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Hedging in academic writing: Cross-disciplinary comparisons in the Michigan Corpus of Upper-Level Student Papers (MICUSP)

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Abstract

Hedging has been a long-standing challenge for English learners. Emerging from the research on hedging in academic writing is the natural/social science dichotomy that hedging is more common in social sciences than in natural sciences. Yet, this line of research has been primarily based on a limited number of disciplines. To bridge this gap, this study compares sixteen disciplines to uncover the cross-disciplinary variation in hedging based on successful student writing captured by the Michigan Corpus of Upper-level Student Papers (MICUSP). Five types of hedging devices were investigated. The results suggest that hedging is more common in argumentation-driven disciplines than in the data-driven ones. Cross-disciplinary differences were also found between disciplines under the same division. The findings challenge assumptions and raise questions about the natural/social science dichotomy in academic writing, calling for discipline-specific instruction on hedging in teaching English for academic purposes. The study also demonstrates the affordances of corpus tools for data-driven teaching and computer-assisted language learning in remote learning during the COVID-19 pandemic.

ヘッジング（断定表現）は英語学習者にとって長年の課題であった。アカデミックライティングにおけるヘッジングの研究からわかってきたのは、ヘッジングは自然科学よりも社会科学でより一般的であることである。しかし、このような研究は、主に限られた学問分野を対象として行われてきた。このギャップを埋めるために、本研究では16の分野を比較し、Michigan Corpus of Upper-level Student Papers (MICUSP)に収録されている学生の文章をもとに、ヘッジングの分野を超えたバリエーションを明らかにする。5種類のヘッジデバイスが調査された。その結果、議論主体の分野では、データ主体の分野よりもヘッジングがより一般的であることが示唆された。また、同じ部門に属する学問の間でも、分野横断的な違いが見られた。この結果は、アカデミックライティングにおける自然科学と社会科学の二分法を覆し、アカデミックな目的の英語教育において、ヘッジングに関する分野別の指導が必要であること

を訴えている。また、COVID-19パンデミック時の遠隔学習におけるデータを元にした教育法やコンピュータ支援型言語学習におけるコーパスツールの余裕を示すものである。

Keywords: hedging; English academic writing; corpus-based research; interdisciplinary comparison

Introduction

Hedging, the process whereby the writer reduces the strength of a statement, is a salient feature of academic writing. Although writing is by nature a product that inevitably embodies the author's viewpoint (Stubbs, 1986), authors of academic papers often need to present their claims cautiously to gain acceptance for their statements, since academic writing – which was traditionally viewed as an impersonal and objective endeavor of presenting absolute truths – has now come to be seen as a persuasive discourse where the writer interacts with the audience (Hyland, 1998a, 2005). By allowing authors to enter a dialogue with their readers, hedging is a key resource of this academic interaction (Hyland, 2004). It can be achieved by using lexical devices (e.g., modal verb *might*) or implicitly by, for example, using passive voice for impersonal construction or referring to experimental or theoretical limitations (Hyland, 1998b).

Hedging has been associated with vagueness, mitigation and politeness. Academic writers employ hedging techniques to maintain objectivity (Swales & Feak, 1994), express uncertainty (Skelton, 1997), and avoid commitment to categorical assertions (Hyland, 1998b). Hedging carries not only the author's degree of confidence in the face of a statement but also the author's attitude towards the audience (Hyland, 1998a). As a politeness strategy (Myers, 1989; Cabanes, 2007), hedging is used to convey respect for alternative views and to tone down the statements to allow room for readers to have their own interpretations (Jalilifar & Shooshtari, 2011). The functions of hedging boil down to this: it allows writers to cautiously present evidence and claims and interact with a wider academic community.

The past two decades have witnessed a growing body of research on cross-disciplinary comparisons on hedging in written academic discourse. The social science/natural science dichotomy is reified in this line of research where an emergent theme is that hedging is more common in social science disciplines than in natural science disciplines. Ignacio and Diana (2008), for example, compared the use of hedging in research articles in the field of marketing, biology and mechanical engineering. They found that hedging was most common in marketing and attributed the finding to the nature of data used in each discipline. Marketing used hedging more frequently because the data used in marketing research is more socially constructed and abstract as opposed to the concrete, numerical data used in biology and mechanical engineering research. Tabrizi (2011) examined the hedging frequency in journal articles in biology and English language teaching (ELT) and found that hedging was more common in ELT journal articles than in biology texts. Similarly, Mirzapour and Mahand (2012) reported that hedging was more commonly used in the field of library and information than in computer science. The findings were corroborated

also by Rabab'ah's (2013) study that compared the distribution and function of hedging devices in nursing and education articles. The results suggest that education authors resorted to a wide range of hedging devices more frequently than the nursing writers. Emerging from this line of research is the natural science/social science dichotomy and that hedging is less salient in the former than in the latter.

However, and notwithstanding the above findings, the small number of disciplines involved in the referenced studies warrants caution in the interpretation of the results. This points to the need to compare a wider range of disciplines to examine whether the natural science-social science dichotomy of hedging is a general rule or popular misconception. As an attempt to bridge this research lacuna, this study compares the use of hedging across sixteen disciplines in the Michigan Corpus of Upper-Level Student Papers (MICUSP). It aims to investigate the cross-disciplinary variations of the form, frequency and function of hedging devices in successful academic writing by advanced student writers. It also attempts to demonstrate how corpus methods can contribute to the understanding of academic writing and hopefully provide fruitful insights into teaching English for academic purposes (EAP). The study answers two questions:

1. How frequently do advanced student writers use hedging across the 16 disciplines? Are there any interdisciplinary differences?
2. What are the most frequently used hedging devices in the 16 disciplines? Are there any interdisciplinary differences?

Methods

The Michigan Corpus of Upper-Level Student Papers (MICUSP)

This study is a corpus-based analysis. As corpus data allows close textual interpretation of concordance lines and large-scale statistical processing, both quantitative and qualitative data can be obtained to address the two research questions. Corpus evidence has been argued to have a unique contribution to "raising teacher's sensitivity to linguistics features and patterns" (Tsui, 2004, p. 39).

The data used in this study comes from the *Michigan Corpus of Upper-level Student Papers* (see **http://micusp.elicorpora.info**). MICUSP provides access to 829 papers (totaling approximately 2.6 million words) written by A-graded senior undergraduate and first to third year graduate students at a large American research university (Römer & O'Donnell, 2011). Papers of seven different types (argumentative essay, creative writing, critique/evaluation, proposal, report, research paper, response paper) were collected from 16 disciplines across four academic divisions (see Table 1).

Considering the comparative nature of this study, raw hedge frequency needs to be normalized to make meaningful comparisons. The following formula was used to calculate the normalized frequency:

$$f_{norm} = \frac{h}{t} \times 10000$$

where *h* is the total number of hedge instances and *t* is the total number of tokens (e.g., the size of the corpus). Table 1 shows the total number of tokens in each sub-corpus.

Table 1

Distribution of papers across academic divisions and disciplines in MICUSP

Academic division	Discipline	Papers	Tokens
Humanities & Arts	English (ENG)	98	268,733
	History & Classical Studies (HIS)	40	182,629
	Linguistics (LIN)	41	155,047
	Philosophy (PHI)	44	128,028
		Σ223	Σ734,437
Social Sciences	Economics (ECO)	25	78,070
	Education (EDU)	46	150,282
	Political Science (POL)	62	210,783
	Psychology (PSY)	104	323,326
	Sociology (SOC)	72	215,793
		Σ309	Σ978,254
Biological & Health Sciences	Biology (BIO)	67	176,124
	Natural resources & Environmental (NRE)	62	176,653
	Nursing (NUR)	42	158,773
		Σ171	Σ511,550
Physical Sciences	Civil & Environmental Engineering (CEE)	31	98,918
	Industrial & Operations (IOE)	42	124,973
	Mechanical engineering (MEC)	32	123,335
	Physics (PHY)	21	45,062
		Σ126	Σ392,288
Overall summary		Σ829	Σ2,616,529

Inclusion criteria

Hedging can be achieved by using lexical devices or implicitly by using passive voice or impersonal expressions (Hyland, 1998b). This study only focuses on some of the most prototypical lexical hedges. A list of lexical items (see Table 2) was compiled based on previous research (Hyland, 1998a, 1998b, 2004; Jalilifar, 2007).

Table 2

Taxonomy of hedges based on Hyland (1998a, 1998b, 2004) and Jalilifar (2007)

Category	Hedges
Modal auxiliaries	can, could, may, might, would
Lexical verbs (including inflections)	appear, assume, imply, infer, indicate, predict, seem, suggest, suppose, tend to
Epistemic Adjectives	approximate, conceivable, likely, possible, probable, seeming, speculative, uncertain, unclear, unlikely
Epistemic Adverbs	about, almost, approximately, at least, broadly, conceivably, generally, maybe, nearly, perhaps, plausibly, probably, relatively, roughly, seemingly, somewhat, supposedly, virtually
Adverbs of frequency	frequently, mostly, often, sometimes, usually

The author searched for all occurrences of hedges listed in Table 2 by putting in each of the hedges in the search box located on the top of the MICUSP interface. Hedge instances were manually checked in context to ensure that they were performing hedging functions. All occurrences went through two rounds of counting by the same author with a one-month interval. Both rounds of counting were done manually as there is no automatic extraction function in MICUSP. The two sets of counting results were compared and the agreement rate was 100%. Occurrences that matched the definition and performed hedging function were counted and those that did not were excluded. For example, the underlined occurrences *appear* and *can* in Excerpt 1.1 and 1.3 were counted, for they were performing hedging function – withholding commitment and expressing possibility, respectively; while the ones in Excerpt 1.2 and 1.4 were excluded from the count as they referred to the object starting to be seen and an ability, respectively.

Excerpt 1.1
Analysis of the data reveals that the adoptees, with few exceptions, <u>appear</u> to be doing well. [Psychology report; Paper ID: PSY.G0.41.1]

Excerpt 1.2
Then, noting that the magnetic field does not <u>appear</u> in the y-component of the canonical momentum, … [Physics report; Paper ID: PHY.G3.03.1]

Excerpt 1.3
Bed nets are another form of vector control while people sleep, but they <u>can</u> be less effective when mosquitoes can bite through. [Biology report; Paper ID: BIO.G0.25.1]

Excerpt 1.4

It may be because they do not know what tasks the techs <u>can</u> do. [Nursing report; Paper ID: NUR.G0.07.1]

Inflections of the hedging verbs were counted through lemmatization, the process of "grouping word forms from the same word class under the base or uninflected form" (Flowerdew, 2012, p.12). For instance, occurrences of *suggests* and *suggested* were subsumed under the count of *suggest*.

Results and Discussion

Hedging frequency across the 16 disciplines & interdisciplinary differences

A total of 33,261 functioning hedges were found in the 2,616,529 words corpus – an average of 40.27 per paper, or 127.12 hedges per 10,000 words, close to what Hyland (1998a) reported 14.6 hedges per 1,000 words in his analysis of 56 research papers. Although Hyland's (1998a) study included eight disciplines while the present study involves sixteen, the overall consistency of the hedging frequency underlines the importance of hedging in academic writing.
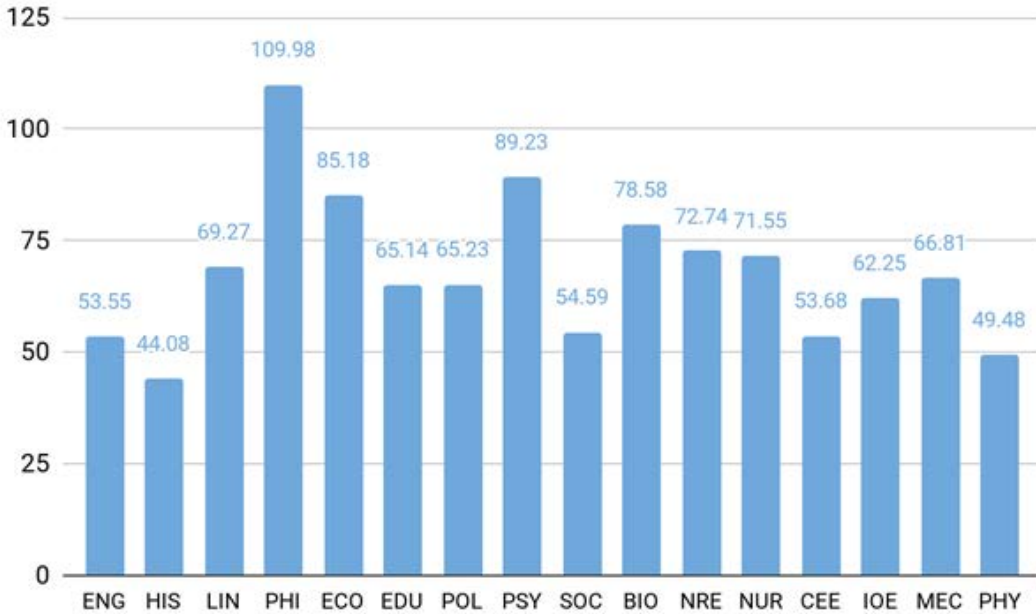
Figure 1

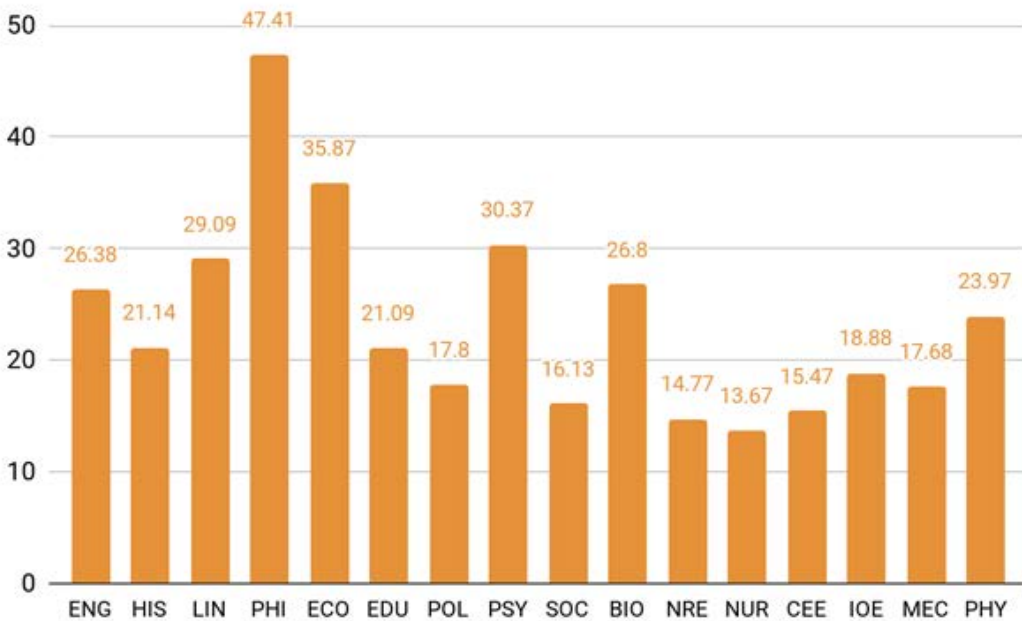Total hedges per 10,000 words: Disciplinary differences
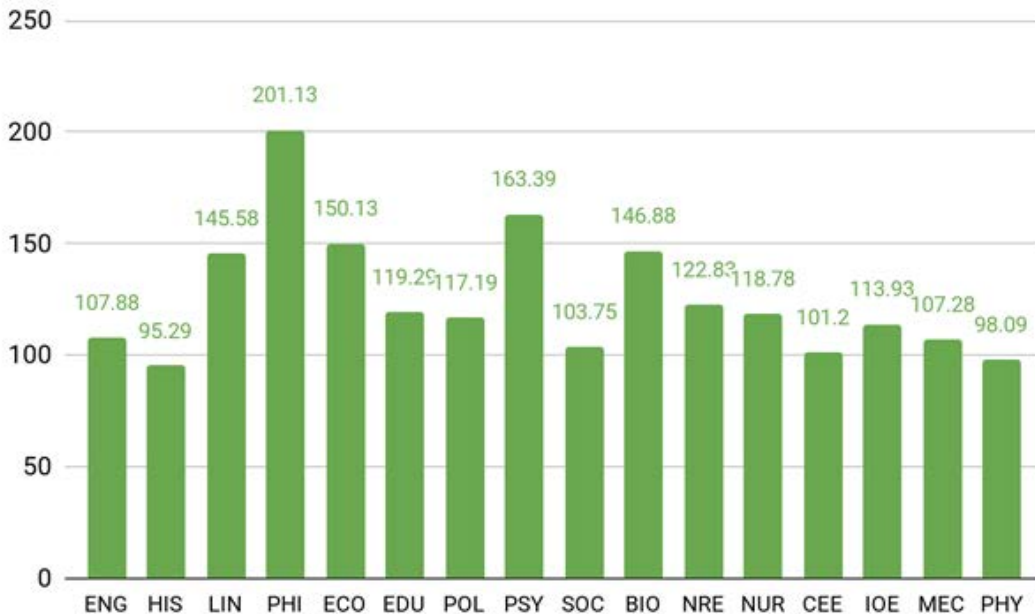
Figure 2

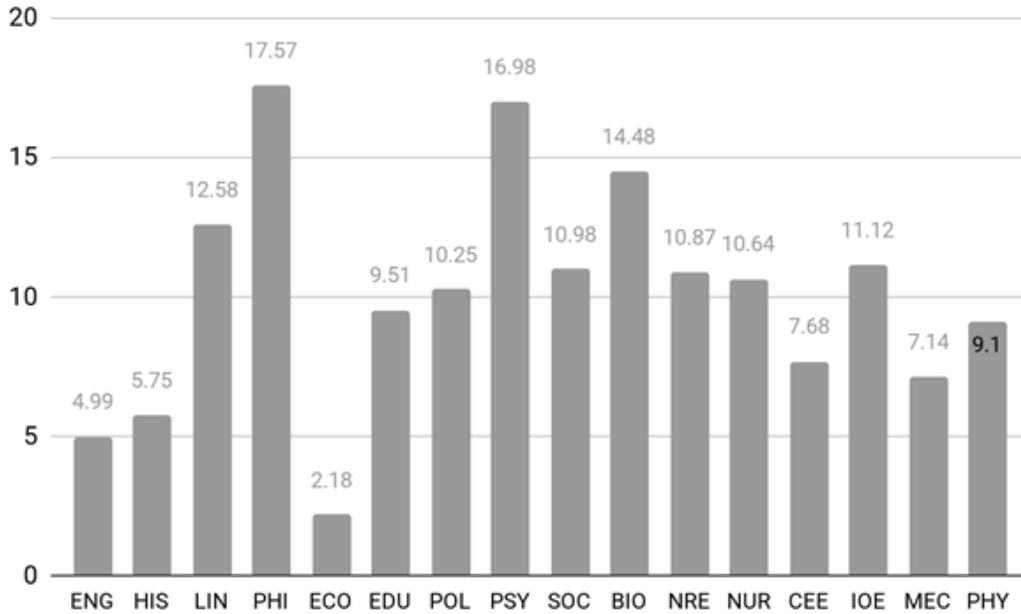Modal-auxiliary hedges per 10,000 words: Disciplinary differences

Figure 3

Lexical-verb hedges per 10,000 words: Disciplinary differences

Figure 4

Epistemic-adjective hedges per 10,000 words: Disciplinary differences

Figure 5

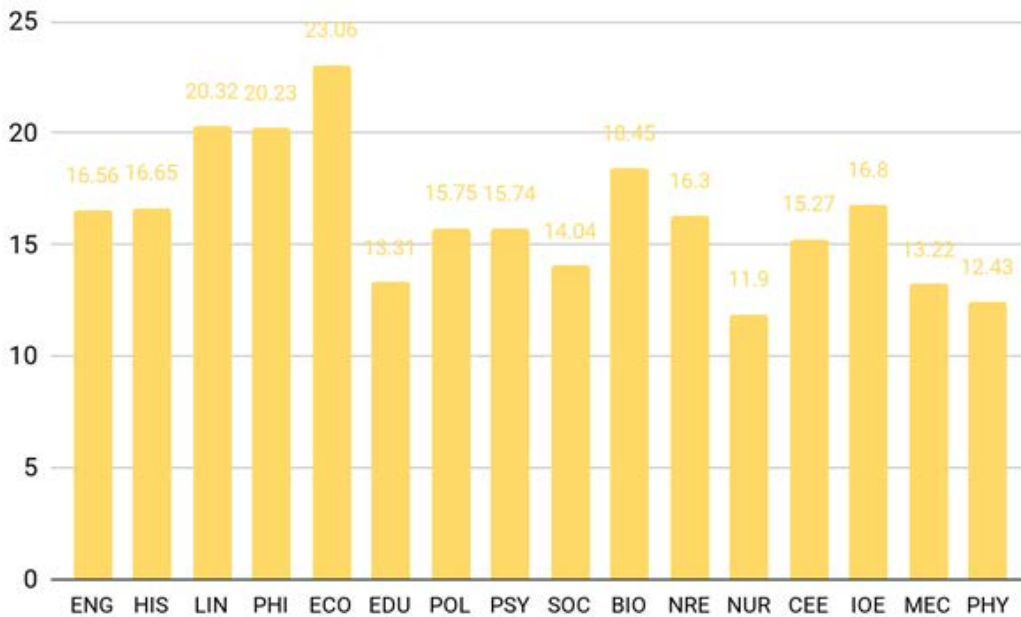Epistemic-adverb hedges per 10,000 words: Disciplinary differences

Figure 6

Adverb-of-frequency hedges per 10,000 words: Disciplinary differences
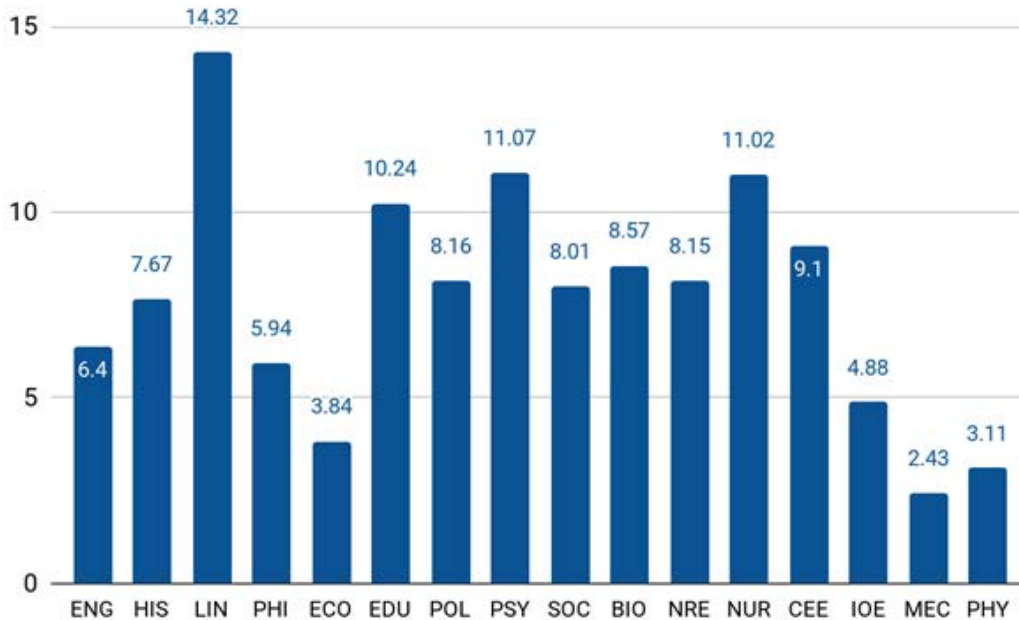

Figure 1 shows that the highest hedge frequencies were found in Philosophy (201.13 occurrences per 10,000 words) and Psychology (163.39) and the lowest in Physics (98.09) and History and Classical Studies (95.29). The results generally support Ignacio and Diana's (2008) conclusion that hedging is more common in disciplines driven by abstract, socially-constructed data and less common in those driven by concrete data. However, a demonstrable exception to this rule is the discipline of History and Classical Studies. Papers in this discipline used hedging the least frequently, while they are primarily based on so-called abstract, socially constructed data, as can be seen from the excerpts below, where the discussions are based primarily on the author's opinions on topics open to interpretation. The hedging modal auxiliaries *may* and *could* were used here as an interactive and politeness device to convey respect for alternative opinions and allow room for readers to make their own judgements, echoing the functions of hedging discussed previously. The low hedging frequency found in History and Classical Studies may be attributed to the fact that 50 percent of the papers in this discipline are report papers, which are mainly citing and analyzing of *faits accomplis* or classical works, allowing little room for hypotheses and argumentation.

Excerpt 2.1

The poet, whenever he <u>may</u> have written, <u>could</u> have also recognized the stability of the Augustan age or not wish to have to treat civil-war at length. [History & Classical Studies argumentative essay; Paper ID: CLS.G2.01.1]

Excerpt 2.2

However, it <u>may</u> be argued that such issues are minimally connected to the fundamental question of what Cicero's rhetorical or private aim is in these extensive compositions. [History & Classical Studies report; Paper ID: CLS.G1.02.1]

Excerpt 2.3

This stance <u>may</u> seem slightly contradictory to the aims of tolerance, but other advocates of tolerance (such as Karl Popper) agree with Scanlon, and so it <u>may</u> be reasonable to accept it for now. [Philosophy; Argumentative Essay; Paper ID: PHI.G0.05.1]

Excerpt 2.4

Note that the manifestations of particular PQ's may change. The grain <u>may</u> have been split in two; it <u>may</u> have fallen on the floor, or been set into motion at some point. [Philosophy; Critique/Evaluation; Paper ID: PHI.G0.02.2]

Excerpt 2.5

We should try to find the candidate somatic cells that <u>may</u> be the reason for migration defect according to the pattern and the region of these two disorder groups of PGC's movement. [Biology; Proposal; Paper ID: BIO.G1.07.1]

Figure 1 also reveals substantial intra-division disciplinary variations. Noteworthy is that Philosophy and History and Classical Studies, one with the highest hedge frequency and the other the lowest, are under the same division of Humanities and Arts. Although the two disciplines are within the same division, they are different in nature, which may factor in the contrast in the hedging frequency. History and Classical Studies focuses on the study of languages, culture and civilizations. The most common techniques in this discipline are extracting information from texts or materials and analyzing the arguments, as in Excerpt 2.1 and 2.2. Philosophy, on the other hand, is the study of fundamental questions about existence and reason. The most common philosophical methods are discussion, argumentation and questioning (Excerpt 2.3 and 2.4), which likely make more room for the role of hedging compared with History and Classical Studies methods.

Intra-division variations were also found in the division of Biological and Health Sciences, where hedging is markedly more common in Biology (146.88 per 10,000 words) than in other disciplines within the same division, i.e., Natural Resources & Environment (122.83) and Nursing (118.78). The results may be explained by the different nature of the disciplines as well. Biology as a discipline is mainly connected to the organization and diversity of life. It is difficult, if possible, to ascertain the processes by which life has achieved its present forms or the mechanisms behind certain species' activity patterns (e.g., Except, 2.5), as there is much room for probabilities. Thus, Biology students might be more prompted to "tone down, mitigate or modulate the statements so that the audience feel that they are still able to judge for themselves and that the author is pending their acceptance" (Cabanes,

2007, p. 141). In contrast, Natural Resources and Environment is related to the knowledge of policies, techniques and skills to manage and conserve resources for protection of

the Earth's resources. Writers in this discipline tend to make their claims with more certainty to express the exigency of the situation and the call for sustainability. Similarly, Nursing as a discipline is to develop skilled nurses as problem solvers to address complex health care issues. Authors of Nursing articles need to state their positions with much more confidence, since the lack of certainty would be associated with potential health risks. This view echoes that of Rabab'ah (2013) who found that hedging is used more frequently in education academic articles than in the nursing ones.

Social Sciences disciplines also witnessed intra-division variations. Psychology papers have a notably higher frequency than Economics, Education, Political Science, and Sociology papers in total hedging use (163.39), as well as in the use of modal verbs (89.23; see Figure 2) and lexical verbs (30.37; see Figure 3). The overlaps between these social sciences disciplines are evident – a focus on patterns of recurring behavior characteristics. Psychology, however, differs from the other disciplines in that delve into the mind of individuals or small groups to understand human behaviors and emotional reactions, while the other social science disciplines tend to look beyond individuals. Thus, the high hedging frequency in Psychology papers may be due to the discipline's heavy reliance on perceptions or personal judgements (Nivales, 2011).

To sum up, there was considerable spread in hedging frequency across disciplines. The results also suggest that hedging frequency varies not only across different divisions but also within the same division. While previous research suggests that hedging is less common in natural sciences than in social sciences, caution is warranted in applying this dichotomy since there are exceptions such as History and Classical Studies and Biology.

Most frequent hedges & interdisciplinary differences

The ten most common hedging devices in the whole corpus, with the normalized frequency in the whole corpus and sub-corpora, are shown in Table 3. The ten items accounted for no less than 74 percent of all hedging devices (127.12 per 10,000 words) in the whole corpus and no less than 62 percent in each discipline, suggesting that these ten items are heavily used to express hedging across all disciplines. Among the ten items, *can, may, could, seem, might, suggest* were also listed among the ten most frequent hedging devices in Choi & Ko's (2005) analysis of writing by native writers of English (NWs) and Korean non-native writers (NNWs). *May*, *could*, *would* were the highest frequency items in Hyland and Tse's (2004) analysis of 40 master's or doctoral dissertations from six disciplines. The five modal verbs, namely *would*, *can*, *may*, *could*, and *might*, accounted for no less than 46 percent of all hedges in each discipline, which supports that modality is an important means to express hedging (Holmes, 1988; Hyland, 2003; Hyland & Tse, 2004). Cross-disciplinary variations exist in terms of both the frequency and function of the ten items. Three most distinct cross-disciplinary differences are closely examined below.

Table 3

Ten most common hedges in MICUSP

	would	can	may	could	seem	might	possible	suggest	likely	often
Total	21.49/16.9	16.28/12.8	14.29/11.2	11.14/8.8	6.75/5.3	5.13/4.0	5.00/3.9	4.78/3.8	4.75/3.7	4.66/3.7
BIO	23.56/16.0	18.45/12.6	19.93/13.6	13.17/9.0	3.58/2.4	3.46/2.4	7.15/4.9	8.86/6.0	5.17/3.5	4.32/2.9
CEE	13.45/13.3	16.28/16.1	12.13/12.0	9.40/9.3	1.21/1.2	2.43/2.4	3.94/3.9	2.12/2.1	2.22/2.2	5.26/5.2
ECO	19.47/13.0	13.32/8.9	15.63/10.4	10.89/7.3	6.15/4.1	11.53/7.7	5.25/3.5	4.36/2.9	14.47/9.6	1.92/1.3
EDU	23.82/12.0	12.71/10.7	13.11/11.0	11.05/9.3	6.39/5.4	4.46/3.7	3.06/2.6	4.66/3.9	5.79/4.9	5.72/4.8
ENG	14.92/13.8	15.29/14.2	9.45/8.8	9.19/8.5	12.09/11.2	4.69/4.4	2.31/2.1	6.29/5.8	1.56/1.4	3.76/3.5
HIS	16.32/17.1	6.73/7.1	6.95/7.3	9.42/9.9	7.67/8.1	4.65/4.9	2.96/3.1	5.31/5.6	1.37/1.4	4.49/4.7
IOE	22.80/20.0	14.24/12.5	8.08/7.1	11.92/10.5	3.12/2.7	5.20/4.6	7.76/6.8	4.48/3.9	2.48/2.2	2.40/2.1
LIN	21.86/15.0	18.32/12.6	16.32/11.2	9.22/6.3	9.93/6.8	4.84/3.3	7.48/5.1	3.22/2.2	2.97/2.0	6.32/4.3
MEC	29.84/27.8	16.38/15.3	7.38/6.9	12.00/11.2	0.97/0.9	1.22/1.1	5.19/4.8	1.78/1.7	0.89/0.8	1.22/1.1
NRE	24.28/19.8	16.59/13.5	13.08/10.6	16.47/13.4	3.79/3.1	2.32/1.9	4.02/3.3	2.09/1.7	5.43/4.4	4.92/4.0
NUR	19.65/16.5	17.13/14.4	21.60/18.2	9.76/8.2	2.59/2.2	3.40/2.9	3.78/3.2	3.46/2.9	6.17/5.2	6.11/5.1
PHI	28.90/14.4	36.09/17.9	15.78/7.8	13.90/6.9	24.76/12.3	15.31/7.6	13.67/6.9	5.31/2.6	1.48/0.7	3.04/1.5
PHY	11.32/11.5	22.19/22.6	7.32/7.5	7.32/7.5	1.11/1.1	1.33/1.4	5.55/5.7	2.66/2.7	2.00/2.0	1.78/1.8
POL	24.34/20.8	12.62/10.8	10.86/9.3	11.77/10.0	5.31/4.5	5.65/4.8	3.32/2.8	5.17/4.4	5.08/4.3	5.60/4.8
PSY	25.79/15.8	18.46/11.3	27.31/16.7	10.95/6.7	6.87/4.2	6.71/4.1	5.72/3.5	7.73/4.7	9.53/5.8	6.34/3.9
SOC	16.91/16.3	13.44/13.0	9.41/9.1	10.19/9.8	4.54/4.4	4.63/4.5	3.61/3.5	2.13/2.1	6.35/6.1	5.10/4.9

Notes: In each cell, the number on the left indicates the percentage of occurrences of the hedge per 10,000 words in the whole corpus (the first row) or in each sub-corpus by discipline; the number in the right indicates the percentage of all hedges in the whole corpus or in each sub-corpus that are comprised of the specific hedge indicated.

Cross-disciplinary variations: Seem

Of all the functioning hedging devices, *seem* was rarely used in Mechanical Engineering (0.9% of all hedges in this discipline) and Physics (1.1%) essays but were significantly more common in English (11.2%) and Philosophy (12.3%) essays. This may have to do with the meaning and connotation of the word *seem*, whose definition revolves around the concept of impression. Impression is highly subjective as it has to do with people's feelings and opinions, which are not as relevant to the fields of Mechanical Engineering and Physics as to the study of English and Philosophy. Upon closer examination of these hedges in context, it was observed that the two hedges were performing different hedging functions in these disciplines. Four examples are presented below.

Excerpt 3.1
Second, the contact resistance of the setup did not <u>seem</u> to be consistent. [Mechanical Engineering; Research Paper; Paper ID: MEC.G0.04.1]

Excerpt 3.2
Conflicts <u>seem</u> to occur most often when one religion does not allow the presence of its neighbor religion and so seeks to alter their presence or activities, even the religion itself. [Philosophy; Argumentative Essay; Paper ID: PHI.G0.05.1]

Excerpt 3.3

Empirical observations <u>suggest</u> that during the summer months, when dissimilar schedules meant less knowledge of others' decisions and thus less peer pressure. [Civil & Environmental Engineering; Argumentative Essay; Paper ID: CEE.G3.04.3]

Excerpt 3.4

Just as space can imply the idiosyncrasies of a generation, it can also <u>suggest</u> impressions of individual issues and emotions. [English; Argumentative Essay; Paper ID: ENG.G0.09.2]

Although *seem* and *suggest* function as hedges in the Mechanical Engineering (Excerpt 3.1) and Civil and Environmental Engineering (Excerpt 3.3) papers, they carry a relatively high level of confidence of the authors in the face of the statements that are based on concrete, objective evidence (i.e., *the contact resistance* and *empirical observations*). The authors used these hedges to present the evidence with caution, maintain objectivity and convey epistemic meaning, less so to express uncertainty. In contrast, in Excerpt 3.2 and 3.4, the authors used *seem* and *suggest* to make statements based on their own experience and interpretation. The claims being made are not definite ones, as there is no standard answer to the open-ended questions that when conflicts occur most often and what space can imply. By using *seem* and *suggest*, the authors attempt to persuade the audience without sounding offensive by allowing readers to have their own interpretations. Given the nature of English and Philosophy studies, authors in these disciplines tend to use hedging to enter a negotiation with the audience.

Cross-disciplinary variations: Possible and likely

The two hedging adjectives *possible* and *likely* were rare in English (3.6% of all hedges in this discipline) and History and Classical Studies (4.5%) but were more than twice as common in Sociology (9.6%) and Economics (13.1%). This may be because these two hedges are often used to make predictions, which is more relevant to Economics and Sociology than to English and History and Classical Studies. Cross-disciplinary differences were also found in the roles of these hedging adjectives. Examples are as follows.

Excerpt 4.1

Therefore, it's <u>possible</u> that if Jessica had not defied her father, he may have had a change of heart, consequently, alleviating sin from herself. [English; Argumentative Essay; Paper ID: ENG.G0.26.2]

Excerpt 4.2

One <u>possible</u> reason why poverty is seemingly absent from the public agenda is that poor individuals themselves are relatively silent on the issue. [Sociology; Report; Paper ID: SOC.G1.03.1]

Excerpt 4.3

While perhaps it is most <u>likely</u> that Plato chose the dialogue because of the singular way it can engage a reader in the privileged teacher-pupil exchange, I would argue that the inherent

framing that occurs within each dialogue was also a major factor in his selection. [History & Classical Studies; Argumentative Essay; Paper ID: CLS.G0.01.1]

Excerpt 4.4
Thus, the marginal benefit of incarcerating an individual may decrease significantly with an aging population, despite the drastic increase in marginal costs that are <u>likely</u> to occur. [Economics; Argumentative Essay; Paper ID: ECO.G0.03.1]

In the English (Excerpt 4.1) and History and Classical Studies (Excerpt 4.3) papers, the authors used *possible* and *likely* in hypothetical statements or deductions about past events to avoid commitment to categorical assertions. English study is mainly dedicated to analyzing texts in the English language, possibly in relation to some cultural phenomena. Effective writers in this discipline are expected to be creative and critical in their writing. Similar qualities are expected in successful History and Classical Studies papers, where students situate the current time in relationship to the past through inquiry and interpretation. While demonstrating creativity and critical thinking, student writers in these disciplines need to resort to hedging devices to avoid commitment to categorical assertions that "experienced academic readers judge to be unwarranted or unnecessary" (Allison, 1995, p.1). In comparison, *possible* and *likely* were employed in the Sociology (Excerpt 4.2) and Economics (Excerpt 4.4) essays to make speculation or prediction based on the observed phenomenon (poverty being absent from the public agenda) or laws of economics (potential increase in marginal costs with an aging population). As the study of human behaviors and their social causes and consequences, Sociology papers are characterized by collecting and interpreting data and making evidence-based arguments. Similarly, Economics papers are heavily based on economic data. Since arguments are more evidence-based in these disciplines, hedging is more often used to tone down a knowledge claim when there is not enough evidence to make a stronger claim. That said, both *possible* and *likely* could be used to express epistemic meanings, showing uncertainty and tentativeness in most, if not all, disciplines. The interdisciplinary differences in their functions can be nuanced.

In sum, disciplinary differences regarding the frequency and functions of the most common hedges mainly exist between disciplines driven by concrete data (e.g., Mechanical Engineering) and those driven by argumentation (e.g., Philosophy; English). The disciplinary differences, however, can be complex and nuanced as a result of the different nature of the fields. It would thus be inadvisable to apply the social/natural sciences dichotomy without caution.

Pedagogical implications

Research suggests that student writers often struggle to hedge appropriately and effectively as proficient native writers (NWs) do. Based on a corpus of 745 student essays by NWs and non-native writers (NNWs) of different L1s (e.g., Arabic, Chinese, Indonesian), Hinkel (2005) found a marked lack of lexically-advanced hedging and a tendency of exaggerate and overstate in NNW' essays. Not only had the NNWs employed a severely limited range

of hedging devices as opposed to NWs, their choices of hedging devices are restricted to conversational discourse and casual spoken interactions. Similarly, Choi and Ko (2005) analyzed Korean postgraduates' research papers and masters' theses in the field of TEFL/ Applied Linguistics. They found that hedging can be challenging even for NNWs of high level of English proficiency. Similar findings were also reported with Chinese learners of English (e.g., Allison, 1995; Hu, Brown, & Brown, 1982; Hyland & Milton, 1997). This line of research suggests that the problem of underusing hedging has been a long-standing one. The overuse of hedging is another issue in student NNWs' writing. Alonso (2019) found that Spanish learners of L2 English used impersonal expressions more frequently than NWs. The author points out that this may be due to the frequent use of impersonal expressions in Spanish. Thus, apart from the challenges coming from the "extremely troublesome" hedging devices (Hyland, 1996, p. 278), NNWs may also need to address the crosslinguistic influence from their mother tongue. The above findings echo what Hyland and Milton (1997) noted that a major problem faced by NNWs is to "convey statements with an appropriate degree of doubt and certainty" (p. 183). This necessitates a close examination of the use of hedging in successful academic writings, such as those captured in the MICUSP corpus, to help writing teachers guide NNWs to use hedging more effectively.

The findings of the present study have a number of pedagogical implications. First, the overall high hedging frequency across all disciplines are indicative of the significant role that hedging plays in English academic writing. It is therefore important for EAP practitioners to raise learners' awareness of hedging to express claims cautiously and advance linear arguments. Second, the findings are suggestive of a rich and multi-faceted hedging tapestry among different disciplines – substantial cross-disciplinary variations were revealed in terms of both the frequency and function of hedging devices in academic writing. Teachers and students are expected to be cognizant of these variations. Discipline-specific teaching is advisable and could be useful to help students construct their academic identity in their own academic community. For example, students of a specific discipline can explore the sub-corpus of the discipline to find out how different hedges are used in different contexts. They may then employ different hedges to achieve specific purposes, such as to be persuasive or to demonstrate critical thinking. Third, echoing the Data-Driven Learning advocated by Johns (1991), the rich data yielded from this corpus research demonstrated the potential of corpora as a powerful pedagogical tool in teaching and learning English academic writing. The lack of learning materials, once a major reason that impeded second language learners from hedging their propositions appropriately and effectively (Hyland, 1998b), is no longer a conundrum in the face of the ubiquitous and easily accessible corpora today. ELT practitioners and students are encouraged to harness the benefits of corpora to advance and personalize their teaching and learning, which can happen beyond the classroom walls and thereby enrich or improve the remote learning that has risen during the COVID-19 pandemic. Looking beyond language learning, corpora can be much more than a collection of language patterns but a tool to develop students' capacity as autonomous learners. For example, in the absence of a human tutor, students can check whether their writing is grammatically correct (e.g., whether a collocation they are unsure about has been previously used in their field of study). Students can also explore various corpora – spoken English, written English, discipline-specific corpora

– based on their own needs and interests. They may even create personalized corpora using tools such as AntConc (Diniz, 2005).

Limitations and future research

With the limited number of hedges and excerpts analyzed in detail in this paper, this study only provides a general overview of the cross-disciplinary differences of hedging in students' academic writings captured in MICUSP. The findings are nonetheless rich and informative. To some extent the findings support the notion that hedging is more common in argumentation-driven subjects. Nevertheless, it is also important to note that variations can exist between disciplines under the same division. Such findings point to the need for more nuanced understandings of the use of hedging in individual disciplines that would allow for a fine-grained understanding of hedging as a means of informing EAP practice. Using annotation tools, for example, to explore the rich metadata available on MICUSP would be an important step in generating a richer understanding of the use of hedging across different disciplines. One sampling caveat in the current inquiry is whether the findings regarding hedging features can be representative of each discipline, considering that different paper types were examined. Different paper types may factor in the cross-disciplinary differences of hedging, which would be worth exploring in future research. Another fruitful line of inquiry might be a closer investigation of other forms of hedging, such as passive voice as a means for impersonal construction. Exploring these hedging devices would constitute a meaningful contribution to teaching hedging in English academic writing. Future research could also look into hedging features in different disciplines in relation to nativeness. It would be interesting to compare the results with Hinkel's (2015) study mentioned above.

Conclusion

This study contributes to the understanding of hedging patterns across different disciplines. An important contribution of this study is the inclusion of sixteen disciplines in the comparison. The findings reveal complex cross-disciplinary variations of hedging, from a frequency and function aspect, that can be attributed to the different nature of the disciplines. This study also provides an example of using corpora to assist language learning. Although the cross-disciplinary differences of hedging are complicated and multifaceted, with the aid of corpus-based methods, EAP practitioners would gain valuable insights to help their students better understand scientific rhetoric and academic writing.

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