A cross-cultural study of hedging in discussion sections by junior and senior academic writers

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Abstract

This study examines the employment of uncertainty marking in discussion sections written by three groups of writers: master's dissertations written in English by Iranian and English graduate students of applied linguistics, and research article discussions by professional writers of applied linguistics. The focus was on the use of hedging devices and degree of conviction promoted in their claims. The results showed that for all writer groups epistemic modals had the highest frequency of use in the discussion sections followed by epistemic adverbials/adjectivals/nouns (EAAN), and verbal hedges respectively. Graduate writers (English and Iranian) mostly used modal verbs to express conviction; hence, they produced a larger proportion of modals compared to professional writers. Professional writers, however, produced more accuracy and reader-based hedges such as EANN, evidential, and judgmental verbs. Further, they used a more unique and diverse range of hedging devices. Except for modals, Iranian graduates' discussions were less hedged compared to those by English graduates and professional writers. Certain epistemic modals (i.e. *can, could*) were frequently used by this group. Particular conversational hedges were used mostly by English graduates. Pedagogical applications and implications for junior researchers about developing appropriate stance and engagement strategies in writing discussion sections will be proposed and discussed.

Keywords: hedging, dissertation, discussion, academic writing, native, non-native.

Resumen

La mitigación en las secciones de discusión de investigadores noveles y experimentados: un estudio transcultural

Este artículo analiza el empleo de marcadores de duda en las secciones de discusión de trabajos escritos por tres grupos de autores: tesis de máster de estudiantes iranís e ingleses de lingüística aplicada y artículos de investigación de investigadores profesionales de esta misma área. En concreto, se ha puesto el foco en los mecanismos mitigadores y el grado de convicción con que se presentan sus afirmaciones. Los resultados muestran que en todos los grupos de autores analizados los modales epistémicos registran la mayor frecuencia de uso en las secciones de discusión, seguidos de los adverbios, adjetivos y sustantivos epistémicos, por un lado, y los mitigadores verbales, por otro. Los estudiantes de máster (ingleses e iranís) emplean los verbos modales fundamentalmente para expresar convicción; así pues, se ha identificado una mayor proporción de modales en sus trabajos en comparación con los de los investigadores profesionales. En los artículos de estos últimos, en cambio, se ha detectado mayor precisión en el uso de mitigadores "en clave de lector" (*reader-based*) como adverbios, adjetivos y sustantivos epistémicos, y verbos evidenciales y de juicio, así como un uso más variado y rico de mecanismos mitigadores. A excepción de los modales, las secciones de discusión redactadas por estudiantes iranís contienen menos mitigadores que las de los estudiantes ingleses y las de los investigadores profesionales. Asimismo, ciertos modales epistémicos (*can, could*) aparecen con gran frecuencia en los textos de los estudiantes iranís. Por otra parte, determinados mitigadores conversacionales se encuentran principalmente en los trabajos de los estudiantes ingleses. Por último, se proponen y discuten aplicaciones pedagógicas relacionadas con el desarrollo de estrategias adecuadas de autoridad e implicación en la redacción de secciones de discusión y sus implicaciones para investigadores noveles.

Palabras clave: mitigación, tesis, discusión, escritura académica, nativo, no nativo.

1. Introduction

Academic writers need to distinguish between propositions already shared by the discourse community, which effectively have the status of facts, and those to be evaluated by the community, which have the status of claims (Hyland, 2004). One characteristic device for signaling such a distinction is hedging. Hedging is a "rhetorical strategy, by which a speaker, using a linguistic device, can signal a lack of commitment to either the full semantic membership of an expression or the full commitment to the force of the speech act being conveyed" (Lakoff, 1972: 22). It is also a rhetorical device for demonstrating politeness and consideration for others by giving readers a chance to disagree (Holmes, 1982). The knowledge claims that a thesis

writer makes in the form of arguments need to be convincing if they are to draw the attention and support of the examiners. "Implicitly and/or explicitly the writer always works within a dialogical framework" which involves negotiating claims and conforming to the disciplinary thinking of the potential or hypothetical readers (Bahktin, 1973: 6; Hyland, 1999). The mechanisms whereby this negotiation operates involves the "internalization on the part of the writer of epistemological assumptions of the discipline, a rhetorical understanding of the genre one is writing in, and an idea of how the audience being addressed may react to what is being put forth" (Silver, 2003: 359). Academic writers resort to interactional resources which help them regulate the plausible stance they project in their interaction with the audience (Hyland, 2005a).

Mastering hedging is "a critical aspect of pragmatic competence" helping writers and speakers achieve their communicative goal (Fraser, 2010: 33). Proper use of hedging is argued to promote the credibility of scientific reports (Jensen, 2008). In Anglo-American written texts, hedges are used extensively to show "honesty, modesty, proper caution, and diplomacy" (Swales, 1990:174). The significance of epistemic comments related to the truth or definiteness of a thesis was demonstrated by Adams Smith (1984) who found one comment every 3.7 lines in medical discourse which rose to one every 2.2 lines in the discussion sections. As Myers (1989: 13) argues, "…a sentence that looks like a claim but has no hedging is probably not a statement of new knowledge". Meanwhile, failing to understand the intention behind hedging may lead to miscommunication.

Hedges play a significant rhetorical role in the macrostructure of research articles particularly in the results and discussion sections where "authors make their claims and explore implications not directly tied to their findings" (Hyland, 1996: 274). Hyland found that over 80% of hedges in molecular biology research articles appeared in the discussion section. Despite being a salient feature of academic discourse, hedges have not been adequately investigated in academic discourse of junior writers who are presumably on the edge of their discourse community. Hence, there have been recent calls for "more descriptions of the wide range of specific disciplinary genres students need to write and read" as well as for "studies which focus on NNES [non-native English speaker] students and how their academic writing in English is similar and distinct from each other and from NESs [native English speakers]" (Hyland, 2015: 303). Very little is known particularly about their frequency, distribution, and use in theses and dissertations. Further, there has

been a relative neglect of dissertation writing practices of master's students who constitute a significant majority of students particularly given the important role of the master's degree in university education (Johns & Swales, 2002). This study attempts to ascertain how junior members mitigate claims in their discussions in line with the expectations of knowledge sharing and construction by professionals in the discipline. The "issue of the degree of overlap between novice native writers and non-native writers has far-reaching methodological and pedagogical implications and is clearly in need of empirical studies" (Gilquin, Granger & Paquot, 2007: 323). Findings from such an analysis can help us realize how linguistically proficient non-native graduate writers compare to their native English counterparts and professional writers in manipulating the resources of the target language to their advantage and promote themselves as plausible members of the discipline. In so doing, they need to conform not only to the norms of the target language but to those of the disciplinary contexts in order for their manuscripts be approved by examiners. Lack of conformity to these rules, conventions, and expectations might make their arguments sound inappropriate to gatekeepers and other community members (Markkanen & Schröder 1997; Vold, 2006). Further, the results contribute to the literature about the rhetoric of social sciences and how novice and professional writers establish claims to knowledge and convince readers about the validity of their claims (Bazerman, 1988). Such awareness can "assist both native and non-native students to participate successfully in the research world" (Hyland, 1996: 253). Therefore, the following research questions were investigated:

1. How frequently do Iranian and English graduate students and professional writers of applied linguistics hedge their propositions in the discussion section of the dissertations and research articles?
2. How do they compare in their use of hedges in the discussion sections?

Cross-cultural studies of hedging

Contrastive studies of hedging across different contexts suggest a culture-specific trend in hedging conventions (e.g., Davoodifar, 2008; Hu & Cao, 2011; Vold, 2006; Yang, 2013). Cultures differ in what is considered suitable behavior in different communicative situations (Crismore et. al, 1993). Non-

native learners of English are reported to have a difficult time when reading or writing academic texts in English distinguishing claims that are accepted within a scholarly community from those that are disputed (Salager-Meyer, 1994). On the other hand, the conventions of scientific writing and the style of argumentation have been shown to vary from one language and culture to another; thus, cross-cultural miscommunication may happen due to lack of awareness as to which conventions and styles are appropriate in which context (Kong, 2005; Markkanen & Schroder, 1988; Vassileva, 2001). For instance, Spanish learners took hedges as "negative, evasive concepts" signaling "lack of clarity, insecurity and lack of validity of the proposal being expressed" (Alonso Alonso, Alonso Alonso & Torrado Mariñas, 2012: 58). The different schemata of L1 and L2 writers can influence their writing in English (Loi, 2010; Moreno & Suárez, 2008). Further, the social and cultural background and proficiency in a second language tend to impact the argumentation patterns and choices a writer makes to express his position (Flores-Ferrán & Lovejoy, 2015). As such, a cross-cultural study of the written discourse of native and non-native professional and non-professional writers in different academic genres and disciplines is warranted.

Hedging in disciplinary and national cultures

Vold's (2006) examination of epistemic modality markers in research articles in the fields of medicine and linguistics in English, French, and Norwegian showed English and Norwegian articles used significantly more hedges than the ones written in French. Similarly, French scientists were found to be "…much more prescriptive, authoritative and categorical than their English-speaking colleagues" (Salager-Meyer et al. 2003: 232). Vold suggests that cultural differences play a more significant role than disciplinary differences in using epistemic modality, and the higher employment of hedges in English and Norwegian articles may relate to the more modest and cautious writing styles of these writer groups compared to their French-speaking counterparts. Vassileva's (2001) study of English, Bulgarian, and Bulgarian English (i.e. English writings of Bulgarian native speakers) showed significant differences in using hedges across different rhetorical sections of research articles in the two languages which might, according to her, engender cross-cultural misunderstanding in communication. The differences were attributed to Bulgarian academic

writers' cultural traditions in writing, and to certain of their culture-specific cognitive schemata. Further, Dutch biologists were found to under-hedge the discussion sections of their research papers in English as most reviewers of the same reviewed draft recommended more hedges to be added (Burrough-Boenisch, 2005). Dutch writers' cultural background and English competence were found to have impacted the deployment of hedges. If these potential cultural differences pertain, it is likely to be reflected in the linguistic choices writers with diverse cultural backgrounds make, and thus may lead to different writing styles which might sound inappropriate to writers with different cultural and educational backgrounds.

Fewer hedging devices were found in journal abstracts in Chinese-medium applied linguistics journals compared to their English-medium journals from the same field (Hu & Cao, 2011). Chinese scholars were found to be authoritative and more assertive in expressing truth values, while Anglo-American scholars were more reader-oriented and cognizant of potential reader disagreements (Hu & Cao, 2011; Kong, 2005). Similarly, a comparison of research articles in English and Persian showed that Persian scientific writers in medicine, chemistry, civil engineering, and psychology tend to use over 50% less hedging markers (both in frequency and variation) compared to their English colleagues (Davoodifar, 2008). Persian academic writers preferred more categorical assertions in their knowledge-making claims promoting a stable and unchangeable reality. Further, a higher frequency of uncertainty markers by Japanese reviewers compared to their English counterparts was reported in a comparative study of English and Japanese book reviews published in linguistics journals (Itakura, 2013). Japanese reviewers' norms of politeness and their tendency to make less face-threatening (i.e. more hedged) evaluations made their reviews different from those by English book reviewers who showed more positive-politeness strategies and willingness to take responsibility as evaluators.

Studies on the use of hedging across sciences and disciplines show variability and complexity in different sections of a text implying that the production of a text is rhetorically motivated, and that the use of hedges is not always motivated by a sense of deference but by the norms of the disciplinary community (e.g., Hyland, 1999; Hyland, 2005b; Rizomilioti, 2006; Vold, 2006). One implication is that hedging in different disciplinary cultures may play different roles. For instance, considerable differences have been reported in the use of mitigating devices between natural sciences (hard sciences) on the one hand, and the humanities and social sciences (soft

sciences) on the other (Abdi, 2002; Hyland, 1999; Hyland, 2005a). Intradisciplinary differences have also been reported in the use of hedging. For instance, Thompson's (2001) corpus analysis of PhD theses from two related fields of Agricultural and Food Economics and Agricultural Botany showed that the two sets of theses perform essentially different functions in the way writers' position with reference to their texts, findings, and audience is portrayed. The former thesis writers used significantly more modal verbs than the latter.

Materials and method

One hundred and fifty nine (159) discussion sections, all written in English, comprising 325196 tokens were analyzed. The corpus included discussions by 48 Iranian and 35 English dissertation writers, and 76 research article discussions by applied linguistics professionals. The research article discussions were selected from three top journals in applied linguistics and language education according to the Scimago Journal rank indicator, i.e. *Applied Linguistics, TESOL Quarterly, Language Learning*. It was hoped that these discussions would provide 'prototypical exemplars' of the genre fulfilling the typical expectations of the parent discourse community (Swales, 1990). Single-authored research articles published by English writers between 2004 and 2014 were targeted. To identify native English authors, we considered a number of sources including authors' online CVs, facebook, biographies, their first and last name origins altogether. In all, 76 article discussions belonging to British, American, Canadian, Australian and New Zealand authors were identified. The master's theses were written in English by English (i.e. British, American) and Iranian graduate students in language education (Applied linguistics, TESOL, TEFL). They were all contacted and agreed to inclusion of their dissertations in the study. The dissertations were all submitted during 2004-2009. English graduates' dissertations were collected from the electronic resources held by the University of Birmingham; those written by Iranian graduates were collected from the electronic resources held by the University of Tehran; Iran University of Science and Technology; Shahid Chamran University of Ahvaz; and Azad University Science and Research Branch.

Dissertations conforming to the traditional IMRD structure (Introduction, Method, Result, Discussion) were selected for consistency purposes. The full

running text of discussion chapters excluding footnotes, quotations, linguistic examples, tables and figures were converted into machine-readable docs (see Table 1). Given the unequal length of the three corpora, the relative frequency rather than absolute frequencies of markers was calculated for analysis and comparison.

Corpus	English Graduates (EG)	Iranian Graduates (IG)	English Professionals (EP)
Word types	8438	6242	7893
Word tokens	120939	99142	105115
Average word count	3455	2065	1383

Table 1: Corpus features by the three writer groups.

There is not a single adequate or precise definition of the term 'hedge', and there have been debates about what counts as hedge and its various forms (Adel & Mauranen, 2010; Kranich, 2011). We adopted a commonly used definition by Hyland (1998: 5) which defines hedges as "the means by which writers present a proposition as an opinion rather than fact". This definition is rooted in the theory of fuzzy sets (Zadeh, 1972; Coates, 1983) assuming "graded membership, rather than a traditional analysis based on discrete semantic categories", which should thus offer a better explanatory model (Hyland, 1996: 256).

Although an exhaustive taxonomy of potential hedging devices does not exist, typical hedge markers were identified through examining the expanding literature as a starting point for analysis (Abdollahzadeh, 2011; Hyland; 2005; Varttala, 1999; Vass, 2017; Vold, 2006). Additional hedging devices were added for analysis upon subsequent sweeps through the texts. Accordingly, three major categories of hedges were identified, i.e. verbal hedges; epistemic modals; as well as epistemic probability adverbials/adjectivals/nouns (EANN). Other non-lexical hedging elements such as tense, questions, voice, and so on were not considered for analysis. Lexical hedging elements have been found to outnumber all other non-lexical hedging markers in native speaker discourse (Varttala, 1999; Hyland, 1999). Hyland (1999) following Palmer (1986) identified four sources scientific writers use to base their convictions about the nonfactual status of a proposition on: speculation (opinion), deduction (conclusion), quotation (reports or hearsay) and senses. Following Hyland, verbal hedges were classified into 'evidential', and 'judgmental' verbs (Hyland, 1998). Evidential verbs (e.g., *seem, appear, sound*) offer evidentiary justification "either based on the reports of others, the writers' senses, or the purpose of the discovery

itself" (Hyland, 1996: 266). Judgmental verbs (e.g., *propose, suggest, claim*) or 'mental verbs' (Biber et al. 2002) include speculative verbs indicating "some conjecture about the truth of a proposition", or deductive verbs indicating judgements derived from "inferential reasoning or calculation rather than speculation and are presented as deductions or conclusions" (Hyland, 1996: 265).

The discussion chapters were searched using Antconc (a corpus analysis tool) for the explicit realization of the subcategories of hedges. The output concordance lines were manually checked to exclude non-hedge examples and ensure that "forms act in the service of rhetorical objectives" (Hyland, 2017: 19). Given the polypragmatic function of some hedging devices, decisions on the function a writer had assigned to a particular marker in a certain context were made on the basis of the interpretation that was the most likely one in that particular context (Halliday, 1994; Salager-Meyer, 1994; Vold, 2006). For instance, amongst modals, *may* is strongly polysemic:

(1) The supervisor had told the teachers that within the EFL classroom they *may* allow learners to more systematically study collocations (EG; non-hedge).

(2) This finding *may* also relate to the tension that exists between the lower-level students and high achievers in their interactions (IG; hedge).

Initially, the corpus was analyzed by the researcher and explicit instances of hedging were extracted. Then, a researcher colleague who had published on hedging in writing looked at 15% of the analyzed corpus for each writer group. The second rater's analysis was matched against the first rater and points of disagreement were discussed and sorted out through consensual agreement. Inter-rater reliability was found to be .92 based on the percentage agreement between raters.

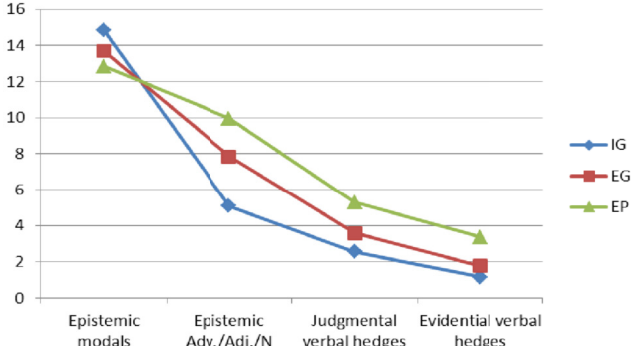
Results and discussion

A detailed analyses and comparisons of hedging devices across groups is presented in Table 2:

Hedge type	IG			EG			EP		
	Total hedge	Proportion per 1000 words	%	Total hedge	Proportion per 1000 words	%	Total hedge	Proportion per 1000 words	%
Epistemic modals	1469	14.82	63	1653	13.67	50.91	1350	12.84	41
Epistemic Adv./Adj./N	502	5.06	22	948	7.84	29.20	1045	9.94	32
Judgmental verbal hedges	252	2.54	11	432	3.57	13.30	555	5.28	17
Evidential verbal hedges	115	1.16	4	214	1.77	6.59	351	3.34	10
TOTAL	2338	23.58	100	3247	26.85	100	3301	31.40	100

Table 2: Descriptive statistics on the use of hedges in discussion chapters.

Epistemic modals were amongst the most frequently used hedges in discussion sections by all writer groups, followed by epistemic adverbials/adjectivals/nouns (EAAN), and verbal hedges respectively (see Graph 1):



Graph 1: Proportion of hedge categories per 1000 words across the three corpora.

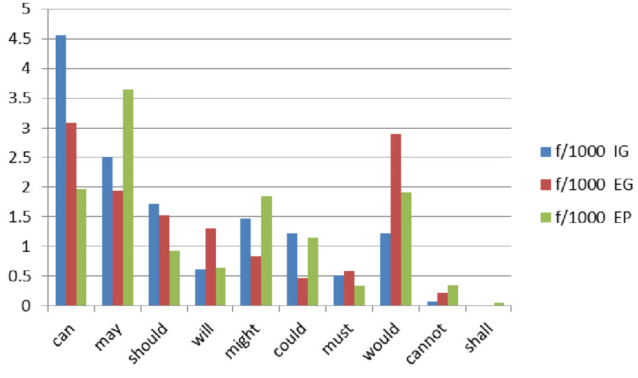
All writer groups used higher proportions of epistemic modals followed by EAAN, judgmental, and evidential hedges respectively. More detailed analyses and comparisons are given below.

Epistemic modals

Six modal auxiliaries appear amongst the first one hundred most frequent words in the EG corpus: *may* (position 32), *would* (36), *can* (37), *could* (49), *will* (64) and *should* (69); three for the Iranian corpus: *can* (25), *may* (44), and *might* (84); five for the EP corpus: *may* (33), *can* (47), *would* (53), *might* (60), and *could* (96). This frequent use of modals in academic prose (13- 14 times per 1000

words across discussions by all groups) is supported in the *Longman Grammar of Spoken and Written English* (Biber et al., 2002), in Thompson's (2001) corpus of PhD theses (12 times per 1000) from Agricultural Botany and Agricultural and Food Economics, as well as in Varttala's (1999) study of medical articles' discussion sections.

Modals constituted a large percentage (63%) of the total hedges employed by the IG group (compared to 51% by EG and 41% by EP groups). These are 'content-motivated' hedges which self-protect writers from making poor judgements about the propositional accord with reality (Hyland, 1999).



Graph 2: The use of epistemic modals in discussions by the three groups.

Proportional comparisons (Graph 2) show that *can* was the only device used most frequently by IG (more than twice and about 1.5 times more than those by the EP and EG groups respectively). *Could* was also used 2.5 times more by this group compared to their EG counterparts. The density of use of '*can*' by IG, based on concordance plots, was mostly towards the end of the discussion in which they mostly made predictions and recommendations for further research. The same observation was true about the highly frequent use of '*could*'.

> (3) The discrepancies between the two groups of the study *can* be due to the nature of the treatment they received something that *could be* further probed in future studies (Ir.)

Concordance plots for the distribution of the same marker for the EG and EP groups; however, demonstrate that except for a few cases, '*can*' is distributed more evenly across discussions.

'*Could*' should be used instead of '*can*' to express tentative possibility. Similarly, based on comments by English native speaker reviewers, Dutch scientists used the phrase '*can explain'* excessively instead of '*could explain*' in the discussion section of their manuscripts (Burrough-Boenisch, 2005). It should be noted that the employment of tentative '*could*' could be discipline-specific. Vold (2006) found very low use of this marker by linguists compared to its relatively frequent use by medical researchers. It was not possible to investigate this observation here. Future research could corroborate this.

The EG used epistemic '*would*' (about twice), and '*will*' (over twice) more than their Iranian counterparts, even so compared to the EP (1.5 and 2 times more respectively). *Will* functions as the predictive marker of the hypothetical *would* to weaken categorical assertions:

> (4) Teachers *will* commit themselves to an innovation if they regard it as being relevant to learners' needs (EG).

Would was the preferred choice (twice more frequent than *will*) for this group expressing prior hypothetical premises or conditions that must be met to fulfil the hypothesis (Coates, 1983). Most cases were active with *be* as the most frequent co-occurring verb:

> (5) A statement of the opposite delivered in a 'blunt' manner *would be* devoid of mitigation. Thus, we treat the former as a subset of the latter (EG).

Nonetheless, *can, would, may, should* and *might* were respectively the most frequently used modals by IG and EG groups. Both groups, based on Salager-Meyer's (1992:93) scale of assertiveness-uncertainty, demonstrate a tendency to move from certainty marking or assertiveness (*would, should*) to uncertainty marking of their propositions (*may-should-might-could*). A similar trend for the frequency of use of the same modals was reported in previous research on scientific writing (Coates, 1983; Hyland, 1999).

The EP, however, used *may* to a much greater extent (around twice more) than other markers such as *can, would, might* which were all used with relatively similar proportions by this group. *May* was the only marker used about and over 1.5 times more by this group compared its use by the IG and EG groups. *Might* was also used over twice more by this group compared to the EG

group. Both modals "indicate a 50–50 assessment of possibilities" (Hyland, 1996: 262). *Might* is more tentative than *may* as its possibility of realization; however, it is more remote. Compared to *might, may* is the preferred choice (used twice more) by professional writers perhaps due to its 'perceived formality' in scientific corpora (Hyland, 1996):

(6) Hence, one *may* argue that no culture-boundedness applies to EU originals drafted in lingua-franca or NNS English (EP).

(7) A partial explanation for these results *might* lie in the discourse structure of the two types (EP).

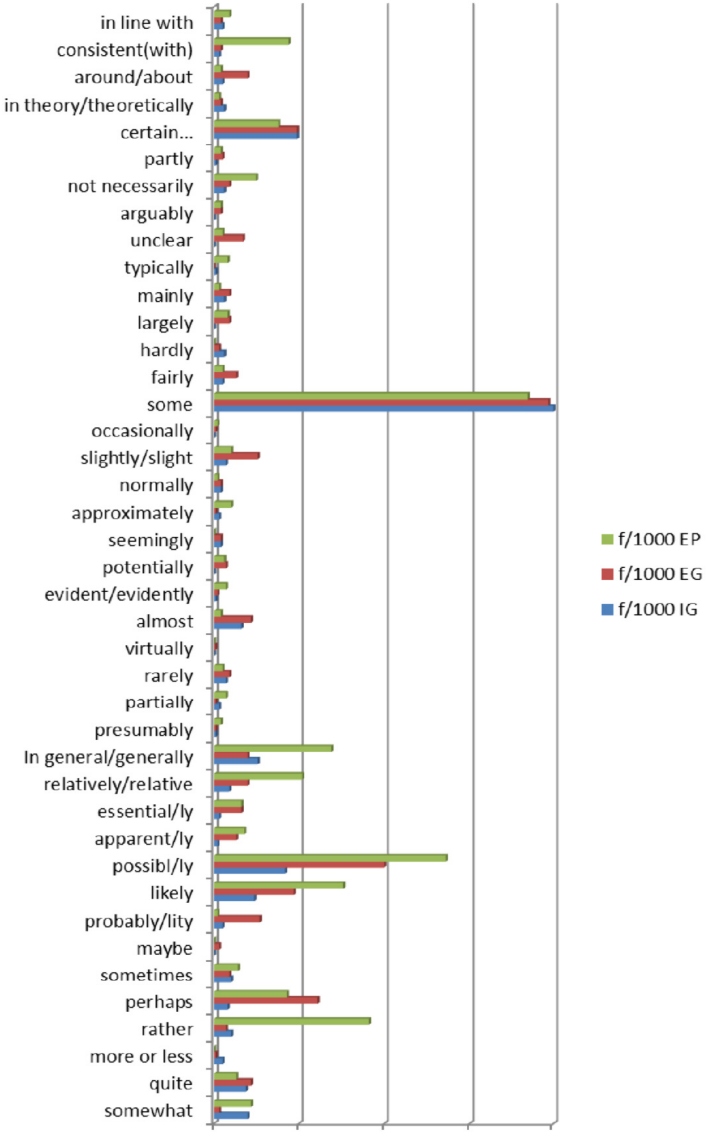
However, *should* was used much less by the EP (about twice less) compared to its use by IG and EG groups.

(8) There *should* have been lower levels of activation from background knowledge, especially for the less familiar stories, from having constructed impoverished textbases during reading (EP).

Similar to *would*, it is a marker of hypotheticality; however it has a more tentative meaning thus denoting less confidence in the probability of an assumption being true based on available facts.

Epistemic Adverbials/Adjectivals/Nouns (EAAN)

As the second most frequently used markers by all groups, they constituted 32% of total hedges by the EP compared to 29% and 22% by the EG and IG groups respectively. All groups used *perhaps, likely, possibly, generally, certain extent/level/degree,* and *some* much more frequently than other markers. Similarly, some of these markers (i.e. *possibly, perhaps*) were amongst the most frequently used in research articles by English, Norwegian, and French medical and linguistics researchers (Vold, 2006). Further, they constituted 53% of hedging expressions in Hyland's (1999) corpus of scientific research articles as well.



Graph 3: The use of EAAN by the three writer groups.

Most of these 'accuracy-based' hedges are probability adjuncts of contingency which avoid excessive certainty and thus increase the degree of precision of the propositional content (Halliday, 1994; Hyland, 1999) as below:

(9) *Perhaps,* the emphasis laid on both text connectives and code glosses in the experimental group helped in understanding the troubling passages or expressions (IG).

(10) One *possibility* is that the context of this study was simply perceived by respondents as far less 'face-threatening' than in previous research (EP).

(11) These results add *some* empirical weight to the observation that different genres and registers choose to highlight different collocations (EG).

"Attitudinal disjuncts" such as '*some*' are used to hedge numerical data and denote "degree of precision" and accuracy of the presented information and are very typical of the results and discussion sections (Quirk et al., 1985: 165). All three groups used *some* and *possibly* relatively more than other markers with *some* as the most frequent adverbial.

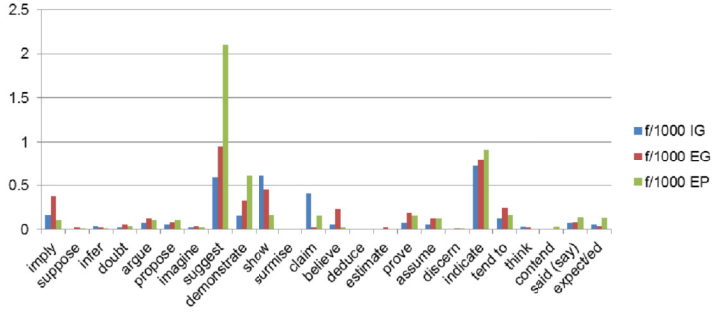
Except for a few markers such as *some* and *certain extent/level/degree/amount,* the IG used EAAN markers much less frequently than their EG counterparts. The most frequent probability markers used by the EP compared to the IG and EG writers respectively included *rather* (9 and 7 times more)*, likely* (3 and 1.5 times more)*, possibly* (about 3 and 1.5 times more)*, relatively* (5 and 2 times more)*, in general/generally* (2.5 times more), *Consistent (with)/in line with* (over 6 times more). Adverbials *consistent/in line with* mostly served a quotative function demonstrating the consistency of the findings with the current theories, norms, or hypotheses in the field:

(12) The free-response survey results were also *consistent with* research showing that language tests can affect students' psychological well-being by mirroring back to students a picture of how society views them and how they should view themselves (EP).

Some markers, though used much less frequently by native speakers compared to others in this category, were never used by IG (e.g., *potentially, unclear, normally*). Further, some other markers (*more or less, maybe, seemingly, hardly*) by both IG and EG groups were never used by professional writers.

Judgmental verbs

The most frequently used tentative judgmental verbs by all groups were *suggest, indicate*, *demonstrate*, *show*, *imply,* and *tend to* respectively. Their presence denotes a tendency rather than a full assertion by discussion writers.



Graph 4: The use of epistemic judgement verbs attributable to the author.

Overall, the EP used these markers (5.25 times per 1000 words) more than both IG and EG groups respectively (3.5 and 2.5 times per 1000), particularly verbs *suggest* (over two and 3.5 times more) and *demonstrate* (about 2 and 4 times more). The two speculative verbs show some conjecture and a cautious position about the truth value of a proposition, thus distinguish speculation from categorical assertion:

(13) These differences *suggest* that after interlanguage has recognized the importance of a linguistic feature, the impact it has on mood use is not necessarily static (EP).

(14) Both studies nonetheless *demonstrate* how metalinguistic self-monitoring during output, not unlike that of Example 8, preceded the breakdown and reanalysis of chunks (EP).

The EG used a higher proportion of the following speculative and deductive hedges compared to their IG counterparts: *suggest (over 1.5 times more)*, *argue (about twice), imply (over 3 times), demonstrate (over twice), believe (over 4times), assume (about twice),* and *prove (about 4 times*). They also used certain speculative verbs most frequently compared to EP, i.e. *believe* (11 times) and *imply* (3.5 times).

(15) After this study I *believe* that referring to TSLT as 'TBLT-lite' is apt and necessary (EG).

(16) This *implies* that for learning unknown, infrequent, or otherwise difficult vocabulary items, a familiar context will be of aid (EG).

The IG, however, used *claim* much more often than the EG (over 4.5 times more) and EP groups (2.5 times more). This was expectable as most of the theses by Iranian graduates were quantitatively-oriented in which they signaled whether their initial claims or hypotheses were confirmed or disconfirmed. Most instances were preceded by the construction '*We can/may*…'.

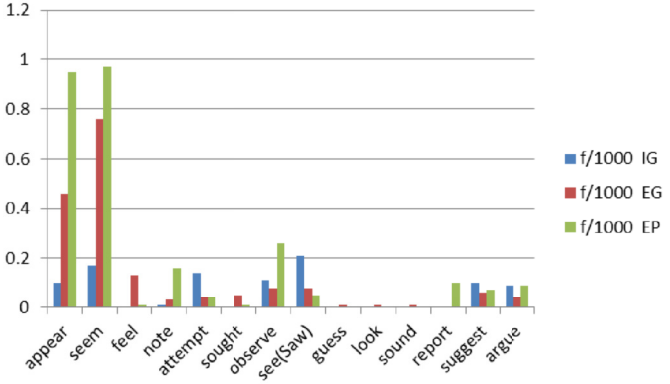
(17) We can *claim* that the use of metadiscourse markers has equally affected the process of reading comprehension of the subjects of both levels (IG).

However, *show* was used about 3 times more by the IG and EG groups. Interestingly, judgmental performatives with personal pronouns for the EP all appeared (.12 per 1000) with first person *I* followed by speculative verbs *suggest, argue,* and *contend.* These 'reader-motivated' hedges help journal writers add their personal attribution to their claims thus giving their speculations more credibility. The EG used both first person singular and plural forms with more of the former (.19 per 1000 mostly with speculative verbs *believe, suggest,* and *think*) than the latter (example 15 above). Conversely, all instances of performative judgmentals with personal pronouns for the IG group (.30 per 1000) appeared with *we* followed mostly by modals *can/may* and the verb *claim* as seen in 17.

Certain judgmentals such as *discern, estimate, deduce, surmise* were rarely or never used by all groups. Overall, judgmental verbs outnumbered evidential verbs across all corpora (almost double the evidentials used by the IG and EG groups).

Evidential verbs

Overall, professional writers used evidentials more frequently than both IG and EG groups respectively (i.e. about 3 and 2 times more often), particularly certain sensorial verbs such as *appear* (5 and 2 times more), *seem* (5 and around 1.5 times more), and *observe* (3 and 2 times more):



Graph 5: Evidential verbs in the discussions by the three groups.

(18) The present data, therefore, *seem* to question the role of a particular type of pushed output (uptake) for SLA in this highly specific context (EP).

(19) Moreover, these participants *appear* to be able to encode semantic criteria that are clearly irrelevant to any comparable grammatical function in the L1 (EP).

(20) This choice seems to be in contrast with the overall distancing trend we *observed* in the Italian texts (EP).

Some quotative hedges by the EP such as *note,* and *report* were rarely or never used by both graduate writer groups:

(21) Similarly, Lyster and Ranta (1997) *noted* that although elicitations were the most effective in producing uptake, recasts were the most frequent response move in the data (EP).

(22) Despite the high motivation *reported* by the English learners participating in our study, the level of motivation found through their behavioral reactions to class activities is low and disappointing (EP).

Overall, the EG used evidentials twice more often than the IG particularly sensorial verbs *seem, appear,* and *feel.* The latter group; however, used narrators *attempt* (3 times more) and *see* (over twice and 4 times) more frequently than the EG and EP groups respectively. The former was consistently used to refer to the purpose of the study, so was the latter in most cases:

(23) The present study was *an attempt to* investigate the role of inner speech as mental rehearsal among EFL learners at different levels of language proficiency (IG).

(24) We intended to *see* whether the teachers' academic degree and self-efficacy have any significant relationship with the students' achievement (IG).

Sensorial hedges (*seem, appear, observe,* respectively) were the evidential verbs used most frequently by all groups. Similarly, *seem* and *appear* were found as the most frequent in scientific research articles in cell and molecular biology (Hyland,1999), in Brown and LOB's academic corpora, as well as in research articles by Norwegian, French and English linguists and medical scientists (Vold, 2006). In Vold's study, '*seem*' was used much less by English medical researchers reflecting a discipline-specific trend for using certain verbal hedges.

In some cases, all three groups used *suggest* and *argue* quotatively rather than in their unmarked judgmental forms to justify their propositions by referring to the works of others:

(25) This resonates with Swain (2001: 279), who *suggests* that "noticing a gap in their [learners'] linguistic knowledge may stimulate learning processes"; and with Samuda (2001), who writes of opportunities (EP).

(26) As *argued* by Martin (2000), "the stage a culture has reached in its evolution provides the social context for the linguistic development…" (IG).

Conversational and informal hedges such as *guess, feel, sound, look* were rarely or never used by the IG and EP groups, while the EG used them on more occasions especially *feel* was used 12 times more (occurring .13 per 1000 words) appearing mostly with a first person pronoun.

(27) I *feel* that extending a study of attitudes to all parties in a translation process is bound to be fruitful (EG).

Other conversational hedges such as *reckon,* and *think* were unsurprisingly missing from the three corpora.

Conclusion

Overall, except for epistemic modals, both native and non-native master's level graduates employed much fewer hedging devices compared to their professional counterparts. Epistemic uses of modals appear far more in speech and informal writing (Coates, 1983) and in lectures (Flowerdew, 1993, cited in Hyland, 1996) than in scientific writing (Hyland, 1996). The differences are pronounced in the diversity and frequency of use of content-motivated hedges (e.g., EAAN hedges), evidential, and judgmental markers. This reflects more cautiousness and awareness of professional writers about the expectations and constraints of knowledge production given the epistemic nature of knowledge in academic genres, as well as creating an open dialogue with the discourse community readers through which alternative perspectives could be recognized. It also reflects professional writers' further awareness of reader rights to refute their claims on adequacy and acceptability grounds. Hence, they tend to produce a more unique and diverse range of hedges compared to both graduate groups. They draw on various sources of knowledge (their senses, inferences, or references) and their expert insights to draw out plausible conclusions. This shows that the choice of hedging devices is 'essentially strategic' as writers use them to tune up the strength and veracity of their claims and modify the degree of certitude in their statements (Hyland, 1996). It should be noted that we did not examine other strategic means of modulating knowledge such as questions (used to highlight knowledge limitations) or conditionals (used to contrast the potential with the unreal).

Except for epistemic modals (used more by the IG), hedges were used more frequently in discussions by English graduates demonstrating the latter group's greater variety and extent of use of conviction and uncertainty marking in discussions. The lower use of certain epistemic modals by the former group might also be attributable to the different stages of acquisition of mitigating devices such as '*would*' which tend to occur much later compared to other hedges (Salsbury & Bardovi-Harlig, 2000). Further research with non-native writers at different stages of proficiency development would be needed to prove this. It is of course likely that some of the modals have been added to the final draft at the request of the supervisor who might have recommended some qualification of the claims in the discussions, an observation confirmed in Thompson's (2001) interviews with PhD supervisors, and in Burrough-Boenisch's (2005) report of reviewers asking more hedges to be added to discussions by Dutch scientists.

Both graduate groups over/underused certain hedging devices compared to professional writers. Despite the over/underuse of certain hedging markers by graduate groups, all the three groups follow a predictable downward pattern of use of different hedge categories, i.e epistemic modals, EAAN, judgmental, and evidential hedges respectively.

Certain judgmental (e.g., *suppose, estimate, surmise*), evidential (e.g., *guess, sound, look*), and probability hedges (e.g., *arguably, potentially, unclear, virtually*) in the English- authored corpus were absent in the Iranian-authored texts. Although they may literally possess knowledge of such lexical devices, Iranian junior researchers may not be conscious of the potential rhetorical and dialogic value of these devices in promoting an interactive tenor in academic discussions. Inadequate awareness of the extent, diversity, and rhetorical function and distribution of hedges may lead to producing direct, less appropriate, and less formal discourse to the expert members of an academic community (Vold, 2006). Textual products by non-native writers need to conform to the norms of the target language, observing its community conventions and expectations, its ways of persuasion and negotiating interpretations, and the practices of knowledge making in that discipline. Disciplinary discourses are not simply about reporting findings in the discussion section. Rather, they involve creating or constructing knowledge by securing community agreement for the claims made through judicious use of tentative language. The non-native graduate writers and to lesser extent their English counterparts tended to be less speculative and demonstrated less desire to take a stance in selling their arguments; hence the absence and/or lower number of speculative, judgmental, and probability devices. Thus, their findings might sound less explained or subjected to interpretation in the discussion section. It is worth noting that this argument applies in the context of use of hedges investigated in this study. Their rhetorical behavior might vary with reference to other non-lexical hedging devices such as tense, questions, and voice which were not investigated here.

Although English has been the practicing language for Iranian graduates at university, the linguistic and rhetorical differences between English and the graduates' native language, and the transfer of these behaviors to their advanced writing is potentially influential. Rhetorical discrepancies including formality, precision, and objectivity have been reported by many non-native graduates from diverse first-language backgrounds doing their dissertations in English in American universities (Dong, 1999). A similar observation was confirmed in the Iranian scientists' less-hedged research articles in Persian

language compared to those by their English counterparts. The former were more interested in "passive changing of attitudes and assertive factual statements" while the latter were more willing to negotiate with peers and develop a more collegial and modest persona (Davoodifard, 2008:40). The use of hedges is a function of the degree of ascription to the linguistic community as well as the academic community of the research field. It is; however, difficult to extricate the language culture from the academic culture in analyzing authentic academic data (Yang, 2013).

We noticed that English graduates transfer certain conversational evidential markers such as *feel*, and *guess*, or conversational adverbials such as *quite*, *maybe* into their formal discussions. Although a comprehensive examination of conversational features of uncertainty was beyond the scope of this study, future research needs to tease apart the extent to which these features of academic spoken English are transferred into written practices by professional writers in a particular community. Recent corpus studies on academic spoken interaction demonstrate significant use of certain conversational hedging devices (e.g., *just, sort of, kind of, and so on, and so forth*) by native and non-native speakers in formal and informal academic speech events (Lindemann & Mauranen, 2001).

Implications

The findings enhance our knowledge of the rhetorical behavior of native and non-native graduate student writers and the extent to which they can construct themselves as plausible members of their community. Mastering hedges can prove elusive for non-native speakers especially in academic texts (Wishnoff, 2000). EFL university students need to do extensive reading and writing of academic texts in English. The results show that the academic discussions are heavily hedged. Thus, inadequate knowledge of modality and tentative language can pose significant problems for rhetorically less sophisticated junior researchers and second language writers. Pedagogically, it is not enough to know the forms of hedging but to know why the form is used as well. Accordingly, developing a functional description of the rhetorical uses epistemic markers are put to, and the extent to which detachment or lack thereof in a particular rhetorical section is allowed, could help junior writers ensure demonstrating an appropriate level of objectivity, or what Skelton (1988) rightly calls being 'confidently uncertain'. Equipping

learners with this knowledge helps them not only to tease out the difference between facts and claims in writing, but also to increase the credibility and decrease the likelihood of opposition to their claims by examiners or other discourse community readers. Explicit instruction of hedging forms and functions in EAP courses in terms of sensitization to various disciplinary proclivities to tentative discourse, translation, and rewriting practices has been reported to improve reading and writing performance (Jalilifar, 2007, cited in Jalilifar & Shooshtari, 2010; Wishnoff, 2000).

Incorporating hedging into the academic discussions of novice writers can be an essential tool in helping them formulate critical statements about their research findings and engage with their community (Bruce, 2016). Foreign language readers and writers need to be sensitized to the distinction between factual versus provisional or hypothetical statements as an important feature of academic socialization (Hyland, 1994; Skelton, 1988). Mastery of tentative language is an important indicator of proficiency in the target language and efficiency in learners' own discourse community's specialist register. Further, dissertation supervisors and dissertation guides and handbooks need to alert novice researchers to the fact that scientists constantly report their findings tentatively and subject their research results to new hypotheses and discoveries (Hogan & Maglienti, 2001; Jensen, 2008). Hedges are therefore necessary rhetorical tools in academic discourse for appropriately adjusting the level of certainty and confidence that the writer expresses towards their findings. Thus, graduate students' awareness needs to be raised about qualifying knowledge claims, withholding full commitment to assertions, and assuming a legitimate tone of circumspection.

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