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PROBLEM TRIGGERS IN SIMULTANEOUS INTERPRETING FROM ENGLISH INTO LITHUANIAN

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1. Introduction

The historical records on interpreting date back to around five thousand years ago (Hermann 2002), yet, research on the subject began only in the 20th century after the introduction of simultaneous interpreting (often referred to as conference interpreting). The first attempt to take a scholarly look at the interpretation process is considered to be Herbert's (1952) *Interpreter's Handbook,* which contains many ideas – on the conference interpreter's mission, his or her personal qualities, audience orientation, etc. – that anticipate future lines of investigation in Interpreting Studies (Pöchhacker 2008:27). With the accumulation of research material and increasing experience, the field of interpreting research has greatly expanded, and the research methodology has evidently experienced the influence of various sciences which resulted in new trends of interpreting research, including sociological (Ebru Diriker, Claudia Monacelli), pedagogical (David Sawyer, Jemima Napier, Cynthia Roy), psycholinguistic and neuropsychological (Laura Gran, Franco Fabbro, Jorma Tommola).

Thus interpreting is a multifaceted activity, and as such, it can be described from various perspectives: as a social function, communicative activity or a cognitive process (cf. Pöchhacker 2011:279). The key question that researchers raise most frequently, however, concerns processes that take place in an interpreter's mind when they interpret simultaneously. Therefore research in cognitive processes of interpreting have occupied an exceptional place among all other areas of interpreting research (Minhua Liu, Presentacion Padilla, Miriam Shlesinger, Barbara Moser-Mercer). The approach chosen in this dissertation is also cognitive, with the analysis performed considering simultaneous interpreting as a cognitive activity taking place within a specific communicative context.

Interpreting differs from other forms of communication studied in linguistics in that it involves at least one participant who is neither the initiator nor the addressee of the message (Setton 1999:8). This complex

communication has a number of challenges for interpreters which Gile (1995/2009) named "problem triggers" (hereinafter referred to as PTs), and which have been selected as **the object of this dissertation**. The definition of PTs is not well-established; it often depends on the object of study. PTs can be understood broadly as any factor which has a negative effect on the output of simultaneous interpreters, or in a narrower sense, as any element in the original speech and (or) its delivery that may increase the processing capacity requirements of an interpreter and thus be a cause of a deteriorated output of simultaneous interpreters. The dissertation deals mainly, but not exclusively, with PTs as understood in their narrower sense, taking into account how they affect the parameters of interpreting quality – the accuracy and fluency of delivery (see section 2.2).

The full classification of PTs is presented in section 2.4. In this dissertation, PTs are further subdivided into *problems* that are universal and *difficulties* that are experienced by individual interpreters (according to Nord 1991). Such a breakdown is helpful as a methodological tool because it allows one to single out and/or confirm PTs.

Novelty and relevance of the research. Gile (1995/2009) points out that, so far, PTs in interpreting have not been analysed using a common conceptual framework. Moreover, they have not been analysed in all their complexity. Only separate PTs have been studied, such as: noise (Gerver 1971), numbers (Mazza 2001, Liu and Xiao 2010), idiomatic expressions (Cattaneo 2004), names (Meyer 2008), the speaker's accent (McAllister 2000, Kurz 2008, Lin et al. 2013), and rapidly delivered speeches (Gerver 1969/2002, Gile 1995/2009, Dailidėnaitė and Noreikaitė 2010).

In this dissertation, the limitations of previous studies are challenged by presenting a complete classification of PTs and giving an overall picture of their effects while employing the whole spectrum of PTs identified during both the case study and the experiment. Typically, in empirical studies either an experiment or a case study is chosen to obtain empirical data.

Experiments are carried out in an "artificial environment" while case studies are used to study the processes in the "natural environment" (Riccardi 2005:759). Both of these methods have their own strengths and weaknesses, therefore, in order to maximize the objectivity and validity of the findings, it was decided to employ both methods as complementing each other.

The major novelty of this research lies in the methodology of econometric analysis applied for the study of the empirical data. This allows one to link the data on interpreting to statistical indicators, and not only provides an opportunity to assess PTs, their nature and the effect they have on the output of simultaneous interpreters, but also clearly indicates that the method of regression analysis can be used to measure the effect of PTs.

Other **research methods** used in this study include a descriptive-analytical method and that of comparative analysis. The descriptive-analytical method is mainly used in the theoretical part, while the comparative method and the econometric analysis are applied in the experiment and case study, i.e. in the empirical part of the work.

The procedural approach chosen for this study follows Setton (2003) and Gile (2008), who suggested performing the analysis of interpreting processes on the 'local' level (on short segments and sequences of two or three neighbouring segments) and comparing the results with full-length speeches or longer segments. The experiment presented below was carried out with students and professional interpreters who interpreted the same speech twice, while the case study investigates the work of professional interpreters in three selected conferences organized by the European Parliament.

In order to identify which PTs have the greatest influence on a deteriorated output of simultaneous interpreters, a regression analysis of the effects of PTs was carried out. The data of the experiment are used to establish the effects of PTs on shorter segments of the speech (i.e., the micro level of analysis), while the data of the case study are used for analysing longer segments (i.e.,

the macro level of analysis). This micro- and macro-analysis allows one to develop an overview of the PTs in simultaneous interpreting and to make suggestions for further research and for further development of research methodology.

The results of this study are relevant not only for researchers, but also for interpreters and their trainers: based on the recommendations given at the end of the dissertation, interpreters could improve their simultaneous interpreting skills and their trainers could work out appropriate methods to eliminate or scale down the effects of identified PTs.

The goal of the study is to determine which PTs have the greatest influence on the output of simultaneous interpreters when interpreting from English into Lithuanian. To achieve this goal, the following **tasks** were posed:

1. To examine the interpreting material of three conferences organized by the European Parliament, which consists of approximately 6 hours of speeches in English and their interpretation into Lithuanian with a view to detecting PTs in simultaneous interpreting;
2. To carry out an experiment with professional interpreters and students of interpreting of the Department of Translation and Interpretation Studies, Vilnius University, during which the same speech is interpreted twice, with a view to identifying the problems that are universal and difficulties that are subjective;
3. To perform an empirical analysis of the detected PTs;
4. To perform a regression analysis in order to identify the major PTs affecting the output of simultaneous interpreters on the micro (short text segments) and macro (longer text segments) levels;
5. To assess how interpreters improve their performance with more available information processing capacity, i.e. when interpreting the same speech for the second time, and to use these data to establish major PTs;

6. To verify whether Gile's (1999) Tightrope Hypothesis that interpreters are working close to processing capacity saturation is valid for the English–Lithuanian language pair.

The goal and the tasks stated above determined **the structure of the dissertation**. It consists of an introduction, four sections devoted to theoretical aspects of simultaneous interpreting, two sections devoted to the discussion of the results of the experiment and the case study, and the conclusions. In Chapter 2 the key aspects of simultaneous interpreting as a communicative activity are described revealing the features of the interpreting event as well as major theories dealing with form and meaning-based interpreting, ear-voice span and the unit of interpreting. Chapter 3 is devoted to presenting the process of interpreting as a cognitive activity, focusing on Gile's Effort Model for simultaneous interpreting. In Chapter 4 the concept of quality of interpreting and ways of its assessment are described with the focus on two main categories of interpreting quality assessment – accuracy and fluency. Different viewpoints on PTs in literature on interpreting are presented in Chapter 5, which proposes a classification of PTs (presented also in Mankauskienė 2016) and defines the concepts of interpreting problems and difficulties. Chapters 6 and 7 present the main results of the empirical research, i.e., the findings of the experiment and the case study respectively. At the end, conclusions are drawn, and recommendations for further research are given. This summary provides only the key aspects of the theoretical background presented in the dissertation and the most important results.

The statements set out for defence:

1. The method of regression analysis can be used to assess the effect of PTs in simultaneous interpreting.
2. When interpreting simultaneously interpreters make errors and omissions for two reasons: 1) because they work close to the saturation

point of their processing capacity (the Tightrope Hypothesis); and 2) because of PTs in the original text and (or) its delivery.

3. At the micro level and at the macro level the output of simultaneous interpreters is affected by different PTs: the propositional density has the greatest negative effect on the output at the micro level, while the speech rate plays the biggest role at the macro level.
4. At the micro level the speech rate in itself is not a PT: it only affects the output of simultaneous interpreters when combined with other PTs.
5. The only PTs which have a statistically significant negative effect on the output of simultaneous interpreters at both micro and macro levels are lexical PTs.
6. Language pair specific PTs, i.e. lexical gaps or phrases in the source language that require explication and (or) have very long counterparts in the target language also have to be regarded as PTs, although researchers emphasize that interpreters interpret ideas not words.
7. The imported cognitive load also influences the output of simultaneous interpreters, i.e. the segment being produced is affected not only by its own characteristics, but also by the features of the previous and subsequent segments.

2. Theoretical Background

2.1. Effort Models

Daniel Gile's (1995/2009) Effort Models were first created to explain the interpreting process to students, but soon gained popularity among researchers as well. According to Gile, the process of simultaneous interpreting may be shown as an equation of four Efforts:

$$SI = L + M + P + C,$$

where L stands for Listening and Analysis, M – Short Term Memory, P – Production and C – Coordination.

Through the Listening and Analysis Effort, the interpreter understands the original text, then stores it in his Short-Term Memory and renders the target text through the Production Effort (which also includes self-monitoring and self-correction). While interpreting, all Efforts are used simultaneously, and their sum cannot exceed the total processing capacity of an interpreter. Although the Coordination Effort was added to the model later, its importance should not be underestimated as it is required to manage the processing capacity allocated to the other Efforts. As Liu (2009:173) notes, the Listening and Analysis Effort and the Production Effort may become less capacity-demanding as expertise develops. Increasing the efficiency of the capacity management mechanism contributes to the advancement of the skill of interpreting the most.

Although all Efforts may be used at the same time, they nonetheless deal with different segments of the original text: when listening and analysis is used for segment C, the short-term memory may be storing segment B while the Production Effort is working with segment A. This is because simultaneous interpreting is not actually simultaneous. Research on ear-voice span shows that the time lag between the uttered original text and the uttered interpreted text is between 2 and 10 seconds (Setton 1999:28).

The Tightrope Hypothesis followed the Effort Models and was equally illuminating. It showed that the total processing capacity requirements for simultaneous interpreting are close to the total available capacity, i.e. interpreters work close to saturation point of their processing capacity (Gile 1999, 1995/2009, 2011). This theory is supported by at least two facts: (1) that many misinterpretations and omissions are unlikely to have resulted from insufficient comprehension of the source text and (2) that when interpreting the same speech for the second time interpreters make new errors in segments they interpreted correctly the first time (Gile 1999). This is why, for the purposes of the present study, it is not only important to understand processing capacity but also possibilities to assess interpreting quality.

2.2. Interpreting Quality Assessment

Interpreting quality is very difficult to define. The reason is that quality is a complex of various interrelated factors as interpreting itself involves different subjects – interpreters, speakers, listeners, clients – and each of them has a different understanding of what interpreting quality should be. Moreover, the various sets of criteria for quality in interpreting pertain to different aspects of interpreter's task, ranging from text processing to communicative text production for a certain purpose and effect and, most generally, to the function of facilitating communicative interaction (Pöchhacker 2002:97). Understandably, due to these multiple perspectives on interpreting quality, there is a vast range of methodological approaches (cf. Bühler 1986, Moser-Mercer 1996, Kurz 2001, Viaggio 2002, Kalina 2002, Viezzi 2003, Pradas Macías 2006, Collados Aís et al. 2011, just to name a few).

This dissertation focuses on error analysis which is a quantifiable description of how an interpreted text differs from (1) the corresponding original text (accuracy), (2) linguistic norms and (3) the norms of coherence (fluency of delivery) (cf. Falbo 2002). As can be seen from this definition, interpreting errors are generally divided into two broad categories: those pertaining to accuracy and those pertaining to fluency of delivery. However, what these broader categories consist of and how they should be measured differs from study to study (e.g. Riccardi 1999, Viezzi 2003, Pio 2003, Gile 2011). This is especially true of errors in source-target correspondence. Researchers have come up with various classifications for these differences, but a clear system has yet to be established.

In this study, the following accuracy errors were used to examine the discontinuities between the target text and the source text (hereafter errors and omissions or EOs) (based on Riccardi 1999, Falbo 2002, Pio 2003):

1. Omissions – one or more ideas in the source text are totally missing in the target text. This error category has received the most attention from researchers (e.g. Altman 1994, Barik 1994, Riccardi 2002, Setton

2002, Pym 2008 and many others). Researchers do not agree on the nature of omissions and whether all of them should be considered errors. In this study, only omissions of content information will be used, i.e. if the speaker repeats or corrects themself, this will not be factored into the overall error calculation.

2. Additions – pieces of information in the target text where no reference to it could be found in the source text (Falbo 2002:121). These only include the kind of additions that cannot be justified by pragmatic reasons.
3. Generalisations – this category includes three types of information loss in Falbo's (2002) classification: a 'loss by understatement', i.e. an idea in the source text is toned down in the target text, a 'loss by generalisation', i.e. the scope of an idea in the source text is extended in the target text and a 'loss of intensity', i.e. emotional and rhetorical features of a source text unit are not transferred to the target text.
4. Substitutions – ideas in the source text altered when transferred to the target text (*ibid*. 2002:122). This kind of change may result in contradictions, ambiguity and misinterpretations with respect to the source text message (Pio 2003). This category also includes Riccardi's (2001) 'logical-time sequence errors', i.e. an improper reproduction in the target text of the logical relation among clauses, phrases or sentences of the source text, as well as Falbo's (2002) 'loss of textual link', i.e. a part of the source text, which is well-placed in its micro-context, but finds itself in a different part of the target text, so that a different link is created in relation to the preceding and following units.

Additions, generalisations and substitutions may be lumped together as **errors of meaning**, which, according to Gile (2011:209), are 'target speech segments where it seems clear that the interpreter has misunderstood the idea expressed by a word or group of words'. This can result from insufficient

background knowledge or linguistic expertise, from signal distortions (a speaker's strong or unfamiliar accent, background noise, etc.), from cognitive saturation affecting the Listening Effort, or from a processing capacity deficit in the Production Effort (*ibid*. 2011:206). Although these errors arise due to the same reasons, it may be argued that generalisation is a less significant error than substitution as in the first case the listener receives the correct information, albeit with less detail, whereas in the second case the speaker's idea is distorted (as is sometimes the case with additions as well).

Fluency of delivery may be more difficult to measure than EOs. As Gile (1995/2009:172) puts it, 'unless there is a clear difference from one moment to the next, it may be difficult to judge that an acceptable rendition of a particular speech segment could have been better had there not been a problem'. It should also be noted that 'many grammatical errors in an interpreter's output suggests a loss of control more strongly than omissions in an output that suffers from no grammatical errors' (Gile 2011:206).

For our purposes fluency of delivery is measured through the following indicators (hereafter FDIs) (based on Riccardi 1999, Pio 2003):

1. Unfilled pauses of more than 3 seconds that are not present in the source text. These lengthy silences may be unpleasant to listen to in terms of fluency and may point to the interpreter's difficulty in performing his task (Déjean Le Féal 1980). The audience may also sense that they are not receiving trustworthy information, which can 'undermine the relation of implicit trust between interpreter and the audience. Once you lose trust, you lose everything' (Pym 2008:99).
2. Filled pauses which are vocalised hesitations such as *eh, ehm* and *mmm.* As with unfilled pauses, these signal the interpreter's difficulty in performing their task and may also be detrimental to the trust between the interpreter and the audience.
3. Language errors is an extremely broad category, including a number of indicators which were measured separately, but due to their low rates of occurrence are more informative as a group:

- False starts – these occur when interpreters interrupt the translation of a sentence and start a new one. This may result in misinterpretations and deviations.
- Unfinished sentences.
- Pronunciation and phonation errors.
- Repairs – when interpreters give a new rendition of a source segment they have already translated.
- Repetition of a word or group of words without any rhetorical or stylistic significance.
- Linguistic interference of the source language (in this case English) – the result of the auditive influence of the source language or source text on structures/elements of the target text that results in a deviation from the norms of the target language (Lamberger-Felber and Schneider 2008).
- Target language (in this case Lithuanian) errors – unnatural choice of words/syntax, incorrect word endings and similar errors that native speakers would notice and find jarring.

It is important to note that although these error categories are clearly separated in this study for the purposes of analysis, they are closely interdependent and may influence one another to a great extent.

2.3. Problems and Difficulties

PTs affect interpreters differently: the same text in the same communicative situation and under the same interpreting conditions will be interpreted by some interpreters better than by others. Therefore, all PTs cannot be considered universal. In order to establish which PTs affect more interpreters, PTs are further divided into problems and difficulties.

Nord (1991) was the first to distinguish between these two terms in the field of translation. She defined *difficulties* as subjective obstacles that a particular interpreter or trainee encounters in the interpreting process.

Following this definition, in this study difficulties are considered to be found in those segments of the source text that interpreters themselves note as being difficult to interpret, i.e. interpreters subjectively see those specific segments as difficult. As they can be overcome by using appropriate tools, it is reasonable to expect that, due to a higher level of expertise, professional interpreters would deal better with difficulties than student interpreters. On the other hand, *problems* are objective obstacles in translating discourse (Nord 1991:167). They will always remain problems even though a translator may have learned to deal with them rapidly and effectively.

PTs may lead to diminished quality of interpreting in a segment that includes a specific PT, especially if that PT carries no redundant information and therefore must be interpreted by transcoding it, such as numbers or proper names. However, Gile (1995/2009) points out that it may be difficult to associate an instance of diminished quality with the specific problem that caused it as it can lead to a failure sequence, i.e. the interpreter may have difficulties interpreting the segments after the one containing the PT as too much effort was expended rendering the segment with the PT. This has been shown to be true by several studies (e.g. Mazza 2001, Meyer 2008) and was taken into consideration in this analysis as well.

It should be noted that a clear distinction between problems and difficulties remains theoretical as the difficulties singled out by interpreters invariably include and overlap with problems as the latter are essentially universal. However, for the purposes of this analysis these two terms are distinguished by the aforementioned definitions and focus on what are obvious problems and what are obvious difficulties, while keeping in mind the conceptual overlap between the two terms.

2.4. Problem Trigger Classification

Due to the broad definition of PTs, it is impossible to list and research all of them at the same time. Therefore, to narrow down the object of a

research project, a classification of PTs is required which would enable the analysis of a group of PTs and their interaction with each other. This section introduces a simultaneous interpreting PT classification based on a communication model combining the approaches of Ingram (1974/2015) and Kirchhoff (1976/2002). Following this model PTs are divided according to their source:

- **Sender-related PTs** (speaker's accent; non-native speaker; fast speech delivery; monotonous intonation; read speeches, etc.);
- As all languages are composed of three systems (lexical, syntactic and semological) (Gleason 1965), **PTs pertaining to the original text** can be further divided into the following groups:
  - Lexical (proper names; numbers; abbreviations; technical terminology);
  - Syntactic:
    - phrases (idiomatic expressions; collocations);
    - sentences (syntactic differences between source language and target language; lexical density; long sentences; many clauses; enumeration);
  - Semological (metaphors; humour; sarcasm);
- **PTs relating to an interpreter** (experience; background knowledge; communication competence; fatigue, etc.);
- **Technical PTs** (failures of interpreting equipment; external sounds; interpreter cannot see the speaker, etc.).

This kind of classification allows researchers to have a broader yet focused look at certain difficulties interpreters face in their daily work. The empirical part of this research takes into account all of these PTs as much as possible: not all PTs were present in the analysed material, not all could be quantified or calculated, yet others were found to be statistically insignificant. The exact list is presented in the relevant sections of the experiment and the case study.

3. Experiment

3.1. Subjects

The study analyses simultaneous interpretations from English into Lithuanian by 18 interpreters in total (4 male and 14 female); 10 interpreting students and 8 professional interpreters, 6 of which are accredited interpreters at EU institutions. All subjects have Lithuanian as their mother tongue and English as their B language. The subjects of the experiment were divided into five categories (Table 1) according to their experience. The division of student interpreters is simple: it was made according to the number of semesters they had received training in simultaneous interpreting. However, the two categories of professional interpreters are not as clear-cut. The first category (Prof1) includes interpreters who are working locally and have fewer opportunities to interpret, as well as one interpreter who had recently acquired EU accreditation but had less than a year of professional experience at the time of the experiment. The second category (Prof2) is comprised of interpreters working full time for EU institutions as well as highly experienced local interpreters, who not only work in the local market, but also teach interpreting at Vilnius University.

Table 1. Participants in the experiment

Student interpreters			**Professional interpreters**	
I semester of int. training	II semesters of int. training	III semesters of int. training	Less experienced interpreters	Highly experienced interpreters
1 sem	2 sem	3 sem	Prof1	Prof2
3	3	4	3	5

3.2. Materials

The material is taken from the European Ombudsman seminar: 'It's our Europe: Let's get active!', hosted by the European Parliament on 23 April,

2013. The extract chosen is slightly longer than eight minutes (it is difficult to tell the exact time because it contains some lengthy pauses), consists of 1,223 words uttered by three speakers: the conference moderator, the main speech presenter and the conference secretary who talks about the questions received from online participants (for more details see Table 2).

Table 2. Speakers and types of speech

Speaker	Speaking features	Speech rate (wpm)
Moderator (3 interventions)	native speaker; spontaneous speech	181
Presenter, part I	non-native speaker; delivers a prepared presentation, but does not read it	139
Presenter, part II		156
Conference secretary	non-native speaker; spontaneous speech; questions received are read out	157

The average speech rate (also called speech delivery speed) of this extract is 156 words/minute (wpm). A 140 wpm-speech is generally considered fast (see Shlesinger 2003), which means that the chosen segment has a fast speech rate. It should be noted, however, that Dillinger (1989), the creator of the first computational model for simultaneous interpreting, used a deliberately faster rate (145 wpm) 'in order to generate deviations' (Setton 1999:31). Following the example of Liu et al. (2004), the material was chosen so that the interpreters would be working with speech input under stressful conditions which are likely to jeopardise the completeness and accuracy of their output, i.e. the interpreters would be working close to their cognitive saturation level and would be forced to resort to automated interpreting strategies.

3.3. Procedure

Due to the busy schedules of the participants, the recordings took place on five separate occasions (June and September 2015; January, May and

July 2016) in the professional simultaneous interpreting booths at Vilnius University.

All the participants interpreted the same text twice in order to assess the impact of cognitive capacity limitations and sender-related and technical PTs. This also increased the likelihood that the subjects would be able to remember and note the difficulties they experienced while interpreting.

Before the first interpretation, the participants were briefed about the overall topic and the setting of the conference. They were told that they would have to simultaneously interpret two texts but were not aware that the second text would be the same as the first. After the first interpretation, the participants were given a short break but were asked not to discuss their interpretations with each other. Only before the start of the 'second' text were they told this would be the same extract. It should be mentioned that the first few minutes of interpretation were not included in the scope of the analysis in order to give the participants the opportunity to warm up.

After the second interpretation, the participants were given the transcript of the extract and were asked to note the segments they had found difficult to interpret and to include a brief explanation where possible. As think-aloud protocols are not possible in the interpreting process, researchers of interpreting often resort to retrospective protocols with either the original speech or the interpreting as a cue (Tiselius 2013). However, this makes it difficult to interview participants immediately after interpreting, which may affect the objectivity of the results. Therefore, a new form of retrospective protocol – marking the transcript – was devised for this study.

3.4. Data analysis

Target texts were transcribed and intonation-based punctuation (commas and periods) was added where it seemed natural, with no other marks for prosody. These transcriptions were then compared to the original in the

search for EOs, while FDIs were singled out by listening to each recording twice. As suggested by Gile (2011:208), in order to prioritise the reliability of the data a low sensitivity level was chosen, i.e. to reduce the probability of 'false positives', e.g. to avoid mistaking acceptable generalisations or compressions as omissions, only instances of what clearly seemed to be EOs were considered.

The data was entered into UAM Corpus tool software which was then used to generate the initial results. All errors were noted on the specific segments they affected, which are roughly equivalent to clauses. To keep the figures comparable, however, some clauses had to be divided into smaller segments. These are not the micro-units Gile (2011) used in his study as they were very rarely made up of just one or two words, but rather encompass the whole clause where possible (the average length is 5.5 words per segment).

The difficulties that the interpreters noted on the transcript of the extract were also entered into the UAM Corpus tool software using the same segmentation as for the EOs. Additional information on whether the difficulty resulted in an error or omission was also included. In cases where a difficulty did not result in an error or omission, it was noted if an EO was made in the following segment.

To check the reliability of the data on the errors of meaning, 8 professional interpreters (out of which 6 are also interpreting/translation trainers at Vilnius University) were randomly divided into two groups of four and asked to identify EOs in two sets of transcripts (262 words) of three different interpretations of the same extract interpreted during the experiment. In set1, I identified 44 erroneously interpreted segments, out of which 39 (or 89%) were identified by all four evaluators, while the remaining 5 were identified by three evaluators. In set2 I identified 36 segments with EOs, out of which 33 (or 92%) were identified by all four evaluators; the remaining 3 were identified by three evaluators. It should be noted that the evaluators identified more EOs, but as a low sensitivity level was selected for this

study, the results of this exercise are sufficient to confirm the validity of the findings.

The results of this analysis are discussed below. If it is not indicated that a comparison is made between the two interpretations, it means that the discussion focuses only on the first interpretation as best reflecting a real life situation.

3.5. Results

3.5.1. Omissions, Errors of Meaning and FDIs

Interpreter performances varied from one interpreter to the next: from 20 to 101 EOs. In the student group, the range was between 55 and 101 EOs, while among the professional interpreters the range was from 20 to 77. Figure 1 represents the number and type of EOs made by the different groups of participants in the first and second interpretation. It is notable that on average the professional interpreters made 43 EOs, which break down to 29 omissions, 1 addition, 4 generalisations and 9 substitutions. Whereas the averages were almost double in most categories among the student group: students made 79 EOs on average, consisting of 59 omissions, 2 additions, 5 generalisations and 13 substitutions.

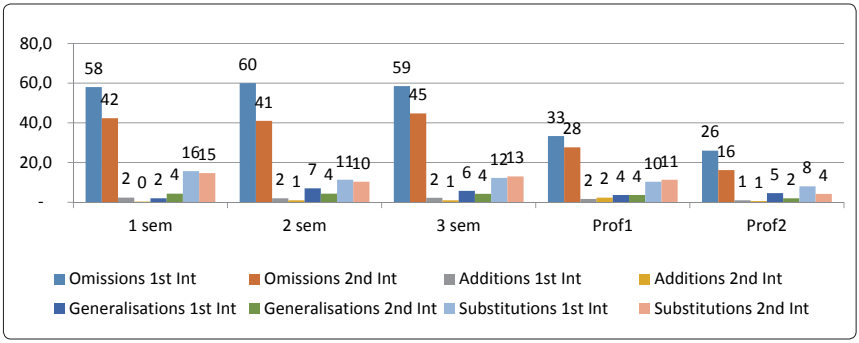

Fig. 1. Errors of meaning and omissions: average number of errors per interpreter within each group in the first and second interpretations

Merely counting the number of EOs, however, does not present a complete picture. As the focus of this study is the PTs interpreters deal with, it would be more relevant to analyse whether the EOs in the second interpretation occurred in the same segments as in the first. For example, one of the students made 89 EOs in the first interpretation and 68 EOs in the second, but these EOs might have been made while interpreting different segments of the text. Therefore, we need to analyse (1) EOs that were made only in the first interpretation, i.e. the ones that were corrected in the second interpretation, (2) EOs that were partially corrected in the second interpretation, (3) EOs that were made in both interpretations and, lastly, (4) EOs that were made only in the second rendition, i.e. new EOs.

The data on student performances in all three groups reflect a rather similar result, while there are significant differences between the professional interpreters (for absolute numbers see Fig. 2; percentages are shown in Fig. 3). In the second interpretation student interpreters fully or partially corrected on average 45% of the erroneously interpreted segments of the first interpretation, while in group Prof1 this figure stands at 37% and in group Prof2 at 57%, which is a considerable difference. There was also notable variation in the number of EOs made during both interpretations; this figure is around 40% in all student groups and group Prof1, while in group Prof2 it stands at around 25%.

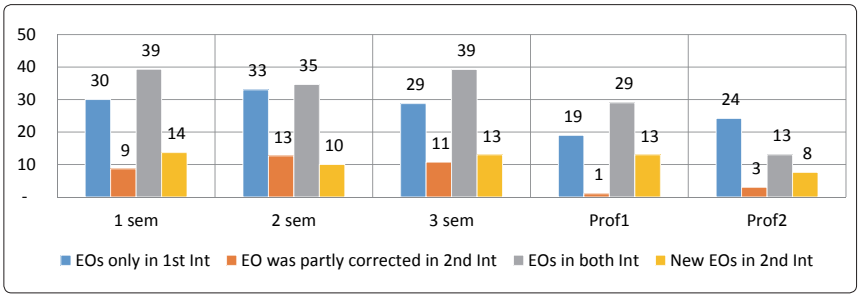

Fig. 2. EOs according to where they occurred: average per interpreter within each group

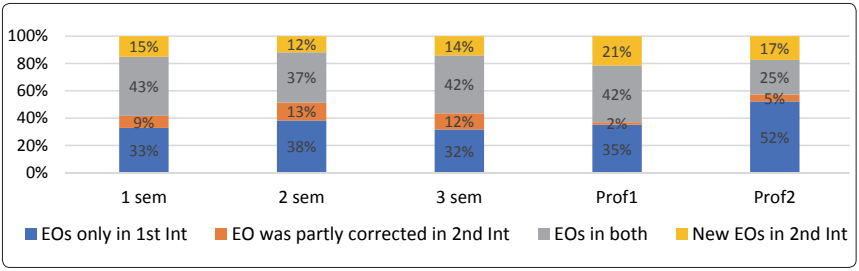

Fig. 3. Percentage of EOs according to where they occurred (all EOs of the group are equal to 100%)

Clearly, the more experienced interpreters corrected more errors in the second interpretation, yet the number of 'new errors' they made is the smallest only in absolute terms but not in proportion, as one would also expect. The presence of these new EOs suggests that the difficulty of processing capacity management, or cognitive saturation, is at fault rather than poor linguistic or extralinguistic knowledge. The fact that even the most experienced interpreters made new EOs in their performance is consistent with the Tightrope Hypothesis.

The segments that were erroneously interpreted in both renditions by several interpreters may be seen as problems of interpretation. These segments will be briefly discussed in the section about difficulties (3.5.2), but a more detailed analysis is beyond the scope of this study.

The three indicators for fluency of delivery show certain dissimilarities between the various student groups and professional interpreters (Fig. 4). The biggest difference was in the average of unfilled pauses, which stood at 23 among the student groups but only at 3 among the professional interpreters. The average for filled pauses was 14 and 7 respectively. The students made 9 language errors on average, while the professional interpreters made 6.

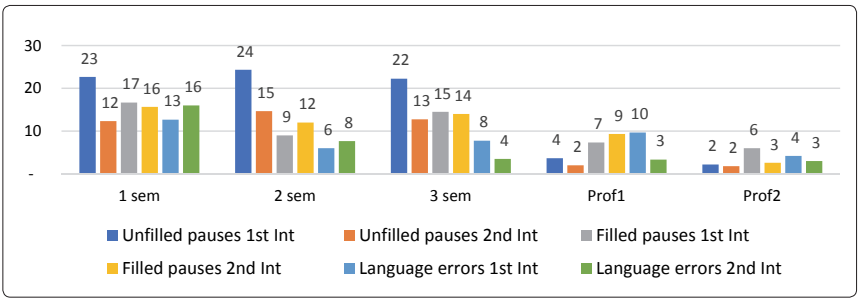

Fig. 4. FDIs: averages per interpreter within each group in the first and second interpretations

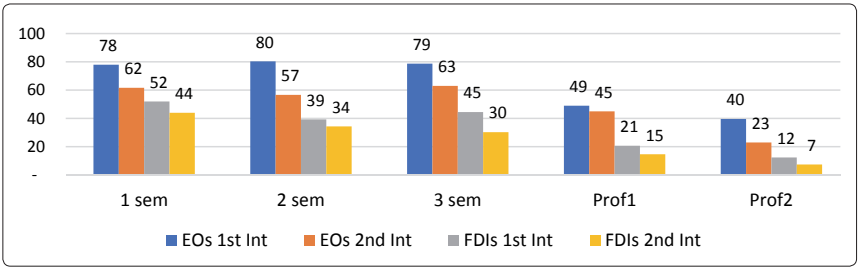

Fig. 5. Number of EOs and FDIs: averages per interpreter within each group in the first and second interpretations

If we were to add these three FDIs together to indicate the number of times the listener might have been alerted to the fact that the interpreter was having difficulties and compare them to the number of segments affected by EOs, the results would be quite revealing (see Fig. 5). It would be reasonable to expect a downward trend among the students that progresses in line with their training, but this is not the case. This may be due to the different pace that individuals improve and acquire new skills. However, there is a clear drop in all indicators when we compare the student and professional interpreters, and an even greater change if we compare the performance of highly experienced interpreters. Moreover, the latter was the only group to decrease the number of errors in both categories almost by half.

3.5.2. Quantitative Analysis of Difficulties

On average the students reported more difficulties than the professional interpreters (26.8 vs 16.6) and the actual figures vary from 15 to 51 for the students and between 6 to 34 for the professionals. There were 18 segments that three or more professional interpreters noted as difficult, whereas this number stood at 36 for the students. Judging from the fact that the student interpreters noted 16 of the 18 segments noted by professionals, both groups clearly experienced the same difficulties, but the students experienced more of them.

There were 63 segments in the student group that were not noted as difficult but which resulted in errors in more than half of the performances, i.e. in five or more interpretations. If a participant noted a segment as difficult and made an error in that segment, his/her error was not included in these calculations, but if he/she did not note the difficulty and made an error, the segment was counted. In the group of professional interpreters this figure stands at 29 which, unsurprisingly, confirms that professional interpreters are more aware of the difficulties they experience while interpreting. Interestingly, out of the 29 segments noted by the professionals, 18 were also referred to by the students. This suggests that these segments are serious translation problems that interpreters remain unaware of rather than accidental errors arising from processing capacity limitations.

The data also suggest that perhaps interpreters are not always aware of the difficulties they encounter or for some reason do not want to admit to experiencing them. Let us take a closer look at the segments that were erroneously interpreted in both interpretations by at least half (9) of the interpreters. There were 28 such segments, out of which only 6 segments were noted as difficult by at least half of both groups, 4 of them coincided in both groups.

A comparison between the students and professionals in terms of the difficulties they had may be summed up in a simple matrix in which all the

segments that had to be interpreted are equal to 100% (Table 3). The fact that the professional interpreters coped better with the segments they found difficult (4% vs 9% in the first interpretation and 3% vs 8% in the second) can be reconfirmed. However, both groups had the same proportion of difficulties that did not result in errors and the student interpreters showed a greater improvement on this indicator in the second interpretation.

Table 3. Proportion of segments according to whether they were noted as difficult and whether they resulted in errors

	Student interpreters				**Professional interpreters**			
	Difficult		**Not difficult**		**Difficult**		**Not difficult**	
	1st Int	2nd Int	1st Int	2nd Int	1st Int	2nd Int	1st Int	2nd Int
Error	9.0%	7.5%	28.5%	21.3%	4.1%	3.0%	16.4%	11.8%
Non error	3.7%	5.2%	**58.8%**	**66.0%**	3.8%	4.9%	**75.8%**	**80.3%**

As expected, professional interpreters rendered more segments correctly and without having obvious difficulties (76% vs 59%). The biggest difference between the groups is in the erroneously interpreted segments that did not seem difficult. This could partly be explained by the Tightrope Hypothesis; as interpreters work close to cognitive capacity saturation they make errors where no apparent difficulty could be found in the original speech. However, it may also suggest that interpreters, and student interpreters in particular, are not fully aware of the difficulties they have during the act of simultaneous interpreting.

3.5.3. Regression Analysis

The regression analysis of PTs is used to analyse PTs in their entirety and to establish which of them have the biggest impact on omissions and (or) misinterpretations.

The linear regression equation is generally written as follows:

$$Y_i = \beta_0 + \beta_i X_i,$$

where β_0 is a constant that describes the average effect of all other non-model factors; X_i are explanatory variables; β_i is the coefficient of the corresponding explanatory variable.

The dependent variable (Y) is the number of participants who misinterpreted a particular segment or omitted it. It is held to be the case that the more interpreters rendered the segment unsuccessfully, the more complicated it is. Since the same text is interpreted twice calculations may be made of the effect of different indicators on the three dependent variables: the number of interpreters who omitted or misinterpreted a specific segment in the first interpretation (Y_1), in the second interpretation (Y_2) and in both interpretations (the sum of the first and second interpretation results (Y_{both})). It should be noted that the analysis would be more accurate if the dependent variable included additions and language errors, however, since the text of the original is divided into small segments, it is difficult to precisely determine which source language segment should include EOs observed only in the target language.

The material under study consists of 211 segments and each of these is characterised by the explanatory variables (X) described in Table 4 below. Indicators are listed in the first column, their brief descriptions – in the second, while the third column shows the measuring scale of a particular indicator. The fourth column in this table shows whether the model also includes indicators showing that preceding or following segments/clauses (in the model marked by "_pre" and "_post" respectively) included a particular characteristic. The last column describes additional binary indicators that are specific to one type of situation and are shown in the model with an addition of the letter "a". For example, a particular clause is considered to be hard to understand if its readability index is higher than 12. To check if these kinds of clauses cause deteriorated interpreting quality, an additional indicator "read_a" is introduced into the model.

Table 4. Explanatory variables and their features

Indicator	Description	Measuring scale	Preceding/ following segments	Additional binary indicators
Speaker	Moderator (speaker1), keynote speaker (speaker2), event secretary (speaker3). This indicator also includes other possible PTs, such as the accent of the speaker and parsing of the text.	0 or 1		
Speech mode	Read (speech1), extemporaneous (speech2), spontaneous (speech3).	Binary		
Speech rate (speed)	If the sentence is very short, its speech rate is measured with the preceding sentence or the following one, depending on where the speaker made a shorter pause.	87–260 wpm		
The readability index (read)	Calculated for each clause by averaging out the results of several readability indices: Gunning fog, Flesch-Kaincaid, SMOG, Coleman-Liau, Automated readability index. Calculations are made at www.analyzemywriting.com.	0.6–20.8	Yes	Values > 12 (the sentence is hard to understand).
Lexical density	Clause (lex_cl) and paragraph (lex_par) lexical density calculated by UAM Corpus tool. The first indicator shows the lexical density of the clause in which the segment in question is located, and the lexical density of the paragraph shows the total lexical density of the specific clause and the clauses surrounding it.	11.1–100		
Lexical PTs (lexPT)	i.e. numbers, names, surnames, country names, technical terms	0 or 1	Yes	

Table 4 (continuation). Explanatory variables and their features

Indicator	Description	Measuring scale	Preceding/following segments	Additional binary indicators
Propositional density (PropD)	Calculated for each clause by dividing the number of propositions in a clause by the number of words. The calculations are performed by CPIDR (Computerized Propositional Idea Density Rater).	0.22–1	Yes	Values > 0.53. The threshold after which indicators become statistically significant.
Noted difficulties	The number of interpreters who marked a particular segment as difficult. Students' difficulties (diff_stud) and difficulties noted by professional interpreters (diff_prof) are separated.	0–13		
The importance of each segment (imp)	in terms of the communication (imp_com) and content (imp_cont) is measured on a scale from 1 (not very important) to 3 (very important) from the point of view of the author and the sum of these indicators (imp).	0 or 1		Indicators that show a particular segment as 3 (very important)
EN-LT language pair difficulties (LT)	These specific difficulties are determined by the analysis of the author and in the light of the comments by the participants themselves.	0 or 1	Yes	

As can be seen from the list of explanatory variables, the goal is to determine not only the effects of variables on a particular segment, but also to take into account the influence of the preceding segment/clause and the following segment/clause. In doing so, we can measure not only the effect of the cognitive load of a particular segment, but also what Gile (2008) calls imported cognitive load, i.e., how the characteristics of the preceding and the following segments and clauses affect the current segment.

The regression analysis of the above-mentioned indicators was performed with the RStudio software. Three linear multiple regression equations with dependent variables Y_{both}, Y_1 and Y_2 are presented in Tables 5, 6 and 7, respectively. It is important to note that there is no issue with multicollinearity (all Variance Inflation Factors (VIF) are lower than 4). This means that the variables of the regression equation are not correlated, which could cause the model to be unstable or show irregular variable relations (Čekanavičius and Murauskas 2014). It should also be noted that there are no outliers, and the ANOVA *p*-values of the resulting equations are lower than 0.05 which means that the models are appropriate.

In order to measure the accuracy of the linear regression equations, the coefficient of determination (R^2) is calculated. This is a statistical measure that shows the portion of explanatory variables' variance as explained by the model. The closer R^2 is to 1, the greater the proportion of variance that is explained by the linear regression, i.e., the better the regression function describes the dependent variable Y. In order to determine the suitability of a model, it is generally assumed that the determination coefficient must be greater than 0.20 (Čekanavičius and Murauskas 2014). The R^2 values in this experiment are as follows: Y_1 equation – 0.4032, Y_2 equation – 0.4494, and Y_{both} equation – 0.4401. The difference in R^2 values is almost 0.04 points between the equation of the first interpretation and the second. This can be explained by the fact that interpreters deal with more difficulties interpreting a speech for the first time than for the second time. Thus, the influence of individual indicators may be the same, but it seems lower because in the first interpretation there are simply more contributing factors.

As can be seen, these models explain more than 40–44% of EOs. The remaining 56–60% depend on factors that are not included in the model, and also on randomness which is partly explained by the Tightrope Hypothesis. As expected, the unexplained part of the first interpretation is greater than that of the second because interpreters make fewer random errors the second time they interpret the same speech. In addition, data on EOs made by both groups (students and professional interpreters) is used to increase the number of observations, so, part of the dependent variable can also be explained by factors associated with the lack of experience, such as rapid fatigue.

Table 5. Regression analysis of the effect of PTs on the output of simultaneous interpreters in both interpretations (Y_{both})

Explanatory variables	**Coefficients**	**Standard Error**	**t-Stat**	***p*-value**	**Significance**
β_0	–7.427	2.913	–2.549	0.012	*
speed	0.012	0.010	1.264	0.208	
speaker1	–1.399	1.365	–1.024	0.307	
speaker3	2.639	1.099	2.401	0.017	*
speech1	3.106	1.351	2.300	0.023	*
speech3	0.976	1.123	0.868	0.386	
read_pre_a	2.719	0.962	2.828	0.005	**
read_post_a	1.039	0.936	1.110	0.269	
lexPT	2.986	1.113	2.682	0.008	**
lexPT_post	1.363	0.994	1.372	0.172	
PropD	17.054	3.708	4.599	0.000	***
PropD_post_a	1.786	0.896	1.995	0.047	*
diff_stud	0.921	0.278	3.308	0.001	**
diff_prof	1.706	0.484	3.523	0.001	***
imp_cont_a	–2.083	1.086	–1.918	0.057	.
LT	3.498	1.479	2.364	0.019	*
Significance indicators:	*** 0.001	** 0.01	* 0.05	. 0.1	.. 0.15

The first column in Table 5 lists the explanatory variables described above and included in the regression equation, while the coefficients in the second column show the impact these variables have on the number of interpreters who make EOs in a particular segment. For example, due to the fact that a speech is read (speech1) the number of interpreters making an EO in the segment increases by 3.106 (see Table 5). So, the Y_{both} regression equation can be written as follows (the other regression equations are written accordingly):

Y_{both} = -7.427 + 0.012 * speed – 1.399 * speaker1 + 2.639 * speaker3 + 3.106 * speech1 + 0.976 * speech3 + 2.719 * read_pre_a +1.039 * read_post_a + 2.986 * lexPT + 1.363 * lexPT_post + 17.054 * PropD + 1,786 * PropD_post_a + 0.921 * diff_stud + 1.706 * diff_prof – 2.083 * imp_cont_a + 3.498 * LT

As can be seen from the table, the influence of some indicators on EOs is greater than that of others. However, their impact should also be evaluated by standardizing the measuring scales of the variables (i.e. it should not matter in which units variables are measured, for example, in words per minute or binary units, etc.). Such evaluation can be made by calculating standardized beta coefficients. The higher the standardized beta coefficient is in absolute terms, the greater the influence of the corresponding variable in the model (Čekanavičius and Murauskas 2014). Thus, in the Y_{both} equation, the greatest impact on the dependent variable is made by the variables "PropD", "diff_prof" and "diff_stud" (their standardized beta coefficient values are respectively 0.28, 0.26 and 0.24). The standardized beta coefficients of other statistically significant variables vary between 0.12 and 0.17.

Following are the most important results of the statistically significant variables of the Y_{both} regression equation in the order in which they are listed in Table 5, as well as a comparison with the results of Y_1 and Y_2 regression equations (Tables 6 and 7, respectively).

Table 6. Regression analysis of the effect of PTs on the output of simultaneous interpreters in the first interpretation (Y_1)

Explanatory variables	Coefficients	Standard Error	t-Stat	*p*-value	Significance
β0	– 3.917	1.667	–2.350	0.020	*
speed	0.009	0.006	1.644	0.102	..
speaker1	–0.938	0.781	–1.201	0.231	
speaker3	0.878	0.629	1.396	0.164	
speech1	1.428	0.773	1.848	0.066	.
speech3	0.798	0.643	1.241	0.216	
read_pre_a	1.447	0.550	2.631	0.009	**
read_post_a	0.920	0.536	1.716	0.088	.
lexPT	1.941	0.637	3.047	0.003	**
lexPT_post	0.822	0.569	1.446	0.150	..
PropD	8.862	2.122	4.177	0.000	***
PropD_post_a	1.135	0.512	2.216	0.028	*
diff_stud	0.382	0.159	2.399	0.017	*
diff_prof	0.935	0.277	3.374	0.001	***
imp_cont_a	–0.667	0.621	– 1.074	0.284	
LT	1.777	0.846	2.100	0.037	*
Significance indicators:	*** 0.001	** 0.01	* 0.05	. 0.1	.. 0.15

As seen from the micro level regression analysis, the following PTs had a statistically significant influence on the overall results of both interpretations:

- The data show that the indicator "speaker3" (secretary of the event) had a significant impact on the number of interpreters making EOs, i.e. when speaker3 speaks it statistically significantly increases the possibility that interpreters will make EOs.

Table 7. Regression analysis of the effect of PTs on the output of simultaneous interpreters in the second interpretation (Y_2)

Explanatory variables	Coefficients	Standard Error	t-Stat	*p*-value	Significance
β0	–3.510	1.401	– 2.506	0.013	*
speed	0.003	0.005	0.672	0.502	
speaker1	– 0.461	0.656	– 0.702	0.484	
speaker3	1.761	0.528	3.333	0.001	**
speech1	1.678	0.649	2.584	0.011	*
speech3	0.178	0.540	0.329	0.743	
read_pre_a	1.272	0.462	2.751	0.006	**
read_post_a	0.120	0.450	0.266	0.791	
lexPT	1.045	0.535	1.952	0.052	.
lexPT_post	0.541	0.478	1.133	0.259	
PropD	8.192	1.783	4.596	0.000	***
PropD_post_a	0.651	0.431	1.512	0.132	..
diff_stud	0.539	0.134	4.026	0.000	***
diff_prof	0.771	0.233	3.312	0.001	**
imp_cont_a	–1.416	0.522	– 2.712	0.007	**
LT	1.720	0.711	2.419	0.016	*
Significance indicators:	*** 0.001	** 0.01	* 0.05	. 0.1	.. 0.15

- The regression analysis has confirmed that a read speech is difficult to interpret as this indicator is statistically significant in all three equations. The data show that if speakers read a specific segment rather than express its ideas in their own words, an average of 2.6 interpreters (out of 36, i.e. 18 interpreters, two interpretations each) will make an error in the segment in question or omit it entirely.
- The regression analysis shows that the readability of a segment itself does not significantly affect EOs. However, two other readability indicators are

significant. The "read_pre_a" indicator shows that once the clause preceding the current one is difficult in terms of readability, the current segment is likely to have more EOs made. It is considered that a readability index exceeding 14 indicates that the segment is difficult to interpret (Liu et al. 2004). However, this analysis shows that segments with a readability of 12 or higher cause difficulties for interpreters. So, in this case, a PT in the preceding clause affects the Short-term Memory or Production Efforts of interpreters. The variable "read_post_a" indicates whether the clause following the segment in question is difficult in terms of readability (readability value > 12), i.e., the readability index of a following clause is relevant only if the clause is difficult to interpret. This variable is only significant in equation Y_1, which means that the result of the first interpretation also depends on how much of their processing capacity interpreters need to devote to the effort of listening and analysis of the following clause.

- The regression analysis has once again confirmed that lexical PTs have a significant impact on interpreting. This means that the probability of EOs increases with a number, name, country name, abbreviation, technical term, etc. This indicates that when interpreting for the second time, interpreters are already familiar with the structure and the content of the speech and are better able to interpret segments with these PTs.
- As can be seen from the regression equation tables, the "lexPT_post" indicator coefficient is statistically significant only in the Y_1 equation. This means that a lexical PT in the following segment may prevent the current segment from being properly rendered. The "lexPT_pre" indicator is statistically insignificant throughout.
- Another explanatory variable which remains very significant in all three regression equations is the propositional density. This result is not surprising, but the propositional density and its influence on the result of interpretation have not been empirically analysed yet, so this conclusion is nevertheless important.
- Indicator "PropD_post" is only significant if the propositional density of the following clause is higher than 0.53 (i.e. the "PropD_post_a"

indicator). Thus, this result reaffirms the notion that, as already shown with the two indicators discussed above, processing capacity allocated to the Listening and Analysis Effort of the following clause can reduce the quality of the production of the current clause.

- Another explanatory variable that has a significant influence on the quality of simultaneous interpreting are the subjective difficulties noted by the interpreters themselves, which are discussed in more detail in previous chapter. Both the students' and the professional interpreters' difficulties remain statistically significant in all three regression equations. The coefficient of difficulties noted by professional interpreters is higher than that of students, which means that professional interpreters highlight their difficulties more accurately.
- The regression analysis includes variables indicating the communicative, content and overall importance of a particular segment in order to determine whether it is possible to confirm the hypothesis that these indicators influence the output of simultaneous interpreters. Out of all these indicators only the "imp_cont_a" indicator is statistically significant, which shows that the segment contains important information. The coefficient for this indicator is negative which means that when interpreters perceive certain information as important, they try to convey it, so such segments are less often omitted or inaccurately rendered.
- The last statistically significant indicator "LT" shows that interpreters find it difficult to interpret certain segments because some linguistic units in the source language (English) require a descriptive and (or) very long translation in the target language (Lithuanian). These are considered language pair specific PTs.
- Although researchers note that lexical density and speech rate greatly affect the output of simultaneous interpreters, the data suggest that at the micro level speech rate has a small effect and only in conjunction with other indicators, while lexical density is statistically insignificant in all three equations.

The discussed above are the results of the experiment, or the micro level analysis. The following chapter is devoted to the regression analysis of the case study, i.e. a macro level analysis of the characteristics of longer segments, which supplements the research into PTs that make a negative impact on the output of simultaneous interpreters.

4. Case Study

4.1 Case Study Description

The subject of this chapter is the simultaneous interpretation of conferences organized by the EU Parliament. Some meetings and debates in the EU Parliament, as well as their interpretations into Lithuanian, are available online. The material for the analysis in this chapter is taken from three conferences organized by the European Parliament:

1. Third Conference of Rectors: Global Interpretation Forum, held on 13–14 November 2014. Event duration 7 hours 36 mins (out of which 2 hours 36 minutes is used for analysis). The average speech rate is 140.38 wpm. 40 interventions by eight speakers are analysed.
2. Ombudsman seminar: "It's our Europe: Let's get active!", held on 23 April 2013. The duration of the seminar is 2 hours 55 minutes (1 hour 48 minutes suitable for analysis). The average speech rate is 145.65 wpm. The analysis uses 30 interventions by ten speakers.
3. Third European Parliament of Persons with Disabilities, held on 5 December 2012. Event duration is 3 hours 37 mins (1 hour 21 minutes suitable for analysis). The average speech rate is 119.93 wpm. 21 interventions by fifteen speakers are analysed.

The overall scope of the case study is 5 hours 45 mins (44 996 words in English and 30 480 words in Lithuanian). These conferences were chosen because of several reasons: 1) the speakers spoke English, 2) the interpretation into Lithuanian is available and 3) the themes and speakers of all three conferences differ – this diversity helps to identify universal PTs.

Only the parts of the events in which speakers speak English are analysed. For this reason, only 8 interpreters are included in the analysis (although three interpreters worked at each conference) because in one of the events one interpreter was working only with French. As all conferences were held in the same hall, the working conditions for all interpreters may be considered identical. However, it is not known how much information the interpreters had to prepare for these assignments beforehand.

It is also not known how much experience the interpreters had at the time when their interpretations were recorded and whether they were working from their main foreign language or from their second one. However, since all three conferences were held in the European Parliament, it is safe to say that all interpreters have passed an interinstitutional accreditation test which recognizes their high level of competence. As highlighted on the website of the Interpretation Service of the European Parliament*: "Interpreters are professionals who must have a perfect understanding of the language they are working from [...] and able to work on a very wide range of subjects." Thus, although the exact experience and competence of the interpreters is not known, interpreters applying to the institutions of the European Union are subject to the highest standards of interpretation, and therefore their competence should not be called into question.

Case study allows us to perform a macro analysis of problems in interpreting. The material from all three conferences is divided into broad segments (not to be confused with the small segments used in the experiment) according to the speaker and the interpreter, i.e., a new segment is started when a new speaker starts speaking and/or when interpreters change even if the same speaker continues to speak. In this way, the material is divided into 91 speeches with an average duration of 3 minutes 47 seconds, and an average length of 494.5 words. However, in the regression analysis (see section 4.3), in order to facilitate comparison between the segments, the

* http://www.europarl.europa.eu/interpretation/en/the-interpreter.html

longer speeches (over 500 words) are split into several shorter ones, while the speeches that lasted less than a minute are removed from the analysis because these are the outliers that may not allow trends to become apparent. Thus, the object of the regression analysis is 124 segments with an average duration of 2 min 41 seconds, and the average length of 365.51 words.

When comparing the original text with the interpreted text, the number of omissions, errors (additions, substitutions and generalisations) and language errors made in each segment are calculated, as well as the number of times the interpreter paused for more than 3 seconds or used such pause fillers like *ehm, amm*, etc. However, it should be noted that, unlike in the experiment, the clauses are not further divided into smaller segments, i.e., if an interpreter omitted three clauses, that would be counted as three omissions regardless of what those clauses contain, whether they are longer or shorter, etc. Also, because the case study segments are much longer than those of the experiment, "all errors", i.e., omissions, errors of meaning and language errors, can be summed up together.

4.2. Empirical Analysis of the Output of Simultaneous Interpreters

In the dissertation the output of simultaneous interpreters of the case study is examined in three ways: by the speakers, by the interpreters, and by the results of the regression analysis. The output analysed by the speakers shows that it is very difficult to assess why interpreters made more errors interpreting the particular speakers on the basis of descriptive and comparative analysis alone, as it seems that there is a different explanation for each case. Therefore, the more precise econometric methods may be more successful in determining statistically which PTs have a greater impact on the output of simultaneous interpreters. The results of such analysis are presented in section 4.3.

The performance of individual interpreters is compared in Table 10. In order to keep the interpreters anonymous, they are indicated simply as IntA,

IntB, IntC, etc. at random. During the three conferences, interpreters made an average of 2.98 EOs per minute and an average of 0.47 language errors per minute. So, on average, interpreters made 3.45 of all errors per minute. The performances of two interpreters (IntD and IntE) are notable because they made significantly more errors than other interpreters – 5.32 and 4.37 EOs per minute, respectively. It may be that these interpreters made more errors because they have less experience, or their interpreting skills or English language skills are poorer, but it is also possible that the speeches they interpreted were more complex.

It should be noted that when analysing errors of meaning, omissions, filled and unfilled pauses, similar conclusions can be drawn as in the case of the experiment: interpreters have a certain interpreting style. For example, interpreters who make unfilled pauses, fill pauses more rarely. This is best illustrated by the example of IntC (unfilled pauses/min. exceed the average several times while the filled pauses/min. ratio is several times lower than the average). The reverse example is IntE (see Figure 6).

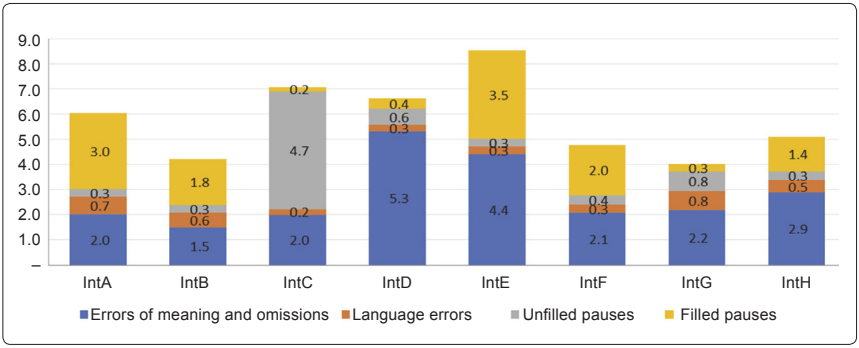

Fig. 6. The output of simultaneous interpreters (results per minute)

There is a moderate negative correlation (-0.53) between EOs and language errors, which means that these types of errors are likely to occur for the same reasons, except that some interpreters incorrectly convey content or omit information while other interpreters correctly render the content

but make language errors. This is an interesting hypothesis which requires additional study to be verified.

4.3. Regression Analysis

The dependent variable (Y) in the case study regression analysis is "all errors" (i.e., the number of errors of meaning including additions, substitutions and generalisations, as well as omissions and language errors) per minute. The value of this variable in the analysed material ranges from 0.28 to 10.38. As mentioned in the description of the case study, the material is divided into 124 segments, each of which is characterised by the following explanatory variables (X_i):

1. Speakers and their characteristics: 35 speakers spoke English, out of which 8 were native speakers (variable: "native"), while the other 8 spoke with a strong accent (accent). These are binary variables which have values of either 0 or 1.
2. Interpreters: the conferences were interpreted by 8 interpreters. A separate indicator is created for each interpreter and marked 1 if a segment is interpreted by a particular interpreter and 0 if not.
3. Speech mode: speech is read (speech1), extemporaneous (speech2) or spontaneous (speech3). These are also binary variables assuming values of either 1 or 0.
4. Speech rate expressed in words per minute: the number of words in the entire segment is divided by the time it took a speaker to say it. The slowest speech rate is 74.23 wpm, while the fastest – 178.89 wpm. Average speech rate – 136.7 wpm.
5. Lexical density (lex) is calculated as described in the experiment analysis with UAM Corpus Tool. The lowest recorded lexical density is 38.62% while the highest is 54.88%. The average lexical density is 47.05%.
6. Propositional density (PropD) is calculated as described in the experiment analysis with CPIDR software. The average propositional density is 0.53, while its variation is between 0.40 to 0.62.

7. Readability (read) is estimated as described in the experiment analysis on the website www.analyzemywriting.com. The values of this indicator vary between 4.46 and 16.64, and the average readability rate is 12.09.
8. Lexical PTs (lexPT) include numbers, names, surnames, names of countries and institutions, etc., but do not include technical terms as these are too complicated to discern in such a large corpus. In order not to distort the statistics of these indicators, the terms "European Union" and "EU" are not counted. Ten segments did not have any of the PTs in this category, and the biggest number of lexical PTs was 29 – set in the segment where the conference chair presents all the speakers at the beginning of the conference.

This data can be analysed in two different ways: 1) without considering the impact of individual interpreters, and 2) eliminating the factors that depend on interpreters. Thus, two separate equations are constructed with dependent variables Y_1 (Table 10) and Y_2 (Table 11). In both linear regression equations there are no multicollinearity issues (VIF < 4), and there are no outliers. The ANOVA *p*-values of the equations are lower than 0.05. This means that the models are appropriate.

Firstly, the impact of PTs on the output of simultaneous interpreters is discussed disregarding the influence of interpreters. As shown in Table 10, the variables that are statistically significant are speech rate, speech mode (read speeches), the strong accent of a speaker and the lexical PTs. The coefficient of determination (R^2) is 0.3849, which means that the above indicators explain slightly less than 40% of all errors in a particular segment.

It should be noted that although the four variables are statistically significant in the regression equation, the variables "speed" and "accent" have the greatest influence on Y_1 (their standardized beta coefficient value is respectively 0.37 and 0.34), while the standardized beta coefficient value of the "lexPT" variable is 0.21. The "speech3" variable is insignificant, but its inclusion in the regression equation is necessary in order to examine

the influence of the general indicator "speech mode" (which, as described above, is divided into three binary indicators).

Table 10. Regression analysis of the effect of PTs on the output of simultaneous interpreters disregarding the influence of interpreters (Y_1)

Explanatory variables	Coefficients	Standard Error	t-Stat	*p*-value	Significance
β_0	– 2.771	1.087	– 2.549	0.012	*
speed	0.039	0.008	5.029	0.000	***
speech1	– 0.793	0.514	– 1.543	0.125	..
speech3	0.456	0.315	1.448	0.150	
accent	1.507	0.350	4.311	0.000	***
lexPT	0.077	0.025	3.104	0.002	**
Significance indicators:	*** 0.001	** 0.01	* 0.05	. 0.1	.. 0.15

The regression analysis method used to evaluate the experimental results is described in section 3.5.3. The same method is applied to the case study. As mentioned above, a different linear regression equation is made in order to establish which variables negatively affect the output of simultaneous interpreters by considering the PTs that are specific to interpreters. By adding the binary variables of all interpreters to the equation, the effect of PTs pertaining to interpreters themselves on the other variables is eliminated. Therefore, the remaining statistically significant indicators reveal universal interpreting problems. The coefficient of determination (R^2) of this regression equation is 0.4817. This means that the indicators explain slightly less than 50% of the average errors in each segment.

The influence of interpreters on the EOs made is assessed by dividing the indicator "interpreter" into eight binary variables (one for each interpreter), indicating whether the specific segment is interpreted by IntA, IntB, IntC, and so on. Attention should also be drawn to the fact that some

other explanatory variables may actually be significant, but the regression equation does not show this because there is an excessive correlation with one of the interpreters. For example, native speakers presented 32 segments, out of which 13 segments (about 40%) were interpreted by IntG, so the effect of the native speaker is largely related to the effect of IntG.

As can be seen from Table 11, there are five statistically significant variables: speech rate, read speech (speech1), and interpreter indicators IntD, IntE and IntF. The standardized beta coefficient values indicate that the "speed" and IntD have the highest impact on segment errors, the values of this indicator being 0.38 and 0.35, respectively. So, it is possible to suspect that IntD's interpreting skills are significantly worse than those of the other interpreters, or that they have encountered particularly complex segments, making it harder to overcome the difficulties of interpreting.

Table 11. Regression analysis of the effect of PTs on the output of simultaneous interpreters taking into account the influence of interpreters (Y_2)

Explanatory variables	**Coefficients**	**Standard Error**	**t-Stat**	***p*-value**	**Signifi-cance**
β_0	– 1.985	1.057	–1.878	0.063	.
speed	0.040	0.009	4.569	0.000	***
speech1	– 1.112	0.593	– 1.875	0.063	.
speech3	0.096	0.305	0.313	0.755	
IntA	– 0.090	0.793	–0.113	0.910	
IntC	0.511	0.859	0.595	0.553	
IntD	2.168	0.604	3.589	0.000	**
IntE	1.153	0.621	1.855	0.066	.
IntF	–1.098	0.645	– 1.701	0.092	.
IntG	– 0.574	0.622	– 0.924	0.358	
IntH	0.008	0.661	0.012	0.991	
Significance indicators:	*** 0.001	** 0.01	* 0.05	. 0.1	.. 0.15

On the other hand, the IntF indicator is also statistically significant, but its coefficient is negative. This means that this interpreter is making fewer errors, regardless of the interpreting difficulties that have to be overcome, and with an interpreting time of more than 51 minutes, this suggests a very high level of interpreting competence. The result is noteworthy because it shows that the result of such a regression analysis could be used to identify expert interpreters (not to be confused with professional interpreters), which, according to Tiselius (2015), is very difficult to do. The statistical significance of the indicator IntF with a negative coefficient could be considered an example of absolute expertise. The next step could be establishing what characteristics of this interpreter and what strategies used allow them to achieve such an exceptional result.

A more detailed discussion of the statistically significant variables of the first (Table 10) and second (Table 11) equations of this chapter is contained in the dissertation in Lithuanian. This summary presents only the general findings:

- One of the most statistically significant PTs is the speech rate. The data show that increased speech rate by 1 wpm results in 0.04 more errors per minute. This indicator remains very significant even after removing the influence of interpreters (Table 11). Thus, it can be clearly seen that speech rate at a macro level plays a particularly important role which was not confirmed at the micro level (see section 3.5.3).
- Another statistically significant variable in the first equation is the speaker's strong accent, i.e., when a non-native speaker speaks English unclearly, although this indicator is not significant if we include the interpreters' variable. This is because the vast majority of speakers with a strong accent were mainly interpreted by two interpreters, so the "accent" indicator in this equation correlates with interpreters' indicators.
- As previously mentioned, read speeches are considered to be a peculiar PT, so it was possible to expect that in the macro level analysis it

would be a statistically significant variable indicating a negative influence on the output of simultaneous interpreters. However, as shown in Table 10, although it is a statistically significant variable, its coefficient is negative. This means that the number of errors in a read segment is lower. Although this seems to contradict the logic, in the context of these conferences this conclusion is correct for two main reasons: 1) the sample is rather small (only 13 segments out of 124); 2) these read speeches do not have other speech-specific characteristics that would make them difficult to interpret (speech rate, propositional density, average readability and average lexical density were quite low).

- Another important variable in the first equation is lexical PTs. As can be seen in Table 10, numbers, names, surnames, abbreviations, names of cities, countries or institutions, increase the number of errors per minute in the segment by 0.077, and this indicator is statistically significant. Interestingly this is the only statistically significant indicator in both macro and micro analyses. However, as can be seen in Table 11, lexical PTs are not included in the second equation of this chapter. This indicator may be insignificant because different interpreters deal with this PT differently. This means that if one interpreter interprets a segment that has a lot of lexical PTs and makes few EOs, while another interpreter interprets a similar segment making a lot of them, the impact of the PT (positive or negative) cannot be discerned by the regression equation since the effect of one interpreter weighs the scale to one side, and the effect of another interpreter – to the other side.

To compare the econometric results of the experiment and the case study, a few things need to be considered. First, due to their specificity, not all variables in the two regression analyses are the same. In the macro level study, it is not possible to distinguish, for example, the propositional density of the current, preceding and following short segments, only the overall propositional density of the broader segment. And in the micro level study,

indicators such as "native speaker" or "strong accent" could not be checked. It should also be noted that in the analysis of larger segments, the average of some indicators is calculated rather than the values of those indicators in the specific place where an interpreter made an EO, therefore the influence of the indicators, such as the propositional density or readability, on the output of simultaneous interpreters cannot be determined precisely, and, as seen in the results of the equations, these indicators become statistically insignificant.

5. Conclusions

The following conclusions are drawn from the empirical results of the dissertation:

1. The method of regression analysis can be used to assess PTs in simultaneous interpreting. The coefficient of determination of the regression equations showing which PTs had a statistically significant impact on the output of simultaneous interpreters varies between 38% and 48%. This means that the PTs included in the equations explain about 40–50% of EOs. In social sciences this is considered to be a reliable result, especially having in mind the complex nature of the object under study.
2. It is generally accepted that it is easier to interpret a text for the second time and that the likelihood of errors greatly diminishes. However, there is no empirical data on to what extent interpreters improve their performance and what specific indicators are improved (see section 3.5). The fact that even the most experienced interpreters made new EOs in their second rendition of the same speech is consistent with the Tightrope Hypothesis and shows that this hypothesis is valid for the English–Lithuanian language pair.
3. The two main parameters of the interpreting quality – the accuracy and fluency of delivery, are negatively affected by PTs in the original text and (or) its delivery:

3.1. The regression analysis (micro-level) of the data collected during the experiment showed that the factors having statistically significant effect on the output of simultaneous interpreters do not coincide with the results of the conference material (macro-level) regression analysis. Propositional density has the greatest negative effect on the output at the micro level, while at the macro level, speech rate plays the biggest role.

3.2. The only PTs that have a statistically significant negative impact on the output both at the micro level and at the macro level, are lexical PTs. In this study there are five main regression equations. In four of them, lexical PTs are statistically very significant, and in the fifth equation, in which they are statistically insignificant, there is a logical explanation as to why mathematically this could have happened (see p. 47).

3.3. Researchers often mention that one of the most important PTs in interpreting is speech rate. However, the regression analysis at the micro level does not confirm this statement, although the macro-analysis shows a statistical significance of this PT. These results may indicate that at the micro level, when parameters can be measured more accurately, the speech rate in itself is not statistically significant, as other parameters become more important (such as the propositional density), while at the macro level, due to the length of the segment, the exact values of the indicators cannot be evaluated, only their averages, but the importance of the speech rate indicator emerges. Therefore, it would be incorrect to state unambiguously that interpreting a faster speech is inherently difficult. This is also evidenced by the fact that the participants of the experiment did not note the faster segments as difficult, while those segments that they did note as difficult due to speed were delivered at a medium rate.

3.4. Some of the results of the empirical study described in the dissertation apply to all language pairs, others are specific to the

English–Lithuanian language pair. The analysis of the experimental data has shown that language pair specific PTs, i.e. lexical gaps or phrases in the source language that require explication and (or) have very long counterparts in the target language also have to be regarded as PTs, although researchers emphasize that interpreters interpret ideas not words. Such linguistic units will vary depending on the language pair. There may also be different syntactic PTs, which are less relevant for the English–Lithuanian languages due to the relative flexibility of Lithuanian language syntax.

4. Several micro-level regression analysis indicators show that the imported cognitive load has a significant effect on the output of interpreters. Due to the complexity of syntax or other aspects specific to a particular language, the regression analysis of other language pairs may show a greater significance for the imported cognitive load.

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Reziumė lietuvių kalba

Sinchroninio vertimo kliuviniai nėra nagrinėti kartu, dažniausiai apsiribojama vieno kliuvinio poveikio vertimo rezultatui analize, todėl šiame darbe atliktas išsamus tyrimas leidžia pirmą kartą sinchroninio vertimo kliuvinius įvertinti empiriškai (atliekant eksperimentą ir atvejo analizę) patvirtinti arba paneigti literatūroje aprašomų atskirų kliuvinių poveikį.

Darbo objektas – sinchroniniam vertimui būdingi kliuviniai (angl. *problem triggers*), kurie gali turėti neigiamos įtakos vertimo žodžiu rezultatui. Vertimo žodžiu rezultatas laikomas neigiamu, jeigu vertimo žodžiu klausytojams neperteikiama ar netinkamai perteikiama originalo kalbos informacija. Kliuvinių apibrėžtis nėra nusistovėjusi, dažnai ji tiesiogiai priklauso nuo tiriamojo objekto. Jie gali būti suprantami labai plačiai, kaip apimantys visas vertimo žodžiu sąlygas, darančias poveikį vertimo rezultatui (nepakankama akustika, pašaliniai garsai, vertėjų pasirengimas ir pan.), ir siauriau, kliuviniais laikant tik su originalo tekstu ir jo pateikimu (kalbėtojo akcentas, kalbėjimo greitis, nežinoma terminologija ir pan.) susijusius aspektus, dėl kurių vertėjas priverstas daugiau protinių pajėgumų skirti informacijos apdorojimui ir (arba) jos perteikimui. Darbe pateikiama visų kliuvinių klasifikacija. Ne visus juos galima įvertinti atliekant konkretų empirinį tyrimą (pvz., pašalinių garsų buvo per mažai, kad būtų galima vertinti jų poveikį vertimo rezultatui), todėl šiame darbe daugiausia nagrinėjami į siaurąją apibrėžtį patenkantys kliuviniai, atsižvelgiant į tai, kaip jie veikia du pagrindinius vertimo žodžiu kokybės vertinimo parametrus – vertimo tikslumą ir sklandumą.

Darbo naujumas ir aktualumas. Per pastaruosius 65 metus teorinių vertimo žodžiu tyrimų vis gausėjo, tačiau vertimo žodžiu problemos, palyginti su kitomis vertimo rūšimis, tebėra ištirtos mažiausiai. Lietuvoje apskritai vertimo žodžiu tyrimai vykdomi tik pastarąjį dešimtmetį: Vilniaus universiteto Filologijos fakulteto Vertimo studijų katedros leidžiamame moksliniame žurnale „Vertimo studijos“ paskelbti keli straipsniai, per pastaruosius kelerius metus Vertimo studijų katedroje apginti keli magistro darbai verti-

mo žodžiu temomis, o 2014 m. išleista Vytauto Vaišnoro studijų knyga „Vertimas žodžiu“. Pristatoma disertacija yra Lietuvoje pirmasis tokios apimties vertimo žodžiu tiriamasis darbas.

Sinchroninio vertimo kliuvinių yra daug ir įvairių, jie daro didelį poveikį vertimo kokybei, tačiau išskyrus keletą nedidelės apimties bandymų, jie beveik nenagrinėti, todėl šiame darbe atliktas visuminis kliuvinių ir jų poveikio vertimo rezultatui tyrimas aktualus visiems tyrėjams, kurie vienu ar kitu aspektu imsis juos nagrinėti.

Gauti rezultatai aktualūs ir patiems vertėjams, taip pat juos rengiantiems dėstytojams: atsižvelgdami į darbo pabaigoje pateikiamas rekomendacijas vertėjai žodžiu galėtų tobulinti sinchroninio vertimo įgūdžius, o juos rengiantys dėstytojai – pasirinkti atitinkamą taktiką nustatytiems kliuviniams šalinti.

Pagrindinis darbo naujumo aspektas – metodologija, kuri dažniausiai taikoma socialinių mokslų (ekonomikos, psichologijos) tyrimuose, o vertimo žodžiu tyrimuose dar neišbandyta. Ji peržengia įprastines kalbotyros tyrimų ribas, leidžia vertimo rezultatą įvertinti statistiniais rodikliais, kitaip tariant, ne tik suteikia galimybę įvertinti kliuvinius, jų kilmę ir poveikį verčiant, bet ir aiškiai nurodo, kad ateityje jie galėtų būti taikomi vertimo žodžiu kokybei nustatyti.

Darbo metodai. Darbe taikomi aprašomasis-analitinis ir lyginamasis metodai ir ekonometrinė analizė. Aprašomasis-analitinis metodas daugiausia naudojamas teorinėje darbo dalyje, o kiti du – atliekant eksperimentą ir atvejo analizę, t. y. empirinėje darbo dalyje.

Paprastai empiriniuose tyrimuose pasirenkamas eksperimentas arba atvejo analizė. Eksperimentas atliekamas „dirbtinėje aplinkoje“, o atvejo analizė – tai „natūralioje aplinkoje“ vykstančių procesų tyrimas (Riccardi 2005:759). Abu šie būdai turi pranašumų ir trūkumų, todėl siekiant kuo didesnio objektyvumo ir išvadų pagrįstumo rengiant šį darbą atlikti abiejų tipų tyrimai. Pasirinkta empirinio tyrimo eiga pagrįsta Settono (2003:68) ir Gile'io (2008) rekomendacijomis, kurie teigia, kad norint atlikti išsamią analizę pravartu at-

sižvelgti į vertimo procesus, vykstančius tiek mažesnės apimties, konkretesniu lygmeniu, tiek ir didelės apimties, bendresniu lygmeniu.

Darbe aprašomas eksperimentas atliktas tiriant studentų ir profesionalių vertėjų tos pačios kalbos du vertimus, o atvejo analizė – tiriant profesionalių vertėjų darbą pasirinktose Europos Parlamento konferencijose. Abiem atvejais taikytas lyginamosios analizės metodas ir ekonometrinė analizė.

Siekiant nustatyti, kurie kliuviniai turi didžiausią įtaką neigiamam vertimo rezultatui (neperteikiama ar netinkamai perteikiama originalo kalbos informacija), atlikta kliuvinių įtakos regresinė analizė. Eksperimento duomenys nagrinėjami siekiant nustatyti, kurie kliuviniai daro didžiausią įtaką vertimo rezultatui mikro- (trumpų teksto segmentų) lygmeniu, o atvejo analizės duomenys – makro- (ilgų teksto segmentų) lygmeniu. Tokia mikro- ir makroanalizė padeda susidaryti bendrą vaizdą apie sinchroninio vertimo kliuvinius ir leidžia teikti siūlymus dėl tolesnių jų tyrimų ir tyrimų metodologijos kūrimo.

Pagrindinis šio darbo **tikslas** – nustatyti, kokie kliuviniai daro didžiausią poveikį sinchroninio vertimo iš anglų kalbos į lietuvių kalbą rezultatui.

Šiam tikslui pasiekti keliami tokie **uždaviniai:**

1. ištirti trijų ES Parlamente organizuotų konferencijų medžiagą, kurią sudaro maždaug 6 valandų trukmės sakytinio teksto originalo (anglų) kalba ir tokios pat trukmės sakytinio teksto vertimo (lietuvių) kalba siekiant nustatyti sinchroninio vertimo kliuvinius, su kuriais susiduria vertėjai realioje situacijoje;
2. atlikti eksperimentą, kuriame du kartus verčiama ta pati kalba, siekiant nustatyti profesionaliems vertėjams ir Vertimo studijų katedros vertimo žodžiu programos studentams magistrantams kylančias sinchroninio vertimo problemas ir sunkumus;
3. atlikti empirinę nustatytų kliuvinių analizę;
4. atlikti regresinę kliuvinių analizę, siekiant išskirti svarbiausius kliuvinius mikro- (trumpų teksto segmentų) ir makro- (ilgų teksto segmentų) lygmenimis:
5. įvertinti vertimo rezultatus, gautus vertėjams verčiant tą pačią kalbą antrą kartą, kaip metodinę priemonę kliuviniams patvirtinti;

6. patikrinti, ar Gile'io (1999) iškelta akrobato lyno hipotezė (angl. *Tightrope Hypothesis*), kad vertėjai žodžiu dirba ties savo protinių informacijos apdorojimo pajėgumų riba (angl. *processing capacity saturation*), galioja ir anglų–lietuvių kalbų porai.

Išsikeltas tikslas ir su juo susiję uždaviniai lėmė ginamo **darbo struktūrą**. Darbą sudaro įvadas, keturi skyriai, skirti teoriniams sinchroninio vertimo ir jo analizės aspektams, du skyriai, kuriuose aptariami eksperimento ir atvejo analizės rezultatai, ir išvados. Pirmiausia teorinėje dalyje (2 skyrius) apibrėžiama sinchroninio vertimo sąvoka ir sinchroninio vertimo ypatybės, aptariami komunikaciniai sinchroninio vertimo aspektai, apibūdinami verčiamieji įvykiai, apibrėžiamas vertimo vienetas. 3 skyrius skirtas vertimo žodžiu, kaip kognityvinės veiklos, procesui aprašyti, didžiausią dėmesį skiriant Gile'io sinchroninio vertimo pastangų modeliui. Kadangi darbo tikslas – įvertinti kliuvinių poveikį vertimo rezultatui, svarbu aptarti vertimo kokybės sąvoką ir galimus jos vertinimo būdus. Tai aprašoma 4 skyriuje, išskiriant dvi pagrindines vertimo žodžiu kokybės vertinimo kategorijas – tikslumą ir sklandumą. 5 skyriuje išsamiai aprašomi vertimo žodžiu literatūroje nurodomi sinchroninio vertimo kliuviniai, siūloma šių kliuvinių klasifikacija, aptariamos vertimo problemų ir vertimo sunkumų sąvokos. Tolesni du skyriai (6 ir 7) skirti pagrindiniams darbo rezultatams pristatyti, atskirai aptariant atliktą eksperimentą ir atvejo analizę. Darbo pabaigoje pristatomos išvados ir tolesnių tyrimų perspektyvos.

Ginamieji teiginiai:

1. Sinchroninio vertimo kliuviniams vertinti gali būti naudojamas regresinės analizės metodas, kuris iki šiol vertimo žodžiu tyrimų srityje neišbandytas.
2. Versdami sinchroniškai vertėjai padaro klaidų ir praleidimų dėl dviejų priežasčių: 1) dėl to, kad dirba ties savo protinių informacijos apdorojimo pajėgumų riba (akrobato lyno hipotezė), ir 2) dėl originalo kalboje bei jos pateikime slypinčių kliuvinių.

3. Mikrolygmeniu ir makrolygmeniu neigiamą vertimo rezultatą lemia skirtingi kliuviniai: mikrolygmeniu didžiausią įtaką daro verčiamo segmento teiginių tankis, o makrolygmeniu – kalbėjimo greitis.
4. Mikrolygmeniu kalbėjimo greitis savaime nėra kliuvinys: vertimo rezultatą jis neigiamai veikia tik kartu su kitais kliuviniais.
5. Vieninteliai kliuviniai, kurie statistiškai reikšmingai neigiamai veikia vertimo žodžiu rezultatą tiek mikrolygmeniu, tiek makrolygmeniu yra leksiniai kliuviniai.
6. Tokie kalbiniai vienetai kaip leksinės spragos ir žodžių junginiai, kurie neturi tikslaus ekvivalento vertimo kalboje ar kuriuos verčiant į lietuvių kalbą reikia eksplikuoti arba versti aprašomuoju būdu, taip pat turėtų būti laikomi kliuviniais, nors literatūroje pabrėžiama, kad vertėjai žodžiu verčia ne kalbėtojo žodžius, o teiginių prasmę.
7. Vertimo rezultatui svarbią įtaką turi ir importuotoji kognityvinė apkrova, t. y. poveikį produkuojamam segmentui daro ne tik paties produkuojamo segmento ypatumai, bet ir ankstesnių bei paskesnių segmentų ypatumai.

Vertinant empirinių tyrimų rezultatus, daromos tokios **išvados**:

1. Sinchroninio vertimo kliuviniams vertinti gali būti naudojamas regresinės analizės metodas, kuris iki šiol vertimo žodžiu srityje nenaudotas. Statistiškai reikšmingai vertimo rezultatą veikiantiems kliuviniams nustatyti sudarytų regresinių lygčių determinacijos koeficientas svyruoja nuo 38 proc. iki 48 proc. Tai reiškia, kad į lygtis įtraukti kliuviniai paaiškina apie 40–50 proc. vertėjų padaromų klaidų. Socialiniuose moksluose tai laikoma patikimu rezultatu, ypač atsižvelgiant į tyrimo objekto kompleksiškumą.
2. Visuotinai priimta, kad tą patį tekstą versti antrą kartą lengviau ir klaidų tikimybė labai sumažėja. Tačiau iki šiol nėra paskelbta vertinimų, kokia dalimi ir kokius konkrečius rodiklius vertėjai pagerina. Kadangi net ir labiausiai patyrę vertėjai antrą kartą versdami tą patį tekstą padarė naujų

praleidimų ir klaidų, kurių nebuvo padaryta verčiant tekstą pirmą kartą, tai patvirtina hipotezę, jog vertėjai gali padaryti klaidų ir praleidimų dėl to, kad dirba ties savo protinių informacijos apdorojimo pajėgumų riba, t. y. akrobato lyno hipotezė patvirtinta ir anglų–lietuvių kalbų porai.

3. Du pagrindinius vertimo žodžiu kokybės vertinimo parametrus – vertimo tikslumą ir sklandumą – neigiamai veikia originalo kalboje ir jos pateikime slypintys kliuviniai:
   3.1. Per eksperimentą surinktų duomenų (mikrolygmens) regresinė analizė parodė, kad statistiškai reikšmingą įtaką konkrečiame segmente daromoms turinio klaidoms ir praleidimams turintys veiksniai nesutampa su konferencijų medžiagos (makrolygmens) regresinės analizės rezultatais. Mikrolygmeniu didžiausią neigiamą įtaką vertimo rezultatui daro verčiamo segmento teiginių tankis, o makrolygmeniu – kalbėjimo greitis.
   3.2. Vieninteliai kliuviniai, kurie statistiškai reikšmingai neigiamai veikia vertimo žodžiu rezultatą tiek mikrolygmeniu, tiek makrolygmeniu, yra leksiniai kliuviniai, susijusę su informacijos perteikimu ne deverbalizuojant, o perkoduojant originalo tekstą. Šiame darbe sudarytos penkios regresinės lygtys. Keturiose iš jų leksiniai kliuviniai yra statistiškai labai reikšmingi, o penktoje lygtyje, kurioje jie yra statistiškai nereikšmingi, yra logiškas paaiškinimas, kodėl matematiškai galėjo taip atsitikti.
   3.3. Mokslinėje literatūroje dažnai minima, kad vienas svarbiausių kliuvinių vertėjams žodžiu yra kalbėtojo kalbėjimo greitis. Vis dėlto atlikta mikrosegmentų regresinė analizė neleidžia šio teiginio patvirtinti, nors makroanalizė ir rodo didelį statistinį šio kliuvinio reikšmingumą. Šie rezultatai gali reikšti, kad mikrolygmeniu, kai galima tiksliau išmatuoti daug įvairių parametrų, greitis savaime nėra statistiškai reikšmingas, nes daug svarbesni tampa kiti parametrai (tokie kaip teiginių tankis), o makrolygmeniu, kai dėl didesnės nagrinėja-

mo segmento apimties vertinamos ne tikslios rodiklių reikšmės, o jų vidurkiai, atsiskleidžia greičio rodiklio svarba. Todėl būtų neteisinga vienareikšmiškai teigti, kad esant dideliam kalbėjimo greičiui verčiamas tekstas yra savaime sudėtingas. Tai parodo ir faktas, kad eksperimento dalyviai nepažymėjo kaip sunkių tų segmentų, kurie buvo iš tiesų pasakyti greitai, o tie segmentai, kuriuos vertėjai pažymėjo kaip sunkius dėl greičio, buvo sakomi vidutiniu greičiu.

3.4. Kai kurie darbe aprašyto empirinio tyrimo rezultatai galioja visoms kalbų poroms, kiti – tik anglų–lietuvių kalbų porai. Eksperimento duomenų analizė parodė, kad tokie kalbiniai vienetai kaip leksinės spragos ir žodžių junginiai, kurie neturi tikslaus ekvivalento vertimo kalboje ar kuriuos verčiant į lietuvių kalbą reikia eksplikuoti arba versti aprašomuoju būdu, taip pat turėtų būti laikomi kliuviniais, nors tyrėjai iki šiol jiems neskyrė dėmesio, argumentuodami tuo, kad vertime žodžiu verčiami ne žodžiai, o teiginių prasmė. Tokie kliuviniais laikomi kalbiniai vienetai skirsis priklausomai nuo kalbų poros. Taip pat bus skirtingi sintaksiniai kliuviniai, kurie anglų–lietuvių kalbų porai mažiau aktualūs dėl lietuvių kalbos sintaksės santykinio lankstumo.

4. Keli mikrolygmens regresinės analizės veiksniai signalizuoja, jog vertimo rezultatui svarbią įtaką daro importuotoji kognityvinė apkrova. Dėl sintaksės sudėtingumo ar kitų konkrečiai kalbų porai būdingų aspektų atliekant kitos kalbų poros kliuvinių regresinę analizę importuotosios kognityvinės apkrovos reikšmė gali padidėti.

Approbation and dissemination of the research results
Publications by the author of the dissertation:

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Work experience		
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2011/present	Vilnius University	Interpreter trainer, teaching assistant
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Research and teaching	
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Consecutive interpreting, simultaneous interpreting	Consecutive interpreting, Interpreting from C language, Master thesis writing seminars, Bachelor thesis writing seminars

Sabbaticals and study periods		
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University of Leeds, UK	2 months	2010
Edinburgh Interpreting Research Summer School Herriot-Watt University, UK	1 week	2014
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