

A Comparative Analysis of Metadiscourse Markers in the Result and Discussion Sections of Literature and Engineering Research Papers

Maryam Kahkesh

Ahvaz Branch, Islamic Azad University, Ahvaz

Mohammad Alipour

Ahvaz Branch, Islamic Azad University, Ahvaz

Abstract

This study compares metadiscourse markers in result and discussion sections of literature and engineering research papers. To this end, 40 research articles (20 literature and 20 engineering) are selected from two major international journals. Based on Hyland's (2005) model of metadiscourse, the articles are codified in terms of frequency, percentage, and density of interactive and interactional markers found. The two corpora are compared to see to what extent the genre of lectures are different. Data are analyzed through Chi-square and the results of the quantitative analysis reveal significant cross-linguistic differences for overall frequency of metadiscourse except for *frame markers* and *boosters*.

Keywords: Metadiscourse, Interactive, Interactional, Research Papers

1. Introduction

Speakers and writers use language not only to transfer information, but also to organize information for their hearers and to encourage them to identify unfolding discourse. This non-propositional aspect of communication is referred to as metadiscourse, though other terms include *metatalk* (Schiffrin, 1980), *meta-text* (Mauranen, 1993), and *discourse reflexivity* (Mauranen, 2010). Metadiscourse simply refers to the organization of the text. It has been conceptualized to contain a range of linguistic features used both to organize and evaluate the propositional notion (Crismore, 1989; Schiffrin, 1980; Vande Kopple, 1985). Metadiscourse is a vague term that is easy to accept, but not easy to establish its limits (Swales, 1990; Nash, 1992). Some authors have limited the term to the features of rhetorical organization by containing only those text elements which refer to the text itself (Bunton, 1999; Mauranen, 1993; Valero-Garces, 1996); though, others have narrowed the term to explicit illocutionary predicates (Beauvais, 1989). In general, Hyland states that “a text should contact with readers or hearers in an acceptable way, which means that the process of understanding and participation are a question of clarity of information, and the author’s or the individual speaker’s projection of a shared context” (pp. 13-14). For this reason, Mauranen (2010) states “crucial aspect of human communication is metadiscourse, which deserves to be studied in its own right” (p. 37).

Researchers have become increasingly aware of the fact that differences in the use of metadiscourse should be understood not only in relation to the national culture of the writer, but also in relation to the genre and the immediate discourse community to which the text is addressed. Although some research studies have been conducted by Abdi (2002), Blagojevic (2004), and Atai and Sadr (2008), there is still a dearth of research studies as for the use of

A Comparative Analysis of Metadiscourse Markers in...

metadiscourse markers in the research articles mainly focusing on the result and discussion sections. This study is intended to bridge this gap by examining the kinds, frequency, and use of metadiscourse markers in the result and discussion parts of research papers in the field of literature and engineering to develop the readers' awareness of how native speakers of these fields organize their writing.

There appears to be no research to date conducted to investigate metadiscourse use and variation in literature and engineering research papers in particular. For filling the gap in research on the mentioned topic, this cross-linguistic study attempts to find out how metadiscourse, interactive and interactional orientation of metadiscourse in articles, differs or resembles in literature and engineering. This is executed by analyzing an adequate number of articles in each field. This study is based on the premise that the information derived from this investigation will provide insights in order to help students, teachers, and all the researchers who are willing to be more native-like English users.

The current study aims to answer the following research questions:

1. Do literature and engineering research articles differ in their use of metadiscourse?
2. What types of metadiscourses are used more frequently in literature and engineering research articles?

2. Method

2.1. Corpus

The corpus which uses in this study consists of 40 research papers. Twenty literature research papers (114,696 tokens) and twenty engineering research papers (79,010 tokens) are selected from native English authors' journals. All

the articles were selected from recent issues of high-impact factor and peer-reviewed international journals of IEEE Transactions on Applied Superconductivity, International Journal of Mechanical Sciences, and journal of modern literature. They were written by both male and female researchers of the fields, including university lectures, students, or both.

2.2. Procedure

This research applies Hyland's model (2005) to investigate metadiscourse markers used in these corpora, which analyzes two types: interactive and interactional metadiscourse markers. The study employs both qualitative and quantitative approach. All the corpus data is annotated to identify the metadiscourse markers. The first step is to find the related research papers in reliable international journals. The next step is to get a number of word counts in the text, to specify the length and ensure the comparability of the corpus. Identifying metadiscourse markers and then classifying them into interactive and interactional metadiscourse markers is defined as the third step. The final step is to find the frequency of metadiscoursal features separately for both corpora. However, before the main analysis of the collected data begins which is bottom up, ten percent of them is subjected to a pilot study. To do so, this part of the data is scrutinized by the researcher in order to reach agreement over the method of analysis and the feasibility of the study.

A Comparative Analysis of Metadiscourse Markers in...

Category	Function	Examples
Interactive	Help to guide listener through the text	
Transitions	express relations between main clauses	and, but, since, so
Frame markers	refer to discourse acts, sequences or stages	okay, now, first, want to
Endophoric markers	refer to information in other parts of the text	earlier, later, handout, page
Code glosses	elaborate propositional meanings	I mean, in fact, like, or
Evidentials	refer to information from other texts	quote, according to X.
Interactional	Involve the listener in the text	
Hedges	withhold commitment and open dialogue	almost, just, might, seem
Boosters	emphasize certainty or close dialogue	know, actually, clearly, never
Attitude markers	express speaker's attitude to proposition I agree, prefer, surprised	
Self-mentions	explicit reference to speaker	I, we, me, our
Engagement markers	explicitly build relationship with listener	let's, take a look, we

Figure 1. *Hyland's Interpersonal model of Metadiscourse (based on Hyland, 2005, p.49).*

The analysis is carried out via AntConc (version 3.2.4, Anthony, 2011), a text analysis and concordance tool. I conducted both quantitative and qualitative analyses of the interactive and interactional metadiscourse markers. For the quantitative analyses (using SPSS 22.0), the frequency per 1000 words of each main type and its subtypes of interactive and interactional metadiscourse markers in both research papers is examined. The qualitative analyses involve studying every instance of metadiscourse in its context and examining how the various types of interactive and interactional metadiscourse are used qualitatively similarly or differently across the research disciplines.

3. Results

Our analysis cropped up with identification of metadiscourse markers across the two corpora. The following table demonstrates the type, frequency,

percentage and density of the metadiscourse markers employed in research papers.

Table 1. *Metadiscourse in Literature and Engineering Research Papers*

	Frequency/ Percentage in Literature Research Papers	Density per 1000 Words in Literature Research Papers	Frequency/Percentage in Engineering Research Papers	Density per 1000 Words in Engineering Research Papers
1. Interactive				
Transitions	1415 (26.63%)	6.61	1765 (33.02%)	8.24
Code glosses	111 (2.08%)	0.51	142 (2.65%)	0.66
Frame markers			61 (1.17%)	0.28
Evidentials	119 (2.26%)	0.55	289 (5.40%)	1.35
Endophoric markers	399 (7.50%) 27 (0.50%)	1.86 0.14	64 (1.19%)	0.31
Total	20.71 (38.97%)	9.67	2321 (43.43%)	10.84
2. Interactional				
Hedges				
Boosters	1337 (21.41%)	6.24	816 (15.26%)	3.81
Attitude markers	1106 (17.71%) 861 (13.79%)	5.16 4.02	821 (15.36%) 530 (9.92%)	3.83 2.47
Self-mentions	75 (1.21%)	0.37	142 (2.67%)	0.68
Engagement markers	793 (12.70%)	3.70	714 (13.36%)	3.33
Total	4172 (66.8)	19.49	3023 (56.57%)	14.12
Total	6243(100%)	29.16	5344 (100%)	24.96

Through the analysis, it is found that both corpora employ interactive and interactional metadiscourse markers in their articles, but the percentage and density of interactional metadiscourse is far greater than interactive ones in both corpora.

A Comparative Analysis of Metadiscourse Markers in...

In order to find out whether or not the differences in the use of metadiscourse markers across the corpora are significant, I analyze the obtained frequency data using Chi-square test for independence.

Table 2. Chi-Square Tests of Interactive Comparison of the Literature and Engineering Research Papers

Chi-Square Tests	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	79.668a	4	.000
Likelihood Ratio	80.348	4	.000
Linear-by-Linear Association	29.817	1	.000
N of Valid Cases	4392		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 42.91.

The results of Chi-square test for the overall results of interactive markers indicate that there are significant differences in employing metadiscourse markers between two corpora.

Table 3. Residuals for Interactive Metadiscourse Markers

			Frequency in Literature Research papers	Frequency in Engineering Research Papers	
Transitions	1	Count	1415	17.65	3180
		Std. Residual	-2.2	2.1	
Frame Markers	2	Count	111	142	253
		Std. Residual	-.8	.7	
Endophoric Markers	3	Count	119	61	180
		Std. Residual	3.7	-3.5	
Code Glosses	4	Count	399	289	688
		Std. Residual	4.1	-3.9	
Evidentials	5	Count	27	64	91
		Std. Residual	-2.4	2.3	
Total		Count	2071	2321	4392

According to Table 3.3, all rows illustrate that the differences between Literature and Engineering research papers are meaningful except *frame markers*.

Table 4. Chi-Square Tests of Interactional Comparison of the Literature and Engineering Research Papers

Chi-Square Tests	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	90.642a	4	.000
Likelihood Ratio	90.062	4	.000
Linear-by-Linear Association	37.816	1	.000
N of Valid Cases	7195		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 91.17.

The results of Chi-square test for the overall results of interactional markers indicate that there are significant differences in employing metadiscourse markers between two corpora.

Table 5. Residuals for Interactional Metadiscourse Markers

			Frequency in English University Lectures	Frequency inPersian University Lectures	
Hedges	1	Count	1337	816	2153
		Std. Residual	2.5	-2.9	
Boosters	2	Count	1106	821	1927
		Std. Residual	-.3	.4	
Attitude Markers	3	Count	861	530	1391
		Std. Residual	1.9	-2.3	
Self- Mentions	4	Count	75	142	217
		Std. Residual	-4.5	5.3	
Engagement Markers	5	Count	793	714	1507
		Std. Residual	-2.7	3.2	
Total		Count	4172	3023	7195

A Comparative Analysis of Metadiscourse Markers in...

As it is evident in Table 3.5, all rows except *boosters* illustrate that the differences between literature and engineering research papers are significant in all categories.

4. Discussion

To make a study of metadiscourse, the researcher intends to discuss the statistically proved differences between the Literature and engineering research papers. Moreover, I intend to discuss the two questions from a qualitative point of view:

Q1. Do literature and engineering research papers differ in their use of metadiscourse?

To answer the first research question concerning the use of metadiscourse markers in the result and discussion sections of the literature and engineering research papers, the researchers do a frequency count in the research papers' result and discussion sections. In other words, the instances of each type of metadiscourse markers are detected, coded, and then counted to assess their distribution. The density and percentage of the use of metadiscourse markers is higher in the literature research papers than in the engineering ones. Hence, we can conclude that literature research papers consist of the majority of metadiscourse markers in contrast to engineering lectures, so they are the clearest and the most comprehensible academic lectures.

The overall results of this study support Rashidi and Alihosseini's (2012) study who examined the difference in the use and frequency of metadiscourse markers in the result and discussion sections of 20 research papers in the field of literature and engineering. The obtained results revealed statistically significant difference in the use of metadiscourse markers across the selected disciplines. Moreover, such results are not in line with the findings of

Blagojevic's (2004) study which demonstrated no statistically significant difference in use of metadiscourse markers in the academic research papers between English native and non-native speakers. Also, the current results concur with Atai and Sadr's (2008) study which showed a statistically significant difference in the use of hedging markers in the academic writings of English native and non-native speakers in applied linguistics research studies.

Q 2. What types of metadiscourses are used more frequently in literature and engineering research articles?

This study made use of Hyland's (2005) model as a framework to find the type and number of MDMs used in the above-mentioned sections. The term meta-discourse was originally coined by Harris (1970) and was later developed by Williams (1981). In the literature research papers, the two most frequently used metadiscourse markers are in order: *transitions* (26.63%) and *evidentials* (7.50%) in interactive metadiscourse markers, and *hedges* (21.41%) and *boosters* (17.71%) in interactional ones. In engineering research papers are *transitions* (33.02%) and *evidentials* (5.40%) in interactive metadiscourse markers, and *boosters* (15.36%) and *hedges* (15.26%).

5. Conclusion

Hyland (2005, p. 98) holds that interactional metadiscourse elements play a crucial role in contributing new knowledge and "making academic claims". Findings manifested that metadiscourse markers play a significant part in two corpora as they both took advantage of MDMs in the result and discussion sections of their papers. The central finding of this study is that MDMs is used more in literature research papers than engineering ones (66.82% vs. 56.57%). Comparative metadiscourse studies, such as the one presented here, can also assist ESP and foreign language researchers, teachers, and learners in

A Comparative Analysis of Metadiscourse Markers in...

increasing their awareness of English writing conventions. Furthermore, the full transcripts of the lectures are not generally available on the website, and hence the researcher has to transcribe all the lectures by herself; this is a difficult task to handle. There are a number of aspects of MDMs that can be explored in future research studies to further understand their nature as an interactive and interactional resource. It is worth mentioning that the corpus used in this study comprised of 40 research articles, picked from a limited number of journals, which might be considered a small corpus. It is suggested that this study be replicated with a larger corpus to have more generalizable findings.

References

- Abdi, R. (2002). Interpersonal metadiscourse: An indicator of interaction and identity. *Discourse Studies*, 4, 139-145.
<http://dx.doi.org/10.1177/14614456020040020101>
- Anthony, L. (2011). Antconc. Retrieved from <http://www.antlab.sci.waseda.ac.jp/software.html>
- Atai, M. R., & Sadr, L. (2008). A cross-cultural study of hedging devices in discussion section of applied linguistics research articles. *Teaching English Language and Literature Society of Iran (TELLSI)*, 2, 1-2.
- Beauvais, P. J. (1989). A speech act theory of metadiscourse. *Written Communication*, 6, 11-30. <http://dx.doi.org/10.1177/0741088389006001002>
- Blagojevic, S. (2004). Metadiscourse in academic prose: A contrastives Study of academic articles written in English by English and Norwegian native speakers. *Studies about Languages*, 5, 60-67.
- Bunton, D. (1999). The use of higher level met text in PhD theses. *English for Specific Purposes*, 18, 41-56.

- Crismore, A. (1989). *Talking with readers: Metadiscourse as rhetorical act*. New York, NY: Peter Lang.
- Harris, Z. (1970). *Linguistic transformations for information retrieval*. In papers in structural and transformational linguistics (pp. 458-471). Dordrecht: D. Reidel. (Original work published 1959). <http://dx.doi.org/10.1007/978-94-017-6059-1>
- Hyland, K. (2005). *Metadiscourse*. London: Continuum.
- Mauranen, A. (1993). Contrastive ESP rhetoric: Meta text in Finnish-English economic texts. *English for Specific Purposes*, 12, 3-22.
- Mauranen, A. (2010). Discourse reflexivity – A discourse universal. *Nordic Journal of English Studies*, 9, 13-40.
- Nash, W. (1992). *An uncommon tongue*. London: Routledge.
- Rashidi, N., & Alihosseini, F. (2012). A contrastive study of metadiscourse markers in research article abstracts across disciplines. *Bulletin of the Transilvania University of Brasov*, 5(4), 17-23.
- Schiffrin, D. (1980). Meta-talk: Organizational and evaluative brackets in discourse. *Sociological Inquiry*, 50, 199-236.
- Swales, J. M. (1990). *Genre analysis*. Cambridge: Cambridge University Press.
- Valero Garces, C. (1996). Contrastive ESP rhetoric: Metatext in Spanish-English economics texts. *Journal of English for Specific Purposes*, 15, 279-294. [http://dx.doi.org/10.1016/S0889-4906\(96\)00013-0](http://dx.doi.org/10.1016/S0889-4906(96)00013-0)
- Vande Kopple, W. (1985). Some exploratory discourse on metadiscourse. *College Composition and Communication*, 26, 82-93.
- Williams, J. M. (1981). *Style: Ten lessons in clarity and grace*. New York: Harper Collins Publishers.