SOUND ALTERNATIONS IN CONNECTED SPEECH[191]

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Abstract

The research on pronunciation aiming at better understanding of the speech process has largely relied upon analyses of corpora mainly built up of records of utterances of isolated words or sounds of a specific language. However, there are corpora built up of records of connected speech such as the speech in the media, interviews, deliverances of various public speeches and alike but most of the research of these corpora are focused on the syntax and prosody.

This paper aims at displaying the sound alternations that occur in authentic connected speech in communication and greatly influence the auditory processing with listeners, thus affecting the communication.

Our findings rely upon acoustic analyses and spectrograms displaying those sound alternations with the English language and with the Macedonian language.

Key words: connected speech, speech perception, coarticulation, sound alternations, phonemic and non-phonemic languages

INTRODUCTION

Oral communication is the essence of everyday life in every society and practiced by every social group – from the smallest one such as family to the largest one such as those in educational or in working environment. It basically consists of two main components: speaking and listening. Each of these encompasses additional corresponding processes; speaking is grounded

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[191] original scientific paper

on articulation and speech production ability whereas listening is grounded on speech perception and comprehension ability.

Linguists and Language Teaching Methods researchers have devoted much of their research work on each of these components of oral communication. Acoustic Phonetics and Auditory Phonetics have greatly contributed to understanding the complexity of oral communication as one of the starting points necessary to improve not only everyday communication but communication for educational purposes, and in professional and social life as well.

However, in most research, the emphasis has been placed on analyses of isolated speech - i.e. sounds or words uttered in isolation. The results are undoubtedly useful, especially in teaching foreign or native – phonemic or non-phonemic language and literature. But they do not contribute to understanding and improving oral communication in real time – i.e. communication which occurs in authentic situations and surroundings and with no text script of the statement said to reread and rely on.

CONNECTED SPEECH AND COARTICULATION

Connected speech is an audibly structured realization composed of phonemes grouped into syllables, syllables grouped into words, words composed into phrases, phrases into clauses and sentences, and sentences into a shorter or longer discourse structure. The "final touch" to this complex structure comes with the accent, stress, intonation, and pauses.

The realization of this audible structure is performed by the speech organs – i.e. *articulators which can be either passive (generally speaking – the stationary parts of the vocal tract) or active (the movable ones) in speech production*[192]. The active articulators *gesture* (make coordinated movements) *to produce certain degrees of stricture (opening / closure) at certain points in the vocal tract*[193], thus allowing for the vowels, consonants, and sonorants to be formed and audibly released. As phonemes making a syllable or a word are sequenced in connected speech production, Mannell (2008) says these *gestures overlap* in an utterance. In *articulatory planning*, each phoneme has a *single ideal articulatory target for each articulator*[194] i.e. each articulator must try to achieve the target position necessary for the articulation of each phoneme. *The ideal target for a specific phoneme of a*

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[192] Mannell, R., 2008, Phonetics and Phonology: Coarticualtion and Assimilation, Macquarie University
[193] Ibid.
[194] Ibid.

specific language is invariant[195]. However, differences occur as they do in the graphemes of the handwriting of different individuals. In speaking, these differences are in tight relation with different accents or other (physical) aspects of the individuals. For the economy of fluent speech, the sequencing of phonemes into a syllable and then into words results in articulators moving nearly simultaneously; the articulators gesture at the target position to produce one phoneme and at the same time start moving to reach the articulatory target position of the next phoneme in the sequence. Thus, no definable articulatory or acoustic boundaries between phonemes in connected speech can be heard, except in certain phrases under accents, stress or when pauses in between intonation blocks are employed. This process is known as coarticulation.

With all of the facts stated, it is easy to understand the abundance of sound alternations initiated by coarticulation and by almost simultaneously target position gesturings of articulators in connected speech. Most of these alternations have already been the objective of linguists and speech pathologists' research and presented in various grammar books, books on phonetics and phonology, and on auditory pathology.

As speech is an essential part of oral communication, and oral communication is an activity which spans the whole life of a human – thus including early childhood, education, socialization, career, family life, communication with other ethnicities and peoples, etc., the objective of this research is to point out some of the most frequent sound alternations that might affect the successfulness of communication in every aspect of life: family, education, work, social and cultural life, etc.

SOUND ALTERNATIONS

Sound alternations are frequently confused with sound changes. However, they are two different processes. Sound changes are tightly related to the diachronic aspect of a language and refer to the language norms and rules that must be obeyed. Unlikely, sound alternations are related to the synchronic aspect of the language and to real time language use as well as to a number of other aspects such as physical aspect of the articulators of an individual, the speech rate the he/she usually employs when conversing, and his/her dialect, sociolect and idiolect – if consciously or unconsciously used in the standard language when conversing.

Sound changes are in the research focus of Phonology and Morphonology and are frequently referred to as phonological and morphonological changes.

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[195] Ibid.

Sound alternations occur in everyday communication and are mostly spontaneous and unintentional though many of them overlap with phonological and morphonological changes and may be intentional at some points (for e.g. to show/hide the social background, to make the statement more interesting, etc.).

The group of sound alternations and sound changes which occur as a design of public speech delivery belong to the group phonomorphological changes and are in the research focus of Phonostylistics, as an important aspect of the art of conversation – i.e. Stylistics of language discourse (in this case the oral one).

This paper deals with the second group – i.e. the alternations in oral speech and the real time speech effects which are spontaneous and unintentional.

This is the reason we have decided our analyses to rely upon spectrogram readings of semi-structured interviews with famous people.

RESEARCH METHODS

This paper has shifted the emphasis of its objective onto connected speech and the processes affecting the pronunciation described and transcribed in between phonetic brackets in all non-phonemic dictionaries as they frequently affect the speech production output and sometimes burden the speech perception i.e. listening comprehension.

There are two languages in focus in this research: the English as a representative of non-phonemic languages and the Macedonian as a phonemic language.

Thus, the objective of this paper is to present that sound alternations occur in real time connected speech both in non-phonemic and phonemic languages.

The research has been conducted by building up corpus of semi-structured interviews with famous people; all of those interviews are accessible for the public as they are posted on public internet sites such as You Tube. This type of interviews is most representative of standard language full of rich vocabulary and communicative phrases common both for formal and informal situations.

The audio-content in English is of 2 hours, 44 minutes and 30 seconds duration, and the audio content in Macedonian language is 2 hours 56 minutes and 20 seconds.

The audio-content was listened to for sound alternations. The parts appearing to contain sound alternations were analyzed in the computer

program PRAAT[196] by reading their spectrograms and measuring the formants of the sounds – both for male and female voices.

SOUND ALTERNATIONS IN THE ENGLISH LANGUAGE

According to Gary Buck (2002), "… *the degree of phonological modification varies depending on the situation. For example, in formal speech speakers will tend to have less modification than in informal situations; similarly, in cases where the information is important, they will tend to pronounce the words with more care than they would with informal, throw-away information…"* [197]. He points out three types of sound alternations as the most important: *assimilation*, *elision*, and *intrusion* - i.e. the third one defined by Peter Roach[198] as *linking*.

Our acoustic analyses with the PRAAT computer program confirm the a/s alternations (Figure 1, Figure 2, Figure 3):

Figure 1 – Spectrogram shot of assimilation: in the phrase *be what you*'ve...

*Spectrograms are individual works and property of the authors of the paper

Figure 1 shows that the sound /t/ undergoes influence from the adjacent sound /j/ that follows it (so called anticipatory or regressive coarticulation)

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[196] www.praat.org

[197] Buck, G., (2001). *Assessing Listening*, Cambridge University Press

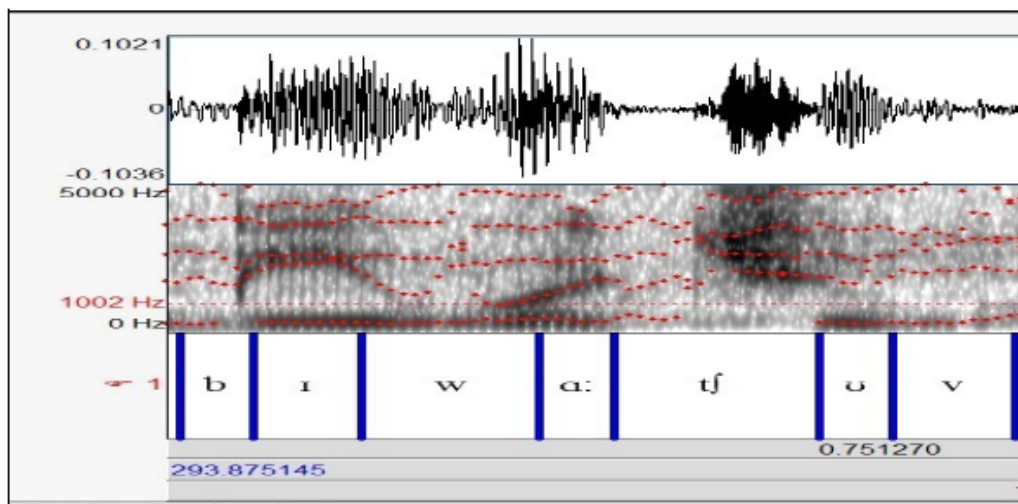[198] Roach, P., (1998). English Phonetics and Phonology, A practical Course, Second ed. Cambridge University Press
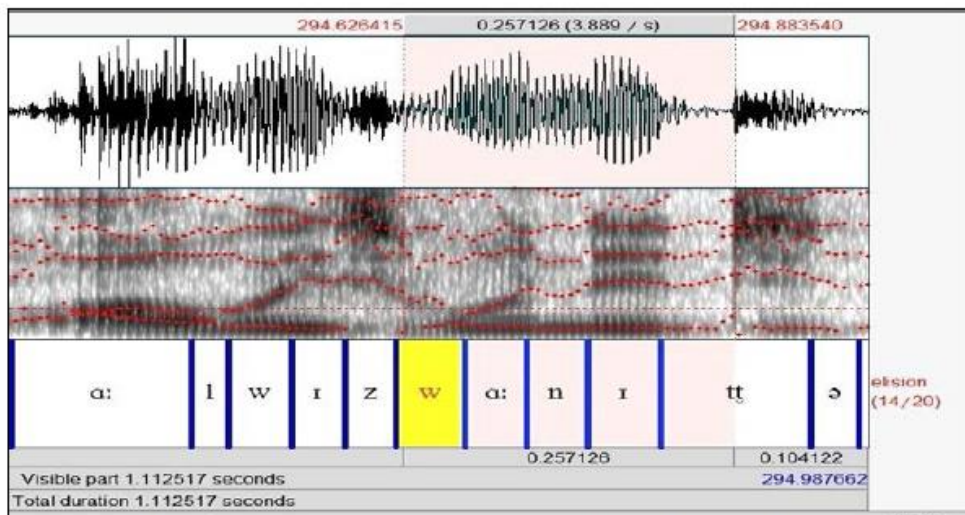
Figure 2 – Spectrogram shot of elision in the word *wanted*:

*Spectrograms are individual works and property of the authors of the paper

Figure 2 shows that the sounds /t/ and /d/ are dropped in *wanted; /d/* is devoiced and then substituted with /t/ which in the phrase *to do,* that follows, assimilates with the initial /t/ in one /t/. There has been another sound alternation identified in the same statement – *reduction;* although quite a common alternation in oral speech, it was not mentioned above. In the same spectrogram shot we see *reduction* of the diphthong /eɪ/ into /ɪ/ in the word *always*.
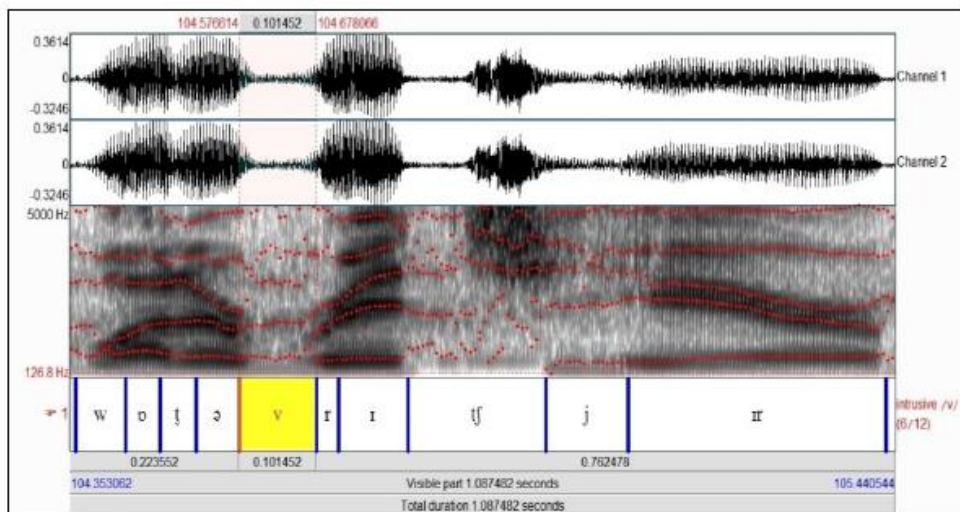
Figure 3 – Spectrogram shot of intrusion in the phrase "… what a rich year…"

*Spectrograms are individual works and property of the authors of the paper

Figure 3 shows a pronunciation of an extra sound occurring in between syllables or in between words, in this case – intrusion of /v/ in between the indefinite article *a* and the adjective *rich* in the phrase "… what a rich year…"

SOUND ALTERNATIONS IN THE MACEDONIAN LANGUAGE

Unlikely to the English language which is non-phonemic, and consists of about 44 sounds and 26 graphemes i.e. letters in 185 combinations[199] to present these spunds – i.e. spellings for the articulation of each sound, the Macedonian language as a phonemic language of 31 sounds and is not expected to show some abundance of sound alternations in real time oral communication. Reduction of diphthongs to monophthongs in the English language is quite common in oral communication in everyday life. But the Macedonian language does not have diphthongs and neither the gemini vowels nor the adjacent vowels occurring in words, word-building, and word-formation are in any case equivalent in quality to diphthongs.

However, both in informal speech and in formal, it can be noticed that the same reduction process does take place when there are gemini vowels or two adjacent vowels, especially in longer words. In some cases, this reduction is influenced by the word accent or the intonation blocks, but in other cases it is simply a result of fast speech or economy of fluent speech. When reduction of gemini vowels occurs in fast oral speech it may result in one longer phoneme or in elision of one of the geminis. In regard with reduction or elision of one of two adjacent vowels in the Macedonian language we can say that it does occur although no diphthong quality binds these vowels as it is the case in the English language. (Figure 4). What is interesting to point out from the discerned alternations is that the Macedonian vowel /a/ is weakened in the end of a word and sometimes even reduced to the schwa /ə/ sound which is only facultative in the Macedonian language.

Assimilation, elision and intrusion have been found to occur in everyday connected speech as well (Figure 5, 5-a, and 5-b, Figure 6). However, assimilation is already a sound change that is in accordance with the phonological and morphonological rules of the Macedonian language; thus

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[199] Irregularities of English Spelling http://spellingsociety.org/irregularities-of-english-spelling#/page/1

viewed from the point of alternations we can take it into consideration only as a component of the Macedonian dialects which is not in the focus of our objective here.
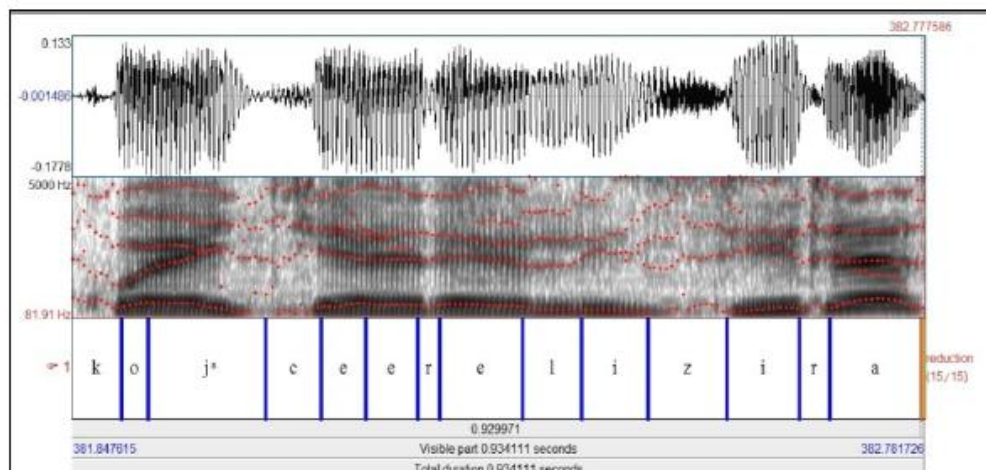

Figure 4 – Reduction: In the phrase *која ќе ја реализира* /koja|ce|ja|realizira/.

*Spectrograms are individual works and property of the authors of the paper

The reduction presented in Figure 4 occurs at three points: in the word *која* /koja/ the vowel /a/ cannot be identified in the spectrogram and the values of the formants display presence of /ə/. Further on, the second reduction occurs in the phrase *ќе ја* /ce|ja/ which is pronounced and identified in the spectrogram analysis as /ce|e/. And the third reduction is identified in the word *реализира* /realizira/. The adjacent vowels /~ea~/ do not make a diphthong. Thus, no condition exists for the reduction from /~ea~/ to /~e~/. The only explanation we can offer is the economy of fluent speech.
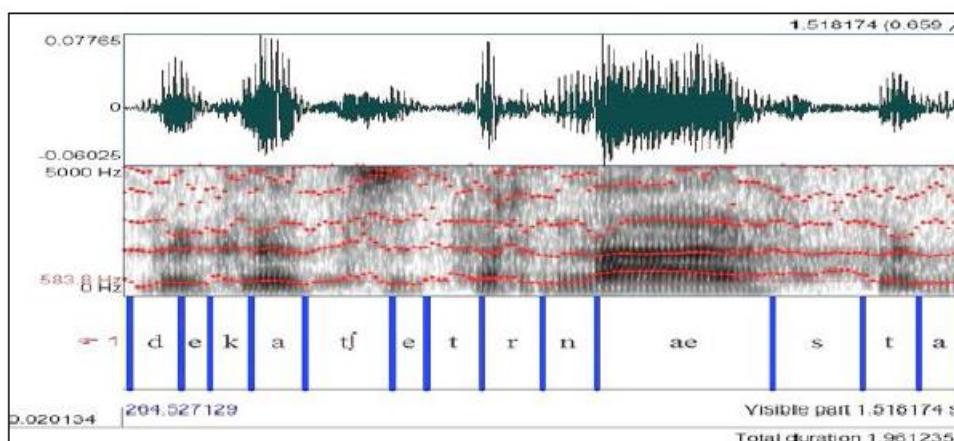
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Figure 5 – Elision: in the word *четиринаесетта* /tʃetirinaˈesetta/

*Spectrograms are individual works and property of the authors of the paper

In Figure 5 the spectrogram analysis shows that both /i/ are dropped as well as /e/ in between /s/ and /t/ due to fast rate of speech; thus the word is pronounced /tʃetrn'aesta/ which conditions the omission of one /t/ where there are two /t/ to be pronounced.

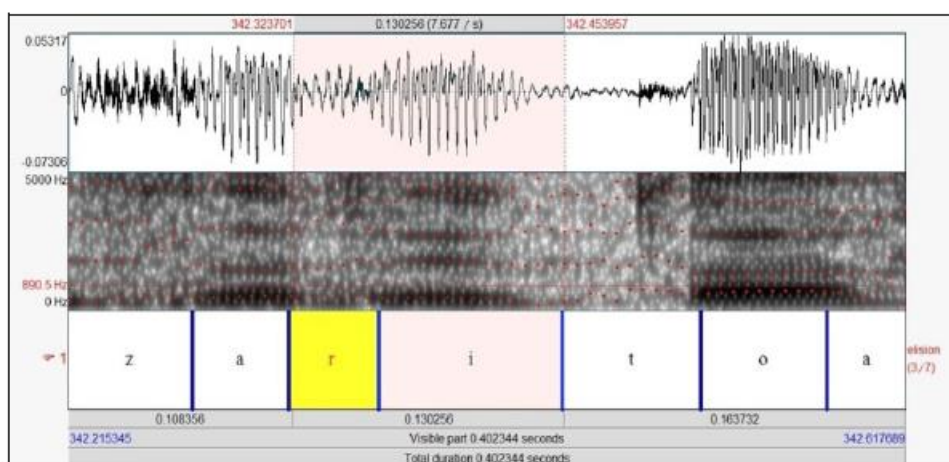Elision in Macedonian occurs with adjacent vowels and consonants as well. (See Figure 5a).

Figure 5a – Elision of /~ad~/ in the word *заради* /ˈzaradi/ pronounced as /zari/

*Spectrograms are individual works and property of the authors of the paper

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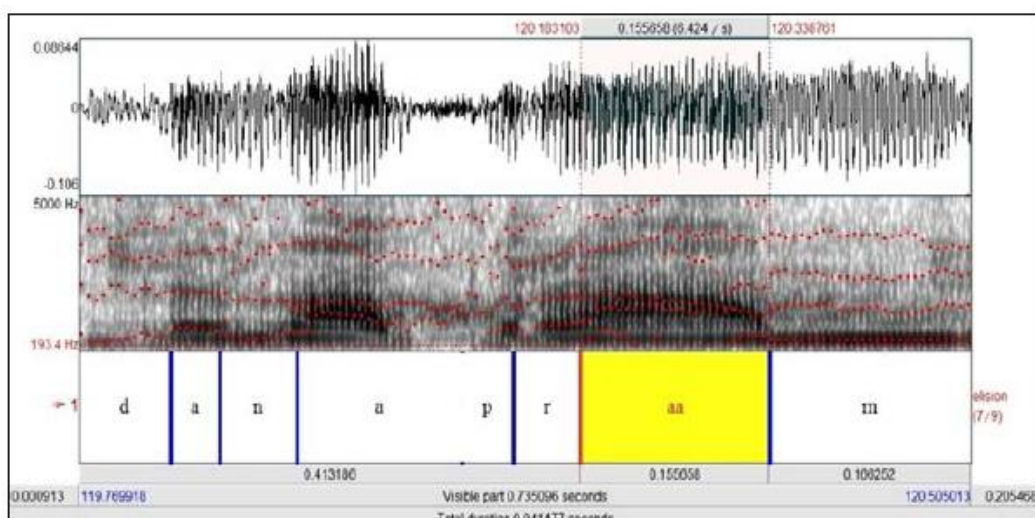
Figure 5b – Elision of /~v~/ in the word направам /ˈnapravam/
*Spectrograms are individual works and property of the authors of the paper

The elision of /v/ displayed in Figure 5b conditions occurrence of gemini /a/ where they do not exist in accordance with the spelling.

Intrusion is a type of sound alternation quite common in informal and formal everyday speech. In fact, on the one hand, the sound /j/ appears quite intrusive in between vowels, and on the other hand it is dropped when proceeded by a word beginning with /j/ or /i/. For this reason we present a different type of intrusion here – i.e. the doubling of a vowel. See Figure 6.

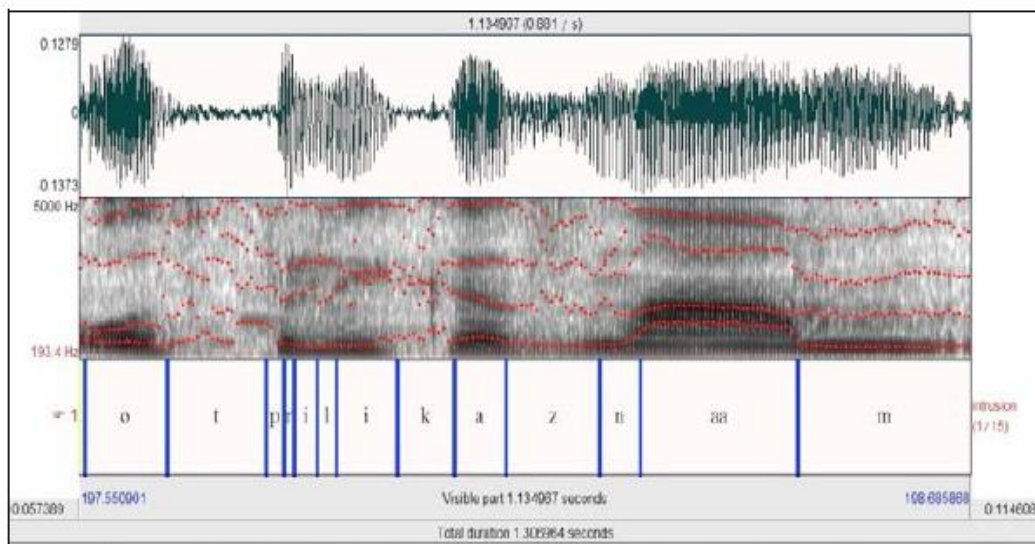
Figure 6 – Intrusion: the sound /a/ intruding the word знам /znam/

*Spectrograms are individual works and property of the authors of the paper

CONCLUSION

This research has been inspired and motivated by misperception which often occurs in oral communication in all aspects of everyday life. Pronunciation has mainly been researched with the focus on sounds and words pronounced in isolation. There have been research papers on pronunciation and sound changes which occur due to coarticulation but most of them deal with non-phonemic languages such as English or for the purpose of easing and improving the process of learning a foreign non-phonemic languages.

Our approach is to provide a better insight regarding the sound alternations in real time communication in a non-phonemic language and see whether we can say that the same sound alternations occur in phonemic languages.

The research was conducted by listening for and selecting semi-structured interviews as most convenient and abundant with standard language used in situations in which the formal and informal components of conversing overlap.

The audio content was analyzed in the computer program PRAAT by reading spectrograms and measuring formants of the sounds involved in the sound alternations.

The results have shown that non-phonemic languages – i.e. the Standard English language undergoes sound alternations in real time communication and the most frequent ones are: reduction, elision, and intrusion.

As for the phonemic languages, in this case – the Standard Macedonian language, the number of the a/s sound alternations that we have found is lower but not to be neglected.

As we searched for the said sound alternations that are most frequent in the English language, we presented some examples of those sound alternations we have found in the Macedonian language. Yet, there is a sound alternation we have not come across in the Standard English language audio content, but which appears quite frequently in the Standard Macedonian language audio content. It is the shifting of accent despite the strict norms and rules of its use. The Macedonian accent is non-phonemic and for the most words *automatically determined*[200] – it falls on the *antepenult* (the third syllable counting from the last one) of words of three or

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[200] Lunt, H. G., Grammar of the Macedonian Literary Language, Makedonska Akademija Biblioteka, Skopje, 1952

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more syllables, and on the second on shorter words (counting from the last one). The most frequent shifts of accents we have come across were mostly with shorter words – i.e. shifting the accent from the second syllable onto the first one (counting from the last syllable).

It is our belief that this research broadens the horizons regarding connected speech sound alternations in phonemic languages and should be further on developed in two directions: a) whether sound alternations are conditioned by other prosodic features in phonemic languages such as intonation and intonation blocks; b) how much this sound alternations are present in the educational institutions and to what extent they can affect students' achievements.

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