PROSODIC MEANS OF SPEECH INFLUENCE REALIZATION: AUDITORY ANALYSIS

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Abstract. The article offers the results of the experimental phonetics research on the role of intonation in speech influence realization in the video lecture as a main massive open online courses material. This methodology is elaborated according to the proven techniques in contemporary phonetics and combines the use of auditory analysis, methods of quantitative data and linguistic analysis, methods of semantic differential and questionnaire. The goal of the experiment was to prove the hypothesis about the role of prosodic organization and components of the tutors' intonation in video lectures in better supporting students' attention, capturing the interest to the subject, facilitating understanding, which help in realization of speech influence in scholarly discourse, thus making the communication and learning more efficient, productive and successful. As a result of the experiment, the intonation parameters used in the video lecture and contributory for students' perception have been established. The paper gives brief insights into such notions as speech influence, scholarly discourse and an e-lecture as a genre of modern scholarly discourse.

Keywords: experimental phonetics, research methodology, speech influence, video lecture, English scholarly discourse, intonation, prosody.

Томахів Марта. Просодичні засоби реалізації мовленнєвого впливу: аудитивний аналіз.

Анотація. У статті проаналізовані отримані результати проведення експериментально-фонетичного дослідження інтонаційних засобів реалізації мовленнєвого впливу на прикладі відеолекції як нового жанру сучасного англомовного наукового дискурсу. Мета експерименту полягала у підтвердженні гіпотези про те, що просодична організація висловлень та компоненти інтонації, притаманні просодії усного мовлення викладачів відеолекцій, сприяють кращому сприйняттю студентами матеріалу викладу, утриманню їхньої уваги, а також опосередковують глибше розуміння предмета, під чим загалом ми розуміємо здійснення мовленнєвого впливу. Експериментально-фонетичне дослідження просодії відеолекції проводиться згідно розроблених у сучасній фонетиці методів експерименту, застосовуючи аудитивний та акустичний методи аналізу, а також використання методів кількісної та лінгвістичної обробки даних, порівняльного методу, анкетування та методу семантичного диференціала. У результаті експерименту визначено ті просодичні параметри, які сприяють здійсненню мовленнєвого впливу та є найоптимальнішими для сприйняття інформації студентами.

Ключові слова: експериментально-фонетичне дослідження, мовленнєвий вплив, відеолекція, англомовний науковий дискурс, інтонація, просодія.

1. Introduction

Plenty of contemporary linguistic research is conducted in the light of cognitive (Selivanova, 2012:223), discursive and energetic (Kalyta, 2016) approaches, for many scientists have a great interest in particularly cognitive processes which mediate our communication. A significant number of studies are dedicated to the speech influence realization by the speaker within different kinds of discourse and on different types of audience. Under the conditions of wide spread and popularity of online education, a particular attention should be paid to a new genre of scientific discourse, a video lecture (Kasparinskyi & Polianskaia, 2013; Tomakhiv, 2016:80). In terms of our research, a video lecture is defined as a lecture delivered through digital technology either synchronously (online) or asynchronously (on demand) (Demetriadis, Pombortsis, 2007). Video lecture plays an important role in the process of scientific communication being an active and dynamic genre of scholarly discourse and owing a number of peculiar features such as interactivity, multimodality, multidimensionality, combination of the linguistic and paralinguistic parameters and completely performs its communicative functions, taking into account a specific anonymous virtual targeted learner. Scientists argue (Antoshyntseva, 2011:46; Trench) that the Internet learning allows increasing the level of cognitive activity, individualizing the process of education, taking over the stereotypic and traditional approach to the interaction between a teacher and a student, thus forming a new type of a learner. This addressee is virtual and anonymous, distant in time and space, but active, motivated, targeted and determined at the same time. The tutor's job becomes more complicated as they cannot timely trace the student's reaction, evaluate previous experience, attitudes, emotions and immediate feedback unlike the lecturer dealing with the real audience.

The mechanism of the speech perception and decoding is a complicated and multichannel process which entails the coordinating between both brain hemispheres. Taking into account results of the scientific psycholinguistic experiments (Sedov, 2007:118), the perception of the speech starts with the identification of the words in the flow of discourse based on the phonematic (phonological) ear which allows a recipient to distinguish and attribute sounds in relation to the sound models − phonemes. Further procession is based on the lexical and grammatical relations within the discourse, and the correlation between the intuitive perception of meaning and reality based on the means of intonation in particular and the context of communication. Thus, the prosody of the speech plays a primary role of speech perception as every utterance conveys the emotional and pragmatic potential (Kalyta, 2007). Under the conditions when the teacher does not see their audience which makes it necessary to exploit additional means of speech influence (prosodic means in particular) effectively to support the attention of the learners.

The experimental phonetics research on the prosodic structure of the video lecture has been conducted in order to test out the hypothesis about the role that

intonation components play in speech influence realization in English scholarly discourse on the examples of video-lectures as a main course material of massive open online courses.

In the context of the paper, by speech influence we understand the conviction of the learner in the adequacy of the learning material, supporting students' attention, capturing the interest to the subject, facilitating understanding. The hypothesis we put forward concerns the role of prosodic organization of the tutor's intonation for successful speech influence realization in a video lecture in making this type of scientific communication between the tutor of a digital lecture and a virtual learner more efficient and productive. Moreover, the hypothesis tests out the role of prosodic components in better supporting students' attention, capturing the interest to the subject, facilitating understanding and overall realization of speech influence via prosodic means of the video lecture.

2. Methods

To support this hypothesis, we use the experimental phonetic research methodology elaborated according to the proven techniques in contemporary phonetics and which combines the use of subjective (auditory), objective (acoustic) methods (Valihura, 2008), methods of quantitative data and linguistic analysis (Rubchak, 2015), method of semantic differential (Osgood et al., 1957; Peer et al., 2012), questionnaire and comparative method (Padalka, 2015).

The auditory analysis has been conducted by two stages. The first stage involved two groups of informants. The first group comprised five native British English speaking auditors who have been listening to the corpus of the material consisting of video lectures in order to complete the following tasks: 1) to identify the authenticity of the video lectures' sounding and the pronunciation of the speakers in accordance with the orthoepic British English; 2) to distribute the video lectures under analysis according to their subgenre variety (e-lecture-presentation, e-lecture-instruction, e-lecture-interview, multimodal e-lecture); 3) to define the level of emotional potential of the video lecture (high, middle and low levels). As the result, from the whole corpus of the material, we have received the fragments of the video lectures consolidated into four blocks according to their subgenre varieties: e-lecture-presentation, e-lecture-instruction, e-lecture-interview, multimodal e-lecture (Tomakhiv, 2016:88).

In line with our assumptions, prepared speech in the video lecture differs from the piece of the video lecture that may be recorded by the native speaker. It is appropriate to use comparison as one of discourse analysis strategies which enables defining the specific character of the intonation means by the tutor in the e-lecture and the piece of text recorded by the speaker. Four native speakers were invited to record the fragments according to the texts of the video lectures received as a result of the first stage of the auditory analysis. The tutors in the e-lecture implying exact

communicative intention, organize their speech using certain parameters of prosodic means while the reader is directed mainly by the syntactic organization of the written text, taking into account punctuation marks. As a result, we have received a pair of texts – the original fragment of the video lecture and the recorded piece.

At this stage, 120 participants who comprised the second group of informants, were involved in the experiment. Among them 17.5 % of native speakers and 82.5 % of those who speak English as a second language at B2 level of English from 23 countries aged 18–59 and who potentially may be interested to use massive open online courses as a learning platform. The participants were listening to the pairs of the original video lectures and fragments recorded by native speakers in order to evaluate their personal impression from each of the fragments. At this stage, respondents were to choose one of the pair which was more favourable for comprehension and indicate the parameters of intonation which contributed to their better understanding. The method of semantic differential (Osgood et al., 1957; Padalka, 2015) has been used to evaluate the personal impression about the video lectures. With the help of this seven-point rating scale (-3, -2, -1, 0, +1, +2, +3) the participants were able to measure the stimulus produced by the video lecture. The bipolar scales of the antonymic adjectives on the basis of *Evaluation, Potency, Activity* factor were designed to receive the personal estimation of the students according to the following factors: 1) *Evaluation* factor, which enables to get general, perceptive and intellectual evaluation of the video lecture (scales of such pairs of adjectives as 'natural-unnatural', 'impressive-unimpressive', 'pleasant-unpleasant', 'polite-impolite', 'articulated-unarticulated'); 2) *Potency* factor to estimate physical and emotional characteristics with the help of such pairs of antonymic adjectives as 'confident-insecure', 'persuasive-unpersuasive', 'superficial – thought-provoking', 'intensive-superficial', 'passionate-emotionless'); 3) *Activity* factor which implies getting dynamic characteristics ('aimless-determined', 'slow-fast', 'nervous-calm', 'calming-stimulating', 'monotonous-lively' pairs of adjectives have been used).

Having received data on the impression about the video lectures as to the three factors according to the scales, the level of the speech influence realization may be calculated. The closer indices are to the positive poles of the scale, the stronger is the pragmatic influence on the listeners as to the factors of Evaluation, Activity and Potency. Proceeding the experiment further with the help of questionnaire participants were to choose those parameters which helped, according to them, in better comprehension.

At the second stage of the auditory analysis, the experienced phoneticians took part in the experiment. Their task was to establish the peculiarities of the prosodic organization of the utterances of different subgenres of the video lecture as well as to correlate the results of their expertise with the results of the first stage of the auditory analysis and to select the fragments for further acoustic analysis.

3. Results and Discussion

The results of the experiment have shown that the indices of the original video lecture evaluation by the respondents are higher than the indices got from the recorded fragment. Table 1 below shows the overall results (number of respondents is measured by per cent, OF stands for 'original fragment' of the video lecture, RF stands for 'recorded fragment' of the video lecture).

Table 1

Evaluation results of the original and recorded fragments of the video lecture according to the bipolar scales

Measure Adjective	OF (%)	RF (%)	Measure Adjective	OF (%)	RF (%)		OF (%)	RF (%)
Natural	78.3	56.6	Unnatural	13.3	33.3	Neutral	8.3	10.0
Determined	82.5	49.1	Aimless	8.3	39.1	Neutral	9.1	11.6
Impressive	75.8	38.3	Unimpressive	9.1	48.3	Neutral	15.0	13.3
Fast	55	55.8	Slow	25	28.3	Neutral	20.0	15.8
Pleasant	86.6	55	Unpleasant	6.6	26.6	Neutral	6.6	18.3
Confident	87.5	58.3	Insecure	3.3	25.8	Neutral	9.1	15.8
Calm	70.8	66.6	Nervous	16.6	22.5	Neutral	12.5	10.8
Persuasive	80,8	45	Unpersuasive	10	44.1	Neutral	9.1	10.8
Thought-provoking	61.6	35	Superficial	16.6	42.5	Neutral	21.6	22.5
Polite	85	74.1	Impolite	1.6	10.8	Neutral	13.3	15.0
Stimulating	67.5	36.6	Calming	21.6	50	Neutral	10.8	13.3
Articulated	88.3	59.1	Unarticulated	4.1	28.3	Neutral	7.5	12.5
Intensive	75	40.8	Superficial	11.6	44.1	Neutral	13.3	15.0
Passionate	73.3	37.5	Emotionless	1	49.1	Neutral	11.6	13.3
Lively	70	43.3	Monotonous	18.3	47.5	Neutral	11.6	9.1

The results of the informative auditory experiment reveal that the original video lecture has more pragmatic potential than the fragments recorded by speakers as to the three factors of *Evaluation, Activity* and *Potency*. For instance, 82.5 % of respondents evaluated the original fragments as determined, while only 49.19 % evaluated a recorded fragment as such; for 75.83 % of informants the original e-lecture seemed to be impressive, while only 38.33 % of participants describes the recorded fragments like that and etc. In conclusion, 67.17 % preferred the original fragment to the recorded one.

The questionnaire has been designed in order to define intonation parameters which dominated in the discourse of the video lectures and contributed to speech influence realization according to the listeners. Based on their impressions about the video lecture, participants were asked to choose the preferred fragment of the video lecture and justify their choice by indicating the parameters which contributed to better comprehension. Participants were asked to evaluate the type of stress, rhythm, loudness, tempo, pauses, terminal tones and the level of emotional potential. Table 2

below shows the overall data obtained from the questionnaire results according to the four subgenres of the video lecture.

Table 2

The perception of the prosodic parameters of the e-lecture utterance of different types

Prosodic Parameters		Type of the utterance							
		e-lecture presentation		e-lecture instruction		e-lecture interview		multimodal e-lecture	
		OF (%)	RF (%)	OF (%)	RF (%)	OF (%)	RF (%)	OF (%)	RF (%)
Stress	Logical	78.57	62.5	86.96	71.43	61.9	88.89	64.00	80.00
	Emphatic	21.43	37.5	13.04	28.57	38.1	11.11	36.00	20.00
Rhythm	Simple	23.31	31.25	26.1	28.56	9.52	77.78	20.00	80.00
	Complex	43.29	25	56.55	28.56	33.32	11.11	32.00	20.00
	Compound	33.40	43.57	17.35	42.86	57.16	11.11	48.00	–
Loudness	Low	–	–	–	–	9.52	–	–	24.00
	Reduced	14.28	12.5	17.4	42.86	4.76	11.11	12.00	24.00
	Moderate	57.12	56.25	56.55	57.14	42.84	77.78	48.00	52.00
	Increased	21.42	18.75	17.4	–	33.32	11.11	28.00	–
	High	7.14	6.25	8.65	–	9.52	–	12.00	–
Tempo	Rapid	–	6.25	–	–	4.76	–	4.00	–
	Accelerated	7.14	6.25	8.7	14.29	28.57	11.11	36.00	–
	Moderate	71.43	75.00	73.91	85.71	57.14	55.56	48.00	60.00
	Slowed down	14.29	6.25	13.04	–	9.52	33.33	12.00	20.00
	Slow	7.14	6.25	4.35	–	–	–	–	20.00
Pauses	Short	64.29	100	56.52	85.71	90.48	55.56	60.00	80.00
	Medium	35.71	–	43.48	14.29	9.52	33.33	36.00	20.00
	Long	–	–	–	–	–	11.11	4.00	–
Terminal tone	Flat	7.14	25.00	26.09	42.86	4.76	44.44	8.00	60.00
	Rise	21.43	18.75	8.7	14.29	19.05	11.11	8.00	–
	Fall	7.14	6.25	4.35	–	23.81	11.11	–	20.00
	Fall-rise	14.29	12.5	13.04	14.29	4.76	22.22	12.00	20.00
	Rise-fall	14.29	12.5	34.78	–	–	11.11	12.00	–
	Rise-fall-rise	35.71	25.00	13.04	28.57	47.62	–	60.00	–

At the final part of the questionnaire, respondents were asked to give the overall impression about the original video lecture as a learning resource. 63.32 % of participants answered that the material presented in the e-lecture was interesting and

informative. 73.35 % of respondents agreed that they can remember the main ideas presented in the e-lecture after having listened to it. 69.97 % of potential students answered that the speaker was delivering information in a friendly and intelligible manner. 55 % expressed their opinion that they can reproduce the main ideas presented in the e-lecture after having listened to it. The e-lecture was interesting to 44.17 % of the respondents and they were attentive during it. 35.82 % of participants found it was motivating enough to get me interested in further learning.

4. Discussion

Having analyzed the questionnaire, we may assume that such prosodic parameters as complex and combined rhythm, moderate loudness with increasing or decreasing on some of the segments, moderate tempo, interchange of short and long pauses, alteration of falling and rising terminal tones contribute to comprehension of the material, capturing the attention and interest during the lecture, better remembering of the material which overall affirms these parameters as the most optimal for speech influence realization.

It is worth to mention that e-lecture-interview and multi-modal e-lecture were reported to be better for the comprehension due to their interactive character, the level of emotional potential, while e-lecture-presentation and e-lecture-instruction were classified as one subgenre.

The results of the second stage of the auditory analysis showed that the invariant characteristics of the utterances in the video lecture are the following: medium or long syntagmas, predominance of the logical phrasal stress, moderate loudness with decreasing or increasing on the informatively meaningful segments of the utterance; melodic contour configuration of mid level gradually descending stepping scale, gradually descending falling scale and broken descending stepping scale finishing with simple rising or falling tones; reoccurrence of the medium or short pauses within the utterance and between them; medium tonal range, complex of combined rhythm; moderate tempo. Based on the analysis conducted by the experienced phoneticians in comparison to the results of the perceptive analysis conducted by the informants, the abovementioned prosodic parameters contribute to the speech influence realization in the video lecture and are the most optimal for the listeners' comprehension.

5. Conclusions

The results of the auditory analysis as a part of the experimental phonetics research reveal that the prosodic level of speech plays an important role in speech influence realization with the help of particular intonation parameters. Taking into account that the results have been obtained with the help of subjective methods, the fragments of the video lecture for the further acoustic analysis (identification of frequency, temporal and dynamic characteristics) with the help of Praat Software has been selected.

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