

DISSERTATIONES PHILOLOGIAE URALICAE
UNIVERSITATIS TARTUENSIS

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6

**STRESS AND QUANTITY
IN ERZYA**

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ABSTRACT

The present dissertation addresses the issues of stress and quantity in the major varieties of the Erzya language. It focuses on the analysis of the mobility of stress and the temporal relationship between the nuclei of adjoining stressed and unstressed syllables. The study provides a survey of previous findings in the prosody of Erzya and presents new empirical data obtained in a study of stress and quantity.

Word stress has been a continual problem in the study of Erzya. Although it has received the attention of many authors during a period of more than a century, no agreement about its placement or phonetic nature has yet been reached.

As it emerges from the overview of literature, the treatment of the problem of stress over time has been subjected to controversy, owing to the scarcity of empiric data. Generalization to the pattern of stress in the language has been made with respect to separate varieties of the language. Pre-experimental studies classified the major dialect types on the basis of segmental and morphological features. The extent of prosodic diversity among the dialects, which are actually used for communication, has not been the subject of study.

The problem of stress and prosody, in general, is the area of research in Erzya, where the first attempts to use experimental methods of acoustic phonetics have been made (Baitchoura 1961: 257–258; 1982; Lehiste, Aasmäe, Meister, Pajusalu, Teras, Viitso 2003; Estill 2004). Results reported hitherto show that the durational data, which have been treated in these studies, are contradictory and, to all appearances, reflect inter-idiolect differences. Comparable results have been obtained on idiolects that can be referred to a same dialect group while diverging data appear to refer to dialects with dissimilar segmental characteristics.

In this dissertation, the base of the research has been broadened to include groups of idiolects that can be considered representative of the major types of spoken varieties. The input included samples of read and spontaneous speech produced by forty speakers from different locations in the Republic of Mordoviya and diaspora. The total number of lexical units analyzed in this study was 1245.

Preliminary observations of stress had been made on field-work materials collected by the author in several locations in the Republic of Mordoviya.

Empirical evidence on the mobility of stress derives from an experiment, in which an informal conversation with native speakers was recorded to obtain a series of one-word responses. The degree of the mobility of stress was found to differ in the inter- and intra-idiolect data. The occurrences of initial, non-initial and double (or quasi-equal) stress in the data for the target groups of speakers allowed distinguishing between four groups of idiolects. Data for two idiolect-groups showed a high occurrence of both initial and non-initial stress, while in

the other idiolect groups stress was predominantly assigned on the initial syllable. The experiment allows proposing that the mobility of stress is related to the functional aspect of the utterance. Interaction between stress and the pragmatics of the utterance is one of the facets, where future research is envisaged.

The duration of stressed and unstressed syllable nuclei for the idiolect groups was assessed using data of both reading and spontaneous speech. The treatment of the duration data in the dissertation is limited to the pattern of word-initial stress. Analyses showed statistically significant differences in the durational characteristics of the syllable nuclei between the four idiolect types identified in the analysis of stress assignment. In a group of idiolects that displayed high occurrences of initial and non-initial stress, a weakly discerned effect of stressedness and lack of vowel reduction, vowel durations tended to be equal. In the data of three idiolect groups exhibiting different types and degrees of vowel reduction, stressed syllable nuclei compared to unstressed ones consistently showed higher values of duration. Stress and duration can be claimed to be independent in the idiolects that revealed equal vowel durations. In the groups of idiolects having reduction, the duration of vowels was in correlation with stress; analysis of data revealed contraction of the unstressed syllable nucleus within the dual foot.

The overall results of the study indicate that the varieties of Erzya are not prosodically uniform. The manifestations of stress and quantity, along with phonological data on the distribution of vowels in a word, suggest that there are diverging tendencies at work in the types of idiolects under consideration. Relying upon the distinction made between syllable- and stress-timed languages and language varieties, it can be argued that in the idiolects displaying a high mobility of stress, equalized durations of the syllable nuclei, and lack of reduction, the syllable-timed tendency is dominant. The idiolects mainly displaying initial stress and contraction of unstressed syllable nuclei gravitate to the stress-timed structure.

This identification of stress patterns and temporal characteristics of the syllable nuclei in language varieties allows for a motivated and complete analysis of Erzya prosody. The results of the study are expected to be useful for eliciting the relationship between the existing data and for planning future research. More generally, the study contributes new data to the description of the Erzya language, namely, to the body of knowledge in prosody.

The findings of the research have been reported in seven publications, which constitute the core of the dissertation. The publications have been written by me independently or as a co-author. Reviews of previous research published as a book chapter in: **Lehiste, I., Aasmäe, N., Meister, E., Pajusalu, K., Teras, K., Viitso, T.-R.** 2003, *Erzya Prosody*. – Suomalais-Ugrilaisen Seuran Toimituksia 245, Helsinki, pp. 13–47, 87–91, 92, and as part of an article in: **Aasmäe, N., Teras, P.** 2005, *Finno-Volgaic Prosody: the Case of Erza*. – M. M. J. Fernandez-Vest (ed.), *Uralic languages today*. Librairie

Honoré Champion, Bibliothèque des Hautes Etudes à la Sorbonne, Paris, 159–165, 172–175, were written within the framework of the project “Finno-Ugric Prosody” (Estonian Science Foundation, Grant No. 4153) initiated by professor Ilse Lehist. They were based on my thesis “Erza prosody: findings over time” submitted in candidature for the degree of Master of Arts (supervisors: prof. I. Lehist and prof. J. Ross), which was approved by the Department of Estonian and Finno-Ugric Linguistics of the University of Tartu in February, 2003.

Results of an empirical study of Erzya stress undertaken by me in partial fulfillment of the requirements for the degree of Doctor of Philosophy (supervisor: prof. J. Ross) have been published in five articles: **Aasmäe, N., Ross, J.** 2005a, How free is alternating stress in Erzya? – *Linguistica Uralica*, XLI, 2, pp. 134–143; **Aasmäe, N.** 2005a, Durational variability in Erzya: stressed and unstressed syllable nuclei in idiolects. – *Linguistica Uralica*, XLI, 4, pp. 264–278; **Aasmäe, N.** 2005b, Effects of word structure upon the temporal relationship between stressed and unstressed syllable nuclei in Ersa Mordvin. – *Fenno-Ugristica*, 27, pp. 5–17; **Aasmäe, N., Ross, J.** 2005b, Temporal relations between stressed and unstressed syllable nuclei in di- and trisyllabic words in Ersa Mordvin. – *Fenno-Ugristica*, 27, pp. 18–26; **Aasmäe, N.** 2006, Sources of variability in the duration of stressed and unstressed syllable nuclei in Erzya: inter-idiolect data of spontaneous speech. – *Linguistica Uralica*, XVII, 2, pp. 81–93.

The dissertation comprises copies of the original publications and an introductory chapter, which formulates the aim of the study, summarizes the findings and their general significance. It comprises an overview of the theoretical tenets pertaining to the research questions and information concerning the language sources used for analysis as well as the experimental design of the study.

Niina Aasmäe
June 2006
Tartu

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In the same spirit, I wish to thank the Head of the Department of Estonian and Finno-Ugric Linguistics Professor Karl Pajusalu who solved so many practical problems for me and provided guidance at every step, from the MA degree dissertation to this thesis. Despite his many responsibilities he has always been ready to receive me and has stimulated my research goals.

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TABLE OF CONTENTS

LIST OF PUBLICATIONS	11
1. INTRODUCTION	12
1.1. Purpose of the study	12
1.2. Key notes on the typology of the spoken varieties of Erzya	13
1.2.1. Technical notes	13
1.2.2. Target idiolect groups	13
1.2.3. Inter-idiolect variation in the distribution of vowel segments	16
1.2.4. Word structure	17
1.2.4.1. <i>Basic stress patterns</i>	17
1.2.4.2. <i>Quantity</i>	19
1.2.4.3. <i>Other units of word structure</i>	19
1.3. Main concepts pertinent to the study	20
1.4. Experimental design	23
1.4.1. Language sources	23
1.4.1.1. <i>Spontaneous speech</i>	24
1.4.1.2. <i>Controlled speech</i>	25
1.4.2. Speakers	27
1.4.3. Procedures	29
1.4.3.1. <i>Recording</i>	29
1.4.3.2. <i>Auditory analysis</i>	29
1.4.3.3. <i>Acoustic analysis</i>	29
1.5. Analytic summary	30
1.5.1. Overview of previous research in the prosody of Erzya	30
1.5.1.1. <i>Early views concerning the problem of stress in Erzya</i>	31
1.5.1.2. <i>The treatment of stress in pre-experimental research</i>	33
1.5.1.3. <i>Acoustic-phonetic studies of stress</i>	34
1.5.1.4. <i>Conclusion</i>	36
1.5.2. Variability in the assignment of stress	36
1.5.2.1. <i>Inter-idiolect data</i>	37
1.5.2.2. <i>Word-related data</i>	37
1.5.2.3. <i>Utterance-related data</i>	38
1.5.2.4. <i>Conclusion</i>	39
1.5.3. Variability of the temporal characteristics of syllable nuclei	39
1.5.3.1. <i>Results of duration measurements</i>	39
1.5.3.2. <i>Conclusion</i>	40

1.5.4. Sources of variability in the duration of syllable nuclei.....	40
1.5.4.1. <i>Objectives of analysis and constraints imposed</i> <i>by the input</i>	41
1.5.4.2. <i>Vowel duration in two patterns of syllable nuclei</i>	42
1.5.4.3. <i>Vowel duration in open/closed syllables</i>	43
1.5.4.4. <i>Vowel durations in the dual foot of di- and</i> <i>trisyllabic words</i>	44
1.5.4.5. <i>Discussion and conclusions</i>	45
1.6. Findings of the study.....	46
1.7. General significance of the study.....	47
REFERENCES	49
KOKKUVÕTE. Rõhk ja kestus ersa keeles	55
2. COPIES OF PUBLICATIONS	61
Bibliography	195
CURRICULUM VITAE	203
ELULOOKIRJELDUS	204

LIST OF PUBLICATIONS

The publications listed below form the basis of the thesis; in the text they are referred to as [P1] through [P7].

- [P1] **Lehiste, I., Aasmäe, N., Meister, E., Pajusalu, K., Teras, K., Viitso, T.-R.** 2003, *Erzya Prosody*. – Suomalais-Ugrilaisen Seuran Toimituksia 245, Helsinki, pp. 13–47, 87–91, 92.
- [P2] **Aasmäe, N., Teras, P.** 2005, Finno-Volgaic Prosody: the Case of Erza. – M. M. J. Fernandez-Vest (ed.), *Uralic languages today*. Librairie Honoré Champion, Bibliothèque des Hautes Etudes à la Sorbonne, Paris, pp. 159–165, 172–175.
- [P3] **Aasmäe, N., Ross, J.** 2005a, How free is alternating stress in Erzya? – *Linguistica Uralica*, XLI, 2, pp. 134–143.
- [P4] **Aasmäe, N.** 2005a, Durational variability in Erzya: stressed and unstressed syllable nuclei in idiolects. – *Linguistica Uralica*, XLI, 4, pp. 264–278.
- [P5] **Aasmäe, N.** 2005b, Effects of word structure upon the temporal relationship between stressed and unstressed syllable nuclei in Erza Mordvin. – *Fenno-Ugristica*, 27, pp. 5–17.
- [P6] **Aasmäe, N., Ross, J.** 2005b, Temporal relations between stressed and unstressed syllable nuclei in di- and trisyllabic words in Erza Mordvin. – *Fenno-Ugristica*, 27, pp. 18–26.
- [P7] **Aasmäe, N.** 2006, Sources of variability in the duration of stressed and unstressed syllable nuclei in Erzya: inter-idiolect data of spontaneous speech. – *Linguistica Uralica*, XVII, 2, pp. 81–93.

1. INTRODUCTION

This introductory chapter states the objectives set in the dissertation, provides background information about the varieties of the Erzya language and overviews the concepts pertinent to the research. It also describes the language input and the experimental design of the study. An analytic summary of the results obtained in the work forms the core of the chapter. The summary is organized in four sections, in which analyses of the findings of previous research and of the results obtained in the current study are presented. In the final part of the introductory chapter, the general significance of the findings obtained in the study is formulated.

Work carried out within the framework of the dissertation involved:

- systematizing the set of theoretical tenets to be taken as the basis of the study,
- evaluating the findings in the area of research reported hitherto,
- processing field-work and experimental materials for formulating preliminary hypotheses,
- obtaining empirical data and quantifying the observations,
- interpreting the tendencies in the relations between stress and duration.

1.1. Purpose of the study

The present dissertation aims at evaluating a set of empirical data pertaining to the relationship between stress and duration in major varieties of the Erzya language in order to define the extent of inter-idiolect diversity in the manifestations of these prosodic features. The main research questions addressed in the dissertation concern the degree of variation in the mobility of stress and in the duration of stressed and unstressed syllable nuclei measured in target groups of idiolects. One of the primary objectives set in the dissertation is surveying the findings of previous studies in order to identify the domains of research to be carried out.

The study undertaken in the dissertation approaches the synchronic aspect of the problems of stress and quantity. In the survey of literature, attention is drawn to the interpretation of some issues of stress and quantity from the historical point of view, to gain insight into the roots of controversy in the existing literature on the issues of Erzya prosody.

The question of prosodic variability has not been the subject of a study. Taxonomy of the dialects based primarily on the parameter of vowel quality – absence/presence of reduction – implies that the dialects might not be uniform from the point of view of prosody, either. Fragmentary notes concerning variation in the manifestations of stress are to be found in the description of dialects over time. It can be suggested that controversy in the interpretation of

the issues of stress and stress-related duration in Erzya might have arisen from generalization to the language made on the observation of separate idiolects.

As the Erzya language actually functions through the spoken varieties, it is essential to define the extent of prosodic diversity in the major types; this would allow establishing a relationship between separate findings of earlier research, on the one hand, and solving the methodological problem of material selection for further research, on the other hand.

1.2. Key notes on the typology of the spoken varieties of Erzya

1.2.1. Technical notes

In the introductory chapter, symbols used to transcribe examples from Erzya are in accordance with the standards of Finno-Ugric transcription. The symbol [ə] marks a reduced vowel, the symbol [ā] marks a low open vowel as in ‘apple’. The symbols *c*, *č*, *š*, *ž* stand for *ts*, *ch*, *sh*, *zh*, respectively. Stress is marked as [·]; palatalization is marked as [ʲ], e.g.: *l – lʲ*; the symbols [ĕ, ě, ō] show weakening of *e*, *a*, *o*.

Place names are adapted from their Russian forms and transliterated by Roman letters.

1.2.2. Target idiolect groups

Varieties of Erzya are spoken in the Republic of Mordoviya and a wide area outside the republic (geographical distribution of the dialects is shown in Appendix 1 to [P1], p. 92). The dialects in Mordoviya have been grouped with respect to the geographical distribution and a set of characteristic language features (Tsygankin 1968; 1977: 19–30; 1979; Itkonen 1971; Yermushkin 1984; Keresztes 1990: 16–17; Feoktistov 1990); taxonomy of the dialects is shown in [P1], pp. 14–18. Some dialects spoken outside Mordoviya were described as early as the end of the 19th century by H. Paasonen (see in: Kahla 1990: LXXXVII–XCIX) and A. A. Shahmatov (1910). A series of studies have been carried out on the dialects in diaspora since the 1960s (for example, Isayeva 1963, 1965a, 1965b; Biushkin 1967, 1968; Nadkin 1969; Turayeva 1972; Agafonova 1983).

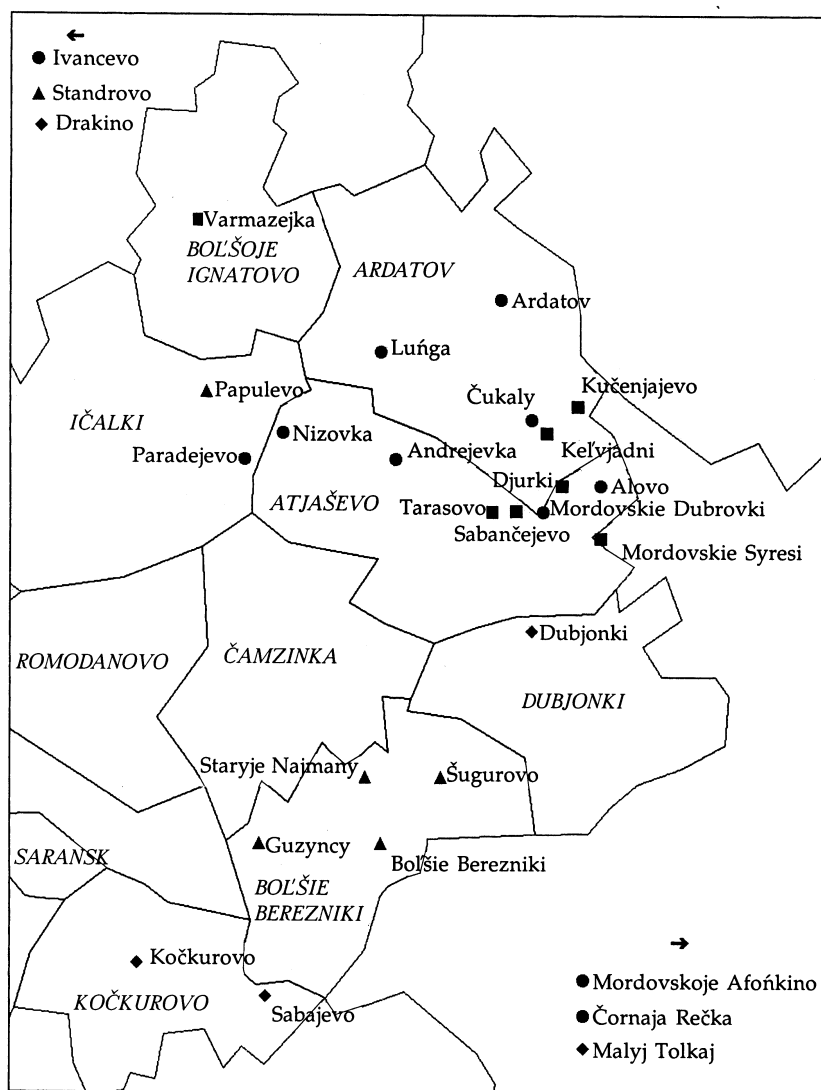
A fundamental parameter that has been used for differentiating the dialects is correlation between vowels of the first and non-first syllables. Prosodic features have not been taken into account for scarcity of data (Yermushkin 1984: 28).

In this dissertation, the grouping of Erzya dialects has been used as a point of departure for defining target groups of idiolects subjected to analysis. The

speakers involved in the recordings of the test material represent all the main dialect groups in Mordoviya and some dialects in diaspora. An account of vowel segment occurrences, durational characteristics of vowels and stress assignment was made on each idiolect, which allowed distinguishing four idiolect groups.

In some of the groups, geographically distant idiolects were merged. Due to extensive geographical mobility and contacts with other languages (in later times, mainly with the closely related Moksha language and unrelated Slavic and Turkic languages), dialects have developed a complexity of features. Information about the processes of migration among Erzyans (Kozlov 1960, Mokshin 1977, Lallukka 1990, Sarv 2002) and background data on some of the dialects (for example, Markov 1961: 7–9; Tsygankin 1961: 294–297; Yakushkin 1961: 197–198, 1963: 49–52; Obyedkin 1963c: 240–241; Davydov 1963: 118) have been used in the dissertation as reference on the historical connections between separate varieties.

The geographical distribution of the idiolects is shown in a figure below, which was designed by Dr. Peeter Päll, (Institute of the Estonian Language). The abbreviation MR in the list of place names here and further in the text stands for Mordoviya.



Geographical distribution of the idiolects:

Idiolect group 1 (marked as ●): *Ardatov, Čukaly, Luŋga (Ardatov, MR); Alov, Andrejevka, Mordovskie Dubrovki, Nizovka (Atjaševo, MR); Paradejevo (Ičalki, MR); Čornaja Rečka (Isakly, Samara), Ivancevo (Lukojanov, Nižnii-Novgorod), Mordovskoje Afoŋkino (Čeremšan, Tatarstan).*

Idiolect group 2 (marked as ■): *Djurki, Keļvadni, Kučenjajevo, Mordovskie Siresi, Sabančejevo, Tarasovo (Atjaševo, MR); Varmazejka (Bolšoje Ignatovo, MR).*

Idiolect group 3 (marked as ▲): *Berezniki, Guzyncy, Staryje Naimany, Šugurovo (Bolšie Berezniki, MR); Papulevo (Ičalki, MR); Standrovo (Tenguševo, MR).*

Idiolect group 4 (marked as ◆): *Dubjonki (MR); Kočkurovo, Sabajevo (Kočkurovo, MR); Drakino (Torbejevo, MR); Malyj Tolkaj (Pohvistnevo, Samara).*

1.2.3. Inter-idiolect variation in the distribution of vowel segments

The dialects of Erzya are primarily distinguished in accordance with the distribution of vowels in first and non-first syllables, as noted in 1.2.1. Compared to other Finno-Ugric languages, Erzya has an impoverished inventory of vowels: there are five phonologically distinct vowel qualities – *i*, *e*, *o*, *u*, *a*; in a part of the dialects, a low *ä* and centralized vowels similar to the schwa-vowel *ə*, occur. Main patterns of vowel distribution observed in an auditory analysis of the recorded materials in this study can be characterized as follows.

In the idiolects of group 1, full-formation vowels *i*, *e*, *o*, *u*, *a* in the initial syllable and *e*, *o*, *a* in non-initial syllables occurred (*i* can be only in suffixes, e.g.: *ul'i* ‘is’, while *u* occurs only in initial syllable), for example, *kudoso* ‘at home’; *vel'ese* ‘in the village’. A same pattern of vowel distribution is common to the literary language. In the idiolect from Alovero, low *ä* sporadically occurred in the initial syllable: *väl'e* ‘a village’.

In group 2, same vowels as in Group 1 were used in the initial and non-initial syllables; however, full vowels in non-initial syllables were less distinct. In a part of idiolects, reduction was observed, e.g.: *kudəsə*, but *vel'ese*; the second syllable containing *ə* could receive stress, e.g.: *kudə'sə*. In this case, the vowel changed into a full-formation vowel but retained the phonetic quality of the reduced vowel. As it appears, vowel reduction is not a reliable indicator of the position of stress (either in this idiolect group or the other groups having reduction).

In group 3, along with the vowels *i*, *e*, *o*, *u*, *a*, a low vowel *ä* occurred both in initial and non-initial syllables. In non-initial syllables the use of *e* and *o* is restricted to certain phonotactic positions (e.g.: *čemeň* ‘rust’, *lovnoms* ‘to read’); characteristic is the use of the vowels *i*, *u*, *a*, *ä*, e.g.: *kudusa/ä*, *väl'isä/ä*. Vowel reduction in the idiolects is not radical.

In group 4, as in the previous group, the vowels *i*, *e*, *o*, *u*, *a*, *ä* occurred in the initial syllable. In non-initial syllables, extensive reduction could be observed, cf.: *kudəsä/kud(ə)sä*, *väl'əsä/väl'(ə)sä*. Reduction in Erzya generally concerns non-initial syllables; however, in some of the idiolects of this group reduction in initial syllable (before *r*) occurs, e.g.: *pərda.ms/pə'rdams* ‘to turn’ (cf. *purdams* in the other idiolect groups).

Vowel reduction is not distinctive in the dialects of Erzya; the phonetic quality of the reduced vowels and the positions, in which reduction occurs, are dialect-specific (Tsygankin 1979: 66–70, Obiedkin 1963a: 5–8).

The complexity of the problem of vowel reduction is reflected in the patterns of distribution and the quality of reduced vowels. Reduction in Erzya can not be considered a feature of a style, since certain word-forms exist only in a reduced form, e.g.: *sazər* – *sazərəm* – *sazərəzə* ‘a sister – my sister – his sister’. Same forms are used with full vowels in other words, e.g.: *kopór* – *kopórem* –

kopoʹeze ‘a back – my back – his back’. Some words have forms both with reduced and unreduced vowels, e.g.: *morə/ ă – morom – morotʹne – moroză/ă*. Stress shift to a syllable with a reduced vowel results in a full vowel of the same quality, e.g.: *saʹzər – sazəʹr – saʹzərəʹm – saʹzərəʹzə*. There is no clarity concerning the patterns of vowel reduction in the dialects.

The distribution of vowels in initial and non-initial syllables in Erzya is largely subject to the influence of another feature – vowel harmony, which is believed to be of Proto-Uralic heritage (Collinder 1965: 204–205). The inherited word stock has either front or back vowels within a word (Devayev, Tsygankin 1970: 54–56, Rédei 1984: 228, Zaicz 1998: 190), e.g.: *kotosto* ‘at six’, *veʹeste* ‘at five’. Vowel harmony has been transformed, supposedly, due to the interference from palatalized consonants that developed in word-medial positions and the weakening of the original **a – *ă* opposition in non-initial syllables. As a result, *a* came to be used with front-vowel stems (Ravila 1929: 120, Itkonen 1971: 59–60). On the other hand, vowel harmony is claimed to occur primarily in languages where the difference between stressed and unstressed syllables is minimal (Bybee et al. 1998: 297); hence, the role of stress in the transformation of vowel harmony in Erzya, apparently, can not be disregarded.

1.2.4. Word structure

This section gives reference concerning stress, duration and structural types of words generally occurring in Erzya. Interrelation between stress, duration and several other components of word structure constitutes the domain of analysis in the present study. It is evaluated by taking into account (along with stress) the openness/closedness of the syllables, the number of syllables constituting the word and the intrinsic duration of vowel segments, which are treated as possible sources of variation in the temporal relationship between stressed and unstressed syllable nuclei.

1.2.4.1. Basic stress patterns

There is general agreement that stress is not distinctive in Erzya. No two words can be distinguished lexically or morphologically only by the placement of stress. The mobility of stress, like in *mo·ro/moro·* ‘song’, *ko·moro·/komo·ro* ‘palm of a hand’, does not change a word into a non-word.

Several tendencies in the assignment of stress in Erzya seem to be identified. Syllables in a di-syllabic and even polysyllabic words receive (quasi-) equal stress, e.g.: *mo·nga·k* ‘me too’, *u·šo·so·* ‘outside’. For comparison, examples from English – *maintain*, *refer*, pronounced with stress on both syllables, or

from Polish – *muj brat biw tam* ‘my brother was there’, where the monosyllabic words receive stress (the examples are from Spencer 1998: 257, 181), can be referred to.

The mobility of stress is considered to be basically a manifestation of the rhythm of an utterance; some empiric data on the rhythmic tendency have been reported by Aasmäe (1982); however, a more detailed research on this question is needed. It has been maintained that stress divides the word into disyllabic feet, which is in accordance with the disyllabic stem – true native words are maximally disyllabic. In polysyllabic words, stress appears either on odd-numbered or even-numbered syllables, which divides a word, a phrase, or an utterance into duple feet, e.g.: *ra·mamsto·nzo*, *rama·mstonzo* ‘while buying it’. Triple rhythmic feet consisting of a stressed and two unstressed syllables can occur in polysyllabic words, e.g.: *a·rašel·iñ* ‘I have not been’. The assignment of stress can disregard word boundaries, e.g.: *mo·n a mo·lan*, *mon a· moła·n* ‘I will not go’.

As a minor tendency, stress on certain suffixes that go back to independent lexical words has been noticed (Aasmäe 1982, Markov 1961). Stress appears regularly on the suffixes *-či*, *-peľ*, *-jak*, that have developed as a part of a compound. The latter were coined on the basis of syntactic combinations, for example: *mo·ramoči* ‘singing’ < *mo·ramo* ‘to sing, singing’ + *-či* (< *či* ‘a day’); *ka·ršema·peľ* ‘footwear’ < *ka·ršema* ‘wear’ + *-peľ* (< *peľ* ‘a part’), *mo·ňštemeja·k* ‘without me, as well’ < *mo·ňšteme* + *jak*. In compound numerals, for example, *keve·jkeje* ‘eleven’ < *kemeñ* ‘ten’ + *veike* ‘one’, the main stress is on the second part of the composite word. Stress in these categories of words interferes with the rhythmic pattern. When the parts of a composite word merge to become an integral unit, primary stress shifts to the first component causing changes in the parts of the word, e.g.: *ur·va* ‘a daughter-in-law’ < *ur·e* ‘a slave’ + *ava* ‘a woman’. Stress thus appears to be associated with the domain of syntax.

Observations of the assignment of stress in Russian loans show that the tendency of stressing odd-numbered syllables, e.g.: *po·verhno·stno* ‘superficially’, for Russian: *поверхностно* (an example from field work materials collected by the author), is a salient feature in the speech of Erzyans less exposed to the influence of Russian. The native form in loans occurs in the pronunciation of bilingual speakers. The two tendencies in the assignment of stress in Russian loans have been dealt with in several studies (Endukovsky 1930, Isayeva 1963).

According to fragmentary notes that can be found in literature (see 1.5.1), the primacy of initial stress is characteristic of the dialects to a greater or lesser extent.

1.2.4.2. Quantity

A quantity opposition has not been excluded for earlier stages of the Mordvinic languages (Itkonen 1946); at synchronic level, the length of vowels in Erzya is not distinctive. It can be assumed, thus, that the parameter of duration can serve as a correlate of stress. However, the first attempts to measure the acoustic manifestations of stress have yielded contradictory durational data; the question of the temporal relationship between the syllable nuclei has not been solved.

1.2.4.3. Other units of word structure

As far as structural types of words are concerned, disyllabic word stems of Finno-Ugric origin (CVCV-, VCV-, CVCCV-, VCCV-) have been largely preserved in Erzya (Collinder 1965: 204–205). Though the word stem can be followed by several suffixes, e.g.: *moravtiñd'e'rasamiž* 'in case they ask us to sing', the occurrence of di- and trisyllabic words in a typical text and especially in spontaneous speech is higher than that of longer words. At morphemic boundaries, complex coarticulation and other effects are observed, for example, voicing of consonants: *kodgemeñ* 'sixty' < *kotoŋgemeñ* < *koto*, - *ń* 'six, genitive' + *kemeñ* 'ten'. The occurrence of consonant clusters is a product of the changes that have taken place within the word, e.g.: *p'ra* < *pi'ra* 'head', *stardoms* 'to seize'. Words can be found to contain three- and four-membered consonant clusters in initial and final positions, e.g.: *kš'ni* 'iron', *pamo'rkst/pamu'rkst* 'pieces of bread'; as to internal consonant clusters, there may be up to five members, *kevks'niems/käwks'niims /käuks'niims* 'to inquire'. This implies that the structure of the syllable in Erzya might not be straightforward. Word-initial syllables can have a complex onset and word-final syllables can have a complex coda; as to words with internal consonant clusters, syllable boundary in such cases is obscure.

Structural types of stems and combinations of consonants occurring in mono- and disyllabic stems have been viewed in detail both in historical and synchronic studies (for example, Toivonen 1928; Posti 1953; Devayev, Tsygankin 1970:71–75; Rédei 1984: 214–218; Keresztes 1990: 30–31; Zaicz 1998: 185–187), while the question of syllable boundary in words with internal consonant clusters awaits a systematic study. The unsolved problem of syllabification in words with multiple internal consonants is a significant constraint on prosodic analysis. In view of the complexity of the problem of syllabification, only basic types of word structure were included in the current study.

The effects of consonants upon vowel duration are not accounted for; to minimize possible measurement bias, test tokens had been selected to contain different consonant segments. The inventory of consonants in Erzya includes 28

phonemes: plosives *p-b, k-g, t-d, t'-d'*; fricatives *f-v, s-z, ś-ź, š-ž, h*; affricates *c-ć, č*; resonants *l-ł, r-ř, n-ń, j*, and *m*. A velar nasal *ŋ* is reported for the Alatyř and Piana dialects (Markov 1961: 19, 30; Nadkin 1969: 79), e.g.: *sepej/sepeŋ* 'bitter, vinegary'.

1.3. Main concepts pertinent to the study

The main topic of this dissertation is stress, looked at from the point of view of phonological distribution and of the acoustic-phonetic manifestations; the treatment of the latter is narrowed to the correlate of duration. Analyses undertaken in the research are consistent with the basic principles inherent to prosodic phonology. A departure was made from the fundamental notions of stress, syllable, duration, foot, and rhythm, central to the research of prosodic features.

Stress has traditionally been a research topic in phonetics and in phonological theory. Being a property of a language system, stress is conveyed by phonetic cues. Its definition in literature, hence, comprises the statement of the physical properties and of the phonological significance, for example: "stress is a conventional label for the overall prominence of certain syllables relative to others within a linguistic system" (Clark, Yallop 1995: 340). The importance of two facets of the prosodic feature of stress has been emphasized in literature. Firstly, stress is an "inherently relational concept" (Spencer 1998: 241). The "minimal unit of contrastive stress placement is a sequence of two syllables" (Lehiste 1976). Secondly, stress "refers to produced and perceived prominence" (Lehiste et al. 2003: 84).

Research has shown that stress is not a clearly defined feature. On the one hand, there is no "one-to-one correspondence between stress and any single acoustic parameter" (Lehiste 1976: 233). On the other hand, phonological patterns are not always exposed to phonetic observation. "There is little reason to suppose that the perceived stress contour must represent some physical property of the utterance in a point-by-point fashion; a speaker ... should 'hear' the stress contour of the utterance that he perceives and understands, whether or not it is physically present in any detail. In fact, there is no evidence from experimental phonetics to suggest that these contours are actually present as physical properties of utterances in anything like the detail with which they are perceived" (Chomsky, Halle 1968: 25). "Alternating Stress Rule", suggested by these authors ascribes to polysyllabic content words an underlying alternation of stressed and unstressed syllables.

Interaction between word- and utterance-level stress has been a subject studied within the context of the rhythm of spontaneous speech. It was noticed in earlier studies that "the stress pattern of the isolate word is often changed to a greater or less extent as soon as the word is placed in an utterance context..."

(Arnold 1957: 11). In later studies it has been widely observed that different languages manifest different standards of eurhythmy (a term used by Hayes, 1984) – the tendency to alternate strong and weak beats either in duple rhythm (strong–weak–strong–weak) or triple rhythm (strong–weak–weak–strong–weak–weak).

Some of the unsolved questions in theories of prosody that are relevant to the study of Erzya stress concern the phonological status and the acoustic manifestations of different degrees of stress (Lehiste 1976: 237; Lepschy 1992; Spencer 1998: 279). The questions of stress identification, as well as the correlates of ‘double’ stress are also important issues in the case of Erzya, where the problem of stress identification has been invariably mentioned by authors. Data for relatively independent word stress and sentence intonation in Russian, for example, show that “the identification of word stress is poor in those parts of a sentence and types of intonation contour where intonation characteristics proper are vague and do not contribute to the expression of word stress. Characteristically in such cases we face the same type of mistakes that are observed in automatic identification of stress, namely, the omission of ‘stressed’ syllables whose acoustic characteristics are vague and the insertion of extra stresses to unstressed syllables having definite acoustic characteristics” (Svetozarova 1987: 93).

The extent, to which intonation interferes with the prosody of the word in a language with movable stress like Erzya, can, apparently, be a cue to an approach in the study of the acoustic characteristics of stress that are not analyzable on listening.

The *syllable* has been regarded in literature as a prosodic constituent, along with the other hierarchical structures: the metrical foot, the phonological word, the intonational phrase, and mora (Ito 1986; Katamba 1989; Roca 1994; Hammond 1998; Turk 2003). “The recognition of the syllable as a prosodic constituent has led to a deeper understanding of various phonological processes related to syllable structure...” (Ito 1986, 1995: 1). In recent years, research in different languages has provided evidence showing the importance of the analysis of syllable for research in prosody (for example, Kubozono, Matsui 2003; Redford 2003; Lunden 2006).

In the case of Erzya, where the complexity of syllable structure is evident, an approach to the study of the unit from the point of view of the latest developments in research is warranted.

Duration of specific units as a temporal category, along with timing and rhythm (Kohler 2003; Sagisaka 2003), has occupied a central place in the research of prosody. In the present study, analysis concerned the duration of syllable nuclei. Vowel duration has been treated as an essential component of syllable duration (Clark, Yallop 1995: 334); in research, vowel duration data used for the study of the temporal characteristics of syllables (for example, Taylor 1981; Moon, Lindblom 1994) have enabled showing a number of different rhythm measures that confirm empirically the differentiation of

traditional rhythm types. Pragmatically, analysis of vowel durations allows researchers to avoid controversies about syllable-division.

As mentioned above, measurements of duration in the study of Erzya have been in an initial stage.

The concept of metric *foot* was used by D. Abercrombie (1965) to refer to the isochronous rhythmic units, lasting from one major word-level stress to the next. Prosodic theory retains the idea of foot as the core unit with respect to both stress- and syllable-timed languages, “since *Initial Head* is normally assumed not only for stressed-timed languages such as English or German, but also for syllable-timed languages such as Spanish or Italian.” (Marotta 2003: 334).

The notion of foot with reference to Erzya has not been in the focus of attention until recent times.

Linguistic *rhythm* refers to the way languages are organized in time. It has been hypothesized that stress-timed languages have equal duration between stresses, while syllable-timed languages show equal duration between syllable onsets (Abercrombie, 1967; Pike, 1945). The rhythmic property – “a clear tendency towards rhythmic patterns, with strong and weak syllables spaced apart at regular intervals” (Kager 1999:145) – is salient in Erza, where word-level stress is largely a manifestation of utterance-stress.

Supposedly, the mobility of Erzya stress is not only a rhythmic feature. In this study, an attempt is made to observe the mobility of stress in recurrent responses differing by attitudinal or emotional implications.

The dimensions of rhythm patterns were provided in metrical phonology (Liberman, Prince 1977; Selkirk 1984). With reference to the notion of isochrony – the tendency to maintain a constant number of metrical units (stresses or syllables) in a given time span, the following observation is valid. “In production, the durations of metric feet will differ somewhat depending on the phonetic structure of the lexical items comprising the metric feet. It stands to reason that differences of a similar type are not heard as differences: the listener makes allowances for them” (Lehiste 1973: 1233).

Speech rhythm has been regarded of late as a multidimensional concept which includes a variety of properties. Languages are assumed to be located along a continuum between the types that are referred to as syllable-timed and stress-timed. For establishing the location of a language along the continuum of the types of rhythmic structure, a set of parameters is taken into consideration. Among them are the type of stress, the absence or presence of vowel reduction, syllable structure and the durational relationship between adjacent syllables (Dauer 1983, 1987; Nespor 1990; Ramus, Nespor, Mehler, 1999; Low, Grabe, Nolan 2000; Grabe, Low 2002; Gut 2003; Patel, Daniele 2003; Asu, Nolan 2005). Though the authors’ approach to the study of rhythm differs, in these scalar models the total effect created by the interaction of a number of phonetic and phonological, segmental and prosodic properties has been evaluated. Duration, syllable complexity, and vowel-realisation criteria were used to

compare languages and language varieties. Concerning stress, it has been observed that in syllable-timed languages, unlike stress-timed languages, “there is no strong pattern of stress, at least not to the extent that unstressed syllables are markedly reduced or hurried, and the total duration of an utterance is dependent more on the number of syllables it happens to contain than on the number and position of stressed syllables” (Clark, Yallop 1995: 341).

Current research in prosody aims at determining how rhythm interacts with other aspects of phonology and with syntactic structure. Attempts of researchers are made to unite phonetic and phonological approaches toward an integrated rhythm timing model (Gibbon 2003).

1.4. Experimental design

The study of the research questions involved production experiments, based on spontaneous speech and script reading, and successive auditory, acoustic, and phonological analyses of the resulting set of data. The phonetic research of the characteristics of conversational speech and reading has been of growing interest of late (for example, Lennes, Anttila 2002; Engstrand, Krull 2003; Svetozarova, Kuosmanen 2003; Strangert 2004).

In this study, reading and spontaneous speech were used as complementary language sources rather than for comparing the properties of the two styles. Spontaneous speech was preferred to script reading in the analysis of the mobility of stress, since auditory analyses of the field work materials convincingly showed that stress alternation in spontaneous speech is manifested broadly. In reading, especially controlled frame sentences, word-initial stress prevails. It has also been mentioned in previous studies of Erzya stress that speakers dominantly located stress on word-initial syllables while reading a script (Lehiste et al. 2003: 50, 86; Estill 2004: 165). However, a sufficient amount of comparable input for acoustic measurements was attained from controlled speech. The test words occurred in two types of utterances. In reading, they were placed in a medial position within simple three-membered sentences; spontaneous speech tokens were one-word utterances. The study of duration was based on words produced in both spontaneous speech and reading.

1.4.1. Language sources

The traditional cornerstone for an analysis of the stress patterns of a language is evidence from the language’s lexicon. It has been used by the author in pilot studies of the problem of stress assignment. As a result, a minor tendency of placing stress on a few suffixes that derive from lexical words (section 1.2.3.1.) was established. To study the primary characteristics of Erzya stress –

alternation between the initial and non-initial syllables of a word, a spontaneous speech experiment, allowing the observation of stress alternation in multiple productions of a same word by a group of speakers, was devised. Controlled speech analysis was based on words placed in a frame sentence.

1.4.1.1. Spontaneous speech

To obtain a comparable set of material, informal dialogues were used, during which the speakers produced one-word utterances in response to the interviewer's questions. The questionnaire, which contained 18 questions, was compiled by the author. To avoid reading it during the conversation, the interviewer used a prompt – key-words for the questions. Below, a list of the test words is provided.

Test words produced in spontaneous speech:

Shape	Word	Gloss
VCV	<i>u'li</i>	is
VCVC	<i>u'li't'</i>	are
VCCVC	<i>u'li'ni'</i>	I was
VCCV	<i>o'sso</i>	in a city
VCVC	<i>o'so's</i>	the city
	<i>ara's</i>	no, not
	<i>apak</i>	not
CVCV	<i>ve'le</i>	a village
	<i>kudo</i>	a house
CVCVC	<i>ve'le's</i>	the village
CVCVCC	<i>ve'le'ni't'</i>	(of) the village
CVCVCV	<i>ve'le'se</i>	in a village
	<i>kudo'so</i>	at home
CVCVCVC	<i>ve'le'se't'</i>	they are in the village
	<i>kudo'so't</i>	they are at home
VCCVCCCVC	<i>u'li'nek'shi'ni'</i>	I used to be
VCVCVC	<i>ara'se'l'</i>	was not
VCVCVCVC	<i>ara'se'li'ni'</i>	I was not

As it can be seen from the list, the words contained from two to four syllables; the morphological forms and the structural shape of the words varied. The total number of tokens analyzed to establish the patterns of stress was 895.

During the dialogue, the speakers were repeatedly asked a same question. Repeating an answer the speakers occasionally changed the pattern of stress. The choice between the questions to be answered once or repeatedly was random, so that the dialogue would sound natural. Two examples of question-response series are illustrated below.

Example 1

Question: *Ul'it' - arast' jalgat?* 'Do you have friends?'

Response 1: *Ul'it'*. 'Yes, I do'

Repeated question: *Ul'it'?* 'Do you?'

Response 2: *Ul'it'*.

Example 2

Question: *Kosot tet'at-avat?* 'Where are your father and mother?'

Response 1: *Vel' eset.* 'In the country.'

Repeated question: *Kosot?* 'Where?'

Response 2: *Vel' eset.*

Repeated question: *Kosot-kosot?*

Response 3: *Vel' eset.*

The experiment allowed recording series of utterances, which, as anticipated, differed by the patterns of stress both in inter- and intra-speaker productions. The speakers' answers diverged minimally, as far as the lexical words are concerned.

The test words were assigned initial, non-initial or double stress, in case the location of greater prominence on repeated listening was difficult to define. In words consisting of three and four syllables, additional stress was perceivable; in these cases, either the odd-numbered or even-numbered syllables of a word tended to be stressed. Since additional stress occurring on the third or fourth syllable is aligned with stress on the first and second syllable, respectively, it was disregarded in the analysis of stress patterns.

In the dissertation, only data of duration measurements in words with initial stress (total number – 315) are included.

1.4.1.2. Controlled speech

Measurements of vowel duration in reading were made by using disyllabic and trisyllabic words placed in a carrier sentence (*Valoš ... er'zan.* 'The word ... is Erzyan.'). The sentences were written in literary Erzya. The speakers were asked to read the sentences at their pace.

The limitation of this type of material in the case of Erzya is that some speakers are susceptible to switching between dialect and norm, under the influence of the script. In such cases, for example, reduced vowels occurring in a part of dialects can be occasionally replaced by full vowels. During the analysis, the data were checked for possible effects of script reading. The material was read by 7 speakers. Morphological variation in the words was constrained – only the nominative case, singular, of nouns and adjectives and

the form of the infinitive with the ending *-ms* were included. The total number of observations was 350. The test words are listed below.

Test words produced in script reading:

Shape	Word	Gloss
CVCV	<i>čama</i>	a face
	<i>jožo</i>	a skin, a feeling
	<i>topo</i>	cottage cheese
	<i>kudo</i>	a house, home
	<i>nula</i>	a rag
	<i>moda</i>	soil, ground
	<i>pize</i>	a nest
	<i>pir'e</i>	a fence, a kitchen garden
	<i>šive</i>	a collar
	<i>paro</i>	good
	<i>paća</i>	a kerchief
VCV	<i>ava</i>	a woman, a mother
	<i>aťa</i>	an old man
	<i>ožo</i>	yellow
	<i>oža</i>	a sleeve
VCCV	<i>ovto</i>	a bear
VCVC	<i>olgo</i>	straw
	<i>emež</i>	a vegetable
CVCVC	<i>pakař</i>	an elbow
	<i>vakan</i>	a dish
	<i>šovoň</i>	clay
	<i>sepej</i>	bitter
	<i>čemeň</i>	rust
CVCCV	<i>pakša</i>	a field
	<i>tarka</i>	a place
	<i>jalga</i>	a friend
	<i>varma</i>	wind
	<i>vadřa</i>	good
	<i>kolmo</i>	three
	<i>potmo</i>	the inside
	<i>pongo</i>	bosom
	<i>tolga</i>	a feather
	<i>pukšo</i>	a thigh
	<i>makso</i>	liver
CVCCVC	<i>jarmak</i>	money
	<i>peřkel'</i>	a spinning wheel
	<i>kistoj</i>	strawberry

CVCVCC	<i>jažams</i>	to destroy, to grind
	<i>salams</i>	to steal
	<i>sasams</i>	to catch up
	<i>tapams</i>	to stamp, to break
	<i>šežems</i>	to tear
	<i>šižems</i>	to get tired
	<i>kozoms</i>	to cough
	<i>lowoms</i>	to count
	<i>poťams</i>	to suck
	<i>šimems</i>	to drink
	<i>peľems</i>	to fear
	<i>psťid'ems</i>	to kick
	<i>veľmems</i>	to revive
CVCCVCC	<i>pečkems</i>	to cut
CVCVCVCC	<i>seřed'ems</i>	to ache
	<i>keped'ems</i>	to lift
CVCVCV	<i>numolo</i>	a hare
	<i>komoro</i>	a handful
	<i>kačamo</i>	smoke
	<i>čapamo</i>	sour
CVCCVCVC	<i>šukštorov</i>	currants

1.4.2. Speakers

Two groups of speakers took part in the recording of test materials (see the list of speakers below). In the experiment on spontaneous speech, the speakers (group A) constituted a uniform age group. There were 33 applicants to university aged 18–20, with the exception of Speaker 4, a university student aged 25. At the time when the recording of materials took place, the speakers were living in rural areas, where they used Erzya in everyday life. The speakers' idiolects can be considered representative of all the main varieties of Erzya spoken in the Republic of Mordoviya; several speakers came from diaspora.

To record the scripted materials, 7 speakers (group B) capable of producing fluent reading in Erzya were invited. The speakers' idiolects represented all the target idiolect types. The age range in the group was 25–37; there were teachers and students among them. Due to studies and professional involvement, the speakers were exposed to Russian and other second languages; in everyday life they regularly spoke Erzya and had close contacts with the native community.

Speaker background data:

Speaker	Idiolect location	Age	Sex
Group A			
1	<i>Bolšie-Berezniki, MR</i>	19	male
2	<i>Ardatov, MR</i>	19	female
3	<i>Sabajevo, Kočkurovo, MR</i>	19	female
4	<i>Čukaly, Ardatov, MR</i>	25	female
5	<i>Čukaly, Ardatov, MR</i>	19	female
6	<i>Standrovo, Tenguševo, MR</i>	19	female
7	<i>Čukaly, Ardatov, MR</i>	19	female
8	<i>Keľvjadni, Ardatov, MR</i>	19	female
9	<i>Sabančejevo, Atjaševo, MR</i>	18	female
10	<i>Varmazeika, Bolšoje-Ignatovo, MR</i>	17	female
11	<i>Alovo, Atjaševo, MR</i>	17	female
12	<i>Mordovskie Dubrovki, Atjaševo, MR</i>	17	male
13	<i>Luńga, Ardatovo, MR</i>	17	female
14	<i>Sabančejevo, Atjaševo, MR</i>	18	male
15	<i>Shugurovo, Bolšie-Berezniki, MR</i>	19	male
16	<i>Mordovskoje Afońkino, Čeremšani, Tatarstan</i>	17	female
17	<i>Mordovskie Syresi, Atjaševo, MR</i>	18	male
18	<i>Andrejevka, Atjaševo, MR</i>	17	female
19	<i>Paradejevo, Ičalki, MR</i>	17	female
20	<i>Djurki, Atjaševo, MR</i>	20	female
21	<i>Drakino, Torbejevo, MR</i>	20	female
22	<i>Sabančejevo, Atjaševo, MR</i>	18	male
23	<i>Guzyncy, Bolšie-Berezniki, MR</i>	18	female
24	<i>Dubjonki, MR</i>	18	female
25	<i>Nizovka, Atjaševo, MR</i>	18	female
26	<i>Tarasovo, Atjaševo, MR</i>	17	female
27	<i>Malyj Tolkaj, Pohvistnevo, Samara</i>	18	female
28	<i>Čiornaja Rečka, Isakli, Samara</i>	18	female
29	<i>Papulevo, Ičalki, MR</i>	19	female
30	<i>Alovo, Atjaševo, MR</i>	17	female
31	<i>Starije Naimany, Bolšie-Berezniki, MR</i>	18	female
32	<i>Ivancevo, Lukojanov, Nižnii-Novgorod</i>	17	female
33	<i>Kučenjajevo, Ardatov, MR</i>	18	female
Group B			
VD	<i>Mordovskoje Afońkino, Čeremšani, Tatarstan</i>	37	male
PA	<i>Čukaly, Ardatov, MR</i>	25	male
VL	<i>Čukaly, Ardatov, MR</i>	25	female
VR	<i>Ičalki, MR</i>	25	female
NP	<i>Guzyncy, Bolšie-Berezniki, MR</i>	32	female
BA	<i>Dubjonki, MR</i>	25	male
NA	<i>Kočkurovo, MR</i>	28	female

1.4.3. Procedures

1.4.3.1. Recording

The recording of the dialogues was performed by an experienced technician in the studio of the phonetics laboratory of the Mordvin Pedagogical Institute. Script reading material was recorded in the studio of the Radio and Television Broadcasting Station of the Republic of Mordoviya. Professional equipment used for recording in both cases consisted of a microphone MD-16, a recorder MЭ3-28 (recording at 38,1 cm/sec.) and a panel RKS-02. The recordings were subsequently digitalized and transferred to 16 bit/48kHz wav-files using a computer equipped with a Creative Labs SoundBlaster Extigy soundcard and Adobe Audition 1.0 software. For the playback of the tapes, a ReVex B77 MK II Stereo tape-recorder was used.

Measurements were made of the values of duration of vowel segments using the software program PRAAT. The procedures and analysis were carried out in the phonetics room of the Department of Estonian and Finno-Ugric Linguistics of the University of Tartu.

1.4.3.2. Auditory analysis

The location of stress in the recorded material was established through repeated listening by the author, who is a native speaker of Erzya. No forced decisions as to the position of stress were made. Three patterns of stress were distinguished in spontaneous speech materials: stress on the word-initial syllable (with additional stress on third syllable), stress on the second syllable (with additional stress on fourth syllable) and double (or quasi-equal) stress mainly in disyllabic words. In reading materials, word-initial stress was common.

In this study, no attempt to establish the degree or type of stress (for example, emphatic stress) has been made.

1.4.3.3. Acoustic analyses

Auditory and acoustic analyses were made using the software Praat (Boersma, P.&D. Weenink, Praat, a system for doing phonetics by computer, Institute of Phonetic Sciences University of Amsterdam; up-to-date version of the manual at <http://www.fon.hum.uva.nl/praat/>).

Vowel durations were measured based on the spectrograms, waveforms and auditory track of each sentence in Praat. The length of a vowel was measured from the beginning of vowel formants in the spectrogram, corresponding with the beginning of a cyclic pattern in the wave form, to the end of the pattern. The

right edge of a vowel was taken up to until either the onset of the following consonant closure, or, in the case of final vowels, until the cycle wave form died out, corresponding to a loss of recognizable formants.

1.5. Analytic summary

This part of the introductory chapter overviews the contents of the publications that constitute the basis of the dissertation. They incorporate information about previous research on Erzya prosody and consecutive reports on the results of an empirical study that addressed the problem of stress and quantity. The summary is organized in four parts:

- *Overview of previous research in prosody* ([P1], [P2]).
- *Analysis of inter-idiolect variability in the assignment of stress* ([P3]).
- *Analysis of inter-idiolect duration variability* ([P4]).
- *Analysis of data concerning the sources of duration variability* ([P5], [P6], [P7]).

In the study of prosody ([P1], [P2]) and the detailed study of stress ([P3], [P4], [P5], [P6], [P7]), wholly different language materials and speakers were used to obtain empirical data.

1.5.1. Overview of previous research in the prosody of Erzya

- [P1] **Lehiste, I., Aasmäe, N., Meister, E., Pajusalu, K., Teras, K., Viitso, T.-R.** 2003, *Erzya Prosody*. – Suomalais-Ugrilaisen Seuran Toimituksia 245, Helsinki, pp. 13–47, 87–91, 92.
- [P2] **Aasmäe, N., Teras, P.** 2005. Finno-Volgaic Prosody: the Case of Erza. – M. M. J. Fernandez-Vest (ed.), *Uralic languages today*. Librairie Honoré Champion, Bibliothèque des Hautes Etudes à la Sorbonne, Paris, 159–165, 172–175.

Publications [P1] and [P2] survey the findings of previous research in the prosody of Erzya. The publication [P1], which is a book chapter, provides a detailed analysis of literature pertinent to Erzya prosody. It reveals the controversy in the views concerning prosody, especially stress. The publication [P2] (written in 2002) presented a concise review of main findings of past research in prosody, which was important for posing research questions for subsequent studies.

Literature reviewed in the publications includes general studies in Finno-Ugric languages; studies of the dialects of Erzya and Moksha and works, in

which some of the issues of Erzya prosody, in particular stress, have been treated. The major part of literature on the subject appeared during the 20th century.

Of the three components of prosody – stress, quantity, and tone, stress has received by far the most attention. Concerning quantity, as it has been mentioned above, an opposition of long and short vowels was reconstructed for early Proto-Mordvinic.

No attempt to reconstruct a tonal opposition for a protosystem of Mordvinic or early Erzya has been reported. In phonological studies of the Uralic languages, tone has received little attention. The distinctive tonal opposition has not been considered, as no minimal pairs differing only in tone have been found (Collinder 1965: 42, 206). Quantity, tone and intensity have been fragmentarily mentioned within the context of the correlates of stress. As far as stress is concerned, questions concerning the origin of the Erzya type of alternating stress and the predictability of its location have continually been discussed.

1.5.1.1. Early views concerning the problem of stress in Erzya

The grammar of Erzya written by F. J. Wiedemann (1965) is an early treatment of the problem of stress in the language. F. J. Wiedemann drew attention to a weak distinction between stressed and unstressed syllables and an unclear relationship in length between the vowels within a word. Polemics on the origin of mobile stress in Erzya also dates back to F. J. Wiedemann's grammar; to date, there has been no agreement concerning the question whether the mobility of stress is an inherited or an acquired feature.

Weak distinction between stressed and unstressed syllables and the problem of defining a certain pattern of stress have been mentioned in all subsequent works dealing with the description of stress in Erzya (for example, Paasonen 1893: 8; Shakhmatov 1910: 759; Yevseyev 1963: 25; Ravila 1929: 90; Itkonen 1946: 308–314; Davydov 1963: 124; Obyedkin 1963c: 247; Bibin 1964: 24; Collinder 1965: 206; Lytkin 1970: 245; Lehiste et al. 2003: 50, 85–86; Estill 2004: 43, 108, 115).

Approach to the analysis of stress changed with time. F. J. Wiedemann defined the location of stress in terms of traditional grammar. He identified stress in grammatical word categories. The rules were not exclusive and none of them appeared to be reliable.

The treatment of the problem of Erzya stress in the works by H. Paasonen (1893 as Dissertation, 1903 as MSFOu XXII publication) and A. A. Shakhmatov (1910) has been pivotal for the research in stress and in the related questions of historical phonology. Reconstruction of the Proto-Mordvinic stress and of the pattern of vowel distribution was largely based on the views of the two linguists. The observations of stress in the works of

H. Paasonen and A. A. Shakhmatov have also had an impact upon the synchronic description of stress.

Both linguists mentioned the problem of defining the location of stress. H. Paasonen admitted that he could not give any definite rules concerning stress in Erzya, except for one of the dialects he observed, namely, Kazhlotka (in present-day Torbeyevo, Mordoviya). According to H. Paasonen, in this dialect of Erzya and in Moksha dialects, stress was either on the initial syllable or a non-initial syllable containing a low vowel *a*, if in the initial syllable there were high vowels *u*, *i* (H. Paasonen 1893: 8; 96–119). H. Paasonen suggested that this pattern of alternating stress might have been inherited from Proto-Mordvinic. In unstressed syllables, the occurrence of reduced vowels in some of the dialects was mentioned.

Observations concerning stress that were described by A. A. Shakhmatov did not principally differ from those described by H. Paasonen. A. A. Shakhmatov, on the one hand, noted the indistinct auditory effect of stress; on the other hand, he noticed the tendency to place stress on the initial syllable and the occurrence of reduced vowels in unstressed syllables. As far as the placement of stress was concerned, the two dialects (Sukhoy Karbulak and Orkino in the vicinity of Saratov), according to A. A. Shakhmatov, somewhat differed. Namely, initial stress tendency was less salient in Orkino. No mention was made by A. A. Shakhmatov concerning the dependence of stress on the quality of vowels. In the analysis of stress, A. A. Shakhmatov reckoned with the openness/closedness of syllables and the number of syllables in the word rather than morphological categories of words. Rules for the assignment of stress on open or closed syllables, though, were not consistent.

A. A. Shakhmatov might have been the first author to mention the appearance of additional stress in trisyllabic and other polysyllabic words, e.g.: lo·pavti·ž ‘moistened’, ko·loda·ńt ‘of the stack’ (Shakhmatov 1910: 759–761). The location of stress in the samples of texts recorded by A. A. Shakhmatov were later analyzed by E. Lewy, who came to the conclusion that stress primarily manifested the rhythm of the utterance.

Concerning the acoustic effect of stress, H. Paasonen noted fluctuations of musical tone in the stressed syllable, while A. A. Shakhmatov wrote that there were changes of tone in unstressed syllables. In Proto-Mordvinic, according to A. A. Shakhmatov, stress could have been dynamic.

It can be inferred from the observations of stress recorded by the two linguists that the varieties of Erzya described may have had diverging features. This particular moment concerning the description of stress in the works by H. Paasonen and A. A. Shakhmatov has not received due attention.

Among the spoken varieties of Erzya described by Paasonen in “*Mordvinische Lautlehre*” were the subdialects of Kaliayevo (in present-day Temnikov, Mordoviya), Kazhlodka (in present-day Torbeyevo, Mordoviya), Maresevo and Chamzinka (in present-day Chamzinka, Mordoviya). H. Paasonen mentioned the difference between the features of stress in Kazhlodka, where

stress was identified as similar to Moksha, and the other varieties, where stress was not distinct.

Manifestations of stress observed by H. Paasonen in Kazhlodka and several dialects of Moksha were the basis for the reconstruction of Proto-Mordvinic stress. A. A. Shakhmatov based his hypothesis of Proto-Mordvinic stress on the observations in Sukhoy Karbulak and Orkino, concerning which some differences in the placement of stress were noticed. In later research, the views of the two linguists were generalized to the Erzya language, which gave rise to controversy in the interpretation of the problem of alternating Erzya stress.

1.5.1.2. The treatment of stress in pre-experimental research

The synchronic description of stress over the 20th century was mainly based on auditory observations of dialects.

In 1930s it was suggested by A. Ryabov (1932) and E. Lewy (1937, 1961) that the mobility of stress in Erzya might be associated with the rhythm of the utterance. According to A. Ryabov, a stressed syllable is followed by one or two unstressed syllables within a phrase. E. Lewy, who analyzed the indications of stress provided in A. A. Shakhmatov's work, noticed regularity in the occurrences of stress patterns. Word-initial stress in these samples alternated with non-initial stress, e.g.: *o·mbočä čī·sta ta·ga mo·lenek* 'the next day we went there again', but: *vädi·ś ul̥hi·ś l̥śma·sa* 'as to water, it was in the well'. There were occurrences of stress on successive syllables that were difficult to interpret, e.g.: *iš'ta·k a·ščan* 'I am just idling' (Lewy 1937: 236, 245). Few comments have been made by other authors concerning this method of analysis. In a survey of research on Erzya stress, Ravila (1973) wrote concerning E. Lewy's approach to the analysis: "Leider gibt die Arbeit nicht viel her; Lewy stellt wieder einmal fest, dass im Dialekt von Orkino die Wörter als solche keinen festen Akzent haben, sondern diesen erst im Satzzusammenhang erhalten" (p. 70).

In the literature of later years, authors associated the location of stress mainly with the rhythmic factor. However, there were no attempts to analyze the assignment of stress. Concerning the standards of literary Erzya, it has been stated that stress is free (Devayev and Tsygankin 1970: 76; Bondarko and Polyakov 1993: 142; Zaicz 1998: 190–191; Bartens 1999: 28). In publications on the dialects of Erzya, generally, little information regarding stress has been provided; indications of stress in examples are lacking.

The role of additional (or secondary) stress has received relatively little attention. In earlier works, the idea that preservation of original *a* in third and fifth syllables could have been due to historical stress on these syllables was expressed by P. Ravila (1929: 116–120). The idea was supported by D. Bubrikh (1937: 81) and E. Itkonen (1971: 60–65). However, no further commentary concerning the topic was made by the linguists. It has been noted by several

authors in pre-experimental research that trisyllabic and other polysyllabic words have additional stress (Shakhmatov 1910, Markov 1961, Biushkin 1967).

Analysis of the assignment of stress based on field-work materials from different locations (Aasmäe 1982) allowed establishing an underlying rhythmic pattern of stress that is identifiable, to a greater or lesser extent, in any spoken variety. It was suggested that stress fundamentally segments an utterance into disyllabic feet and that it can be assigned either to odd-numbered or even-numbered syllables. A polysyllabic word is analyzable as, for example: *še·ževe·meze·nze* or: *šeže·veme·zenze* ‘till it is torn’. In utterances consisting of more than one word, stress can disregard word boundaries, e.g.: *mo·n a mo·lan* or: *mon a·mo·la·n* ‘I will not go’. The observation concerning the division of words and utterances into disyllabic sequences has been supported in the study of Erzya prosody (Lehiste et al. 2003: 86).

Some authors noticed differences in the assignment of stress or in the auditory impression of the effect of stressedness between separate varieties. In groups of dialects spoken in the central and north-western part of Mordoviya, as well as in the vicinity of Nizhnii-Novgorod, a weak prominence of stressed syllables, a relatively high occurrence of non-initial stress and lack of vowel reduction were identified (Davydov 1963: 124; Markov 1961: 40; 1961: 143, 1963c: 247; Isayeva 1965a: 49–52; Yermushkin (1968: 325–326). In several dialects to the west of Mordoviya, vowels in unstressed syllables were found to preserve their quality, though they sounded less distinct than in a stressed syllable (Obiedkin 1961: 143, 1963c: 247). In groups of dialects located to the south of Mordoviya and in Bashkortostan the tendency towards initial stress and vowel reduction were defined as regular features (Obiedkin 1963b: 45–46; Biushkin 1967: 215–233, Yakushkin 1961: 205, 213–214). In the subdialects of Guzyntsy and Kosogor as well as some dialects in the Penza area, which originate from north-west, reduction was found to be less extensive than in the other varieties of the south-eastern part of the Republic of Mordoviya (Tsygankin 1963: 434–437; Bibin 1964: 24).

These observations of the authors, though fragmentary, are important evidence of prosodic variation in the dialects.

1.5.1.3. Acoustic-phonetic studies of stress

The first systematic study of Erzya, in which acoustic methods were used to investigate the characteristics of stress, quantity, and tone, was undertaken in a research project dealing with Finno-Ugric prosody (Lehiste, Asu, Meister, Pajusalu, Parve, Teras, Viitso 2001; Lehiste, Aasmäe, Meister, Pajusalu, Teras, Viitso 2003; Aasmäe, Teras 2003). The aim of the study was “to produce a set of data that can serve as a basis for systematic comparison between various dialects of Erzya as well as other Finno-Ugric languages for which such data are not yet available” (Lehiste et al. 2003: 86). Summarizing the results of the study,

in which productions of eight speakers were analyzed, the authors wrote: “The results concerning stress are the most interesting – perhaps partly so because they are somewhat ambiguous and point toward directions that future research might take.” (Lehiste et al. 2003: 85). Ample reference to the results of this study is made in [P3], [P4], [P5], [P6], [P7].

Earlier, some measurement data on Erzya, including the duration and fundamental frequency of vowels in stressed and unstressed syllables, was reported in a phonetic study of Turkic and Finno-Ugric languages (Baichoura 1961: 257–258; 1982). In this work, productions of a speaker from Guzyntsy (Bolshiye-Berezniki, Mordoviya) were recorded. In a publication on the phonetics of Erzya and Moksha (Bondarko, Polyakov 1993), some fragmentary data on the duration of vowels in stressed and unstressed syllables were provided; information about the origin of the speaker(s) is, however, missing in the work. Data on the duration of vowels have been recently reported in a study of Erzya stress (Estill 2004) that compared the location of stress in 18th century documents (published in: Feoktistov 1971) and in the pronunciation of contemporary speakers.

Measurements on duration, treated as a possible correlate of stress in these studies, produced contradictory results. The assumption that duration plays a primary role in manifesting stress (Baichoura 1961; 1982; Estill 2004) has not been supported. Measurements made on vowel durations in the productions of eight speakers (Lehiste et al 2003) have shown greater duration of stressed syllable nuclei in comparison to unstressed ones only in some of the idiolects. The authors write: “The eight speakers fall into two groups according to duration patterns” (Lehiste et al. 2003: 83). A book of Erzya phonetics contains a statement, according to which the duration of vowels in stressed and unstressed syllables in Erzya does not differ (Bondarko, Polyakov 1993: 136).

Thus, the temporal relationship between the syllable nuclei has not been clear. Of the other possible correlates of stress, fundamental frequency was measured in the studies mentioned above; the measurements have not produced definitive results. Intensity, along with duration, has been claimed to be another important component of stress (Estill 2004). As a relatively important characteristic of stressedness, vowel quality has been taken into account (Lehiste et al. 2003).

Comparison of the placement of stress in historical documents provided with indications of stress and in present-day Erzya (Estill 2004) yielded results, on the basis of which it was claimed that the location of stress in the language has changed over 200 years. According to the author, present-day speakers placed stress on the first syllable, while in the documents, a high occurrence of stress on the second syllable was found.

As a commentary on the interpretation of the question concerning the changes in stress, it will be noted here that the reliability of, at least, one of the premises in the study had to be established. The author’s preliminary assump-

tion was that the dialects of Erzya are prosodically homogeneous (Estill 2004: 32–33, 97).

The documentation, to all appearances, represents the dialect(s) spoken in the Nizhnii-Novgorod area, where the dictionary and texts comprising the documents were compiled (Feoktistov 1971: 5). As it is mentioned in 1.5.1.2, in this variety of Erzya a high occurrence of non-initial stress has been noticed by present-day researchers. In the study, the Nizhnii-Novgorod dialects were not represented. Some of the informants came from locations in the Bolshiye-Berezniki and Kochkurovo areas, where, according to evidence from literature, initial stress is dominant.

1.5.1.4. Conclusion

Both pre-experimental and first acoustic-phonetic studies of stress and duration indicate that the dialects of Erzya might display diverging characteristics. Literature provides evidence of divergency in the location of stress in dialects. In some of them, the tendency towards initial stress has been noticed by researchers; other dialects were found to manifest a relatively high frequency of non-initial stress.

The findings of the first acoustic-phonetic studies of the correlates of stress, primarily measurement data concerning duration, have been controversial. Diverging data might be ascribed to the use of different language sources.

Fragmentary evidence available in previous research buttresses the relevance of the present study of stress in the varieties of the Erzya language.

1.5.2. Variability in the assignment of stress

[P3] **Aasmäe, N., Ross, J.** 2005a, How free is alternating stress in Erzya? – *Linguistica Uralica*, XLI, 2, pp. 134–143.

This publication addressed the subject of the variability of stress assignment in Erzya. It reported on the results of an experiment that aimed, firstly, at eliciting the degree of mobility of stress; secondly, at establishing factors that might condition stress alternation. As input, one-word utterances spontaneously produced by 33 speakers were used. First and repeated responses of the speakers (895 tokens) were assessed to establish the occurrences of initial, non-initial and double, or quasi- equal, stress, e.g.: *ve·lé*, *vele·*, *ve·lé·* ‘a village’; *ve·lése·*, *vele·se*, *ve·lé·se·* ‘in a village’. There is a definite tendency toward alternation of stress “in many and perhaps all languages” (Pike 1945: 67), for example, English: ‘upstairs – up’stairs.

In the case of Erzya, stress alternation proves to be a regular phenomenon rather than a minor tendency, the phonetic and phonological basis of which has not been distinct.

1.5.2.1. Inter-idiolect data

Analysis revealed differentiation in the distribution of the patterns of stress in the idiolect-related data. The overall distribution of the stress patterns varied both in the inter- and intra-speaker productions. Occurrences of initial stress exceeded those of non-initial stress in the data for all speakers; however, in two groups of idiolects, non-initial stress was used fairly frequently. The tendency towards the assignment of initial stress was more salient in the data of the idiolects characterized by vowel reduction in non-initial syllables. There was less difference between initial and non-initial stress occurrences in the data of the idiolects that use only full-formation vowels.

The overall occurrences of initial, non-initial and double, or quasi-equal stress in the speakers' productions are shown in [P3], Fig. 1. The overall distribution of stress patterns was found to be as follows: initial stress occurred in 510 responses (57%), non-initial stress in 264 responses (30%), and double or quasi-equal stress in 121 responses (13%). The results show, on the one hand, prevalence of initial stress across the speakers' productions; on the other hand, a considerable share of non-initial and double stress occurrences. The inter-speaker distribution of the patterns of stress in the overall data was found to be diverse. The least difference between the occurrences of initial and non-initial stress was observed in the data of idiolects lacking reduction (initial stress – 50%, non-initial stress – 37%); the speakers of idiolects with reduction used the pattern of initial stress more often (66–68%). Occurrences of double or unidentified stress in all the four groups amounted to 13–14%, which is an interesting outcome. The phenomenon of quasi-equal stress might be a core feature of Erzya.

1.5.2.2. Word-related data

Next, the occurrences of stress were analysed regarding the structure of the test words; the characteristics included the type of vowel segments, syllables, and morphemes constituting the words. It has been common belief that the assignment of stress does not depend on the factor of morphology. Vowel quality and the openness/closedness of syllables have, however, been considered in some earlier studies as factors influencing stress.

The test material contained words with either a same phoneme (*e*, *o*, or *a*) or different phonemes (*u* vs. *i*, *e*, *o*) in the first and second syllables. Words of a different shape, e.g.: CVCV, VCVC, VCCVC, as well as different categories of

words in different morphological forms were used. The number of tokens across the types of test words was not the same, due to several circumstances. For example, there were cases of alternative answers, like *ve'leset/kudosot* 'they are in the country'/'they are in the city'. Longer forms, like *araśeli'ñ* 'I have not been', *ul'ñekš'ñi'ñ* 'I used to be' tended to be replaced by shorter ones: *araś* 'no', *ul'ñi'ñ* 'I have been' in the responses of some speakers.

It was found that any word, irrespective of a form, could potentially be assigned stress either on the initial or non-initial syllable or its syllables could be pronounced with (quasi)-equal prominence. The position of stress alternated both in words with same vowel and syllable types: *araś* 'no', *ośoś* 'the city'; *ve'eše* 'in the country', as well as different vowel and syllable types: *kudoso* 'at home', *ul'ñekš'ñi'ñ* 'I used to be', *ul'i* 'is', *ul'it* 'are', *ul'ñi'ñ* 'I have been'.

Stress appeared to be less mobile, i.e. tended to be on the first syllable in words having the same vowel, e.g.: *ve'e* 'a village', and different vowels, e.g.: *kudo* 'a house', or different syllable types, e.g.: *ośoś* 'the city', *ośso* 'in the city'. On the other hand, the words *araś* 'no, not' and *apak* 'not' revealed a highly varied distribution of stress patterns, unlike *ośoś*, which has a similar segmental structure. Comparing the data for words that have different morphemic structure, e.g.: *kudo*, *ul'i*, *ośso*, *apak*, we can not fail to notice that the distribution of stress patterns in the sets of words diverges. However, there is no regularity in the series of distribution that could be ascribed to a certain morpheme type. Thus, no sensitivity to stress was displayed by the segmental, syllabic, and morphemic composition of the words.

1.5.2.3. Utterance-related data

As it has been claimed in previous studies and shown in the experiment described above, stress in Erzya is not analyzable in terms of word structure or lexico-grammatical meaning. Stress assignment was assessed further in the speakers' recurrent responses to see whether stress is sensitive to the recurrences of a response, e.g.: 1st response – *a-raś*, 2nd response – *ara-ś*. Repeating a response a speaker is likely to alter the emotional or attitudinal implication.

Prosodic parameters "can be found to provide important information at the emotional, pragmatic and syntactic level" (Waibel, 1988: 19). Thus the assumption tested in the experiment was that stress alternation in Erzya might serve this purpose

There was a tendency towards an increase in the occurrences of non-initial stress and, accordingly, a decrease in the occurrences of initial stress in the recurrent responses, which was manifest in each of the idiolect groups. The average increase of non-initial stress in repeated responses compared to first responses amounted to 8% across the speaker groups.

1.5.2.4. Conclusion

The analysis of stress assignment showed that the mobility of stress was idiolect-dependent. The dialect background of the speaker is, thus, an important factor to be reckoned with in the studies of prosody. The data analyzed confirmed that the segmental and morphemic structure of the word do not condition the assignment of stress. The alternation of stress might be conditioned by the functional role of a word in an utterance. The analysis of stress distribution in recurrent utterances showed that repeated responses likely to bear complementary – emotional or attitudinal – implications could contribute to the increase of non-initial stress in the speakers' productions.

Hence, stress in Erzya can be found to provide information at the pragmatic or emotional levels. Along with rhythmical alternation, stress seems to be movable due to changes in utterance-related meaning. Further research could involve the aspect of the interaction between stress and the communicative aspect of an utterance, for example, the study of “how sentence stress reacts to different kinds of new and given information” (Svetozarova 1987:112).

1.5.3. Variability of the temporal characteristics of syllable nuclei

- [P4] **Aasmäe, N.** 2005a, Durational variability in Erzya: stressed and unstressed syllable nuclei in idiolects. – *Linguistica Uralica*, XLI, 4, pp. 264–278.

1.5.3.1. Results of duration measurements

In this publication, results of measurements on the duration of stressed and unstressed syllable nuclei in disyllabic words were reported. Analysis focused on the evaluation of the temporal relationship between the two syllable nuclei in the target groups of idiolects. The input consisted of both conversational speech and reading. Data assessed in the analysis included values of duration and duration ratios for vowels in adjacent stressed and unstressed syllables. The results were assessed as inter-speaker and inter-group data.

The results of analysis on duration also differentiated between two main types of idiolect groups. Idiolects lacking reduction that displayed a high degree of stress mobility in the experiment on the assignment of stress, revealed a tendency towards equal duration of vowels in stressed and unstressed syllables. Three groups of idiolects characterized by different types and degrees of reduction, displayed a higher duration of vowels in stressed syllables, compared to unstressed ones. Differences between the duration of stressed and unstressed

syllable nuclei were statistically significant only in the idiolects that exhibited vowel reduction both in the reading and spontaneous speech data.

Differences in the duration ratios between stressed and unstressed syllable nuclei differentiated, on the one hand, between the idiolects having reduction and the idiolects lacking reduction and, on the other hand, between the idiolects exhibiting different types and degrees of reduction (at $p < 0.0001$ and $p = 0.005$, respectively). Spontaneous speech data revealed statistically significant differences in this measure only between the idiolects lacking reduction and idiolects having reduction (at $p = < 0.0001$). In the group of idiolects having reduction, differences in the duration ratios were statistically not significant. It might be explained by the effect of uneven tempo in speech across the relatively large group of speakers. Eventually, more extensive reduction in speech, compared to reading can have neutralized inter-idiolect differences in the duration ratios.

As the input in the two parts of the experiment was different, a direct comparison between the data obtained was not viable. In order to make a judgement concerning the compatibility between the results on the two parts, comparison was drawn between the results, firstly, for a same speaker, who participated in both parts of measurements; secondly, for speakers originating from a same location; thirdly, for speakers from different locations representing a same idiolect type.

Analysis of variance, in which duration ratios between stressed and unstressed syllable nuclei in the observations on spontaneous speech were juxtaposed to those on script reading, showed that data on the two types of input did not display statistically significant differences. Hence, the results in the two parts of material can be considered congruent.

1.5.3.2. Conclusion

Durational data in both parts of the test materials consistently showed differentiation between the idiolects that tended to have equalized vowel durations and idiolects, in which stressed syllable nuclei were longer than unstressed syllable nuclei. Duration, thus, can be considered an important correlate of stress in the idiolects having reduction.

1.5.4. Sources of variability in the duration of syllable nuclei

[P5] **Aasmäe, N.** 2005b, Effects of word structure upon the temporal relationship between stressed and unstressed syllable nuclei in Ersä Mordvin. – *Fenno-Ugristica*, 27, pp. 5–17.

- [P6] **Aasmäe, N., Ross, J.** 2005b, Temporal relations between stressed and unstressed syllable nuclei in di- and trisyllabic words in Ersa Mordvin. – *Fenno-Ugristica*, 27, pp.18–26.
- [P7] **Aasmäe, N.** 2006, Sources of variability in the duration of stressed and unstressed syllable nuclei in Erzya: inter-idiolect data of spontaneous speech. – *Linguistica Uralica*, XVII, 2, pp. 81–93.

1.5.4.1. Objectives of analysis and constraints imposed by the input

Publications [P5], [P6] and [P7] presented results of analysis that concern the effects of stress, intrinsic vowel durations, openness/closedness of syllables and number of syllables constituting the word, upon the temporal relationship between the nuclei of adjoining stressed and unstressed syllables. Publications [P5] and [P6] reported on the results obtained in the analysis of reading materials; publication [P7] presented data from the analysis of spontaneous speech. The findings on the two sources of material do not diverge.

There was a fair range of various phenomena of experimental interest in the analyses. The main observation concerned the character of interaction between stress and duration in the idiolect types. The analysis also included an account of the intrinsic duration of vowels. In previous studies, the factor of intrinsic vowel duration was not considered in the analysis of the duration data for stressed and unstressed syllable nuclei. Sources of duration variability for the syllable nuclei were established by analysing vowel durations in target sets of tokens.

According to evidence from research in acoustic phonetics, the intrinsic duration of vowels differs. High vowels (*i, u*) are inherently shorter than low and mid vowels (*a, e, o*), if other factors are equal (Lehiste 1970, 1976; Kato 2003; Sagisaka 2003). Experiments on speech recognition show that syllables containing, for example, a high vowel tend to be detected as unstressed or are ambiguous (Waibel 1988: 137). Perceptual experiments (Sagisaka 2003) that revealed a high correlation between temporal characteristics and loudness also suggest the existence of a language universal temporal perception mechanism.

In words containing a high vowel in the stressed syllable and a low vowel in the unstressed syllable, duration-based stress could be manifested through a lengthening of a high vowel in the stressed syllable and a shortening of a low vowel in the unstressed syllable, as stress is a relative property and it is defined over syllables (Clark, Yallop 1995: 57). In the case of Erzya, in which the acoustic effect of stress is not distinct, low and mid vowels, being inherently longer than high vowels, will be perceptually salient. In pre-experimental research, the effect of the relative acoustic prominence within a word in the speech of the informants was ascribed to syllables containing low or mid, but not high vowels, or word-final open syllables (Wiedemann 1865: 15–16;

Paasonen 1893: 96–119; Shakhmatov 1910: 759–760). It can not be excluded that the intrinsic acoustic properties of low and mid vowels as compared to those of high vowels or the lengthening of word-final open syllable nuclei were perceived as stress by researchers. Comparison of vowel durations in target sets of tokens, considering the aforementioned maxims, was based on two patterns of syllable nuclei – occurrences of same and different vowel segments.

The analysis was constrained by the requirement of comparable representation of vowels across the idiolect types, which was especially difficult to meet in the part based on spontaneous speech. It has been noted in literature that obtaining comparable sets of linguistic input in experiments on spontaneous speech is a difficult task to meet (for example, Svetozarova 2003: 1299). In this study, there was the problem of selecting tokens comparable across the idiolects to be solved. The dialects are characterized by numerous diverging features, among which are differences in the representation of vowels (Tsygankin 1979; 2000). Firstly, the occurrence of unreduced mid vowels *o*, *e* in non-initial syllables is restricted in idiolects with reduction. For comparison, words preserving the quality of mid *o* and *e* in non-first syllables across the dialects (e. g.: *čemeń* ‘rust’, *ošoś* ‘the city’) were selected. Secondly, the occurrence of the high vowels *u* and *i* in both initial and non-initial syllables (e. g.: *putums* ‘to put’, *śimims* ‘to drink’) is characteristic of some of the idiolects with reduction. In view of these peculiarities, vowel segment durations were compared in a series of words containing *a*, *o*, or *e* in both syllables and in a series of words with high *u* or *i* in the stressed syllable and low *a*, *ä* or mid *o*, *e* in the unstressed syllable, e. g.: *nula* ‘a rag’, *pize/ä* ‘a nest’.

Another constraint encountered in the process of analysis was lack of reliable syllabification rules concerning the Erzya language. Words with internal consonant clusters required an extra treatment.

1.5.4.2. Vowel duration in two patterns of syllable nuclei

Analysis of vowel duration in words with same and different syllable nuclei yielded the following results. In the idiolects lacking reduction, vowel durations tended to be equal in words with a same vowel in both syllables. High vowels (*u*, *i*) in the stressed syllable were shorter than low and mid vowels (*a*, *o*, *e*) in the unstressed syllable; differences between the vowel durations in the set of words with these vowels were statistically significant.

In the idiolects having reduction, stressed syllable nuclei displayed higher vowel duration than unstressed syllable nuclei in words with a same vowel in both syllables. The differences between the duration of the syllable nuclei were statistically significant. The duration of high and low (or mid) vowels in the adjoining syllables tended to be equalized.

The data showed that in the idiolects lacking reduction, stress and duration were independent prosodic entities, while in the idiolects having reduction, the duration of vowels in the adjoining syllables was affected by stress.

It was noticed, along with this, that duration ratios for the tokens with *a* in both syllables were lower than for those with *o* and *e* across the idiolect groups. Analysis of the formant structure of Erzya vowels has shown the least amount of centralization in the case of unstressed *a* (Lehiste et al. 2003: 64). For comparison, it can be mentioned that in Russian, the influence of which upon Erzya is evident, the vowel *a* has been reported to reveal a high degree of duration variability in different positions with regard to stress, especially in spontaneous speech (Bolotova 2003). The findings imply that reduction in the two languages follows phonologically different patterns. Vowel reduction in Erzya can, apparently, be referred to a type (Crosswhite 2004), in which *a* has “a special durational status”.

1.5.4.3. Vowel duration in open/closed syllables

The influence of open/closed syllables upon vowel durations within the word was checked by comparing the mean durations and duration ratios for words of the CVCV, CVCCV, CVCVC, CVCVCC structure in reading and (C)VCV, VCVC, VCCV in spontaneous speech. Vowel duration variations in words with open/open and open/closed syllables were found to be statistically significant in some of the idiolects with reduction. However, the effect of the openness/closedness of the syllable was not explicitly manifested either in the reading or spontaneous speech data.

The duration ratios had a tendency to grow from the CVCV through the CVCCV, CVCVC CVCVCC series in all the idiolects. However, in the idiolects using full vowels, the values of duration for the adjoining stressed and unstressed syllable nuclei did not significantly differ in any of the word types with some minor exceptions. In the idiolects with reduction, statistically significant differences between the duration of the syllable nuclei were found in the CVCVCC series for all the four speakers, while in the CVCVC series, the results among the speakers differed. Thus, higher duration ratios in the CVCVCC series, compared to the CVCVC series, could be due to the occurrence of a consonant cluster in the coda of the closed second syllable. In the idiolects lacking reduction, data on the CVCV type, e.g.: *čama* ‘a face’, showed word-final lengthening of vowels – a cross-linguistic phenomenon which, according to literature (Oller 1973; Ross, Lehiste 2001; Lunden 2006), occurs at the right edge of prosodic boundaries. In the idiolects exhibiting reduction, the duration of the vowels tended to be equal; the effect of stress may have counterbalanced vowel lengthening likely to occur in the word-final position. In the analysis of data on the CVCCV type (e.g.: *pakša* ‘a field’, *jalga* ‘a friend’), the question of syllable boundary had to be treated. According to the

traditional point of view, syllable boundary in words with an internal consonant cluster (with the exception of *ng* and *mb* which start a new syllable) is between the consonants (Devayev, Tsygankin 1970: 75). Comparison of data for the CVCV and CVCCV showed that duration ratios between the syllable nuclei in the latter were higher than in the former for all the idiolects. In the CVCCV series, no lengthening of word-final vowel occurred in the idiolects lacking reduction, while in the idiolects having reduction, vowels tended to be longer in the first syllable. Thus, the tendency towards closed syllable vowel shortening (Maddieson 1985; Redford 2003: 2261), due to which the duration ratio for the CVCCV series could be expected to be lower than for the CVCV series, seemed not to work. The result indicated that the initial syllable in the CVCCV type can have been open. The occurrence of an internal consonant cluster in the CVCCV type of words conditioned lower duration ratios between the syllable nuclei than in the CVCV type. It can not be excluded that the consonant cluster started the second syllable and, thus, the words consisted of two open syllables. Results of duration measurements available in other works showed that the dependence of vowel duration on the openness/closedness of the syllable was manifested only in unstressed second syllables, where vowels in open syllables were longer than in closed syllables (Baichura 1982: 57–59, Lehiste et al. 2003: 53). The implication might be that syllable boundary in words with an internal consonant cluster (which constituted part of the tokens used in these works) was between the open head syllable and a consonant cluster in the onset of the second syllable. In a publication concerning Japanese (Kubozono, Matsui 2003), an identical case has been dealt with; temporal patterning in words of the CVCCV type in some of the language varieties suggests that geminate consonants and consonant clusters belong to the following syllable. The authors' interpretation of the case has been that CVCCV shows the syllabification pattern of /CV.CCV/ in temporal control, while demonstrating the pattern of /CVC.CV/ in phonological control.

1.5.4.4. Vowel durations in the dual foot of di- and trisyllabic words

Previous duration measurements on trisyllabic words (Baithoura 1958, 1982; Lehiste et al. 2003; Estill 2004) have shown that in words with initial stress, vowels in third syllables tended to be longer than in first syllables. It has been also found that the duration of vowels in trisyllabic words was lower than in disyllabic words (Lehiste et al. 2003).

In this study, the analysis aimed at defining to what an extent the temporal manifestations of the dual foot in disyllabic and polysyllabic words might differ in the major language varieties. The preceding analyses of disyllabic words showed the tendency towards equal length of vowels in stressed and unstressed syllables in the idiolects lacking reduction and a greater length of vowels in stressed syllables compared to unstressed ones in the idiolects with reduction.

Trisyllabic words compared to disyllabic ones in both types of idiolects were found to have shorter syllable nuclei, analogous to the results of the previous study (Lehiste et al 2003). Within the duple foot of trisyllabic words, higher duration ratios compared to those in disyllabic words were observed in the data for all the idiolects. In the idiolects lacking reduction, the differences in the duration ratios within the duple foot of disyllabic and trisyllabic words were statistically not significant. The tendency towards equal duration of the vowels observed in disyllabic words persisted in trisyllabic words, as well. In the idiolects with reduction, a statistically significant difference was found between the duration ratios for the duple foot of both disyllabic and trisyllabic words.

Comparison of vowel durations in trisyllabic and disyllabic words showed that the increase of the number of syllables in the word was associated with the increase of the duration ratio between the stressed and unstressed syllable nuclei primarily in the idiolects exhibiting reduction.

Vowel duration in the third syllable was comparable to that in the first syllable in all the idiolect groups.

1.5.4.5. Discussion and conclusions

Analyses of vowel duration variability in target sets of words differing by patterns of vowel distribution, types and number of syllables constituting the word, showed that the factors contributing to the variation in the temporal characteristics of syllable nuclei were idiolect-specific.

In the idiolects with full vowels, stress and vowel durations were independent. The contrast known to exist between the intrinsic duration of high and low vowels was well observed in the test words. High vowels in the stressed syllable were significantly shorter than low vowels in unstressed syllables. In words with a same vowel in both syllables, vowels durations tended to be equal. Word-final lengthening was found to occur in words with a final open syllable.

Vowel harmony might be the factor that contributes to the stability of the intrinsic duration of the vowel segments.

In the idiolects characterized by reduction, stress was found to be a factor conditioning a greater length of vowels in the stressed syllable compared to the unstressed one. In words with a high vowel in the stressed syllable and a low vowel in the unstressed syllable, the vowel durations were equalized; in some idiolects, high vowels under stress were longer than low vowels in the unstressed syllable. Word-final lengthening was counterbalanced by stress.

Decrease in the mobility of stress and preference for initial stress has, apparently, been one of the conditioning factors for reduction. Since the mobility of stress is not cancelled, reduced vowels appear in stressed syllables as vowels of full formation.

The duple foot both in disyllabic and trisyllabic words displayed a tendency towards equal duration of the syllable nuclei in the idiolects with full vowels

and a contraction of the unstressed syllable nucleus in the idiolects with reduction. It can be argued, hence, that the nature of the foot in the two language varieties is different.

In this dissertation, word-initial stress and, accordingly, the ‘head’ foot has been the domain of analysis. The treatment of the foot that begins with the second syllable in the case of stress shift will, hopefully, yield more data for making conclusions concerning the unit of foot in Erzya.

The data obtained on sets of words with open/open and open/closed syllables and words with internal consonant clusters, in which syllable boundary is obscure, indicate that variation in the duration ratios between the syllable nuclei might be conditioned by the occurrence of consonant clusters and word-final lengthening rather than the openness/closedness of the syllables.

These implications concerning the effects of word-related factors upon the temporal characteristics of syllable nuclei allow suggesting the idea of divergency of the rhythmic tendencies in the varieties of Erzya. Idiolects using full vowels gravitate to the syllable-timed structure, while idiolects with vowel reduction display the tendency towards stress-timing.

1.6. Findings of the study

The dissertation “Stress and quantity in Erzya” has provided a review of previous research in the prosody of Erzya and an evaluation of data obtained in a new empirical study of stress and quantity. Analyses undertaken in the framework of the dissertation have produced definitive results, which have been reported in seven publications surveyed in this introductory chapter.

The section “Analytic summary” of the Introduction has given synopses of the results in subsections 1.5.1.4.; 1.5.2.4.; 1.5.3.2.; 1.5.4.5.

The major findings formulated with respect to the domains of research addressed in the dissertation are as follows.

1. Review of literature

Analysis of literature pertaining to the prosodic features of Erzya showed that there had been no systematic research into the question of prosodic diversity among the language varieties.

Pre-experimental studies were found to contain fragmentary observations concerning dialect differences in the manifestations of stress. For lack of empirical data, observations on separate dialects had been generalized to the language, which gave rise to controversy in the interpretation of the problem of Erzya stress.

Results of acoustic-phonetic measurements on the manifestations of stress undertaken hitherto were found to be contradictory. Analysis of data suggests

that divergence in the results might be due to the use of different language sources.

2. Phonological manifestations of Erzya stress

An experiment testing the variability of stress assignment in four target groups of idiolects carried out in this study revealed inter-idiolect differences. It is proposed that the degree of mobility of stress is associated with the absence or presence of vowel reduction in the idiolect groups under consideration. The phonological relationship between stress and reduction is a research question to be investigated.

This experiment also showed that stress alternation can be related to the functional aspect of the utterance. Interaction between stress and the pragmatics of the utterance is one of the facets, where future research is envisaged.

3. Acoustic-phonetic measurements on the duration of syllable nuclei

Measurement data on the duration of the syllable nuclei in di- and trisyllabic words allow making the conclusion that on the level of production, duration consistently appears to be related to stress only in the idiolects with reduction.

The overall results of the study indicate that the varieties of Erzya are not prosodically uniform. Manifestations of stress and quantity, along with phonological data on the distribution of vowels in a word, suggest that there are diverging tendencies at work in the types of idiolects under consideration. Relying upon the distinction made between syllable- and stress-timed languages and language varieties, it can be argued that in the idiolects displaying a high mobility of stress, equalized durations of the syllable nuclei, and lack of reduction, the syllable-timed tendency is dominant. The idiolects mainly displaying initial stress and contraction of unstressed syllable nuclei gravitate to the stress-timed structure. The historical aspect of the prosodic diversity among the varieties of Erzya is another area for future research.

1.7. General significance of the study

The present dissertation contributes to the description of Erzya prosody by offering new empirical data that concern the tendencies of stress assignment and temporal characteristics of stress. The data of the current study are congruent with evidence from previous research. Viewed on the background of inter-idiolect data, the results of previous studies support the validity of the present findings.

This is the first empirical study of the mobility of Erzya stress. It is based on the productions of a relatively large group of speakers representing major

language varieties. As language sources, controlled speech and samples of spontaneous speech in a typical communicational situation were used.

Owing to an integrated treatment of linguistic data, findings of acoustic-phonetic measurements and sociolinguistic information, the overall results obtained in this study can be claimed to be generalizable to the language varieties represented by groups of speakers.

The results of the study are expected to be useful for eliciting the relationship between the existing data and for planning future research, namely, for solving the problem of speaker selection. They will, hopefully, provide input for diachronic studies of the Erzya language.

Identification of stress patterns and temporal characteristics of the syllable nuclei in language varieties allows for a motivated and complete analysis of Erzya prosody.

REFERENCES

- Aasmäe 1982 = Аасмяэ, Н. 1982: Ритмическое ударение в эрзянском языке. – *Filoloogiateadused Tartu Ülikoolis. Konverentsi teesid*. Tartu, 15–17.
- Aasmäe, N., Teras, P. 2005: Finno-Volgaic Prosody: the Case of Erza. *Uralic languages today*. Editions Honoré Champion, Bibliothèque des Hautes Etudes à la Sorbonne, Paris, 159–178.
- Aasmäe, N., Ross, J. 2005a: How free is alternating stress in Erzya? – *Linguistica Uralica*, XLI, 2, 134–143.
- Aasmäe, N. 2005a: Durational variability in Erzya: stressed and unstressed syllable nuclei in idiolects. – *Linguistica Uralica*, XLI, 4, 264–278.
- Aasmäe, N. 2005b: Effects of word structure upon the temporal relationship between stressed and unstressed syllable nuclei in Erza Mordvin. – *Fenno-Ugristica*, 27, 5–17.
- Aasmäe, N., Ross, J. 2005b: Temporal relations between stressed and unstressed syllable nuclei in di- and trisyllabic words in Erza Mordvin. – *Fenno-Ugristica*, 27, 18–26.
- Aasmäe, N. 2006: Sources of variability in the duration of stressed and unstressed syllable nuclei in Erzya: inter-idiolect data of spontaneous speech. – *Linguistica Uralica*, XVII, 2, 81–93.
- Abercrombie, D. 1965: A phonetician's view of verse structure. – *Studies in Phonetics and Linguistics*, Oxford U.P., London, 16–25.
- Abercrombie, D. 1967: *Elements of General Phonetics*. Edinburgh: Edinburgh University Press.
- Agafonova 1983 = Агафонова Н. А. 1983: *Словоизменение существительного и местоимения в смешанных мордовских говорах Куйбышевской области*. Автореферат диссертации на соискание ученой степени кандидата филологических наук. Тарту: Тартуский государственный университет.
- Arnold, G.F. 1957: *Stress in English words*. Amsterdam.
- Asu, E. L., Nolan, F. 2005: Estonian rhythm and the Pairwise Variability Index. – *Proceedings, FONETIK 2005*, Department of Linguistics, Göteborg University, 29–32.
- Baichura 1961 = Байчура, У. Ш. 1961: *Звуковой строй татарского языка*. Казань, Издательство Казанского университета.
- Baitchoura, U. 1982: Instrumental-Phonetic data on Intonation and Stress in Erzja-Mordvinian (Di- and Trisyllabic Words). – *Études Finno-Ougriennes* XV, Akadémiai Kiadó, Budapest, 55–72.
- Bartens, R. 1999: *Mordvalaiskielten rakenne ja kehitys*. Suomalais-Ugrilainen Seura, Suomalais-Ugrilainen Seuran Toimituksia, Mémoires de la Société Finno-Ougrienne, 232, Helsinki.
- Bibin 1964 = Бибин, М. Т. 1964: Говоры насафтымской мордвы. – *Ученые записки, серия мордовская филология*, 43, Саранск, 19–159.
- Biushkin 1967 = Биушкин, М. С. 1967: Особенности мелодической структуры федоровского диалекта эрзя-мордовского языка на территории Башкирской АССР. – *Вопросы мордовского языкознания*, 32, Саранск, 215–290.
- Biushkin 1968 = Биушкин, М. С. 1968. Звуковая система федоровского диалекта эрзя-мордовского языка на территории Башкирской АССР. – *Очерки мордовских диалектов*, 5, Саранск, 199–317.

- Bolotova, O. 2003: On some acoustic features of spontaneous speech and reading in Russian (quantitative and qualitative comparison methods). – *Proceedings of the 15th International Congress of Phonetic Sciences*, Barcelona, 913–916.
- Bondarko, Polyakov 1993 = Бондарко, Л. В., Поляков, О. Е. 1993: *Современные мордовские языки. Фонетика*. Саранск.
- Bubrikh 1937 = Бубрих, Д. В. 1937: Из истории мордовского вокализма. – *Советское языкознание*, 3, Ленинград, 69–91.
- Bubrikh 1951 = Бубрих, Д. В. 1951: О былом эрзянском ударении. – *Записки Мордовского Научно-Исследовательского Института Языка, Литературы, Истории и Экономики при Совете Министров Мордовской АССР (Записки МНИИЯЛИЭ)*, Саранск, 83–87.
- Bubrikh 1953 = Бубрих, Д. В. 1953: *Историческая грамматика эрзянского языка*. Саранск, 36–38.
- Bybee, J., Chakraborti, P., Jung, D., Scheibman, J., 1998: Prosody and segmental effect. Some paths of evolution for word stress. *Studies in Language*, 22:2, 267–314.
- Chomsky, N., Halle, M. 1968: *The Sound Pattern of English*. New York: Harper and Row.
- Clark J., Yallop C. 1995: *An Introduction to Phonetics and Phonology*. Oxford UK and Cambridge USA.
- Collinder, B. 1965: *An Introduction to the Uralic Languages*. Berkeley and Los Angeles, University of California Press.
- Crosswhite, K. 2004: Vowel Reduction. – Hayes, B., Kirchner, R., Steriade, D. (eds.) *Phonetically-Based Phonology*. Cambridge University Press.
- Dauer, R. 1983: Stress-timing and syllable-timing reanalyzed. – *Journal of Phonetics* 11, 51–62.
- Dauer, R. 1987: Phonetic and Phonological Components of Language Rhythm. – *Proceedings of the 11th International Congress of Phonetic Sciences*, 5, Tallinn, 447–450.
- Davydov 1963 = Давыдов, М. М. 1963: Больше-Игнатовский диалект эрзя-мордовского языка. *Очерки мордовских диалектов*, 2, Саранск, 118–233.
- Devayev, Tsygankin 1970 = Деваев, С. З.; Цыганкин, Д. В. 1970: *Фонетика мордовских (мокишанского и эрзянского) литературных языков*. Саранск, Мордовский Государственный Педагогический Институт.
- Endukovski 1930 = Эндюковский А.Г. 1930. К вопросу о русских заимствованиях в мордовском языке. *Учёные записки Саратовского Университета*. Том VIII, выпуск III, Саратов, 55–112.
- Engstrand, O., Krull, D. 2003: Rhythmic intentions or rhythmic consequences? Cross-language observations of casual speech. – *Proceedings of the 15th International Congress of Phonetic Sciences*, Barcelona, 2789–2792.
- Estill, D. 2004: *Diachronic change in Erzya word stress*. – *Suomalais-Ugrilainen Seuran Toimituksia* 246, Helsinki.
- Feoktistov 1971 = Феоктистов, А. П. 1971. *Русско-мордовский словарь*. Москва: Издательство Наука.
- Feoktistov 1976 = Феоктистов, А. П. 1976. *Очерки по истории формирования мордовских письменно-литературных языков*. Москва: Издательство Наука.
- Feoktistow, A. P. 1990: Die Dialekte der mordwinischen Sprachen. – *H. Paasonens Mordwinisches Wörterbuch*. Helsinki, Suomalais-Ugrilainen Seura, XXXI–CV.

- Gibbon, D. 2003: Computational modelling of rhythm as alternation, iteration and hierarchy. – *Proceedings of the 15th International Congress of Phonetic Sciences*, Barcelona, 2489–2492.
- Grabe, E., Low, E. L. 2002: Durational variability in speech and the rhythm class hypothesis. – C. Gussenhoven, N. Warner (eds.) *Laboratory phonology 7*, Berlin: Mouton de Gruyter, 515–546.
- Gut, U. 2003: Non-native speech rhythm in German. – *Proceedings of the 15th International Congress of Phonetic Sciences*, Barcelona, 2437–2440.
- Hammond, M. 1998: Optimality Theory and Prosody. – *Optimality Theory*. Archangeli D. and Langendoen, D.T. (eds.), Oxford: Blackwell Publishers, 33–58.
- Hayes, B. 1984: The phonology of rhythm in English. – *Linguistic Inquiry*, 15, 33–74.
- Isayeva 1963 = Исаева, Т. А. 1963: *Особенности русской речи мордвы-эрзи*. Автореферат кандидатской диссертации. Горький, Горьковский Государственный университет.
- Isayeva 1965a = Исаева, Т. А. 1965a: Русская речь мордвы-эрзи. – *Труды МНИИЯЛИЭ*, 29, Саранск, 3–132.
- Isayeva 1965b = Исаева, Т. А. 1965b: Об ударении в эрзя-мордовском языке. – *Труды МНИИЯЛИЭ*, 29, Саранск, 264–274.
- Itkonen, E. 1946: Zur Frage nach der Entwicklung des Vokalismus der ersten Silbe in den finnisch-ugrischen Sprachen, insbesondere im Mordwinischen. – *Finnisch-Ugrische Forschungen* XXIX, 1–3, Helsinki, 222–337.
- Itkonen, E. 1971: Zum Ursprung und Wesen der reduzierten Vokale im Mordwinischen. – *Finnisch-Ugrische Forschungen* XXXIX, 1–2, Helsinki, 41–79.
- Ito, J. 1995: *Syllable Theory in Prosodic Phonology*. University Microfilms International Dissertation Services, University of Massachusetts (1986: *Syllable Theory in Prosodic Phonology*. PhD dissertation, Department of Linguistics, University of Massachusetts).
- Kager, R. 1999: *Optimality Theory*. Cambridge University Press.
- Kahla, M. (ed.) 1990: *H. Paasonens Mordwinisches Wörterbuch*. – Helsinki, Suomalais-Ugrilainen Seura.
- Katamba, F. 1989: *An Introduction to Phonology*. London and New York: Longman.
- Kato, H., Muto, M., Tsuzaki, M., Sagisaka, Y. 2003: Relationship between control precision and perceptual sensitivity to segmental duration. – *Proceedings of the 15th International Congress of Phonetic Sciences*, Barcelona, 2043–2046.
- Keresztes, L. 1990: *Chrestomathia Morduinica*. Budapest.
- Kohler, K. 2003: Domains of temporal control in speech and language. From utterance to segment. – *Proceedings of the 15th International Congress of Phonetic Sciences*, Barcelona, 7–10.
- Kozlov 1960 = Козлов, В. И. 1960: *Расселение мордвы. Вопросы этнической истории мордовского народа*. Москва.
- Kubozono, H., Matsui, F.M. 2003: *Proceedings of the 15th International Congress of Phonetic Sciences*, Barcelona, 24–25.
- Lallukka, S. 1990: *The East Finnic minorities in the Soviet Union: an appraisal of the erosive trends*. Suomalainen tiede akatemia, B 252.
- Lehiste, I. 1970: *Suprasegmentals*. Cambridge, Massachusetts and London, England: The M.I.T. Press.
- Lehiste, I., 1973: Rhythmic Units and Syntactic Units in Production and Perception. *Journal of the Acoustical Society of America*, 54, 5, 1228–1234.

- Lehiste, I. 1976: Suprasegmental Features of Speech. – *Contemporary Issues in Experimental Phonetics*. New York, San Francisco, London: Academic Press, 225–239.
- Lehiste, I., Asu, E. L., Meister, E., Pajusalu, K., Parve, M., Teras P., Viitso, T. R. 2001: Acoustic analysis of Erza prosody. – *Congressus Nonus Internationalis Fenno-Ugristarum*. Pars V, Tartu, 248–255.
- Lehiste, I., Aasmäe, N., Meister, E., Pajusalu, K., Teras, K., Viitso, T.-R. 2003: *Erzya Prosody*. – *Suomalais-Ugrilaisen Seuran Toimituksia* 245, Helsinki.
- Lennes, M., Anttila, H. 2002: Prosodic Features Associated with the Distribution of Turns in Finnish Informal Dialogues. – *Fonetiikan päivät*. The Phonetic Symposium 2002, Helsinki, 149–158.
- Lepschy, G. C. 1992: Proposte per l'accento secondario. – *The Italianist*, 12, 117–128.
- Lewy, E. 1937: Zur betonung des erzämordwinischen im satze. – *Finnisch-Ugrische Forschungen*, XXIV, 1–3. Helsinki. 232–245.
- Lewy, E. 1961: *Zur Betonung des Erdzja-Mordwinischen von Orkino*. Berlin: Akademie – Verlag.
- Lewy, E. 1937: Zur Betonung des Erzjamordwinischen im Satze. – *Kleine Schriften*. Berlin 1961, S. 440–450 (*Finnisch-Ugrische Forschungen* 24, S. 232–245).
- Low, E. L., Grabe, E., Nolan, F. 2000: Quantitative characterizations of speech rhythm: syllable timing in Singapore English. – *Language and Speech*, 43 (4), 377–401.
- Lieberman, M., Prince, A. 1977: On stress and linguistic rhythm. – *Linguistic Inquiry*, vol. 8, 249–336.
- Lunden, A. 2006: *Weight, Final Lengthening and Stress: A Phonetic and Phonological Case Study of Norwegian*. University of California, Santa Cruz.
- Lytkin 1970 = Лыткин, В. И. 1970: Проблема лексического ударения в финно-угорских языках. – *Acta Linguistica Academiae Scientiarum Hungaricae*, XX, Budapest, 245–263.
- Maddieson, J. 1985: Phonetic cues to syllabification. – V. Fromkin (ed.), *Phonetic Linguistics*. Orlando: Academic Press, 203–221.
- Markov 1961 = Марков, Ф. П. 1961: Приалатырский диалект эрзя-мордовского языка. – *Очерки мордовских диалектов* 1, Саранск, 7–99.
- Marotta, G. 2003: What does Phonology tell us about Stress and Rhythm? Some Reflections on the Phonology of Stress. – *Proceedings of the 15th International Congress of Phonetic Sciences*, Barcelona, 333–336.
- Mokshin 1977 = Мокшин, Н. Ф. 1977: *Этническая история мордвы*. Саранск.
- Moon, S.-J., Lindblom B. 1994: Interaction between duration, context, and speaking style in English stressed vowels. – *Journal of the Acoustical Society of America*, vol. 96 (1), 40–55.
- Nadkin 1969 = Надькин, Д. Т. 1969: Краткие сведения по фонетике ниже-пьянского диалекта и говоров ЧувашскогоПрисурья. – *Вопросы мордовского языкознания. Труды МНИИЯЛИЭ*, 36, Саранск, 67–87.
- Nespor, M. 1990: On the rhythm parameter in phonology. – I. Roca (ed.) *Logical issues in language acquisition*, Dordrecht: Foris, 157–175.
- Obyedkin 1961 = Обьедкин, В. Д. 1961: Старо-турдаковский диалект эрзя-мордовского языка. *Очерки мордовских диалектов*, 1, Саранск, 100–196.
- Obyedkin 1963a = Обьедкин, В. Д. 1963b: Сабаевско-кочелаевский говор эрзя-мордовского языка. – *Очерки мордовских диалектов* 3, Саранск, 3–26.

- Obyedkin 1963b = Обьедкин, В. Д. 1963а: Говор села Мордовское Давыдово бывшего Кочкуровского района Мордовской АССР. – *Очерки мордовских диалектов*, 2, Саранск, 37–98.
- Obyedkin 1963c = Обьедкин, В. Д. 1963с: Говоры, имеющие общность со старотурдаковским диалектом эрзя-мордовского языка. *Очерки мордовских диалектов*, 2, Саранск, 240–260.
- Oller, D.K. 1973. The Effect of Position in Utterance on Speech Segment Duration in English. – *The Journal of the Acoustical Society of America*, 54, 1235–1247.
- Paasonen, H. 1893: *Mordvinische Lautlehre*. Helsingfors.
- Patel, A.D., J. R. Daniele 2003: An empirical comparison of rhythm in language and music. – *Cognition* 87, B35–B45.
- Pike, K. N. 1945: *The Intonation of American English*. Ann Arbor, MJ: University of Michigan Press.
- Posti, L. 1953: “From Pre-Finnic to Late Proto-Finnic” – *Finnisch-Ugrische Forschungen XXXI*, 1–2, Helsinki, 1–91.
- Ramus, F., Nespor, M., Mehler, J. (1999). Correlates of linguistic rhythm in the speech signal. – *Cognition*, 73, 265–292.
- Ravila, P. 1929: Über eine doppelte vertretung des urfinnischwolgaischen *a der nichtersten silbe im mordwinischen. – *Finnisch-Ugrische Forschungen XX*, 1–3. Helsinki, 83–120.
- Ravila, P. 1973: Der Akzent im Erza-Mordwinischen. – *Finnisch-Ugrische Forschungen XL*, 1–3. Helsinki. 169–176.
- Rédei, K. 1984: Phonologische Analyse des Erza-Mordwinischen. – *Studien zur phonologischen Beschreibung uralischer Sprachen*, herausgegeben von P. Haidú und L. Honti, Akadémiai Kiadó-Budapest, 209–230.
- Redford, M.A. 2003. Cognitive Template for a Phonetic Correlate of Syllable Structure. – *Proceedings of the 15th International Congress of Phonetic Sciences*, Barcelona, 2261–2264.
- Roca, I. 1994: *Generative Phonology*. London and New-York: Routledge.
- Ross, J., Lehist, I. 2001: *The Temporal Structure of Estonian Runic Songs*. – Berlin, New York, Mouton de Gruyter.
- Ryabov 1932 = Рябов, А. П. 1932: Об ударении в эрзя-мордовском языке. – *Революция и письменность*. Москва.
- Sagisaka, Y. 2003: Modeling and perception of temporal characteristics in speech. – *Proceedings of the 15th International Congress of Phonetic Sciences*. Barcelona, 1–6.
- Sarv, H. 2002: *Indigenous Europeans East of Moscow*. Tartu, Tartu University Press.
- Selkirk, E. 1984: *Phonology and Syntax. The Relation between Sound and Structure*. Cambridge University Press, Cambridge.
- Shahmatov 1910 = Шахматов, А. А. 1910: *Мордовский этнографический сборник*. С.-Петербург.
- Spencer, A. 1998: *Phonology: Theory and Description*. Oxford, Blackwell Publishers Ltd.
- Strangert, E. 2004: On modeling of conversational speech. – *Proceedings, FONETIK 2004, The XVIIth Swedish Phonetics Conference*, Stockholm University, 20–23.
- Svetozarova, N. 1987: Linguistic Factors in Sentence Stress (Evidence from Russian). – *Proceedings of the 11th International Congress of Phonetic Sciences*, 6, Tallinn, 110–113.

- Svetozarova, N., Kuosmanen, A. 2003: Declination and finality in spontaneous and read speech in Russian. – *Proceedings of the 15th International Congress of Phonetic Sciences*, 1297–1300.
- Taylor, D. S. 1981: Non-native speakers and the rhythm of English. – *International Review of Applied Linguistics in Language Teaching* 19 (3).
- Toivonen, Y. H. 1928: Zur geschichte der finnisch-ugrischen inlautenden affrikaten. – *Finnisch-Ugrische Forschungen* XIX, 1–3. Helsingfors, 1–270.
- Tsygankin 1961 = Цыганкин, Д. В. 1961: Шугуровский диалект эрзя-мордовского языка. – *Очерки мордовских диалектов* 1, Саранск, 294–395.
- Tsygankin 1963 = Цыганкин, Д. В. 1963: Об одном говоре Присурья бывшего Больше-Березниковского района Мордовской АССР. – *Очерки мордовских диалектов* 2, Саранск, 433–447.
- Tsygankin 1968 = Цыганкин, Д. В. 1968: Опыт классификации эрзянских говоров Мордовского Присурья. – *Очерки мордовских диалектов*, 5, Саранск, 383–394.
- Tsygankin 1977 = Цыганкин, Д. В. 1977. *Морфология имени существительного в диалектах эрзя-мордовского языка (словоизменение и словообразование)*. Диссертация на соискание научной степени доктора филологических наук. Саранск.
- Tsygankin 1979 = Цыганкин, Д. В. 1979: *Фонетика эрзянских диалектов*. Саранск.
- Tsygankin (ed.) 1980 = Цыганкин, Д. В. (ред.) 1980: *Грамматика мордовских языков*. Саранск, Мордовский государственный университет.
- Tsygankin 1994 = Цыганкин, Д. В. 1994: Взгляд лингвиста на лексико-фонетические особенности шокишанского диалекта эрзя-мордовского языка. – *Folia Uralica Debreceniensia*, 3, Debrecen, 7–10.
- Tsygankin 2000 = Цыганкин, Д. В. 2000: *Мордовские языки глазами ученого-лингвиста*. Саранск.
- Turaieva 1972 = Тураева, Л.И. 1972: Фонетико-морфологический очерк эрзянских говоров верховьев рек Черемшана, Шешмы и Кечуя (Татарская АССР) – *Труды МНИИЯЛИЭ*, 42, Саранск.
- Turk, A. 2003: Introduction to the symposium on the role of the word, foot, and syllable in speech production and perception: The role of the syllable in speech production. – *Proceedings of the 15th International Congress of Phonetic Sciences*, 147–150.
- Waibel, A. 1988: *Prosody and Speech Recognition*. London.
- Wiedemann, F. J. 1865: *Grammatik der Ersä-Mordwinischen Sprache*. St. Petersburg.
- Yakushkin 1961 = Якушкин, А. В. 1961: Дракинский диалект эрзя-мордовского языка. – *Очерки мордовских диалектов*, 1, Саранск, 197–293.
- Yakushkin 1963 = Якушкин, А. В. 1963: Границы распространения дракинского диалекта эрзя-мордовского языка в пределах Мордовской АССР. – *Очерки мордовских диалектов*, 3, Саранск, 49–82.
- Yermushkin 1984 = Ермушкин, Г. И. 1984: *Ареальные исследования по восточным финно-угорским языкам (эрзя-мордовский язык)*. Москва: Издательство Наука.
- Yermushkin 1968 = Ермушкин, Г. И. 1968: Северо-западные говоры эрзя-мордовского языка. – *Очерки мордовских диалектов* 5, Саранск, 318–382.
- Yevseyev 1963 = Евсеев, М. Е. 1963 (written in 1929). Основы мордовской грамматики. – *Избранные труды* 4. Саранск.
- Zaicz, G. 1998: Mordva. – *The Uralic Languages*, edited by Daniel Abondolo, Routledge Language Family Descriptions. London and New York.

KOKKUVÕTE

Rõhk ja kestus ersa keeles

Antud väitekirj käsitleb rõhu ja kestuse suhet ersa põhimurretes. Töös on analüüsitud rõhu määramise ja vokaalide kestuse varieerumist. Väitekirj sisaldab ülevaadet kirjandusest, milles on käsitletud ersa rõhu küsimusi läbi aegade ja tutvustab antud töös saadud empiirilisi andmeid.

Ersa rõhu omadustest on kirjutanud paljud uurijad rohkem kui sajandi jooksul; samas pole see teema olnud kuni viimase ajani eksperimentaalse uurimuse objektiks. Ersa keele liikuva rõhu probleemi käsitus on empiiriliste andmete puudumise tõttu olnud vastuoluline. Üldistusi ersa keele rõhu kohta on tehtud vaid üksikute idiolektide kirjelduse põhjal.

Ülevaade kirjandusest

Väited ersa rõhu kohta läbi aegade

Esimesed kirjeldused ersa rõhu kohta pärinevad selliste autorite töödest nagu F. J. Wiedemann (1865), H. Paasonen (1898, 1903), A. A. Shahmatov (1910). Ersa keele foneetilises kirjelduses pöörasid nad tähelepanu sellele, et rõhulisuse kõla on ebamäärane. Rõhulise silbi koht sõnas muutub, ilma et muutuks sõna tähendus. H. Paasonen ja A. A. Shahmatov märkasid ka murretevahelisi erinevusi rõhu omadustes. Mõnedes murretes oli võimalik eristada tendentsi asetada rõhk sõna esimesele silbile. Nende uurijate kirjeldatud murded olid mõnevõrra erinevad. H. Paasoneni ja A. A. Shahmatovi vaateid interpreteeriti hilisemates töödes murretevahelisi rõhu erinevusi arvestamata. Diskussioon selle kohta, milline on rõhu mudel ühismordva keeles olnud, kestab praeguseni.

H. Paasoneni arvamus järgi võis rõhu koht sõltuda vokaalidest – juhul, kui esimeses silbis olid kõrged vokaalid (*i, u*) ja järgsilbis madalad vokaalid (*a, ä*), pidi rõhu eelistatud kohaks olema järgsilp. Sellist rõhu paigutust märkas H. Paasonen mokša murretes ja ühes ersa murdes (*Kažlotka, Torbejevo* kandis). Rõhu kohta teistes murretes (*Maresevo* ja *Čamzinka* külades Mordva keskpäärikonnas ja *Kaľajevo* külas *Temnikov-i* kandis) märkis autor, et polnud võimalik kindlaid jooni eristada.

A. A. Shahmatov kirjeldas murdeid (*Suhoy Karbulak* ja *Orkino* Saratovi kandis), kus rõhu koht oli suhteliselt kinnistunud esimesele silbile. Sellest tingituna oletas autor, et algupäraseks rõhu malliks pidi olema sõnaalguline dünaamiline rõhk, mis tingis vokaali redutseerimist järgsilpides.

Nende uurijate vaated mõjutasid hilisemate fonoloogiliste uurimuste arengut. Kõigepealt väljendus see segmentaalse struktuuri ajaloolises kirjelduses. Vokaalide rekonstrueerimisel kasutati kas H. Paasoneni või A. A. Shahmatovi

seisukohti rõhu mudelite kohta, mis olid omavahel vastuolus, kuna nad põhinesid erinevatel murretel.

Lähenemisviis rõhu kirjeldamisele muutus järg-järgult. Kui varasemates töödes võeti rõhu reeglite määramisel arvesse sõna morfoloogilist vormi või vokaale ning silbi tüüpi (avatud/kinnine), siis hiljem nendest reeglitest loobuti, sest nad ei pidanud paika. Võib oletada, et järgmisena mõjutasid rõhu kirjeldamist A. P. Ryabovi (1932) ja E. Lewy (1937, 1961) uurimused. Nende autorite järgi allub rõhk ersa keeles põhiliselt lause rütmile. E. Lewy võrdles rõhu asukohta A. A. Shahmatovi salvestatud tekstides, kus olid märgistatud rõhulised silbid. Analüüs näitas, et rõhk võib asetseda nii sõna esi- kui järgsilbil, näiteks: *o·mbočā čī·sta ta·ga mo·lenek* 'järgmisel päeval läksime me taas'; *vādi·š ul̄nī·š l̄is·ma·sa* 'vesi oli kaevus', kuid mitme rõhulise silbi tekkimist üksteise järel, näiteks: *is̄ta·k a·ščan* 'niisama olen' (Lewy 1937: 236, 245) oli raske interpreteerida.

Väidet, et rõhk ersa keeles sõltub lauserütmist, pooldati murdeid käsitlevates uurimustes alates 1950. aastatest. Võib märgata, et nendel aastatel käsitleti rõhu teemat suhteliselt vähe. Siiski osutasid rõhku käsitlevates lühiülevaadetes mõned autorid sellele, et murrete vahel on erinevusi, näiteks tendents asetada rõhk sõna algusse nendes murretes, kus esineb reduktsioon.

Toetudes murdepraktika materjalidele ja katsetele loetud materjalidega, leidis väitekirja autor (Aasmäe 1982), et ersa keeles on rõhk peamiselt kahe-silbilise jala tunnusmärk. Rõhuga märgistatakse sõna alg- või järgsilbi, mille tõttu rõhk kordub kas paaris- või paaritutel silpidel, näiteks: *ku·doso·nok / kudo·sono·k* 'meie kodus'. Rõhu nihkumine kandub üle sõnapiiri: *mo·n a mo·lan / mon a·mo·lan* 'ma ei lähe'. Ersa prosoodiat käsitlevas uurimistöös (Lehiste, Aasmäe, Meister, Pajusalu, Teras, Viitso 2003) leidis see väide kinnitust. Autorid tegid järelduse, et ersa keeles on rõhk lauseprosoodia tunnus.

Esimesed eksperimentaalfoneetilised uurimused ersa prosoodiast

Prosoodia ja just rõhk on teema, mida on viimasel ajal hakatud uurima eksperimentaalfoneetiliste meetoditega. Esimeseks süstemaatiliseks uurimuseks selles valdkonnas on *Erzya prosody* (Lehiste, Aasmäe, Meister, Pajusalu, Teras, Viitso 2003). Mõningaid mõõtmisandmeid ersa rõhu kohta on avaldatud ka varem (Baitchoura 1961, 1982). Uuemas uurimuses (Estill 2004) on samuti tehtud mõõtmisi rõhu akustiliste omaduste kohta, kuid põhiteemaks oli töös rõhu käsitus diakroonilisest aspektist. Kestust rõhu korrelaadina on vaadeldud kõikides töödes. Saadud tulemused on vastuolulised ja nähtavasti kajastavad töödes kasutatud idiolektide erinevusi. Mõõtmistulemuste võrdlus näitab, et rõhulises ja rõhuta silpides esinevate vokaalide kestused olid ühesugused samalt murdealalt pärinevatel keelejuhtidel, erineva taustaga keelejuhtidel need andmed erinesid. Näiteks selliste idiolektide puhul, mida iseloomustab vokaali redutseerumine rõhuta silbis – *Guzinci* (Baitchoura 1961, 1982), *Kočkurovo*

(Lehiste jt. 2003) – oli vokaali kestus rõhulises silbis suurem kui rõhuta silbis. Mõõtmised Uzbek Baitchoura ja Dennis Estili töödes, kus andmeid saadi ühelt keelejuhilt, näitasid, et kestus on oluline rõhu korrelaat. Autorite rühm (Lehiste jt. 2003) leidis, et kestust ei saa pidada ersa rõhu korrelaadiks. Nende uurimus näitas, et keelejuhtide tulemused polnud ühtsed. Ersa foneetika õpikus (Bondarko, Polyakov 1993) on autorid märkinud, et vokaali kestused rõhulises ja rõhuta silpides ei erine, kuid informatsioon informanti(de) kohta puudub.

Teistest võimalikest korrelaatidest on mõõtmisi tehtud tooni kohta, kuid tulemused ei näidanud selget tendentsi suhte kohta rõhulise ja rõhuta silpide vahel. D. Estili töös tehtud mõõtmised näitavad, et üheks rõhu korrelaadiks ersa keeles võib olla intensiivsus.

Kokkuvõtteks

Kirjanduse ülevaatest järeldub, et ersa rõhu omaduste uurimist tuleks jätkata, kasutades laiemat uurimismaterjali. Nii esimesed empiirilised uurimused kui ka teema mitteempiirilised käsitlused osutavad sellele, et süstemaatiline lähenemine eeldab murretevaheliste andmete võrdlust nii rõhu määramise kui ka akustiliste omaduste osas.

Andmete analüüs

Käesolevas väitekirjas kasutatud materjal on salvestatud 40 keelejuhilt, kes pärinevad kõikidelt põhimurdealadelt. Lindistused sisaldasid nii loetud kui ka spontaanses kõnes kasutatud keelendeid. Andmed koosnevad 1245 sõna mõõtmistulemustest. Esialgse materjalina on kasutatud murdepraktika ajal salvestatud vestlusi keelejuhtidega erinevatelt murdealadelt. Idiolektide eristamisel oli lähtepunktiks murdejaotus Mordva vabariiki alal (Tsygankin 1968, 1977: 19–30, 1979; Itkonen 1971; Yermushkin 1984; Keresztes 1990: 16–17; Feoktistov 1990). Prosoodilised tunnused pole selles taksonoomias arvesse võetud andmete puudumise tõttu. Samuti on kasutatud kirjandust ersalaste migratsiooni kohta.

Empiirilised andmed rõhu asukoha varieerumise kohta põhimurretes

Empiirilised andmed spontaanse kõne kohta on saadud eksperimendist, milles osales 33 keelejuhti. Vestlus iga keelejuhiga eraldi võimaldas salvestada korduvaid vastuseid küsimustele. Vastustes esinevad sõnad olid kõikide keelejuhtide puhul samad, kuid rõhu koht sõnades varieerus nii ühe kõneleja materjalis kui ka keelejuhtide võrdluses.

Rõhujaotuste põhjal oli võimalik eristada nelja idiolektirühma. Rõhumallide varieerumine oli suurem idiolektides, kus ei esine vokaali redutseerimist. Tendents rõhutada sõna esimest silpi oli ilmne idiolektides, kus esineb reduktsioon. Analüüs näitas samuti, et rõhu koha muutmine ei muuda sõna tähendust. Üheks rõhu asukoha muutmise faktoriks võib pidada lause pragmaatilist aspekti. Rõhu koha muutmine toimus sagedamini kordusvastustes, mis tähendab, et kõneleja muutis keelendis edastavat emotsionaalset või pragmaatilist suhtumist. Rõhu ja pragmaatika vaheline seos on teema, mida tuleb arendada edaspidises uurimistöös.

Empiirilised andmed vokaali kestuse varieerumise kohta põhimurretes

Vokaalide kestust on analüüsitud nii spontaanses kõnes kui ka loetud sõnades. Viimased olid salvestatud 7 keelejuhilt. Tulemused näitavad, et reduktsioonita idiolektides ei erinenud vokaalide kestused rõhulises ja rõhuta silpides. Võib järeldada, et rõhk ja vokaali kestus nendes idiolektides üksteisest ei sõltu. Reduktsiooniga idiolektides oli vokaali kestus rõhulises silbis järjekindlalt suurem kui rõhuta silbis. Vahe rõhulises ja rõhuta silbis esinevate vokaalide kestuste vahel oli statistiliselt oluline, mis tähendab, et kestus on reduktsiooniga idiolektides tähtis rõhu korrelaat.

Sõna struktuuri mõju vokaalidevahelise kestuse suhtele

Vokaalide kestusi rõhulises ja rõhuta silpides on järgnevalt võrreldud erineva struktuuriga sõnades, et hinnata sõna struktuuri mõju vokaalide kestusele. Analüüsi juures on silmas peetud selliseid kriteeriume nagu vokaalide omakestus, silpide liigid (nt. CV, CVC) ja silpide arv. Võrdlustulemused näitasid, et reduktsioonita idiolektides mängib olulist rolli vokaalide omakestus. Kõrged vokaalid rõhulises silbis olid oluliselt lühemad kui keskkõrged ja madalad vokaalid rõhuta silbis. Reduktsiooniga idiolektides olid kõrged ja keskkõrged ning madalad vokaalid samades positsioonides samasuguse kestusega tänu rõhu mõjule. Silbi avatuse või kinnisuse mõju avaldus vaid mõnedes reduktsiooniga idiolektides. Vokaalidevahelise kestuse suhe kahesilbilise jala piirides erines kahesilbilistes ja kolmesilbilistes sõnades samuti reduktsiooniga idiolektides. Kahesilbiliste sõnadega võrreldes muutus kolmesilbilistes sõnades vokaalidevahelise kestuse suhe kõrgemaks, mis näitab, et kahesilbilises jalas põhineb rõhk kestusel.

Kokkuvõtteks

Arvestades mitmekülgse analüüsi tulemusi, on töös järeldatud, et ersa murded pole prosoodiliselt ühtsed. Üldisemal kujul jagunevad murded kaheks tüübiks, millest ühes domineerib rõhuajastuse ja teises silbiajastuse tendents. Esimeses kaldub rõhk püsima sõna esimesel silbil, rõhuta silbis esineb vokaali redutseerumine. Seega põhineb rütmiline jalg rõhu ja vokaali kestuse seosel. Teise tüübi puhul ei ole rõhu ja vokaali kestuse vahel olulist seost. Rõhulisuse efekt on nõrk. Rütmilise jala tunnused ei põhine rõhu ja vokaali kestusel.

Tulemuste olulisus

Andmed rõhu ja kestussuhete varieerumise kohta murretes on kasulikud ersa keele prosoodia uurimuste planeerimiseks. Nad aitavad lahendada keelejuhtide valiku probleemi. Samuti saab nende tulemustega seostada varem avaldatud tööde andmed. Laiemalt täiendavad tulemused teadmisi ersa keele prosoodia kohta ja loodetavasti leiavad kasutust diakroonilise fonoloogia küsimuste käsitlemisel.

2. COPIES OF PUBLICATIONS

Lehiste, I., Aasmäe, N., Meister, E., Pajusalu, K., Teras, K., Viitso, T.-R. 2003, *Erzya Prosody*. – Suomalais-Ugrilaisen Seuran Toimituksia 245, Helsinki, pp. 13–47, 87–91, 92.

Aasmäe, N., Teras, P. 2005, Finno-Volgaic Prosody: the Case of Erza. – M. M. J. Fernandez-Vest (ed.), *Uralic languages today*. Librairie Honoré Champion, Bibliothèque des Hautes Etudes à la Sorbonne, Paris, pp. 159–165, 172–175.

Aasmäe, N., Ross, J. 2005a, How free is alternating stress in Erzya? – *Linguistica Uralica*, XLI, 2, pp. 134–143.

Aasmäe, N. 2005a, Durational variability in Erzya: stressed and unstressed syllable nuclei in idiolects. – *Linguistica Uralica*, XLI, 4, pp. 264–278.

Aasmäe, N. 2005b, Effects of word structure upon the temporal relationship between stressed and unstressed syllable nuclei in Erza Mordvin. – *Fenno-Ugristica*, 27, pp. 5–17.

Aasmäe, N., Ross, J. 2005b, Temporal relations between stressed and unstressed syllable nuclei in di- and trisyllabic words in Erza Mordvin. – *Fenno-Ugristica*, 27, pp. 18–26.

Aasmäe, N. 2006, Sources of variability in the duration of stressed and unstressed syllable nuclei in Erzya: inter-idiolect data of spontaneous speech. – *Linguistica Uralica*, XVII, 2, pp. 81–93.

BIBLIOGRAPHY

- Aasmäe 1982 = Аасмяэ, Н. 1982: Ритмическое ударение в эрзянском языке. – *Filoloogiateadused Tartu Ülikoolis. Konverentsi teesid*. Tartu, 15–17.
- Aasmäe, N., Teras, P. 2005: Finno-Volgaic Prosody: the Case of Erza. *Uralic language today*. Editions Honoré Champion, Bibliothèque des Hautes Etudes à la Sorbonne, Paris, 159–178.
- Aasmäe, N., Ross, J. 2005a: How free is alternating stress in Erzya? – *Linguistica Uralica*, XLI, 2, 134–143.
- Aasmäe, N. 2005a: Durational variability in Erzya: stressed and unstressed syllable nuclei in idiolects. – *Linguistica Uralica*, XLI, 4, 264–278.
- Aasmäe, N. 2005b: Effects of word structure upon the temporal relationship between stressed and unstressed syllable nuclei in Ersa Mordvin. – *Fenno-Ugristica*, 27, 5–17.
- Aasmäe, N., Ross, J. 2005b: Temporal relations between stressed and unstressed syllable nuclei in di- and trisyllabic words in Ersa Mordvin. – *Fenno-Ugristica*, 27, 18–26.
- Aasmäe, N. 2006: Sources of variability in the duration of stressed and unstressed syllable nuclei in Erzya: inter-idiolect data of spontaneous speech. – *Linguistica Uralica*, XVII, 2, 81–93.
- Abercrombie, D. 1965: A phonetician's view of verse structure. – *Studies in Phonetics and Linguistics*, Oxford U.P., London, 16–25.
- Abercrombie, D. 1967: *Elements of General Phonetics*. Edinburgh: Edinburgh University Press.
- Agafonova 1983 = Агафонова Н. А. 1983: *Словоизменение существительного и местоимения в смешанных мордовских говорах Куйбышевской области*. Автореферат диссертации на соискание ученой степени кандидата филологических наук. Тарту: Тартуский государственный университет.
- Aguiar L., Balari S., Castellví J., Marín R., Vallverdú T. 2003: On the Phonological Interpretation of Vowel Reduction: The Case of Russian and Catalan. – *Proceedings of the 15th International Congress of Phonetic Sciences*, Barcelona, 2769–2772.
- Allen, G. 1968: The Place of Rhythm in a Theory of Language. – *Working Papers in Phonetics*, 10, Los Angeles, 47 – 59.
- Arnold, G.F. 1957: *Stress in English words*. Amsterdam.
- Asu, E. L., Nolan, F. 2005: Estonian rhythm and the Pairwise Variability Index. – *Proceedings, FONETIK 2005*, Department of Linguistics, Göteborg University, 29–32.
- Baichura 1961 = Байчура, У. Ш. 1961: *Звуковой строй татарского языка*. Казань, Издательство Казанского университета.
- Baitchoura, U. 1982: Instrumental-Phonetic data on Intonation and Stress in Erzja-Mordvinian (Di- and Trisyllabic Words). – *Études Finno-Ougriennes* XV, Akadémiai Kiadó, Budapest, 55–72.
- Bartens, R. 1999: *Mordvalaiskielten rakenne ja kehitys*. Suomalais-Ugrilainen Seura, Suomalais-Ugrilainen Seuran Toimituksia, Mémoires de la Société Finno-Ougrienne, 232, Helsinki.
- Bertinetto, P., Fowler, C. 1989: On sensitivity to durational modifications in Italian and English. – *Rivista di Linguistica*, 1, 69–94.

- Bibin 1964 = Бибин, М. Т. 1964: Говоры наскафтымской мордвы. – *Ученые записки, серия мордовская филология*, 43, Саранск, 19–159.
- Bibin 1968 = Бибин, М. Т. 1968: О некоторых ассимилятивных явлениях в консонантизме теньгушевского диалекта эрзя-мордовского языка. – *Очерки мордовских диалектов* 5. Саранск, 395–399.
- Biushkin 1967 = Биушкин, М. С. 1967: Особенности мелодической структуры федоровского диалекта эрзя-мордовского языка на территории Башкирской АССР. – *Вопросы мордовского языкознания*, 32, Саранск, 215–290.
- Biushkin 1968 = Биушкин, М. С. 1968. Звуковая система федоровского диалекта эрзя-мордовского языка на территории Башкирской АССР. – *Очерки мордовских диалектов*, 5, Саранск, 199–317.
- Bolotova, O. 2003: On some acoustic features of spontaneous speech and reading in Russian (quantitative and qualitative comparison methods). – *Proceedings of the 15th International Congress of Phonetic Sciences*, Barcelona, 913–916.
- Bondarko, Polyakov 1993 = Бондарко, Л. В.; Поляков, О. Е. 1993: *Современные мордовские языки. Фонетика*. Саранск.
- Bondarko, L., Volskaya, N., Tananaiko, S., Vasilieva, L. 2003: Phonetic Properties of Russian Spontaneous Speech. – *Proceedings of the 15th International Congress of Phonetic Sciences*, Barcelona, 2973–2976.
- Bubrikh 1937 = Бубрих, Д. В. 1937: Из истории мордовского вокализма. – *Советское языкознание* 3. Ленинград, 69–91.
- Bubrikh 1951 = Бубрих, Д. В. 1951: О былом эрзянском ударении. – *Записки Мордовского Научно-Исследовательского Института Языка, Литературы, Истории и Экономики при Совете Министров Мордовской АССР (Записки МНИИЯЛИЭ)*. Саранск, 83–87.
- Bubrikh 1953 = Бубрих, Д. В. 1953: *Историческая грамматика эрзянского языка*. Саранск, 36–38.
- Burzio, L. 1996: *Principles of English Stress*. Cambridge University Press.
- Bybee, J., Chakraborti, P., Jung, D., Scheibman, J., 1998: Prosody and segmental effect. Some paths of evolution for word stress. *Studies in Language* 22: 2, 267–314.
- Chambers, J., Trudgill, P. 1998: *Dialectology*. Cambridge University Press, Cambridge.
- Chomsky, N., Halle, M. 1968: *The Sound Pattern of English*. New York: Harper and Row.
- Clark J., Yallop C. 1995: *An Introduction to Phonetics and Phonology*. Oxford UK and Cambridge USA.
- Collinder, B. 1965: *An Introduction to the Uralic Languages*. Berkeley and Los Angeles, University of California Press.
- Crosswhite, K. 2004: Vowel Reduction. – Hayes, B., Kirchner, R., Steriade, D. (eds.) *Phonetically-Based Phonology*. Cambridge University Press.
- Dauer, R. 1983: Stress-timing and syllable-timing reanalyzed. – *Journal of Phonetics* 11, 51–62.
- Dauer, R. 1987: Phonetic and Phonological Components of Language Rhythm. – *Proceedings of the 11th International Congress of Phonetic Sciences*, 5, Tallinn, 447–450.
- Davydov 1963 = Давыдов, М. М. 1963: Больше-Игнатовский диалект эрзя-мордовского языка. *Очерки мордовских диалектов* 2. Саранск, 118–233.

- Devayev, Tsygankin 1970 = Деваев, С. З., Цыганкин, Д. В. 1970: *Фонетика мордовских (мокишанского и эрзянского) литературных языков*. Саранск, Мордовский Государственный Педагогический Институт.
- Eek, A. 1982: Stress and associated phenomena: a survey with examples from Estonian, I. – *Estonian Papers in Phonetics*, Tallinn, 20–59.
- Endukovski 1930 = Эндюковский А.Г. 1930: К вопросу о русских заимствованиях в мордовском языке. *Учёные записки Саратовского Университета*. Том VIII, выпуск III, Саратов, 55–112.
- Engstrand, O., Krull, D. 2003: Rhythmic intentions or rhythmic consequences? Cross-language observations of casual speech. – *Proceedings of the 15th International Congress of Phonetic Sciences*, Barcelona, 2789–2792.
- Estill, D. 2001: A diachronic and synchronic study of accentuation in Erzya-Mordvin. – *Congressus Novus Internationalis Fenno-Ugristarum*, Tartu, Pars IV, 209–214.
- Estill, D. 2004: *Diachronic change in Erzya word stress*. – *Suomalais-Ugrilainen Seuran Toimituksia* 246, Helsinki.
- Feoktistov 1971 = Феоктистов, А. П. 1971: *Русско-мордовский словарь*. Москва: Издательство Наука.
- Feoktistov 1976 = Феоктистов, А. П. 1976: *Очерки по истории формирования мордовских письменно-литературных языков*. Москва: Издательство Наука.
- Feoktistow, A. P. 1990: Die Dialekte der mordwinischen Sprachen. – *H. Paasonens Mordwinisches Wörterbuch*. Helsinki, Suomalais-Ugrilainen Seura, XXXI–CV.
- Gibbon, D. 2003: Computational modelling of rhythm as alternation, iteration and hierarchy. – *Proceedings of the 15th International Congress of Phonetic Sciences*, Barcelona, 2489–2492.
- Grabe, E., Post, B., Watson, I. 1999: The acquisition of rhythm in English and French. – *Proceedings of the International Congress of Phonetic Sciences*, 2, San Francisco, August 1999, 1201–1204.
- Grabe, E., Low, E. L. 2002: Durational variability in speech and the rhythm class hypothesis. – C. Gussenhoven, N. Warner (eds.) *Laboratory phonology 7*, Berlin: Mouton de Gruyter, 515–546.
- Gut, U. 2003: Non-native speech rhythm in German. – *Proceedings of the 15th International Congress of Phonetic Sciences*, Barcelona, 2437–2440.
- Hallap, V. 2000: Verbaaltuletussufiksids mordva keeltes. *Eesti Keele Instituudi Toimetised*, 5. Tallinn.
- Hammond, M. 1998: Optimality Theory and Prosody. – *Optimality Theory*. Archangeli D. and Langendoen, D.T. (eds.), Oxford: Blackwell Publishers, 33–58.
- Hayes, B. 1984: The phonology of rhythm in English. – *Linguistic Inquiry*, 15, 33–74.
- Hudson, R. 1999: *Sociolinguistics*. Cambridge University Press.
- Isayeva 1963 = Исаева, Т. А. 1963: *Особенности русской речи мордвы-эрзи*. Авто-реферат кандидатской диссертации. Горький, Горьковский Госуниверситет.
- Isayeva 1965a = Исаева, Т. А. 1965a: Русская речь мордвы-эрзи. – *Труды МНИИЯЛИЭ*, 29, Саранск, 3–132.
- Isayeva 1965b = Исаева, Т. А. 1965b: Об ударении в эрзя-мордовском языке. – *Труды МНИИЯЛИЭ*, 29, Саранск, 264–274.
- Itkonen, E. 1946: Zur Frage nach der Entwicklung des Vokalismus der ersten Silbe in den finnisch-ugrischen Sprachen, insbesondere im Mordwinischen. – *Finnisch-Ugrische Forschungen* XXIX, 1–3, Helsinki, 222–337.

- Itkonen, E. 1971: Zum Ursprung und Wesen der reduzierten Vokale im Mordwinischen. – *Finnisch-Ugrische Forschungen* XXXIX, 1–2, Helsinki, 41–79.
- Ito, J. 1995: *Syllable Theory in Prosodic Phonology*. University Microfilms International Dissertation Services, University of Massachusetts (1986: *Syllable Theory in Prosodic Phonology*. PhD dissertation, Department of Linguistics, University of Massachusetts).
- Kozlov 1960 = Козлов, В. И. 1960: *Расселение мордвы. Вопросы этнической истории мордовского народа*. Москва.
- Kager, R. 1999: *Optimality Theory*. Cambridge University Press.
- Kahla, M. (ed.) 1990: *H. Paasonens Mordwinisches Wörterbuch*. – Helsinki, Suomalais-Ugrilainen Seura.
- Katamba, F. 1989: *An Introduction to Phonology*. London and New York: Longman.
- Kato, H., Muto, M., Tsuzaki, M., Sagisaka, Y. 2003: Relationship between control precision and perceptual sensitivity to segmental duration. – *Proceedings of the 15th International Congress of Phonetic Sciences*, Barcelona, 2043–2046.
- Keresztes, L. 1990: *Chrestomathia Morduinica*. Budapest.
- Kohler, K. 2003: Domains of temporal control in speech and language. From utterance to segment. – *Proceedings of the 15th International Congress of Phonetic Sciences*, Barcelona, 7–10.
- Kubozono, H., Matsui, F.M. 2003: *Proceedings of the 15th International Congress of Phonetic Sciences*, Barcelona, 24–25.
- Lallukka, S. 1990: *The East Finnic minorities in the Soviet Union: an appraisal of the erosive trends*. Suomalainen tiedeakatemia, B 252.
- Lehiste, I. 1970: *Suprasegmentals*. Cambridge, Massachusetts and London, England: The M.I.T. Press.
- Lehiste, I., 1973: Rhythmic Units and Syntactic Units in Production and Perception. *Journal of the Acoustical Society of America*, 54, 5, 1228–1234.
- Lehiste, I. 1976: Suprasegmental Features of Speech. – *Contemporary Issues in Experimental Phonetics*. New York, San Francisco, London: Academic Press, 225–239.
- Lehiste, I., Asu, E. L., Meister, E., Pajusalu, K., Parve, M., Teras P., Viitso, T. R. 2001: Acoustic analysis of Erza prosody. – *Congressus Nonus Internationalis Fenno-Ugristarum*. Pars V, Tartu, 248–255.
- Lehiste, I., Aasmäe, N., Meister, E., Pajusalu, K., Teras, K., Viitso, T.-R. 2003: *Erzya Prosody*. – Suomalais-Ugrilaisen Seuran Toimituksia 245, Helsinki.
- Lennes, M., Anttila, H. 2002: Prosodic Features Associated with the Distribution of Turns in Finnish Informal Dialogues. – *Fonetiikan päivät*. The Phonetic Symposium 2002, Helsinki, 149–158.
- Lepschy, G. C. 1992: Proposte per l'accento secondario. – *The Italianist*, 12, 117–128.
- Lewy, E. 1937: Zur betonung des erzämordwinischen im satze. – *Finnisch-Ugrische Forschungen*, XXIV, 1–3. Helsinki, 232–245.
- Lewy, E. 1937: Zur Betonung des Erzjamordwinischen im Satze. – *Kleine Schriften*. Berlin 1961, 440–450.
- Lewy, E. 1961: *Zur Betonung des Erdzja-Mordwinischen von Orkino*. Berlin: Akademie – Verlag.
- Liberman, M., Prince, A. 1977: On stress and linguistic rhythm. – *Linguistic Inquiry*, vol. 8, 249–336.

- Lindblom B., 1963: Spectrographic study of vowel reduction. – *The Journal of the Acoustical Society of America*, vol.35, 1773–1781.
- Lotz, J. 1960: Metric Typology. – *Style in Language*. The Massachusetts Institute of Technology, 1960, 135–149.
- Low, E. L., Grabe, E., Nolan, F. 2000: Quantitative characterizations of speech rhythm: syllable timing in Singapore English. – *Language and Speech*, 43 (4), 377–401.
- Lunden, A. 2006: *Weight, Final Lengthening and Stress: A Phonetic and Phonological Case Study of Norwegian*. University of California, Santa Cruz.
- Lytkin 1970 = Лыткин, В. И. 1970: Проблема лексического ударения в финно-угорских языках. – *Acta Linguistica Academiae Scientiarum Hungaricae*, XX, Budapest, 245–263.
- Maddieson, J. 1985: Phonetic cues to syllabification. – V. Fromkin (ed.), *Phonetic Linguistics*. Orlando: Academic Press, 203–221.
- Markov 1961 = Марков, Ф. П. 1961: Приалатырский диалект эрзя-мордовского языка. – *Очерки мордовских диалектов* 1, Саранск, 7–99.
- Maskayev 1964 = Маскаев, А. И. 1964: *Мордовская народная эпическая песня*. Саранск.
- Marotta, G. 2003: What does Phonology tell us about Stress and Rhythm? Some Reflections on the Phonology of Stress. – *Proceedings of the 15th International Congress of Phonetic Sciences*, Barcelona, 333–336.
- Mokshin 1977 = Мокшин, Н. Ф. 1977: *Этническая история мордовы*. Саранск.
- Moon, S-J., Lindblom B. 1994: Interaction between duration, context, and speaking style in English stressed vowels. – *Journal of the Acoustical Society of America*, 96 (1), 40–55.
- Nadkin 1969 = Надькин, Д. Т. 1969: Краткие сведения по фонетике нижне-пьянского диалекта и говоров ЧувашскогоПрисурья. – *Вопросы мордовского языкознания. Труды МНИИЯЛИЭ*, 36, Саранск, 67–87.
- Nadkin 1972 = Надькин, Д. Т. 1972: Некоторые наблюдения по эрзя-мордовскому вокализму. – *Вопросы мордовского языкознания. Труды МНИИЯЛИЭ*, 42, Саранск, 88–90.
- Nadkin 1988 = Надькин, Д. Т. 1988: Проблема редуцированного гласного и особенности развития ударения в мордовских языках. – *Актуальные вопросы мордовского языкознания. Труды*, 94, Саранск, 3–11.
- Nespor, M. 1990: On the rhythm parameter in phonology. – I. Roca (ed.) *Logical issues in language acquisition*, Dordrecht: Foris, 157–175.
- Nujanžina-Aasmäe, N. 1980: Initial Syncope in Mordvinian. – *Советское финно-угроведение*, 16, 1, Таллин, 19–27.
- Nyqvist, A. 1974: *The Stress System of English*. Stockholm.
- Obyedkin 1961 = Объедкин, В. Д. 1961: Старо-турдаковский диалект эрзя-мордовского языка. *Очерки мордовских диалектов*, 1, Саранск, 100–196.
- Obyedkin 1963a = Объедкин, В. Д. 1963a: Говор села Мордовское Давыдово бывшего Кочкуровского района Мордовской АССР. – *Очерки мордовских диалектов*, 2, Саранск, 37–98.
- Obyedkin 1963b = Объедкин, В. Д. 1963b: Сабаевско-кочелаевский говор эрзя-мордовского языка. – *Очерки мордовских диалектов* 3, Саранск, 3–26.
- Obyedkin 1963c = Объедкин, В. Д. 1963c: Говоры, имеющие общность со старо-турдаковским диалектом эрзя-мордовского языка. *Очерки мордовских диалектов*, 2, Саранск, 240–260.

- Oller, D.K. 1973: The Effect of Position in Utterance on Speech Segment Duration in English. – *The Journal of the Acoustical Society of America*, 54, 1235–1247.
- Paasonen, H. 1893: *Mordvinische Lautlehre*. Helsingfors.
- Patel, A.D., J. R. Daniele 2003: An empirical comparison of rhythm in language and music. – *Cognition* 87, B35–B45.
- Pajusalu, K., Help, T., Lippus, P., Niit, E., Teras, P., Viitso, T.-R. 2005: On the temporal structure of Estonian secondary-stressed feet. – *Linguistica Uralica*, XLI, 2, pp. 98–106.
- Peterson, G. E., Lehiste I. 1960: Duration of Syllable Nuclei in English. – *The Journal of the Acoustical Society of America*, 32, 693–703.
- Pike, K. N. 1945: *The Intonation of American English*. Ann Arbor, MJ: University of Michigan Press.
- Posti, L. 1953: “From Pre-Finnic to Late Proto-Finnic” – *Finnisch-Ugrische Forschungen* XXXI, 1–2, Helsinki, 1–91.
- Ramus, F., Nespor, M., Mehler, J. 1999: Correlates of linguistic rhythm in the speech signal. – *Cognition*, 73, 265–292.
- Raun, A. 1974: On Stress and Length in Proto-Finno-Ugric. – *Acta Linguistica Academiae Scientiarum Hungaricae* XXIV, 1–4. Budapest, 303–306.
- Ravila, P. 1929: Über eine doppelte vertretung des urfinnischwolgaischen *a der nichtersten silbe im mordwinischen. – *Finnisch-Ugrische Forschungen* XX, 1–3. Helsinki, 83–120.
- Ravila, P. 1973: Der Akzent im Erza-Mordwinischen. – *Finnisch-Ugrische Forschungen* XL, 1–3. Helsinki, 169–176.
- Rédei, K. 1984: Phonologische Analyse des Erza-Mordwinischen. – *Studien zur phonologischen Beschreibung uralischer Sprachen*, herausgegeben von P. Haidú und L. Honti, Akadémiai Kiadó-Budapest, 209–230.
- Redford, M. A. 2003: Cognitive Template for a Phonetic Correlate of Syllable Structure. – *Proceedings of the 15th International Congress of Phonetic Sciences*, Barcelona, 2261–2264.
- Roca, I. 1994: *Generative Phonology*. London and New-York: Routledge.
- Ross, J., Lehiste, I. 2001: *The Temporal Structure of Estonian Runic Songs*. – Berlin, New York, Mouton de Gruyter.
- Ryabov 1932 = Рябов, А. П. 1932: Об ударении в эрзя-мордовском языке. – *Революция и письменность*. Москва.
- Sagisaka, Y. 2003: Modeling and perception of temporal characteristics in speech. – *Proceedings of the 15th International Congress of Phonetic Sciences*. Barcelona, 1–6.
- Sarv, H. 2002: *Indigenous Europeans East of Moscow*. Tartu, Tartu University Press.
- Selkirk, E. 1984: *Phonology and Syntax. The Relation between Sound and Structure*. Cambridge University Press, Cambridge.
- Serebrennikov 1967 = Серебренников, Б. А. 1967: *Историческая морфология мордовских языков*. Москва: Издательство Наука.
- Serebrennikov et al. 1989 = Серебренников, Б. А.; Ермушкин, Г.А.; Майтинская К. Е. 1989: *Финно-волжская языковая общность*. Москва: Издательство Наука.
- Shahmatov 1910 = Шахматов, А. А. 1910: *Мордовский этнографический сборник*. С.- Петербург.
- Spencer, A. 1998: *Phonology: Theory and Description*. Oxford, Blackwell Publishers Ltd.
- Steinitz, W. 1944: *Geschichte des finnisch-ugrischen Vokalismus*. Stockholm.

- Strangert, E. 2004: On modeling of conversational speech. – *Proceedings, FONETIK 2004, The XVIIth Swedish Phonetics Conference*, Stockholm University, 20–23.
- Svetozarova, N. 1987: Linguistic Factors in Sentence Stress (Evidence from Russian). – *Proceedings of the 11th International Congress of Phonetic Sciences*, vol. 6, Tallinn, 110–113.
- Svetozarova, N. , Kuosmanen, A. 2003: Declination and finality in spontaneous and read speech in Russian. – *Proceedings of the 15th International Congress of Phonetic Sciences*, 1297–1300.
- Taylor, D. S. 1981: Non-native speakers and the rhythm of English. – *International Review of Applied Linguistics in Language Teaching* 19 (3).
- Toivonen, Y. H. 1928: Zur geschichte der finnisch-ugrischen inlautenden affrikaten. – *Finnisch-Ugrische Forschungen* XIX, 1–3. Helsingfors, 1–270.
- Tsygankin 1961 = Цыганкин, Д. В. 1961: Шугуровский диалект эрзя-мордовского языка. – *Очерки мордовских диалектов* 1, Саранск, 294–395.
- Tsygankin 1963 = Цыганкин, Д. В. 1963: Об одном говоре Присурья бывшего Больше-Березниковского района Мордовской АССР. – *Очерки мордовских диалектов*, 2, Саранск, 433–447.
- Tsygankin 1968 = Цыганкин, Д. В. 1968: Опыт классификации эрзянских говоров Мордовского Присурья. – *Очерки мордовских диалектов*, 5, Саранск, 383–394.
- Tsygankin 1977 = Цыганкин, Д. В. 1977: *Морфология имени существительного в диалектах эрзя-мордовского языка (словоизменение и словообразование)*. Диссертация на соискание научной степени доктора филологических наук. Саранск.
- Tsygankin 1979 = Цыганкин, Д. В. 1979: *Фонетика эрзянских диалектов*. Саранск.
- Tsygankin (ed.) 1980 = Цыганкин, Д. В. (ред.) 1980: *Грамматика мордовских языков*. Саранск, Мордовский государственный университет.
- Tsygankin 1994 = Цыганкин, Д. В. 1994: Взгляд лингвиста на лексико-фонетические особенности шокшанского диалекта эрзя-мордовского языка. – *Folia Uralica Debreceniensia*, 3, Debrecen, 7–10.
- Tsygankin 2000 = Цыганкин, Д. В. 2000: *Мордовские языки глазами ученого-лингвиста*. Саранск.
- Tsyurkaikina 1988 = Цыпкайкина, В. П. 1988: Лексикализованные фонетические особенности говоров эрзянского языка. – *Актуальные вопросы мордовского языкознания*. Саранск, 71–80.
- Turaieva 1972 = Тураева, Л.И. 1972: Фонетико-морфологический очерк эрзянских говоров верховьев рек Черемшана, Шешмы и Кечуя (Татарская АССР) – *Труды МНИИЯЛИЭ*, 42, Саранск.
- Turk, A. 2003: Introduction to the symposium on the role of the word, foot, and syllable in speech production and perception: The role of the syllable in speech production. – *Proceedings of the 15th International Congress of Phonetic Sciences*, 147–150.
- Viitso, T.-R. 1978: Accents in Estonian. – *Estonian Papers in Phonetics*, Tallinn, 94–98.
- Waibel, A. 1988: *Prosody and Speech Recognition*. London.
- Wiedemann, F. J. 1865: *Grammatik der Ersä-Mordwinischen Sprache*. St. Petersburg.
- Yakushkin 1961 = Якушкин, А. В. 1961: Дракинский диалект эрзя-мордовского языка. – *Очерки мордовских диалектов*, 1, Саранск, 197–293.
- Yakushkin 1963 = Якушкин, А. В. 1963: Границы распространения дракинского диалекта эрзя-мордовского языка в пределах Мордовской АССР. – *Очерки мордовских диалектов*, 3, Саранск, 49–82.

- Yermushkin 1984 = Ермушкин, Г. И. 1984: *Ареальные исследования по восточным финно-угорским языкам (эрзя-мордовский язык)*. Москва: Издательство Наука.
- Yermushkin 1968 = Ермушкин, Г. И. 1968: Северо-западные говоры эрзя-мордовского языка. – *Очерки мордовских диалектов*, 5, Саранск, 318–382.
- Yevseyev 1963 = Евсевьев, М. Е. 1963: Основы мордовской грамматики. – *Избранные труды* 4. Саранск.
- Zaicz, G. 1998: Mordva. – *The Uralic Languages*, edited by Daniel Abondolo, Routledge Language Family Descriptions. London and New York.

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Tartu State University, 1980, a post-graduate course in Finno-Ugric Languages; MA degree *cum laude* (“Erzya prosody: findings over time”, research advisors: prof. J. Ross and prof. I. Lehiste), 2003; since 31.08.2004 a doctoral student (“The phonetics and phonology of stress in Erzya”, research advisor: prof. J. Ross)

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Professional development

Seminars and conferences (Finno-Ugric languages, phonetics, general linguistics)

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