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**SECOND LANGUAGE PROSODY ACQUISITION BY TELEUT
NATIVES**

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Abstract

The Teleut productions of prosodic parameters by native speakers were studied. The word prosody variables include: 1) vowel intensity, 2) vowel length, and 3) fundamental frequency curve. These parameters of the Teleut word forms were examined in the program 'Praat'. Our motivation for the study is to address: 1) how Teleuts acquire and produce word prosody patterns of their native language, 2) the effects of language interference in the acquisition of prosodic parameters of the Russian language by Teleuts, and 3) the issues of different approaches in teaching word prosody and intonation of foreign languages. Results of the Teleut acoustic data show that they were typologically commensurate with those of other Turkic languages of South Siberia (Khakas, Teleut and Telengit dialect of Altai) and other regions (Tatar and Yakut). However, some unique features of prosodic patterns were revealed, and effects based on pronunciation of the Teleut natives were found which will be discussed in the context of existing studies considering the acquisition of prosodic and intonation parameters related to word forms and speech utterances.

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1. Introduction

The Teleut language is the language of the Turkic-speaking small ethnic group named Teleuts, self-name is 'Tadar kizhi' or 'Teleut kizhi' ('kizhi' means 'man'). The most numerous group of Teleuts live in the Belovsky district of the Kemerovo region, along the rivers Large and Small Bachat. In the scientific literature it is known as 'Bachat Teleuts' (self-name is 'Payat kizhi'). Another small group of Teleuts live together with Shors in the Teleut Zavodskoy district of Novokuznetsk, Kemerovo region. About 200 people live compactly in the Altai region. At present, there are no significant groups of Teleuts in the Altai Republic. The name 'Teleut language' traditionally refers to the language spoken by the Teleuts living in the territory of the Kemerovo region along the rivers Large and Small Bachat. According to the 2010 census, the Teleut language is spoken by 1892 people out of a total of 2650 Teleuts (Urtegeshev, 2009). Thus, the Teleut language is endangered language of indigenous people of Siberia. All Teleuts are bilingual: they speak both the Russian and Teleut languages.

Until recently, the Teleut language has been considered with Telengt as a dialect of the Altai language. Now Teleut is recognized as an independent language. Our presupposition is that Teleut being related with Altai has both common and specific prosodic features, according to the theory of the articulatory-acoustic base (AAB) proposed by Nadelyaev. AAB of any ethnic group assumes that substrate features are distinctive existing on the background of historically common ones. AAB is having being acquired by people in their early childhood and it contributes to self-identity of certain ethnicity (Nadelyaev, 1986).

The intonation of the Turkic languages of southern Siberia is studied much less than their vocalism and consonantism, and in some cases it has no description at all, for example, of Tuba, Chalcan, Altai Kalmak, etc.

In scientific works there are different views on the definition of intonation. Bondarko considers speech intonation in the narrow sense as referring to the melody, namely the direction, form, register (or tone level) of the fundamental frequency in utterances (Bondarko, 1998). For many researchers (Cooper & Sorensen, 1977; Grønnum, 1995; Ladd, 1985; 1988; 1996; O'Connor & Arnold, 1973; Pierrehumbert, 1979), speech intonation is mainly the melody. This discrepancy in the definitions of intonation is due to the fact that the realizations of different intonation parameters coincide, and given the fact that the frequency of the main tone makes a lexical tone or communicative type of a statement, it is the priority. For instance, in the Russian language intensity, length and melody complement each other, creating different shades of the pre-center, center and post-center parts of a statement, and reducing unstressed syllables (Bryzgunova, 1980). However, for Turkic languages in addition to melody, the parameters of length and intensity are significant, the realization of which with melody can hardly be explained by any regularity, as study by Ryasyanen (1955) analyzes a large number of works on word stress in Turkic languages. For example, some scholars have noted second tonic stress (which is more ancient by origin) in addition to the main expiratory one. Radlov considered that in the Turkic languages there are two musical accents: ascending on the first syllable and descending – on the last (quoted from: Ryasyanen, 1955).

2. Problem Statement

The Turkic languages have been spoken in southern Siberia since ancient times and these languages are the subject of study by many linguists. The relevance of studying the phonetics of southern Siberian Turkic languages in typological and comparative-historical aspects is characterized in two ways:

- the literary norms of the Turkic languages, such as Khakas and Altai, are still developing, so the description of the pronunciation base of the basic dialects plays a primary role;
- some languages and dialects (for example, Teleut, Telengit, Northern dialects of Altai) not supported by local authorities are endangered, therefore fixing their phonetics is a crucial task for typological and comparative-historical linguistics.

As stated above, the Teleut prosody has not been fully studied by experimental phonetic methods. But only experimental methods without taking into consideration the perception of native speakers are not enough. Russian-speaking students, or Russian students who study one of the Turkic languages of Southern Siberia, face difficulties when the narrow approach to the study of intonation and prosody having been applied. Different intonation parameters, such as pitch, intensity, and length form unique accent patterns in each language.

3. Research Questions

This article aims to introduce a broader typological approach to teaching intonation and phonetics. So, the questions of our research are: 1) comparison, consideration, and analysis of many linguistic data concerning teaching accent; 2) theoretical issues of native speakers' perception; 3) problems of phonetic interference in second language acquisition.

4. Purpose of the Study

Aiming to determine relevant Teleut acoustic parameters of the word accent of two-syllable word forms, the intensity, length, fundamental frequency, local tones on syllables and global prosodic contours of the words are to be analyzed. The perception of native speakers is the only frame for interpreting our given data.

5. Research Methods

The acoustic parameters of prosody and the perception of the stress of the following forty five two-syllable word forms were analyzed: *ada* 'his name', *acha* 'brother', *Malbaq* 'wide', *Many* 'new', *izir* 'will heat', *kebe* 'appearance', *keche* 'yesterday', *kȳzȳrt* 'storm', *qalyq* 'people', *qyzyl* 'red', *oro* 'pit', *orton* 'middle', *tabaq* 'cup', *taqda* 'tomorrow', *tolq* 'corner'. These word forms were spoken by three speakers living in Bekovo village of the Belovsky district of the Kemerovo region, Russia. The speech was processed in the computer program 'Praat'. The analysis of the linguistic material was conducted by means of experimental-phonetic research methods: synchronous-descriptive, spectrographic, audio-visual. In our work we relied on the subjective perception of native speakers.

Aiming to determine relevant Teleut acoustic parameters of the word accent of two-syllable word forms, the intensity, length, fundamental frequency, local tones on syllables and global prosodic contours of the words were analyzed.

5.1. The Acoustic Parameter of Intensity

The vowel intensity is expressed in decibels (dB). Measurements were conducted in the program 'Praat'. The intensity of the first vowel of a two-syllable word form was compared with the second one. According to given data, the intensity of the first vowel of a two-syllable word form was different with the second one in most utterances. Of the forty five utterances, the first syllable was more intensive in thirty cases, and the second syllable – in fifteen cases. Speakers differently implemented dynamic stress: d. 1 accented the first syllable (*Many* 'new', *kebe* 'appearance', *қалық* 'people', *қызыл* 'red', *оро* 'pit', *табақ* 'cup', *таңда* 'tomorrow', *толық* 'corner') as well as the second syllable (*ada* 'his name', *acha* 'brother', *Malbaқ* 'wide', *izir* 'will heat', *keche* 'yesterday', *күзйрт* 'storm', *orton* 'middle'), d. 2 and d. 3 emphasized the first syllable of word forms more often (d. 2: *Malbaқ* 'wide', *Many* 'new', *kebe* 'appearance', *keche* 'yesterday', *қалық* 'people', *қызыл* 'red', *оро* 'pit', *orton* 'middle', *табақ* 'cup', *таңда* 'tomorrow', *толық* 'corner'; d. 3: *ada* 'his name', *Many* 'new', *izir* 'will heat', *keche* 'yesterday', *күзйрт* 'storm', *қалық* 'people', *қызыл* 'red', *оро* 'pit', *orton* 'middle', *табақ* 'cup', *таңда* 'tomorrow', *толық* 'corner').

Thus, the first syllable was characterized by the maximum of intensity more frequently. The data of the Teleut language do not agree with the data of the Altai language, in which the intensity is an additional parameter of syllabic accentuation and marks the final syllable of a word form (Badanova, 2011).

5.2. The Acoustic Parameter of Length

Researchers detected the opposition of short and long vowels in the Teleut language system (Fisakova, 1984), (Gavrilin, 1984). All vowels of the analyzed word forms are phonologically short. The length of vowels in the first and second syllables of forty five homogeneous and heterogeneous two-syllable word forms pronounced by three speakers was measured. Absolute length in milliseconds (ms), average sound length in a word, and relative vowel length (%) were measured. All the speakers emphasized the second syllable by length more often than the first one. So, d. 1 accented the second syllable by length in eight cases (*acha* 'brother', *izir* 'will heat', *keche* 'yesterday', *күзйрт* 'storm', *қалық* 'people', *оро* 'pit', *табақ* 'cup', *таңда* 'tomorrow'), d. 2 – in nine cases (*acha* 'brother', *Malbaқ* 'wide', *izir* 'will heat', *keche* 'yesterday', *күзйрт* 'storm', *қызыл* 'red', *оро* 'pit', *табақ* 'cup', *таңда* 'tomorrow'), d. 3 – also in nine cases (*acha* 'brother', *Malbaқ* 'wide', *izir* 'will heat', *kebe* 'appearance', *keche* 'yesterday', *оро* 'pit', *orton* 'middle', *табақ* 'cup', *таңда* 'tomorrow'). So, the second syllable in two-syllable word forms was emphasized more often: there were twenty six such utterances. The first syllable was accented in nineteen word forms. This difference is hardly significant for determining the relevance of this acoustic parameter of the Teleut word stress. However, there is some inconsistency in the length and intensity parameters, since the intensity of the first syllable was more often distinguished.

There is a tendency observed for all Turkic languages of the South Siberian area to realize a wide vowel of the first syllable as longer, if the vowel of the second syllable is narrow (Selutina, 2011, pp. 43–48): *Many* ‘new’, *tolyk* ‘corner’ (in the pronunciation of all speakers). In our study, wide short vowels were often articulated as phonetically semi-long, especially in the position of the open syllable. In the light of recent data it was not possible to consider the length as a significant prosodic parameter of the Teleut word stress. Only as an additional acoustic parameter of the stress, length is also treated in the study of the Altai stress (Badanova, 2011), in which vowels differ phonologically being short and long as well.

5.3. The Acoustic Parameter of Fundamental Frequency

Changes of the fundamental frequency (F_0) of the speech signal, perceived as changes of pitch, form a melody. The melody is characterized by: 1) the interval and its direction; 2) the range; 3) the average frequency; 4) curve; 5) variability; 6) the individual features of the speaker's voice. In our study, F_0 maximums, tones on syllables and prosodic contours of two-syllable word forms pronounced by three speakers were analyzed.

Based on the analysis of the F_0 implementation when three speakers uttering forty five word forms F_0 maximum was accounted for the first syllable in twenty two cases, for the second one – in twenty three cases. While choosing one or the other syllable as a maximum by the tone there was no speakers' preference: each speaker uttered one half of the word forms with F_0 peak on the first syllable, the other – with F_0 peak on the second syllable. At the same time, the lists of words realized in one or another speech manner did not coincide in pronunciation of different speakers. At first approximation, the results do not allow one to detect the dominant syllable by F_0 in the Teleut word forms and do not agree with the data of the Altai language. The dominant system-organizing parameter of the Altai word stress is tonality: the stressed syllable is marked by the peak of the pitch frequency (F_0), which allows to determine the accent by the phonetic type as the musical ascending (Badanova, 2011). Thus, not only the position of the F_0 maximum in the word is important for Altai, but also the direction of the tone (it is emphasized that it is rising).

In our material in the majority of speakers' utterances the prosodic contour with the descending tone on the first syllable and ascending – on the second one - was realized. The following variations were observed:

1) fall-rise contour of a word with the F_0 maximum on the second syllable was in fifteen utterances of all speakers (d. 1: *qalyk* ‘people’, *tabaq* ‘cup’; d. 2: *ada* ‘his name’, *acha* ‘brother’, *Malbaq* ‘wide’, *kjzjrt* ‘storm’, *kjzyl* ‘red’, *tabaq* ‘cup’; d. 3: *ada* ‘his name’, *Malbaq* ‘wide’, *kebe* ‘appearance’, *keche* ‘yesterday’, *qalyk* ‘people’, *tabaq* ‘cup’, *taqda* ‘tomorrow’);

2) rise-fall contour of the word with the F_0 maximum on the first syllable was in ten utterances of all speakers (d. 1: *ada* ‘his name’, *Many* ‘new’, *kebe* ‘appearance’, *tolyk* ‘corner’; d. 2: *Many* ‘new’, *kebe* ‘appearance’, *oro* ‘pit’, *tolyk* ‘corner’; d. 3: *Many* ‘new’, *kjzjrt* ‘storm’).

The rising tone both in the first and second syllables with F_0 peak on the final syllable was found in three utterances (d. 1: *oro* ‘pit’; d. 3: *acha* ‘brother’, *oro* ‘pit’). Thus, rising tone on the second syllable, regardless of the F_0 maximum position was observed in twenty eight utterances. The rest implemented the

falling prosodic contour or rise-fall. The most frequent one among them was the falling tone with the F_0 maximum on the first syllable (d. 1: *Malbaq* ‘wide’, *keche* ‘yesterday’, *orton* ‘middle’, *taqda* ‘tomorrow’; d. 2: *izir* ‘will heat’, *qalyq* ‘people’, *orton* ‘middle’; d. 3: *orton* ‘middle’, *tolyq* ‘corner’). The falling contour of a word can be a consequence of the influence of the Russian prosody: all Teleuts are bilingual, and the status of the Teleut language is ‘endangered language’.

Thus, apparently, for Teleut the tonal curve is more relevant, which, as a rule, marks the second syllable as rising. At the same time, the F_0 maximum can be both on the first and on the second syllable. In contrast to Altai, in which the accent is qualified as a musical ascending with the F_0 maximum on the final syllable (Badanova, 2011), in Teleut the prosodic contour of the word which is fall-rise seems to play a more significant role.

6. Findings

Thus, fifteen two-syllable word forms were uttered by each of the three speakers: *ada* ‘his name’, *acha* ‘brother’, *Malbaq* ‘wide’, *Many* ‘new’, *izir* ‘will heat’, *kebe* ‘appearance’, *keche* ‘yesterday’, *kjzyrt* ‘storm’, *qalyq* ‘people’, *qyzyl* ‘red’, *oro* ‘pit’, *orton* ‘middle’, *tabaq* ‘cup’, *taqda* ‘tomorrow’, *tolyq* ‘corner’. From the list of forty five two-syllable word forms the second syllable was emphasized by all acoustic parameters (length, intensity and F_0 maximum) in eight utterances (dd. 1–3: *acha* ‘brother’, d. 1: *izir* ‘will heat’, *kjzyrt* ‘storm’, d. 3: *Malbaq* ‘wide’, *kebe* ‘appearance’, *taqda* ‘tomorrow’) and the first syllable – in twelve utterances (dd. 1–3: *Many* ‘new’, dd. 1–2: *kebe* ‘appearance’, dd. 1–3: *tolyq* ‘corner’, d. 2: *qalyq* ‘people’, *orton* ‘middle’, d. 3: *kjzyrt* ‘storm’, *qyzyl* ‘red’). So, not ambiguous emphasis was implemented only in twenty utterances.

In the other twenty five utterances the acoustic parameters manifested themselves differently. Thus, in fourteen utterances the length parameter was characterized by a tendency to be combined with the F_0 maximum on one syllable (while the peak of intensity was on another syllable): the first (d. 1: *ada* ‘his name’, *Malbaq* ‘wide’, *orton* ‘middle’) or the second (d. 1: *qalyq* ‘people’, *oro* ‘pit’, *tabaq* ‘cup’, d. 2: *Malbaq* ‘wide’, *keche* ‘yesterday’, *kjzyrt* ‘storm’, *qyzyl* ‘red’, *tabaq* ‘cup’, d. 3: *keche* ‘yesterday’, *oro* ‘pit’, *tabaq* ‘cup’). Less often, only in eight utterances the intensity coacted with F_0 maximum (and the increase of vowel length was observed on another syllable): on the first syllable (d. 1: *qyzyl* ‘red’, *taqda* ‘tomorrow’, d. 2: *oro* ‘pit’, *taqda* ‘tomorrow’, d. 3: *izir* ‘will heat’, *qalyq* ‘people’, *orton* ‘middle’) and on the second syllable – only one case (d. 2: *ada* ‘his name’). And rare cases were observed when the length and intensity emphasized one syllable, and the F_0 maximum – the other syllable (d. 1: *keche* ‘yesterday’, d. 2: *izir* ‘will heat’, d. 3: *ada* ‘his name’).

On having conducted the acoustic analysis we found out that the nature of the Teleut stress is predominantly tonal, and the preferred prosodic contour of the word is fall-rise. The parameters of length and intensity act as additional, but the length, apparently, plays a more important role. However, we have stated the difference of speakers’ realizations of word prosody, as well as the occurring discrepancy of acoustic parameters on any syllable.

Relevance of tonality and preference of fall-rise F_0 contour belong to the articulatory-acoustic base (AAB), common for Teleut and Altai.

In languages such as Khakas (Bicheldei, 2001), Telengit dialect of the Altai (Gerzog, 1986), Teleut (Shestera, 2018), Tatar, Gorno-Bashkir, Chuvash phoneticians have found the discrepancy between the maximum values of the intensity and fundamental frequency tone (Baichura 1962).

Thus, when acquiring Russian prosody, the Teleuts and other Turkic-speaking students may have some difficulties for the use of the narrow approach to the study of intonation as there are discrepancies in intonation parameters of melody, intensity and length. The evidence of linguistic interference is stated in works by many research works (Gut et al., 2007; Jackson & O'Brien, 2011; Yenkimaleki & van Heuven, 2016). In this connection, when acquiring the intonation of a foreign language by Teleuts, it seems more appropriate to study all the parameters of intonation and take into account the accent of the native language.

7. Conclusion

The traditional approach to teaching the intonation of a non-native language includes the idea of a limited set of contours. The most popular systems are the system by O'Connor in the study of English intonation (O'Connor & Arnold, 1973) and for Russian language learners – that by Bryzgunova (1980). Studied contours are realized in the utterances of dialogues, which are listened, repeated and produced by students.

When analyzing these systems, first of all, attention is drawn to what unites them, namely the orientation from form to content. From the point of view of the formal approach, it is assumed that in the language consciousness of the speaker there is a level responsible for the perception and implementation of suprasegmental units regardless of the meaning, namely the communicative type of an utterance. Respectively, another approach is to adopt the point of view of the predominance of the syntactic level over the phonetic, so the lack of independence of the latter and the self-sufficiency of the former is recognized a-priori.

In order to determine which method is the most appropriate for acquisition intonation norms, we turn to theoretical linguistics. So, as for the preference for a formal or syntactic approach in the description of speech intonation in typological linguistics, the description of intonation contours (O'Connor & Arnold, 1973), intonation constructions (Bryzgunova, 1980) on the material of any other language is, at first glance, an advantage, since the same (or similar) inventory of units makes it possible (in any case, greatly simplifies) the subsequent comparison of the results obtained in different languages (Su & Tseng, 2015).

However, the disadvantages of the formal method may be as follows:

1) the structure of the language (inflectional, agglutinative, etc.) is not taken into account, in connection with which there may be difficulties with the phonetic division of speech (for example, words, syntagmas, phrases) and as a result substitution of these terms;

2) an indirect postulate about the isolation of language levels from each other, which follows from the statement about the separate existence of intonation contours in the consciousness, capable of realizing utterances of different communicative types;

3) the paradoxical failure of intonation contours or intonation constructions to describe the wealth of all the prosodic meanings and nuances of language (Ode, 1996).

In comparison with the Russian intonation, it is more individualized in the Teleut language. Speakers' preferences play an important role in choosing the prosodic realization of syllables and word forms, however, from the pragmatic view, intonation functions are not verbally expressed: most often, it is only in a speech situation that can convey the hidden meaning of the message. The latter statement is true for other languages, such as Spanish, though (Moore, 2017).

Thus, it is likely that the study of word prosody and phrase intonation should take into account not only the instrumental data, but also the subjective linguistic method (subjective impressions of informants-native speakers of certain language).

The features that complicate the use of a narrow and formal approach in acquisition and production, the intonation of non-native Indo-European (for example, English or Russian) language by students of Teleut ethnicity are: different structures of languages and the discrepancy of intonation parameters in an utterance. In this connection, when acquiring the intonation of a non-native language by students of Teleut ethnicity, it seems more appropriate:

- 1) to devote attention to the syntactic approach as well, not just the formal one;
- 2) to study the all parameters (length, intensity and melody), i.e. a broad understanding of intonation;
- 3) to rely on subjective perception of informants.

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