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Do Scholars Rely on Interactive Metadiscourse Markers? An Exploratory study of Research Articles in Applied Linguistics

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Abstract
Metadiscourse is an interesting field of inquiry which is believed to play a vital role in organizing and producing persuasive writing, based on the norms and expectations of people involved. It is based on a view of writing as a social engagement. Recent trends in the study of written texts reflect a growing interest in interaction between readers and writers. Several studies have studied metadiscourse from the descriptive and contrastive perspectives; there is a lack of experimental work on this topic. This study reports a comparative study of interactive metadiscourse markers in quantitative and qualitative research articles in Applied Linguistics to shed some light on the ways academic writers deploy these resources in a high stakes research genre to persuade readers in their own discourse community. . Drawing on Hyland s metadiscourse framework, the study examined the use of five types of interactive metadiscourse, together with their subtypes, in a corpus of 100 research articles. The analysis suggested how academic writers use language to offer a credible representation of their work in different fields, and thus how metadiscourse can be seen as a means of uncovering something of the rhetorical and social distinctiveness of disciplinary communities. Frame markers strategy was the mostly occurred strategy in Applied Linguistics. The findings are attributable to the knowledge-knower structures characteristic of the disciplines and the epistemologies underlying the research paradigms. These findings might have implications for the teaching of academic writing and for novice writers who would like to publish their research in academic journals. This study could help develop a more plausible academic writing syllabus, which brings less visible rhetorical features of research articles under the spotlight to help avoid possible overgeneralizations from native culture.
Keywords: Academic writing, Genre analysis, Interactive metadiscourse markers, Metadiscourse strategy, Research articles

Introduction

As claimed by Hyland (2004) linguists' interest in discourse in recent years is gradually shifting from the traditional focus on ideational dimension of texts and speech to the ways they function interpersonally. Such a view argues that writers or speakers do not simply produce a text to convey information and to represent an external reality.

The disadvantage experienced by those who use English as a foreign language in writing for publication is well documented both in the fields of applied linguistics (Flowerdew, 1999; Kaplan and Baldauf, 2005; St. John, 1987) and science (Benfield and Feak, 2006; Benfield and Howard, 2000).

In the literature related to academic discourse, there are two perspectives. The first, and the traditional one, perceives it as a mere account of scientific facts expressed through an impersonal and objective piece of writing. Discourse comprises facts that solely add up to the truth. The second perspective, which is the most fashionable and widespread, sees academic discourse as a form of social engagement, involving interaction between writers and readers. (Widdowson 1984; Crismore, Farnswarth 1990; Hyland 2000, 2005) among many others represent the second perspective. (Widdowson, 1984), for example, claims that academic genre, on the one hand, is like any other form of writing in requesting writers to consider the expected audience and anticipate their background knowledge, processing problems, and reaction to the text. The readers of an academic text, on the other hand and at the same time, try to predict lines of thought, interrogate authors on their positions, and evaluate work for its usefulness and importance to their own research (Hyland, 1994).

Traditional academic writing has considered that researchers should be objective and have an impersonal style when reporting their studies (Farrokhi and Ashrafi, 2009). This thought mainly shows preferences and general tendencies in academic writing. Academic discourse is the object of an interesting number of studies (Hyland and Hamp-Lyons, 2002). A great many of these are pedagogically oriented, focusing on student needs and competencies. The proliferation of courses on academic discourse in general and English for academic purposes in particular has entailed increased research activity into what language and communication tools the students must acquire to become fully socialized into their research community. Researchers (Thetela, 1997; Hoey, 2001; Hyland, 2005) argue that interaction in written texts can be conducted as that in the spoken text, though with different effects as a result of the different medium. This view has gradually reflected a perception of academic writing as social engagement, involving interaction between writers and readers. In such contexts, the process of gaining entry into these communities is seen as being dependent on awareness of, and competence in, the writing practices of the relevant discourse community. Another strand of research on academic discourse forms the basis for the first, namely that related to studies on how expert writers within a discourse community communicate with their peers. In many studies the two aspects, i.e., investigation of professional communication practices among experts and pedagogical issues relevant for novice communicators, go hand in hand (typical contributions may be found in Hyland, 1999; Ventola and Mauranen, 1991).

According to (Hyland, 2005), the research article (RA) is a genre where an orientation to readers is crucial in securing rhetorical objectives. While it is often considered a predominantly propositional and impersonal genre, the act of accrediting knowledge is a social process and involves making linguistic choices which an audience will recognize as persuasive. So if we view knowledge as "the social justification of belief" (Rorty, 1979), then it is clear that writers must consider the reactions of their expected audience, anticipating its background knowledge, processing problems, interests and interpersonal expectations. Simultaneously, readers are trying to predict lines of thought and interrogate authors from the perspective of their personal research goals (Bazerman, 1988). Thus academic writers seek to produce texts that evoke specific responses in an active audience, both informing and persuading readers of the truth of their statements by seeking to "weave discourse into fabrics that others perceive as true" (Harris, 1991).

The traditional view of the research article as an objective, neutral, informative and factual-oriented genre has been questioned by numerous studies (see e.g. Bazerman 1988; Swales 1990; Hyland 1998, 2000; Vassileva 1998).

Mastering English academic discourse is therefore not restricted to mastering English vocabulary, syntax, morphology etc. and the genre schemata of the discipline in question. It is also crucial to master the rhetorical strategies and genre practices specific to English academic discourse. As Vassileva (1997) points out: "It is . . . essential for any scientist anxious to become or remain a member of the international academic community to master the rhetorical organization of English academic discourse." As cultural differences in argumentation strategies and rhetorical means are embodied in language use, it is essential to have some knowledge of these differences while writing in a foreign language. Awareness of cultural differences within academic discourse, such as the differences in the use of hedges, is important for researchers who want to express themselves and read academic texts in languages other than their own.

In addition to the language aspect, disciplinary differences in the use of epistemic modality markers will be examined here. Much of the research investigating variation across disciplines has focused on differences in text structure, referring to formats such as the IMRAD model in the hard sciences and Swales' (1990) CARS model for introductions. But as Fløttum (2005) points out, "there is more to the genre of the research article . . . than a more or less straightforward structure to be identified and imitated by students".

Although genre schemata are important, it is equally important to focus on the rhetorical organization that takes place within the text. As hedging is an important element in the rhetorical organization of a text, the study of hedges across disciplines can tell us something about the argumentative strategies used in different disciplines. It is important to be aware of disciplinary differences, because results from one discipline cannot automatically be transferred to other disciplines. Every discipline has its own terminology and also, it seems, its own preferred rhetorical strategies. The content of an academic writing course should therefore be adjusted to the appropriate research field.

In recent years, there has been a considerable amount of interest in interactive and interactional metadiscourse signals of academic writing, expanding the attention of study beyond the textual perspective of texts, or how they characterize the world, to the ways they function interpersonally (Hyland, 2005). Academic authors do not only produce texts that represent an external reality, but also apply language to offer a plausible representation of themselves and their work, and to communicate social and cultural relations with readers. These written texts create and generate a relationship between the writer and the reader and the meaning of the text is conveyed through this interaction. Not only does the writer write, but the reader also has an active role in this interaction (Hoey, 2001). This is called the interactive nature of written text in which the reader is supposed to interpret the relationships between textual elements. Another framework is an interactional one in which the texts challenge their readers' curiosity about how to read, respond, and evaluate what was written about the subject matter (Hyland, 2005).

So, it seems clear that one of the writers' responsibilities is to provide readers with proper use and usage of language to talk about message through bringing different signals and patterns of written texts to readers' conscious awareness. One aspect of such language awareness is metadiscourse awareness which mainly refers to "self-reflective linguistic material referring to the evolving text and to the writer and imagined reader of that text" (Hyland and Tse 2004). Swales asserts that metadiscourse is "writing about the evolving text rather than referring to the subject matter" (Swales, 1990). Hyland and Tse (2004) believe that writing is viewed as an engagement between writer and reader which possess a social and communicative basis; and metadiscourse is related to the "ways

writers project themselves into their discourse to signal their attitude towards both the content and the audience of the text".

Researchers who analyze RAs for applied linguistics purposes attend to a wide variety of focuses from moves and strategies (Bhatia, 1999) to rhetorical features (Hyland, 2005). Persuasion, as an important objective in authoring RAs, is arguably partly achieved by employing metadiscourse. In simple words, metadiscourse, as defined by Hyland (2005), refers to an array of self-reflective expressions used to negotiate interactional meaning in a text, assisting the writer to express a viewpoint and engage with readers as members of a particular community. According to him, rhetoricians, applied linguists and composition theorists agree on using metadiscourse to refer to various linguistic tokens employed to guide or direct a reader through a text so that both the text and the writer's stance is understood.

It is also worth mentioning that within the past forty years or so, trends in ESP in general, and EAP in particular, have come a long way (e.g. register analysis, skill-based teaching, etc.) to finally opt for genre-based teaching of writing where the concepts like social and cognitive genre and rhetorical structure play a significant role in teaching writing (Basturkmen, 2006; Bruce, 2003, 2005).

However, despite a wide interest in such analyses, no effort is made so far to compare and contrast different sections of the popular social genre of RAs which allegedly have different cognitive genre (Bruce, 2003). Thus, for a genre-specific characterization of academic writing, it is quite helpful to investigate different sections of research articles to find out how certain metadiscursive strategies associate with certain cognitive genres. To capture yet more finesse, an attempt is also made to study a variety of disciplines which apparently follow the tenets of different research paradigms.

On the whole, finding out about the currently practiced norms of employing metadiscourse in different sections of RAs across sciences can provide insight into the rhetorical structure and, hence, can be used in academic writing classes. Therefore, this study sets out to analyze RAs to discover how authors take advantage of metadiscourse strategies to help them reach their audience in the canonical sections of RAs across sciences, and then compares and contrasts the use of different strategies in an attempt to provide a pedagogically useful picture of RAs' internal structure.

This study investigates the distribution of metadiscourse in the canonical divisions of RAs, namely *Introductions*, *Methods* and *Results and discussions* the journals that did not follow this format in one way or another were discarded and replaced by random alternatives.

According to Williams (1981) Metadiscourse is discourse about discourse, intended to direct rather than inform readers. Metadiscourse includes linguistic elements which do not refer to aspects of external reality (as propositional or referential elements do) but to the organization of the discourse itself and to aspects of the relationship that develops between the author and the reader (Crismore 1989; Vande Kopple 2002). What Vande Kopple labels referential meaning is equivalent to what Halliday (1978) calls ideational meaning. Vande Kopple (1985), using the broad definition of metadiscourse, suggests that metadiscourse conveys interpersonal and/or textual meanings. Interpersonal metadiscourse ―helps writers express their personalities, their evaluations of and attitudes toward ideational material, shows what role in the communication situation they are choosing, and indicates how they hope readers will respond to the ideational material‖ (Vande Kopple 2002). Textual metadiscourse helps writers relate and connect bits of ideational material within a text and helps the text make sense in a particular situation for readers. Crismore, Markkanen and Steffensen (1993) point out that interpersonal and textual functions are important from the point of view of teaching composition, and they use the term metadiscourse to refer to linguistic items that explicitly serve the interpersonal and textual functions of language.

In the broad definition, metadiscourse is based on a view of writing as social engagement in which writers project themselves into their discourse to signal their attitudes and commitments (Hyland 2005). Metadiscourse elements are rhetorical tools that make a text reader-friendly and as such enable

the writer to reach the audience. Research over the past two decades has shown that the use of metadiscourse in writing may vary from one language and culture to another and that the conventions followed in its use may be different in different cultures (Abdollahzadeh 2003; Crismore et al. 1993; Mauranen 1993). There is also burgeoning research on both the role of metadiscourse presence in text comprehension and its instructional impact on reading and writing.
According to Hyland, (2004) Metadiscourse is particularly important at advanced levels of academic writing as it is represents writers' attempts to present and negotiate propositional information in ways that are meaningful and appropriate to a particular disciplinary community. On one hand, metadiscourse enables readers to recover an interpretation consistent with their disciplinary knowledge and community-specific rhetorical expectations. Here the writer needs to make assumptions about the reader's processing abilities, contextual resources, and intertextual experiences. On the other hand, metadiscourse focuses on the participants of the interaction, and the adoption of an acceptable academic persona. Here the writer makes choices to express a 'voice' consistent with disciplinary norms by revealing a suitable relationship to his or her data, arguments, and audience (Hyland, 1998; Hyland and Tse, 2004). Metadiscourse thus provides a link between texts and disciplinary cultures, helping to define the rhetorical context by revealing some of the expectations and understandings of the audience for whom a text was written.

As Hyland, (2004) claims, the importance of metadiscourse as an analytical tool therefore lies in its close association with the contexts in which it occurs. That is, the ways that writers present themselves, negotiate an argument, and engage with their readers is closely linked to the norms and expectations of particular cultural and professional communities. It is a response to the writer's evaluation of his or her readers' need for elaboration and involvement, ensuring that he or she supplies sufficient cues to secure an understanding and acceptance of propositional content. Metadiscoursal analysis is therefore a valuable means of exploring academic writing and of comparing the rhetorical preferences of different discourse communities.

In addition to this, metadiscourse offers teachers a useful way of assisting students towards control over disciplinary-sensitive writing practices. Because it shows how writers engage with their topic and their readers, exploration by students of metadiscourse in their own and published writing can offer useful assistance for learning about appropriate ways to convey attitude, mark structure, and engage with readers.

In sum, metadiscourse is recognised as an important means of facilitating communication, supporting a writer's position, and building a relationship with an audience. Its significance lies in the role it plays in explicating a context for interpretation and suggesting one way which acts of communication define and maintain social groups. Yet despite this importance surprisingly little is known about the ways it is realised in key genres in which L2 writers participate.

Models of metadiscourse
Early studies of metadiscourse, as well as some of the recent analyses, made use of the Hallidayan distinction between textual and interpersonal macro-functions of language (Halliday, 1973) to recognise two levels to metadiscourse. The first level, called 'textual metadiscourse', contributes to the deployment of rhetorical strategies used to express a theory of experience in a coherent way. It provides a framework which clarifies the schematic structure of the text. The second level, labelled 'interpersonal metadiscourse', concerns the interactional and evaluative aspects of the author's presence in his/her discourse. It expresses the writer's individual persona. This type of metadiscourse is used to convey attitudes to propositional material and to involve the writer in more intimacy and dialogue with the reader. Interpersonal metadiscourse indicates the writers' assessment of information and their conviction in its reliability or truth, thereby projecting a strong, authoritative and credible authorial presence in the text.

In the metadiscourse literature, a number of taxonomies can be seen (Abdi *et al*., 2010; Ädel, 2006; Crismore, 1989; Dafouz-Milne, 2008; Dahl, 2004; Hyland, 2005; Rahman, 2004; Vande Kopple, 1985, 2002). The taxonomies demonstrate a theoretical fine-tuning as time develops.

The early models of metadiscourse

Williams (1981) categorises written metadiscourse into three large common types: hedges (*possibly*) and emphatics (*certainly*); sequencers (*in the next section*) and topicalizers (*with regard to*); narrators and attributors (*according to X (2007)*).

Based on the categories of both Meyers (1975, cited in Crismore 1983) and Williams (1981), Crismore (1983) classified written metadiscourse into two general categories: informational and attitudinal. The first category includes goals (*the purpose of this study*), pre-plans (*this chapter is about*), post plans (*in the previous section*), and topicalizers. The second category includes saliency (*still more important*), emphatics, hedges, and evaluatives (*unfortunately*). These two categories are similar to the textual and interpersonal function of metadiscourse.

Vande Kopple (1985) categorised metadiscourse into seven types, among which the first four are textual and the remaining three are interpersonal. His textual category includes: text connectives (*however*), code glosses (*this means that*), illocution markers (*to conclude*), and narrators. The interpersonal category includes: validity markers (hedges, emphatics, and attributors), attitude markers (*surprisingly*), and commentaries (*you might not agree with that*). Crismore and Farnsworth (1990) extended the scope of metadiscourse to include a new category: scientific commentaries. Scientific commentaries include textual and typographical marks such as quantitative (*measure 19*), source (*Gould, woodruff, and Martin, (1974)*), graphics (*table 5*), captions (*converted from original data in micrometer units*), and Latin terminology (*post scriptum*)

By investigating textual and interpersonal metadiscourse, some studies take a broad approach to metadiscourse. Examples of this are Vande Kopple (1985), Crismore et al. (1993), Markkanen et al. (1993) and Hyland (1998; 2004). Other researchers, however, considered only textual metadiscourse in their studies, and thus a narrow approach: Schiffrin (1980), Mauranen (1992; 1993a; 1993b), Bunton (1999), Dahl (2004), Valero-Garces (1996), Moreno (1997; 2004) and Peterlin (2005). To sum up, the distinctive feature separating broad and narrow approaches is the inclusion among the former of stance – or what Vande Kopple (1985) calls 'attitude' – and validity markers.

In recent years, there has been an upsurge of interest in metadiscourse albeit with little concern for standard theoretical assumptions such as the distinction between textual and interpersonal metadiscourse. Against such standard assumptions, some metadiscourse analysts argued for the reconsideration of metadiscourse in semantic and pragmatic terms.

They claim that the central boundary between textual and interpersonal metadiscourse is rather fuzzy (Moreno 1998; Hyland 2004; Hyland and Tse 2005) and that all metadiscourse markers are interpersonal, in that they take account of the readers' knowledge, textual experience and processing needs as well as providing authors with rhetorical means to achieve this.

The models of reflexive metadiscourse developed by Mauranen (1992; 1993b) and Adel
(2006) also fit into this new direction, in that they consider all metadiscourse as interpersonal, and equally does the model presented here. However, the latter models perceive another distinction in metadiscourse which was not considered previously. Namely this is reflexivity of the current text, writer and reader. According to this distinction, 'text connectives', 'code glosses', 'illocution markers' and 'commentaries' qualify as reflexive while 'validity' and 'attitude markers' are non-reflexive because they refer to the internal state of mind of the writer as an experiencer in the real word, or as writer of other texts. 'Narrators' also qualify as non-reflexive because they refer to writers of other texts or to the current writer but as writer of other texts.

Hyland (2005) developed a new taxonomy which is summarized in Table 1. His model is based on a functional approach which regards metadiscourse as the ways writers refer to the text, the writer or the reader. It acknowledges the contextual specificity of metadiscourse and, at a finer degree of delicacy, employs Thompson and Thetela's (1995) distinction between *interactive* and *interactional* resources to

acknowledge the organizational and evaluative features of interaction (Hyland, 2005). The model proposed by Hyland (2005) assumes the two main categories of *interactive* and *interpersonal* for metadiscourse.

Table 1. An Interpersonal Model of Metadiscourse (Hyland, 2005)

Category	**Function**	**Examples**
Interactive	**Help to guide the reader through the text**	**Resources**
Transitions	express relations between main clauses	in addition; but; thus; and
Frame markers	refer to discourse acts, sequences or stages	finally; to conclude; my purpose is
Endophoric markers	refer to information in other parts of the text	noted above; see figure; in section 2
Evidentials	refer to information from other texts	according to X; Z states
Code glosses	elaborate propositional meaning	namely; e.g.; such as; in other words
Interactional	**Involve the reader in the text**	**Resources**
Hedges	withhold commitment and open dialogue	might; perhaps; possible; about
Boosters	emphasize certainty and close dialogue	in fact; definitely; it is clear that
Attitude markers	expresses writers' attitude to proposition	unfortunately; I agree; surprisingly
Self mentions	explicit reference to author(s)	I; we; my; me; our
Engagement markers	explicitly build relationship with reader	consider; note; you can see that

A more recent model was introduced by Abdi, Tavangar Rizi, and Tavakoli, (2010). In this model two maxims are added to complement the Gricean maxims (Table 2, below). Also, the table includes the two newly introduced MSs of collapsers and disclaimers and their maxims. Moreover, the interaction category is added to the already-existing categories of quantity, quality and manner to make the model appropriate to metadiscourse marking. The Overall Orientation column acts as the supermaxims of the relevant categories. All in all, the table represents the CP model hypothesized to be at work in the employment of metadiscourse.

This model, besides providing a framework for the use of MMs, shows a different theoretical conceptualization of metadiscourse. We include the model here to remind that notable different approaches are gradually gaining ground.

Table 2. Abdi et al.'s CP-Based Metadiscourse Model (2010)

Metadiscourse strategy	Maxims	Cooperation category	Overall orientation
Endophoric markers	1. Make your contribution as informative as is required. 2. Refer the audience to other parts of the text to avoid repetition. 3. When repetition is inevitable, acknowledge it to avoid inconvenience.	Quantity	Avoiding prolixity to make the text manageable and friendly
Collapsers	Avoid undue repetition by using proper referents.		
Transitions	1. Properly signpost the move through arguments. 2. Be perspicuous.	Manner	Clarifying steps and concepts to make the text comprehendible
Frame markers	1. Be orderly. 2. State your act explicitly.		
Code glosses	1. Avoid ambiguity. 2. Avoid obscurity of expression.		
Evidentials	1. Do not say that for which you lack adequate evidence. 2. Cite other members of the community to qualify your propositions.	Quality	Building on evidence to make the propositions tenable
Hedges	1. Do not say what you believe to be false. 2. Do not say that for which you lack adequate evidence. 3. Mark if evidence is not enough. 4. Do not use hedges in widely accepted or supported propositions.		
Boosters	1. Do not say what you believe to be false. 2. Do not say that for which you lack adequate evidence. 3. Mark if evidence is notable. 4. Do not use emphatics if evidence is not enough.		
Disclaimers	1. Do not say that for which you lack adequate evidence. 2. Outline the framework within which you would like your propositions to be interpreted. 3. Explicitly distance yourself from untenable interpretations.		
Attitude markers	Express your feelings or avoid them, according to norms and conventions.	Interaction	Making people and feelings visible to promote rapport
Self-mentions	Enter your text or sidewalk it, according to norms and conventions.		
Engagement markers	1. Draw the audience in or ignore them, according to norms and conventions. 2. Give directions to your readers to follow when appropriate.		

Although notable difference can be seen among the models, the significance of metadiscourse in written communication, as well as variations in different contexts, is demonstrated by several studies no matter what theoretical standpoint is supported (Ädel, 2006; Crismore, 1990; Hyland, 2004; Thompson, 2001). Nonetheless, the difference in the theoretical approaches could give rise to various pedagogical orientations and thereby probable varying efficiencies.

In addition to the absence of this distinction in the early developed models of metadiscourse, there is the problem of fuzziness. Earlier models only defined metadiscourse without setting clear criteria for the identification of metadiscursive instances as distinct from other kernels. Moreover, the broad approach to metadiscourse adopted by the earlier models does not allow for a functional analysis of

metadiscourse occurrences. In that, Hyland (2000) identified over 300 possible cases of metadiscourse in different disciplinary discourse. This huge number of cases hampers the feasibility of functional analyses in large corpora.

Method

The RAs dealing Applied Linguistics were taken to be the corpus of the study. It should be noted that since NS and SS are generally associated with different research paradigms (Guba and Lincoln, 1994), it was thought that a sort of *paradigmatic identity* could prompt different rhetorical choices and, hence, different ways of metadiscourse marking.

For the purpose of this study, 100 research articles were selected from the *sciencedirect* database. In order to ensure a reasonable coverage, we randomly selected 100 articles to build the corpus of the study.

Since this study was interested to find answers to the questions relating to the distribution of metadiscourse in the canonical divisions of RAs, namely *Introductions*, *Methods* and *Results and discussions* (Swales, 1990), the journals that did not follow this format in one way or another were discarded and replaced by random alternatives.

A recent taxonomy of metadiscourse formulated by Hyland (2005), which appears in Table 1 below, was taken as the model. It should be noted that Hyland's model was preferred for being recent, simple, clear and comprehensive (Abdi, Tavangar and Tavakkoli, 2010).

The Introductions can be considered as integral parts of research articles. On the other hand, Introductions are known to be problematic for most academic writers since getting started on a piece of academic writing is often regarded difficult. Swales (1990) in his CARS model for research article Introductions states that the main concerns of the Introduction section of a research article are to contextualize a research study being presented in the relevant literature, claim its novelty, and present main features of the study. In order to meet this end, the writers try to show the problem or gap by reviewing the previous works and emphasize the significance of their own work. According to Harwood (2005) the Introduction part constitutes "a vital part of packaging, designed to alert potential users, to persuade them that this is a valuable product, one that they cannot do without".

Furthermore, according to Swales (1990, p. 133) the *Discussion* section "mirror-images the *Introduction* by moving from specific findings to wider implications". The main rhetorical function of the *Discussion* is to contextualize the reported study and relate it to previous work in the field, reflecting a sense of membership in the larger scientific community. Furthermore, the Discussion section is the very part of the research article in which researchers try to persuade their readers.

In view of the above, the study was further confined to Introduction (Int) and Results and Discussion (RD) sections as a persuasive text type.

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Procedure

After building the corpus, five subcategories of code glosses, endophorics, evidentials, frame markers and transition markers as classified by Hyland (2005) were selected, and their possible ambiguities and various functions were taken into account. Linguistic realizations of metadiscourse strategies were recognized according to the criteria of the model before and while analyzing. The propositions containing interactive metadiscourse markers were identified functionally and manually throughout the corpus since there is a common belief among scholars that metadiscourse is inherently a fuzzy and a functional category and that the metadiscursive expressions can be multifunctional and context dependent (Ädel, 2006; Crismore, 1990; Crismore *et al*. 1993; Salager-Meyer, 1994, 1998). The number of IMMs in each category and in each part of the RAs was then counted and the relative frequency of them was calculated per 1,000 words.

The manual frequency count was used following the Systemic- Functional Grammar (SFG) of Halliday (1978, 1994), as opposed to the machine-supported concordancing strategies recently used on a wide scale in corpus linguistics. In computer-assisted analysis, there is a risk of assuming external reference items as metadiscourse, which could damage the validity of research. However, in order to achieve a higher reliability in our manual analysis, three colleagues examined the corpus and the final data is the average of three independent data.

Meanwhile, since a single judgment was deemed to be inadequate for identifying IMMs, three colleagues reviewed the data and the results were averaged out to yield one more reliable set of data.

Results and Discussion

In order to find out the differences in the distribution of five strategies in RAs in Applied Linguistics, RF of IMMs in each strategy was computed in this discipline. Table 4.2 presents the distribution of these five strategies in Applied Linguistics.
Table 3 shows the distribution of IMMs in the Introduction section of RAs in both disciplines.

Table 3. The Distribution of IMMs across Different Rhetorical Sections of RA in Applied Linguistics

Science	
Discipline	AL
Code Glosses	30.536
Frame markers	92.456
Endophorics	56.136
Evidential	48.893
Transition	48.046
Total IMMs	276.726
Number of words	342013

The relative frequency of IMMs was calculated in the Introduction and Results and Discussion sections of research articles in Applied Linguistics.

According to Table 3, the RFs were as follows: Frame markers (92.456), Endophorics (56.136), Transition (48.046), Evidential (48.893), and Code glosses(30.536). The lowest RF belonged to Code (30.536).
In this Table RAs in Applied Linguistics have more Frame markers, Endophorics, Transition and Evidentials compared to Code glosses.

To better illustrate these findings the results of the total distribution of IMMs in the Introduction and Results and Discussion sections of research articles in Applied Linguistics are shown in Figure 1.

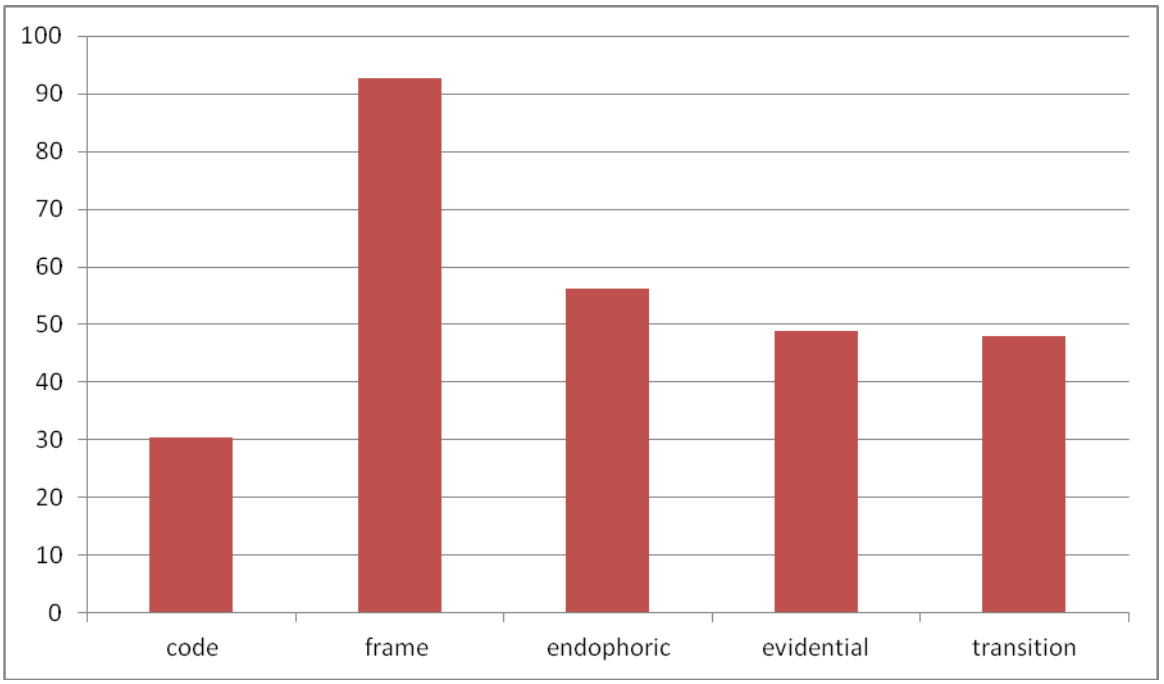

Figure 1. The total distribution of IMMs in Research articles in Applied Linguistics.

The most frequent sub-category in the corpus is frame markers, reflecting the critical importance of text boundaries or elements of schematic text structure in academic writing and the need for writers to sequence, label, predict and shift arguments, making the discourse clear to readers or listeners. In fact, sequencing, label stages, announce goals, shift topic used to present sequence parts of the text or to internally order an argument, often acting as more explicit additive relations. In general, the writers' use of metadiscourse provided framing information about elements of the discourse.

Evidentials are metadiscoursal features which provide intertextual support for the writer's position, a frame within which new arguments can be both anchored and projected. Evidentials guide the reader's interpretation and establish an authorial command of the subject. Evidentials distinguish *who* is responsible for a position. According to Becher (1989), writers often have to pay greater attention to elaborating a context through citation to demonstrate a plausible basis for their claims. The number of Evidentials in Applied Linguistics indicates the importance of locating academic claims within a wider disciplinary framework. Explicit reference to prior literature is a substantial indication of a text's dependence on context and thus a vital piece in the collaborative construction of new knowledge between writers and readers. The embedding of arguments in networks of references not only suggests an appropriate disciplinary orientation, but also reminds us that statements are invariably a response to previous statements and are themselves available for further statements by others. New work has to be embedded in the literature of the community to demonstrate its relevance, importance and the credentials of the writer. Scientists cited numerous studies in order to build an argument to support their main work and to make new claims more acceptable to discourse community members. Our analysis revealed that the writers in Applied Linguistics tried to determine the detailed picture of the relationship between their own research and previously done researches. This indicated that these writers present the generally accepted ideas by reviewing the past studies. In addition, it presented that these writers are knowledgeable enough in their field of study.

Dahl, (2004) believes that the high number of endophorics in research articles can be related to its more heterogeneous organization that in turn imply that writer must signal which discourse act is being performed.

In the case of Transitions, according to the findings of this study, the writers in this discipline are apparently aware of their importance in RAs. According to Table 3, the relative frequency of Transitions in Applied Linguistics is (48.056), perhaps reflecting the more discursive nature of this discipline and the need to rely more on the careful crafting of a coherent and persuasive discourse.

According to Hyland (2005), transitions are central to academic writing as they represent writers' attempts to ensure readers are able to correctly recover their intentions. They are mainly conjunctions and adverbial phrases which help readers interpret pragmatic connections between steps in an argument. They signal additive, causative and contrastive relations in the writer's thinking, expressing relationships between stretches of discourse. It is unimportant whether items here contribute to syntactic coordination or subordination, but to count as metadiscourse they must perform a role internal to the discourse rather than the outside world, helping the reader interpret links between ideas.

According to Table 3, the least used strategy is Code in this discipline. From the data analyzed in this study, what I have found is that the use of Code was indeed low, Code in Applied Linguistics (30.536).

Base on the findings of this study in Table 3, the high relative frequency of IMMs may show that writers tend to establish more coherent text, hence providing more guidance for the reader to comprehend the purpose of the text.

As a result, we can say that IMMs are vital rhetorical devices (Abdi, *et al*., 2010) with a variety of functions central to build coherence and organization into the RAs. The results also reveal that writers of RAs in this discipline are apparently equally aware of the importance and contribution of such markers in RAs. As it is evident in Jalilifar and Shooshtari (2011) we could say that while it was true that rhetorical decisions may sometimes reflect either conscious choices or unreflective practices, the analysis of metadiscourse patterns indicated that effective argument involves a community-oriented deployment of appropriate linguistic resources to represent signposting, organization, and the expectancy rhetoric.

Guba and Lincoln (1994) believe that the property of being *academic* entails a multitude of generally respected rhetorical conventions among all academia which happens to obscure the so called positivist distinction between soft and hard sciences. According to (Dörnyei, 2007) the recent pragmatic research paradigm could be conceived as playing a role in ironing out the already staunch and opposing positions.

Lack of familiarity with these resources (IMMs) of academic discourse may cause difficulties for those students, teachers, and researchers who want to be considered as a member of disciplinary community. According to (Dafouz-Milne, 2008) the awareness of IMMs provides this opportunity for learners to meet the needs of the audience. Therefore, it seems necessary to devote special attention to the foreign language learners of English in the research or ESP course. Our understanding of IMMs also needs to be sharpened by doing further research in this area of rhetorical competence.

This study has pedagogical implications for teachers, writers, students, syllabus designers, teacher educators and researchers.

The findings of this study provide writers with a knowledge of appropriate language forms, shifts writing instruction from the implicit and exploratory to a conscious manipulation of language and choice.

With extensive support for consciousness raising activities in adults' language learning (e.g., Myles, 2002; Svalberg, 2007), this study also could motivate the tendency to change the implicit instruction to a conscious manipulation of rhetorical structure.

This study attempted to shed some light on the complex process of academic research articles format and, although it investigated academic English in research articles, similar research could be carried out in any genre and language. Given the wide variety of language groups in many nations around the world, it is my hope that the findings will inspire further research and discussion on the most effective ways to educate all students in diverse settings.

This study had the aim of investigating the effects of metadiscourse markers on research articles. Future studies can target teaching writing and reading in ESL and EFL situation as well, because although the use of some markers, like hedges, has been investigated in recent years, the use of other metadiscourse markers by different writers has not been investigated seriously. Particularly it would be useful to investigate those markers in different communities and genres.

Future studies might also aim at investigating metadiscourse change over time in different speech communities, styles, and genres.

It is hoped that this characterization would offer a rough image of metadiscursive structure of different sections of research articles. Coupled with other studies in the future, this study could help develop a more plausible academic writing syllabus, which brings less visible rhetorical features of research articles under the spotlight to help avoid possible overgeneralizations from native culture.

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