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ATTRIBUTE AND RELIABILITY HEDGING DEVICES IN ENGLISH, CZECH AND SLOVAK RESEARCH ARTICLES

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Abstract

This paper is a cross-cultural investigation into attribute and reliability hedges in research papers on applied linguistics published in journals in English, Czech and Slovak. Overall, 30 research articles have been examined using discourse and corpus analysis. Although Čmejrková et al. (1999) assert that modality and a low degree of decisiveness are more typical for Czech scientific publications than for English, the findings demonstrate that hedges are employed considerably more frequently and are more varied in the selected articles written in English than in Czech and Slovak. This could be connected with the writer's choice of vocabulary or with limited literature focusing on academic vocabulary in the Slavic languages. The wider variety of hedging expressions in the articles written in English could be the consequence of the historical impact of Latin and French on the language, which provided synonyms to the already existing Anglo-Saxon expressions.

Key words

Hedges; academic vocabulary; academic writing; research articles; discourse analysis; corpus analysis

1. Introduction

English as the language of sciences has resulted in the worldwide interest among academics to publish in anglophone journals. Creating a good research paper might be a challenge in any language, native or foreign. On the one hand, the process involves and is influenced by the author's knowledge, communication style, immediate environment, or by the system established by a particular lingua culture referring to processing research findings (Bilá and Kačmárová 2021, see also Ilynska et al. 2016, Owtram 2010). On the other hand, the author must consider the journal requirements, which typically means applying the Anglo-American academic writing principles.

Prior to creating a research article in the source language, ideally, authors should become familiar with the typical structure and linguistic pattern of the

genre in the target language, including vocabulary. In the English-speaking academic community, there are numerous manuals and sources that authors can draw inspiration and advice from (e.g., Bailey 2018, Charles and Pecorari 2016, De Chazal and McCarter 2012, Gastel and Day 2016, Glasman-Deal 2010, Goodson 2017, Hewings and Thaine 2012, Hofmann 2010, Mack 2018, Pu 2022, Sala 2015, or Simpson 2014); however, these are intended for active users of the language only. A non-native author who does not communicate in English might be unable to produce a paper that would meet the requirements proposed by anglophone journals. Nevertheless, they could be assisted by those familiar with the Anglo-American academic writing style, for example, by participating in specialised writing courses in their native language to learn to apply these principles when creating their text. Ultimately, this would contribute to their success and simplify not only their work but also that of a potential translator, as there would be no need for adjustments due to the incompatibility of the source text with the target culture requirements. Active users of English who can produce their research articles might be aware of the Anglo-American academic writing style; however, they might not have a detailed knowledge of all its linguistic aspects, which this paper could partly contribute to and ultimately help to develop these authors' writing skills even further.

Vocabulary is an integral part of any text as it conveys authors' thoughts to their readers. Individual scientific disciplines seem to employ their own language to communicate (Hayot 2014). Furthermore, Bacon (2013) states that the writing style typical for, for example, mathematicians generally differs from that employed by historians or specialists in social sciences. She also adds that the way the author creates their text, paragraphs and sentences changes and frequently depends on their expertise, and also on the factors related to the author's personal attributes, their current mindset, their occupational situation, ethnic origin, as well as their ability to express their thoughts verbally. Authors generally have complete freedom to use and arrange linguistic devices into sentences and paragraphs to communicate their findings, arguments, or conclusions. Thus, on the one hand, every author has a choice, and on the other, they are required to adhere to certain conventions, which often leads to uniformity to ensure objectiveness, trustworthiness, clarity, and precision, and helps to eliminate misinterpretation (Murin 2021). The goal of a research article is not to impress verbally, but to be original, and provide compelling arguments and heterogeneity in methodology (Kačmárová and Bilá 2021), which also influences the choice of vocabulary. Non-native authors in particular might often be unsure what vocabulary they should select or avoid using to produce a good quality research paper that would be accepted by an anglophone journal. Successful papers written in English could thus be investigated as they might provide useful insights into linguistic patterns typical for the genre in the target culture.

The Anglo-American writing community recognises the term *English for Academic Purposes*, which has been the subject of extensive research for nearly four decades. The research has resulted in several lists containing the most frequent single-word expressions, for example, *University Word List* (Xue and Nation 1984), *Academic Word List* (Coxhead 2000), *Academic Keyword List* (Paquot 2010),

the New Academic Word List (Browne et al. 2013), *Academic Vocabulary List* (Gardner and Davies 2014). Moreover, some linguists have compiled lists consisting of multi-word units, for instance, *Academic Formulas List* (Simpson-Vlach and Ellis 2010) and *Academic Phrasebank* (Morley 2015).

In the Czech and Slovak academic environments, manuals published more recently have focused on specific research areas, such as medicine or social sciences, and discuss not only research papers, but additional genres, for instance, presentations, reviews, or theses (e.g., Dobbersteinová 2019, Meško 2004, Šandarová 2005). In the last decade, authors have investigated and compared various linguistic functions in scientific publications in English and Czech or Slovak (e.g., Čechová 2008, or Walková 2017 and 2018). Nevertheless, attempts to analyse or define what academic vocabulary is in the Czech or Slovak linguistic culture and what it comprises are still limited (e.g., Levická and Zmrík 2019, or Kovářiková et al. 2021).

One of the microstructural elements of practically every research paper that authors should be aware of is a *hedge*. The term was coined by Lakoff (1973: 458) who studied the meaning and fuzzy logic of statements, concluding that “natural language sentences will very often be neither true, nor false, nor nonsensical, but rather true to a certain extent or false to a certain extent, true in certain respects or false in other respects.” *Hedges* are „words whose job is to make things fuzzier or less fuzzy“ (Lakoff 1973: 471). They have also been addressed, for example, by Hyland (1996, 1998). In his analysis of 26 studies focusing on cell and molecular biology, he distinguishes between reader- and content-oriented statements communicated by authors, with the latter motivated by “the writer’s focus on propositional accuracy or on self protection from the consequences of poor judgement, although there may be an element of both purposes on any particular occasion” (Hyland 1996: 9).

Most Czech linguists have adopted the English expression *hedge* and *hedging*, although Daneš (2000) also uses the term *epistemic modality*. However, Hyland (1998: 44) considers hedging to be “one aspect of epistemic modality, concerned with personal judgements based on a lack of knowledge”. In Slovak, Bilá et al. (2018) have created the term *relativisation* or *reservation* (in Slovak *relativizácia, rezervovanosť*).

Relativisation or reservation can be expressed using various linguistic devices that contribute to creating accurate or cautious statements or arguments, both in the spoken and written form. In the academic environment, the phenomenon is considered particularly important since it helps the author of a scientific publication eliminate objections raised by potential opponents. The use of hedges is connected with the fact that empirical research cannot contain or include the absolute number of cases or circumstances, therefore it is impossible to draw universally valid conclusions. The only cases that can be considered are those investigated by the scientists themselves. Furthermore, Hyland (2005: 17) suggests that verbal and grammatical choices in interaction, including “a categorical or hedged assertion” are generally “choices motivated by intentions to express certain meanings in specific situations”. In research articles, hedges are most frequent “interactional resources that involve the reader in the text and

withhold commitment and open dialogue” (Hyland 2005: 49). Generally, hedging is considered an important communication source as, on the one hand, it can help academics enhance their reputation and on the other, it is an essential rhetorical instrument thanks to which the scientific community acknowledges the author’s work (Hyland 1996). This style of communication might probably have emerged from a gradual diversion from the perception of sciences and their findings as invariable, universally valid, and truthful to understanding them as a dynamic and ceaseless human activity (Daneš 2000). Scientific findings and observations thus cannot be consistently viewed as definite or absolute, which should also be reflected in the language researchers use.

Regarding further classification, Hyland (1996: 6) divides content-oriented statements into “accuracy-oriented and writer-oriented” expressions. Within the concept of *accuracy-oriented hedges*, he recognises *attribute hedges*, which help to depict “the variability of natural phenomena” and *reliability hedges*, which reflect authors’ confidence in their assertions. These two types of hedges are the focus of this investigation. Authors use them “in the absence of certain knowledge”, allowing “readers to distinguish between what is actual and what is only inferential and imply that the writer has less than full warrant for categorical assertion” (Hyland 1996: 10). *Attribute hedges* can be understood as those focusing on the subject or the topic of research, helping the author express views as precisely as possible “to restructure categories, define entities and conceptualise processes more exactly to distinguish how far results approximate to an idealised state, specifying more precisely the attributes of the phenomena described” (Hyland 1996: 10). In English, there are various lexical devices used for this purpose: for example, adverbs of degree (e.g., *considerably*), stylistic disjuncts (e.g., *generally*) or prepositional phrases (e.g., *to some degree*). *Reliability hedges* are those that help the author express their degree of certainty or uncertainty in the assumptions they are making or the conclusions they are drawing. Hyland (1996: 12) adds that these linguistic devices “acknowledge subjective uncertainties and are motivated by the writer’s desire to explicitly convey an assessment of the reliability of propositional validity.” For this purpose, authors use, for example, modal verbs (e.g., *may*), adverbs of certainty (e.g., *probably*) or linking verbs (e.g., *seem*). Both attribute and reliability hedges can normally be found in those sections of research papers where the author discusses or interprets their findings, or where they draw conclusions, such as the discussion or the results sections, or the conclusion.

In the last decade, hedges have been the focus of cross-cultural research in applied linguistics. For example, Yang (2013: 32) compares their use in English and Chinese scientific articles. Although she finds some similarities, there are major differences in the frequency, as “Chinese authors tend to be more assertive in their scientific writing than native English speakers and employ fewer hedges”, and in their types. Yang’s conclusion is that it is the effort to preserve Chinese cultural identity that motivates the authors in their choice of vocabulary. A similar conclusion, “a more confident manner” of presenting “ideas and points” is drawn by Mkhitarian and Tumanyan (2015: 2509) who compare the use of hedging devices in English and Armenian academic discourse. Furthermore, Mur-Dueñas (2021) examines business management research articles in Spanish and English

and identifies differences in the frequency of using hedges, in how they are distributed and in the lexical and grammatical choices made by the authors. Similarly to previous research, those publishing in English use hedging devices more frequently than in Spanish which, according to Mur-Dueñas (2021: 11), is caused by the fact that “the Spanish disciplinary community” is “smaller,” therefore “RA writers can be more certain about consensual/non-consensual knowledge and understanding, which may lead to more categorical statements and less need for attenuation”. She explains that in the international environment, where research papers are read by a larger, presumably more diverse and more critical scientific community, the researchers need to express their ideas less assertively. The lexical and grammatical differences “may have to do with the different language systems”. Liu and Tseng (2021) focus on hedges and boosters in research articles and use narrative inquiry and grounded theory approaches while discovering that narrative inquiry researchers rely more on boosters and grounded theorists are more tentative in building theories. The study by Limnios (2022: 245) examines hedges as “locations for fictionality” in fifteen scientific articles written in English, while identifying “the parameters of Real Condition and Fictional Condition each determined by context, verbal process types, and the number of hedging devices used”.

In the Czech and Slovak academic community, Daneš (2000) examines research papers from numerous scientific disciplines in the Czech environment, discovering that relativisation or expression of certainty or uncertainty is typical for some authors, especially in introductions and conclusions. Their employment also depends on the genre and the author’s generation. Čmejrková et al. (1999) investigate the Czech scientific style of writing, concluding that in comparison with the Anglo-American texts, typical features of Czech publications in social sciences and humanities are modality, a low degree of decisiveness and an abundance of verbs such as *seem*, *appear* (we can presume that the findings would be very similar in Slovak, given the shared history and continuous cooperation among scientists). The purpose of this paper is thus to examine whether the above findings particularly by the Czech researchers are currently valid and to identify to what extent hedges are present in selected research papers published in English, Czech and Slovak. This research could expose the differences between the linguistic cultures in question, the Anglo-American, Czech and Slovak. Its findings could be considered by authors who create their research articles in English, but also by translators who need to be aware of the Anglo-American writing principles and adjust the translation to meet the publishers’ requirements.

2. Methodology

To achieve the objective, 30 research papers (10 in English, 10 in Czech and 10 in Slovak) focusing on applied linguistics were selected. The journals had to be registered in either Scopus Elsevier or Current Contents databases to ensure comparable standards. Subsequently, the guidelines for potential authors regarding the writing style were examined as these might play a significant role in the

way the paper is organised or in the choice of vocabulary. The summary referring to these is presented in tables 1–3.

Table 1. Journals with research articles published in English

Journal (published since)	Publisher / database	Issues annually / focus	Stylistic guidelines
<i>Journal of English as a Lingua Franca</i> (2012)	De Gruyter Mouton/ Scopus Elsevier	two / dialectology, English, Germanic languages, linguistics, semiotics, sociolinguistics, theoretical disciplines	Ask a native speaker to proofread paper
<i>Language and Communication</i> (1981)	Elsevier Ltd. / Scopus Elsevier	six / applied linguistics, culturology, discourse analysis, linguistic anthropology	Review spelling and grammar, use inclusive language; avoid bias, stereotypical ideas, slang, referencing dominant cultures and/or cultural superiority; use plural to achieve gender neutrality
<i>Language Learning and Technology</i> (1997)	University of Hawaii Press (USA) / Current Contents	three / applied linguistics, foreign language research, translation, use of digital technologies	Proofreading by someone familiar with English writing style and APA guidelines; British and American varieties accepted

Table 2. Journals with research articles published in Czech

Journal (published since)	Publisher / database	Issues annually / focus	Stylistic guidelines
<i>Slavia</i> (1921, except World War II)	Institute of Slavonic Studies of the Czech Academy of Sciences / Scopus Elsevier	four / Slavic philology, comparative studies on Slavic languages or literature, papers on non-Slavic languages accepted	none
<i>Časopis pro moderní filologii / Journal for Modern Philology</i> (1911)	Faculty of Arts, Charles University, Czech Republic / Scopus Elsevier	two / contrastive linguistics, European languages	none

Table 3. Journals with research articles published in Slovak

Journal (published since)	Publisher / database	Issues annually / focus	Stylistic guidelines
<i>Slavica Slovaca</i> (1965)	Slovak Academy of Sciences / Scopus Elsevier	three / comparative studies, linguistics, history, ethnology, other disciplines in Slovak, Slavic languages, English, German, French	none
<i>Jazykovedný časopis / Journal of Linguistics</i> (1948)	Linguistic Institute of Ľudovít Štúr of the Slovak Academy of Sciences / Scopus Elsevier	three / Slavic languages, English, German, linguistic theory	none
<i>Slovenská reč / Slovak Speech</i> (1932/1933)	Linguistic Institute of Ľudovít Štúr of the Slovak Academy of Sciences / Scopus Elsevier	three / contemporary language, its development, onomastics, dialectology, phraseology	none

Since this investigation focuses on hedges that tend to appear mainly in the Discussion / Analysis, Results or Conclusion (e.g., Hyland 1998, Yang 2013), the selected papers have also been analysed in terms of their structure. The overview is presented in Tables 4–6. For clarification, PWO represents “a personal way of organising” the text, which means that, instead of following the IMRAD structure (e.g., Swales 1990), the author(s) arranged presented information, chapters, and subchapters, in the way they personally considered most effective. The presence of a particular section is marked by “+”, while “-” signifies its absence.

Table 4. Structure of papers published in English. A – Journal of English as a Lingua Franca, B – Language & Communication, C – Language Learning and Technology

Paper number	1	2	3	4	5	6	7	8	9	10
Journal	A	A	A	B	B	B	B	C	C	C
INTRODUCTION	+	+	+	+	+	+	+	+	+	+
LITERATURE REVIEW	-	PWO	-	-	-	-	-	+	-	+
METHODS	+		PWO	+	+	+	+	+	+	+
MATERIAL/DATA				+	+	+	+	-	+	+
RESULTS	-			+	-	+	+	+	+	+
DISCUSSION/ANALYSIS	+			+	+	+	+	+	+	+
CONCLUSION	+	+		+	+	+	+	+	+	+

Table 5. Structure of papers published in Czech. D – Slavia, E – Jazykovedný časopis / Journal of Linguistics, F – Časopis pro moderní filologii / Journal for Modern Philology

Paper number	1	2	3	4	5	6	7	8	9	10
Journal	D	D	D	E	E	E	E	F	F	F
INTRODUCTION	+	+	+	+	+	+	+	+	+	+
LITERATURE REVIEW	PWO	PWO	PWO	-	PWO	PWO	PWO	PWO	-	+
METHODS				+					+	+
MATERIAL/DATA				+					+	+
RESULTS				-						
DISCUSSION/ANALYSIS				+					+	+
CONCLUSION	+	+	+	+	+	+	+	+	+	+

Table 6. Structure of papers published in Slovak. G – Slavia Slovaca, E – Jazykovedný časopis / Journal of Linguistics, H – Slovenská reč / Slovak Speech

Paper number	1	2	3	4	5	6	7	8	9	10
Journal	G	G	G	G	E	E	E	H	H	H
INTRODUCTION	PWO	PWO	+	+	+	+	+	+	+	+
LITERATURE REVIEW						+	PWO	+	-	+
METHODS						+		+	+	+
MATERIAL/DATA						+		+	+	+
RESULTS						-		+	+	+
DISCUSSION/ANALYSIS					+	+		-	+	
CONCLUSION	+		+	+	+	+	+	+	+	+

Both qualitative and quantitative methods have been applied in the study. Firstly, a corpus (database) was compiled from the research articles, one in English, one in Czech and one in the Slovak language. Secondly, discourse and corpus analyses were conducted. Corpus analysis is a suitable method in this case, which has been confirmed by, for instance, Biber et al. (2007) who mention two approaches to corpus research. On the one hand, researchers can investigate the structure of texts belonging to the same discourse community (top-bottom research) and on the other hand, they can focus on smaller linguistic units, which can contribute to the comprehension of the style or pattern based on which texts typical for a particular genre are constructed (bottom-up research), which has been applied in this investigation. Furthermore, Connor et al. (2016) state that the method enables the comparison of similar texts in different languages and provides data about both linguistic and rhetorical preferences in various languages and cultures, which can then be generalised.

Table 7. Corpus statistics

	English corpus	Czech corpus	Slovak corpus
Number of tokens	93 769	59 692	64 530
Number of words	77 505	47 229	49 775

Subsequently, the texts in each corpus were modified and the following information was deleted: the title, information about the journal, abstract and bibliography. Table 7 above illustrates the number of tokens and words in each corpus after this procedure. Since attribute and reliability hedges refer to comments made by the author about their research, its subject-matter, or they draw conclusions or interpret the findings, they typically occur in the Discussion / Analysis or in the Conclusion. These sections were extracted from the articles written in English, except for papers number 2 and 3 (Table 4 above), which were examined as a whole. Due to inconsistencies, extraction of Discussion / Analysis was impossible in the research papers published in Czech and Slovak, therefore entire texts were investigated (excluding the article title, journal references, abstract and bibliography). Only two articles in Czech and two in the Slovak language contained a chapter devoted to the analysis of the findings. The authors of one of the Slovak research papers did not even include Conclusion. Nevertheless, it was still possible to use both Czech and Slovak corpora and identify hedging expressions, since the authors of the papers in these languages typically analysed or commented on their findings and the subject-matter of their investigation where they presented the results.

The following phase of the research involved manual discourse analysis. The corpora were examined and hedges expressing the authors' attitude to various aspects of their research as well as those demonstrating their certainty or uncertainty about their findings or conclusions were identified. Subsequently, the expressions were subjected to corpus analysis using the SketchEngine tool (<https://www.sketchengine.eu/>), the goal of which was to determine the frequency of their occurrence as well as their variety. The KWIC (keyword in context) instrument was used since hedges cannot be investigated without the context. The expressions were then manually reviewed to include the relevant items only. As a result, when SketchEngine identified, for instance, an expression that the author of the analysed paper used to refer to or comment on other research articles or other authors' work or findings, which can normally be found in the introduction or in the literature review, but occasionally also in the methodology, it was not included in the analysis.

Finally, a quantitative analysis of the acquired data was conducted. The numerical data for the identified hedging expressions were recorded and are presented in tables in the Results and Discussion section below, while the complete list of hedges can be found in the Appendix.

3. Results and Discussion

This paper focuses on accuracy-oriented hedges, namely attribute and reliability hedges, used when authors introduce their claims with caution because they lack some information, asking the reader “that a proposition be understood as true as far as can be determined” (Hyland 1996: 10). They are primarily used in the comments on the phenomenon the author is investigating, including the circumstances (attribute hedges), and also when drawing conclusions cautiously based on the author’s findings, which are limited to certain conditions and therefore cannot be generalised (reliability hedges).

The results indicate that attribute and reliability hedges can be represented by the following grammatical categories: modal verbs, linking verbs, lexical verbs, adjectives, adverbs, nouns, and pronouns / determiners. The following sections are categorised according to English word classes, which were assigned their Czech and Slovak equivalents. The decision to employ this classification derives from the fact that some expressions belong to a different word class in Czech and Slovak. One such example is the modal verb *would*, which has the same equivalent in Czech and Slovak *by*. While in the Czech language *by* declines and constitutes the conditional (Slovník spisovného jazyka českého), in Slovak it does not decline, although it is considered a particle that also forms the conditional (Slovník súčasného slovenského jazyka).

Table 8 below illustrates the total number of occurrences of hedges in each corpus, or absolute frequency (AF), and the relative frequency (RF), that is the occurrences per 1000 words, which is a more objective comparison of the data, since the number of tokens and words in the analysed corpora differs significantly, especially when comparing the English corpus with the Slovak and the Czech (Table 7 above). To determine the relative frequency, the figure for the total number of words was considered, which reflects the total number of words in each research article excluding the title, journal references, abstract and bibliography. The results show that the authors of English research papers used hedging expressions significantly more frequently than those who published in Czech and Slovak.

Table 8. Hedging expressions in each corpus and their absolute and relative frequency

Corpus	AF	RF
English	854	11.01
Czech	249	5.27
Slovak	240	4.82

Overall results for each word class and corpus, including AF and RF are shown in Table 9 below. When assessing RF according to individual word classes, in the English corpus, value 1 has been exceeded in five out of seven categories: modal verbs, lexical verbs, adjectives, adverbs and pronouns / determiners. In the Czech corpus, RF exceeded 1 only in the case of adverbs. In the Slovak corpus, the value

exceeded 1 also in the case of adverbs and modal verbs. The findings show that the only grammatical category used more frequently by authors writing in Czech and Slovak than by those publishing in English was nouns.

Table 9. Absolute and relative frequency of hedging expressions for each word class

Word class	English corpus		Czech corpus		Slovak corpus	
	AF	RF	AF	RF	AF	RF
Modal verbs	321	4.14	37	0.78	59	1.18
Linking verbs	56	0.72	16	0.34	5	0.10
Lexical verbs	102	1.32	18	0.38	27	0.54
Adjectives	89	1.15	13	0.27	29	0.58
Adverbs	181	2.33	93	1.97	65	1.30
Nouns	22	0.28	42	0.89	28	0.56
Pronouns/ Determiners	83	1.07	30	0.63	27	0.54

3.1 Modal verbs

As the results indicate, this word class was the most popular choice by those who published their papers in English. The English list contains the following modal verbs: *may*, *can*, *could*, *would* and *might*, ordered from most to least frequent (see Table A1 in the Appendix for further details). As is evident, *may* was the most frequently used verb (97 occurrences), which is in line with Mur-Dueñas' findings (2021), followed by *can* (95 occurrences). There are only two expressions in Czech and Slovak, *moci / môt'* (*may / might / can / could*) and *by*, since authors writing in these Slavic languages express modality differently, using, for example, adverbs, adjectives, or reflexive verbs with a particle *se/sa*, or the conditional.

According to Hyland (1998: 109), *may*, *might* and *could* are similar as they express "tentative possibility", which is illustrated in example (1). The author uses four modal verbs to comment on the results and the implications of their own research. In the first instance, *can* refers to possibility at present, in the second (*could*) to a possibility in the past, and in the third and the fourth *could* and *may* refer to the possibility in the future. This extract also contains a determiner *some* and an adjective *possible* to help the author express themselves with caution.

- (1) The sample of the study *can be criticized* in a few ways. The size of the groups *could have been* larger and more diverse culturally and linguistically to allow for a more generalizable result. Further research *could address* these limitations with... There are *some* other *possible* implications that arise from this study. It *may be* useful to conduct...

As has been mentioned above, Czech and Slovak express modality differently. Example (2) below shows how a Czech author uses *moci* (*mohou být / may/might/*

can/could be) in combination with a reflective verb with a particle *se* (*dá se předpokládat / can/may be assumed*) to interpret the results. We can see that the author attempts to draw conclusions and uses not only modals and their equivalents, but also hedging lexical verbs (*naznačují / suggest, nasvědčuje / is indicated*).

- (2) Uvedené příklady *naznačují, že... I když* naprostá většina těchto výrazů evidentně vznikla a rozšířila se v rámci běžné komunikace, u některých *se dá předpokládat, že mohou být* výsledkem... *Nasvědčuje* tomu ... (The examples *suggest* that... Although the vast majority of these expressions evidently originated and spread in the context of everyday communication, some *can be assumed* to be the result of... This *is indicated* by...)

The Slovak authors selected for this study used modal expressions more frequently than their Czech colleagues. Example (3) contains a particle *by*, which is an integral part of a conditional. In English, it is represented by *would*, which is used to replace hypothetical *will* and marks prediction (Hyland: 1998). In example (3), the particle is complemented by an adverbial *skôr* (literally *rather*, although *probably* would be a better translation in this context), which helps to relativise the author's comment, followed by another adverbial (*zrejme / probably/perhaps/possibly*) to speculate on the future implications.

- (3) Je nutné na tomto mieste poznamenať, že ak by strojový preklad bol upravený ..., *zrejme by* riešenie bolo *skôr*... a v odbornej komunikácii *zrejme* aj častejšie... (It should be noted here that if machine translation had been modified..., the solution *would rather/probably have been*... and *probably/perhaps/possibly* more frequently used in professional communication...)

3.2 Linking verbs

Although linking verbs *seem* and *appear* have been identified in all three corpora, they were the least popular choice for the Slovak authors (only 5 instances in the entire corpus). For the authors writing in English and Czech, this grammatical category was the second least popular (see Table A2 in the Appendix for further details). The findings partially correspond with those of Mur-Dueñas (2021: 7), namely that these hedging devices are “less frequent than modal verbs, full verbs, adverbs, adjectives” in English papers, although in this study they appear slightly more frequently than nouns.

In examples (4) and (5), these verbs are used as attribute hedges and help authors comment on the phenomena they are investigating. Furthermore, example (5) from the Slovak corpus is interesting in terms of translation, as it contains a more personal statement *Slovak appears to us as an open... system*, as opposed to simple *Slovak appears to be an open... system*.

- (4) Adopting a process-oriented perspective *appears to be* important for capturing the essence of lingua franca communication, where...

- (5) Slovenčina sa nám na základe zistených dát *javí* ako otvorený, živý a dynamický systém s prevažnou väčšinou slov domáceho pôvodu. (Based on the data, Slovak *appears* to us as an open, vibrant, and dynamic system with the vast majority of words of domestic origin.)

3.3 Lexical verbs

For the authors writing their research articles in English, lexical verbs were the third most popular choice when commenting on the results of their research or its implications, using these hedges nearly 3.5 times more frequently than those writing in Czech and nearly 2.5 times more frequently than those writing in Slovak.

Regarding the variety, there are eight types of verbs used in the English corpus: *indicate*, *assume*, *suggest*, *consider*, *imply*, *tend*, *predict*, *believe*. For comparison, Hyland's investigation (1998) reveals not only that lexical verbs are the most frequent hedging choice, but also that *suggest*, *indicate*, and *predict* are the most popular lexical verbs. While the first two are most frequent in Mur-Dueñas' investigation (2021), the third place is occupied by *expect*.

Regarding grammar, Hyland (1998: 122) finds that lexical verbs functioning as hedges are "often used in passive so that the author can distance themselves" (Hyland 1998: 122) and frequently take on a non-human subject. One illustration of this is example (6) from the English corpus. The author is commenting on the possible reasons for the discovered results, using *this* as opposed to *I* or *we* as the subject of the statement.

- (6) In ... test, ... students achieved higher scores than... This *suggests* that ...

The Czech corpus contains five lexical verbs (*naznačovat* / *suggest/imply*, *ukazovat (se)* / *show/seem*, *inklinovat* / *incline*, *evokovat* / *evoke*, *nasvědčovat* / *indicate*), and the Slovak four (*znamenat'* / *mean/signify*, *naznačovať/značiť* / *suggest/indicate*, *evokovať* / *evoke*, *nazdávať sa* / *assume/believe*; see Table A3 in the Appendix for further information on absolute and relative frequencies). Both languages use lexical verbs similarly: in the passive voice, with and without a personal or human subject (in Czech and Slovak, pronouns are typically not expressed as subjects of verbs since verbs conjugate and take on a person-denoting suffix). Example (7) from the Slovak corpus contains *nazdávame sa* (*we assume*), a hedging lexical verb referring to an undisclosed first person plural *we*, while example (2) above contains a lexical verb with a non-human subject.

- (7) ... naša analýza ukázala, že... Pokiaľ ide o druhú otázku, *nazdávame sa*, že ... (Our analysis has shown that... Regarding the second question, we *assume* / *believe* that ...)

3.4 Adjectives

Regarding the grammatical category of adjectives, there is a significant difference between individual corpora. While research papers written in English contain 89 hedging adjectives (RF 1.15), there are only 13 in the Czech corpus (RF 0.27) and 29 in the Slovak (RF 0.58; see Table A4 in the Appendix for additional information). The results reflect different syntactic patterns in English and in the Slavic languages, with the former language commonly using *it*-clauses containing adjectives, which appear considerably less frequently in Czech and Slovak.

The findings of this research confirm those by Hyland (1998), in which *likely* and *possible* were the most frequently used adjectives in English, while an additional adjective, *potential*, appeared between them in Mur-Dueñas' investigation (2021). The function of *likely* and *possible* is "to reduce writers' categorical commitment" to their proposition, while they are similar to *may* or *can* (Hyland 1998: 130-131). Examples (8) and (9) from the English corpus illustrate this: both authors express their speculation about the possible reasons for their findings. Furthermore, an approximator *relatively* is used in example (8) to comment on the examined material, while in (9) the author uses a modal verb (*might*) to make a cautious comment on the implications of their findings.

- (8) As the content of the stories was *relatively* fixed, the variation found between the signed stories of different signers is more *likely* to have been caused by socio-individual characteristics, such as...
- (9) The research has shown that professional interpreters possess ... that allow them to... than unstrained bilinguals or native speakers. This *might imply* ... It is *possible* that the non-expert interpreting students had already developed better listening comprehension skills than...

The most frequent adjectives in the Czech corpus are *častý* (*frequent*) and also *možný* (*possible*). Example (10) illustrates the use of this hedging adjective in combination with the conditional *by bylo / would be*, helping the author make a cautious proposition about the future. It also contains a modal *by se mohl*, which is an alternative for the English modal *could*, discussed earlier.

- (10) Dalším směrem, kam *by se mohl* budoucí výzkum ubírat, je také práce s... Na těchto základech *by bylo možné*... vytvořit... (Another direction in which future research *could go* is also work with... On these foundations, it *would be possible* to create...)

On the other hand, example (11) illustrates that *it*-clauses can also occur in Slovak (and Czech), although *it* does not need to be expressed (conjugation of the verb *be* in the third person singular).

- (11) *Je málo pravdepodobné, že stroj dokáže vytvoriť rovnako verný preklad ako prekladateľ.* (It is *very/highly unlikely* that a machine can produce a translation as faithful as the one produced by a translator.)

3.5 Adverbs

For the authors writing in Czech, adverbs were the most popular choice when hedging their statements (AF 93) and the only category that exceeded the RF value of 1 (1.97). This grammatical category was the most popular choice for the authors writing in Slovak as well (AF 65, RF 1.30) and the second most popular for those who wrote their text in English (AF 181, RF 2.33; also see Table A5 in the Appendix), which is in line with Hyland's findings (1998). Furthermore, this grammatical category contains the widest range of expressions: 32 in English, 20 in Czech and 13 in the Slovak corpus. The reason for such frequent occurrences might be connected with the fact that adverbial phrases can function as both attribute and reliability hedges, as downtoners, used by authors to comment on the subject-matter of their research, or as style and content disjuncts, helping to comment on the "truth-value of proposition" or express certainty or uncertainty when drawing conclusions or interpreting the results (Hyland 1998: 139). In addition, in all three languages, adverbs are relatively flexible in terms of their position in the sentence, depending on which element they modify (verb, adjective, another adverb, or the entire clause).

Quite is the most popular adverb in the English corpus, classified as a compromiser (Hyland 1998: 135), followed by an approximator *relatively*, which is also among the five most frequent adverbs in Hyland's (1998) and Mur-Dueñas' research (2021).

In Czech example (12), both adverbs function as downtoners and attribute hedges, helping the author weaken the meaning of the sentence element they modify. While *poněkud* (*somewhat*) downtones the meaning of an adjective (*odlišné / different*), *někdy* (*sometimes*) modifies a verb (*fungovat / function*). Slovak example (13) also contains two attribute hedges: *akoby* which modifies another adverb and is translated into English as an idiomatic expression *as if*, and a downtoning frequency adverb *spravidla* (*as a rule / usually*) which modifies a verb.

- (12) Použití této varianty, která ..., je tedy *poněkud* odlišné než v případě ... Přesto *mohou někdy* tyto konstrukce *fungovat* jako funkční ekvivalenty. (The employment of this variant, which ..., is therefore *somewhat* different from that of ... Yet, these constructs can *sometimes* function as functional equivalents.)
- (13) ... spôsobuje, že jednotlivé lexie nie sú výsledkom sémantických derivácií, ale do lexémy vstupujú *akoby* „zvonku“ a ich interpretácia *si spravidla vyžaduje* ďalšie kontextuálne upresnenie. (... causes that individual lexias are not the result of semantic derivatives but enter the lexeme *as if* "from the outside", and their interpretation *as a rule/usually* requires further contextual refinement.)

3.6 Nouns

The only word class with a higher relative frequency in the Czech and Slovak corpora is nouns (42 instances at relative frequency 0.89 in Czech; 28 occurrences, RF 0.56 in Slovak, and mere 22 hedging nouns at RF 0.28 in the English corpus; see Table A6 in the Appendix for further details). Nouns generally comprise collocations or fixed expressions, such as *to a certain extent* / *do jisté míry* / *do istej miery* (Czech example 14 below) which contain several words. In contrast to English research articles, the expression *tendence* / *tendencia* (*tendency*) appears seven times in the Czech and nine times in the Slovak corpus (example 16 from the Slovak corpus below). The explanation could be that instead of the noun *tendency*, authors writing in English prefer using the lexical verb *tend*, which does not have a Czech or Slovak equivalent. In contrast to its absence in the English and Slovak corpora, there are two occurrences of the expression *tíhnutí* in the Czech corpus, or *inclination* in English, which is presented in example (15). Interestingly, the authors provide their opinion explicitly, stating *in our opinion* (*podle našeho názoru*), which is rather rare in academic texts.

The reason for a generally lower frequency of hedging nouns in the English corpus might be the fact that the Anglo-American writing style tends to be as economical as possible, thus discouraging authors from using multi-word expressions where a single word can be used. On the other hand, there seem to be no specific guidelines or recommendations for authors in this regard in the Czech and Slovak scientific communities.

- (14) Tato reprodukce cizí řeči je sice *do jisté míry* shovívavá, přesto ale vyjadřuje spíše negativní, distancovaný postoj... (This interpretation of a foreign language is *to a certain extent* lenient, nevertheless, it expresses a rather negative, distanced attitude...)
- (15) Vyhraňování určitých kombinací vidu a času v ruštině k plnění určitých funkcí, ..., je pak podle našeho názoru projevem *tíhnutí* k monofunkčnosti konkrétní jazykové (morfologické) formy... (In our opinion, the demarcation of certain combinations of aspect and time in Russian to fulfil certain functions, ..., is a manifestation of the *tendency* towards the monofunctionality of a particular linguistic (morphological) form...)
- (16) Spojenie... *má tendenciu* absolutizácie, čím možno vysvetliť ... (The phrase... *has a tendency* to absolutise, which *could* (*help to*) *explain*...)

3.7 Pronouns / Determiners

The value for the relative frequency of pronouns or determiners / quantifiers functioning as hedges in the English corpus exceeds 1 (1.07 with 83 occurrences). The group is represented by five expressions only, namely a determiner *some*, determiners / pronouns *most*, *several*, *many*, and a noun functioning as a quantifier

majority). The Czech corpus contains the following expressions (AF 30, RF 0.63): *většina* (majority), *mnoho* (much, many), *jeden* (one), and *jakýsi* (somewhat). There are five lexical representations in the Slovak corpus (AF 27, RF 0.54): *niektorý* (some), *jeden* (one), *mnoho*, *mnohý* (much, many), *väčšina* (majority), *mnohokrát* (many times). Table A7 in the Appendix presents further details on absolute and relative frequencies.

Example (17) below contains a determiner *some*, which helps the author limit their comment on the possible future implications (as opposed to using, for example, more absolute or bolder *definite*), while drawing careful conclusions using *can be assumed*.

- (17) That is to say, although the external setting in which an interaction takes place [...] sets *some* preliminaries to the nature of the interaction that can be expected in this context [...], it *can be assumed* that...

The Czech example (18) contains the quantifying noun *většina* (majority), commenting on the data approximately instead of providing an accurate figure. The author continues to speculate on what the findings mean, using the noun *indicie* in combination with a modal verb *may* (*může*) and a downtoning adverb *rather* (*spíše*), which modifies the verb *consider* (*považovat*) and which could be omitted in translation and replaced with a modal verb *should*.

- (18) Fakt, že velká *většina* získaných dokladů má český protějšek ve formě..., *může být indicií* pro to, považovat získané doklady *spíše* za... (The fact that the vast majority of the documents obtained have a Czech counterpart in the form of ... *may be an indication* that the obtained documents should (*rather*) be considered...)

Example (19) from the Slovak corpus illustrates the use of the phrase *one of*, as opposed to *the only*, combined with a hedging adjective *possible* to make the comment on the future possibilities more tentative, therefore more objective.

- (19) Príspevkom sme chceli poukázať na potrebu skúmania strojového prekladu, ktorý je *jedným z možných* riešení narastajúceho dopytu po prekladoch z jedného jazyka do iného. (With this paper, we wanted to point out the need to research machine translation, which is *one of the possible* solutions to the growing demand for translations from one language to another.)

4. Conclusions

The goal of this paper has been to identify hedging expressions and their diversity in 30 research articles published in English, Czech and Slovak using discourse and corpus analysis. Although the corpus is relatively small, the trend of using hedges in the selected research articles is evident, since the expressions are present in all three linguistic varieties.

The first observation concerns the structure of the selected papers. Although the authors of two research articles in English arranged their texts using their own system, the chapters they created included data analysis where hedging expressions could be located. The majority of the Czech and Slovak research papers did not follow the IMRAD structure, nor did they devote any specific chapter to analysing the findings. As has been mentioned above, the authors commented on their findings / results and used hedges where they presented the data. Three research papers in each of these corpora followed the typical Anglo-American system, which suggests that some authors are familiar with this writing style and employ its principles in their native language as well.

The second observation refers to the instructions for authors proposed by the selected journals. It is interesting that although the journals based in the Czech Republic and Slovakia are considerably older than those that publish in English (the oldest, *Časopis pro moderní filologii / Journal for Modern Philology*, was first published as early as in 1911), their requirements for potential authors are solely technical (formatting, paper layout). They seem to allow writers complete freedom of choice regarding the structure of the text and writing style, including the language. Perhaps they presume that a potential author is aware that the text they submit must be of excellent linguistic quality, although they do not express this. The reason why they promote, although not explicitly, freedom of expression in writing might be connected with general rejection of any censorship, which was common in both countries before 1989.

Regarding hedging expressions, the results show that they are used considerably more frequently by authors of English research papers than by those publishing in Czech and Slovak, which is in line with the findings by Yang (2013), Mkhitarian and Tumanyan (2015) or Mur-Dueñas (2021). On the other hand, they are in contrast to the findings by Čmejrková et al. (1999) who concluded that in comparison with the Anglo-American texts, typical features of Czech publications are modality, a low degree of decisiveness and an abundance of verbs such as *seem*, *appear*. Regarding the reasons why there are differences in the frequency, the authors attribute these to assertiveness typical and acceptable in the respective cultures (Yang 2013, Mkhitarian and Tumanyan 2015) or to the size of a scientific community which enables bolder claims (Mur-Dueñas 2021). More frequent employment of hedging expressions by those who write in English might also reflect the fact that there is abundance of literature, especially textbooks and manuals focusing on English for academic or research purposes informing authors about the existence and importance of using hedges, whereas such literature is absent in the Czech and Slovak environment. It could also simply be the authors' personal choice to express their assumptions or statements more or less cautiously or tentatively, which corresponds with Daneš's observations (2000) that some authors use hedging devices more and some less frequently. He adds that some authors combine various hedges in such a way that they might appear almost hesitant or indecisive, or they might seem to avoid taking responsibility for their work. I would argue that the reason why authors employ these is that they are hesitant or indecisive and would conclude that instead they strive to describe their views or observations as objectively as possible and for this reason, they cannot avoid using such language.

Regarding the choice of linguistic devices, including hedges, as stated by Bacon (2013), when authors create their text, their personality, current state of mind and other aspects are reflected in the process. The findings demonstrate that all three examined corpora contain expressions that help the author relativise or express themselves more cautiously or more objectively. Each word class that appears in English is also represented in the Czech and Slovak databases. However, it is evident that the English corpus is more varied for every word class and contains a wider range of expressions than Czech and Slovak. The differences in the variety might confirm the fact that English vocabulary is more extensive, as it contains a larger number of synonyms, and thus provides authors with more options. This fact could be connected with history, since numerous adjectives, adverbs, but also some verbs typically used for hedging in academic writing are generally derived from Latin or French.

To conclude, considering the need, or rather the necessity, for academics to publish their scientific work internationally, it is essential to become familiar with the target culture's writing style, which also includes the use of hedging devices when speculating about or commenting on the subject-matter, results, or implications of one's research. Simultaneously, should a researcher decide to use translation services, the translator should also be aware of this microstructural aspect of writing and adjust the language accordingly. What might help in this regard is further and more extensive cross-cultural investigation of a larger corpora of research articles that could focus not only on applied linguistics, but also on other scientific disciplines.

Appendix A

Table A1. Modal verbs

English corpus	AF	RF	Czech corpus	AF	RF	Slovak corpus	AF	RF
may	97	1.25	môct (may /	25	0.53	môct' (may /	40	0.8
can	95	1.22	can / might /	12	0.25	can / might /	19	0.38
could	45	0.58	could)			could)		
would	44	0.57	by			by		
might	40	0.52						
Total	321	4.14		37	0.78		59	1.18

Table A2. Linking verbs

English corpus	AF	RF	Czech corpus	AF	RF	Slovak corpus	AF	RF
seem	49	0.63	zdát (seem)	12	0.25	javit' sa (ap-	3	0.06
appear	7	0.09	jevit se (appear)	4	0.08	pear)	2	0.04
						zdat' sa		
						(seem)		
Total	56	0.72		16	0.34		5	0.10

Table A3. Lexical verbs

English corpus	AF	RF	Czech corpus	AF	RF	Slovak corpus	AF	RF
indicate	31	0.39	naznačovat	9	0.19	znamenat'	12	0.24
assume	16	0.21	(suggest)			(mean/signify)		
suggest	16	0.21	ukazovat se	6	0.13	naznačovat'/	7	0.14
consider	15	0.19	(show / seem)			značit' (sug-		
imply	12	0.15	inklinovat	1	0.02	gest/indicate)	5	0.1
tend	9	0.12	(incline)			evokovat'	3	0.06
predict	2	0.03	evokovat	1	0.02	(evoke)		
believe	1	0.01	(evoke)			nazdávat' sa		
			nasvědčovat	1	0.02	(assume)		
			(indicate)					
Total	102	1.32		18	0.38		27	0.54

Table A4. Adjectives

English corpus	AF	RF	Czech corpus	AF	RF	Slovak corpus	AF	RF
possible	16	0.21	častý (frequent)	6	0.13	istý (certain)	14	0.28
likely	16	0.21	možný (possi-	4	0.05	pravdepodob-	8	0.16
certain	16	0.21	ble)	2	0.04	ný (probable)		
frequent	12	0.15	obecný (gen-	1	0.02	možný (possi-	5	0.1
common	9	0.12	eral)			ble)		
feasible	4	0.05	případný (po-			prevažný (ma-	2	0.04
impossible	4	0.05	tential)			ajor)		
indicative	3	0.04						
apparent	3	0.04						
potential	3	0.04						
hypothesized	2	0.03						
occasional	1	0.01						
Total	89	1.15		13	0.27		29	0.58

Table A5. Adverbs

English corpus	AF	RF	Czech corpus	AF	RF	Slovak corpus	AF	RF
quite	16	0.21	lze	17	0.34	možno (may-	17	0.34
relatively	14	0.18	zcela (quite/	10	0.21	be)	10	0.2
usually	14	0.18	completely)			akoby (some-		
often	14	0.18	spíše (rather)	10	0.21	how)	5	0.1
perhaps	9	0.12	poněkud	7	0.15	prevažne		
generally	9	0.12	(somewhat)	6	0.13	(mainly)	5	0.1
approximately	8	0.1	často (fre-	5	0.11	takmer (near-		
almost	8	0.1	quently)	5	0.11	ly)		
not necessarily	7	0.09	téměř (nearly)	5	0.11	predovšetkým		
possibly			zhruba (roughly)			(primarily)		

English corpus	AF	RF	Czech corpus	AF	RF	Slovak corpus	AF	RF
in part	7	0.09	jednoznačně			přibližně (ap- proximately)	5	0.1
probably	7	0.09	(unambigu- ously)	4	0.08	celkom (over- all)	4	0.08
somewhat	6	0.08	asi (perhaps)	4	0.08	spravidla (as a rule)	4	0.08
commonly	6	0.08	podstatně	3	0.06	všeobecne (generally)	4	0.08
rather	6	0.08	(significantly)	3	0.06	značne (con- siderably)	4	0.08
likely	6	0.08	zřejmě (evi- dently, prob- ably)	3	0.06	nesporne (un- questionably)	3	0.06
mostly	5	0.06	evidentně	3	0.06	relatívne (rela- tively)	3	0.06
normally	5	0.06	(evidently)	2	0.04	pravdepo- dobne (prob- ably)	3	0.06
potentially	5	0.06	značně (con- siderably)	2	0.04		1	0.02
partly	5	0.06	obecně (gen- erally)	2	0.04			
frequently	3	0.04	intuitivně (in- tuitively)	2	0.04			
considerably	3	0.04	částečně (par- tially)	2	0.04			
slightly	3	0.04	pravděpodob- ně (probably)	1	0.02			
partially	3	0.04	nezřídka (fre- quently)	1	0.02			
sometimes	2	0.03	běžně (typi- cally)	1	0.02			
typically	2	0.03	případně (al- ternatively)	1	0.02			
roughly	2	0.03						
presumably	1	0.01						
virtually	1	0.01						
theoretically	1	0.01						
tentatively	1	0.01						
nearly	1	0.01						
	1	0.01						
Total	181	2.33		93	1.97		65	1.30

Table A6. Nouns

English corpus	AF	RF	Czech corpus	AF	RF	Slovak corpus	AF	RF
case	3	0.04	míra (degree)	10	0.21	případ (case)	11	0.22
sense	3	0.04	případ (case)	10	0.21	tendencia (ten- dency)	9	0.18
indication	2	0.03	tendence (ten- dency)	7	0.15	miera (degree)	4	0.08
possibility	2	0.03	ohled (regard)	5	0.1	zmysel (sense)	2	0.04
probability	2	0.03	náznak (indica- tion)	4	0.08	náznak (indica- tion)	1	0.02
degree	1	0.01	třhnutí (inclina- tion)	2	0.04	ohľad (regard)	1	0.02
regard	1	0.01	indicie (indication)	2	0.04			
			smysl (sense)	2	0.04			
Total	14	0.18		42	0.89		28	0.56

Table A7. Pronouns / Determiners

English corpus	AF	RF	Czech corpus	AF	RF	Slovak corpus	AF	RF
some	33	0.42	většina (ma-	13	0.28	niektorý	11	0.22
most	29	0.37	ajority)			(some)	6	0.12
several	10	0.13	mnoho	11	0.23	jeden (one)	5	0.1
many	6	0.08	(much, many)			mnoho, mnohý		
majority	5	0.06	jeden (one)	3	0.06	(much, many)	4	0.08
			jakýsi (some-	3	0.06	většina (ma-	1	0.02
			what)			ajority)		
						mnohokrát		
						(many times)		
Total	83	1.07		30	0.63		27	0.54

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