropriate tonal patterns or distinguish them in an appropriate way in L2 Swedish. They often produce one, probably familiar, tone contour that is acceptable for one of the Swedish tonal accents, namely Accent 2. However, they also produce this pattern for words where it is not acceptable.

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ABOUT THE AUTHORS

Elisabeth Zetterholm (elisabeth.zetterholm@isd.su.se) is a senior lecturer and researcher in Swedish as a second language at Linnaeus University and Stockholm University, Sweden. Her current research interests focus on pronunciation in second language acquisition, comprising segmental and prosodic issues. When teaching, most of her students are prospective teachers of Swedish as a second language and therefore she wants to develop the teaching methodology. She received her PhD in phonetics at Lund University, Sweden (2003). Her thesis and postdoctoral research were about voice imitation, with a focus on speaker identification and individual features in voice and speech.

Mechtild Tronnier (mechtild.tronnier@ling.lu.se) is a senior lecturer and researcher in phonetics at Lund University, Sweden. Her current research interest focuses on pronunciation in second language acquisition, comprising segmental and prosodic issues. When lecturing, her students are enrolled in diverse programs and range from prospective teachers of Swedish as a second language, speech pathology students to students in linguistics on both undergraduate and graduate levels. She received her PhD in phonetics at Lund University, Sweden (1998). Her thesis work was concerned with nasals and nasality with a focus on Japanese.

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