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Artículo de Investigación

# How to avoid potential rejection on the part of the reader: lexical realizations of hedging as a politeness strategy in academic prose

## Cómo evitar un posible rechazo por parte del lector: unidades léxicas de la cobertura como estrategia de cortesía en la prosa académica

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**Abstract:** The study aims to consider hedging as a politeness strategy used to appear humble rather than all-knowing in academic interaction. Hedging has yielded a lot of attention as the main strategy used to show politeness and mitigate face-threats in academic prose. Studies have explored it from different perspectives, yet few ones have been conducted on lexical patterns of hedging in academic writing from a cross-disciplinary perspective. Drawing on a corpus of 412 research article abstracts taken from the five journals in each of the four disciplines (linguistics, law, engineering, and medicine), this article seeks to describe an interdisciplinary comparison of lexical patterns used to show politeness in academic texts. The study proceeds from Myer's (1989) pragmatically-oriented concept of hedging devices as signs of politeness used to avoid categorical statements. Vartalla's (2001) taxonomy of lexical realizations of hedging was taken as a point of departure. The quantitative analysis indicated that the distribution of lexical patterns used to show politeness differed across disciplines.

**Keywords:** politeness – academic discourse – research article abstract – hedging – metadiscourse.

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**Resumen:** Este artículo explora la cobertura como una estrategia de cortesía utilizada para parecer humilde en el discurso académico. Se estudia la cobertura como la principal estrategia utilizada para mostrar cortesía en la prosa académica. Los estudios han explorado la cobertura desde diferentes perspectivas. Sin embargo, hay pocos estudios que se centren en los patrones léxicos de cobertura en el discurso académico. Con este fin, hemos construido un corpus integrado por 412 resúmenes que acompañan a artículos de investigación, todos ellos en la disciplina de la lingüística, la jurisprudencia, la ingeniería y la medicina. El marco teórico es el concepto de la cobertura propuesto por Myer (1989). La taxonomía propuesta por Vartalla (2001) se utilizó para analizar las herramientas de la cobertura léxica. El análisis cuantitativo indicó que la distribución de patrones léxicos usados para mostrar cortesía difería en cuatro disciplinas.

**Palabras clave**: cortesía - discurso académico - resumen – cobertura - metadiscurso

## 1. Introduction

The establishment of the global academic community has resulted in a greater challenge for teachers to help EAP learners develop communicative competence in academic English. This competence entails several abilities such as the ability to communicate in a coherent way, the ability to negotiate meaning and the ability to use language appropriately. As a result, research into EAP teaching has focused on the analysis of teaching methods used to develop these abilities and facilitate the participation of academic writers in global academia. Among the characteristics of academic writing is the use of politeness markers, including hedging devices, that protect authors from face threatening acts and enable them to minimize the authoritativeness of their claims.

Hedging in academic discourse has been examined in a large number of works from terminologically and conceptually different perspectives (e.g., Aull & Lancaster, 2014; Boginskaya, 2022; Donadio & Passariello, 2022; Dontcheva-Navratilova, 2016; Hyland, 1996, 1998; Hyland & Jiang, 2016, 2021; Kozubíková Šandová, 2021; Petchkij, 2019; Riekkinen, 2009; Vassileva, 2001). Varttala (2001), for example, examined the status of hedging in research articles from three disciplines – economics, medicine, and technology – and revealed different use of lexical means which make statements less categorical. Mojica (2005), who examined how Filipino academic writers use hedges in research articles, found significant differences in the way the authors in the field of engineering and linguistics show detachment to their claims and attributed these

differences to the disciplinary writing conventions. From the same cross-disciplinary perspective, Takimoto (2015) investigated research articles to measure the frequencies and functions of hedges in humanities, social and natural sciences and concluded that differences in hedging are disciplinary determined. Demir (2018) adopted a different approach to compare hedging in research articles by L1 and L2 writers to reveal cross-cultural differences in terms of lexical means. It has been found that writers with different cultural backgrounds use different lexical patterns to hedge in academic discourse. Thuy (2018) also revealed cross-cultural differences in the use of lexical patterns for hedging. He found, for example, that in Vietnamese academic prose, modal verbs are the most frequently used hedging tools. According to Rezanejad et al. (2015), unlike Vietnamese scholars, Iranian writers prefer adverbs, including approximators, as hedging tools.

While these studies are valuable, there is still a complementary contribution to be made by corpus-based studies that (1) consider hedging as a politeness strategy used to avoid apodictic statements in academic writing, and (2) compare lexical patterns of hedging in research articles across disciplines. It is possible that such a comparative study can reveal discipline-specific differences in lexical realizations of the politeness strategy in academic prose. The research seeks answers to the following questions:

(1) What are the interdisciplinary differences in the lexical patterns used to show politeness in terms of frequencies?

(2) What are the interdisciplinary differences in the lexical patterns used to show politeness in terms of types?

Thus, lexical patterns of hedging as a politeness strategy used in RA abstracts derived from 20 journals in the four disciplines are the main focus of research in the current study assuming that their distribution is discipline-specific.

## 2. Theoretical framework

### 2.1 Hedging as a politeness strategy

The concept of hedging was coined by Lakoff (1973) who described the communicative value of hedging markers and claimed that linguistic concepts can have "vague

boundaries and fuzzy edges". Lakoff's definition was used as a starting point by some other researchers who have changed, however, the angle of research focusing on the role of hedging as a politeness strategy. As a rhetorical strategy that can help protect writers against potential criticism, hedging in academic prose has been studied in terms of politeness based on Brown and Levinson's (1987) theory. One of the most crucial concepts of this theory is that of "face" which is defined as the self-image that writers or speakers try to maintain in verbal interactions to protect their claims against criticism and ensure their acceptance by readers.

Several studies have demonstrated how academic discourse is structured to shield authors against potential criticism. In these studies, politeness has been the main motivating factor for hedging, since academic discourse "consists of interactions among scientists in which the maintenance of face is crucial (Myers, 1989, p. 5). Politeness has been, for example, emphasized in Hubler's (1983) definition of hedging devices used to avoid apodictic statements overlooking the readers' wish to judge for themselves. Crismore and Vande Kopple (1988, p. 185) 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.

Hedging as a politeness strategy has been treated in several other works. Myers (1989) was, however, the first scholar who paid attention to the role of politeness markers, including hedges, in academic prose. Following Brown and Levinson (1987), Myers found that politeness strategies applied in oral interactions can be extended to written academic discourse, in which making claims and presenting findings can threaten the negative face of other researchers. In Myers' (1989) theory, hedging is employed for dealing with social interactions involved in publishing articles and marking authorial claims as being provisional. Every scientific report makes a claim that is to be taken as the article's contribution to knowledge. The making of a claim threatens the disciplinary community. After all, it is a demand by individuals for communally granted credit and the negative face of other researchers because it implies a restriction on what they can do now. As Myers (1989: 5) put it, "the making of claims always involves a tension: the writer must stay within a certain consensus to have anything to say to members of his or her discipline but must also have a new claim to make to justify publication". This act, therefore, threatens other researchers whose credit may be questioned and a disciplinary community suspending its absolute authority. The writers feel a need to

assure the reader that the claims put forth are not intended to exclude alternative ideas and views.

Myers' concept provided a new theoretical framework for the studies of hedging as a politeness strategy in academic prose. Following Myer, Salager-Meyer (1995) showed that hedges can protect an author's reputation as a scientist by making claims tentative and avoiding absolute statements. According to Holmes (1997, p. 32), hedges could "create conviviality, facilitate discussion, show politeness and oil the phatic wheels". In line with Holmes, Martin (2001) 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. In the same vein, Boncea (2014) considered hedging markers as helpful in expressing politeness and mitigating face-threats. Similarly, Demir (2018, p. 74) argued that hedging "acts as a face-saving strategy and represents the certainty of the scientists' knowledge on the study field".

In this article, we also take Myer's (1989) pragmatically-oriented concept of hedging as a point of departure as it seems to be more extensive and thus more persuasive. Following Myers's ideas, in the current study, hedging will be treated as a politeness strategy employed to appear humble rather than all-knowing in academic interactions. It will be considered to reflect the appropriate attitude for offering a claim to the disciplinary community. The following sub-section will deal with lexical realizations of hedging as a politeness strategy used by academic writers to mitigate face-threats.

## 2.2 Lexical patterns of hedging

Hedging devices do not form a separate linguistic category. They can be expressed by various lexical and grammatical patterns marked by uncertainty and the degree of less than full commitment to the precision of research results. Researchers have developed numerous classifications of linguistic items used as hedges since hedging is explored from different perspectives. Myer (1989), for example, claimed 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, etc.

Salager-Meyer (1995) included a different set of hedging devices in her taxonomy: (1) shields realized through the use of modal and epistemic verbs and probability adverbs

and adjectives; (2) approximators of degree, quantity, frequency and time expressed by adverbs; (3) hedges expressing personal doubt and direct involvement expressed by epistemic verbs and introductory phrases; (4) intensifiers expressed by adjectives and adverbs or their combinations; and (5) compound hedges expressed by combinations of modal and lexical verbs or modal and lexical verbs with adverbs.

Clemen (1997) added passive voice, concessive conjuncts, particles, and comments on value- and truth judgement as hedges into the taxonomy suggested by Salager-Meyer (1995). One more taxonomy was developed by Crompton (1997), who divided hedges into copulas, lexical verbs, modal verbs, probability adverbs and adjectives. Chan and Tan's (2009) taxonomy includes almost similar categories of hedging devices including adverbials, epistemic verbs, modal verbs, cognition verbs, hypothetical constructions and anticipatory clauses.

In this article, we take more extensive Vartalla's (2001) taxonomy of lexical realizations of hedges as a point of departure. Varttala distinguished five categories of hedging markers including nouns, full verbs, modal auxiliaries, adjectives, adverbs, clausal elements and questions. Varttala's taxonomy has been modified to fit the needs of the present study aimed to explore only lexical manifestations of hedging, leaving aside the grammatical patterns. The categories of the lexical patterns suggested by Vartalla (2001) are presented in Table 1.

**Table 1.** Categories of lexical patterns used for hedging

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

# 3. Methodology

## 3.1 Research design

To address the research questions set in the Introduction section, we collected RA abstracts from 20 Scopus-indexed journals. The selection of the disciplines was motivated by several considerations. First, very few interdisciplinary studies of RA abstracts have compared these disciplines, leaving an obvious lacuna to fill in. Second, it

would be important to focus on different disciplines to leave aside culture-determined effects on the distribution of lexical patterns used to mitigate face-threats.

In designing the current study, the methodological framework proposed by Connor and Moreno (2005) was used to reveal similarities and differences in the use of lexical patterns of hedging in RA abstracts. It is based on the concept of equivalence which implies the need for a common platform of comparison (e.g., textual data, metadiscourse markers, lexical patterns) that allows the researcher to compare quantitative results and draw reliable conclusions about diachronic differences in the use of lexical hedges.

## 3.2 Corpus design

Cross-disciplinary variation in the use of lexical hedges was investigated on a specialized corpus consisting of 412 research article abstracts derived from twenty international journals in the fields of linguistics, engineering, law and medicine. The corpus was compiled to ensure comparability in terms of genre (RA abstracts) and time of publication (2010-2020). Linguistics, law, engineering and medicine are members of the four different categories of soft and hard sciences. They were selected based on the assumption that these disciplines would be maximally different in terms of rhetorical strategies and their linguistic realizations.

412 RA abstracts were divided into four parts by the journals they have been derived from. The number of tokens in each sub-corpus was 14,976, 18,163, 16,567 and 16,044, which made 65,750 tokens altogether. Sub-corpus 1 (SC1) (abstracts taken from linguistics journals) consisted of 103 RA abstracts derived from *Applied Linguistics, English for Specific Purposes, Journal of English for Academic Purposes, Journal of Specialized Translation* and *Written Communication*. Articles published in the journal cover a wide range of linguistics sub-disciplines such as semantics, cross-cultural studies, translation studies, discourse studies, genre studies, sociolinguistics, etc. Sub-corpus 2 (SC2) (abstracts taken from law-related articles) also consisted of 103 English-language abstracts derived from *Criminology, Journal of Criminal Justice, Crime Science, Journal of Legal Analysis* and *Perspectives on Terrorism*. The articles published by these journals cover a wide range of legal sub-disciplines such as crimes and deviant behavior, criminal justice, analysis and control of crime, etc. Sub-corpus 3 (SC3) (abstracts taken from medicine-related articles) consisted of 103 English-language abstracts derived from medicine journals

such as *Nature Medicine, World Psychiatry, Cancer Cell, Journal of Clinical Oncology* and *Cells Systems*. The articles published by these journals cover a wide range of medicine-related sub-disciplines such as gene and cell therapies, clinical genomics, regenerative medicine, mental health, oncology, systems biology, etc. Sub-corpus 4 (SC4) (abstracts taken from engineering articles) included 103 English-language abstracts derived from engineering journals such as *Materials Today, Computer Optics, Metal Powder Report, Symmetry* and *Nano Energy*. The articles published by these journals cover a wide range of engineering sub-disciplines such as powder metallurgy, symmetry/asymmetry phenomena, biomaterials, engineering of nanomaterials and nanodevices, etc.

## 3.3 Methods

To investigate the lexical patterns of hedging, 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 four sub-corpora to analyze the socio-pragmatic context in which lexical items are used to identify whether they act as hedges.

First, lexical patterns of hedges were identified manually in the RA abstracts. Second, the markers found in the corpus were manually analyzed in context. Following the above presented taxonomy, the lexical items were divided into five main groups: nouns, adjectives, adverbs, full verbs and modal verbs. Each group was further subdivided into several sub-groups (see Table 1). The results were annotated in tables and the frequencies contrasted.

In agreement with the common procedure in contrastive corpus-based research, the difference in word-count between the sub-corpora was neutralized by normalization, i.e. the raw frequencies for each sub-corpus were converted into frequencies per 1,000 words. The text sample was rather small (totalling 65,750 words). This helped facilitate statistical comparison. The material yields enough grounds for a cross-disciplinary analysis of the use of lexical patterns of hedging in RA abstracts. 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 items used for hedging in the four disciplines. A qualitative analysis was conducted to interpret the findings of the quantitative analysis.

## 4. Results

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

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

| SC | Lexical hedges |
|---|---|
| SC1 | 31.2 |
| SC2 | 23.5 |
| SC3 | 21.4 |
| SC4 | 15.2 |

Table 2 summarizes the results of the quantitative analysis of lexical hedges occurring in the four sub-corpora. It is important to emphasize that the research is based on an analysis of RA abstracts from only five academic journals in each field. It is therefore not possible to generalize the results to the whole field, but it is more objective to interpret the findings as certain trends. The table shows that lexical hedges were most frequently used in linguistics RA abstracts (31.2 per 1,000 words). The RA abstracts written by engineering writers showed the least number of lexical hedges (15.2 in 1,000 words), which indicates that humanities writers tend to leave room for the opinions of the audience and shield themselves against potential criticism, while hard science writers present their findings more forcefully, not avoiding categorical assertions. In law- and medicine-related RA abstracts, the frequencies of occurrence of lexical hedges slightly differed, which indicates almost identical manifestations of authors' desire to facilitate the ratification of their contributions and avoid potential conflict and criticism.

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

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

| Category | SC1 | SC2 | SC3 | SC4 |
|---|---|---|---|---|
| Nouns | 18 (5.6) | 29.2 (4.2) | 6 (1.3) | 16.4 (2.5) |
| Adjectives | 8.3 (2.6) | 12.8 (2.8) | 4.2 (0.9) | 12.5 (1.9) |
| Adverbs | 20.8 (6.5) | 34.5 (8) | 34 (7.2) | 29.6 (4.5) |
| Full verbs | 19.2 (6) | 18.5 (4.2) | 27.9 (5.9) | 15.1 (2.3) |
| Modal auxiliaries | 20.5 (6.4) | 15 (3.3) | 28.9 (6.1) | 26.4 (4) |
| Total | 100 (31.2) | 100 (23.5) | 100 (21.4) | 100 (15.2) |

The study revealed that in SC1 hedging was most frequently realized through adverbs, modal auxiliaries and nouns (20.8, 20.5 and 18%, respectively). In SC2, adverbs and full verbs were the most frequently used lexical categories (34.5 and 18.5%, 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 the linguistics RA abstracts (6.4), followed by the medicine (6.1), engineering (4) and legal science (3.3) RA abstracts. Regarding the pronouns, while in the linguistics RA abstracts, their number in 1,000 words was the largest, the engineering RA abstracts showed the smallest frequency of this lexical category. In terms of the share of nouns, a striking difference was observed between SC1 and SC3. In the latter, the share of nouns was three times lower than that in SC1. As can be seen from Table 2, the three most common lexical categories of hedges in the whole corpus were adverbs, modal auxiliaries and full verbs. These three accounted for no less than 60% in SC1, 68% in SC2, 89% in SC3, and 80% in SC4.

Tables 4-8 reveal several interdisciplinary differences in the frequencies of individual categories of lexical hedges.

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

| | SC1 | SC2 | SC3 | SC4 |
|---|---|---|---|---|
| Probability nouns | 2.9 | 1.3 | 0.2 | 0.6 |
| Assertive nouns | 0.5 | 0.4 | 0.7 | 0.3 |
| Cognition nouns | 1.7 | 1.4 | 0.4 | 1.2 |
| Total | 5.1 | 3.1 | 1.3 | 2.1 |

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

| | SC1 | SC2 | SC3 | SC4 |
|---|---|---|---|---|
| Probability adjectives | 1.2 | 0.9 | 0.5 | 0.4 |
| Adjectives of frequency | 0.6 | 1 | 0.3 | 0.4 |
| Adjectives of degree | 0.2 | 0.3 | 0.1 | 0.4 |
| Approximative adjectives | 0.1 | 0.1 | 0 | 0.3 |
| Total | 2.1 | 2.3 | 0.9 | 1.5 |

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

| | SC1 | SC2 | SC3 | SC4 |
|---|---|---|---|---|
| Probability adverbs | 2.7 | 2.9 | 1.5 | 1.3 |
| Adverbs of frequency | 2.1 | 3.6 | 2.9 | 1.9 |
| Adverbs of degree | 1.2 | 1.3 | 2.1 | 0.5 |
| Approximative adverbs | 0.1 | 0.2 | 0.2 | 0.4 |
| Total | 6.1 | 8 | 6.7 | 4.1 |

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

| | SC1 | SC2 | SC3 | SC4 |
|---|---|---|---|---|
| Reporting verbs | 1.2 | 0.9 | 1.5 | 1.4 |
| Cognition verbs | 2.1 | 2.3 | 2 | 0.8 |
| Tentative linking verbs | 1.3 | 1 | 1.4 | 1.1 |
| Total | 4.6 | 4.2 | 4.9 | 2.3 |

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

| | SC1 | SC2 | SC3 | SC4 |
|---|---|---|---|---|
| May | 3.2 | 1.4 | 2.9 | 1.8 |
| Might | 0.7 | 0.2 | 0.6 | 0 |
| Could | 0.5 | 0.7 | 0 | 0 |
| Can | 1.5 | 1 | 2.1 | 2.1 |
| Total | 5.9 | 3.3 | 5.6 | 3.9 |

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

## 4.1 Nouns

43 different nouns that were interpreted as lexical hedging markers were found in the RA abstracts, amounting to 382 instances.

Assertive nouns. Five different assertive nouns (63 instances) used as lexical hedges were found in the four sub-corpora. *Prediction* (12) was the most frequent one, followed by *proposal* (10) and *implication* (8). The examples below illustrate that the statements are proposals and predictions rather than verified facts which allows the authors to avoid potential criticism and soften the illocutionary force of the claims.

(1) Data supporting this **proposal** included observations that one DCC allele was deleted in roughly 70% of colorectal cancers. (SC3)

(2) **Implications** of these results are discussed. (SC2)

The results concerning this group of nouns as hedging devices were different in the four disciplines. The highest number of assertive nouns as hedges was found in the medicine RA abstracts (0.7 per 1,000 words), and the figure for engineering was lowest (0.3 per 1,000 words). Regarding the choice of assertive nouns, it was wider in medicine (4) and linguistics (4), followed by engineering and legal science (3).

Cognition nouns. Seven different cognition nouns (156 instances) used for hedging appeared in the corpus. The most frequently used nouns of this group were *hypothesis* (27), *assumption* (21) and *assessment* (18). Some typical examples from the corpus are provided below.

(3) In order to test this **assumption**, an experiment was conducted at Antwerp University with a group of intermediate-level students of Spanish. (SC1)

(4) To test this **hypothesis,** we determined whether TGFBR1×6A contributes to a proportion of mismatch repair (MMR) gene mutation-negative hereditary nonpolyposis colorectal cancer (HNPCC) patients. (SC3)

Probability nouns. The RA abstracts selected to build the corpus included seven different probability nouns (163 occurrences). The most used items were *probability* (46) and *possibility* (32). Other probability nouns found in the corpus were *likelihood, potential, chance, trend* and *tendency*. Some examples from the corpus provided below indicate that the issues discussed are only possibilities or trends rather than accurate information.

(5) Content-based studies of risk communication in the media have revealed a **tendency** to exaggerate risks. (SC1)

(6) The goal of this article is to investigate the **possibilities** of substituting certified recycled electronic trash for coarse aggregates in construction. (SC4)

These two groups of nouns also demonstrated significant differences in the four disciplines. While the highest degree of probability and cognition nouns per 1,000 words was found in the linguistics RA abstracts (2.9 and 1.7, respectively), for the medicine RA abstracts the figures were lowest (0.2 and 0.4, respectively). The widest repertoire of probability nouns was found in linguistics (7), followed by legal science (5), engineering (4) and medicine (3). The choice of cognition nouns was widest in legal science (7), followed by linguistics (6), medicine (4) and engineering (3).

## 4.2 Adjectives

The four sub-corpora contained altogether 32 different adjectives deemed as hedging markers, constituting a total of 240 occurrences.

Probability adjectives. Eight different items of probability adjectives (106 occurrences) were found in the whole corpus. The most frequently identified items were *probable* (n=23), *potential* (n=18) and *possible* (n=16). As the following illustrates, these hedging devices were typically used to express a lack of certainty or commitment or suggest degrees of doubt about theoretical or practical possibilities.

(7) When the goal is to communicate with a stranger, to engage in public discourse, the most **probable** functional selection is to choose linguistic features which mark one's discourse as being acceptable for public discourse, to choose standard English. (SC1)

(8) We close this review with a careful evaluation of **potential** strategies to ensure a high degree of sustainability. (SC4)

The highest number of probability adjectives used for hedging was found in the linguistics RA abstracts, with an incidence of 1.2 per 1,000 words (n=42). In the engineering sub-corpus, occurrence was lowest (0.4 per 1,000 words) (n=14). 32 and 18 instances of probability adjectives were found in law- and medicine-related RA abstracts, respectively. The widest choice of probability adjectives was found in the linguistics sub-corpus (8), followed by legal science (6), medicine (3) and engineering (3).

Adjectives of frequency. 11 different adjectives of frequency (80 occurrences) used for hedging were found in the corpus. The most frequently identified items were *typical* (n=23), *common* (n=21) and *usual* (n=12). Here are some examples from the corpus.

(9) Students' **typical** writing problems reveal the inadequacy of the typical composition classroom instruction. (SC1)

(10) These findings suggest that comprehensive pain assessment and evidence-based analgesic decision-making processes do enhance **usual** pain outcomes. (SC3)

The highest number of these adjectives was found in legal science, with an incidence of 1 per 1,000 words (n=35), followed by linguistics (0.6, n=21), engineering (0.4, n=14) and medicine (0.3, n=10). Regarding the choice of this type of hedging device, eight different adjectives of frequency were found in linguistics, and five different hedging markers from this group were found in the other three sub-corpora.

Adjectives of degree. Seven different adjectives of degree (32 instances) used as hedging devices were found in the corpus. *Significant* (12) was the most frequent one, followed by *considerable* (9) and *slight* (5). The examples below illustrate that the writers avoid presenting precise qualifications of the phenomena under study to protect themselves against potential criticism.

(11) Cumulative ACEs were **significant** for all groups across both types of offending but varied in magnitude across nativity. (SC2)

(12) **Slight** female predominance (men, 58; women, 66) was observed in the study population. (SC3)

This group of adjectives demonstrated significant differences in the four disciplines. The highest degree of these hedging markers was found in engineering (0.4 per 1,000, n=13), and the lowest one was in medicine (0.1, n=3). The widest repertoire of adjectives of degree was found in legal science (6), followed by linguistics (4), engineering (3) and medicine (2).

Approximative adjectives. Only one approximative adjective *approximate* (22 occurrences) was found in the corpus to indicate the imprecise nature of the data, as in the following example.

(13) Results show a threshold **approximate** entropy value of 0.1 as the separation point between the volunteers of normal and abnormal health conditions. (SC4).

Four instances of this adjective were found in linguistics, legal science and medicine (0.1 per 1,000 words in each subcorpus), and eight in engineering (0.3 per 1,000 words).

## 4.3 Adverbs

The data drawn from the 20 journals included 46 adverbs that were interpreted as hedges, constituting a total of 821 instances of hedging.

Probability adverbs**.** Eight different items of probability adverbs (277 occurrences) were found in the corpus. The most frequently used ones 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.

(14) Their contributions to L2 reading have rarely been examined together, **probably** because of the different theoretical frameworks in which they are postulated. (SC1)

(15) However, $\kappa$ reduction that can be achieved tends to be saturated **presumably** due to an amorphous limit. (SC4)

The highest number of probability adverbs used for hedging was found in legal science, with an incidence of 2.9 per 1,000 words (n=32). In the engineering sub-corpus, occurrence was lowest (1.3 per 1,000 words) (n=14). 30 and 17 instances of probability adverbs were found in law- and medicine-related RA abstracts, respectively. The widest choice of probability adverbs was found in the linguistics sub-corpus (8), followed by legal science (6), medicine (5) and engineering (4).

Adverbs of frequency. 11 different adverbs of frequency (346 instances) used for expressing politeness appeared in the corpus. The most frequently used adverbs of this group were *often* (87), *typically* (57) and *usually* (46). Some typical examples from the corpus are provided below.

(16) The statistical methods **commonly** used for assessing publication bias are applied without testing and interpreting assumptions about the missing studies. (SC2)

(17) A statistical trend is found in which a smaller curvature would **typically** lead to a higher charge rate of negative charges after CE. (SC4)

The highest number of these adverbs was found in legal science, with an incidence of 3.6 per 1,000 words (n=119), followed by medicine (2.9, n=96), linguistics (2.1, n=69) and engineering (1.9, n=63). Regarding the choice of this type of hedging device, eight different adjectives of frequency were found in legal science, seven in linguistics and five different hedging markers from this group were found in the other two sub-corpora.

Adverbs of degree**.** The corpus contained 15 different adverbs of degree used as hedging devices (168 occurrences). The most frequently used items were *significantly* (n=44), *relatively* (n=37) and *mostly* (14) used to tone down the assertiveness of what is being stated.

(18) Children showed a **significantly** faster rate in proverbs known to them but showed more variability in tonal patterns. (SC1)

(19) Our study shows that host genotype, but **mostly** environmental setting contributes to fire coral bacterial associations. (SC3)

This group of adverbs demonstrated significant differences in the four disciplines. The highest degree of these hedging markers was found in medicine (2.1 per 1,000, n=69),

and the lowest one in engineering (0.5, n=16). The widest repertoire of adverbs of degree was found in linguistics (12), followed by legal science (9), engineering (7) and medicine (5).

Approximative adverbs. The corpus included eight different approximative adverbs used as hedging devices (31 occurrences). More than two third of these cases (21) involved the adverbs *almost* (9), *approximately* (7) and *about* (5). As the examples below show, these adverbs were used to avoid providing precise qualifications.

(20) **Almost** all reported implantable cardiac energy harvesting designs sutured devices directly onto the epicardium or pericardium with potential risks to the patients. (SC3)

(21) However, the TGE produces more symmetrical shapes than the GE as the two parameters controlling the extent of symmetry in it are **approximately** equal. (SC4)

Engineering was the discipline with the highest number of these adverbs per 1,000 words (0.4, n=14). In legal science and medicine, the incidence was lower (0.2, n=7). The lowest number was found in the linguistics RA abstracts (0.1, n=3). The widest selection of these items was found in engineering (7), and the narrowest one in linguistics (1).

## 4.4 Full verbs

Altogether 32 different full verbs were interpreted as hedges in the corpus, constituting a total of 528 instances.

Reporting verbs. The corpus included nine different reporting verbs deemed as hedging devices, with a total number of occurrences of 165. The most frequently used items were *suggest* (n=47) and *propose* (n=36). The following represent typical instances of these verbs used to mitigate the claims.

(22) We then **propose** a theoretical framework that articulates key layers of genre knowledge and their interrelations, presuming a multilingual writer. (SC1)

(23) Our findings **suggest** mega-sporting events may have a differential effect

on crime across cities as hundreds of thousands of tourists generate more offending opportunities at the Olympics. (SC2)

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 device, seven different reporting verbs were found in linguistics, six in legal science, and five in the other two sub-corpora.

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

(24) The analysis, I **believe**, sheds new light on the use of English in the media, and more particularly on issues such as viewers' agency and linguistic superiority. (SC1)

(25) The model **assumed** that patients could attempt TFR after 36 months of TKI therapy. (SC3)

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 was 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 we can see from the examples below, the tentative linking verbs help writers 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.

(26) Furthermore, the vast majority of the teacher-initiated episodes **appeared** to arise pre-emptively and not in response to errors, a finding that

suggests the disciplinary teachers were proactive in shifting attention to language. (SC1)

(27) Patients with mucinous or clear cell carcinomas of the ovary **tend** to present with earlier-stage disease and may not require adjuvant chemotherapy. (SC3)

Hedging of this type was most commonly used in the 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 the 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.

## 4.5 Modal auxiliaries

The RA abstracts selected to build the corpus included four different modal auxiliaries deemed as hedges, amounting to 617 occurrences.

*May* was the top modal in terms of frequency in all the sub-corpora, with a total of 312 instances. Its share accounted for over half of modal auxiliaries (see Table 8). The highest number of *may*-instances in 1,000 words was found in linguistics and medicine RA abstracts (3.2 and 2.9 per, respectively), whereas in law-related and engineering abstracts, the incidence was slightly lower (1.4 and 1.8, respectively). Here are examples found in the corpus.

(28) Family political philosophies **may** also serve to sensitize those persons to the economic and political tensions inherent throughout modern society. (SC2)

(29) This work suggests that different complex radially symmetrical shapes can be generated by the same equation, implying that different types of biological symmetry **may** result from the same biophysical mechanisms. (SC4)

*Can* was the second most common modal auxiliary found in the corpus, with a total of 225 instances. The highest number of *can*-instances in 1,000 words appeared in the medicine and engineering RA abstracts (2.1 in both sub-corpora), whereas in the law-related abstracts, the incidence was lowest (1). Here are two examples from the corpus.

(30) The externalizing superspectrum is one aspect of the general approach to psychopathology offered by HiTOP and **can** make diagnostic classification more useful in both research and the clinic. (SC3)

(31) According to the numerical simulations, our proposed 'alternative Box-Cox model' **can** overcome the problems of a grossly underestimated lambda and the asymmetry of residuals. (SC4)

The third most common modal auxiliary in the whole corpus used to express politeness was *might*, amounting to 51 occurrences. Out of the four disciplines, *might* was the third most common in linguistics and medicine (0.7 and 0.6, respectively), and the fourth most common in legal science (0.2). In the engineering RA abstracts, no instances of *might* were found. The examples below illustrate some typical occurrences of *might* in the corpus. In most cases, *might* was used in a way like *may*, but it was more tentative in meaning.

(32) The conclusion addresses the policy implications of possible shifts in gender social norms and the shape that women's engagement in violent jihadist groups **might** take in the future. (SC2)

(33) Matching detailed molecular and drug response annotation of an individual patient-derived xenograft **might** guide "personalized" treatment with conventional and novel therapeutics. (SC3)

*Could* was the least common modal auxiliary in the whole corpus, amounting to 40 occurrences overall. The concentration of *could* was highest in legal science (0.7 per 1,000 words), followed by linguistics (0.5 per 1,000 words). In the engineering and medicine RA abstracts, no instances of the item were found. As the following examples show, *could* was used in a way like *may* and *might*.

(34) These findings point to a deep-seated structural tension in doctoral

education that, while constraining doctoral students' scholarly publishing endeavors, **could** also enable them to acquire the skills of the trade to publish and to be socialized into their disciplinary communities. (SC1)

(35) This review summarizes available evidence indicating that EA **could** be a risk factor in radicalization processes. (SC2).

## Discussion

The study revealed that there are interdisciplinary differences in the frequencies and types of lexical patterns of hedging, and the pragmatics of hedging are discipline-specific. While in the linguistics RA abstracts, probability adverbs were more common, in engineering, legal science and medicine, adverbs of frequency were used more frequently than other adverbial categories. The modal auxiliary *may* was most frequently used in all the disciplines, except for engineering, which showed the highest frequency of *can* among the modal hedges. The frequency of appearance of individual categories of nouns was also different across disciplines. While the linguistics scholars used the probability nouns more frequently, the authors from the legal and engineering fields gave preference to the cognition nouns. In the medicine sub-corpus, assertive nouns were among the most frequently used. Regarding the categories of adjectives used to save face in academic interactions, there were no marked interdisciplinary differences. Probability adjectives were most frequently used in all the sub-corpora. The categories of full verbs as lexical realizations of hedging were slightly different across disciplines. In linguistics, medicine and legal science, the cognition verbs showed the highest frequency. Authors of engineering RA abstracts gave preference to the reporting verbs.

Overall, the results did not differ from those of previous research. Varttala (2001), for example, also revealed different lexical patterns of hedges used in economics, medicine and technology research articles. Disciplinary differences in the use of lexical patterns of hedges were also emphasized by Takimoto (2015), who investigated these devices in humanities, social and natural sciences. His study identified 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 in natural sciences.

The differences in the use of lexical patterns of hedging across disciplines are not easy to explain. Academic writers appeal to their readers to claim membership in 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 different lexical patterns may reflect a different stance towards research results in the disciplines and a different way of shielding against potential criticism and expressing politeness.

The differences in the lexical choices made by writers from different disciplines force us to consider the practice of academic writing as a social act determined by disciplinary norms (Berkenkotter & Huckin 1995). In the same vein, Hyland (1998) argued that academic writers need to ratify their claims to obtain collective agreement that their data represent facts rather than opinions. Similarly, Varttala (2001) claimed that the different uses of hedging devices are a manifestation of writers' adherence to the disciplinarily accepted rules of academic interactions. According to Takimoto (2015, p. 103), the lexical choices made by academic writers "seem to be constrained by the discourse norms and rhetorical styles of each discipline". Compliance with disciplinary 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 are accepted within the relevant discourse community as the recognized way to show politeness and to assure the reader that the claims put forth are not intended to exclude alternative ideas and views.

## Conclusion

This article explored hedging as a politeness strategy used by scholars to save face and to appear humble rather than all-knowing in academic interactions. The focus was on the prevailing lexical patterns of hedges used to minimize potential criticisms and enhance effective writer-reader relationships across four disciplines. The study proceeded from Myer's (1989) pragmatically-oriented concept of hedging devices as signs of politeness used to avoid categorical statements and make claims more acceptable to readers thus increasing the probability of acceptance. Vartalla's (2001) taxonomy of lexical realizations of hedges was taken as a point of departure.

Overall, the distribution of lexical patterns used to show politeness differed across disciplines. Significant differences were apparent amongst the most frequent types of lexical patterns in each discipline.

It should be admitted here that the research results presented in the article are limited due to a small corpus built. Further research involving more disciplines would be required to verify findings on cross-disciplinary variation in the lexical patterns of hedging as a politeness strategy. Lexical realizations of hedges could be also investigated from other perspectives. It would be interesting to compare their distribution in RA abstracts by scholars with culturally diverse backgrounds. In this way, we will be able to reveal differences in the employment of lexical patterns of hedges in the international and national academic contexts and provide novice writers with guiding principles regarding the ways to mitigate face-threats in academic prose. Finally, future research could involve interviews with academic writers to analyze considerations they consider when choosing lexical patterns of this type of politeness marker in their research articles.

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