

## **Patterning of Interactive Metadiscourse Markers in Result and Discussion Sections of Academic Research Articles across Disciplines**

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### **ABSTRACT**

A generic analysis of research articles can cover a wide variety of issues; among them are rhetorical features. A crucial part of the rhetorical features of research article is the use of metadiscourse that can help to make the text persuasive and acceptable to a discourse community (Hyland, 2005). The underlying principle behind metadiscourse use is the view of writing as socially engaging: in particular metadiscourse reveals the ways writers project themselves into their discourse to declare their perspectives and commitments to the readers. The present paper focuses on interactive metadiscourse markers in the result and discussion sections of academic research articles across four disciplines, namely, English Language Teaching, Civil Engineering, Biology, and Economics to clarify the manner of metadiscourse use among the varied disciplines. Sixteen research article result and discussion sections (4 from each discipline) were sourced from four internationally reputed refereed journals for analysis. Results indicated some cross-disciplinary similarities and differences in the use of interactive metadiscourse markers. Results of this study can be of value especially for novice research article writers who belonged to disciplinary communities focused in the present study so that they get an entry into their own particular research communities.

*Keywords:* Metadiscourse, interactive metadiscourse markers, genre, academic research articles

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### **INTRODUCTION**

To Swales (1990), a discourse community has the following features: 1) determined and fixed set of common public aims; 2) mechanisms and approaches for its members to communicate with each other;

3) one or more genres in the communicative assertions of its goals; and 4) a threshold level of members with an appropriate degree of relevant content and discursive expertise. Following Swales (1990), the academic community is a typical discourse community, and disciplinary communities can be assumed to be more specific academic discourse communities.

Getting entry into the community can be achieved through defining its particular goals (Bizzell, 1992) and being aware of and competent in its writing practices (Hyland & Hamp-Lyons, 2002). In the same line of argumentation, Swales (1990) asserts that to write effectively and acceptably, one has to be familiar with genre-based conventions, rhetorical structures, public goals, and requirements set up by a specific disciplinary community. For any discourse community, there are established ways to communicate, which give rise to different genres. The defining characteristic of a genre is the communicative purpose it fulfils. This communicative purpose is reflected in the rhetorical structure or organization of the genre.

Bruce (2005) argues that in the academic discourse community, research articles function as firmly established social genres of communication. They are the manifestations of the various epistemological and social assumptions of disciplinary communities. In support, Bazerman (1988, p. 46) asserts that articles from different disciplines vary in their representations of the subject matter, the audience, and the authors themselves, to the extent that “each text seems to be making

a different kind of move in a different kind of game”. A generic analysis of research articles can cover a wide variety of issues such as rhetorical features. A crucial part of the rhetorical features of research article is shaped by the use of metadiscourse that is used to make the text persuasive and reader-friendly and also help authors to secure acceptance from audiences (Hyland, 2005).

#### *The Notion of Metadiscourse*

There are some definitions surrounding the notion of metadiscourse. Williams (1981) takes it as “writing about writing, whatever does not refer to the subject matter being addressed” (p. 212). As defined by Vande Kopple (1985), metadiscourse is “the linguistic element which does not add propositional content, but rather signals the presence of the author in the text” (p. 83). Mauranen (1993, p. 8) and Crismore *et al.* (1993, p. 40) take roughly the same stance referring metadiscourse to linguistic material in the text that goes beyond the propositional content, that add nothing to the subject matter but guide the listener or reader through organizing, interpreting, and as well as evaluating the information mentioned.

However, Hyland (2004) defines metadiscourse as “self-reflective linguistic expressions referring to the evolving text, to the writer, and to the imagined readers of that text” (p. 133). His definition is based on a view of writing as a social and communicative engagement, and in academic contexts, shows the ways writers project themselves into their argumentation

in order to control their interactive intentions and signal their perspectives and commitments (2005, p. 14).

*Hyland's (2005) Taxonomy of Metadiscourse*

A number of taxonomies on metadiscourse markers have been proposed since initial interest began some decades ago (see Crismore *et al.*, 1993; Vande Kopple, 1985; etc). Many metadiscourse analysts have resorted to the Hallidayan distinction to code their data (Halliday, 1973). Vande Kopple (1985) asserted that the primary or discourse level of writing achieves Halliday's ideational function and the secondary or metadiscourse level fulfils the other two functions, textual and interpersonal. He categorized metadiscourse elements functionally and puts them into two broad categories: textual and interpersonal. Textual metadiscourse refers to the organization of discourse, while interpersonal metadiscourse reflects the writer's stance towards both the content in the text and the potential reader. While adopting the same major textual and interpersonal categories, Crismore *et al.* (1993) however, presented a revised classification system for metadiscourse categories. Hyland (2004, 2005) and Hyland and Tse (2004) suggested another modification for the categorization of metadiscourse which they called an Interpersonal Model of Metadiscourse based on which metadiscourse elements are put into two types "interactive" and "interactional". The former helps writers organize propositional content and displays

the extent to which the text is produced based on the readers' demands in mind. They are a result of the writer's assessment regarding the "readers assumed comprehension capacities", "understanding of related text", "the need for interpretive guidance", as well as "the relationship between the writer and reader". These resources consist of **transitions** (e.g., and, but, thus, then, in addition to) that help readers to understand the pragmatic relationships between ideas in the text, including additive, contrastive and consequential steps in the discourse; **frame markers** (e.g., to conclude, my purpose here is to) that indicate text boundaries or elements of schematic text structure, **endophoric markers** (e.g., see figure 1, in section 2, as noted above) that refer to information in other parts of the text and make the additional material available for the readers; **evidentials** (e.g., according to X, Z states) that refer to sources of information from texts other than the current one, and finally **code glosses** (e.g., for example, in other words, namely) that provide more information by restating and rephrasing of ideational content to ensure that the reader can get the writer's preferred interpretation.

Interactional metadiscourse unlike the interpersonal refers to the approaches writers interact with the audience by intruding and commenting on their own argumentation. Here, the writer's also aims to make his/her ideas and perspectives clear and to engage readers, allowing them to give feedback about the unfolding text. The interactional resources include such markers as **hedges**

that reveal the writer's decision to realize the other voices and points of view. Hedges (such as perhaps, about, possible, might) mark the writer's unwillingness to present propositional information categorically, while **boosters** allow writers to close down alternatives and express certainty in what they say (it is clear that, definitely, obviously, etc.), and **attitude markers** indicate the writer's influential, not epistemic, viewpoint and attitude towards propositional content. Through attitude markers the writer conveys his/her personal feelings such as surprise, agreement, importance, obligation, frustration and so on. Attitude markers can be characterized through such lexical choices as in attitude verbs (agree, prefer), sentence adverbs (unfortunately, hopefully), and adjectives (appropriate, remarkable). **Engagement markers** address readers clearly either to attract their attention or engage them as discourse participants in the use of expression like *note that*, *consider*, *you can see that*, etc., and finally, **self-mentions** refer to the extent of author presence through pronouns such as: I, we, our, my, etc. (Hyland, 2005, pp. 49-54).

Many studies have been conducted on the use of metadiscourse (Abdi, 2002; Crismore, *et al.*, 1993; Khedri, *et al.*, 2013; Harwood, 2005; Hyland, 2005, 2007; Vande Kopple, 1985; Vazquez & Giner, 2008). Among them, Abdi (2002) analyzed 55 conclusion sections of research articles across two fields of social sciences and natural sciences in order to investigate how writers mapped interpersonal metadiscursive devices in their own discipline-related articles. Harwood (2005) conducted a

qualitative corpus-based study of self-promotional "I" and "we" in academic writing across four disciplines. By analyzing 240 academic research articles in eight disciplines, Hyland (2007) studied code glosses so as to find out how professional academic writers control and manage their discourses for readers through code glossing strategies. Vazquez and Giner (2008) worked on the use of epistemic markers as hedging rhetorical strategies in research articles in English cross-disciplinarily.

Most cross-disciplinary studies on metadiscourse have focused on different disciplines other than those investigated here, different rhetorical sections of research article (henceforth, RA), or they focused on the use of particular types of metadiscourse markers. In the existing literature, studies on metadiscourse in the genre of RA are extremely low. The scarcity is felt greater when it comes to the status of interactive metadiscourse markers, especially in RA and its various rhetorical sections among disciplines. With this scarcity in mind, especially driven by the notion that application and concept of metadiscoural features are variant among disciplines (p. 143), this study aimed to explore the status of interactive metadiscourse markers in academic RAs. The investigation scrutinized how interactive metadiscourse markers were used by RA writers across four various different disciplines. In all, two major research questions below addressed the concern of our study:

- i. What are types of interactive metadiscourse markers mapped in the

- result and discussion sections of RAs written in four selected disciplines?
- ii. Is there a difference across the four disciplines in the manifestation of interactive metadiscourse markers?

## METHODOLOGY

Following Grabe (1987) and Paltridge (1996), the corpus selection was based on three criteria; namely, genre, ESP, and text type. In line with Swales (1990), Mauranen (1993), and Connor (1996), who postulate that RAs act as a genre, academic RAs were selected to meet the first criterion. To meet the second, RAs solely from two main fields, hard sciences and soft sciences, were selected. Lastly to fulfil the third criteria, this study was narrowed down and focused on the result and discussion sections of RAs since the persuasive nature of these rhetorical sections is suitable for the identification of metadiscourse elements which carry the interactive function.

Thus, the corpus applied in this study consists of a sample of sixteen academic RA result and discussion sections in four disciplines (4 from each discipline). The four disciplines were selected from two sciences: English Language Teaching (ELT) and Economics (Eco) representing soft sciences, and Biology (Bio) and Civil Engineering (CE) representing hard sciences. All selected articles were published in 2009 or 2010 and sourced from four referred journals published by Universiti Putra Malaysia that serve four identified disciplines: Social Sciences and Humanities, Economics and Management, Tropical and Agricultural

Sciences, and Science and Technology. These journals are indexed in Scopus.

Sixteen RAs in each field of study were taken randomly from the selected journals and they were given to some experts in each discipline to confine that the selected articles do indicate a variety of authors' style and discipline. It is worthy to point out that the selected articles were experimental articles (henceforth, EA) which shaped through Introduction, Method, Result, and Discussion (IMRD) as a pattern of rhetorical development, a widely accepted conventional structure of experimental research papers identified by Swales (1990).

There is a common belief among scholars that metadiscourse is an inborn fuzzy and functional category. Lexicogrammatical features which serve as metadiscourse can be multifunctional and context dependent (Ädel, 2006). Such multifunctionality and context-dependency imply that metadiscursive elements can be considered not strictly as linguistic feature but also as a pragmatic and rhetorical feature. As Hyland (2005) opines, metadiscourse is a relative notion in which textual devices solely act as metadiscourse in concern with another part of the text. What might be regarded as metadiscourse in a particular context may serve the function of propositional information in another. Thus, in analyzing metadiscourse, it is important to clearly identify the strategies applied by writers in creating those elements at specific point in their arguments. In the current research, Hyland's (2005) taxonomy was used to analyse metadiscourse and the researchers

performed a rigorous analysis taking the functional meaning into account. Firstly, all the selected research articles, either those that were obtained directly from the electronic versions of the relevant journals or those which were manually scanned and converted into Rich Text format, were saved on the computer and word count was run on them as well. Next, all articles were traversed in search of metadiscourse markers electronically using MonoConc Pro, a text analysis and concordance programme. Then, all metadiscourse illustrations were carefully analyzed individually and manually based on the context in which they occurred in order to be certain about their functions. Furthermore, in this study, to preclude the threat of unreliability and misinterpretation in the analysis, and to verify the interpretations, the functionality of the interactive metadiscourse markers in a small subset of the corpus, 4 result and discussion sections of RAs (1 from each discipline) were double-checked by an expert in applied linguistics working independently.

## RESULTS

According to figures presented in Table 1, the total number of words in the hard disciplines is 485 words more than that of in the soft disciplines. This was unexpected as the researchers premised that the soft disciplines would use more words since Hyland (2005) has remarked that disciplines in soft sciences are more interpretative than [hard] sciences, and as a result argumentations are lengthier compared to

discourses based on the reporting of science that shows more certainty in the procedures applied to create facts. He reached the above conclusion through analyzing the entire rhetorical sections of RA. In this study, the length is not a clear distinguishing determinant of discipline discourse. What might be concluded based on the data is that ELT articles are much longer than Eco articles, and Bio articles are a little longer than the CE articles.

Table 2 illustrates the results of the frequency analysis of interactive metadiscourse markers and their percentages in four disciplines. In the following sections, the distribution of the categories of interactive metadiscourse markers per discipline and across disciplines will be interpreted separately.

### *Categorical Distribution Per Discipline*

According to Table 2, ELT article writers used the most transitions and code glosses in comparison with the other interactive markers, totalling 105 cases or 32.11% and 94 cases or 28.74% respectively. Amongst other the markers, they showed more affinity towards endophoric markers (63 cases or 19.26%) followed by evidentials 46 cases or 14.06%. Regarding frame markers, it was found that ELT article writers employed them infrequently, only 19 cases or 5.81%.

In contrast, Eco writers were more predisposed to use code glossing devices in their academic papers, with a total of 79 cases or 39.69%, followed by transitions which were applied at least twice more than the other three interactive metadiscourse

TABLE 1  
Number of words in the result and discussion sections of RAs

	ELT	Eco	Bio	CE
Article 1	2316	1089	1585	1120
Article 2	999	853	1512	1069
Article 3	720	829	915	981
Article 4	706	477	717	575
Total	4741	3248	4729	3745

TABLE 2  
Frequency analysis and percentage of each category per discipline

Categories	Soft Science Disciplines				Hard Science Disciplines				Total	
	ELT		Eco		Bio		CE			
	F	Per	F	Per	F	Per	F	Per	F	Per
Transitions	105	32.11	54	27.13	87	26.52	60	32.25	306	29.42
Frame markers	19	5.81	16	8.04	25	7.62	15	8.06	75	7.21
Endophoric markers	63	19.26	26	13.06	50	15.24	49	26.34	188	18.08
Evidentials	46	14.06	24	12.06	75	22.86	5	2.68	150	14.42
Code glosses	94	28.74	79	39.69	91	27.74	57	30.64	321	30.86
Total	327		199		328		186		1040	

Note: F = Frequency, Per = Percentage

markers (54 cases, or 27.13%). Interestingly, endophoric markers and evidentials were manifested identically in Eco academic RAs, 26 cases (13.06%) and 24 cases (12.06%), respectively. Similar to ELT, frame markers had the lowest frequency in Eco academic RAs (16 tokens or 8.04%).

In the case of Bio, code glosses (91 cases or 27.74%) and transitions (87 cases or 26.52%) were the most used categories of interactive metadiscourse markers. Following code glosses and transitions, evidentials (75 cases or 22.86%) were the third more frequent metadiscoursal features employed by biologists. Compared to endophoric markers (50 cases or 15.24%), they were realized precisely a quarter more.

Frame markers were the least frequently used interactive metadiscourse markers in RAs written by biologists which showed a similarity with ELT.

Finally, findings illustrated that similar to the ELT writers, transitions and code glosses were commonly used with a higher proportion by CE article writers. These two markers were the most frequently used categories with identical occurrences (60 cases or 32.25% for transitions and 57 cases or 30.64% for code glosses), followed by endophoric markers with a total of 49 cases or 26.34% in the CE academic articles. It could be concluded that the leading category in ELT and CE was transitions, while code glosses played a more major role in Eco and

Bio. The least used metadiscourse in ELT, Eco, and Bio was frame markers but not in CE where evidentials were the least used.

#### *Total Categorical Distribution across Disciplines*

As results revealed, all interactive metadiscourse markers were used in each discipline with roughly different frequencies across disciplines. Furthermore, by comparing the absolute frequencies as well as their percentages, we could say that code glosses and transitions had the highest occurrence in the corpus [321 cases (30.86%) and 306 cases (29.42%), respectively]. Amongst other markers, endophoric markers (188 cases or 18.08%) were placed in third position, followed by evidentials (150 case or 14.42%), and finally frame markers as the least frequent (75 cases or 7.21%).

Comparing disciplines together, results indicated that transitions and code glosses were the first and second most frequent types of interactive metadiscourse in ELT and CE, whereas in Eco and Bio it was the other way around. In terms of endophoric markers, they were the third most frequent in ELT, Eco, and CE, while in the fourth level in Bio. Although evidentials had the least use in CE texts, they were used more frequently in other disciplines, particularly in Bio.

Such variations can lead to certain conclusions about the specific disciplines. Bio, as a hard discipline, used metadiscourse in a highly similar fashion as ELT, a soft science discipline. Bio and ELT probably

shared the same degree of tentativeness. Thus, Hyland's (1998) claim that metadiscourse is affected by the lack of control of variables in the soft-knowledge fields, making argument more protracted appear not be supported. Similarly, Eco as a soft science discipline did not use more metadiscourse than Bio. Compared to Bio, CE stood out as the hard science discipline that used the least metadiscourse. This speaks for metadiscourse analysis to be more focused on being discipline specific rather than being inclusive, when referring to differences between hard and soft sciences.

#### **DISCUSSION**

On one hand, the writers' job is to produce a piece of writing that encodes the meanings and organizes the discourse. On the other, it is the readers' responsibility to decode the preferred meanings intended by writers. It is quite clear that it is a two way process but it seems that the readers' success in going through the text and grasping the flow of information smoothly is somewhat subordinated to writers' profession while creating the text. Among rhetorical structures, interactive metadiscourse markers are devices which can be of help for writers to organize the discourse and produce a more cohesive, reader-friendly, and well-organized text in a way that readers be able to share the flow and rhythm of ideas in the text.

The main purpose of transitions is to assist readers interpret the connections between ideas pragmatically. As quoted by



Hyland (2005), their syntactic coordination and/or subordination are of secondary importance and it is the writer's internal duty to guide readers in understanding and interpreting the logical links between ideas which is of primary value (p. 50). By the use of frame markers, writers try to frame the proposition. To do so, they show explicit additive relations, label text stages, announce discourse goals, or alter topics. The data showed that biologists resorted to this employment highly to equip readers with framing devices. ELT writers also had a strong belief in well-framed texts. It is worthy to point out that RA writers in the other two disciplines, Eco and CE, showed less affinity towards a similar need of metadiscourse use in this aspect in this study.

Endophoric markers are at the readers' disposal for decoding the intended meanings for better comprehension and arguments' support. In order to achieve this, writers refer backward and forward textually. In CE and ELT, article writers were more accentuated to steer readers to get to the preferred meanings by means of endophoric markers. In contrast, these markers were less used by biologists and economists.

The next category, evidentials, signposts references to information external to the texts. Writers normally take advantages of these markers to cite a number of earlier works in order to support their own work and make new findings more acceptable to the discourse community they belong to. This need was more prevalent among biologists. As found in this study, they

tended to compare and contrast their findings to previously found results and used other works to support their argumentations and claims. RA writers in ELT and Eco disciplines (the soft sciences) were positioned very differently with regard to evidentials; while civil engineers (the other hard science) paid the least attention to having to justify their claims in relation to other previous studies. Hyland (2005, pp. 89-90) posits that "it is in research articles that writers exhibit both the relevance and the novelty of their work to colleagues" leading to more evidentials usage. In this study, there appears a marked difference in how this strategy was used by different writers in different disciplines.

In terms of code glosses, authors resort to its use by rephrasing, explaining, or elaborating so as to provide readers with extra information with the aim of becoming more precise and accurate in the decoding of their own intended meaning. The majority of writers in the present research, especially economists and biologists, gave the highest preference to code glossing devices with these tools as one of the two top frequently used markers. This high inclination towards applying such markers signals that in RAs, writers generally tended to predict about their readers' existing knowledge base and saw a need to provide them with information they feel necessary to signpost information by using code glosses.

## CONCLUSION

Interactive metadiscourse markers assist writers in organizing propositional content and display the extent to which texts are

produced based on readers' demands in mind. In a nutshell, they are used by writers, as Hyland (2005, p. 50) puts, it to assess "readers' assumed comprehension capacities", and "understanding of related text", and to fulfil "the need for interpretive guidance" as well as to establish "the relationship between the writer and reader".

In the present research, we displayed a cross-disciplinary picture of metadiscourse interaction between writers and readers in academic writing highlighting interactive metadiscourse markers in the academic RA genre. Based on the results, there were some similarities and differences across disciplines. This study analyzed interactive features only in the result and discussion sections of academic RAs. Some scholars believe that the communicative aim of the various rhetorical sections of RA influence the degree of uncertainty, flexibility, writers' involvement, authorial persona, and attitudinal language characterized by different linguistic expressions (Hopkins & Dudley-Evans, 1988, Salager-Meyer, 1994). Obviously, it seems necessary to investigate the manifestation of metadiscourse markers, both interactive and interactional, in other rhetorical sections such as introduction, methodology, and conclusion among different fields to achieve more plausible findings. Further precise research must be done in order to accentuate variations or similarities among disciplines. All in all, the results of this study has highlighted differences and similarities in metadiscourse use in four disciplines. Insights enable disciplinary communities to become

more familiar with public and discipline-related goals, norms, and conventions and understand some discourse features that could play an essential role for writers, especially the beginners, to increase their chances of publishing in international leading journals.

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