

Acoustic features of prosodic marking in Upper Lozva Mansi: a preliminary study

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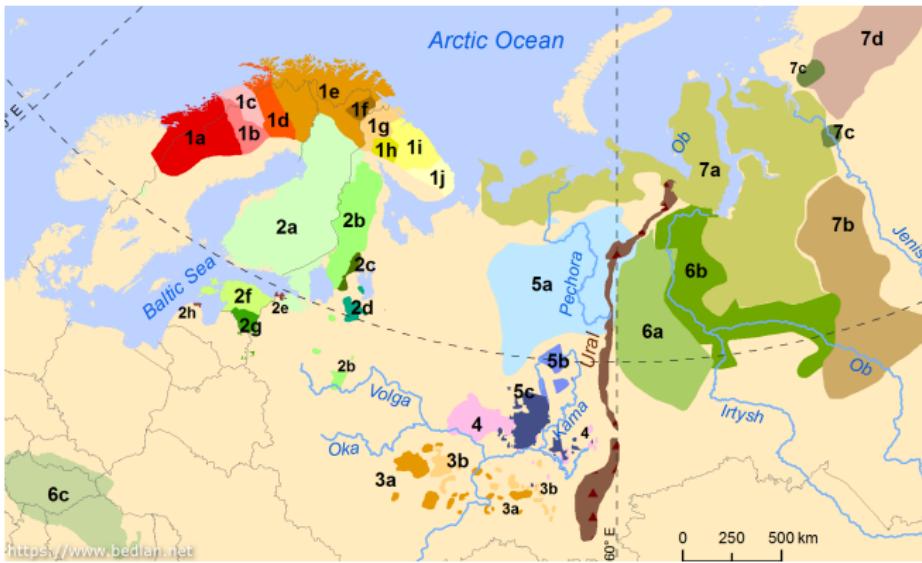
The goal of our research

We try to:

- ▶ perform experiments concerning all types of pragmatic structuring;
 - ▶ find common features in terms of prosodic marking of the “main” or “most salient” element;
 - ▶ make further conclusions about the information structure of the language based on visible phenomena of the “physical world”, which allows us to avoid searching for non-existent abstractions.

The Mansi language

- ▶ Ob-Ugric, Western Siberia, approx. 1000 speakers.



The Mansi language

Among the Mansi dialects, only the Northern ones survive today.

Most of Mansi speakers live dispersely in the Khanty-Mansi Autonomous Okrug.

As they mostly live in Russian villages and towns, they are heavily assimilated and have almost no opportunities to speak the Mansi language, even if they still remember it.

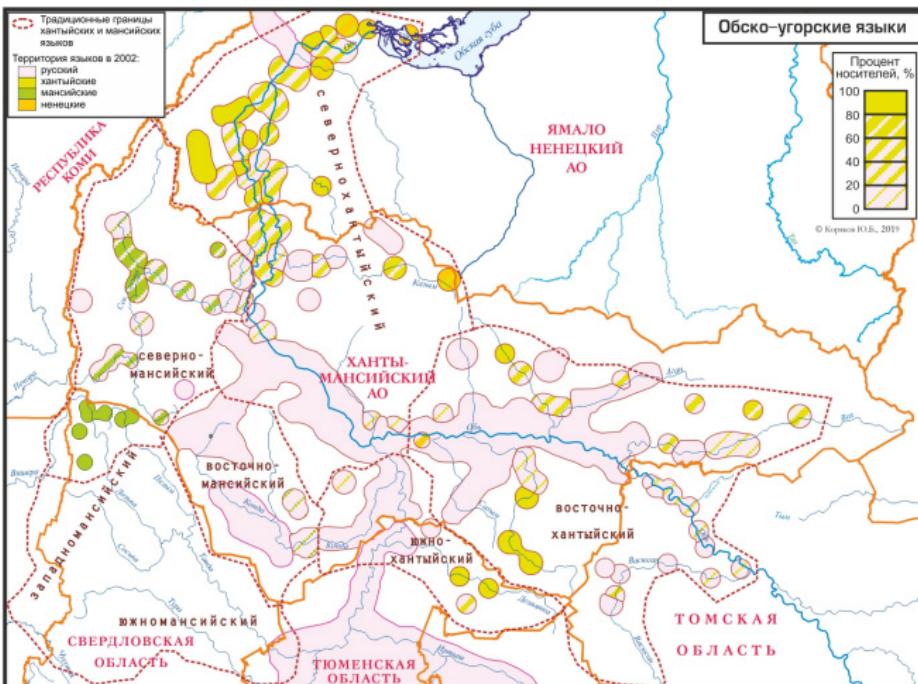
Upper Lozva Mansi

Speakers of the Upper Lozva dialect live in the neighbouring Sverdlovsk oblast, being geographically and administratively separated from the main mass of Mansi people.

However, unlike those in KhMAO, Upper Lozva Mansi live in a closed community deep in the forest (150km from the nearest small town Ivdel) without electricity and communications and thus retain their language extraordinarily well.

All Upper Lozva children are fluent in Mansi and only start learning Russian at school.

Mansi dialects (map by Yuri Koryakov)



Our project

Our research on the Mansi language is being supported by the RFBR grant №18-012-00833A “Dynamics of phonetical and grammatical systems of Ob-Ugric languages”

Fieldwork on the Upper Lozva dialect:

- ▶ 3 field trips in 2017-2018;
- ▶ elicitation tasks;
- ▶ sociolinguistic questionnaires;
- ▶ text recordings;
- ▶ **experiments;**
- ▶ **language games.**

Types of experiments

Being interested in the pragmatic aspect of Mansi discourse, we attempted to recreate various possible types of communication:

- ▶ Tasks for groups of speakers;
 - ▶ Tasks for pairs of speakers;
 - ▶ Task for speaker-linguist pairs;
 - ▶ Solo tasks.

“Alias” game

Visual stimuli: a set of cards with single Mansi words written on them.

A group of speakers is engaged in a game where each one of them, during their turn, tries to give a definition of the word found on the next card.

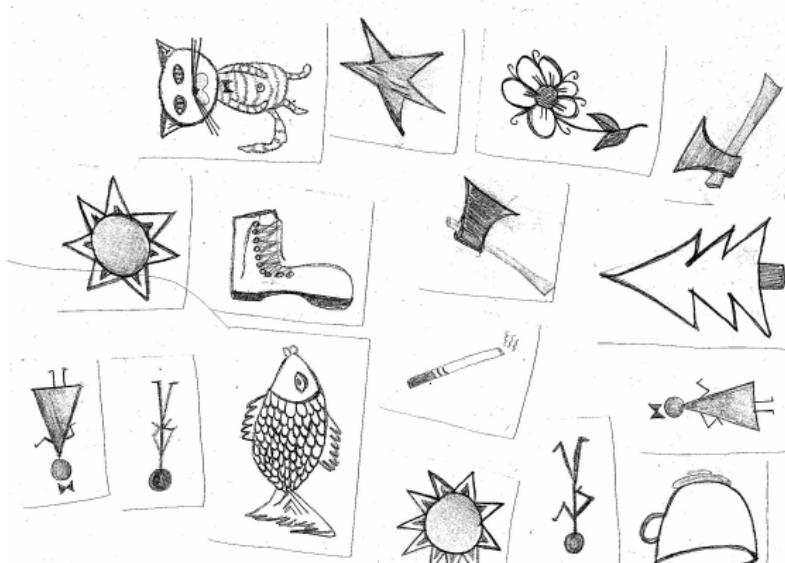
All the other speakers try to guess the word.

Referential communication tasks for pairs of speakers

Referential communication tasks involve 2 participants who have to communicate without directly seeing each other in order to successfully solve the task given, see e.g. [Fedorova et al. 2013], [Usacheva 2016].

Visual stimuli: two identical sets of cards, one for each participant; each card features a picture of a certain object or event.

Referential communication tasks for pairs of speakers



Referential communication tasks for pairs of speakers

Sets of cards are placed so that one speaker can only see his set and not the other one. The order of cards is different for each speaker.

The task is to match the way the cards are ordered only using oral communication (the speakers cannot directly see each other or use gestures).

The most common strategy is as follows: “Place card N onto place M” or “Place card N to the Z of card K”.

Argument marking tasks for pairs of speakers

Visual stimuli: two sets of cards, each card features a situation, where the words for the verb and its (two or three) arguments are written.

Pairs of identical cards in different sets have a significant difference: the word which describes the “most relevant information” is highlighted in color: e.g. if in the first picture the main constituent is the Agent, in the second it is the Patient and so on.

Argument marking tasks for pairs of speakers

The first speaker draws a card from a set and described the situation on the picture with one sentence based on the keywords.

The second speaker has to find the corresponding picture in his set and also describe it with a sentence, where the logical stress is on another participant.

Linguist-speaker pairs: information structure tasks

Visual stimuli: pictures with keywords describing certain simple situations, e.g. *Peter killed a moose with a rifle, Elizabeth is washing her face with water* etc.

At first, the speaker produces a neutral sentence using the picture and the keywords given.

Then, a linguist asks (in Mansi) one of the questions prepared beforehand, which address different participants of the situation, e.g. *What did Peter kill the moose with?*, *Who did Peter kill?* etc.

Linguist-speaker pairs: information structure tasks



Linguist-speaker pairs: information structure tasks

The speaker has to answer with a full sentence, e.g. *Peter killed the moose with a rifle.*

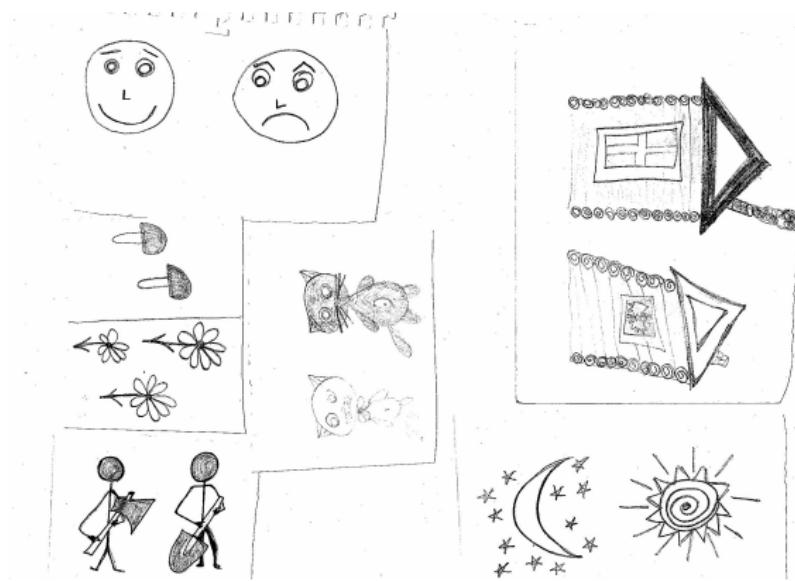
We try to study the ways speakers topicalize or focalize different participants.

Solo tasks: contrast

Visual stimuli: pictures without additional keywords, showing pairs of objects, the opposing traits of which are emphasized (e.g. a *tall man* vs. a short man).

Such stimuli allow us to gather natural data with no priming effects.

Solo tasks: contrast



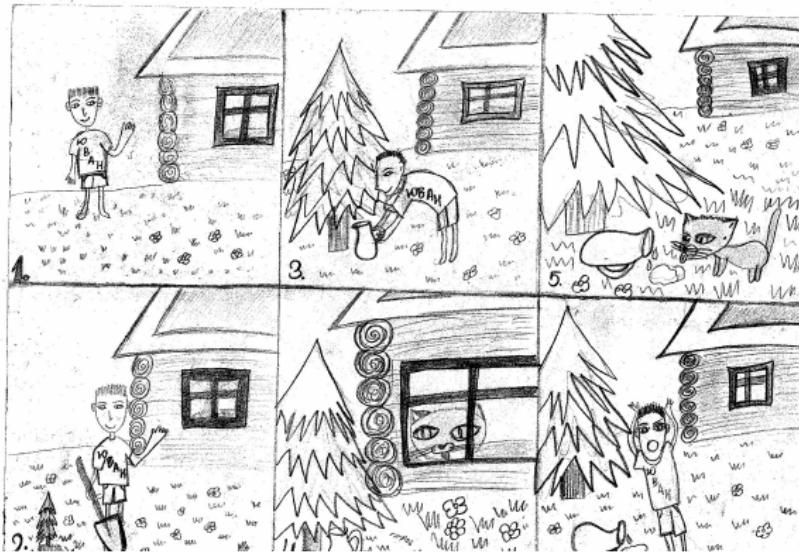
Solo storytelling tasks

Visual stimuli: groups of pictures making up a certain consistent story.

Each picture in the story contains the previous participant, who is already known to the speaker, and a new participant.

These participants are both animate and inanimate: different combinations of saliency, activation, animacy etc. allow us to study the topic-comment structure efficiently based on various constructions surfacing in natural speech.

Solo storytelling tasks



Evaluation of these data

Advantages of experimental data:

- ▶ natural speech;
- ▶ no Russian priming;
- ▶ linguistic data is produced in the process of natural communication, but role-switching happens consistently and not in a chaotic and often parallel way

The main drawback: it is very difficult or even impossible to provide regular phonological context: words with logical stress in various phrases have different length and syllable structure.

The main question: is it possible to compare means of prosodic marking among such different words at all?

Prosodic marking

But anyway, we are trying to search means of prosodic marking for the following types of phenomena (see [Kodzasov 2010]):

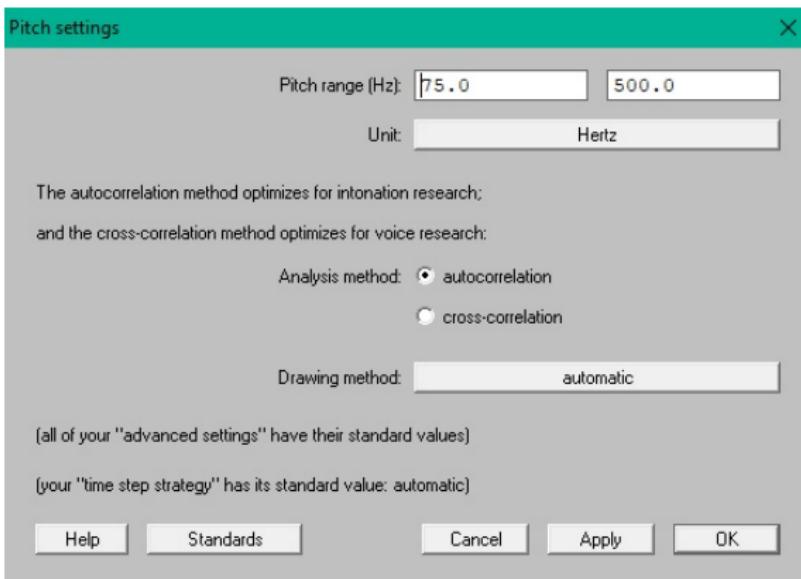
- ▶ Information-structural constituents: topic, comment, focus etc.
 - ▶ Emphasis/antiemphasis
 - ▶ Contrast/anticontrast

What do we mean by acoustic correlates?

- ▶ Pitch contour;
 - ▶ loudness (intensity);
 - ▶ vowel quality and quantity.

see e.g. [Fitzgerald 2017].

How do we measure pitch?



What do we mean by acoustic correlates?

- ▶ intensity;

It seems that word stress in Mansi is mainly characterized by intensity. Word stress is fixed on the first syllable, high intensity on the first syllable of every word may hide other correlated if they exist.

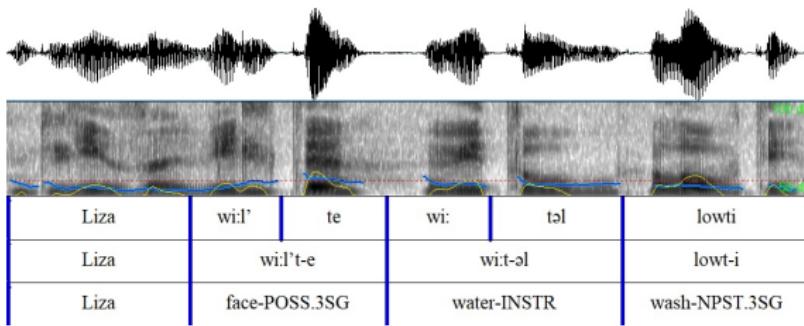
- ▶ vowel quality and quantity.

These are tricky and we haven't measured them properly yet: the important thing is that Mansi has short and long vowels which differ significantly not only in terms of quantity but in terms of quality as well. This also makes comparison difficult.

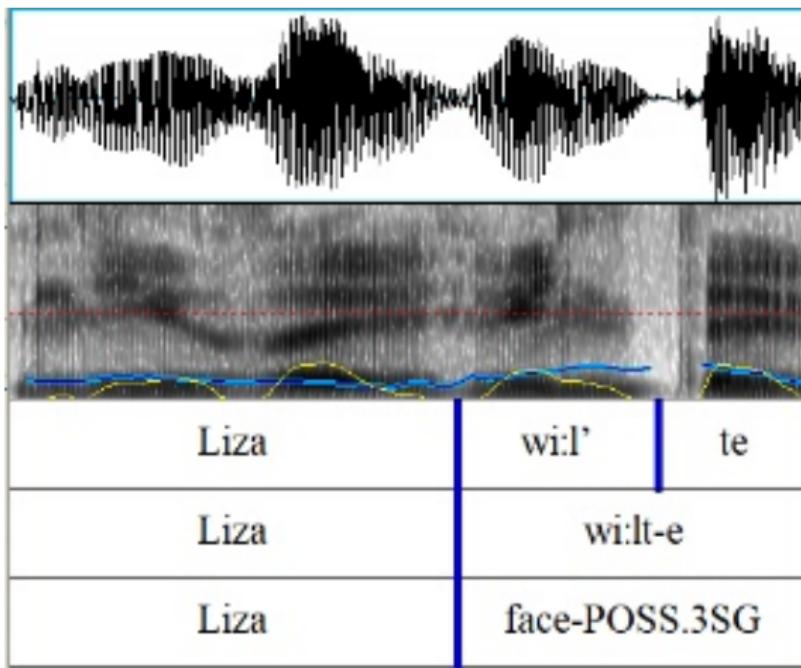
Examples: neutral

Elizabeth is washing her face with water.

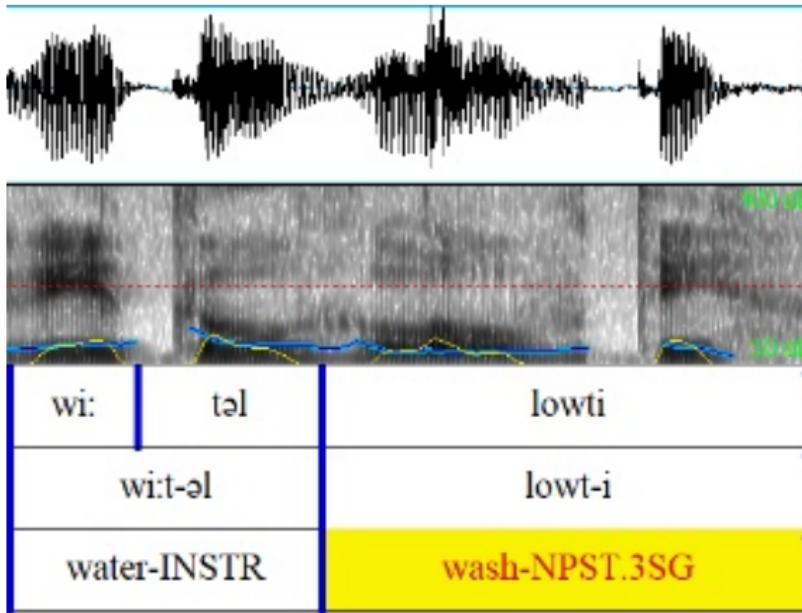
- ▶ A neutral sentence: pitch rises and falls at the syllable boundary of each participant;
- ▶ Similar to modal IC-1 (in terms of E. A. Bryzgunova, see [Bryzgunova 1980] and also [Kodzasov 2017]): neutral but “playful” intonation.



Examples: neutral



Examples: neutral

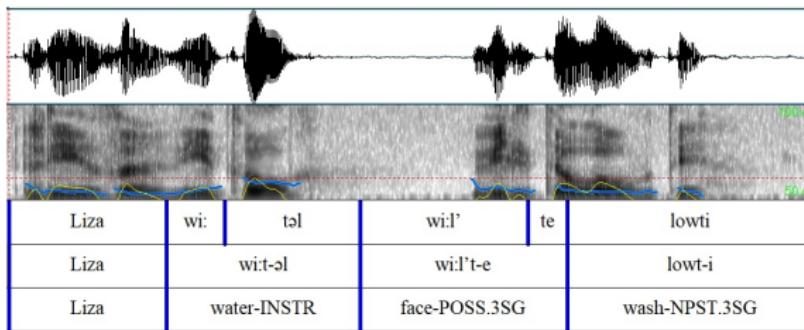


Examples: focus

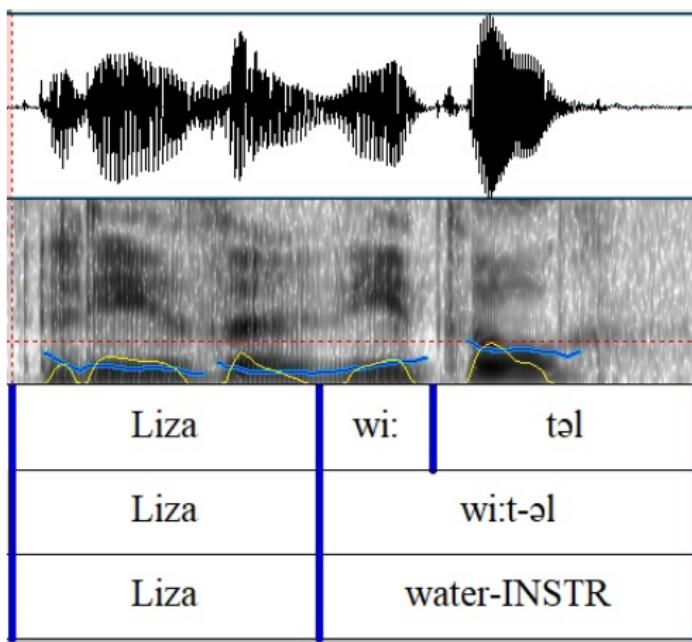
What is Elizabeth washing her face with?

*Elizabeth is washing her face **with water***

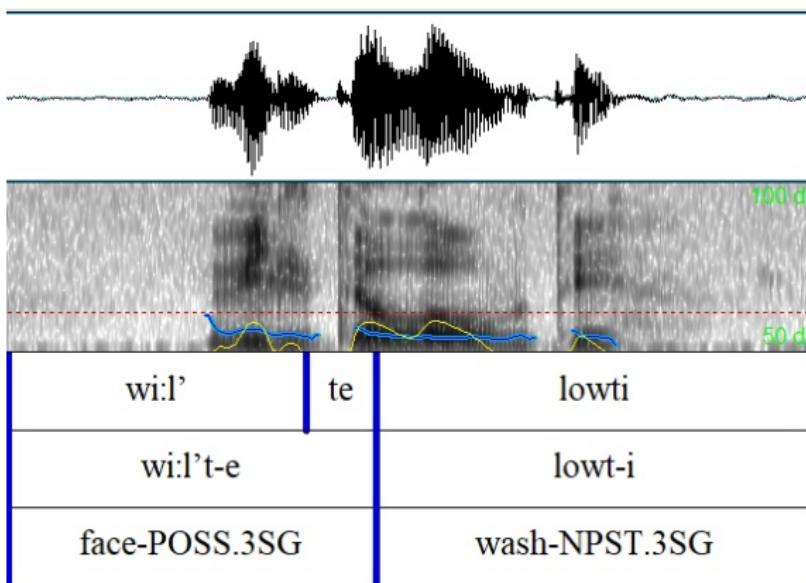
- ▶ On the stressed syllable of the word in focus pitch rises;
- ▶ The pitch falls in the stressed syllable of the less “important” constituent



Examples: focus



Examples: focus

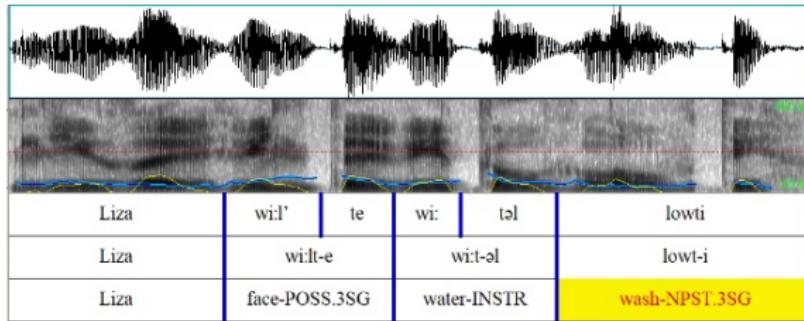


Examples: focus pt. 2

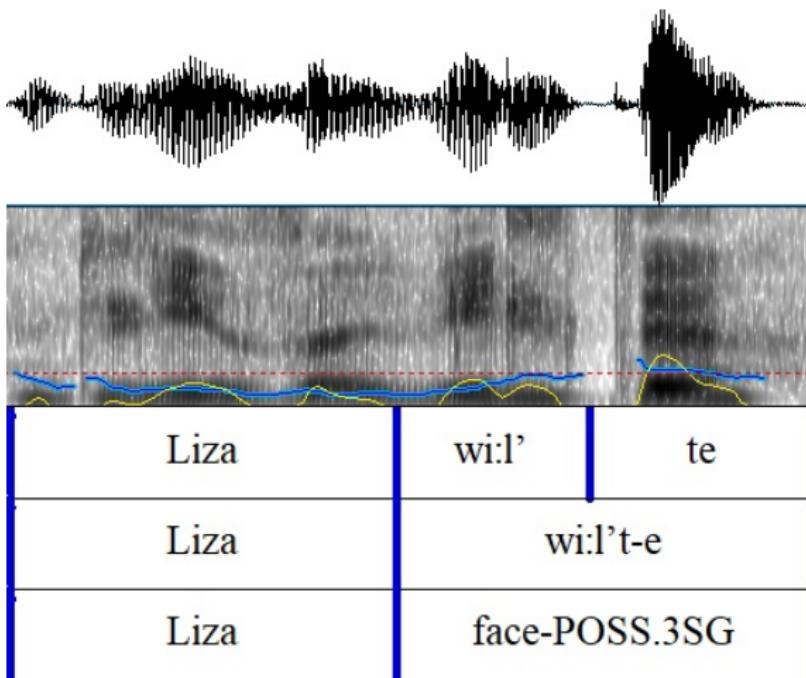
What is Elizabeth washing with water?

Elizabeth is washing her face with water

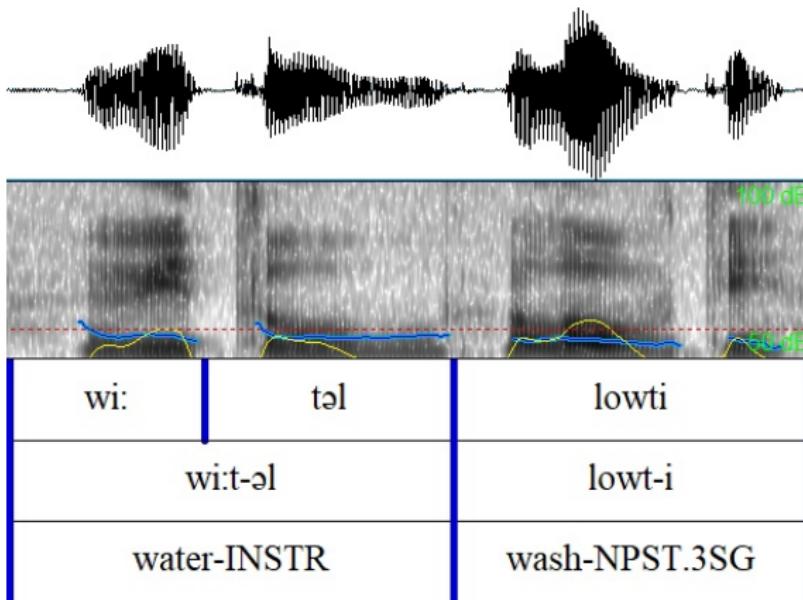
- ▶ We see a familiar tendency: the focused constituent is again distinguished by rising of pitch on the stressed vowel;
 - ▶ Non-focused constituents demonstrate fall of pitch.



Examples: focus 2

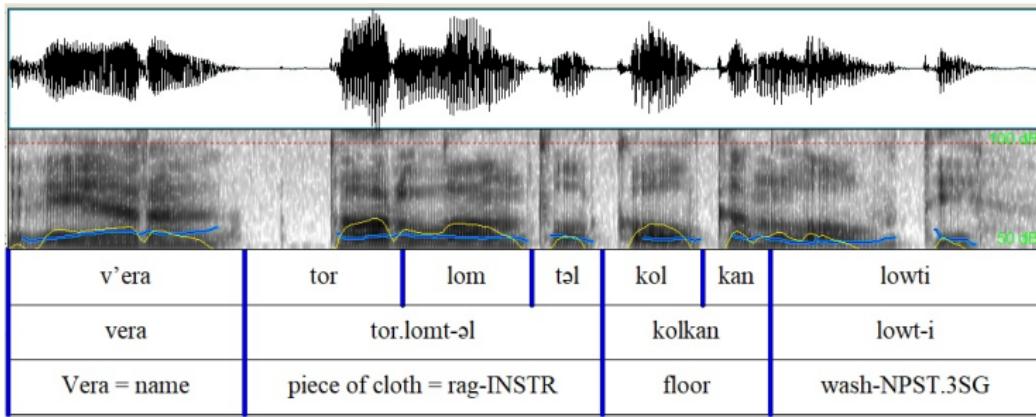


Examples: focus 2

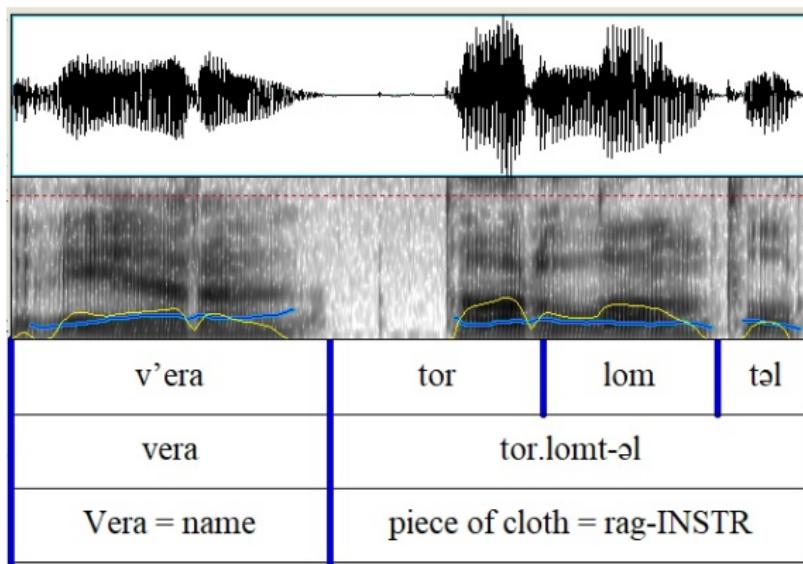


Examples: neutral

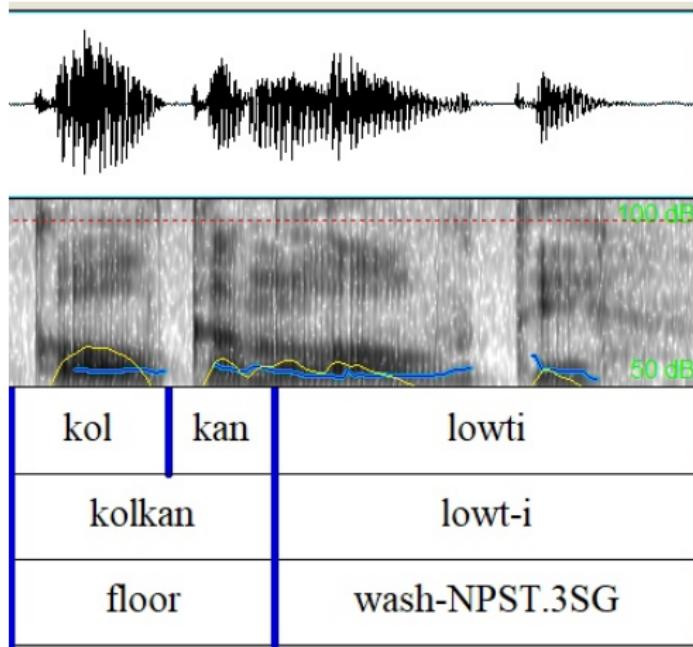
Vera is washing the floor with a rag.



Examples: neutral



Examples: neutral

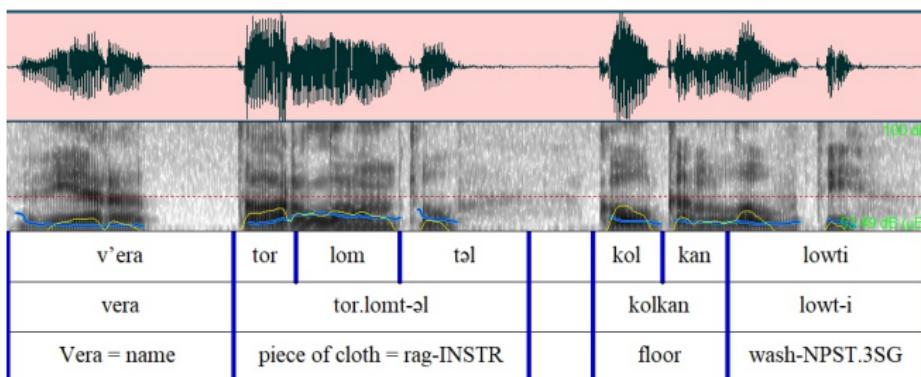


Examples: focus

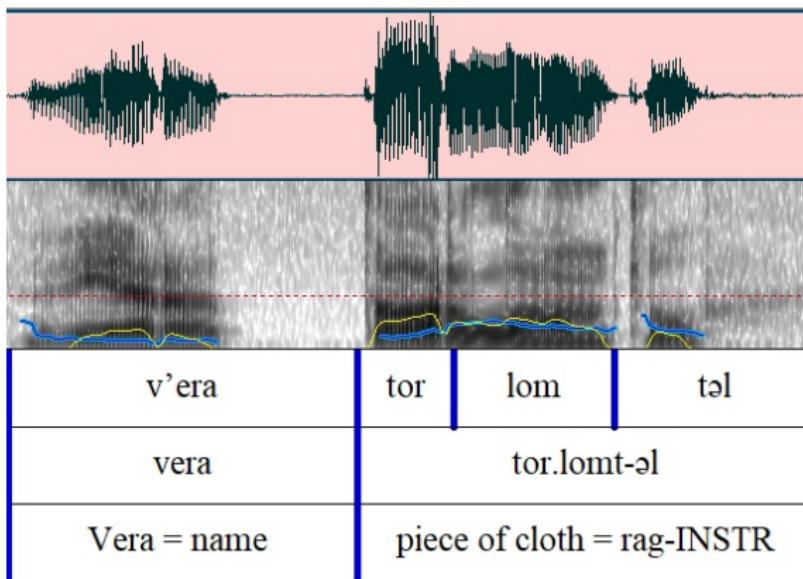
What is Vera washing the floor with?

*Vera is washing the floor **with a rag***

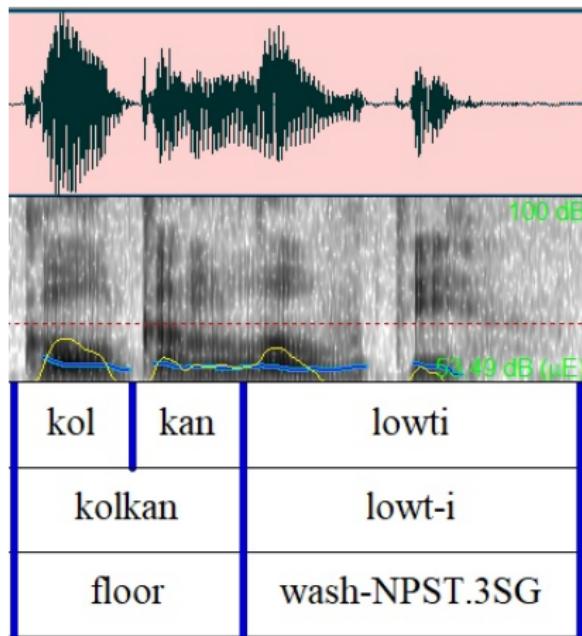
Here we do not find any declination, probably the intonation was not natural enough (e.g. the speaker just repeated the sentence given by the linguist)...



Examples: focus



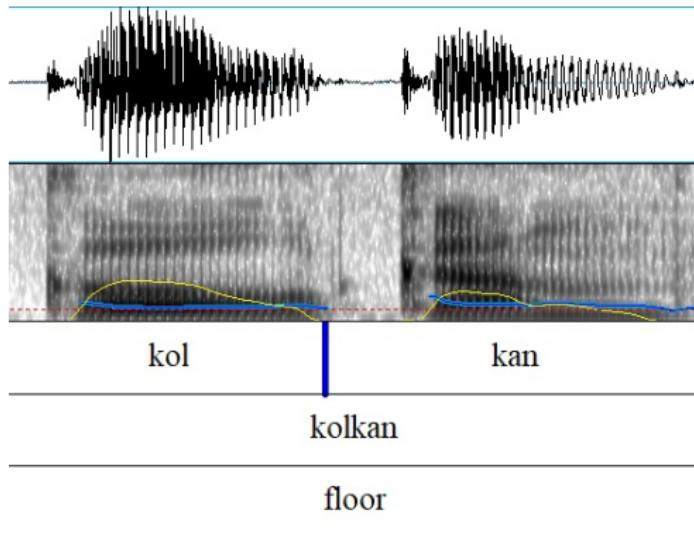
Examples: focus



Examples: focus

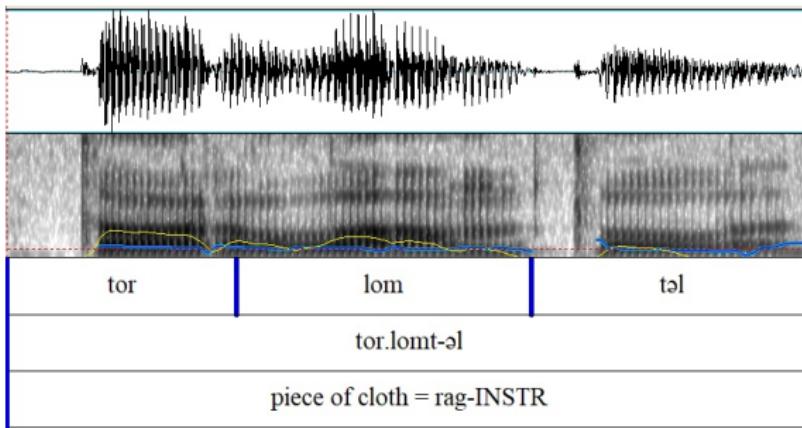
However, the tendency is the same:

The focused constituent:

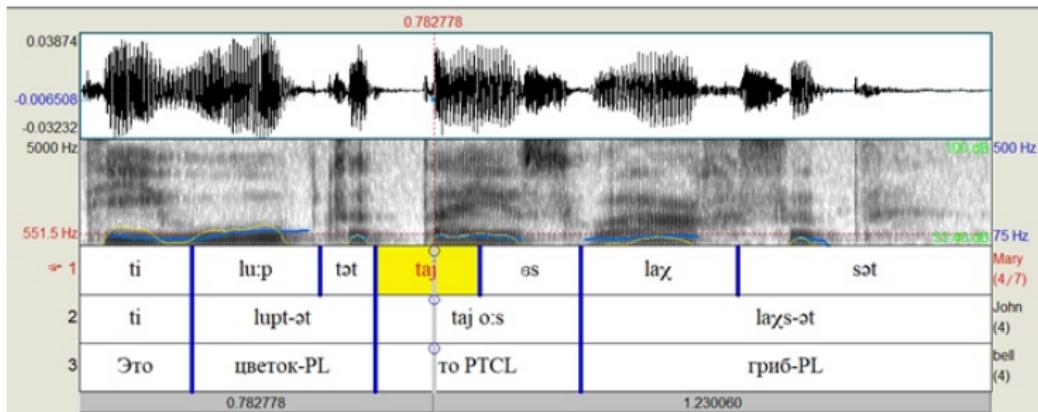


Examples: focus

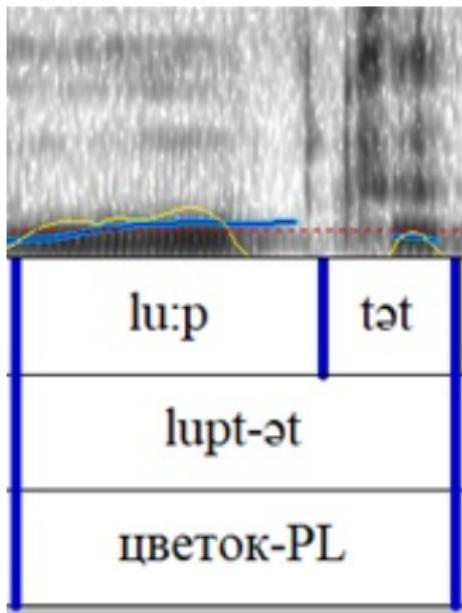
The non-focused constituent:



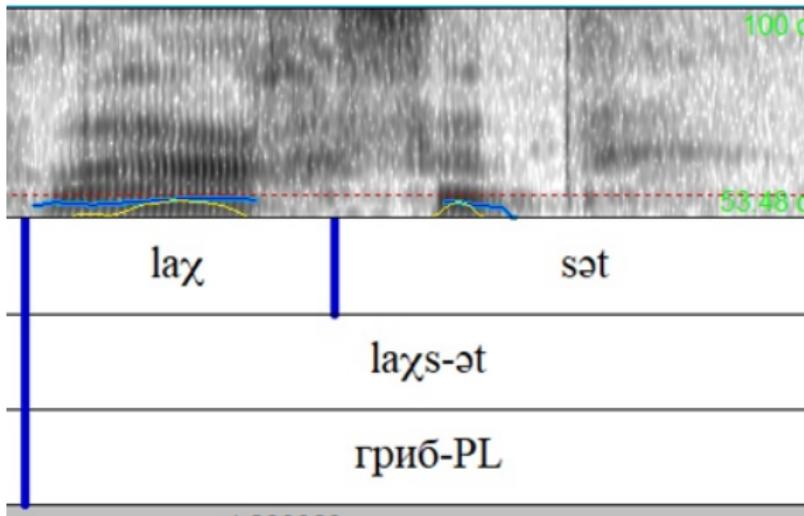
Solo tasks: contrast



Solo tasks: contrast



Solo tasks: contrast



Conclusion

Pitch movement marks the main element: Agent/topic in a neutral sentence; focus or contrast in corresponding types of clauses.

Pitch rises on the stressed syllable of these constituents, and we find maximum intensity there as well.

The least marked element is marked by pitch falling on the stressed syllable, its intensity is also significantly lower.

Conclusion

The duration of the vowel under phrasal stress is perceptively longer, quantity effects are yet unclear;

To get a clearer picture, we are planning to measure dispersion and mean values for each vowel and each speaker.

Our main question: how to measure it all more consistently on these data given the problem of regularity of phonological context?