



Studying the Structure of the Sound of Russian Speech by Chinese and Ghanaian Students in a Digital Format: a Linguodidactic Aspect

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Abstract. The purpose of the research is to study the peculiarities of the structure of the sound of Russian speech by Chinese and Ghanaian students at different levels of study, based on experimental phonetic programs. The subject of the study is the intonational structure of the main communicative intentions: greeting, address, completion, incompletion, a question without an interrogative word, a question with the Russian conjunction «а» (“and”), a positive evaluation and surprise. The study contributes to the creation of an ethno-oriented methodology for teaching Russian intonation. The scientific novelty is in the analysis of the sound of the Russian speech of foreign students at the syntagma level in comparison with that of a native Russian speaker using the Praat and Lingvodoc programs. The results of the study consist in the visual representation of the peculiarities of the structure of the main communicative intentions in the Russian speech of Chinese and Ghanaians to predict and correct errors at the level of intonation.

Keywords: Intonation; phonetic skills; Chinese students; Ghanaian students; experimental phonetic programs; Praat; Lingvodoc.

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Изучение оформления русской звучащей речи китайскими и ганскими студентами в цифровом формате: лингводидактический аспект

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Аннотация. Цель работы заключается в исследовании особенностей оформления русской звучащей речи китайскими и ганскими студентами на разных уровнях обучения на основе экспериментально-фонетических программ. Предметом внимания послужило интонационное оформление основных коммуникативных интенций: приветствие, обращение, завершенность, незавершенность, вопрос без вопросительного слова, вопрос с союзом «а», положительная оценка и удивление. Исследование представляет интерес для создания этноориентированной методики обучения русской интонации. Научная новизна – анализ звучащей речи иностранных студентов на уровне синтагмы в сравнении с носителями русского языка с использованием программ Praat и Lingvodoc. Результаты исследования

состоят в наглядном представлении особенностей оформления основных коммуникативных намерений в русской речи китайцев и ганцев с целью предупреждения и коррекции ошибок на уровне интонации.

Ключевые слова: Intonation, phonetic skills, Chinese students, Ghanaian students, experimental phonetic programs, Praat, Lingvodoc.

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1. Introduction

The relevance of the research lies in the fact that the study of the structure of the sound of Russian speech occupies an important place in the process of teaching foreign students, and often poses major challenges. Moreover, inaccurate intonation can lead to communication failures. According to the survey conducted by S.A. Deryabina in 2021, in which 118 undergraduate, graduate, and postgraduate students from different countries participated, more than 90% of foreigners are of the view that, working on improving auditory-pronunciation skills and on prolonging the foreign language accent is relevant [7].

A characteristic feature of the development of the modern era is the inclusion of information communication technologies in all spheres of life [6]. Today, modern technology is widely used in the educational space. When teaching Russian intonation to foreign students, it is possible to use multimedia learning aids such as «Буква. Слово. Диалог» (“Letter. Word. Dialogue”) [3], ВФГК «Вперед» (“Forward”) [4] among others. Due to the rapid development of modern technologies in teaching, it is necessary to take full advantage of the opportunities offered by new effective forms of teaching, thus experimental phonetic programs.

Objectives of the study:

- to describe the results of the analysis of the sound of foreign students' Russian speech in comparison with that of a native Russian speaker using the Praat and Lingvodoc programs;
- to determine the degree of pronunciation skills formation of Chinese and Ghanaian students at the level of intonation;
- to create nationally oriented visual materials for Chinese and Ghanaians on the intonational structure of the main communicative intentions of the sound of Russian speech, demonstrating typical deviations at different stages of learning.

The following research methods are used in the work: description, analysis, comparison, experiment, evaluation.

The theoretical basis of the study is the internationally recognized work of E.A. Bryzgnova. In her opinion, seven types of intonational constructions (IC) can be distinguished in the Russian language, which express different purposes of an utterance [5]. IC-1 expresses completion in narrative sentences, without oppositions and emotional meanings. The middle descending tone formalizes the stressed syllable in this type of IC. IC-2 is used in questions with interrogative words, where the descending center is pronounced with a bit of pitch enhancement. It is also used in an appeal, demand, exclamation, statement with opposition, emphasis. IC-3 is most evident in an interrogative sentence without an interrogative word. In addition, this type of IC also expresses incompleteness, comparison, and enumeration in non-terminal syntagmas. It is characterized by a significant increase in the pitch of the stressed part. IC-4 expresses an incomplete question with comparison, a question with the connotation of a demand; it is also used together with IC-3 in a non-terminal syntagma, where it means incompleteness, comparison, and enumeration. However, unlike IC-3, IC-4 in an incomplete syntagma makes the speech formal. IC-5 is realized when expressing emotional evaluation, desire, and regret in sentences with and without the pronouns (какой (which), как (how), сколько (how many) etc.). Unlike other types of IC, IC-5 has two centers, so this construction is

possible in a sentence with at least two syllables. IC-6 expresses qualitative and quantitative evaluation, repeated question (переспрос), bewilderment, surprise, along with IC-3 and IC-4 in an incomplete syntagma, it formalizes the incompleteness of an utterance. In the implementation of IC-6, the pitch level at the center of the vowel is raised, and the backward part is pronounced with a high middle tone. IC-7 serves as a means of expressing disagreement and negation in sentences with pronoun words, and in expressive utterances it intensifies affirmation, negation, and evaluation. In the practice of teaching Russian as a foreign language, generally, students are familiarized with the first five ICs, without the meaning of incompleteness. Usually, future philologists and linguists get acquainted with IC-6 and IC-7, which have the meaning of incompleteness.

The practical significance of the study consists in finding out the difficulties that Chinese and Ghanaian students face in learning Russian intonation based on experimental phonetic programs to create an ethno-oriented method of teaching Russian intonation to Chinese and Ghanaians.

2. Discussion and results

For the foreign students in this paper, Chinese and Ghanaian students, mastering Russian intonation is an integral and a difficult part of the learning process. They are faced with various difficulties due to the interference of their native languages with the target language. To determine the degree of formation of pronunciation skills at the level of intonation and the typical mistakes that the representatives of the two countries make, an experimental study was conducted.

The materials for the analysis are the speech recordings of the students (1 Russian, 4 Chinese, 4 Ghanaians), obtained from the reading of an excerpt from V.M. Shukshin's story "The Sun, the Old Man and the Girl" («Солнце, старик и девушка») (293 words); the results of the assessment of the students' Russian language proficiency level based on the Lingvodoc 3.0 platform; pitch contour illustrations of the read phrases (Praat).

The Audacity application [2] was used to cut the students' recordings into phrases in Wav format for further analysis. The Praat application was then used to convert the phrases into TextGrid format. Praat was also used for highlighting and naming phrases in Latin vowels for analysis as well as collecting pitch indicator data. The content of the work in the Lingvodoc application included creating a dictionary, uploading audio files in Wav and TextGrid formats and determining the level of foreigners' Russian proficiency.

Researchers point out the possibilities and prospects of these experimental phonetic programs, Audacity and Praat, in the modern educational space for the purpose of teaching non-native languages to students, for example, Russian [8], Chinese [1], English [9], German [11], etc. Based on the software processing of the sounding speech, the works investigate the phonological features that occur in the pronunciation of native speakers, as well as compare the phonetic characteristics of the native and the studied languages.

The Lingvodoc program [12] developed at ISP RAS allows creating multilayer dictionaries and corpora with the obtained sound and text data. With the help of the program, experimental phonetic [10], etymological and morphological work is effectively reproduced.

Students with different levels of phonetic skills formation acted as foreign informants. The results of determining the level of Russian language proficiency on the Lingvodoc learning platform showed that 3rd year undergraduate students from China made errors at the B1 level, and 1st year master's students from China made errors at the C1 level. As for the Ghanaian informants, a 3rd year postgraduate student made errors at the C1 level, a 1st year master's student made errors at the A1 level, a PhD candidate made errors at the B1 level and a first-degree graduate from the University of Ghana made errors at the B1 level.

Below are the phrases used in the analysis:

- Здравствуйте, дедушка! (Hello, Grandpa!) – Greeting. Address
- Девушка поднялась и пошла в деревню. (The lady got up and went to the village.) –

Incompletion and completion

- Вы завтра придёте сюда, дедушка? (Will you come here tomorrow, Grandpa?) – Question without an interrogative word
- А тебе? (And you?) – Question with the Russian conjunction «а» (“and”)
- Солнце-то какое! (The sun is so bright!) – Exclamation with a positive evaluation
- Ого! (Wow!) – Surprise

Let us consider the features of the intonational structure of these phrases with the help of experimental phonetic programs and in the tradition of the methodology of teaching Russian as a foreign language.

In this phrase, IC-2 is used in the meaning of greeting and address, where the center is pronounced with a bit of pitch enhancement. This is well illustrated in the intonational contour of the native speaker of Russian and the Chinese informants, who have advanced level of Russian phonetic skills (fig. 1). However, for the students with a B1 Russian language proficiency, pitch enhancement at the intonational center is not observed.

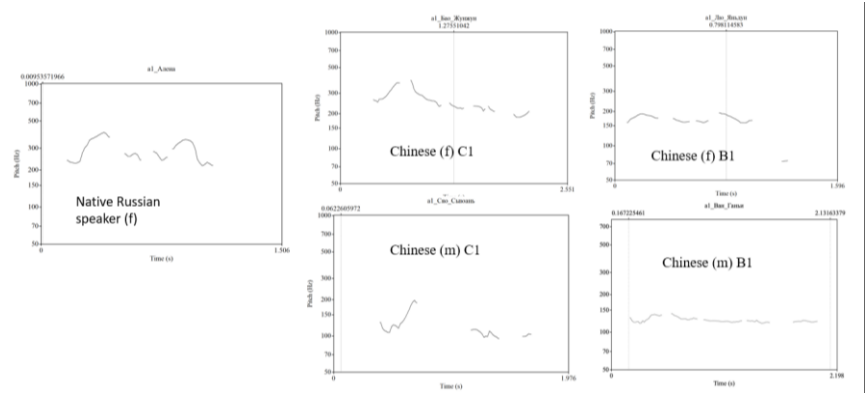


Fig.1. Intonational contour of the phrase «Здравствуйте, дедушка!» (“Hello, Grandpa!”) in the speech of Russian and Chinese informants

With regards to the Ghanaian participants, we see that the 3rd year graduate student with a C1 Russian language proficiency pronounces the phrase «Здравствуйте, дедушка!» (“Hello, Grandpa!”), with a slight increase at the center like that of the native speaker. The other participants (apart from the student with an A1 level of Russian language) also raise the pitch at the center of the phrase but at a very lower extent as compared to that of the native speaker (fig. 2).

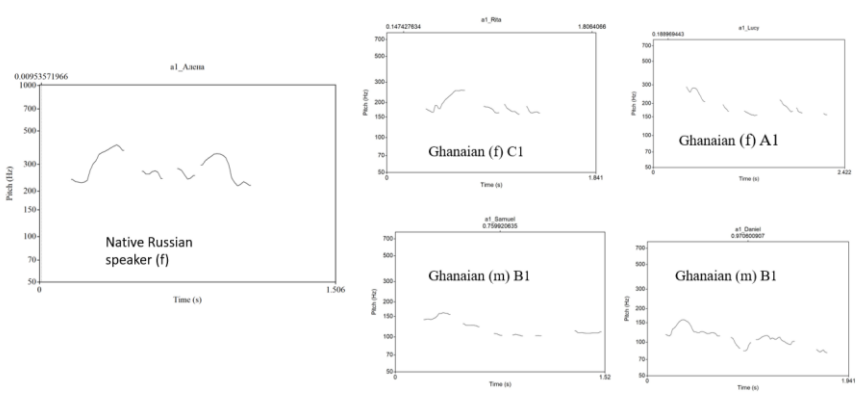


Fig.2. Intonational contour of the phrase «Здравствуйте, дедушка!» (“Hello, Grandpa!”) in the speech of Russian and Ghanaian informants

The category of completion/incompletion is usually considered as a relative semantic completion/incompletion of a linguistic unit, a criterion which shows the possibility or impossibility of its “communicative automatization” [16]. The phrase «Девушка поднялась и пошла в деревню» (“The lady got up and went to the village”) consists of two syntagmas: «Девушка поднялась» (“The lady got up”) and «и пошла в деревню» (“and went to the village”). The first syntagma is characterized by the intonation of incompletion (IC-3), the second by completion (IC-1).

As compared to the native speaker's intonation contour, most of the Chinese informants (except for the male Chinese speaker with advanced level of Russian language proficiency) have difficulty in expressing incompletion with a rising pitch. However, expressing completion with the help of IC-1 did not cause much difficulty for all the Chinese informants. Since in Chinese, the incompletion of an utterance is mainly characterized by a pause, it is challenging for Chinese learners to master the rising pitch for an unfinished syntagma (fig. 3).

In addition, it can be seen from the illustration that, the speech of the Chinese students with a B1 Russian language proficiency is interrupted. This shows the problem of pronouncing words within the same syntagma together.

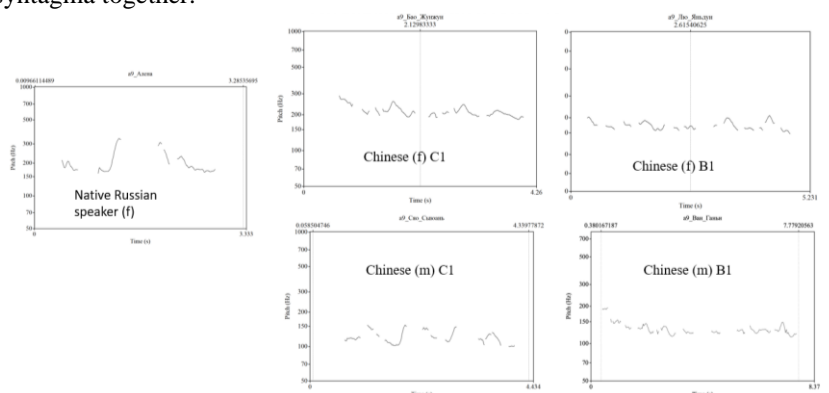


Fig. 3. Intonational contour of the phrase «Девушка поднялась и пошла в деревню» (“The lady got up and went to the village”) in the speech of Russian and Chinese informants

Looking at the pitch contours of the Ghanaian students in the pronunciation of the phrase above, it is seen that most of the participants (apart from the PhD candidate) had difficulty in expressing the first syntagma to show incompletion (IC-3). The second syntagma «и пошла в деревню» ("and went to the village") has the meaning of completion (IC-1), which is formed by lowering the intonation at the center. IC-1 in the meaning of completion is analogous in English language and the language Akan, hence the participants had no difficulty in expressing this phrase (fig. 4).

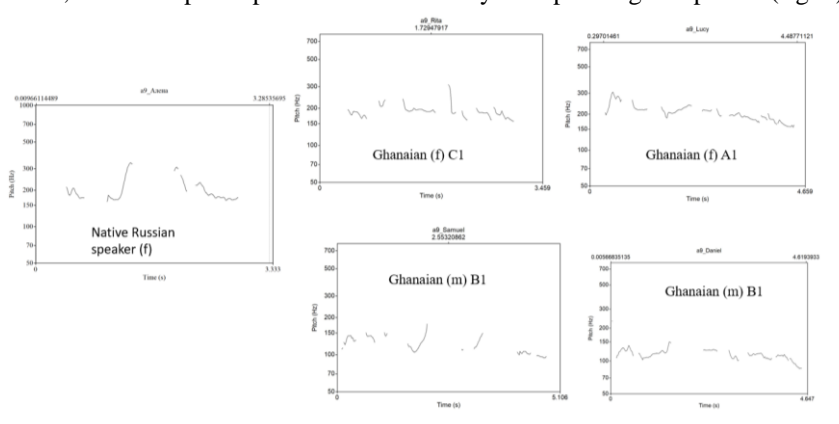


Fig. 4. Intonational contour of the phrase «Девушка поднялась и пошла в деревню» (“The lady got up and went to the village”) in the speech of Russian and Ghanaian informants

A question with an interrogative word is easily perceived by the ear due to its lexical composition, whereas the understanding of a question without an interrogative word relies more on the intonation of the phrase. In the case of a question without an interrogative word, the intonational center in IC-3 is on the word that carries the main semantic load. With the help of the context («- Вы завтра придете сюда, дедушка? ... - Приду...») (“Will you come here tomorrow, Grandpa? ... - I will come...”) it can be understood that the intonational center in this question should be on the word «придете» (“I will come”). In the intonational contour of the two undergraduate students, no clear intonational center is observed, but it is present in the master students’ contour. This indicates the undergraduate students' inability to express IC with a rising pitch. It is also worth noting that the Chinese male informant with an advanced level of Russian incorrectly identified the intonational center by highlighting the word «завтра» (“tomorrow”), which is evident of his misunderstanding of the dialogue (fig. 5).

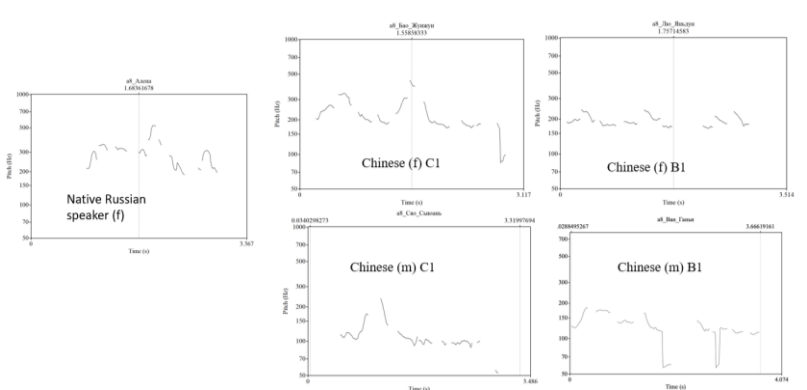


Fig.5. Intonational contour of the phrase «Вы завтра придете сюда, дедушка?» (“Will you come here tomorrow, Grandpa?”) in the speech of Russian and Chinese informants

Concerning the question above, the Ghanaian informants with a B1 Russian language proficiency placed the intonational center on the word «завтра» (“tomorrow”) instead of «придете» (“will come”), while the female participant with A1 level of Russian language placed the intonational center on the word «сюда» (“here”). The female Ghanaian participant with a C1 level of Russian language placed the intonational center on the word «придете» (“will come”) like the native speaker. In this regard, we can say that most of the participants have difficulty in using the right intonation (IC-3) to ask a question without an interrogative word.

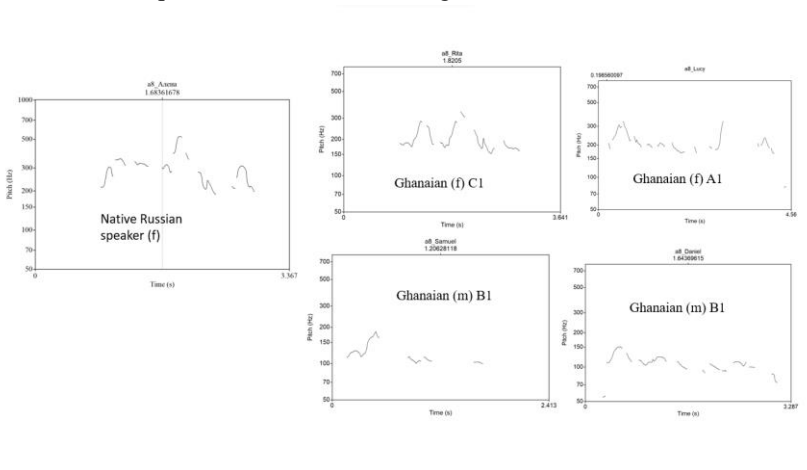


Fig.6. Intonational contour of the phrase «Вы завтра придете сюда, дедушка?» (“Will you come here tomorrow, Grandpa?”) in the speech of Russian and Ghanaian informants

In this phrase IC-4 expresses an incomplete question with comparison. It can be seen that most of the informants use IC-4 correctly in this sense (fig. 7).

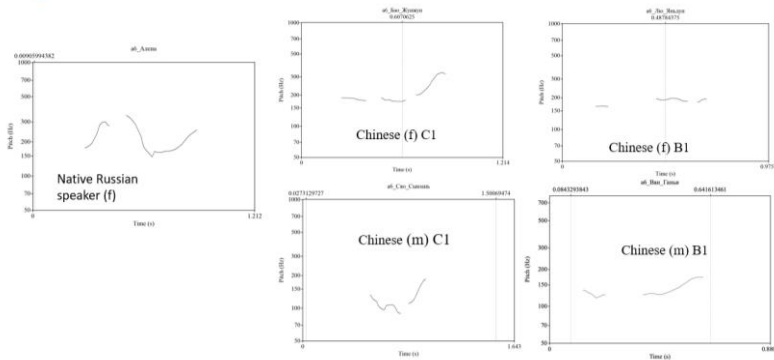


Fig.7. Intonational contour of the phrase «A тебе?» («And you?») in the speech of Russian and Chinese informants

Most of the Ghanaian participants also rightly used IC-4 to express an incomplete question (fig. 8) using the conjunction «а» («and») in the phrase «A тебе?» («And you?»).

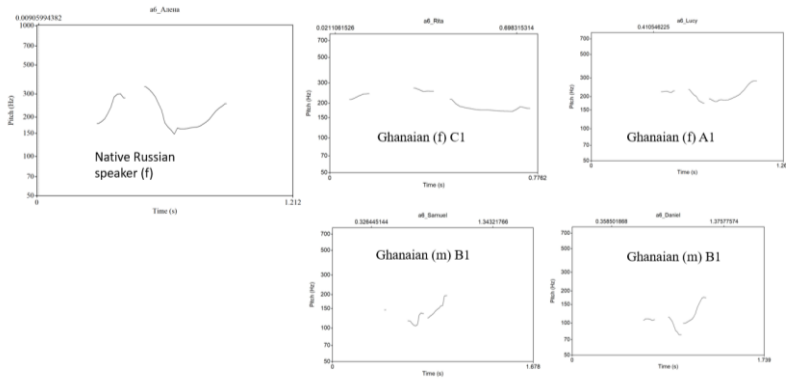


Fig 8. Intonational contour of the phrase «A тебе?» («And you?») in the speech of Russian and Ghanaian informants

A striking feature of IC-5 is the presence of two centers. This is clearly visible in the intonational contour of the native speaker, but the illustrations of the Chinese informants are more similar to a question with an interrogative word or a statement, thus, exclamation was not expressed (fig. 9).

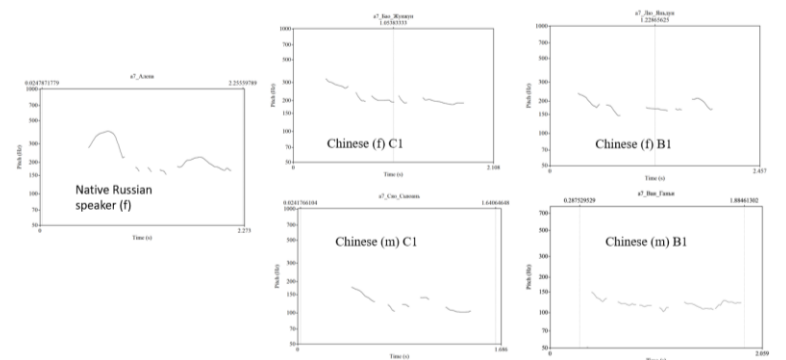


Fig.9. Intonational contour of the phrase «Солнце-то какое!» («The sun is so bright!») in the speech of Russian and Chinese informants

The intonational contours of the Ghanaian informants in the pronunciation of the phrase «Солнце-то какое!» ("The sun is so bright!") as compared to that of the native speaker do not clearly show two centers which is characteristic of IC-5 (fig. 10).

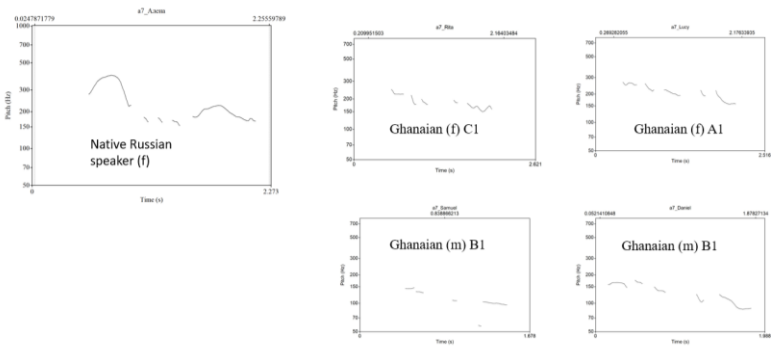


Fig.10. Intonational contour of the phrase «Солнце-то какое!» ("The sun is so bright!") in the speech of Russian and Ghanaian informants

IC-6 expresses surprise in this phrase. It is easy to notice that the Chinese informants find it difficult to render emotional expressions in their Russian speech (fig. 11).

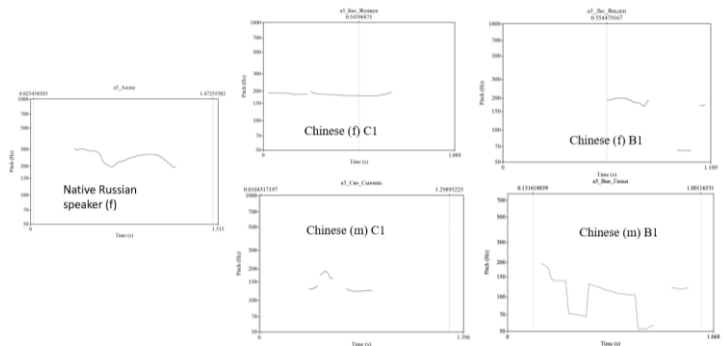


Fig.11. Intonational contour of the phrase «Ozo!» ("Wow!") in the speech of Russian and Chinese informants

The female Ghanaian informants have similar intonational contours (fig. 12) like that of the native speaker in the phrase «Oro!» ("Wow!"), however the native speaker expressed more emotions in this phrase. The male Ghanaian participants had difficulty in using IC-6 to express surprise.

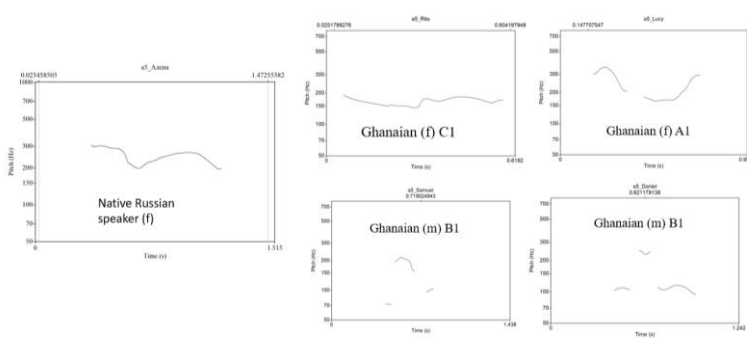


Fig.12. Intonational contour of the phrase «Oro!» ("Wow!") in the speech of Russian and Ghanaian informants

3. Conclusion

The results of the study led to the following conclusions:

1. The data of the analysis shows that Chinese and Ghanaian students have difficulties in assimilating Russian intonation. Inadequate pronunciation skills at the level of intonation hamper the formation of communicative competence. As a result, foreign students experience communicative failures in the process of communication.
2. This study shows the necessity of paying special attention to the study of Russian language intonation in the Chinese and Ghanaian classrooms, as it is observed that participants at the beginning, intermediate and advanced levels of Russian language face difficulties in using intonational constructions.
3. Most of the Chinese respondents had difficulties in expressing IC-5 and IC-6, and most of the Ghanaian respondents had difficulties in expressing IC-3 and IC-5.
4. Pauses within syntagmas are clearly observed in the speech of Chinese and Ghanaian students, which indicate the need to work on teaching how words within the same syntagma are pronounced together.
5. The existing methodology is not quite justified regarding teaching intonation to Chinese and Ghanaian students.
6. It is relevant to create an ethno-oriented method of teaching Russian intonation to Chinese and Ghanaians.
7. Experimental phonetic programs make it possible to create nationally oriented visual materials for teaching the intonational structure of the sound of Russian speech, observing how accurate or inaccurate foreign students articulate Russian phrases.

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