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PAUSATION ALGORITHM OF POLITICAL AND PEDAGOGICAL DISCOURSES: A COMPARATIVE PERSPECTIVE

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Abstract: The article highlights the findings of an experimental phonetic study of pausation algorithm of English pedagogical and political discourses from a comparative perspective. The work focuses on pausation as an important temporal element of the specific cognitive perception mechanism. Common and variant features of optimal duration of structural pauses, their localisation, and pausation ratio have been revealed.

Key words: institutional discourse, comparative discourse analysis, discourse prosody, comparative approach, pausal organisation, auditory-acoustic analysis, variant and invariant temporal features.

*Never pause unless you have a reason for it but when you pause, pause as long as you can
(William Somerset Maugham).*

1. Introduction

New developments in the fields of discourse studies and cognitive science have resulted in the evolution of new paradigms in linguistics and shifted its core scientific

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goals from traditional formal-structural studies to socio-cognitive perspective. By interpretation of Lakoff (1993) and Kubryakova (Кубрякова 1994), cognitive linguistics studies language as a cognitive mechanism that plays a role in encoding and transforming information. The model of frame semantics and concept modelling was developed in the works by Fillmore (1982) and Zhabotinskaya (Жаботинская 2012). A socio-cognitive approach to discourse analysis was suggested by van Dijk (2010).

This encouraged the spread of new trends in the study of phonetics, namely new approaches to analysing prosodic characteristics suggested by Kalyta (Калита 2000), Potapova and Potapov (Потапова & Потапов 2000), new strategies in analysing discourse prosodic patterns (Штакина 2006; Bondarenko 2013; Wichmann 2000). In its present stage of development, phonetics is characterised by growing interest in prosodic problems within the framework of complex discourse analysis, the basis of which is interaction of discourse units of different language levels.

Popova (Попова 2015: 297) concludes that language as an abstract sign system is realised through discourses. Consequently, Karasik (Карасик 2004) identifies two main types of discourse: *personal* and *institutional*. He notes that in modern communicative space the following types of institutional discourse are used: *political, diplomatic, administrative, legal, military, pedagogical, religious, mystical, medical, business, advertising, sports, scientific, stage, and mass information* (ibid.). According to van Dijk (2008), institutional discourse is communication within established social institutions of the society. As for varieties of institutional discourse, differences between them are rather arbitrary. Thus, the choice of pedagogical and political discourses as an object of comparative analysis is not random; both discourses belong to the same type, are goal-oriented, and aim at reaching the audience. Institutional discourse is considered in different studies, which focus on various types of communication, distinguished on the basis of sociolinguistic features, including phonetic ones (Петренко 2000; Alexiyevets 2017; Siller 2019). It is generally recognised that institutional discourse uses a certain system of professionally oriented

signs, that is, it has its own sublanguage. Therefore, the study of prosodic organisation in this perspective will be very relevant for both discourse analysis and phonetic studies on the problems of prosodic variability. The comparative study of prosodic variation will make it possible to fully describe and understand the nature of prosodic features of institutional discourse and reflect the specifics of discursive approach more deeply.

Until now, empirical studies in the area of discourse prosody were predominantly concentrated on studying prosody or one of its components in a particular type of discourse, for example, Al-Siyami (2018), Lysychkina (Лисичкіна 2005) analysed advertising discourse, Alexiyevets (2017), Kirkham and Moore (2016) focused on political discourse, Falk (2013) investigated radio discourse, and Serdyuk (Сердюк 2016) paid special attention to military discourse. Nevertheless, comparative studies of prosodic parameters of two or more discourses were almost entirely ignored. On the one hand, phoneticians increasingly claim that discourse structure is reflected by a number of global prosodic parameters or cognitive prosodic universals (Cruttenden 1986; Jasinskaja et al. 2005), but on the other hand, each type of discourse has its own peculiar features. Considering these ideas, first, we want to fill the gap in empirical research comparing two socially important discourses. Secondly, we want to check whether the expectation that there are global prosodic parameters is correct.

"The hierarchical structure of spoken discourse is reflected by a number of prosodic parameters" (Jasinskaja et al. 2005). The prosody manifests itself at different levels (i.e. syllables, words, word combinations, and whole utterances) influencing interpretation of a message in different ways. For example, prosodic information can be used to convey lexical meaning at the word level through variations in stress pattern or lexical tone (Carvalho et al. 2018). Bondarenko (2013), Bradford (1996), Brown (1990), and Roach (2000) argue that prosody is also used to convey useful discourse information such as information structure (e.g., focus, new vs. old information). Carvalho et al. (2018), Kalyta (Калита 2001), Magnier et al. (2014) conclude that

prosody can also be used to change interpretation of an utterance (e.g., irony, disbelief, etc.), and it can reflect the emotional state of the speaker (Stashko 2017).

Prosody is regarded as a macro-system (Bradford 1996; Panasenko 2013; Roach 2000), which includes three aspects: melodic (tone and intonation, in relation with speech melody), temporal (unit durations, pausation, and speech rate), and dynamic (intensity, one of the major correlates of loudness). These prosodic aspects of speech have a variety of communicative functions, most of these closely tied to the fact that they mediate between abstract and time-free mental structures underlying speech utterances and the production and perception of speech developing in real time (Nooteboom 1997). Recent phonetic studies pay special attention to the pragmatic aspect of prosody (Musiienko 2017; Strangert 2006; Taranenko 2017), prosodic emphasis (Лисичкіна 2005; Szczepek 2010), rhythm (Zabuzhanska 2017), and pause features (Александрова 2004; Барьядаева 2016; Falk 2013; Fors 2015; Li-chiung 2007).

Prosody of speech is a sensitive and delicate indicator of rhetorical methods to influence the audience. In other words, the basic principle of modern public speech both in lecture and in political speech is the principle of harmony between an addresser and an addressee. Manifestation of certain influence on the addressee is realised with the help of the whole complex of prosodic means, pauses being a significant expressive component of such (Бишук 2005). In her doctoral dissertation, Fors (2015: 14) defines a pause as follows: "a pause is a silence that occurs during an ongoing conversation, and during a speaker's turn or at a turn change". Pauses play a very important role in speech production, for instance, they have a physiological role during the breathing phase of the speaker and they fulfil a rhythmic and prosodic role in grouping words together and producing them in a particular rate (Demol et al. 2007). According to Zontova (Зонтова 2016: 80):

"As a phenomenon of the linguistic plan, pauses can be regarded as a component of prosody, which allows segmenting speech utterance into discrete units optimum for transferring the meaning of the message. As a phenomenon of the extralinguistic plan, it is phenomenally (i.e. as a phenomenon) related to and dependent on the communication situation. As a phenomenon of the metalinguistic plan,

pausation, and especially its formal component, is not only the key to decoding the meaning of the utterance, but also going beyond the linguistic plan into extralinguistic, which allows the recipient to interpret the incoming extralinguistic information and to correlate it with the linguistic form".

Pauses have multiple functions, they organise oral discourse, reflect its structural-semantic space, serve as cues to discourse boundaries in speech, introduce new discourse topics, and act as cognitive and interactional discourse signals (Li-chiung 2007; Zellner 1994: 46). Works on discourse production increasingly discuss the aspects concerning the cognitive status of pauses (Schilperoord 2002), showing the relation between pauses and cognitive processes in discourse production. Zellner (1994) suggests that as a reflection of cognitive activity a pause is the external manifestation of some of the cognitive processes involved in speech production in that pauses provide extra time for planning and programming the final production. Scholars recognise that pauses are relevant to cognitive processing and are related to effect, style, and lexical and grammatical structure (e.g., Ramanarayanan & Bresch 2009; Schilperoord 2002; Zellner 1994 among others).

Speech pauses are regularly used to demarcate major or minor phrases, and the particular acoustic realisation seems to depend on the relation between the prosodic boundary and its position in the hierarchical constituent structure of the sentence being spoken (Nooteboom 1997; Zellner 1994). Production of speech pauses is to a large extent optional, and depends much on the style of speech and speech tempo (Nooteboom 1997). Pauses are used as expressive elements in a discourse, especially for emphasis or dramatic effect and for building up tension or climax (Magnier et al. 2014).

Thus, the **object** of this paper is pedagogical and political discourses as types of institutional discourse. We **aim** to closely study their pausation algorithm, which is the **subject** of this research, as an important element of discourse temporal organisation from a comparative perspective. The **hypothesis** is as follows: there are both common and variant prosodic features in pausation algorithm of political and pedagogical discourses, consequently, the overall **purpose** of this study is to reveal possible similarities and differences in the pausal arrangement of these types of discourse.

2. Methods and material

This work uses a combination of auditory and acoustic phonetic analysis methods. Nowadays it is generally recognised that both auditory and acoustic techniques have their flaws when used in isolation, a combination of both in an auditory-acoustic approach should ideally be used when carrying out phonetic experiments (Дворжецкая et al. 1991; De Witte 2017). We agree with widely accepted point of view by most phoneticians (Дворжецкая et al. 1991; Калита 2001; Bradford 1996; Brown 1990) that "both approaches are indispensable: the auditory analysis [...] is of equal importance to its acoustic analysis, which the auditory analysis must logically precede" (Rose 2002: 35). The stages of the experiment were based on existing methodological paradigms in experimental phonetics: peculiarities of the English speech intonation system (Захарова 2004; Bradford 1996; Cruttenden 1986), approaches and aspects of experimental phonetic researches (Калита 2001; Цеплитис 1974), principles of acoustic analysis (Бондарко et al. 1991; Бровченко & Волошин 2005). Auditory or perceptual analysis is an integral part of the combined phonetic method used in this research. Despite the development of computer technology, which gives phoneticians-experimentalists extremely wide opportunities, perceptual analysis is still relevant today. To identify the perceived characteristics of the discourses under study several stages of auditory experiments were carried out. In accordance with the recommendations (Дворжецкая et al. 1991: 39), a board of auditors consisting of an odd number of phoneticians ($n=5$) were involved in the experiment to ensure a more correct further statistical analysis. The auditors were highly trained phoneticians who are non-native speakers. Before conducting the audition, the auditors were familiarized with the specific requirements, the relevant procedure of the analysis, issued clear instructions on how to perform tasks. A list of unified system of phonetic diacritics was provided to each participant. In the research we stick to the traditional approach (Зырянова 2016: 95; Nordquist 2020) to mark short pauses by a single bar (|) and very short pauses by a vertical broken bar (|). The medium pauses usually made between sentences are marked by two parallel bars (||). To represent a distinct long pause a triple bar symbol (|||) is used correspondingly as a delimiter. The number of auditions of

experimental material samples was not limited and stated in the instructions. In the auditory analysis, the phoneticians were asked to divide the texts into syntagms, to denote temporal pauses, the duration of temporal pauses, characterise temporal differences of the speech segments as well as to present them graphically.

Acoustic analysis was manipulated through using *PRAAT* and *Speech Analyser: version 3.1* resynthesis techniques. Quantitative and statistical methods performed via special computer software (*Mathcad Prime 2.0* and *Microsoft Excel Office 2019*) were applied to find out whether the differences of the data obtained were statistically significant when compared. The significance of the difference between the percentages was verified by the modified formula for calculating Student's T-Test (Перебийніс 2002: 82-84):

$$t = \frac{|p_1 - p_2|}{Sed \%}$$

The speech corpus of the English lecture and political discourse for the comparative analysis derives from a larger investigation on the role of prosodic features in discourse organisation. The empirical data have been received in authentic phonetic experimental research carried out by the authors. Speech material that has been used is the same as in (Васік 2008; Полюєва 2011) and consisted of a set of 90 lectures from the course "English for academic purposes series" (total recording time is over 12 hours) and political speeches by the Prime Ministers of the United Kingdom and Cabinet Ministers, recorded from the Internet. Individual characteristics of speakers (physical, social, gender) in both discourses were not taken into account. The total duration of the sound of the analysed research material (40 political speeches) is 4 hours.

Thus, the obtained substantiation of the invariant prosodic characteristics can serve as a theoretical and methodological ground for the experimental comparative phonetic study of pausation algorithm of political and pedagogical discourses.

3. Results and discussion

In this paragraph, we will consider the analysis and the interpretation of the results of the undertaken experimental study on common and variant features of pausal organisation in pedagogical and political discourses according to the developed methodological actions.

3.1 *Perceptive analysis*

Breaks in the continuity of speech flow are inevitable – we cannot speak without pausing (Zellner 1994). The simplest way to try to explain the reason for pauses would be to suggest that pauses are produced to inhale, speak for as long as our lung capacity allows, and then pause to inhale again. Pausing to breathe is a physiological necessity, but pauses are also made in speech due to cognitive needs (Fors 2015). A study by Howell and Sackin (2001) further underlines the cognitive aspect of pauses by demonstrating that when speakers are conditioned to avoid silent pauses, they instead increase function word repetitions. Based on this, we can argue that pauses are not only made to breathe, but to gain time to, for example, plan what is going to be said (and when pauses can not be used, we use other strategies to get planning time, such as repeating function words) (Fors 2015).

The important function of pauses, as argued by Oliveira (2002), is that they are very significant in speech perception, because they help the audience to cognitively digest the input. Though pauses perform multiple functions, it is generally accepted that among all the prosodic features available to the speaker for signalling the structure of a text, pauses are one of the most efficient structuring devices (Сердюк 2016; Cruttenden 1986; Oliveira 2002). As mentioned by Viola and Madureira (2008: 721), pauses generally mark the boundaries of intonation groups and coincide, in a general way, with syntactic boundaries, within and between sentences.

Modern linguists (see, for example, Bilá & Džambová 2011; Viola & Madureira 2008 among others) classify pauses from *structural*, *functional*, and *distributional* points of

view. From a *descriptive* point of view, two classifications of pauses are in general use. The first one is a physical and linguistic classification, and the second one is a psychological and psycholinguistic classification (Zellner 1994: 42). The focus of this phonetic experimental research is structural speech pauses.

Thus, in the perceptive analysis the following temporal parameters of the two discourses under study have been compared: *structural pauses, duration of structural pauses, localisation of structural pauses in relation to pause duration*. In accordance with the purpose of the study, a generalised classification of structural pauses, formulated by Petrenko (Петренко 2000), was accepted. The following classification of the types of structural pauses has been accepted: *inter-syntagmatic, intra- syntagmatic, intra-sentence, and discursive*. Although there is very little agreement among researchers concerning the cut-off point for defining a silent pause (Oliveira 2002), duration of silent intervals (Блохина & Потапова 1977: 32-33) was perceived as a perceptual cue of speech pauses by the experts in intonation involved in the experiment.

The results of the study indicate that out of all types of pauses *structural pauses* make up about 90% of all other types of pauses in lecture (see examples below) and 83% in political speech.

→Now | 'let's , turn to the "first of the 'three °topical , issues. || It's the ^question of "raw ma , terial , prices. || "Raw ma'terial , prices. || , LDCs are worried | that in'dustrial , countries are ex , ploiting , them. || Ex^ploiting them | by 'buying 'raw ma , terials from °them at 'low , price. || And then 'sending the 'same , raw ma , terial back to them | in the 'form of manu'factured , goods. || 'But | at a`much , higher , price. || Countries | which pro , duce 'primary co , mmodities | 'like` coffee, | for`example, | or` minerals°like , copper, | would ^love to be , able to , copy the "oil- pro , ducing , countries. || They'd °love to 'triple the , price of their 'primary , products, | but at the 'same , time | 'not , suffer a sig , nificant re , duction in the "quantities de , manded. |||

*Hello! || In 'this ,lecture | we are 'going to ,look at 'what we°mean by ,illness and
'disease. || You might ,think | that 'illness and di'sease are sy, nonymous, | 'that is they
,mean the ,same , thing. || But 'that's "not ,quite, true. || 'Let me ex'plain the, difference.
|| ,Illness | is the ex'perience of 'feeling un, well: | it is the 'feeling of 'ill-, health | that
'often ac"companies di,sease. || Di, ,sease | is a dis'turbance of the ,structure | or
,funcion | of 'part of the, body, | for , instance by ,cancer | or in'fection with
,micro, organisms. || It is ,something that can ,usually be 'measured in ,some , way | or
'looked°down 'under a , microscope. || But "is this ,difference of any im^portance? ||
And if ,so, | why? || 'That's 'what we'll°be con, sidering to,day. |||*

It should be pointed out, however, that the auditors also marked *filled pauses, pauses of hesitation, emotional pauses, psychological pauses, breath pauses*, etc. Since such pauses are not primarily used as a means of signalling the structure in a discourse and have limited incidence in speech (Oliveira 2002), they were removed from further research. The overall results of this parameter in the two types of discourses are suggested in Table 1. Inter-syntagmatic pauses were not subject to investigation in political discourse and pauses planning the discourse and structuring parts of the discourse were not analysed in pedagogical discourse. Therefore, further research studies should be carried out to fill in this gap.

Table 1. Results of structural pauses indication in pedagogical and political discourses¹

type of <i>discourse</i>	type of <i>structural pause</i>			
	inter-syntagmatic	intra-syntagmatic	intra-sentence	discursive
Pedagogical discourse	+	+	+	not studied
Political discourse	not studied	+	+	+

Nevertheless, it should be noted that for pedagogical discourse the auditors recognised the

so-called *narrator's pause* (Берковець 2004: 112) or in some research papers *pre-emphatic pause* (Bilá & Džambová 2011: 22) as a variant speech feature. Pre-emphatic pauses occur before semantically heavy words: new names, proper names, complex terms, digital data, or complex syntaxes, thereby enhancing their status and giving them extra emphasis. An emphasized word may be at the same time identified by a number of prosodic features, e.g., increased volume, slower speech rate, and change in the melody. The pause preceding an emphasized word prepares a perceiver for the most important portion of an utterance. Here are some examples of such pauses in lecture discourse:

Let's 'take the e,xample of |,hyper, tension. ||

The 'first of ,these | is 'what we → call |'Gross'National, Product. ||

In the first example, the lecturer pauses before the word "*hypertension*", which is introduced for the first time and is a specific medical term. Similarly, in the second case "*Gross National Product*" is a keyword highlighted and enhanced by means of a narrator's pause. In both cases, the use of the pause with medium perceptual duration was indicated.

However, the auditors identified *rhetorical pause* a relevant marker of political discourse. Rhetorical pauses serve to highlight and emphasize "the high-key information centre" of the utterance (Brown 1990: 135) to keep and control the attention of the audience and add particular significance to the semantic core. In addition, the functional load of such pauses is to facilitate the perception of the text, enhance emotional engagement (Bacik 2008: 100). Rhetorical hesitations are also used to create certain proximity between the politician and his audience (Duez 1997).

In some cases, rhetorical pauses overlap structural ones. Substitution of the structural pause proper with rhetorical pause is evidenced by longer duration compared to other pauses realised at the same syntactic boundaries in the same text:

1. I have kept / Her Majesty the Queen / fully informed of my intentions, / and I will

continue to serve / as her Prime Minister / until the process has concluded. 2. || It is, || and will always remain, || a matter of deep regret to me / that I have not been able to deliver || Brexit. 3. || It will be for my successor || to seek a way forward that honours / the result of the referendum. (Theresa May's Resignation Speech of May 24, 2009)

Thus, the duration of the pauses separating the phrases in the second and third sentences is much longer (||) than the length of the normal pause generally realised between these units.

Furthermore, rhetorical pauses can be used to reinforce the significance of emotional impact of speech on the audience involved to obtain the effect of a more pronounced rhythmic pattern. For instance:

Our politics | may be under strain, || but there is so much | that is good | about this country. ||| So much | to be proud of. ||| So much | to be optimistic about. ||| I will shortly | leave the job | that it has been the honour | of my life || to hold – ||| the second female Prime Minister || but certainly | not the last. || I do so with no ill will, || but with enormous and enduring gratitude || to have had the opportunity || to serve the country ||| I love. (ibid.).

In this example, pauses create a certain prosodic pattern where short pauses (|) alternate with rhetorical pauses (|||) enhancing the emotional appeal to the audience acting as certain regulators between the addresser and the addressee. Thus, the pauses contribute to the effective transfer of dynamism and expressiveness of political discourse. Pausing, well adjusted to the content of the message, is essential in creating an optimal situation and having a maximal effect on the listener (Strangert 2006).

Most rhetorical pauses are a technique for creating expressiveness. Using a rhetorical pause on the border of syntagmatic division allows the speaker to emphasize the significance of the previous phrase, and the listener to perceive the logic of the


speaker's thoughts and intentions. A rhetorical pause, when it follows a beat after a compulsory intra-pause pause, creates favourable conditions for perception of the text, as it compensates for the lack of a compulsory pause.

It seems that we do not pause haphazardly, but rather we plan where to pause, following certain constraints such as speech rhythm (Szczepek 2010). Regarding the "rhythm of the sentence" factor, we believe that pausing is one of the essential components of the rhythm of a sentence because pausing per se plays a very important role ensuring that a persuasive tone is developed in the speech and the desired affect is created upon the audience (Карпиченкова 1981). In addition, stable correspondence of a form of the pause organisation to semantic segmentation of discourse can be regarded as a typical sign of its integrity, the invariant characteristic of which is gradual pausal correlation of rhythm units. However, our study has not focused on the role of pauses in determining the rhythm of a sentence or its role regarding persuasiveness of speech.

Next, perceptual relative duration of silent intervals as perceptual cues of speech pauses was explored. From the temporal point of view, we differentiated five types of pauses: *very short*, *short*, *medium*, *long*, *very long*. The overall data obtained are summarised in the table below. Table 2 displays distribution of perceptual duration of speech pauses (%). Variant prosodic features hereinafter are given in dark background colour fill and invariant features are suggested in light background colour fill accordingly.

Table 2. Distribution of perceptual duration of pauses in pedagogical and political discourses

type of <i>discourse</i>	<i>Distribution of pauses perceptual duration (%)</i>		
	short pauses; very short pauses	medium pauses	long pauses; very long pauses
Pedagogical discourse	25.9	30.3	43.8
Political discourse	45.2	21.3	33.5


 variant features
 invariant features

The comparative analysis revealed that short pauses (45%) prevail in political

discourse, although the portion of long pauses is also quite significant (33.5%) that "reproduces a certain receptive scheme of perception of this type of discourse, as well as regulates the semantic development of discourse" (Bacik 2008: 98). The share of short pauses in pedagogical discourse is less significant, only 25.9%, medium – 30.3%, and long pauses prevail here (43.8%). Figure 1 shows a histogram of pause distribution more closely.

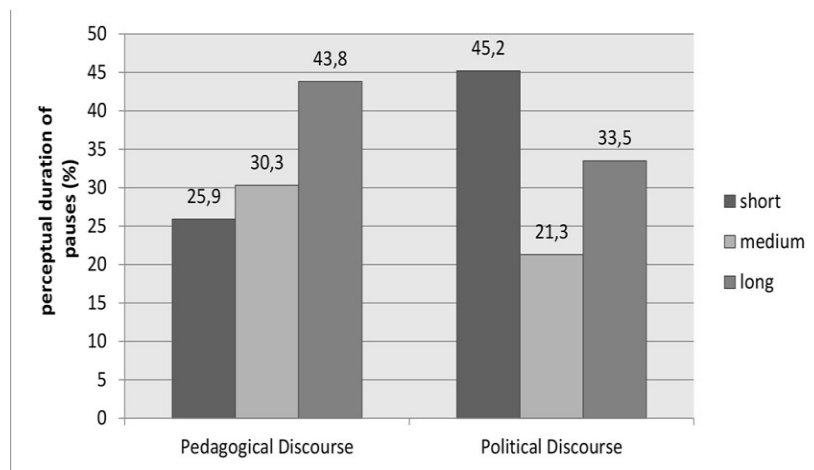


Figure 1. Histogram of distribution of perceptual duration of pauses in pedagogical and political discourses²

We concluded that a distinctive variant feature of political speech is the apparent predominance of short pauses. It is known (see, for example, Фрейдина et al. 2015: 96) that the use of short and very short pauses by politicians, at times in combination with fast speech tempo and peculiar prosodic organisation, creates a certain multiplier effect. What is more, relatively fast speech tempo and the use of short pauses contribute to the fact that politicians speak very confidently, categorically, they have a desire to convince, perhaps even to impose their point of view (ibid.: 97). Thus, a short pause is an extremely effective tool in public speaking. If timed correctly, it can be a short moment to create a long lasting impact (Kukreja 2019). Pedagogical speech, on the contrary, is distinguished by a moderately slow speaking pace, and pausation is mainly attributable to syntactic and logical division of the utterance.

At the next stage of the experiment, correlation between perceptual length of pauses

and their localisation in discourse structures have been analysed and compared. Table 3 below summarises the data obtained for this parameter. As the table shows, the results of the study indicated syntactic localisation of pauses in pedagogical discourse. The duration of pauses primarily reflects the features of the syntactic structure of the text of the lecture or its segments. Thus, pauses of short duration are most often used by lecturers within a clause (intra-syntagmatic – short pauses 74.2%), medium – between clauses of the same sentence (intra-syntagmatic pause – medium pauses 78.6%), long pauses tend to occur at the boundaries of sentences (intra-sentence pause – long pauses 95.3%). The results of this study confirm that pause localisation in pedagogical discourse almost fully complies with logical and syntactic segmentation of the text of a lecture, both in terms of identifying the boundaries of discourse segments and in the use of pauses of adequate duration. Such pausation algorithm, as well as a moderate speech tempo, is a variant characteristic for pedagogical discourse (Фрейдина et al. 2015). The speech flow of a lecturer is smooth compared to the emotional well-paced speech flow of politicians. In general, political discourse is not linked as much to speech organisation and syntactic planning, it is more emphatic and emotional. Through that expressiveness pauses are produced in places not oriented by punctuation marks or by discourse structure, but rather by the emotional qualities (Magnier et al. 2014). As for intra-syntagmatic boundaries almost all types of pauses are used here by politicians, pauses of long duration (29.3%), medium pauses (23%) but short pauses prevail (47.7%). One more variant peculiarity indicated in our study is that no short pauses occur on intra-sentence boundaries in pedagogical lecture discourse whereas 19.7% of short pauses are registered for political discourse for this syntactic localisation. The existing studies include the following explanations of this feature: "a politician, not wanting to be interrupted, can purposely avoid using pauses at the end of a sentence, which gives no opportunity to the interviewer to interrupt him" (Wichmann 2000: 22). There may be one more explanation that is in political speeches, the text is known and learned in advance, and this helps the speaker not to hesitate, not to make long pauses.

Table 3. Correlation of the perceptual duration of pauses and their localizations in political and pedagogical discourses (%)

type of <i>discourse</i>	type of <i>pauses</i>											
	inter-syntagmatic pause			intra-syntagmatic pause			ra-sentence pause			discursive pause		
	very short; short	medium	very long; long	very short; short	medium	very long; long	very short; short	medium	very long; long	very short; short	medium	very long; long
Pedagogical discourse	74.2	24.6	1.2	9.4	78.6	12	---	4.7	95.3	not studied		
Political discourse	not studied			47.7	23	29.3	19.7	16.9	63.4	---	11.1	88.9

Pauses facilitate benefit transfer of information at a lecture because their distribution structures basic discourse semantic units thus performing a more complex communicative task and allowing the recipients to process information easier. Significant pausal saturation can be considered a variant feature of political discourse as a kind of institutional discourse, to which pedagogical discourse also belongs (Попова 2015).

However, perceptual measurements of pausation remain a relative indicator to help the researcher to take a cue in the plane of discourse structure for conducting the next stage of the experiment, namely the acoustic analysis, to account the relationships of perceptually identified pauses to objective properties of spoken discourse.

3.2 Acoustic analysis

According to Zellner (1994), perceived pauses are not really the equivalent of physical pauses. In acoustics a pause is generally considered a stop or break in continuous speech, which is marked by a drop of the sound pressure level to 0 dB at a linear time interval for a period of 10 ms (Блохина & Потапова 1977: 32; Светозарова 1990: 369).

For acoustic analysis, the sound files of the experimental material were digitized in real time in the software, specifically the programs *Praat* and *Speech Analyser 3.1*. The developed perceptual estimates of the auditors served as a basis when computer defining the length of the pause. Furthermore, the pauses were detected and annotated by the auditors into sentences, syntagms, and rhythmic groups. The segmentation of the speech signal was carried out manually in an oscillogram through simultaneous audio and visual examination of the speech signal.

The duration of silent pauses (duration of phonation breaks) was measured in milliseconds (ms) by using the waveform (speech anal tutorial). It is therefore important to note that in the present study we preferred examination of correlation of perceived pauses with their acoustic properties to automatic pause detection methods. However, the subjective perception of pauses does not always correlate with acoustic silences (Hansson 1998: 41) since listeners may be relying on other cues, such as inserted vowels (fillers), preboundary lengthening, specific F0-patterns, and drops in intensity (Strangert 1993). Some significant examples illustrating that perceived pauses are not really the equivalent of physical pauses are provided below (see Fig. 2 and 3).

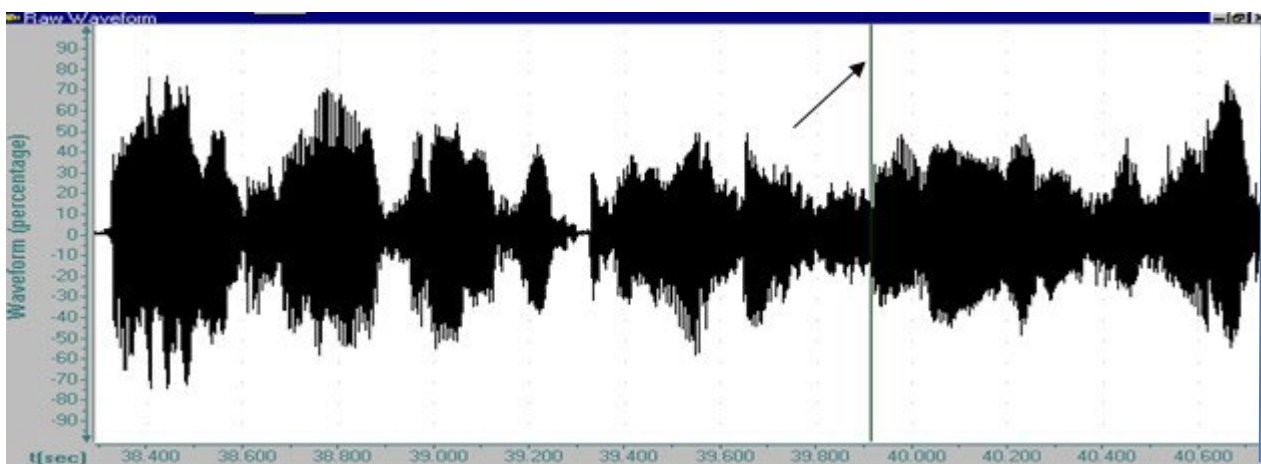


Figure 2. The oscillogram of the phrase "*Microeconomic concepts, on the other hand, [because they are of interest only to the particular group they deal with are of less public interest]*" (Pedagogical discourse)

The cursor indicates the absence of break in phonation after the word "concepts" (Fig. 2). The perceptual impression of a pause in the auditory analysis is due to the

sharp drop in the F0 and the intensity in the specified segment, as can be seen from the waveform and pitch track (Fig. 3) of the same fragment of speech.

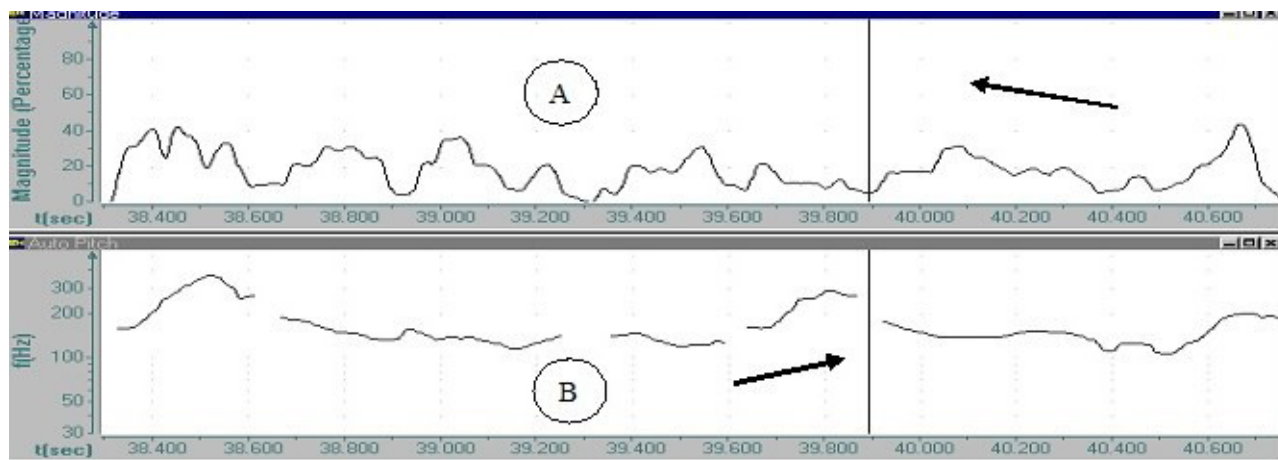


Figure 3. Waveform (A) and pitch track (F0 contour in Hz) (B) of the phrase "*Microeconomic concepts, on the other hand, [because they are of interest only to the particular group they deal with are of less public interest]*". (Pedagogical discourse)

Thus, the results of the acoustic analysis showed that for the experimental corpus two types of pauses can be distinguished:

- *temporal* (silent, absolute, physical pauses) – pauses with a phonation break;
- *non-temporal* (quasi-pauses, filled pauses) – pauses without a break in phonation.

Non-temporal pauses are characterised by low degree of perceptual identification, their number in the analysed fragments is insignificant. For both pedagogical and political discourses, they account for a small portion (~7%) of the overall number of structural pauses detected. This type of pauses was identified only perceptually, and in the acoustic analysis was not taken into account. Physical analysis of non-temporal pauses is increasingly complex owing to the fact that duration is still the only available pause indicator (Zellner 1994).

Analysing this temporal prosodic parameter, we also recorded *physical pauses* (*breathing pauses*), *logical pauses*, *hesitation pauses* (*filled, unfilled*), rarely *emphatic*. However, these types of pauses were not subject to careful analysis. The research focus was on duration of structural pauses in the two types of discourses.

Therefore, silent pauses made up a larger group. Their duration on inter-syntagmatic, intra-syntagmatic, and intra-sentence joints is shown in Table 4. For structural pauses both the range of the value of duration and the mean value were determined. The software allowed for measurements in tenths of a thousand of a second. However, since a large database of pauses was analysed, it was considered reasonable to round off measurements to the nearest ten in milliseconds.

Table 4. Duration range and mean duration of structural pauses in pedagogical and political discourses (ms)

type of discourse	Duration of inter-syntagmatic pauses (t_i)	Mean duration of inter-syntagmatic pauses	Duration of intra-syntagmatic pauses (t_i)	Mean duration of intra-syntagmatic pauses	Duration of intra-sentence pauses (t_i)	Mean duration of intra-sentence pauses	Duration of discursive pauses (t_i)	Mean duration of discursive pauses
Pedagogical discourse	50... 560	200	110... 900	600	600... 1740	1 350	not studied	not studied
Political discourse	not studied	not studied	220... 500	not studied	520... 800	not studied	>1 200	not studied

Figure 4 depicts a typical duration of an intra-sentence pause in pedagogical discourse. In the oscillogram, the temporal pause corresponds to a silence of 1 390 ms. Identification of the silent pause was made by *Speech Analyser 3.1*.

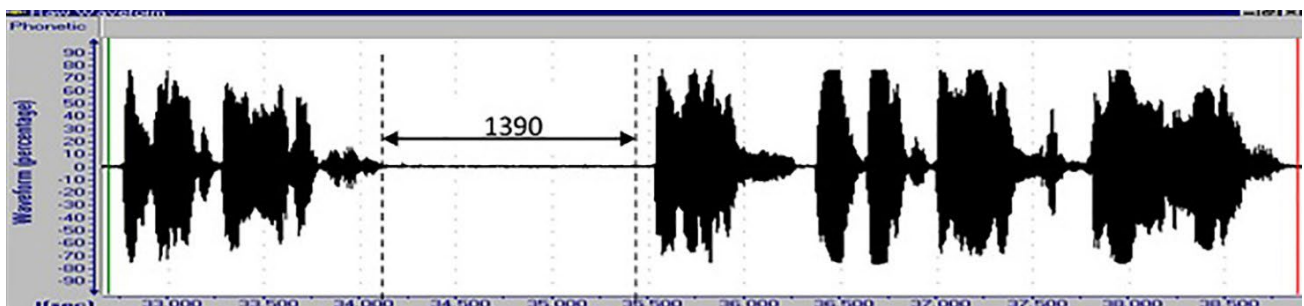


Figure 4. The oscillogram of the sentences "Let me explain the difference. || *Illness is the experience of feeling unwell*" (Pedagogical discourse)

The comparative perceptual and acoustic analyses of temporal organisation of speech has revealed that duration of most of pauses generally exceeds the established norms. Very long pauses (>1 200 ms) make up 17.4% of all types of pauses in political speech, which is another of its variant features. The more active use of *long* and *very long* pauses is observed, in particular, in the final part, which makes the concluding point of the discourse. Such usage of pauses highlights the intense semantic and structural development of the discourse. For instance (final part of political discourse):

It is important, however, |2 460| that those engaged in terrorism realise |3 783| that our determination |750| to defend our values |600| and our way of life |3 397| is greater |1 988| than their determination |470| to cause death and destruction |228| to innocent people |1 340| in a desire to impose extremism on the world |4 515|. Whatever they do, |1 478| it is our determination |1 320| that they will never succeed in destroying |588| what we hold dear in this country |1 905| and in other civilized nations throughout the world.

The example above represents absolute duration values of the pauses in milliseconds (ms) illustrating the peculiarities of the pausal organisation of the final part in political discourse. As is shown, it is characterised by wide use (30.7%) of *very long pauses* (>1 200 ms). In eight cases out of nine, this type of pause is used as an intra-sentence pause, whereas the duration norm of this type pause is 200-500 ms. It gives prominence to its most essential final parts and is evidence of their rhetorical nature. The greatest influence is achieved by double framing of dominant syntagms (2, 6, 10, 12) with rhetorical pauses, which results in special emotionality of the final part, allows the recipient to psychologically "read" the message, prepare for perception of high-key information. In this example, the speaker highlights the opposition of "*peaceful coexistence*" and "*the cruelty of terrorism*" and rhetorical pauses help clearly express the ideological position – dominance of good over evil.

Rhetorical pauses can break the closest syntactic links, for example, between an article

and a noun: *a || report, the || leaders*, between a preposition and a noun: *with ||| the victims*, between parts of the analytical verb form: *it is || designed*.

In addition, rhetorical pauses amplify emotional impact of the utterance on the audience by acting as certain regulators between the addresser and the addressee. For example, if the duration of a pause exceeds similar average pauses of segmentation of the largest units of the oral discourse, the listener may perceive it as a signal of intentional or unintentional interruption of communication, which is, as noted by Zontova (Зонтова 2016), a very significant factor in distant communication.

It is therefore important to consider *absolute length vs perceptual relative length*. The perceptual correlate of the temporal characteristics of speech is the subjective relative duration (Fors 2015). The analysis compared correlation of perceived pauses with acoustic properties, absolute values of duration with their subjective perceptual estimates. Thus, for the pedagogical discourse the mean value of the *short pauses* according to their physical duration is within 100-300 ms, whereas in political discourse they constituted a larger range of 220-500 ms. This type of structural pause is characterised by the lowest degree of perceptual recognition, and our study was no exception. Acoustic analysis of duration showed that the sound interruption with physical duration of up to 100 ms, which was marked on the oscillogram, with some exceptions, was not detected by the auditors.

Medium pauses, marked, as a rule, by most auditors and characterised by a relatively high degree of perceptual identification, have duration ranging from 300 to 600 ms. Medium pauses again proved to be longer in political discourse – from 520 to 800 ms. During the experiment, it was possible to determine physical duration of *long pauses* in lecture discourse as manifested through perception. The average pause duration in pedagogical discourse is equal to > 600 ms vs political discourse 820-1 200 ms.

Thus, five types of pauses have been considered in analysing the discourses: *very short, short, medium, long, very long*. The summary of this comparative overall analysis of

temporal pauses absolute duration (ms) in relevance to their perceptual estimates is suggested in Table 5.

Table 5. The range of length of temporal pauses in relevance to their perceptual estimates (ms)

temporal <i>pauses</i>	Pedagogical discourse	Political discourse
<i>very short</i>	not studied	< 200 ms
<i>short</i>	100-300 ms	220-500 ms
<i>medium</i>	300-600 ms	520-800 ms
<i>long</i>	>600 ms	820-1 200 ms
<i>very long</i>	not studied	>1 200 ms

The results in Table 5 indicate one more variant feature of political discourse, significant increase of total pause time in political discourse in contrast to pedagogical discourse. This discrepancy is observed not only in terms of duration of pauses in pedagogical lecture discourse but also in deviation from the normative indicators in English of average duration of structural pauses (see, for instance, Bilá & Džambová 2011: 23).

Another parameter, which has been taken into account in the acoustic analysis, is *pausation ratio* (K_p). General tendency to increase pausation in political discourse is confirmed by the results of estimations of pausation ratio. The coefficient of pausation was calculated by using the following formula:

$$K_p = \frac{t\sum 1}{t\sum 2},$$

where $t\sum 1$ – the total length of the sounding text with pauses;
 $t\sum 2$ – the total length of the sounding text excluding pauses.

Without pausing this coefficient is equal to 1. The more pauses are in a text, the higher the coefficient increases (Дворжецкая et al. 1991: 66).

Based on the study of the temporal component, we determined absolute duration of discourse segments and duration of the sound of the phonation segment without pauses to determine the pausation ratio. Thus, calculated for each political speech of the investigated material with an average value, this coefficient is equal to 1.6. For pedagogical discourse, this indicator made 1.27 that is significantly lower (see Fig. 5).

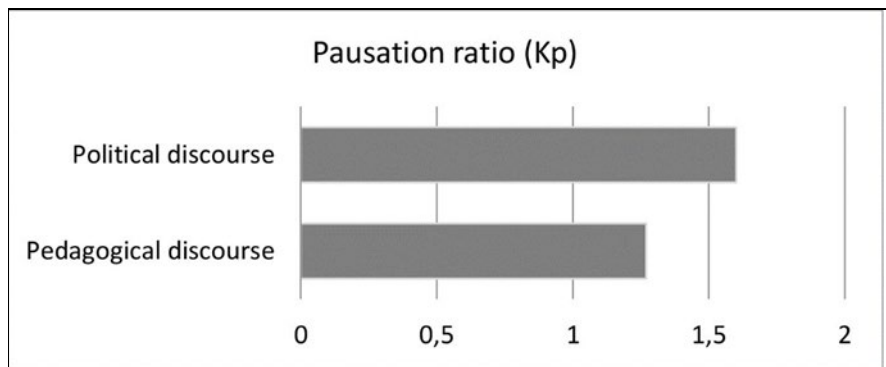


Figure 5. Bar chart of pausation ratio in pedagogical and political discourses

Thus, the measurements of pausation ratio prove that political discourse is characterised by a significantly higher degree of pausing compared to pedagogical speech.

4. Conclusion

The results of the research presented in the article demonstrate some peculiarities of pausal organisation of English pedagogical and political discourses conditioned by integration of prosodic cues and semantic discourse structure. The comparison of the pausation algorithms supports our main research hypothesis therefore showing variable and invariable temporal structures. It has been found out that the peculiarities of pausal organisation of pedagogical and political discourses are predetermined by their communicative pragmatic dominant and genre peculiarities creating adequate cognitive strategies for these types of discourses.

The perceptive and acoustic analyses have proved that point of view, making it possible to conclude, that a great number of pauses contribute to the effective transfer of dynamism and expressiveness of pedagogical and political discourse. Pause

distribution and duration are essential in natural discourse processing and indicate not just physiological but also cognitive origins of pauses that result from planning and organising units of discourse structure.

Furthermore, the invariant specifics of pausation in political and pedagogical discourses shows that with the increasing rank of the unit, duration of a pause regulating the process of delimitating discourse segment structure increases. In pedagogical discourse, pauses ordinarily occur syntactically and their duration is linked to speech organisation though temporal segmentation is not really equivalent to the syntactic structure of utterances in political discourse.

We concluded that a distinctive variant feature of political speech is apparent predominance of short pauses. The comparative perceptual and acoustic analyses of temporal organisation of political speech has revealed that duration of most pauses exceeds the established norms. Such usage of pauses highlights intense semantic and structural development of the discourse. Thus, our results clearly indicate significant increase of total pause time in political discourse in contrast to pedagogical discourse. This discrepancy is observed not only in terms of duration of pauses in lecture but also in deviation from the normative indicators in English of the average duration of structural pauses. General tendency to increase of pausation in political discourse is confirmed by the results of the estimations of pausation ratio. Thus, considerable pausal saturation can be considered a characteristic feature of political discourse as a kind of institutional discourse, to which pedagogical discourse also belongs.

Studying the role of other prosodic parameters of the two discourses from a comparative perspective offers significant prospects for further research. It would also be of particular scientific interest to apply this method to other discourses or even different languages with homogeneous data and comparable speech materials.

Notes

1. Tables 1-5 are by Yuliia Polieieva and Yuliia Vasik. The original tables presented in the paper are an integral part of the research, summarising the results on the basis of authentic empirical data obtained by the authors.
2. Figures 1-2 are by Yuliia Polieieva and Yuliia Vasik. The original figures of the paper illustrate the findings of the undertaken research.

List of used phonetic symbols

dB – decibels

Kp – pausation ratio

ms – milliseconds

| – inter-syntagmatic pause (short pause)

|| – intra-syntagmatic pause (medium pause)

||| – intra-sentence pause (long pause)

— – rhetorical or pre-emphatic pause

'**m** – main stress

"**m** – emphatic stress

,**m** – secondary stress

°**m** – partially stressed syllable

˘**m** – the Low Fall

`**m** – the High Fall

,**m** – the Low Rise

´**m** – the High Rise

˘**m** – the Fall-Rise

^**m** – the Rise-Fall

ˉ**m** – high pre-head

→ **m** – level tone

↑**m** – Accidental/Special Rise

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Résumé

The paper highlights the results of the investigation into the pausation algorithm of political and pedagogical discourses from a comparative perspective. The study is integrated analysis of examples of political and pedagogical discourses as socially significant types of institutional discourse. Considering the prosodic organisation of the discourses under examination, this research provides a brief review of theoretical material in the field of experimental phonetic studies, discourse prosody, as well as discourse studies. The work focuses on pausation algorithm as an important element of discourse temporal organisation in comparative context. It has been found out that the specific character of pausal organisation of English pedagogical and political discourse is predetermined by their dominant pragmatic communicative and genre peculiarities creating an adequate cognitive strategy of these types of discourse. The comparative perceptual and acoustic analyses of temporal arrangement of speech have revealed that

a distinctive feature of political discourse is apparent predominance of short pauses. In pedagogical discourse pauses ordinarily occur syntactically and their duration is linked to speech organisation. Another variant feature discovered in our study is that no short pauses occur on intra-sentence boundaries in lectures whereas they are registered for political speeches. The outcome of the acoustic analysis verified a significant increase of total pause time in political discourse in contrast to pedagogical discourse. This discrepancy is observed not only in terms of duration of pauses in lecture but also in deviation from the normative indicators in English of the average duration of structural pauses.

Key words: institutional discourse, comparative discourse analysis, discourse prosody, comparative approach, pausal organisation, auditory-acoustic analysis, variant and invariant temporal features.

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