An Analysis of Interactional Metadiscourse Markers in Political Science Research Articles

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ABSTRACT

The study examined the interactional metadiscourse markers used in higher and lower tiered political science research articles. The specific aspects studied were: (1) the frequencies of five categories of interactional markers; and (2) the distribution of interactional markers by rhetorical section. The descriptive study which involved the analysis of political science research articles published in 40 SCOPUS-indexed journals (20 Quartile 1; 20 Quartiles 3 and 4) conducted using Hyland's (2005) interpersonal metadiscourse model identified 10,903 markers. Both Q1 and Q3-Q4 political science articles have boosters and hedges as the most frequently used markers, and engagement markers as the least used marker. There are significant differences between the higher and lower tiered political science research articles in the frequencies of interactional metadiscourse markers found in rhetorical sections. The method section has the most self-mentions, particularly in articles published in Q1 journals. Writers of articles published in Q1 journals prioritise boosters, indicating confidence in emphasising certainty, but writers of articles published in Q3-Q4 journals prioritise hedges over boosters. The Q1 articles have more attitude markers in the introduction and results-discussion-conclusion sections but less in the abstract and method sections, but writers of Q3-Q4 articles use attitude markers in similar frequencies across sections. The findings suggest that the nature of reader engagement varies with rhetorical section in research articles.

Keywords: interactional; metadiscourse; political science; research articles

INTRODUCTION

Metadiscourse is an integral part to any piece of writing. Metadiscourse markers are used to explicitly organise the discourse, involve the audience and show the writer's attitude (Hyland, 1998). Metadiscourse elevates the "persuasiveness of a text" (Hyland, 2005, p. 179) and makes it more interesting for readers because it enhances the writer's interaction with readers. Indeed, metadiscourse is a useful tool in academic writing as it helps writers to convey information that meets the writing standards of their disciplinary field while managing reader engagement.

Among the many genres of academic writing, research article is an important communication medium for a researcher, as not only it allows them to share information with their peers but it is also a "symbol of professional growth and a prerequisite for academic careers worldwide" (Braine, 2005, p. 707). Research articles is a high-stakes kind of publication and requires not only quality research but also excellent research writing skills. For example, research articles submitted to *Biological Conservation* were rejected generally due to

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unsatisfactory writing style and poor presentation (Primack, 2009). The language in research articles is formal, which is why one of the difficult areas of writing such articles is presenting arguments where writers are required to be subjective (Hyland & Tse, 2005). Developing strategic use of metadiscourse markers can improve evaluation of propositional information in research articles and enable writers to avoid sounding informal or casual and yet achieve reader-writer interaction.

Metadiscourse can be divided into two dimensions, namely, interactive and interactional (Hyland, 2005). Interactive metadiscourse markers include transitions (e.g., "however"), frame markers (e.g., "firstly",), endophoric markers (e.g., "(x) above"), evidentials (e.g., "according to (x)") and code glosses (e.g., "in other words"). Interactional metadiscourse refers to how writers involve their audience in their writing by intervening and commenting on their message through the use of boosters, hedges, attitude markers, engagement markers and self-mentions. The focus of this paper is on interactional metadiscourse markers. Interactional markers allow readers to recognise the writers' perspective towards the propositional information as well as their evaluation of the readers themselves (Hyland, 2005). In doing so, the readers are able to respond and react to the text at hand.

The current state of knowledge on interactional metadiscourse markers in research articles is that the use varies by discipline, section of article and experience of writers. Researchers in humanities use more engagement markers (Hyland, 1998) than those in the sciences (Sahragard & Yazdanpanahi, 2017). However, within the humanities, there are also disciplinary differences. Hu and Cao (2015) found that research articles in applied linguistics and education have more boosters whereas articles in psychology have more self-mentions, but the frequencies of hedges, attitude markers and engagement markers are similar. However, these studies report the frequencies of the interactional metadiscourse markers for the whole research article, thereby obscuring possible differences in the use of the markers according to sections in the article. Introductions and discussions tend towards argumentation whereas method of the study is explanatory, and the different purposes of writing would draw upon different interactional metadiscourse markers. Akoto (2020) showed that the introductions of sociology masters theses have more engagement markers whereas literature reviews have more hedges, attitude markers and boosters. The discussion-conclusion section of applied linguistics research articles tends to have more interactional markers because of the subjective and evaluative nature of the writing (Kuhi et al., 2012). Differences in research writing by researchers and students were also found. Crosthwaite et al. (2017) found that researchers use a narrower range of hedges, boosters, self-mentions and attitude markers than students when writing dentistry research articles. The expert and student writers also differ in types of interactional metadiscourse markers used. Wang and Zeng (2021) analysed research articles and PhD theses in four disciplines in hard applied and hard pure science, and found that expert writers use more self-mentions with hedges, particularly for making arguments, whereas students use more self-mentions with boosters for writing both arguments and method of study. In research writing, hedging is crucial for mitigating generalisations. Besides the obvious differences between researchers and students, there are variations in expertise among researchers – researchers who publish in highly ranked journals may have more expertise in research writing than those who publish in lowly ranked journals, and it is likely that the use of interactional metadiscourse markers also differs. Gholami and Ilghami (2016) reported a significant relationship between the frequency of metadiscourse markers used and the impact factors of the biology journal articles. The focus on expertise level within the group of researchers is a step to advance the study of interactional metadiscourse beyond comparison of expert and student writing (e.g., Akoto, 2020; Crosthwaite et al., 2017; Kuhi et al., 2012; Wang & Zeng, 2021).

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Thus far, the use of interactional metadiscourse markers has been extensively studied in a few disciplines. However, our literature search indicated that interactional metadiscourse markers in political science research articles have not received much attention. Political science is a discipline that leans towards argumentation more than other disciplines in the humanities and, needless to say, the sciences. Studies on political science research articles are significant to show how interactional metadiscourse is used to make convincing arguments.

The present study examined the use of interactional metadiscourse markers in higher and lower tiered political science research articles. The specific objectives of the study were to:

1) determine the most frequently used category of interactional marker;
2) compare the distribution of interactional markers in higher and lower tiered political science research articles; and
3) compare the distribution of interactional markers in abstract, introduction, method and results-discussion-conclusion sections of the articles.

THEORETICAL FRAMEWORK

The theoretical framework of this study is adapted from Hyland's (2005) interpersonal metadiscourse model, which has been extensively used in past studies (e.g., Estaji & Vafaeimehr, 2015; Hu & Cao, 2015; Keramati et al., 2019; Lee & Casal, 2014). The forms and functions of the five interactional markers (hedges, boosters, attitude markers, engagement markers and self-mentions) will be explained next.

Firstly, hedges are included to reduce the writer's commitment towards the propositional content or knowledge claim (Hu & Cao, 2015). If a writer anticipates opposing views to their proposition, hedges can be used to mitigate face-threatening acts. Writers also use hedges to convey their reluctance to convey information directly (Hyland & Tse, 2004) and to show uncertainty. Hedges are particularly useful when discussing results. Hedges are employed to "negotiate alternative explanations of empirical results, hence opening up a dialogic space and entertaining diverse viewpoints" (Hu & Cao, 2015, p. 17). Hedges take the form of modal verbs (e.g., "could"), verbs (e.g., "indicate", "suggest"), adjectives (e.g., "doubtful"), adverbs (e.g., "plausibly"), nouns (e.g., "possibility"), and expressions (e.g., "to my knowledge").

Secondly, boosters have the opposite function of hedges. Boosters emphasise the certainty of a value and express the confidence that writers may have towards their propositional content by focusing on one narrative. Writers use boosters to divert readers' attention away from anticipated conflicting views to a stand they wish to make (Hyland, 2005). Hyland (2005) listed the following as boosters: modal verbs (e.g., "will"), verbs (e.g., "proves"), adjectives (e.g., "clear"), adverbs (e.g., "evidently"), nouns (e.g., "fact") and expressions (e.g., "no doubt"). Li and Wharton (2012) added superlatives.

Thirdly, attitude markers signal the writers' attitude towards the propositional content, which is why they are used more frequently in book reviews than research articles (Bal-Gezegin & Baş, 2020; Hyland & Tse, 2004; Jin & Shang, 2016). To express surprise, agreement, and their beliefs, writers use a variety of verbs (e.g., "prefer"), adverbs (e.g., "amazingly") and adjectives (e.g., "interesting") (Hyland, 2005).

Fourthly, writers use engagement markers to connect with their readers. This includes acknowledging their presence and getting them involved in the discussion (Hyland, 2005). Based on their discretion, writers are able to control the level of readers' presence in the text through selected use of pronouns (e.g., "we"), interjections (e.g., "by the way"), directives (e.g., "consider"), obligation modals (e.g., "should"), shared knowledge (e.g., "it is well known")

and questions (Hyland, 2005). The use of engagement markers in humanities and science articles increased from 1990-1999 to 2000-2010 (Sahragard & Yazdanpanahi, 2017) and in biology and electrical engineering articles from 1965 to 2015 but decreased in sociology and applied linguistic articles (Hyland & Jiang, 2018).

Finally, self-mentions refer to the level of explicitness at which writers reveal their identity. Self-mentions can help strengthen the credibility of writers and their research role (Hyland, 2001). Self-mentions are typically represented through subject pronouns (e.g., "we"), object pronoun (e.g., "us"), possessive adjectives (e.g., "our") and nouns (e.g., "the research team"). The degree of explicitness can be influenced by factors such as social practices in a discipline as well as "issues of seniority, experience, relationship to the community, and general sense of self" (Hyland, 2001, p. 224).

METHODOLOGY

A descriptive research design was selected because metadiscourse usage is dependent on the context. The phenomenon of interactional metadiscourse use "is intimately linked to the norms and expectations of particular cultural and professional communities" (Hyland, 1998, p. 438). Therefore, a descriptive viewpoint will enable the researchers to identify and describe the characteristics that may exist as is within the selected political science discipline.

CORPUS

The corpus comprised 40 political science research articles written in English and published in 2011-2021 (20 Quartile 1; 20 Quartiles 3 and 4). The research articles were selected from eight journals; five articles each. The articles covered general areas of public policy which does not require specialised knowledge to understand.

The higher tiered articles were taken from four journals in Q1 of the SCOPUS database, namely, the *Journal of Peace and Research* and *Research and Politics*. The other two journals were the *Journal of Politics* and the *Journal of Experimental Political Science*. The lower tiered articles were selected from four journals in Q3 and Q4 of the SCOPUS database, namely, *International Journal: Canada's Journal of Global Policy Analysis, Studies in Indian Politics, International Journal of Public Policy* and the *Journal of Public and International Affair*.

ANALYSIS FRAMEWORK

Table 1 shows the analysis framework that was adapted from Hyland's (2005) interpersonal metadiscourse model, with functions and examples to ensure reliability in data analysis.

TABLE 1. Analysis framework for interactional metadiscourse markers

Category	Functions	Examples
Boosters	Emphasise certainty or close dialogue	in fact, definitely, only, significant, most, it is clear that, highly
Hedges	Withhold commitment and open dialogue	may, might, would, could, perhaps, about, suggest, tend to,
Self-mentions	Explicit reference to writer(s)	first person pronouns (I, my, me, myself, we, our), the authors
Attitude markers	Express writer's attitude to proposition	simply, unfortunately, difficult, appalling, we expect, I agree, surprisingly
Engagement markers	Explicitly build a relationship with reader	questions, personal asides, allusion to shared knowledge (it

	has been accepted), directives (e.g., see, consider, note, imagine)

DATA COLLECTION PROCEDURE

The retrieval of research articles began with a search in the SCOPUS database. Once the website has been assessed, the "Journal Rankings" tab was selected and a list of journals was shown on the page. The list was filtered by clicking "Political Science and International Relations" in the "All subject areas" drop-down menu. Potential political science journals were selected based on the list of publications that appears on the page.

The higher and lower tiered articles were distinguished based on the ratings they received on the website. Each of the journals has a dedicated page on Scimagojr.com that contains the information and link to the journal's online site. Once the journal online site was accessed, the keywords "public policy", "international relations" and "policy analysis" were typed into the search bar to find relevant articles. These keywords were chosen to ensure the articles were about public policy issues. Articles from the list of search results were chosen if they fit the selection criteria which were (1) research articles that were published between 2011 and 2021, and (2) research articles that were organised into rhetorical sections like abstract, introduction, method, results, discussion, and conclusion. The articles were then downloaded and categorised into their respective folder.

DATA ANALYSIS PROCEDURE

The coding of interactional metadiscourse markers in the whole research article was carried out using the framework adapted from Hyland's (2005) interpersonal model (Table 1).

The results were tabulated according to rhetorical section: abstract, introduction, method and result-discussion-conclusion sections. This is because rhetorical sections can influence the implementation of markers (Akoto, 2020). However, due to variability in labelling of rhetorical sections by authors, the frequencies for the results, discussion and conclusion sections of the research articles were merged to "overcome the problem of considerable structural variation in a corpus of RAs [research articles] and make it possible to compare their functionally equivalent parts across the different disciplines and paradigms" (Hu & Cao, 2015, p. 14). In this study, the introduction section (in a broad sense) refers to both (1) a section under the heading "Introduction" (i.e., the introduction in a narrow sense) and (2) "Literature Review", while the results, discussion, conclusion and/or other equivalent components in an article were considered collectively as the "Results-Discussion-Conclusion" section.

To control oversight errors, the coding process was repeated at least three times to ensure all interactional markers were accounted for. Inter-rater coding was conducted by the two researchers for a set of articles to ensure stability in coding before the rest of the articles were coded. While an electronic search could eliminate oversight errors, a manual search was still needed to identify new items that were not included in the list of search items or key words. This is because interactional markers could take the form of phrases. A frequency count was conducted once the coding process was concluded and the distribution data was tabulated based on the overall frequency, frequency of markers in Q1 and Q3-Q4 articles and the frequency of markers within the rhetorical sections. Finally, Chi-square tests of independence were performed to determine whether there are significant differences between higher and lower tiered political science research articles in the use of interactional metadiscourse markers, as a whole article and according to rhetorical sections.

RESULTS

The analysis showed that there were 10,903 interactional metadiscourse markers in 40 political science articles (see Table 2, last column, last row). In this section, the use of the markers will be described before the quantitative results are presented. The Q1 research articles are referred to as H1 to H20 whereas the Q3-Q4 articles are referred to as L1 to L20.

USE OF INTERACTIONAL METADISCOURSE MARKERS

This section is important to provide background information on the five categories of interactional metadiscourse in political science research articles, considering that other studies are on articles published in other disciplines.

Boosters

The frequent use of boosters (see Table 2) indicated that the political science writers are constantly controlling the strength of their propositional content, particularly in the introduction and result-discussion-conclusion sections of the articles. In the introduction, to justify the niche for their study, political science writers use boosters when citing previous research to establish a research territory or, put simply, outline a topic of importance (see Example 1). The verb "demonstrated" is an assertion of the fact that states form alliances with one another. Example 2 shows positive justification of how the study can contribute to the advancement of the field. The adverb "fully" is used to emphasise the new insights that the research would produce to explain the research phenomenon.

Example 1.
"… previous research has demonstrated that states continue to form alliances with such states." (H5)

Example 2.
"As such, in order to more fully understand how these characteristics influence how we select leaders …" (H17)

In the result-discussion-conclusion sections of the articles, when the political science writers describe and discuss their results, boosters are used to underscore the potential impact that their findings have (see Example 3). In L1, the predicate "sheds light" emphasises how the study is significant in clarifying the issue at hand. By using boosters, the writers influence readers into accepting the contribution of their findings to the body of knowledge.

Example 3.
"Furthermore, it sheds light on the possibility of foreign policy and identity change through the reinterpretation …" (L1)

Hedges

The relatively frequent use of hedges in various rhetorical sections of the political science research articles (except the Method section) indicates that the political science writers are willing to withhold assertion of their stance on the propositional content, and allow the possibility of alternative views. Example 4 shows how the modal verb "might" is used as a hedge to reduce the researchers' commitment towards the claim, as a strategy to posit a speculation about the usefulness of the findings.

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Example 4.
"By looking at defence commitments and alliance memberships, for instance we might be able to learn more about the way in which the political organization of defence plays into decisions to participate in the RMA." (L3)

In the abstract section, boosters and hedges are usually used in the concluding sentence on the implications of the findings in the field. The abstract section while comparably compact, serves as a space for researchers to present their research claims and their importance, while managing the attention of their readers (Hyland & Tse, 2005). Example 5 shows the use of a booster ("demonstrate") to deliver a concise claim of their study while Example 6 shows how a hedging ("suggests") is used to reduce their commitment to their claim, to avoid generalisations when extrapolating from their results.

Example 5.
"Together, our results demonstrate why unreliable partners may not lead to increased conflict initiation ..." (H5)

Example 6.
"The finding suggests that Muslim community is sociologically heterogeneous and this has impact …" (L17)

Self-mentions
The political science researchers use mainly first person pronouns to highlight their presence. In the dataset, self-mentions appear more often in the method section than any other rhetorical section. Example 7 shows that the use of the pronoun "I" to describe the research procedures, but it is not merely a retelling of research activities, but a justification of the measures used for the constructs. Example 8 shows the use of the pronoun "our" to claim ownership of the data which contradict established findings, and this appears in the discussion of the results. Both instances show how self-mention alerts readers to the presence of the writer, the person(s) behind the study and the results.

Example 7.
"Additionally, I include measures in the dataset that capture the support for independence and electoral mobilization." (H14)

Example 8.
This is because our terrorist events data violate the Poisson assumption …" (H11)

Attitude markers
The analysis of the political science research articles revealed that the researchers mark their attitudes either using explicit expressions showing their position on the proposition at hand (e.g., "agree", Example 9) or evaluative adjectives (e.g., "surprising", Example 10). The proposition comes through even without the attitude markers, but the use of this interactional metadiscourse marker amplifies the meaning and highlights the writer's subjective attitudes and judgements on the proposition. The political science writers are careful in controlling the amount of evaluation that they share with their readers.

Example 9.
"While I agree that alter expectations have an important impact ..." (L1)

Example 10.
"It is surprising that in the 2014 parliamentary election …" (L17)

Engagement markers
Engagement markers is the least used interactional metadiscourse marker in all of the rhetorical sections of the political science research articles. The political science researchers refrain from explicitly building a relationship with readers. Example 11 shows the occasional use of question to engage readers. The rhetorical question serves to align the readers' viewpoint with the writer's stance. Research articles are formal writing and achieves persuasion through the rhetoric of argumentation, unlike casual writing or religious talks which rely on audience engagement for persuasion (Alkhodari & Habil, 2021; Mahmood & Mohd Kasim, 2021). The finding on the infrequent use of engagement markers is not surprising because other researchers (Bal-Gezegin & Baş, 2020; Gholami & Ilghami, 2016) have also found the low usage of engagement markers. In fact, Khedri and Kritsis (2018) found an absence of engagement markers in the applied linguistics and chemistry research articles they analysed.

Example 11.
"… begs the question: How can our society accept that risk?" (L12).

This section has shown how the five categories of interactional metadiscourse markers are used in the political science research articles, and highlight particular common functions of the markers. In the next two sections, quantitative results will be described to first show the patterns for the whole research article, and then by rhetorical section.

FREQUENTLY USED CATEGORIES OF INTERACTIONAL MARKERS

Table 2 shows the frequencies and percentages of interactional metadiscourse markers in the whole research article. There are more interactional markers in Q1 journals (6,041 markers or 55.41%) than in the Q3-Q4 journals (4,863 or 44.59%). Overall, the top two markers are boosters (36.12%) and hedges (31.1%) but self-mentions (15.65%), attitude markers (11.8%) and engagement markers (5.33%) are less frequently used.

TABLE 2. Distribution of interactional metadiscourse markers in Q1 and Q3-Q4 articles

Category	Q1 articles		Q3-Q4 articles		Total	
	Frequency	%	Frequency	%	Frequency	%
Boosters	2,169	35.90	1,769	36.38	3,938	36.12
Hedges	1,824	30.19	1,567	32.23	3,391	31.10
Self-mentions	1,130	18.71	576	11.85	1,706	15.65
Attitude markers	596	9.87	691	14.21	1,287	11.8
Engagement markers	322	5.33	259	5.33	322	5.33
Total	6,041		4,862		10,903	

COMPARISON OF THE DISTRIBUTION OF INTERACTIONAL MARKERS IN Q1 AND Q3-Q4 ARTICLES

An interesting result is the equally frequent use of boosters and hedges in Q1 and Q3-Q4 articles. Boosters frequently used in the political science articles are verbs (e.g., "show"), modal verbs (e.g., "will"), adjectives (e.g., "strong") and adverbs (e.g., "clearly"). The frequent use of boosters in the political science articles indicates that the writers are comfortable in being direct and expressing certainty of the propositional content. Commonly used hedges are

modal verbs (e.g., "might"), adverbs (e.g., "necessarily"), adjectives (e.g., "possible") and phrases (e.g., "to the best of our knowledge"). The frequent use of hedges indicates that the political science writers are still mindful of possible alternative views, and withhold commitment to their views. The equally high frequency of boosters and hedges show that political science writers have the need to appear objective and subjective at the same time, and signal facts and opinions using these markers. They demonstrate autonomy in controlling their commitment towards a propositional content.

Next, the frequencies of self-mentions and attitude markers differ with the impact of the political science research articles. In Q1 articles, self-mentions (18.71%) are used more than attitude markers (9.87%) but in Q3-Q4 articles attitude markers (14.21%) are used more than self-mentions (11.85%). The writers of Q1 articles appear to be more comfortable making self-references. On the other hand, writers of Q3-Q4 articles are more inclined to express attitude towards propositional information (e.g., surprise, amazement) but they are less confident to share their evaluation of the propositional content.

The differences in frequencies of self-mentions indicate that writers of Q1 political science research articles are more explicit in making references to themselves and are fairly open about stating their views and their involvement in the study. Examples of self-mentions are subject pronouns (e.g., "I", "we"), object pronouns (e.g., "me", "us"), possessive adjective (e.g., "my", "our") and nouns ("the authors"). The expressions "authors" and "the research team" tend to appear in Q3-Q4 articles and create more distance with readers, compared to pronouns and possessive adjectives which appear in Q1 articles.

As for attitude markers, the commonly used attitude markers in the political science articles are in the form of adverbs (e.g., "interestingly"), adjectives (e.g., "unique") and verbs (e.g., "expect"). These affective adverbs and attitudinal adjectives reflect positive evaluation of the results and tend to be used by the political science researchers to foreground the novelty of the results. Hu and Cao (2015) considered the writer's use of authorial evaluation and attitudes as a means to persuade the readers to agree with them. There was little use of deontic modals (e.g., "have to", "should") to mark evaluative and affective stance. The results indicate that writers of lower tiered political science articles are freer in expressing how they feel or what they think about the propositions.

The least frequently used marker in the political science research articles is engagement markers. There is little use of questions and personal asides to explicitly build a relationship with readers. Questions and personal asides are uncommon in research articles, and are more common in informal writing. However, directives (e.g., "consider") and allusion to shared knowledge using it-clauses containing predicative adjectives such as "it has been accepted" and "it is well known" are used in the political science research articles. To Hu and Cao (2015), expressions of shared knowledge "position readers within shared disciplinary understanding and bring them to agreement with writers' argument" (p. 15). Other examples of engagement markers often used are "see" "note" and "imagine", almost as if the writers were in a dialogue with readers and engaging them in the knowledge-making. The infrequent use of engagement markers indicates the political science writers' shared apathy in overtly building a relationship with their readers.

While there are qualitative differences in the frequencies of interactional metadiscourse markers between Q1 and Q3-Q4 articles, the statistical test shows that the frequencies are not significantly different. The Chi-square test of independence based on Table 2 results show that the relation between tier of journal and category of interactional metadiscourse markers is not significant, X^2 (4, N = 10,903) = 2.39, p = .99).

Since past research has indicated that the markers differ with rhetorical section, the results are next presented according to these sections to better understand the functions of the markers in higher and lower tiered political science articles.

COMPARISON OF THE DISTRIBUTION OF INTERACTIONAL MARKERS BY RHETORICAL SECTION IN Q1 AND Q3-Q4 ARTICLES

Table 3 presents the distribution of markers in the rhetorical sections of Q1 political science research articles. Booster is the most frequently used interactional metadiscourse marker in the abstract, introduction, and results-discussion-conclusion sections, but not in the method section. Apart from the method section, the second most frequently used marker is hedges, followed by self-mentions and attitude markers while engagement marker is the least used in Q1 articles.

The Chi-square test of independence for Table 3 shows that the relation between category of interactional metadiscourse markers and rhetorical section of Q1 research articles is significant, X^2 (12, N = 10,903) = 26.02, p = .05). The percentages of different categories of interactional metadiscourse markers in different sections of the Q1 political science research articles are different. Table 3 also indicates that the interactional metadiscourse markers and rhetorical sections have the greatest delta between the number of observed and expected frequencies, for self-mentions and method in the Q1 political science research articles. However, it cannot be concluded that reporting research procedures causes self-mentions to be frequently used, or that self-mention is the best interactional metadiscourse marker to use in the method section, because of other factors which might be at work.

The method section shows a different pattern of interactional metadiscourse. Within the method section, the most frequently used marker is self-mentions, followed by boosters, hedges, attitude markers and engagement markers. Self-mention occurs the most frequently in the method section because researchers tend to report their research procedures using the active voice and the first-person pronouns. However, for the other rhetorical sections, self-mention ranks third in frequency, and booster tops the list of interactional metadiscourse markers, followed closely by hedges. The equally frequent use of boosters and hedges and the less frequent use of attitude markers and engagement markers have already been described in the earlier section of results.

Table 4 presents the distribution of markers in the rhetorical sections of Q3-Q4 articles. The distribution is similar to those of Q1 articles, that is, in the abstract, introduction and results-discussion-conclusion sections, boosters is the most frequently used marker, followed by hedges, attitude markers and self-mentions.

The Chi-square test of independence based on Table 4 shows significant relation between category of interactional metadiscourse markers and rhetorical sections of Q3-Q4 research articles, X^2 (12, N = 10,903) = 21.24, p = .05). The percentages of different categories of interactional metadiscourse markers in different sections of the Q3-Q4 articles are different. Similar to the Q1 journals, the greatest delta between the number of observed and expected frequencies for interactional metadiscourse markers and rhetorical sections is for self-mentions and method in the lower tiered articles. Despite the association between self-mentions and method, it cannot be concluded that writing the method section elicits the use of self-mentions, or that self-mentions is the most appropriate interactional metadiscourse marker to use liberally in the method section.

However, in the method section, there is a slight difference between Q1 and Q3-Q4 articles. In Q1 articles, the sequence is as follows, from highest frequency to lowest: self-mentions (37.42%), boosters (38.17%), hedges (23.08%), attitude markers (7.90%) and engagement markers (3.43%) (Table 3). In the method section of Q3-Q4 articles, self-mentions is also the most frequently used interactional marker (28.2%), but the frequency is not much higher than hedges (26.54%) and boosters (25.94%). An application of the results of this study is to teach less experienced writers how to increase writer presence in the method section through the use of self-mentions to reveal their justifications for research procedures rather than to retell research activities.

TABLE 3. Frequency and percentage showing the distribution of interactional markers in various sections of Q1 political science articles

Q1 Journals	Abstract		Introduction		Method		Results-Discussion-Conclusion		Total	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Boosters	95	45.02	902	39.44	271	28.17	901	34.91	2169	35.90
Hedges	48	22.75	768	33.58	222	23.08	786	30.45	1824	30.19
Self-mentions	43	20.38	260	11.37	360	37.42	467	18.09	1130	18.71
Attitude markers	18	8.53	229	10.01	76	7.90	273	10.58	596	9.87
Engagement markers	7	3.32	128	5.60	33	3.43	154	5.97	322	5.33
Total	211	3.49	2287	37.86	962	15.92	2581	42.72	6041	100

TABLE 4. Frequency and percentage showing the distribution of interactional markers in various sections of Q3-Q4 articles

Q3-Q4 Journals	Abstract		Introduction		Method		Results-Discussion-Conclusion		Total	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Boosters	54	35.76	752	40.63	172	25.94	791	36	1769	36.38
Hedges	43	28.48	580	31.33	176	26.54	768	34.96	1567	32.23
Self-mentions	22	14.57	168	9.08	187	28.20	199	9.06	576	11.85
Attitude markers	25	16.56	245	13.24	97	14.63	324	14.75	691	14.21
Engagement markers	7	4.64	106	5.73	31	4.68	115	5.23	259	5.33
Total	151	3.11	1851	38.07	663	13.64	2197	45.19	4862	100

Note: The results are based on 19 abstracts for Q3-Q4 articles because one article did not have an abstract.

Note that in the method section of Q3-Q4 articles, writers use slightly more hedges than boosters but in Q1 articles, writers use more boosters than hedges. This result suggests that when describing research procedures, it is appropriate to express certainty rather than tentativeness because the method section is a report of research activities conducted and researchers should be confident about their justifications for their decisions. Writers should not be expressing reservations about the research procedures carried out.

Next, attitude markers (14.63%) ranks fourth among the interactional metadiscourse markers in the method section of both categories of articles. However, the percentage is much higher in Q3-Q4 articles showing that less inclination to reveal attitudes towards the propositions while in the Q1 articles, the description of research procedures speaks for themselves. In argumentation (e.g., introduction and discussion sections), it is relevant for writers to show their evaluative and affective stance towards propositions but not in the method section. Table 3 shows that attitude markers account for about 10% of interactional metadiscourse markers used in introduction and results-discussion-conclusion sections of Q1 research articles, and much less in the abstract and method sections (about 8%). However, the percentage of attitude markers in lower tiered articles is much higher at about 14% across the four rhetorical sections. Less experienced writers need to learn to limit use of attitude markers to largely writing involving argumentation.

DISCUSSION

The study on the interactional metadiscourse markers used in higher and lower tiered political science research articles produces two noteworthy findings. Firstly, the most frequently used categories of interactional markers are discussed. Boosters and hedges are frequently used in all rhetorical sections of political science research articles, regardless of whether they are published in higher or lower tiered journals. The high frequency of boosters and hedges show that writers are constantly controlling the strength of their propositional content in the articles. This result concurs with Estaji and Vafaeimehr (2015) who also found that booster is the most frequently used interactional metadiscourse marker in introductions and conclusions of electrical engineering and mechanical engineering research articles. These are the rhetorical sections of research articles with argumentation. The introduction section typically acts as a space for researchers to carve a niche for their study (Samraj, 2008), and researchers use past findings to outline the current state of knowledge before presenting arguments to justify why a certain research area is less understood and warrants further investigation. In this context, hedges serve to "convey deference and respect for readers' views" (Hyland, 2005, p. 68), making the writer's stance less assertive (Kawase, 2015). Boosters and hedges are also important in conclusions, where researchers argue the significance of their findings. Other researchers such as Estaji and Vafaeimehr (2015) reported that in the conclusion, the writers use boosters to emphasise the significance of their results and influence their readers into accepting the novelty of their findings. In the present study, the results-discussion-conclusion sections are treated as one rhetorical section for ease of comparison across research articles, where some writers combine results and discussion, and others combine discussion and conclusion or write separate sections. These sections generally contain argumentation. The political science writers use boosters to highlight the potential impact of their findings while putting a caveat on the generalisability of their claims through the use of hedges. As abstracts are usually written with the context (i.e., research gap) and conclusion, boosters and hedges also occur in high frequencies in the political science abstracts. Hyland (2005) stated that "[t]he balance of hedges and boosters in a text thus indicates to what extent the writer is willing to entertain alternatives and so plays an important role in conveying commitment to text content and respect for readers" (p. 53). By analysing the use of interactional metadiscourse markers by rhetorical section, the present study offers more granulated findings on the role of boosters and hedges in argumentation compared to findings based on analysis of whole articles (e.g., Hu & Cao, 2015; Khedri & Kritsis, 2018).

Secondly, the results on distribution of interactional markers in higher and lower tiered research articles are discussed together with results according to rhetorical section because this shows the distinctiveness of the findings of this study in comparison to other studies which treated these two aspects separately. The method section of political science research articles features self-mention as the most frequently used interactional metadiscourse marker, and the frequency is higher in higher tiered articles. Keramati et al. (2019) found that self-mentions in three applied linguistics journals increased in the 1996 to 2016 period, but the frequency is still far less than boosters, hedges and attitude markers, despite a decrease in the use of these three markers. Infrequent self-mention is reflective of the object-centred approach of the sciences, where there is little reader engagement. In the periodontics subdiscipline of dentistry, writers projected an objective stance by using the passive voice instead of self-mentions (Alyousef & Alotaibi, 2019). This pattern of minimal self-mentions in the sciences is confirmed by Khedri (2016), who found that research articles in environmental engineering and chemistry have half the number of self-mentions compared to applied linguistics articles. The frequencies of self-mentions in psychology articles are higher than the science articles but lower than that in the applied linguistics articles. Moreover, Khedri (2016) also found frequent use of self-mentions in the method section of applied linguistics articles, but psychology articles have more self-mentions in the introduction section, and environmental engineering and chemistry articles

have the most self-mentions in the results and discussion sections. Psychology is like the sciences because of its reliance on experiments. In the sciences, self-mention is more important in rhetorical sections with argumentation (introduction, results and discussion) to stake claims. In the present study, most of the self-mentions in the political science articles are in the method section, similar to the applied linguistics articles in Khedri's (2016) study. Political science is in the arts discipline, like applied linguistics. It is generally considered as a social science (not a pure/applied science). In the present study, political science researchers highlight their role in the research process using first person pronouns. In so doing, they emphasise their ownership of the methodology and justify why the method is chosen (Khedri, 2016). The strong writer presence in the method section of political science articles is possibly reflective of the arts inclination towards an author-centred approach as opposed to the object-centred approach of the sciences.

CONCLUSION

The study on interactional metadiscourse markers in political science research articles shows that boosters and hedges are the most frequently used markers. Self-mentions and attitude markers are less frequently used, and engagement markers are the least used. Based on the frequencies in the whole research article, there are no significant differences between Q1 and Q3-Q4 research articles in terms of the category of interactional metadiscourse markers used. However, when the analysis was conducted by rhetorical section, it was found that there are significant differences between the higher and lower tiered articles in the frequencies of interactional metadiscourse markers. The method section stands out in the frequent use of self-mentions, making writer presence obvious in justifications for their decisions in research procedures. In rhetorical sections involving arguments, particularly the introduction and the results-discussion-conclusion sections, boosters and hedges are important for asserting certainty and withholding commitment to the propositional content respectively. Writers of Q1 articles prioritise boosters, indicating confidence in emphasising certainty, but writers of Q3-Q4 articles prioritise hedges, reflective of their intention to withhold commitment and open dialogue with readers. In addition, attitude markers are also important in these sections for writers to show their evaluative and affective stance towards propositions, which show up more in Q1 articles. The study shows that research articles do not rely on engagement markers to achieve persuasion, seen in the low frequency of expressions for explicitly building a relationship with readers. Admittedly, the frequencies are raw frequencies and not normalised frequencies because the pdf format of the articles made it difficult to obtain the word count of the research articles.

This study has revealed that analysing interactional metadiscourse markers as a whole article does not produce as insightful findings compared to analysis by rhetorical section. By comparing higher and lower tiered political science research articles by rhetorical section, this study has identified two areas of reader engagement for novice political science researchers to improve on in order to increase chances of getting published in higher tiered journals. Firstly, novice political science researchers should increase writer presence in the method section through the use of self-mentions to reveal their justifications for research procedures rather than to retell research activities, and reduce hedges to reduce tentativeness when describing procedures. Secondly, less experienced writers in political science ought to largely confine attitude markers to argumentation, particularly in the introduction and results-discussion-conclusion sections and avoid giving their evaluative and affective stance in the method section. Overall, the moderate frequency of attitude markers and low frequency of engagement markers reflect a movement in research writing in the social sciences towards the style of the hard sciences (Keramati et al., 2019). Findings from this study lend credence to the notion that

the use of metadiscourse is dependent on the context that it occurs in and "is intimately linked to the norms and expectations of particular cultural and professional communities" (Hyland, 1998, p. 438). However, as the present study only analysed political science articles, a comparison needs to be made with hard sciences articles before drawing a definitive conclusion.

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