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Experimental-Phonetic Analysis of the Phonetic Structure of Word in the English language

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Abstract

The article has been written on the basis of experimental-phonetic method in the study of the English language. The main aim of the investigation is to find out similarities and differentiations due to the acoustic parameters between phonetic structure of word in the monosyllabic and poly syllabic words in the English language. The analysis is based on experimental-phonetic investigation. PRAAT computer program has been used for this experiment.

Keywords: phonetic structure, oscillograms, spectrograms, frequency, intensity

1. Introduction

It is important to use experimental-phonetic method for the investigation in the modern linguistics. The work of the researcher in the experiment does not end only with the selection of appropriate research methods, the identification of important components and the correct execution of the experiment. The main problem facing the researcher is to provide a linguistic analysis of the results of the experiment in accordance with the theoretical propositions (Veysally, 2005).

It is possible to receive information about the speech sounds in modern instruments. However, it is impossible to say anything about the linguistic essence of this issue. The fact that the oscillograms and spectrograms are of high quality is not a problem, it is the researcher's ability to "expand" them (Veysally, 2005).

The experiment also sets certain requirements for the researchers. The experiment requires the researcher to have theoretical knowledge of the investigated problem. Prof. Scherba noted that the language material and language facts obtained from the experiment were based on his linguistic ideas (Scherba, 1979). According to Veysally, the phonetic study of any material can be qualitative only if it is based on experiment rather than observation (Veysally, 2005).

About oscillographic analysis, Veysally writes: "The main difficulty in working on oscillograms is related to the correct division of segments and determination of their boundaries" (Veysally, 2005).

Our aim is relying on these principles, the principle of importance of the experimental study, to carry out experimental analysis of the word in the English language.

2. Scope of the Study

Experimental-phonetic method plays a very important role in the investigation of modern linguistic problems. In order to perform the experiment accurately, some conditions must be met. One of them is the selection of announcers to record the experimental material on tape and informants who will listen to the recorded language material. "PRAAT" computer program was used in the phonetic study of the material. The indicators about the acoustic parameters were obtained by means of a computer program. The experimental-phonetic method allows us to have an objective opinion about the phonetic features of stress. Therefore, the application of the instrumental research method is of great importance in the study of languages and their repetition. Among the acoustic parameters, melody plays the leading part. Veysally notes that the rise and fall of the voice tone in the act of conversation is its melody, and the results obtained at the end of the research depend on it, so it is important to pay special attention to it (Veysally, 2003).

3. Research Methodology

In the article we have used experimental-phonetic method in the investigation of phonetic structure of words in the monosyllabic and polysyllabic words in the English language.

4. Experimental-Phonetic Analysis of Phonetic Structure of Word in the English Language

The use of the experimental-acoustic method of analysis of prosodic phenomena such as intensity, length, tone gives us an opportunity to express objective thoughts on the main peculiarities of stress in the English language. The nucleus of each syllable is a segment, and the nucleus of each word consists of a syllable. Depending on the segments in the word, the syllables in the word have different quantitative and qualitative indicators due to the acoustic parameters. L. Bloomfield notes that the word plays a key role in our understanding of language and the word is the smallest unit we use in speech (Bloomfield, 1933). Torsuyev notes that in two and three-syllabic words that are used more often in speech, stressed and unstressed syllables replace each other and form rhythmic groups. The changes in the melodic structures of the words are related to the vowels in those words. The position of the vowel sounds in the words is also important (Torsuyev, 1962).

In the English word “infinitive”, since the stress falls on the first syllable, the maximum tone frequency is observed in the vowel in that syllable - 264 hs. In this word, the lowest rate of the basic tone frequency was recorded on the last syllable - 184 hs. The interval difference between the maximum and minimum indexes of the tone frequency within the word is equal to 80 seconds. In the analyzed word “abstract” / 'æbstrækt / we observe the same position. The maximum tone frequency in the two syllabic word / 'æbstrækt / is noted on the first syllable - 274 hs (see: oscillograms 1, 2).

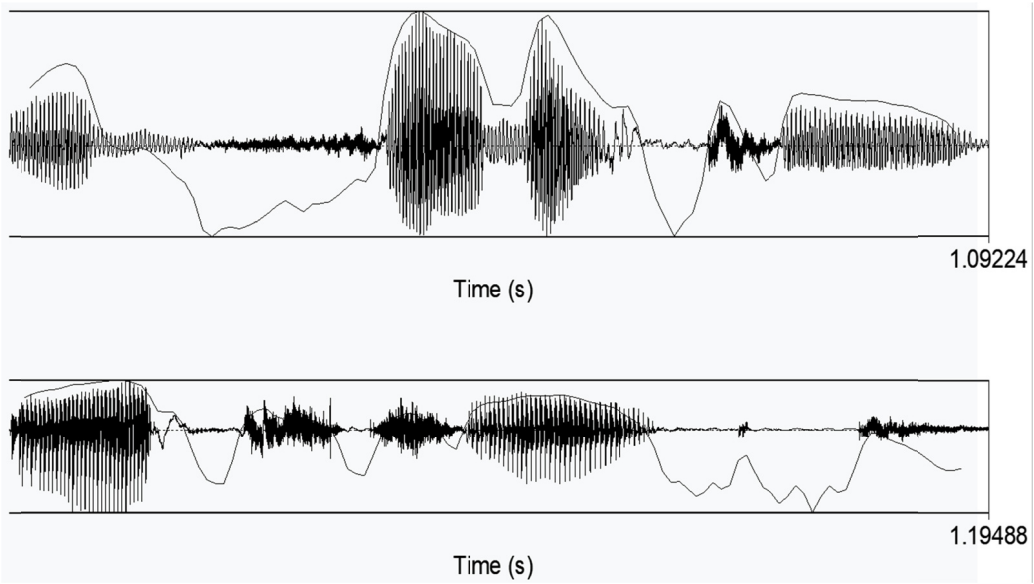

Figure 1. Oscillograms of English words / ɪ n'f ɪ n ə t ɪ v / (1) /'æb s t r æ k t/ (2)

In the analyzed words “identifiable” /aɪ'dentɪfaɪəbl/, “typewriter” /'taɪp'raɪtə/ and “three-wheeler” /'θri: 'wi:lə/, the main tone frequency is distributed in the following order. The maximum tone frequency in the word /aɪ'dentɪfaɪəbl/ is 216 hs in the first syllable, in the word /'taɪ p'raɪtə / - 214 hs, and in the word /'θri: 'wi:lə/ , this indicator is 223 hs -. The difference between the intervals in these words is 49-56-107 hs, respectively. The interval difference indicates that the frequency of the main tone is moving in a decreasing direction. The maximum tone frequency in English complex words “illegitimate” /'ılı'ʤɪtəmət/ and “immaterial” / 'ımə'tıərıəl/ was recorded in the initial syllables. The maximum tone frequency in the word /'ılı'ʤɪtəmət/ is 198-225 hs, but in “immaterial” / 'ımə'tıərıəl / is 184-196 hs. (see: oscillograms 5, 6). In the word “major general” / 'meıʤə 'ʤenərəl/, the maximum tone frequency was recorded at the beginning of both words: “illegitimate” / 'ılı'ʤɪtəmət / - 206 hs and “immaterial” / 'ımə'tıərıəl / - 183 hs.

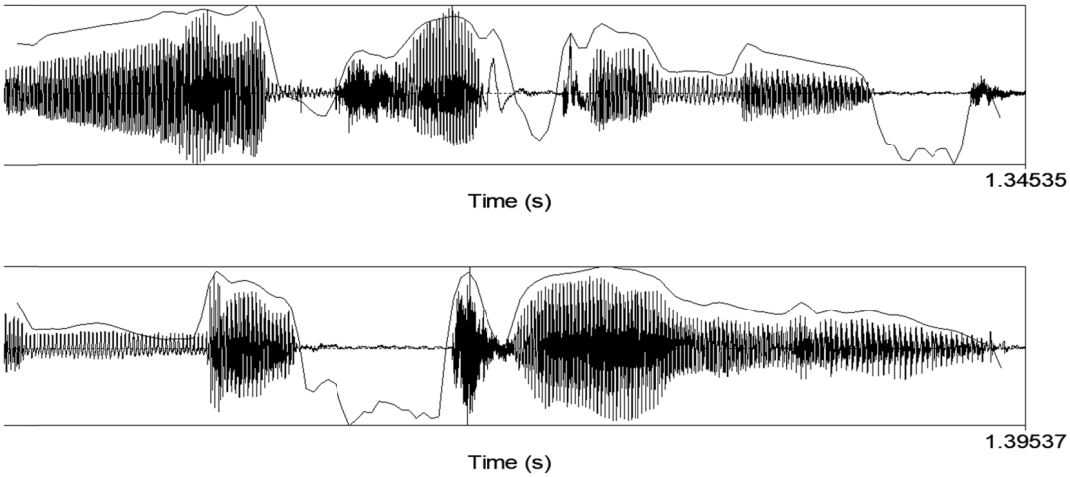

Figure 2. Oscillograms of the words /'ılı'ʤıtəmət/ (5), / 'ımə 'tıərıəl/ (6) in the English language

The maximum indicator of the frequency of the main tone in the analyzed words “underproduction” /'ʌndəprə'dʌkʃən/, «overdeveloped» /'əuvədı'veləpt/, «underpopulated» /'ʌndə'pɒpjəleıtıd/ və «polysyllabically» /'pɒlı'sıləbıkəlı] is observed in the initial syllables. It is possible to give these values in the following order: 217:204 hs, 213: 194 hs, 200:196 hs, 204:200 hs.

The indicators of the main tone frequency in the word “BBC” / ˌbi: bi: 'si: / are distributed in the following order: 214-216-170 hs. In “USA” / ˌju: es 'eı / the basic tone frequency is expressed by the following values: 215-197-162 hs.

The maximum tone frequency in the word “aircraftman” / 'eəkrɑ:ftmən/, which was drawn to analysis, was recorded in the first syllable - 301 hs. In “back-woodsman” / ˌ bæk'wʊdzmən/, the main tone frequency is distributed in the following sequence: 301-198-161 hs. In the analyzed words “handicap” /'hændıkæp/ and “son-in-law” /'sʌn ın lɔ:/, the tone frequency was reflected in the following indicators: 250-181-158 hs; 268-218-198 hs. As can be seen from the figures, the main tone frequency in all the analyzed words is downward.

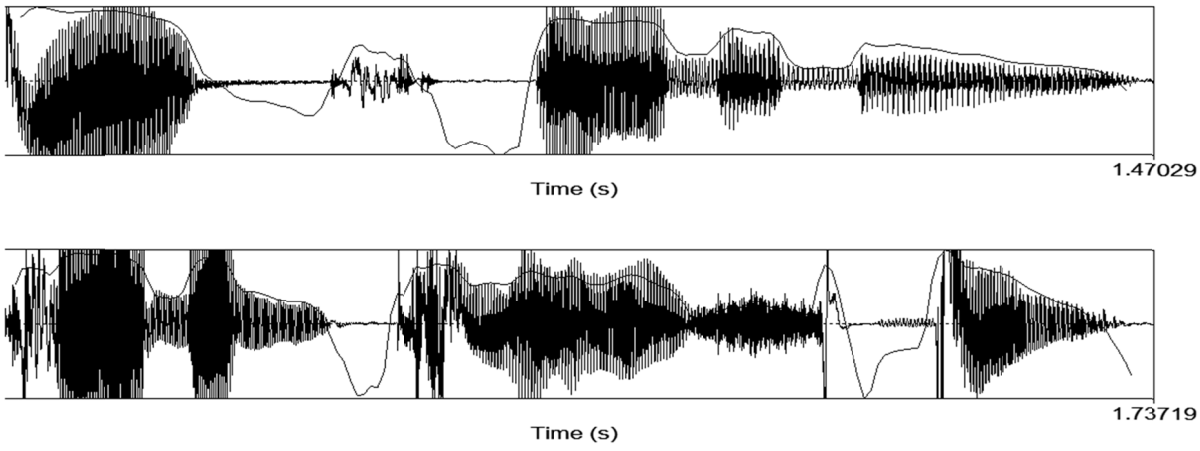

Figure 3. Oscillograms of English words /p æ k ' æ n ı m ə l/ (11) and /'k ɒ mə n p l e ı s b u k/ (12)

In the English word “impossibility” /ı mˌp ɒ s ə ′ b ı l ı t i/, the maximum indicator of the main tone frequency is recorded in the vowel /i/ in the third syllable from the end - 236 hs. The frequency is 219 hs on the syllable carrying the secondary stress. The maximum tone frequency in the word “idealistic” /ˌaıdıə′ lıstık/ was recorded in the vowel /i/ in the main stressed syllable - 220 hs. The syllable carrying the secondary stress, the main tone frequency is 200 hs. In the words “americanization” /əˌmerıkənaı′zeıʃn/, “great grandfather” /ˌgreıt′grændˌfɑ:ðə/ and “scotch

woodcock” /ˈsкɒ ʧ ˈwʊd к ɒ к/, the basic tone frequency in the main stressed syllables is given in the following order, respectively: 223 hs, 196 hs. In the English words “onomatopoeia” /ˌɒnəʊˌmætəˈpiːə/, “palatalization” /ˌpælətəlaɪˈzeɪʃn/ and “industrialization” /ɪnˌdʌstriəlaɪˈzeɪʃn/ the frequency of the tone in the main stressed syllables is expressed by the following parameters: 230-240-227-216 hs. In these words, the frequency of the tone in the syllables carrying secondary stress is as follows: 210-213-204-199 hs.

The maximum tone frequency in the following polysyllabic English word «three legged rase» /θri: 'legɪd reɪz/ is recorded as 285 hs in the vowel /e/. The minimum tone frequency in this word is 164 hs which is observed on the last syllable. It shows that the interval difference is 79 hs.

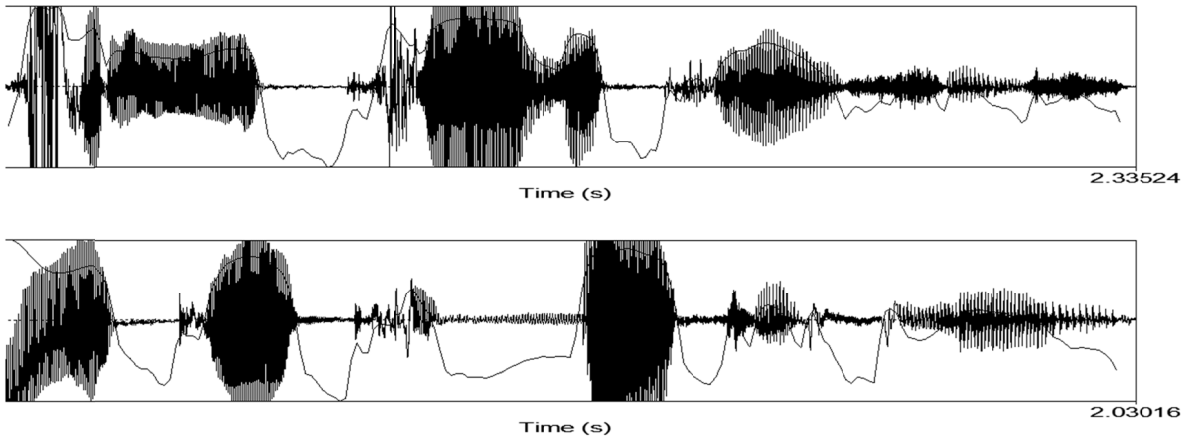

Figure 4. Oscillograms of English words pecock butterfly /'peкɒк 'bʌtəflaɪ/ and /'ɔ:l 'fu:lz ˌdeɪ/

The maximum tone frequency in the English word “soda water bottle” /'səudə 'wɔ:tə 'bɒtl/ is recorded in the vowel /ɔ:/ - 275 hs. The peak of the main tone speed in the word “wash hand basin”/ 'wɒʃ hænd ˌbeɪsn/ /ɔ:/ falls on the tone of the vowel - 261 hs. The maximum tone frequency in “wash hand stand” /'wɒʃ hænd ˌstænd/ is 267 hs in the syllable carrying the primary stress. In the word “waste-paper-basket” /'weɪst peɪpə ˌba:sкɪt/, the maximum indicator of tone frequency was recorded in the vowel /ɔ:/ in the amount of 253 hs. In the word “interdenominational” /ˌ ɪntədɪˌnɒ mɪ'neɪʃənəl/ tone frequency is distributed in the following order: 246-254-230-210-190-176-136 hs. In terms of “discontinuity” /ˌdɪsˌkɒntɪ 'nju:ətɪ/ and “irreconcilability” /ɪˌrekən 'saɪlə'bɪlətɪ/, the values of the basic tone frequency were found in the following indicators: 225-220-190-220-166 hs, 228-230-218-240-220-190-176-146 hs.

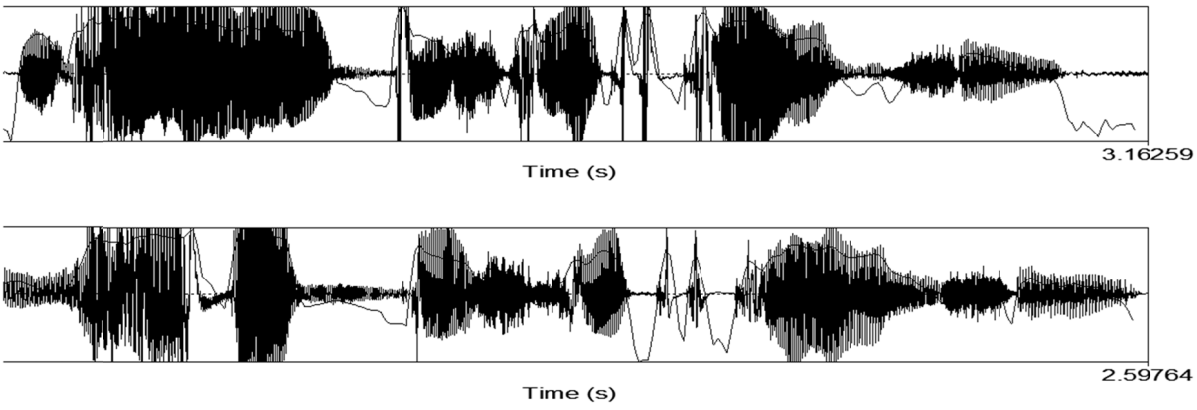

Figure 5. Oscillograms of the English words «rural district council» (35) /'r ʊə rəl 'dɪstrɪkt 'kaunsl/ (36) /«urban district council» /'ə:bən 'dɪstrɪkt 'kaunsl/ (36)

The maximum tone frequency in the English word “three legged rase” / ˌθ ri: 'leg ɪ d ˌreɪz / / is recorded as 285 hs

in the vowel /e/. The minimum tone frequency in this word is noted on the last syllable as 164 hs . It shows that the interval difference is 79 seconds.

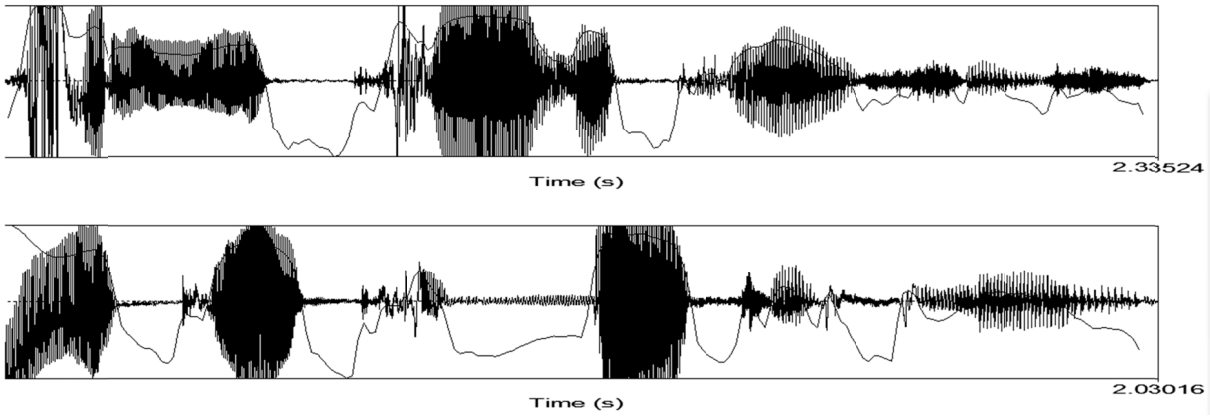

Figure 6. Oscillograms of English words /'pɛкɒк 'bʌtəflaɪ/ and /'ɔ:l 'fu:lz ˌdeɪ/

The maximum tone frequency was recorded at the beginning of the analyzed words “three-color process” /ˌθri: 'kʌlə prə'ses/ və “peacocк butterfly” /'pɛкɒк 'bʌtəflaɪ/. In /ˌθri: 'kʌlə prə'ses/, the maximum tone frequency is 276-264 hs in the first syllables, and in /'pɛкɒк 'bʌtəflaɪ / it is 300-294 hs in the first stressed syllables (see: oscillogram 15). The maximum tone frequency in the words “all fools day” /'ɔ:l 'fu:lz ˌdeɪ/, “maid of all work” /ˌmeɪd əv 'ɔ:l ˌwə:к/ and “rag and bone man” /ˌræg ənd 'bəʊn ˌmæn/ is observed in the initial syllables. The maximum tone frequency in the word /'ɔ:l fu:lz deɪ / is 294 hs (see: oscillogram 16), in /ˌmeɪd əv 'ɔ:l ˌwə:к/ it is 321 hs, and in “rag and bone man” /ˌræg ənd 'bəʊn ˌmæn/ this indicator is 271 hs. The maximum tone frequency in the word “apchbishopric” /ˌa:ʧ 'bɪʃəprɪк/ is noted in the vowel /i/ - 252 hs. The oscillographic analysis shows that the maximum tone frequency was recorded in the vowel /i/ in the word “discontinue” /ˌdɪskən'tɪnju:/ - 220 hs. In the words “misdoing” /mɪs'dui:ŋ / and “misconceive” / “misconceive” /mɪskən'si:v/, the main tone frequency is observed in the vowels /u/ and /i/. The maximum tone frequency in the first word is 246 hs, and in the second word is 236 hs.

In the analyzed words “revisit” /rɪ'vɪzɪt/ and “polyphonic” /ˌpɒlɪ'foʊnɪk/, the maximum tone frequency is 236 hs in the vowel /i/ in the first syllable, and 249 hs in the vowel / oʊ / in the second word. In the word “polyphonic” /ˌpɒlɪ'foʊnɪk/, the tone frequency in the vowel /ɒ/ is 219 hs in the syllable carrying the secondary stress. In the word “poly semantic” /ˌpɒlɪsɪ'mæntɪk/, it is distributed between secondary and primary stresses in the following ratio: 220-246 hs.

Intensity is one of the main acoustic features that distinguish speech sounds from each other. (19, 94) The main reason why the intensity of speech sounds is relatively little studied compared to the melodic and length parameters is that the dynamic component of intonation is studied relatively during the analysis of stress.

In the words “identifiable” /aɪ'dentɪfaɪəbl/, “typewriter” /'taɪpˌraɪtə/ and “three-wheeler” / ˌθri: 'wi:lə/, the intensity values are given as follows: in the first word, the intensity peak is in the first syllable in the diphthong / aɪ / is 83 db, and 80 db in the next /eɪ/ diphthong; In the beginning of the second word, /ai/ is 88 db, in the following syllable, /ai/ is 80 db, in the beginning syllable of the third word, the intensity is 81 db, and in the following syllable, this indicator is 69 db. The interval difference of the intensity of the words is 03-07-12 db, respectively. The observed difference in the interval indicates that the intensity in the words moves in the reduced direction.

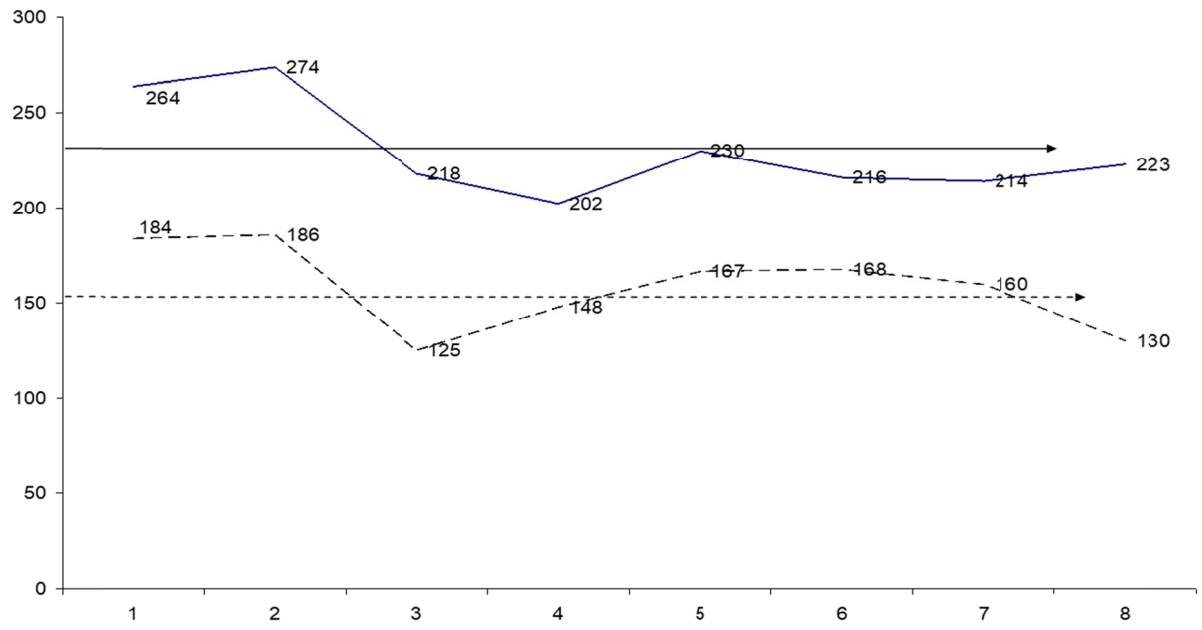

Figure 7. Oscillograms of English words /aɪ'dentɪfaɪəbl/, /'taɪp'raɪtə/ and/'θri: 'wi:lə/

The maximum intensity of the English complex words “illegitimate” /'ılı'ʤıtəmət/ and “immaterial” / 'ımə'tıərıəl/ was observed in the initial syllables. The intensity peak in “illegitimate” /'ılı'ʤıtəmət/ is 77-83 db, and the intensity ratio in “immaterial” / 'ımə'tıərıəl/ is 74-80 db (see: oscillograms 5, 6). In the analyzed word “major general” /'meıʤə 'ʤenərəl/, the intensity is on the maximum level in the initial syllables: 82-80 db. The analysis of the oscillograms of the words “underproduction” /ˌʌndəprə'dʌkʃən/, “overdeveloped” /ˌəʊvə dı'veləpt/, “underpopulated” /ˌʌndə'pɒpjuleıtıd / and “polysyllabically” /ˌpɒlı'sıləbıkəlı] shows that the intensity peak is noted in the initial syllables. Intensity ratios in the words “underproduction” /ˌʌndə prə'dʌkʃən/: 86:81 db, “overdeveloped” /ˌəʊvə dı'veləpt/ : 83:80 db, “underpopulated” /ˌʌndə'pɒpjuleıtıd/: 87:89 db, “poly syllabically” /ˌpɒlı'sıləbıkəlı] is 96: 87 db.

We meet an interesting landscape in the abbreviations involved in the experiment. The maximum time in the word “BBC” /ˌbi: bi: ' si: / is distributed in the following order: 79-78-73 db. The peak of the intensity in the word “CIS” /ˌsi: aı 'es/ was recorded in the second syllable:79-87-72db. It is possible to explain this with the acoustic quality of the /ai/ diphthong realized in the second syllable of the word. In the analyzed words “UNO” /'ju: ən əʊ/, “FBI” /ˌef bi: 'aı/ and “USA” /ˌju: es 'eı/, the intensity is expressed by the following values: 84-85-83, 85-83-82 db .

It should be noted that in the initial phase of the /ai/ diphthong realized in the word “FBI” /ˌef bi: 'aı/ and the diphthong /ei/ in the word “USA” /ˌju: es 'eı/, the intensity is 84 db and 82 db, then the intensity is reduced at the end: 79-75 db.

In the English word “impossibility” /ım ˌpɒsə′bılətі/, the maximum degree of intensity is recorded in the vowel /i/ in the third syllable from the end of the word - 85 db. Intensity is relatively weak in the syllable carrying the secondary stress: 79 db.

In the studied word “idealistic” /ˌaıdıə′lıstık/ maximum intensity was recorded in the syllable carrying the primary stress /i/: 83 db. The intensity is 80 db in the syllable carrying the secondary stress. In the words “americanization” /əˌmerıkənaı′zeıʃn/, “great grandfather” /ˌgreıt′grændˌfɑ:ðə/ and “scotch wood cock”/′ sкɒ ʧ ′wʊd к ɒ к/ , the intensity indexes in the syllables carrying primary stress are given in the following order, respectively: 83 db, 84 db. In these words, the intensity is relatively weak in the syllables carrying the secondary stress: 79-80 db. In the English words “onomatopoeia” /ˌɒnəʊˌmætə′pi:ə/, “palatalization” /ˌpælətəlaı′zeıʃn/ and “industrialization” /ınˌdʌstrıəlaı′zeıʃn/, the intensity in the main stressed syllables is reflected in the following parameters: 86-84-85 db. In these words, the intensity is relatively weak in the syllables carrying the secondary stress: 79-80-81 db.

The maximum intensity of the vowel /e/ in the English polysyllabic word “three legged rase” /ˌθ ri: 'leg ı d ˌreız / was recorded in the amount of 88 db. In the word, the maximum weakening of the intensity was recorded in the last syllable - 79 db. It shows that the interval difference of the intensity in the word is 9 db.

In the analyzed words “three colour process” /ˌθri: 'kʌlə prə'ses/ and “peacock butterfly” /'peкɒк 'bʌtəflaı/, the peak of intensity in the vowel /ʌ/ in the initial position is 90 db. In the word /'peкɒк 'bʌtəflaı/, the maximum intensity is 89 db -91 db in the initial syllables. In the words “all fools day” /'ɔ:l 'fu:lz ˌdeı/ , “maid-of all work” /ˌmeıd əv 'ɔ:l ˌwə:к/ and “rag and bone man” /ˌræg ənd 'bəʊn ˌmæn/, the maximum intensity is noted in the initial syllables. The intensity peak of the word /'ɔ:l 'fu:lz ˌdeı / is 92 db, /ˌmeıd əv 'ɔ:l ˌwə:к/ is 91 db, and “rag and bone man” /ˌræg ənd 'bəʊn ˌmæn/ is 88 db.

In the English word “soda water bottle” / 'səudə ˌwɔ:tə 'b ɒ tl/ the maximum intensity was recorded in / ɔ: / - 91 db. “Wash hand basin” / 'wɒʃ hænd ˌbeısn/ the intensity peak in the phoneme /ɔ:/ is 91 db. The intensity peak in the word /'wɒʃ hænd ˌstænd/ is 90 db in the stressed syllable. In the word “waste-paper-basket” /'weıst peıpə ˌba:sкıt/, the maximum intensity peak on the phoneme / ɔ:/ is 88 db. Intensity values in the word “interdenominational” were distributed in the following order: 84-88-87-88-87-78-76 db. The intensity values of the words of “discontinuity” /ˌdısˌkɒntı 'nju:ətı/ and “irreconcilability” /ıˌrekən 'saılə'bılətı/ in the English language were found in the following indicators: 88-87-83-85-78 db, 85-88-87-89-88-82-78-73 db.

In the words “superannuation” /ˌsu:pərˌænju'eıʃn/ and “superficiality” /ˌsu:pəˌfıʃi'ælıtı/ selected from the English language, the maximum intensity was recorded in the stressed syllable: in the word “superannuation” /ˌsu:pərˌænju'eıʃn/, it is 88 db, in the /ei/ diphthong, “superficiality” /ˌsu:pəˌfıʃi'ælıtı/ and the vowel /i/ is 86 db. In the words “individualization” /ˌındıˌviduəlaı'zeıʃn/, “internationalization” /ˌıntəˌnæʃ'nəlaı'zeıʃn/ and “impressionability” /ım'preʃənə'bılətı/, the intensity indicators are distributed in the following order: 83-87-88-89-90-91-88-75 db, 84-88-87-85-88-90-88-75 db, 85-89-88-88-86-80-78 db.

In the analyzed word “hot water bottle” /h ɒ t 'w ɔ: t ə 'b ɒ t l/, the maximum intensity was registered in the / ɔ: / phoneme - 92 db. In the phrase “waste-paper-basket” /weıst 'peıpə 'ba:sкıt/ the maximum intensity is found in the diphthong /ei/ - 87 db. In the word “rural district council” /'r ʊərəl 'dıstrıkt 'kaunsl / the maximum intensity coincides with the diphthong /aı/ - 86 db. The oscillographic analysis of the words “urban district council” /'ə:bən 'dıstrıkt 'kaunsl/ and “ginger beer bottle” /' ʤ ı n ʤ ə bıə 'b ɒ tl/ shows that the maximum intensity is recorded in the parts where the vowels /i/ and /iə/ are realized. 89-90 db.

The maximum intensity of the vowel / ı / in the English word “archbishopric” /ˌa:ʧ'bıʃəprıк/ was recorded - 89 db. The analysis shows that the maximum intensity was recorded in the / ı / vowel in the word “discontinue” /ˌdıskən'tınju:/ - 82 db. In the words “misdoing” /mıs'du:ıŋ / and “misconceive” /mısкən'si:v/, the maximum intensity is recorded in the vowels /u / and /ı /. In the first word, the intensity is 84 db, and in the second word, the intensity is 81 db.

In the analyzed words “revisit” /rı'vızıt/ and “polyphonic” /ˌpɒlı'foʊnık /, the maximum intensity was recorded in the amount of 81 db in the vowel /ı / of the first word, and 86 db in the diphthong / oʊ / of the second word. In the word “polyphonic” /ˌpɒlı'foʊnık/ the intensity of the syllable carrying the secondary stress is 82 db in the vowel /ɒ /. The word “poly semantic” /ˌpɒlısı'mæntık/ in the English language, the intensity is distributed between syllables carrying the secondary and primary stress- in the following ratio: 85-90 db. In the words “semi-automatic” /ˌsemı ɔ:t ə'm æ tık/ and “anti-body” /'æntı ˌbɒdı/, the intensity is 88-85 db in the stressed syllables, respectively. In these words, the intensity is very low in the syllables carrying the secondary stress: 79 db - 76 db.

The maximum intensity in the English words “impartiality” /'ım ˌpɑ:ʃı'æılıtı/ and “impossibility” //ım ˌp ɒ sı 'bılıtı/ is 87-89 db. The intensity is very low in the syllables carrying the secondary stress: 80-82 db. The oscillographic analysis of the words “imperturbablility” /ˌımpəˌtɜ:bə'bılətı/ and “indestructibility” /ˌındıˌstrʌктə'bılətı/ shows that the maximum intensity is recorded in the syllables carrying the primary stress: 91-90-92 db. In these words, the intensity is relatively weak in the syllables carrying the secondary stress: it is 82-83-84 db.

In the words “individuality” /ˌındıˌvıdu'ælətı/ and “individualistic” /ˌındıˌvıduə'lıstık /in the English language, the intensity in the stressed syllables is noted in the following indicators: 89-90 db. On the other hand, the intensity is relatively low in the syllables carrying the secondary stress - 81-82 db.

We would like to point out that in the course of speech, speech sounds have different lengths depending on the time. Prof. Sherba considered the length (time) to be the main component in the sentence (Scherba, 1979). For this reason, the length parameter is more important than the intensity and frequency of the main tone in the phonetic characteristics of speech sounds.

Zinder notes: “The length of the syllable is usually directly dependent on phonetic conditions, more precisely, on phonetic positions. The length of the phonemes is often different in the open and closed syllables. It depends on the acoustic quality of the preceding and following consonants (plosive or constrictive, voiceless or voiced), the number of consonants that come after the vowel, the place of stress (stressed syllable, preceding stress, following

stress, the second), etc., as well as the number of syllables in the words and word combinations. Finally, there is a certain dependence between the length of the vowel and its quality" (Zinder, 1979).

In the English words "garden party" and "characterizing" and "gas-mask" the maximum time length was also recorded in the initial syllables. In the English word "garden party" /'ga:dn 'pɑ:ti/, the maximum time length is specific to the vowel /a:/ - 248 m/sec, in /'k ærıkt ə ra ı z ı ŋ / it is specific to / æ / - 146 m/sec, in the word "gas-mask" /'gæsma:sk/ belongs to the phoneme/ æ / - 330 m/sec. In the analyzed words identifiable" /aı'dentıfaıəbl/, "typewriter" /'taıp'raıtə/ and "three-wheeler" /'θri: 'wi:lə/, the time parameter is distributed in the following order. The maximum time length in the word "identifiable" /aı'dentıfaıəbl/ is 245 m/sec, in the word "typewriter" / 'ta ı p'ra ı t ə / it is 236 m/sec, and in the word "three-wheeler" /'θri: 'wi:lə /, the time length is 189 m/sec. The difference interval between the maximum and minimum time spent is 141-116-93 m/sec in the words "identifiable" /aı'dentıfaıəbl/, "typewriter" / 'ta ı p'ra ı t ə / and "three-wheeler" /θri: wi:lə/.

In the English language complex words such as,"illegitimate" /'ılı'ʤıtəmət/ and "immaterial" / 'ımə'tıərıəl/, the maximum time length is specific to initial syllables. In the word "illegitimate" /'ılı'ʤıtəmət/ it is 122-160 m/sec, and in "immaterial" / 'ımə'tıərıəl/ it is in the following ratio: 100-137 m/sec.

In the analyzed word "major general" /'m eı ʤ ə ' ʤ en ə r ə l/, the maximum time length was observed in the first parts of the components: 198-126 m/sec. In the words selected from the English language "underproduction" /ˌʌndəprə'dʌkʃən/, "overdeveloped"/ˌəʊvə dı'veləpt/, "underpopulated" /ˌʌndə'pɒpjuleıtıd / and "poly syllabically" /ˌpɒlı'sıləbıkəlı / the maximum time length belongs to the initial syllables. It is possible to give the parameters of the time spent on the syllables in the words in the following order: 150-138-98-140-72m/sec, 195-140-97-128-76 m/sec, 192-160-96-130-187-78 m/sec, 135-130-113-165-86-75-68 m/sec.

In the words "justification" /ˌʤʌstıfı'keıʃn/ and "superabundance" /ˌsju:pər ə'bʌndəns/, the maximum time length is recorded in the syllables carrying the primary stress. In the word "justification" /ˌʤʌstıfı'keıʃn/ the diphthong /eı/ has a time length value of 148 m/sec. In the syllables carrying the secondary stress, the time length is 100 m/s (see: oscillogram 24). In the word "superabundance" /ˌsju:pər ə'bʌndəns/, the maximum time length was recorded in the vowel /ʌ/ - 170 m/sec. In the word "sentimentality", the maximum indicator of time length was recorded in /e/ - 142 m/sec. The time length on the syllables carrying the secondary stress is 98 m/sec. In the English word "impossibility" /ım ˌpɒsı'bılətı/, the maximum time length is recorded in the vowel /ı / in the third syllable from the end of the word- 139 m/sec.

The time length on the syllable carrying the secondary stress is 114 m/sec. In the analyzed word "idealistic" /ˌa ı d i ə ′ l ı s t ı ĸ/, the maximum time length was recorded in the amount of 290 m/sec on the /i/ vowel in the stressed syllable. On the other hand, the time length in the syllable carrying the secondary stress is 146 m/sec. In the words "americanization" /əˌmerıĸənaı′zeıʃn/, "great grandfather" /ˌgreıt′grændˌfɑ:ðə/ and "scotch wood cock" /′sĸɒ ʧ ′wʊd ĸ ɒ ĸ/, the time parameters are given in the following order: 146-190-164 m/sec. In these lines, the values of the time parameter in the syllables carrying the secondary stress are as follows: 116-173-115 m/sec.

The values of the time spent on the main stressed syllables in the English words "onomatopoeia" /ˌɒnəʊˌmætə′pi:ə/, "palatalization" /ˌpælətəlaı′zeıʃn/ and "industrialization" /ın ˌdʌstrıəlaı′zeıʃn/ are in the following order: 160-220-196 m/sec. In the analyzed words, the time length in the syllables carrying the secondary stress is as follows: 135-131-92 m/sec.

In the English word "ministeration" /ˌmını′streıʃn/, the maximum time length was recorded in the first and third syllables - 119-129 m/sec. In the word "individualization" /ˌındıˌvıduəlaı′zeıʃn/, the maximum time length was recorded in / ı / - 126 m/sec. The time length of the syllables carrying the secondary stress is 96 m/sec. The time parameter in the words "five finger exercise" /ˌfaıv 'fıŋgə 'eksəsaız/ and "incomprehensibility" /ın ˌkɒmprı ˌhentsə'bılətı/ is distributed in the following order: 302-190-172-164-86-195 m/sec, 86-94-106-76-78-90-78-70 m/sec. The time length in the analyzed words "internationalization" /ˌıntə ˌn æʃənəlaı 'zeıʃn /, and "hot cross bus" /ˌhɒt ˌkrɔ:s 'bʌs/ has the following indicators: 85-80-97-109-185-168-86 m/sec, 230-249-182 m/sec

In the analyzed word "hot water bottle" /h ɒ t 'w ɔ: t ə 'b ɒ t l/, the maximum time interval was recorded at / ɔ: /- 200 m/sec. The maximum length in the word "waste-paper-basket" /'weıst peıpə ˌba:sĸıt/, diphthong /eı/ is 307 m/sec. The maximum time length in the pronunciation of the diphthong /au/ in the word "rural district council" /'rʊərəl 'dıstrıkt 'kaunsl /, "urban district council" /'ə:bən 'dıstrıkt 'kaunsl/ and "ginger beer bottle" /' ʤ ı n ʤ ə bıə 'b ɒ tl/ showed that the maximum time length was recorded in the segments where the vowels / ı / and /ıə/ are realized – 180 m/sec, 193 m/sec.

We would like to note that in the English language, while the number of syllables in the sentences increases, the

time spent on their pronunciation also decreases. In other words, the maximum time is inversely proportional to the number of the syllables. Among the factors affecting the length of speech sounds, Zinder also noted the influence of the number of syllables: "… the time length depends on the phonetic conditions, more precisely, on the phonetic position and also on the number of syllables in the speech (Zinder, 1979).

5. Conclusion

Experimental-acoustc analysis of the materials of the English language helps us to come to the following conclusions:

In the English language, the maximum tone frequency is proportional to the primary stressed syllables: in the English word "impossibility" /ɪmˌpɒsəˈbɪləti/, the main tone frequency is 236 hs for the vowel /ɪ/ in the primary stressed syllable, and 219 hs for the secondary stressed syllable. In the words "onomatopoeia" /ˌɒnəʊˌmætəˈpiːə/, "palatalization" /ˌpælətəlaɪˈzeɪʃn/ and "industrialization" /ɪnˌdʌstrɪəlaɪˈzeɪʃn/, the tone frequency in the main stressed syllables is expressed by the following parameters: 230-210 hs, 240-213 hs, 227-204 hs, 216-199 hs.

In the English language, the maximum tone frequency is recorded in the second syllable in complex abbreviated words. Maximum tone frequency is observed in the stressed syllables.

In English some abbreviations, the maximum tone frequency is recorded in the second syllable: "BBC" /ˌb i: b i: 's i:/ 214-216-170 hs, "CIS" /ˌsi aɪ 'es/ 196-230-170 hs, "UNO" /'ju: ənəʊ/, 214-221- 193 hs.

In the English language, the highest tone frequency was noted in the syllables with the maximum tone frequency. In the English words "pack animal" /p æ k ' æ n ɪ m ə l/ and "handicap" /'hæn d ɪ kæp/, the maximum tone frequency is recorded in the stressed syllable: 315 hs.: 250 hs. In the English words "infinitive" /ɪn'finətiv/ and "abstract" / 'æbstrækt/, the indicators of the maximum tone frequency are 264-184 hs and 274-190 hs.

Maximum intensity parameters such as main tone frequency and length parameters are characteristic of stressed syllables. For example, in the words "Infinitive" / ɪ n'f ɪ n ə t ɪ v / (1) 73: 79 db. and "abstract" /'æb s t r æ k t/ is 79:84 db (see: gr. 3.3).

One of the factors that influences on the length of syllables is the number of the syllables in the word. The results of the experiment show that whenever the number of syllables in a word increases, the time length spent on them decreases. The maximum time spent is on the stressed syllable.

The average time spent on the pronunciation of primary stressed syllables in English compared is much more than the average time spent on the syllable carrying the secondary stress.

Maximum intensity indexes as well as the maximum tone frequency and length parameters are typical for the stressed syllables.

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