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Multidimensional structural linguistic analysis of moves in abstracts: A corpus-based approach

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Abstract

This paper reports a multidimensional move analysis and identifies metadiscourse features of abstract sections of 30 Scopus-indexed articles in the Social Sciences and identifies the interactive stylistic resources used by the authors. The results show that the authors used various interactive resources, to help readers understand a text. Among the resources are: explaining, orienting and guiding the readers through the discourse. Also by using interactive metadiscourse, the authors organize the main contents by considering readers' knowledge, experiences and needs through transitions, which indicate how the authors intend the connections between elements of the discussion to be comprehended.

Keywords: abstract writing; academic writing styles; move analysis; interpersonal metadiscourse.

Análisis lingüístico estructural multidimensional de movimientos en resúmenes: Un enfoque basado en corpus

Resumen

Este artículo presenta un análisis de movimientos multidimensionales e identifica las características de metadiscurso de las secciones abstractas de 30 artículos indexados a Scopus en Ciencias Sociales e identifica los recursos estilísticos interactivos utilizados por los autores. Los resultados muestran que

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los autores utilizaron varios recursos interactivos para ayudar a los lectores a entender un texto. Entre los recursos se encuentran; Explicar, orientar y guiar a los lectores a través del discurso. También mediante el uso del metadiscurso interactivo, los autores organizan los contenidos principales considerando los conocimientos, las experiencias y las necesidades de los lectores a través de las transiciones, que indican cómo los autores pretenden comprender las conexiones entre los elementos de la discusión.

Palabras clave: escritura abstracta; estilos de escritura académica; análisis de movimientos; metadiscurso interpersonal.

1. INTRODUCTION

The research article (RA) is no doubt the most studied genre in English for Academic Purpose (EAP). As Hyland (2009) states, it remains the "pre-eminent genre of the academy" and "is the principal site of knowledge making". Swales' (1981, 1990) seminal work on the rhetorical organization of research article has been followed by a large number of studies exploring the rhetorical organization of various parts of this genre, analyzing lexico-grammatical features characterizing this genre, and cross-disciplinary and across linguistics variation in the genre structures. As a pre-eminent genre produced in the academic community, the RA has also been the site for the exploration of a number of rhetorical aspects of academic discourse such as stance, engagement, evaluation, and author presence. These studies increased our understanding of this genre and the epistemologies of different disciplinary community. A number of previous studies have focused on analyzing the organizational patterns of RA sections in terms of moves such as analyzing the introduction section, methods section, and the discussion section. Some of these studies have analyzed the stylistics and grammatical features accompanied to sentence levels such as modality, hedging, citations, and personal pronouns (Abarghooeinezhad & Simin, 2015). Swales & Feak (2009) defined the

genre as "a type of text or discourse designed to achieve a set of communicative purposes" (p.1). According to them, the other components of RA is called part-genres such as the RA abstracts. The abstracts have also received extensive attention in recent years as it is the brief summary of the RA (Badr Parchin & Davaribina, 2016).

Research abstracts have gained extreme importance due to the huge academic information in the world. Abstracts are seen as the readers' doorway to view an article, journals' selection for contributions, and for conferences to accept or reject articles (Lores, 2004). Therefore, recent research articles are more likely to be accompanied by more and more informative abstracts that would enable them to get acceptance to internationally-recognized journals.

The prior studies in this field have studied RA abstracts from various disciplines, such as Medicine, Engineering, and Psychology. However, there is a need for more comparative studies that compare RA abstracts in the field of Applied Linguistics (Nasseri & Nematollah, 2014). In addition, the lack of structural knowledge often makes English linguists utilize self-strategies in their writing of research articles. These linguists attempt to read abstracts written by other researchers in order to get ideas and information about the structure of the research abstract and the way of writing it. This could lead to a lack of creativity, critical thinking, subjectivity, and innovations (Abarghooeinezhad & Simin, 2015). Therefore, a considerable number of English articles are rejected by reputable journals due to the authors' rhetorical deviations. The lack of information about the rhetorical features could lead to difficulty in producing informative and structured abstracts (Ibragimova, 2016). The

well-known abstracts would attract more readers and enhance the opportunity of these abstracts to be indexed and cited in internationally-recognized journals (Marefat & Mohammadzadeh, 2013).

2. LITERATURE REVIEW GENRE ANALYSIS

Genre analysis first appeared in the field of ESP in the 1980s. Previous studies in this area indicated the different influences on Genre Analysis such as "genre as social action", the examination of learners' writing, and genre as new rhetoric (Paltridge, 2007). Notably, the word "genre" indicates various types of artistic and literary works; however, linguists have extended its usage to cover classes of language use and all areas of communication (Allison, 1999). The term "genre" is defined by Swales (1990) as "a class of communicative events, the members of which share some set of communicative purposes". Apparently, this definition reveals that a genre is classified due to its communicative purpose. The description of the rhetorical structure of genre moves plays a vital role in the field of genre analysis.

2.1. Move-Step Analysis In Ra

The move-step analysis in RA was first introduced by Swales (1981, 1990) and it was on the structure of RA's introductions. Since then, several studies have been conducted by genre analysts on the discourse of RA in terms of move structures. However, Swales' (1990) definition of genre analysis received a number of critiques. Askehave & Swales (2001)

noted that the common purpose of written texts is not always clear and some texts have multiple communicative purposes. Hence, genre study in terms of move analysis has been paid great importance in the last few years as it has great value in understanding the nature of the discourse being examined.

Furthermore, the findings of move-step analyses have invaluable pedagogical implications for both reading and writing classes (Askehave & Swales, 2001). Moves in genre analysis is defined as a "discoursal or rhetorical unit that performs a coherent communicative function in a written or spoken discourse" (Swales, 2004). Each move of a written text has its own role and communicative purpose, which, together with other moves, contributes to the general purpose of the text (Pho, 2009). Rhetorical moves can be realized through one or more steps, but not all moves contain constituent steps. These moves or steps are functional units, which can be obligatory or optional in a genre. Regularly occurring steps or moves in a genre are said to be obligatory; others occurring less frequently are considered optional. Nevertheless, the criteria for considering obligatory units are not harmonious. In some studies, obligatory move or step occurs in 50%-80% of a written text.

2.2. Genre Analysis Of Ra Sections

Research articles are one of the most widely studied genres in academic writing. Prior studies in this field have examined the organizational patterns of RA sections. The preliminary concern of these

studies was the introduction section of RAs. Swales (1981) examined the structure of RA introduction from a wide variety of disciplines and indicated that there is four basic move structure in the introduction of RAs: 1. Establishment of the research field, 2. Reporting prior research, 3. Preparing for the present research, 4. Introducing present research. Later, Swales (1990) revised the structure to a three-move pattern called Create-a-Research-Space-Model (CARS). This model contains three moves: 1. Establishing a territory, 2. Establishing a niche, and 3. Occupying the niche. This model has influenced many later studies on the structure of the introduction (Bhatia, 1997; Samraj, 2005).

A huge amount of research works is being published around the world every year, and RA abstracts have become an important element to assist readers in selecting appropriate readings. However, RA abstracts are different from RAs in three aspects: function, rhetorical structure, and linguistic realizations (Lorés, 2004). Due to this particular difference, a number of analyses have been conducted to determine the textual organization of RA abstracts. This organization includes the macro-level features of textual organization, and micro-level features at the sentence level (Pho, 2009). Some of these studies employed the model of five-moves which included: situating the research (M1), presenting the research (M2), describing the methodology (M3), summarizing the results (M4), and discussing the research (M5). The results of these studies concluded that M2 and M3 were essentially compulsory moves in the genre, and the other moves required different linguistic resources to realize theme, tense choice, and voice choice. Other studies have conducted genre analyses employing either CARS or IMRD model. Lores (2004) carried out a genre analysis on a corpus of thirty-six RA abstracts in the linguistics field. The

findings of her study revealed that about 61% of those abstracts followed the IMRD model, about 31% of them followed the CARS model, and about 8% showed employment of the two models. Also, three RA abstracts functions were inferred: the indicative, the informative, and the informative-indicative function. The results of this study might explain why previous studies were not consistent in terms of rhetorical organizations of abstracts and the inflexible description of the abstracts' organization.

2.3. The Scope Of Metadiscourse

Metadiscourse has often been described as "text about text" or "discourse about discourse" (Ädel & Mauranen, 2010). It can certainly be thought of as simply discourse that discusses text or discourse on a meta-level, but in reality, metadiscourse is a more complex phenomenon. Hyland (2000) defines the scope of metadiscourse being a broad, interactive model as "the author's linguistic and rhetorical manifestation in the text," as a way of creating a reader-friendly discourse that conveys the author's opinions and credibility. Features of metadiscourse that seek to express the author's own attitude or to persuade the reader do not merely add non-propositional information to the text: they function as writer-reader interactions.

Metadiscourse has been studied since the late 1970s (Boggel, 2009), but the linguistic features and rhetorical concepts it encompasses have been studied much earlier. In his 1956 model of the functions of language, Jakobson (1985) wrote of the concept of metalanguage in

linguistics, borrowing the term from the study of logic and mathematics. In linguistics, the function of metalanguage is to talk about language itself, about linguistic elements including sound, structure and meaning. Another function Jacobson (in Ädel & Mauranen, 2010) suggests is the expressive function in a language where the writer's or the speaker's presence can be noticed, e.g. in first- and second-person pronouns or imperative clauses. The expressive function exists also for phrases such as to summarize, where the author is only implicitly recognized as the agent. In another early study of metadiscourse, Schiffrin (1980) writes about meta-talk having a two-fold purpose; it is both for organizing the text flow and for evaluating the content of it. It thus applies to both the informational and the expressive plane of language. The features of Schiffrin's framework include verbs of saying, operators that modify propositions, and noun phrases that refer to different sections of text.

A framework of metadiscourse that has been highly influential and widely adopted in later studies is one proposed by Vande Kopple (1985). The model follows Joseph Williams (Williams, 1981; in Vande Kopple, 1985) in treating metadiscourse as a text about text and suggests that it does not expand propositional information but is concerned with organising the text and the presence of the author and the reader in the text. Vande Kopple (1985) shows how a writer can use linguistic devices to connect or explain ideas, to remind the reader of previous sections of text, or to spell out discourse goals. The writer can also guide a reader's understanding and assessment using validity markers which estimate the trustworthiness of a proposition, e.g. clearly or perhaps (Din Mohammad et al. 2018).

As metadiscourse encompasses both devices for organising and evaluating, most frameworks draw a line between these two functions. Vande Kopple. (1985) categorises the devices as marking either textual or interpersonal metadiscourse. His division echoes the textual and interpersonal metafunctions presented in M.A.K. Halliday's Systemic Functional Grammar (SFG) (Halliday & Matthiessen, 2014). In SFG, the textual metafunction of a clause is concerned with making the discourse flow coherent and continuous; the interpersonal metafunction is concerned by the ways a language is used for enacting relationships, encompassing the author's attitudes towards both the reader and the topic at hand. In their study of metadiscourse in persuasive writing by students, Crismore et al. (1993) adapt and reorganize Vande Kopple's (1985) framework but retain the distinction between textual and interpersonal. Hyland (2005), who base their models on that of Crismore et al. (1993), also follow the textual/interpersonal distinction.

However, Hyland (2005) emphasise that both textual and interpersonal model is concerned with the author's self-awareness of the discourse, that is, with an awareness of not only the text but also of the text as effective communication. Thompson and Thetela (1995) distinguish between reader-friendly (interactive) and reader-managing (interactional) rhetoric choices. Building on this and on previous models of stance and engagement Hyland (2005) proposed new names for the two dimensions of model: the interactive and the interactional, respectively. Using the interactive resources , the author guides the reader through the content of the text and with interactional resources they persuade and "involve the reader in the argument" (Hyland, 2005). Turning to the other half of the interaction, the writer, interactional model markers such as

attitude and modality markers also form the perceived persona of the writer (Hyland, 2005).

3. RESEARCH METHODOLOGY THE CORPUS

The method used in the present study include applying the computer-assisted corpus analysis proposed by Manvender (2014, 2012) and a genre-specific structural linguistic analysis (Manvender, 2014). Altogether, 30 abstracts were selected from five ISI-indexed journals, with abstracts published in issues of the journals between 2010 and 2015, to reflect current abstract writing practices. The abstracts were produced for various topics in the field of Social Science. The five journals of Linguistics selected from the Web of Science have the highest impact factors in 2016, according to Thomson Reuters. The journals are in the specific linguistic field of cognition, cognitive psychology, communication, memory and language, and language and social interaction.

3.1. RESEARCH INSTRUMENT

As a novel strategy, the present study employed Pho's (2009) move framework, which was adapted from Dos Santos's (1996) and Swales's (1981) five-move pattern. According to Pho's framework, five moves are involved in the preparation of an abstract, namely; situating the research (M1), presenting the research (M2), describing the methodology (M3), summarizing the findings (M4), and discussing the research (M5). Each

move represents the realization of a communicative purpose. In contrast to other models, Hyland's (2005) model distinguished the writer's purpose from the introduction move, where it is often located. Specifically, the present analysis employed Hyland's (2005) interpersonal model. According to this model, two dimensional are involved: interactive dimension (5 types: Transitional Markers, Frame Markers, Endophoric Markers, Evidentials, and Code Glosses) and interactional dimension (5 types: Hedges, Boosters, Attitude Markers, Self-Mention, and Engagement Markers).

3.2. Data Analysis

The sample articles were examined in terms of the type of moves, steps and sub-steps, occurring in the compiled corpus of the abstracts. Move can be defined as a communicative unit which carries the specific communicative purpose of a particular part of the text under study. A move may be realized by one or more subsequent elements called steps. Prior to attempt to analyze the texts, first, the whole articles were read to obtain a general idea about them. Identification of moves was made on the basis of linguistic evidence and knowledge about the content of the text. The identification of moves and steps in the corpus was done recursively. In other words, re-readings or re-analyses of any part of the RAs were carried out until the identification of the communicative units of moves and steps were satisfactorily done. The analysis was based on "top-down" approach where the contents of the abstracts were examined and compared to Pho's (2009) framework. This framework seems to be suitable for the present study due to the fine distinctions made between each move where

short abbreviations; I, P, M, R, and D, were used to represent each move. According to linguistic features, as stated earlier, these features were identified and categorized based on Hyland's (2005) classification of interpersonal metadiscourse markers (interactive and interactional). He classifies interactive sources into five major categories which are transitions, frame markers, endophoric markers, evidential, and code glosses. Hyland (2005) also organizes interactional metadiscourse into five main categories with specific functions which are hedges, boosters, attitude markers, self-mentions, and engagement markers.

4. RESULTS AND DISCUSSION

4.1. Moves Used

Using the aforementioned move analysis models, many researchers have investigated the abstract section of research articles in different disciplines (e.g. Stotesbury, 2003). Research abstract in applied linguistics were also examined in the studies done by Lorés (2004) and Pho (2009) for their linguistic realization of rhetorical structures. Besides, schematic structures of research articles, including the abstract section, were studied by Hyland (2005). Moreover, research abstracts in other fields of study, such as biology and medicine were investigated for their writing conventions (e.g. Samraj, 2005). Additionally, many comparative studies (e.g., Marefat & Mohammadzadeh, 2013; Stotesbury, 2003), examined research abstracts among different disciplines in terms of cross-disciplinary studies. Furthermore, a number of studies (Marefat & Mohammadzadeh, 2013; Ismail & Ahmad Shah, 2014; Abarghooeinezhad

& Simin, 2015) have been conducted to contrast and compare between RA abstracts written by academicians. Comparatively, these analyses were conducted solely based on Swales' (2004) model of move analysis.

The characteristics of these moves with examples and the steps that realized they are described in this section. Table 1 to Table 5 show examples of the moves in ISI-indexed articles' abstract section. Each example is provided from a selected coded file of the corpus (italicized). The files are selected from the folders used for the macro level of analysis; the move analysis. However, in order to retain the originality of the texts in the corpus, no editing was done to the structure of the selected sentences.

Move 1- Situating the research: The introduction move usually establishes the research by stating the present knowledge and discussing some points related to the field. Table 1 shows examples of move 1 in abstract sections.

Table 1. Examples of situating the research move 1 in abstract sections.

Move / Sub-move	Example
Move 1: Situating the research	Move Analysis/a_cogn (2010).txt (1 hit) <move 1> Recent investigations have supported the suggestion that phonological speech errors may reflect the simultaneous activation of more than one phonemic representation.
	Move Analysis/a_cogv (2010).txt (1 hit) <move 1> We argue that the grammatical diversity observed among the world's languages emerges from the struggle between individual cognitive systems trying to impose their preferred structure on human language.

	Move Analysis/a_memo (2010).txt (1 hit) <move 1> Morpheme frequency effects for derived words (e.g. an influence of the frequency of the base ‘‘dark” on responses to ‘‘darkness”) have been interpreted as evidence of morphemic representation.
	Move Analysis/a_comm (2012).txt (1 hit) <move 1> Previous applications of RTM to hurt have uncovered associations among relational characteristics that influence people’s hurtful experiences; however, the process by which these characteristics influence experiences of hurt remains unclear.
	Move Analysis/a_lang (2010).txt (1 hit) <move 1> This article reports the results of an ethnographic study of court hearings in which participants are distributed across two distant sites, connected by videoconference.

Move 2- Presenting the research: The purpose move is employed to present the purpose of the study. The purpose of the study is classified into two forms: the descriptive form that focuses on presenting the features of the research, or the purposive form that uses some expressions like “the aim” or “the goal”. Table 6 shows examples of move 2 in abstract sections.

Table 2. Examples of presenting the research move 2 in abstract sections.

Move / Sub-move	Example
	Move Analysis/a_cogn (2013).txt (1 hit) <move 2> We show here instead that the pattern of performance depends critically on presentation modality and different mechanisms give rise to superficially similar effects across modalities.
	Move Analysis/a_cogv (2013).txt (1 hit) <move 2> Thus, infants must extract two kinds of information from the same speech input. They must find the actual words of their language.

Move 2: Presenting the research	Move Analysis/a_ memo (2013).txt (1 hit) <move 2> An alternative possibility, however, is that these failures arise naturally as a result of how word familiarity affects lexical processing. In the present work, we explored the effects of word familiarity on adults' use of phonetic detail.
	Move Analysis/a_ comm (2013).txt (1 hit) <move 2> This shift may be attributable to the type of medium discussed (e.g., television vs. video games), the number of unaffiliated sources that are cited in the news article, and the sex of the journalist.
	Move Analysis/a_ lang (2013).txt (1 hit) <move 2> Two formulation types were found in both approaches: highlighting formulations, which recycle the client's descriptions and recognize therapeutically dense material, and rephrasing formulations, which offer the therapist's version of the client's description and focus on subjective experiences.

Move 3- Describing the methodology: The method move is used by authors to describe the mechanism of conducting their research by presenting the population and sample, materials and instrument, research procedures, and the design of the study. Table 3 shows examples of move 3 in abstract sections.

Table 3. Examples of Describing the methodology move 3 in abstract sections.

Move / Sub-move	Example
	Move Analysis/a_cogn (2011).txt (2 hit) <move 3> In Experiment 2, 49 second graders were tested on two other sets of phoneme awareness tasks and similar results were obtained.

Move 3: Describing the methodology	Move Analysis/a_cogv (2011).txt (2 hit) <move 3> We adapt this idea to the two-step model of word production, and test the model-derived predictions on a sample of aphasic patients.
	Move Analysis/a_ memo (2011).txt (2 hit) <move 3> Participants were slower reading and less accurate comprehending the overlap sentences compared to the non-overlapping controls, even though sentences were matched for plausibility and differed by only two words across overlap conditions.
	Move Analysis/a_ comm (2011).txt (2 hit) <move 3> An examination of processing mechanisms helps to explain this null effect: While perceived bias in opinionated news enhances learning, opinionated news also shifts the focus of information processing away from the message and toward the source, thereby distracting from learning.
	Move Analysis/a_ lang (2011).txt (2 hit) <move 3> First, the vast majority of mate-preference disclosures were not only prompted, but were prompted in ways that occasioned delayed responses. Second, the majority of initial mate-preference formulations were delayed or mitigated, revealing that requests for and disclosures of mate preferences were delicate social actions.

Move 4- Summarizing the findings: The results move is used to briefly present and summarize the major results of the study. It might also include the arguments or description of the achieved research objectives. Table 4 shows examples of move 4 in abstract sections.

Table 4. Examples of summarizing the findings move 4 in abstract sections.

Move / Sub-move	Example
	Move Analysis/a_cogn (2015).txt (2 hit) <move 4> We found that illusory control and the self-attribution bias (i.e. the bias to attribute positive

Move 4: Summarizing the findings	outcomes to oneself) in the card guessing game decreased, as children get older.
	Move Analysis/a_cogv (2015).txt (2 hit) <move 4> Experiments 1 and 2 show that this effect emerges in hierarchically structured domains when a negative observation from a different category is added to a positive observation.
	Move Analysis/a_ memo (2015).txt (2 hit) <move 4> Thus familiarity with message-level information can change how speakers express their messages and, during formulation, can provide conceptual guidance that supersedes effects of sentence-level variables.
	Move Analysis/a_ comm (2015).txt (2 hit) <move 4> Subsequently, absorption decreased counterarguing such that the attitude toward the satirized object was affected negatively.
	Move Analysis/a_ lang (2015).txt (2 hit) <move 4> Our analysis shows that customers coming to the shoe repair shop enact an epistemic stance toward the object they have brought in for repair.

Move 5- discussing the research: The discussion move is employed by writers to make their claims about the research and summarize the implications drawn from the results and the recommendation for future research. Table 5 shows examples of move 5 in abstract sections.

Table 5. Examples of discussing the research move 5 in abstract sections.

Move / Sub-move	Example
	Move Analysis/a_cogn (2014).txt (1 hits) <move 5> Thus, our results provide a novel neural bridge between psycholinguistic models of comprehension and production that posit functionally similar combinatorial mechanisms operating in reversed order.

Move 5: Discussing the research	Move Analysis/a_cogv (2013).txt (1 hit) <move 5> These results suggest that sensitivity to word structure is in place earlier than the ability.
	Move Analysis/a_ memo (2012).txt (1 hits) <move 5> These results provide important evidence for individual differences in everyday cognitive failures as well as important evidence for the ecological validity of laboratory cognitive ability measures.
	Move Analysis/a_ comm (2010).txt (1 hits) <move 5> We contend that informal conversation is part of the dynamics that prepare citizens for more demanding and formal deliberations.
	Move Analysis/a_ lang (2014).txt (1 hits) <move 5> The study further suggests possible explanations for how and why the addition of the particle achieves the interactional work of performing a negatively valenced action in Korean.

Figure 1 shows the percentage of occurrences of moves in the ISI-indexed abstracts. The frequency of moves in the CORISIA corpus was calculated using the AntConc software. From the total number of moves, move 4 is the most recurring move with a total number of 64. This is followed by move 3 with a total of 49 occurrences, move 2 with a total of 44 occurrences, and move 1 with a total of 28 occurrences. The least occurring move is move 5 with a total number of 18 occurrences. It was found that Move 1 appears once in the ISI-indexed abstracts, while move 2, move 3, and move 4 appear more than once in each abstract. In can be concluded that move 1, move 2, move 3, and move 4 are obligatory moves in the ISI-indexed abstracts while move 5 is an optional move, move 5 has only 18 occurrences which mean it is not a compulsory move of the ISI-indexed abstract's component.

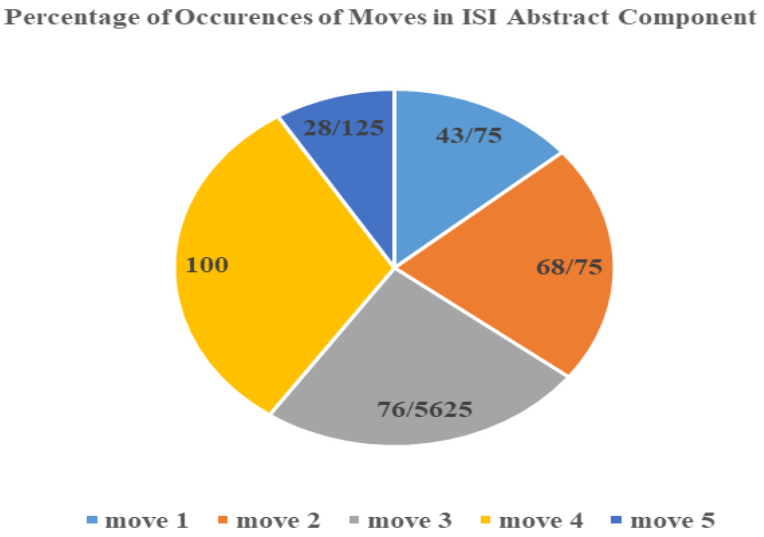

Figure 1. The Percentage of Occurrences of Moves in ISI Abstract Sections

Figure 1 shows the most essential three moves in ISI-indexed abstracts are move 2 (presenting the research purpose) with 68.76 %, move 3 (describing the methodology) with 76.56 %, and move 4 (summarizing the findings) with 100 %. These three most frequently used moves can be categorized as 'conventional' for ISI-indexed abstracts (higher than 60%). The least frequent moves in the present study were moved 1 and move 5 with 43.75% and 28.12% respectively. In addition, figure 1 illustrates that not all articles included move 1 and move 5. The results are in line with the results found in Li's (2011) study where it was found that Chinese authors used the introduction and discussion moves much lesser compared to the other moves of research abstracts. This may indicate that some writers believe that their research papers are well-organized and there is no need for the inclusion of an introduction and a

discussion, to attract the interest of readers in their fields. It seems then, those two moves; move 1 and move 5, are the only moves that are truly rather optional for the writers.

4.2. Metadiscourse Features

Table 6 shows both interactional and interactive markers for each move in ISI abstract sections. Table 6 shows that the highest number of abstract's occurrences of interaction markers in the corpus is 375 which is in move 2 with 89 occurrences followed by 86 number of occurrences in move 5 then move 4 with 81 occurrences. The number of abstract's occurrences of interactive markers in the corpus is 360 which is in move 3 with 100 occurrences followed by 92 number of occurrences in move 2. This high value comes from the 234 occurrences of transition markers in corpus with move 2 is 72 occurrences followed by 59 number of occurrences in move 3 while it appears in move 4 with 44 occurrences. Overall, transition markers dominate the number of occurrences of the interactive dimension as shown in Table 6. This is due to the highest number of occurrences of move 2 in abstracts which has 215 moves.

Table 6. The Linguistic Features in Abstract Section

Linguistic Features		Move 1	Move 2	Move 3	Move 4	Move 5	Total
Interaction Markers	Boosters	3	37	10	7	20	77
	Attitude	6	15	2	30	10	63
	Self-mention	0	17	33	20	16	86
	Hedges	21	10	11	12	25	79
	Engagement	10	17	16	20	15	70
	Total	40	89	72	81	86	375
Interactive	Transition	30	72	59	44	29	234

	Frame	10	20	31	10	15	86
	Endophoric	1	0	10	5	3	24
	Evidential	0	0	0	0	0	0
	Code	11	0	0	0	10	21
	Total	52	92	100	59	57	360

On the whole, the number of interaction metadiscourse resources accounts for about 375 occurrences of the total number of metadiscourse resources investigated, which is more than interactive resources with 360 occurrences. These finding consistent with Hyland (2005), Hyland's categorization of metadiscourse led to the conclusion that interaction resources dominated metadiscourse in RAs, with hedges, boosters, and attitude marker being among the most frequent categories. These resources explained in details for each move according to the highest frequency element.

4.3. Move 1 and Move 5

According to Table 6, the most used metadiscourse in the ISI abstract articles in move 1 was the transition with 30 occurrences in interactive resources and hedges with 21 occurrences in interaction resources. Likewise, the highest number of metadiscourse in move 5 was a transition with 29 occurrences in interactive resources and hedges with 25 occurrences in interaction resources. First, regarding the transition metadiscourse, it was used in all moves as the highest number of occurrences in interactive resources for communal discourse functions embedded in the corpus. Their most common use was providing readers with basic and particular information regarding the topic being reported.

They facilitated logical links between different segments of discourse cognitively based on different semantic functions of addition, contrast/comparison, and consequence. Additive (around 50%) and consequential (around 15%), and comparison (around 30 %) transitions appeared in ISI abstracts. However, whereas adding and contrasting ideas were materialized through (e.g., and, also, but, however), consequential transitions were materialized through thus (52%) and therefore in (40%). The use of transition in move 1 constitutes a significant rhetorical level in RAs, functioning as a bridge between previous studies and the study being reported.

Although the hedges appeared with different frequencies in various moves, they are found throughout all the moves in corpus and are not constrained to particular moves (as shown in Table 6). For instance, the writers used the hedges in providing background information, especially when they provided theoretical and technical information. So that, hedges reflect the rhetorical function of move 1 and move 5 which refers to the introduction move that usually establishes the research by stating the present knowledge and discussing some points related to the field. Meanwhile, two moves were most heavily hedged in ISI RAs: Situating the research and discussion the research. The finding is expected, as in these two moves writers make speculation and conclusions about their findings and present new knowledge claims. The important of the hedges in previous moves (move 1 and move 5) suggested that it is used strategically by the writers to interact with their audience and persuade them. It was noticed that the writers used hedges for different purposes including protecting themselves from possible criticisms, showing their

tentativeness towards a proposition either to avoid full commitment or to show their uncertainty about a proposition.

4.4. Move 2

According to Table 6, the most used metadiscourse in the ISI abstract articles in move 2 was the transition with 72 occurrences in interactive resources and boosters with 37 occurrences in interaction resources. Move 2 shows that boosters are an important element that are used by writers in ISI RAs to interact with their audience. On the one hand, writers use hedges to down tone their arguments and claims as seen in move 1 and move 5 and on the other, they use boosters to show their commitment to their achievements and gain credibility for them. However, boosters appeared less frequently than hedges in the corpus. Meanwhile, boosters were more frequent in move 2 (presenting the research). The most widely used booster lexicon in the corpus was the cognitive verbs like show, present, examine, demonstrate. The finding is consistent with Peacock's who found the show as the most common booster in four various disciplines including Languages and Linguistics. He also found find and demonstrate among the most dominant boosters in his corpus. This verb was used mostly with reference to the objective of the study to demonstrate that the proposition is drawn from the evidence and the writer is certain about the purpose of the study. As Hyland (2005) also found in his corpus, in this context, the writers used boosters "to stress the strength of warrants, suggesting the efficacy of the relationship between the data and claims". The other lexicons used as boosters in this move included adverbs like explicitly, clearly, and particularly.

4.5. Move 3

According to Table 6, the most used metadiscourse in the ISI abstract articles in move 3 was the transition with 59 occurrences in interactive resources and boosters with 33 occurrences in interaction resources. Move 3 shows that self-mentions are an important element that is used by writers in ISI RAs to describe the methodology. RA writers expressed themselves and their role and involvement in their research explicitly. The ISI research articles are not following positivism which is based on the assumption that research should be presented as if the human agent was part of the process. It gains its credibility, in general, by taking care of validity and reliability and by employing precise methodologies. It tries to persuade the reader by demonstrating personality and showing that researcher affected the research process (Mukti, 2019; Močinić & Feresin, 2017).

The overall occurrence of self-mention in this study was consistent with Hyland's (2005) findings who found self-mention with a frequency of 40 per 1,000 words in 30 Applied Linguistics RAs. In move 3, there is a possibility that writers express themselves more explicitly in the other moves of the abstract section. For instance, Martínez (2005) found that biologists used more in their Results sections than other sections. Her study also showed a frequency of 59.6 per 10,000 words of first-person pronouns in the Discussion section of biology RAs which is higher than what was found in the corpus of this study. The difference might be related to disciplinary differences. Several studies such as Fløttum et al. (2006) and Hyland (2005) have shown that the presence of authors in the text is disciplinary-specific and some disciplines have more explicit author

presence than others. The analysis of the first person pronouns in different moves of the RAs showed that they appeared in most of the moves in corpus with different frequency. However, there is one exception in move 1. For instance, they didn't found self–mention category in introduction move. The pronoun we were more frequent than the other personal pronouns in this move and was used as exclusive.

4.6. Move 4

According to Table 6, the most used metadiscourse in the ISI abstract articles in move 4 was the transition with 44 occurrences in interactive resources and attitude markers with 30 occurrences in interaction resources. Table 6 showed that attitude markers, compared to the hedges and boosters, were much less frequent in corpus and appeared less than 2 times. The findings are both similar to Hyland's (2005) results. Similar to this study, Hyland's analysis showed that attitude markers were less frequent than hedges in Applied Linguistics RAs. The writers used the attitude markers in stating their findings where they emphasized the importance of their findings as a function of move 4. Attitude markers were found more frequently in the move of summarizing the findings in the corpus. They were used, for instance, to briefly present and summarize the major results of the study. It might also include the arguments or description of the achieved research objectives (Inchamnan, 2018).

The most frequent category in the corpus was deontic verbs which comprised around 60% of the whole attitude markers. The other categories of words that was used as attitude markers were adjectives and adverbs.

Among the adjectives category, important, expected, necessary were the frequent in the corpus. According to adverb category, particularly (around 30%) was the frequent in the corpus. Some other adverbs were also found in the corpus which normally was not frequent in the corpus: reasonably, sufficiently, and curiously.

Figure 2 shows interpersonal metadiscourse in ISI abstract section from both dimensions interactive and interaction resources. In other words, the abstract writers use the number of interaction metadiscourse items more than the interactive ones. Investigating the subcategories of the interactive and interactional metadiscourse for each move in details in the below sections.

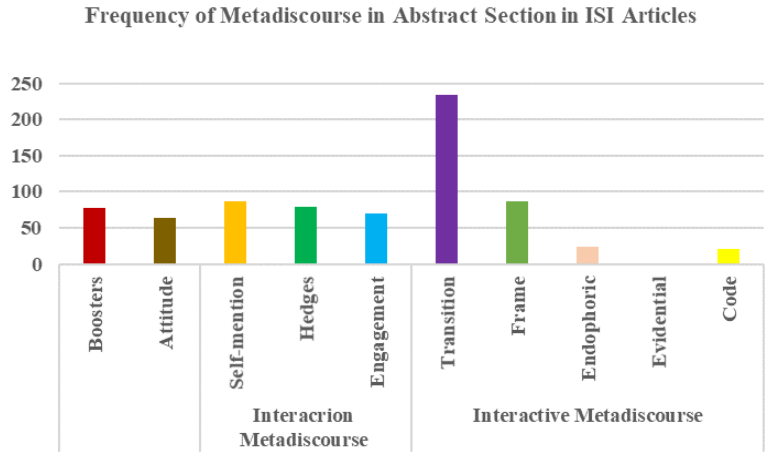

Figure 2. Interpersonal Metadiscourse in Abstract Section in ISI Articles

In summary, Figure 2 shows that the ISI writers use interactive metadiscourse resource to help readers understand a text by explaining, orienting and guiding them through discourse. From Figure 2 we can find that transitions account for over half of the interactive metadiscourse used in abstracts. As Hyland (2005) puts it, the most frequent way that the argument structure of a text is made explicit is through transitions, which indicate how the writer intends the connections between elements of the discussion to be understood. As Figure 2 illustrates, the transitions are the most frequently used interactive metadiscourse resources followed by frame markers (Chan, 2018).

5. CONCLUSION

The present study was aimed at examining the variations in rhetorical structure and linguistics features of 30 abstracts of ISI-indexed journal articles. It was found that four moves (Introduction, Purpose, Methods, and Results) were present in every abstract written by the authors. These imply that all writers are aware of the importance of these moves in the abstract. The striking difference was found in the Discussion move. Some writers tend to include this move frequently compared to other writers. Moreover, the overall findings disclosed that, in terms of using the interactive resources category, the use of transition markers, which refer how the writer intends the connections between elements of the discussion to be understood, were more frequently used in ISI-indexed articles in Applied Linguistic. In addition, the abstract writers use the number of interaction metadiscourse items more than the interactive ones.

The findings of the present study could help writers in general, and specifically those who intend to publish in ISI-indexed journals. Hyland (2005) pointed out that the improvement of genre knowledge would help novice writers in becoming active members in their disciplinary community. Bhatia (1997) emphasizes the importance of genre analysis in providing useful information to writers by exposing them to a particular genre convention. The findings might also be a guide for writers in realizing the textual variations in terms of moves, the sequence of moves, and the role of each move in the research abstract. In addition, the findings obtained from this study may help prospective and present authors to better understand the stylistic developmental occurrences of moves the RA abstracts in the Applied Linguistics field, both linguistically and structurally. Through this awareness, writers will be able to improve their chances of getting to publish their research findings in high impact journals.

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