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Lexical realizations of hedging: A cross-disciplinary study of research article abstracts by Russian authors

Currently, when the English language has established itself as a lingua franca in academic settings, it is relevant to investigate rhetorical strategies in texts produced by L2 writers who use English in their academic prose. This paper explores lexical patterns of hedging in English-medium research article abstracts written by L2 (Russian) writers from two fields representing hard sciences and humanities — engineering and linguistics. The main focus is on quantitative and qualitative variations in the lexical realizations of hedging as a metadiscourse strategy used to present research results and enter into a dialogue with the reader. The corpus comprises 312 engineering and linguistics research article abstracts taken equally from six Russian linguistic and engineering journals. In order to investigate hedging devices and their lexical categories, this study adopted the methods of quantitative and qualitative analysis. The results of the quantitative analysis show that there are many differences in the distribution of lexical patterns of hedging in the two sub-corpora. In the engineering abstracts, hedging was most frequently realized through modal auxiliaries and adverbs of frequency. In the linguistics sub-corpus, probability nouns and reporting verbs were among the most frequent lexical patterns of hedging. In the linguistics abstracts, hedging was realized through a greater variety of lexical categories. This suggests that lexical realizations of hedging seem to be influenced by the discipline rather than generic conventions.

Keywords: academic discourse, research article abstract, hedging, metadiscourse.

Introduction

Globalization has created the need to learn academic English in order to report research results on the international academic arena. Many scholars from non-Anglophone countries are required to publish their research papers for promotion as universities rely on SCI indicators for their ranking. Over the past 15 years there has been a dramatic increase in the number of published English-language research articles by Russian scholars. The movement has caused intensive research into L2 English academic texts with the aim of revealing prevailing metadiscourse patterns including hedging markers.

The term 'hedging' was coined by J. Lakoff who claimed that linguistic concepts can have "vague boundaries and fuzzy edges" and described hedges as fuzzy words [Lakoff 1973]. Lakoff's definition was later used as a starting point by many other researchers. P. Brown and S. Levinson, for example, defined hedges as "elements that modify the degree

of membership of predicate or a noun phrase in a set" and are used to achieve linguistic vagueness [Brown, Levinson 1987: 145]. In the same line, J. Channel defined them as expressions whose meaning can be contrasted with another that "appears to render the same proposition" or expressions whose meanings are stimulated by "intrinsic uncertainty" [Channel 1994: 20]. The second group of definitions provided by Crismore and Vande Kopple, Hyland and Salager-Meyer described hedges as linguistic devices that convey the writer's uncertain attitude towards the respective statement and help avoid responsibility toward the utterance [Crismore, Vande Kopple 1988; Hyland 1996; 1998; 2005; Martin 2001; Myers 1989; Salager-Meyer 1994]. A. Crismore and W. Vande Kopple, for example, defined hedges as elements that "signal a tentative or cautious assessment of the truth of referential information" and allow the author to reduce his/her responsibility toward the information presented [Crismore, Vande Kopple 1988: 185]. P. Martin claimed that hedges are used to communicate academic knowledge in a way that will enable them to gain community acceptance of their contribution without the risk of Face Threatening Acts [Martin 2001]. K. Hyland argued that hedges allow writers to convey their attitude to the statements, thereby softening categorical assertions [Hyland 2005]. According to R. Holmes, hedges are linguistic means used to "create conviviality, facilitate discussion, show politeness and oil the phatic wheels" [Holmes 1997: 321]. Politeness has been also emphasized in A. Hubler's definition of hedges as linguistic devices used to avoid apodictic statements overlooking the readers' wish to judge for themselves [Hubler 1983].

Thus, as can be seen from the definitions provided above, the research tradition on hedging focuses on three crucial aspects: hedging as vague language, hedging as a way to avoid responsibility toward the utterance, and hedging as a politeness strategy.

In academic discourse, hedging has been investigated by a large number of researchers [Boginskaya 2022; Dontcheva-Navratilova 2016; Haufiku, Kangira 2018; Hyland 1998; Lancaster, Aull 2014; Petchkij 2019; Vassileva 2001]. For example, T. Varttala examined the status of hedging in popularized articles as opposed to research articles from three disciplines — economics, medicine, and technology [Varttala 2001]. From the same cross-disciplinary perspective, M. Takimoto investigated research articles to measure the frequencies and functions of hedges in humanities, social and natural sciences [Takimoto 2015]. N. Haufiku and J. Kangira explored hedging in Master theses and concluded that similarities and differences in the use of this strategy depend on the data being analyzed, the writer's level of English language proficiency, and the need to conform to the accepted academic writing style [Haufiku, Kangira 2018]. Z. Lancaster and L. Aull adopted a different approach to compare undergraduate research papers and research articles with the aim to reveal stance-taking changes as researchers gain experience in academic writing [Lancaster, Aull 2014]. The findings revealed distinctions in the use of hedges between novice and advanced writers which indicates a clear developmental trajectory in terms of hedging. O. Dontcheva-Navratilova explored cross-cultural variation in the use of hedges in academic discourse by L2 writers. She analyzed distribution and choices of hedges in order to reveal ways in which L1 and L2 academic writers express different degrees of commitment in their statements when persuading readers to accept their claims [Dontcheva-Navratilova 2016].

Until recently, in Russian discourse analysis, rhetorical features of academic texts were an understudied issue. However, this issue has become the focus of analysis in a growing number of studies. The comprehensive analysis of academic prose was carried out by V. Chernyavskaya who explored rhetorical and linguistic features, semantics and composi-

tion of scientific texts from the intertextuality perspective [Chernyavskaya 2010]. In her article, I. Yu. Shchemeleva overviewed foreign studies of hedging as tentative language and provided examples of hedges derived from English-medium sociology research articles [Shchemeleva 2013]. M. Fomina analyzed Russian language items used for hedging and boosting on the syntactic level [Fomina 2013]. S. Nefedov's study dealt with epistemic lexical items regarded as markers of the intersubjective relations between the author and the reader used to downplay the conflict between previous and novel knowledge structures [Nefedov 2017]. The conclusion about the role of epistemic modal items in mitigating the categoricalness of claims and presenting them as alternative opinions rather than absolute truths is of special interest for metadiscourse studies.

The gender approach was adopted by A. S. Temirbulatova who explored pragmatic functions of hedges focusing on the accuracy of utterances and issues of glottogenesis [Temirbulatova 2017]. This strategy was also explored by A. E. Ustyantseva who described forms and functions of hedging and identified differences in the use of this metadiscourse device by Anglophone and Russian writers of research articles from the same gender perspective [Ustyantseva 2019]. O. G. Gorina and V. E. Khrabrova analyzed linguistic hedging in line with corpus studies and sociolinguistic interpretations of their results. The authors revealed functions and linguistic means of hedging and provided several examples of the corpus-based analysis of hedges [Gorina, Khrabrova 2017]. M. V. Mikolaychik conducted a corpus-based analysis of lexical hedging tools in English-medium research article abstracts in the field of economics and revealed that Russian authors use a wide repertoire of lexical hedges, however the overall frequency of hedging devices in Russian-authored abstracts is significantly lower than that in Anglophone writers' texts [Mikolaychik 2020].

While these works are valuable, there is still a complementary contribution to be made by corpus-based studies that compare the use of lexical hedges in academic discourse by L2 writers from a cross-disciplinary perspective. Thus, in an attempt to contribute to literature on hedging in L2 academic discourse, the present study focuses on the use of this metadiscourse device in English-medium research article (RA) abstracts by Russian academic writers from two fields — engineering and linguistics. The research seeks answers to the following questions:

1) What lexical patterns are used to realize hedging in English-medium research article abstracts by Russian writers from the two different disciplines?
2) Are there any differences in the lexical realizations of hedging in research article abstracts from the two fields of knowledge?
3) What is the frequency of occurrence of lexical categories of hedges in the linguistics and engineering research article abstracts?

Thus, the lexical categories of hedges used in English-medium RA abstracts by Russian academic writers from the two fields are the main focus of research in the current study assuming that their distribution is discipline-specific.

Methodology

Theoretical background

For the purpose of the current study, K. Hyland's pragmatically-oriented definition of hedges as a multifunctional phenomenon will be used as it seems to be more extensive and thus more persuasive [Hyland 2005]. Hedging will be treated as a metadiscourse strat-

egy employed to indicate different degrees of commitment and responsibility towards the propositional content and to involve the reader in open discussion.

Since hedging devices do not form a separate linguistic category and can be expressed by various lexical, morphological and syntactic patterns, there have been developed numerous classifications of linguistic items used as hedges. G. Myers, for example, claims that hedging can be realized through the use of personal pronouns, emotionally-charged adjectives and adverbs, epistemic nouns, assertive nouns serving the function of impersonal agency, modal verbs, epistemic verbs used as personal attributions, probability adjectives acting as modifiers [Myers 1989]. F. Salager-Meyer refers the following lexical items to hedges: modal and epistemic verbs, probability adverbs and adjectives; approximators of degree, quantity, frequency and time; epistemic verbs and introductory phrases; intensifiers expressed by adjectives and adverbs or their combinations; combinations of modal and lexical verbs or modal and lexical verbs with adverbs [Salager-Meyer 1994]. G. Clemen adds passive voice, concessive conjuncts, particles, and comments on value and truth judgement into the taxonomy suggested by F. Salager-Meyer [Clemen 1997]. In the current study, I took more extensive T. Varttala's taxonomy of lexical realizations of hedges as a point of departure [Varttala 2001]. Varttala distinguishes five categories of hedging markers including nouns, full verbs, modal auxiliaries, adjectives and adverbs, clausal elements and questions. The taxonomy was modified to fit the needs of the present study aimed to explore only lexical manifestations of hedging, leaving aside the syntactic patterns such as clausal elements and questions. The lexical categories of hedging suggested by Varttala are presented in Table 1.

Table 1. **Lexical categories of hedging**

Category	Hedges
Nouns Probability nouns Assertive nouns Cognition nouns	*probability, possibility, likelihood, potential, trend* *prediction, implication, proposal, argument* *hypothesis, assessment, assumption, belief, estimates*
Adjectives Probability adjectives Adverbs of frequency Adverbs of degree Approximative adjectives	*probable, possible, apparent, potential, likely* *common, typical, usual* *significant, slight, considerable, substantial* *approximate, virtual, close,*
Adverbs Probability adverbs Adverbs of frequency Adverbs of degree Approximative adverbs	*perhaps, possibly, probably, likely, apparently* *usually, often, seldom* *quite, relatively, slightly, significantly* *about, nearly, roughly, almost*
Full verbs Reporting verbs Cognition verbs Tentative linking verbs	*argue, predict, imply, suggest, propose* *assume, speculate, think, believe, estimate, evaluate* *tend, appear, seem, look*
Modal verbs	*may, might, can, could, would, will, should*

Corpus design

Cross-disciplinary variation in the use of the lexical patterns of hedges was investigated on a corpus comprising 312 research article abstracts published in six international journals in the field of engineering and linguistics (*Computer Optics*, *Light and Engineering*, *Ecological Processes, Russian Journal of Linguistics*, *Vestnik of Saint Petersburg University. Language and Literature*, *Issues of Cognitive Linguistics*) in 2001–2021. The corpus-based approach adopted for the study is considered to be evidential [Chernyavskaya 2018], able to confirm the reliability of the patterns revealed.

All the journals selected to build the corpus have a large readership and high prestige in the field. The judgements on the origin of the authors were made according to their family names and affiliation. Articles published in the journals cover a wide range of engineering and linguistics sub-disciplines.

The corpus was compiled so as to ensure comparability in terms of genre (RA abstracts), authors' origin (Russian writers) and field (engineering and linguistics).

The journals were divided into two sub-corpora: S1 for the engineering sub-corpus, including RA abstracts derived from *Computer Optics, Ecological Processes,* and *Light and Engineering* and S2 for the linguistic one including RA abstracts from *Russian Journal of Linguistics*, *Vestnik of Saint Petersburg University. Language and Literature* and *Issues of Cognitive Linguistics*. 156 RA abstracts were included into each sub-corpus. Within each journal, four abstracts from each volume published between 2011 and 2021 were chosen. The result was 156 abstracts per each discipline, i. e. 312 abstracts altogether.

It is assumed that only the persons listed as authors are responsible for the language used in the RA abstracts. Editors' or translators' input is ignored, since it is difficult to disentangle it from that of the authors.

Methods

In order to investigate hedging devices and their lexical patterns, this study adopted corpus-based and computational techniques together with quantitative and qualitative analyses.

The analysis process went through several steps. Quantitative analysis supplemented with manual contextual analysis was applied to all instances of hedging markers in the two sub-corpora so as to identify their functions.

First, hedges were identified manually in the RA abstracts. Second, the markers found in the corpus were manually analyzed in context. Following Varttala's taxonomy, the markers were divided into five lexical groups: nouns, adjectives, adverbs, full verbs and modal verbs. The results were annotated in Tables and the frequencies contrasted.

The difference in word-count between the two sub-corpora was normalized, i. e., the raw frequencies were converted into frequencies per 1,000 words. The text sample was rather small (54,123 words). This helped facilitate statistical comparison. The material yields enough grounds for a cross-disciplinary analysis of the use of lexical patterns of hedges in RA abstracts by Russian academic writers. The occurrences were processed automatically with AntConc 3.4, an advanced text analysis application which provides details about the text and can ensure the accuracy of research results. The chi-square test was used to decide on the statistical significance of the results.

The examples discussed are intended to illustrate variation in the lexical patterns of hedging in the two disciplines. The method of discourse analysis [Chernyavskaya 2017] was applied to analyze the role of lexical hedges in the RA abstracts selected to build the corpus.

Results

In this section, the data obtained from the study is presented, beginning with the total frequency of lexical hedges in the two sub-corpora (Table 2). Thereafter, the focus is placed on the frequencies of lexical patterns of hedging (Table 3) in the two sub-corpora; after which the findings are discussed from a cross-disciplinary perspective.

Table 2 summarizes the results of a quantitative analysis of lexical hedges occurring in the two sub-corpora. The Table shows that lexical hedges were most frequently used in linguistics RA abstracts (39.2 per 1,000 words), which indicates that while humanities writers tend to leave room for the opinions of the audience and shield themselves against potential criticism, engineering writers present their findings more forcefully, not avoiding categorical assertions.

Taking a look from another angle, that is, from the perspective of the frequencies of lexical categories of hedges in the two sub-corpora, the results are also different (Table 3).

The study revealed that in SC1 hedging was most frequently realized through full verbs, nouns and modal auxiliaries (27.3, 22 and 21.4 %, respectively). In SC2, adverbs and modal auxiliaries were the most frequently used lexical categories (34 and 31 %, respectively). The modal auxiliaries identified as hedges were *might, may, could* and *can*. The highest concentration of modal auxiliaries per 1,000 words was found in linguistics RA abstracts (8.4). The striking difference between the disciplines was observed regarding the use of nouns. In the linguistics sub-corpus, their share was four times larger than in the engineering one.

Table 2. **Frequencies of lexical hedges in the sub-corpora (per 1,000 words)**

SC	Lexical hedges
SC1	39.2
SC2	24.5

Table 3. **Distribution of lexical hedges by category (% and per 1,000 words)**

Category	SC1	SC2
Nouns	24.5 (9.6)	5.1 (1.2)
Adjectives	10.2 (4)	12 (2.8)
Adverbs	16.6 (6.5)	34 (8)
Full verbs	27.3 (10.7)	17.9 (4.2)
Modal auxiliaries	21.4 (8.4)	31 (7.3)
Total	**100 (39.2)**	**100 (23.5)**

Tables 4–8 reveal a number of interdisciplinary differences in frequencies of individual lexical categories of hedging.

Table 4. **Categories of nouns as hedging markers in the corpus (per 1,000 words)**

Category	SC1	SC2
Probability nouns	4.9	0.6
Assertive nouns	1.5	0.4
Cognition nouns	3.2	0.2
Total	**9.6**	**1.2**

Table 5. **Categories of adjectives as hedging markers in the corpus (per 1,000 words)**

Category	SC1	SC2
Probability adjectives	2.2	0.8
Adjectives of frequency	1.5	0.9
Adjectives of degree	0.2	0.8
Approximative adjectives	0.1	0.3
Total	**4**	**2.8**

Table 6. **Categories of adverbs as hedging markers in the corpus (per 1,000 words)**

Category	SC1	SC2
Probability adverbs	3.1	2.3
Adverbs of frequency	2.1	2.9
Adverbs of degree	1.2	1.5
Approximative adverbs	0.1	1.3
Total	**6.5**	**8**

Table 7. **Categories of full verbs as hedging markers in the corpus (per 1,000 words)**

Category	SC1	SC2
Reporting verbs	5.3	2.4
Cognition verbs	3.1	0.7
Tentative linking verbs	2.3	1.1
Total	**10.7**	**4.2**

Table 8. **Types of modal auxiliaries as hedging markers in the corpus
(per 1,000 words)**

Modal verb	SC1	SC2
May	4.2	2.8
Might	0.2	0
Could	0.5	0.4
Can	3.5	4.1
Total	**8.4**	**7.3**

In what follows, the different categories/types of lexical hedges found will be dealt with as concerns their frequency, functions and contexts in which they appeared in the two sub-corpora.

Nouns

32 different nouns that were interpreted as hedging markers were found in the RA abstracts, amounting to 518 instances.

Assertive nouns. Five different assertive nouns (103 instances) used as hedging devices were found in the corpus. 'Prediction' (12) was the most frequent one, followed by 'implication' (10). The example below illustrates that the statement is an implication rather than a verified fact which allows the author to avoid potential criticism and soften the illocutionary force of the claim.

(1) ***Implications** of these results are discussed* [Sai 2018: 829].

The results concerning this group of nouns were different in the two disciplines. The higher number of assertive nouns as hedges was found in linguistics RA abstracts (1.5 per 1,000 words), and the figure for engineering was significantly lower (0.4 per 1,000 words). Regarding the choice of assertive nouns, it was wider in linguistics (4) than in engineering (2).

Cognition nouns. Six different cognition nouns (183 instances) appeared in the corpus. The most frequently used nouns of this group were 'hypothesis' (21), 'assumption' (18) and 'assessment' (17). A typical example from the corpus is provided below.

(2) *Basing its arguments on this **assumption**, the article also names the background of these changes (including extra-linguistic factors)* [Borzenkova, Koteniatkina 2015: 148].

Probability nouns. The RA abstracts included five different probability nouns (583 occurrences). The most commonly used items in the whole corpus were 'probability' (68) and 'possibility' (57). Other probability nouns found in the corpus were 'likelihood', 'potential', 'chance', 'trend' and 'tendency'. The example from the corpus provided below indicate that the issues discussed are only possibilities or trends rather than accurate information.

(3) *It is demonstrated that in most cases it allows to identify forest areas with predominant dry or green deciduous or conifer trees, bogs or pastures in summer with **possibility** of correct identification Pd → 1 and **possibility** of false alarms Pa < 0.1* [Belov 2022: 51].

These two groups of nouns also demonstrated significant differences in the two disciplines. The higher degree of these nouns per 1,000 words was found in linguistics RA abstracts. The widest repertoire of the nouns was also found in linguistics.

Adjectives

The two sub-corpora contained altogether 27 adjectives interpreted as hedging markers, constituting a total of 367 occurrences.

Probability adjectives. Six different items of probability adjectives (162 occurrences) were found in the whole corpus. The most frequently identified items were 'probable' (n = 21), 'potential' (n = 117) and 'possible' (n = 12). As the following illustrates, these hedging devices were typically used to express the lack of certainty or to suggest doubt about theoretical or practical possibility.

(4) *This method for identifying the metaphor power can be used to investigate the* **potential** *impact of political speeches and can become an important tool for analyzing various aspects of the metaphor use in discourse* [Sun, Kalinin 2021: 250].

The highest number of probability adjectives used for hedging was found in the linguistics RA abstracts, with an incidence of 2.2 per 1,000 words (n = 119). In the engineering sub-corpus, occurrence was significantly lower (0.8 per 1,000 words) (n = 43). The widest choice of probability adjectives was found in the linguistics sub-corpus (6).

Adjectives of frequency. Eight different adjectives of frequency (130 occurrences) used for hedging were found in the corpus. The most frequently identified items were 'typical' (n=32), 'common' (n = 27) and 'usual' (n = 17). Here is an example from the corpus.

(5) *In the fellings defined as "incomplete clear fellings," which were the most* **common** *final felling type at that time, 11 — 40 % of the growing stock was left* [Shorohova 2021: 1].

The higher number of these adjectives was found in linguistics, with an incidence of 1.5 per 1,000 words (n = 81). Regarding the choice of this type of hedging devices, seven different adjectives of frequency were found in linguistics, and four hedging markers from this group were found in engineering.

Adjectives of degree. Six different adjectives of degree (54 instances) used as hedging devices were found in the corpus. 'Significant' (11) was the most frequent one, followed by 'considerable' (8) and 'slight' (5). The example below illustrates that the writer avoids presenting precise qualifications of the phenomena under study in order to protect herself against potential criticism.

(6) *This functional usage and reinvention of Gothic conventions in the Gaskell's story is a* **considerable** *step forward in comparison with their parody usage by the English writers of the beginning of the 19th century* [Vasileva 2015: 4].

This group of adjectives also demonstrated significant differences in the two disciplines. The higher degree of these hedging markers was found in engineering (0.9 per 1,000, n = 48). However, the widest choice of adjectives of degree was found in linguistics (5). In engineering RA abstracts, their number was 3.

Approximative adjectives. Only one approximative adjective 'approximate' (16 occurrences) was found in the corpus to indicate the approximate nature of the data, as in the following example.

(7) *Results show a threshold **approximate** entropy value of 0.1 as the separation point between the volunteers of normal and abnormal health conditions* [Kotlyar 2019: 727].

Four instances of this adjective were found in linguistics (0.1 per 1,000 words), and 12 in engineering (0.2 per 1,000 words).

Adverbs

The data drawn from the six journals included a selection of 44 adverbs that were interpreted as hedges, constituting a total of 783 instances of hedging.

Probability adverbs**.** Six different items of probability adverbs (292 occurrences) were found in the whole corpus. The most frequently identified items were 'probably' (n = 109), 'potentially' (n = 87) and 'likely' (n = 46). As the following illustrates, these hedging devices were typically used to express a certain reservation concerning the accuracy of what is said.

(8) *The swearing in Albanian is a direct indication of the ancestral first language of the (female) consultants, who **possibly** borrowed the whole narrative from Albanian to Greek* [Sobolev 2017: 420].

The higher number of probability adverbs used for hedging was found in linguistics, with an incidence of 3.1 per 1,000 words (n = 292). In the engineering sub-corpus, occurrence was slightly lower (2.3 per 1,000 words) (n = 124). The wider choice of probability adverbs was found in the linguistics sub-corpus (6). In engineering RA abstracts, their number was 3.

Adverbs of frequency. Nine different adverbs of frequency (270 instances) used for hedging appeared in the corpus. The most frequently used adverbs of this group were 'often' (85), 'typically' (52) and 'usually' (39). A typical example from the corpus is provided below.

(9) Frequency conversion processes, such as second- and third-harmonic generation*, are **commonly** realized in nonlinear optics* [Kamenskiy 2022: 659].

The higher number of these adverbs was found in SC2, with an incidence of 2.9 per 1,000 words (n = 157), followed by linguistics (2.1, n = 113). Regarding the choice of this type of hedging devices, seven different adjectives of frequency were found in SC1 and five different hedging markers from this group were found in SC2.

Adverbs of degree. The corpus contained eight different adverbs of degree used as hedging devices (146 occurrences). The most frequently used items were 'significantly' (n = 41) and 'considerably' (n = 32) used to tone down the assertiveness of what is being stated.

(10) *The results of the analysis support the assumption that the use of corpus data not only **significantly** improves cross-linguistic descriptions, but also changes the very idea of the specifics of phraseology as a subsystem of the lexicon* [Dobrovol'skij 2020: 398].

This group of adverbs demonstrated slight differences in the two disciplines. The higher degree of these hedging markers was found in engineering (1.5, n = 81). However, the widest repertoire of adverbs of degree was found in linguistics (7), followed by engineering (5).

Approximative adverbs. The corpus included six different approximative adverbs used as hedging devices (76 occurrences). The most frequent adverbs were 'almost' (23) and 'about' (17). As the examples below show, these adverbs were used to avoid providing precise qualifications.

(11) For example, for images with the smallest difference in spatial resolution (2 times) from the fusion result, the classification accuracy of the fused image was **about** 4% higher [Belov 2020: 627].

Engineering emerged as the discipline with the higher number of these adverbs per 1,000 words (1.3, n = 70). In linguistics, incidence was significantly lower (0.1, n = 5). Not surprisingly, the widest selection of these items was found in engineering (6), and the narrowest one in linguistics (2).

Full verbs

Altogether 28 different full verbs were found as hedges in the corpus, constituting a total of 805 instances. To see whether there are differences in the use of full verbs between the four disciplines, let us look at each subcategory in detail.

Reporting verbs. The corpus included nine different reporting verbs deemed as hedging devices, with a total number of occurrence of 165. The most frequently used items were *suggest* (n = 47) and *propose* (n = 36) used to tone down the assertiveness of what is being stated. The following represents a typical instance of these verbs used to mitigate the claims.

(12) *This paper proposes a hypothesis according to which visual foregrounding is viewed as a formal feature of modern texts focusing readers' attention on various unbound semiotic resourses (such as drawings, maps, photographs) contributing to the transmodal meaning-making process and performing a range of functions in the narrative* [Chemodurova 2021: 5].

The highest number of these verbs was found in medicine, with an incidence of 1.5 per 1,000 words (n = 49), followed by engineering (1.4, n = 46), linguistics (1.2, n = 40) and legal science (0.9, n = 30). Regarding the choice of this type of hedging devices, seven different reporting verbs were found in linguistics, and six in legal science, and five in other two sub-corpora.

Cognition verbs. The corpus contained 17 different cognition verbs used to save face and avoid potential criticism (237 occurrences). The most frequently used items were *expect* (n = 34), *believe* (n = 27) and *assume* (22) which helps authors to be cautious in making claims about the research results and demonstrate a lower extent of assurance.

(13) *The analysis of "France" by Lady Morgan and its perception by British and French critics makes it fair to* **assume** *the pro-Irish trendiness of the text* [Burova, Dudkina 2017: 171].

Cognition verbs demonstrated significant differences in the four disciplines. The highest degree of these hedging markers was found in legal science (2.3 per 1,000, n = 76), and the lowest one — in engineering (0.8, n = 26). The widest repertoire of cognition verbs was found in legal science (13), followed by linguistics (9), medicine (7) and engineering (6).

Tentative linking verbs. Altogether four different tentative linking verbs were found in the whole corpus (158 occurrences). The verb *tend* was most frequently employed in each discipline (n = 86), followed by *seem* (n = 35), *appear* (n = 27) and *look* (n = 10). As can seen from the examples below, the tentative linking verbs help academic writers to express

subjective uncertainty in a proposition, thus saving face. The writers emphasize that the statements are not an absolute truth. The hedges allow them to sound evasive and shed responsibility for the statements.

(14) *In the near- and mid-infrared ranges, both configurations **appear** to have no optical absorption and possess an extremely high dielectric permittivity making them favorable for lossless subwavelength photonics* [Kotlyar 2020: 493].

Hedging of this type was most commonly used in medicine and linguistics RA abstracts (1.4 and 1.3. per 1,000 words, n = 46 and 43, respectively). The number of these items in legal science and engineering was almost similar (1 and 1.1 per 1,000 words, n = 36 and 33, respectively). Regarding variety in the use of linking verbs, only in linguistics RA abstracts all four items of this group were found. In medicine and engineering, only *tend* (n = 27 and 21, respectively) and *seem* were *present* (n = 19 and 12, respectively). In legal science, instances of *tend* (n = 18), *seem* (n = 12) and *appear* (n = 6) were found.

Modal auxiliaries

The RA abstracts selected to build the corpus included four different modal auxiliaries interpreted as hedges, amounting to 848 occurrences.

'May' was the top modal in terms of frequency, with a total of 378 instances. As can be seen, its share accounted for over half of modal auxiliaries (see Table 7). The highest number of 'may'-instances in 1,000 words was found in linguistics RA abstracts (4.2 per 1,000 words, respectively), whereas in engineering abstracts, incidence was slightly lower (2.8 per 1,000 words). The examples that illustrate the use of 'may' for hedging are presented below.

(15) *They **may** be described in terms of denotative and significative incongruences* [Karasik 2018: 895].

'Can' was the second most common modal auxiliary found in the corpus, with a total of 410 instances. The highest number of 'can'-instances in 1,000 words was found in engineering RA abstracts (4.1). Here is an example from the corpus.

(16) *Myth at the mental level is considered as a «conceptual frame» which **can** be filled with the aid of symbolic substitution* [Maslova 2021: 16].

The third most common modal auxiliary in the whole corpus used to express politeness was 'could', amounting to 49 occurrences. The examples below illustrate some typical occurrences of 'could' in the corpus.

(17) *The computational results showed that the proposed Algorithm **could** be used to design an efficient tunnel illumination system with less energy waste* [Perdahsi 2021: 102].

'Might' was the least common modal auxiliary in the whole corpus, amounting to 11 occurrences overall. It was found only in the linguistic sub-corpus. As the following example shows, 'might' was used in ways similar to 'may'.

(18) *The analysis of grammar in the ethnocultural aspect enables us to reveal the ethnocultural factors which **might** have served as the backbone of certain grammatical categories or **might** explain the grammatical changes happening here and now* [Kozlova 2018: 874].

Discussion

The study revealed there are interdisciplinary differences in frequencies and types of lexical patterns of hedging, and the pragmatics of hedging is disciplinarily determined. Overall, the results did not differ from those of previous research. Varttala, for example, also revealed differences in the lexical patterns of hedges used in economics, medicine and technology research articles [Varttala 2001]. Disciplinary differences in lexical realizations of hedging were also emphasized by M. Takimoto, who investigated these devices in humanities, social and natural sciences [Takimoto 2015]. His study revealed more cases of cognition verbs, probability adjectives and adverbs and assertive nouns in humanities RA, and more instances of reporting verbs, adverbs and adjectives of degree and frequency were more commonly employed in natural sciences.

The differences in the use of lexical patterns of hedging across disciplines are not easy to explain. It is evident that academic writers appeal to their readers in order to claim membership of the relevant disciplinary community. In achieving this purpose, they are forced to follow disciplinary conventions. As there are significant interdisciplinary differences in terms of research procedures, writing styles, methods of claiming and rhetorical constraints must also differ. The choice of lexical patterns may reflect a different stance towards research results in the disciplines and a different way of shielding against potential criticism.

The differences in the lexical choices made by writers from linguistics and engineering force us to consider the practice of academic writing as a social act. As C. Berkenkotter and T. N. Huckin put it, academic writers are social actors who are familiar with disciplinary norms [Berkenkotter, Huckin 1995]. In the same vein, K. Hyland argued that academic writers need to ratify their claims in order to obtain collective agreement that their data represent facts rather than opinions [Hyland 1998]. Similarly, Varttala claimed that the different uses of hedging devices are a manifestation of writers' adherence to the disciplinarily accepted rules of academic interactions [Varttala 2001]. The compliance with discipline norms is required for authorial claims to be accepted by the disciplinary community. The interdisciplinary differences revealed in the present study, exist, therefore, because those lexical patterns used for hedging are accepted within the discourse community as the recognized way to assure the reader that the claims put forth are not intended to exclude alternative ideas and views.

Conclusion

This article explored lexical realizations of hedging in English-medium linguistics and engineering RA abstracts from a cross-disciplinary perspective, which previously did not attract much attention of linguists. Despite the fact that recently many studies on hedging in academic discourse have emerged, they have mainly focused on a cross-cultural perspective, comparing hedging markers and functions in L1 and L2 academic writers. This article has adopted a cross-disciplinary approach dealing with variation in the use of hedging devices in English-medium academic prose by non-native writer from the two fields of knowledge representing humanities and hard sciences. At the beginning of this research the assumption was that the distribution of lexical patterns of hedging varies across disciplines and is discipline-specific. The study confirmed this

assumption. In engineering RA abstracts, Russian authors showed a tendency to underuse hedges and employed a narrower repertoire of lexical patterns than linguists. The study revealed that in the engineering abstracts, hedging was most frequently realized through modal auxiliaries and adverbs of frequency. In the linguistics sub-corpus, probability nouns and reporting verbs were among the most frequent lexical patterns of hedging. In the linguistics abstracts, hedging was realized through a greater variety of lexical categories.

The results of the study allowed me to conclude that the reasons for these differences might be attributed to the influence of disciplinary norms rather than generic conventions. To have their research results recognized by the disciplinary community, academic writers need to follow writing conventions accepted within this community.

It should be admitted here that the findings presented in the article are limited due to the small corpus. Further research involving more disciplines would be required to verify findings on interdisciplinary variation in the lexical patterns of hedging. Hedges could be also investigated from other perspectives. It would be interesting to compare the distribution of hedges in English and Russia-medium RA abstracts by Russian scholars. In this way, we will be able to reveal differences in the employment of hedges in the international and national academic contexts and provide novice writers with guiding principles regarding hedging in academic prose. Cross-cultural variation in the use of hedges in RA abstracts could be also of interest. This study has focused on only one type of interactional metadiscourse devices in RA abstracts. Further research into other metadiscourse markers such as boosters, self-mentions or attitude markers would broaden the scope. In addition, despite the assumption that only the persons listed as authors are responsible for the language used in the RA abstracts, the contribution of a translator can also be regarded as a limitation of the current study. This limitation could be overcome in future studies by interviewing the RA authors on the contribution of third parties to their writing and excluding texts edited by translators or native English speakers.

Despite the above-mentioned limitations, this study could be taken as a starting point for future studies of hedging in academic prose from different perspectives.

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Лексические средства хеджирования:
междисциплинарный анализ англоязычных аннотаций российских авторов

В статье на материале 312 аннотаций к англоязычным научным статьям, опубликованным в шести российских журналах по техническим и филологическим наукам в 2011–2021 гг., анализируются лексические средства хеджирования как метадискурсивной стратегии, которая используется авторами для репрезентации результатов исследования и поддержания диалога с читателем. Цель статьи — количественный и интерпретативный анализ лексических средств хеджирования в корпусе текстов, представляющих гуманитарные и технические науки. Результаты количественного анализа показали, что в технических текстах стратегия хеджирования реализуется преимущественно с помощью модальных глаголов и наречий с семантикой частоты действия, в то время как в аннотациях из лингвистических журналов наиболее частотными лексическими категориями хеджирования были существительные с семантикой вероятности и глаголы непрямой речи. Было также установлено, что в лингвистическом корпусе хеджирование реализуется с использованием более широкого репертуара лексических средств. В ходе интерпретативного анализа высказываний был определен функционал лексических средств хеджирования и выявлены существенные различия в коммуникативных функциях лексических средств хеджирования в технических и лингвистических аннотациях. Результаты исследования позволяют предположить, что актуализация стратегии хеджирования в языке детерминирована дисциплинарными, а не жанровыми конвенциями. Статья вносит вклад в такие разделы лингвистики, как прагмалингвистика, теория текста и дискурса. Перспективным направлением может стать анализ лексических средств актуализации других метадискурсивных стратегий, включая бустинг, а также диахроническое исследование метадискурса в научных текстах.

Ключевые слова: академический дискурс, аннотация, хеджирование, метадискурс.