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The rhetorical organization of research article discussion sections: An investigation into genre evolution in applied linguistics

Alireza Jalilifar *, Department of English Language and Literature, Shahid Chamran University of Ahvaz, Iran.

Mitra Baninajar, Department of English Language and Literature, Islamic Azad University, Ahvaz Branch, Iran.

Soheil Saeedian, Department of English Language and Literature, Khorramshahr University of Marine Science and Technology, Iran.

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Abstract

The present study aimed to investigate the evolution of the rhetorical structure of research article discussions in three prestigious journals covering the two chronological periods of 1980-1989 (group A) and 2005-2010 (group B). It also studied changes in the application of the two most frequently used verb tenses − the simple present tense and the simple past tense − over the two time periods. Overall, 115 published articles were selected from the aforementioned journals. Move analysis was accomplished through application of Dudley-Evans' (1994) model on the datasets. Findings indicated that despite the overall consistency in utilizing the nine-move organization, there emerged rather considerable differences in the frequency of (Un) expected outcome and Explanation moves. A reduction in the frequency of (Un) expected outcome in group B indicated that present-day writers announce results with more caution to win the acquiescence of reviewers and readers. On the other hand, a rise in explanations revealed a growing concern for including more arguments in order to follow the analytical nature of the discussion section. The results also demonstrated a shift from the simple present tense toward the simple past tense, which marks a shift from generalization to specificity.

Keywords: research article, move, discussion section, genre evolution

*ADDRESS FOR CORRESPONDENCE: **Alireza Jalilifar,** Department of English Language and Literature, Shahid Chamran University of Ahvaz, Iran. *E-mail address*: ar.jalilifar@gmail.com

1. Introduction

With the advance of science and technology, there is an accruing demand for the publication of research articles (RA) in international academic journals. In this regard, having expertise in writing RA in English is very crucial. To facilitate the reading and writing of scientific research articles both native and non-native speakers of English need to be aware of the rhetorical organization of RAs (Kanoksilapatham, 2005).

RAs have been studied from different perspectives. Attention to the rhetorical and social aspects of genres was especially intensified after the publication of Miller's (1984) influential article, Genre as Social Action, in which she regarded genres as "typified rhetorical actions based in recurrent situations". Bazerman's (1988) work also opened a new path to help researchers pay closer attention to the concept of time in genre evolution and to investigate how a genre grows and how it evolves to become what it is today. Swales's (1990) definition of genre indicates that the structure and patterns of a genre are subject to change and modification. The definition also implies that changes in the linguistic structure of a genre are indispensable and result from changes in the social structure within the respective discourse community.

Exploring the concept of time in genre analysis has captivated the attention of several researchers (e.g., Ayers, 2008; Berkenkotter, 2008; Li & Ge, 2009; Magnet, 2001). For example, Bazerman (1988) investigated the emergence and transformation of the genre of experimental report in natural sciences during the last three centuries and social sciences in the 20th century. Gross, Harmon, and Riedy (2002), in a comprehensive study, analyzed the evolving nature of scientific articles across English, French, and German from the 17th century to the 20th century in three acts: style, presentation, and argument. Similarly, Ayers (2008) analyzed short texts accompanying full research articles in the scientific journal Nature from 1999 to 2005. She analyzed headings and abstracts and studied their move structures on the basis of Swales' (1990) CARS model.

These genre-based studies have examined the historical developments in scientific writing and the evolutionary changes in the textual structure of the same genre over a period of time. Diachronic studies explore the close interrelatedness of language and social activities and provide a strong perspective on the developing scientific forms (Atkinson, 1996). The main motivation of the diachronic analyses, according to Salager-Meyer (1999b), is to help the researchers gain insight into the history and development of scientific thinking and the scientific community. The rapid growth in the number of diachronic studies and the need for the awareness of the way that RA has evolved make historical studies important. On the other hand, genre-based approaches to the understanding of the rhetorical structure will help to obtain useful information about the nature of different types of texts in order to write more effectively and successfully.

Given its "argumentative and quantitative" nature (Parkinson, 2011), the discussion segment of a paper may be considered the most problematic and analytical part of RAs (Holmes, 1997; Hopkins & Dudley-Evans, 1988; Jalilifar, Hayati, & Namdari, 2012). This section integrates supporting evidence from the study with reference to previous knowledge to defend the obtained findings and is perhaps a sign based on which the text’s quality is evaluated.

Despite the increasing interest in the evolutionary nature of academic genres, investigation into existing literature reveals that few, if any, chronological studies focusing on the investigation of the changes and developments of different sections of RAs have been carried out so far. Albeit there are some historical analyses in medical and science disciplines (Ayers, 2008; Bazerman, 1988; Gross, et. al, 2002; Salager-Meyer, 1999a, 1999b, 2000), regarding the overall structure, we know very little about the modifications and changes in the rhetorical and generic structure of the different parts of RAs over different periods of time. More particularly, there has been a dearth of studies regarding the generic differences that might exist among the discussion sections of Applied Linguistics RAs in international journals across time. The present work thus aims to focus on the discussion section of RAs which have been published in scholarly journals and significantly plans a meticulous analysis of historical changes or developments over two time periods. To this end, the following question is formulated:

What are the generic structures of RA discussion sections published in scholarly journals in the 1980s and between the years 2005-2010, and what are the possible differences over the two time periods?

2. Methodology

2.1 Materials

The research journals selected for the purpose of this study were taken from the field of Applied Linguistics, as previous studies have acknowledged the influence of interdisciplinary variations on the rhetorical structure of RAs (Peacock, 2002; Posteguillo, 1999; Kanoksilapatham, 2005). The motivation for the choice of the journals was three-fold. First, Nwogu's (1997) suggestion on journal selection was followed, which emphasizes reputation, representativeness, and accessibility. Second, the journals were chosen because they maintained a regular schedule of publication during the years under study. Finally, they are the most peer-reviewed and professional journals published in this field. By considering the above-mentioned criteria, three journals were selected for an effective comparison, namely English for Specific Purposes (ESP), TESOL Quarterly, and Modern Language Journal (MLJ).

In order to illustrate the diachronic changes of RA discussions, two time periods were selected: 1980-1989 and 2005-2010. In general, 981 articles were extracted. The articles were then classified into groups A and B, representing the two periods respectively. The decision about the number of selected articles was made on the assumption that the dataset was large enough to reveal major changes in the journals in focus. One hundred and fifteen RAs were selected for subsequent analysis. Group A consisted of 55 articles and group B included 60 articles, all having an empirical orientation with the IMRD structure. The lower number of RAs in group A stemmed from the paucity of discussion sections in the volumes published in 1980-1986 and there were no publications in 1982 either. Therefore, to reach the required number of samples, articles published in successive years (1987-1989) were included.

Regarding the sampling process, a few restrictions were imposed. To set constraints on the selection of articles, only experimental RAs that were compatible with the IMRD structure were considered. Those RAs with the conventional section headings Discussion and Discussion of results were chosen and those entitled Results and Discussion, Findings and Discussion, Discussion and Summary, Discussion and Conclusion, and Discussion and Implication were excluded from the study. The information about the sampling process has been summarized in Table 1.

Table 1. The Process of the Selection of Articles

	Year of Publication	Total no. of articles	Total no. of "discussions"	No. of selected Articles
ESP	1980-1989	106	15	15
	2005-2010	95	36	20
TESOL	1980-1989	280	69	20
	2005-2010	78	26	20
MLJ	1980-1989	269	36	20
	2005-2010	153	67	20
Total		981	249	115

2.2 Procedure

The aim of the present study was twofold − an integration of two analyses. First, it took advantage of the move analysis of RA discussion sections and, second, it shed light on the changes and evolution of RAs over two time periods in three prestigious academic journals.

Move identification in this study followed Dudley-Evans' (1994) model, for it appears to be the most comprehensive model mostly deployed in previous studies (Holmes, 1997; Peacock, 2002; Jalilifar, et al., 2012). Besides, it is the most reliable paradigm for analyzing applied linguistics RAs (Peacock, 2002).

Based on Crookes' (1986) claim that the sentence is reflected as "constituting a complete unit of meaning" (p. 65), the unit of analysis was assigned to be the sentence. Every sentence was coded as one unit and each sentence which was not coded was deleted in the analysis. In line with Ruiying and Allison (2003) and Holmes (1997), if a clause or a phrase functioned as a single move, then the sentence was coded in terms of the most prominent move. The criteria for the move analysis were linguistic signals of comparison, lexical clues and expressions, verb forms, and in the case of ambiguity, the understanding of the text itself (Dudley-Evans, 1994). The frequency of each move in each discussion was recorded to verify the extent to which any given move had been used. Then, they were submitted to a chi-square analysis to find whether a significant difference existed in the move structure of the discussion section in the journals over the two time periods.

To ensure the reliability of the analysis, inter-rater agreement was applied. This analysis shows a sufficient level of agreement on the classification and analysis of the moves, making the analytical process transparent, thus reducing idiosyncratic factors (Hammersley, 2011). Thirty articles were randomly selected, and two experienced researchers in Applied Linguistics were asked to identify the moves in the texts independently and then the disagreements were negotiated to ensure full concord in analysis. Though this approach seemed to be adequately objective to allow for further analysis, in line with some studies (e.g., Crooks, 1986; Dudley-Evans, 1994; Ozturk, 2007), intra-rater agreement was also assessed to control variations in the analysis by a researcher in two settings. To achieve this target, one of the researchers re-analyzed 30 articles one month after the initial analysis. The results showed that the analyzed articles had a 90% intra-rater and inter-rater reliability agreement rate, which proves no significant difference between the analyses.

Guided by the nine-move structure suggested by Dudley-Evans' (1994), the move configuration of all 115 articles was identified. In order to explore the differences in the rhetorical structure of the discussion section in the selected journals, the distribution of the moves was recorded. A total number of 997 moves with an average of eight moves per paper were found. It is worth mentioning that only one occurrence of each move in an article was taken into account. Table 2 shows the overall distribution of the moves in the data investigated in the study.

Table 2. Distribution of Moves in Journals in Group A and Group B

	1980-1989 (Group A)			2005-2010 (Group B)		
Move	ESP (%)	TESOL (%)	MLJ (%)	ESP (%)	TESOL (%)	MLJ (%)
M1	13 (86.6)	13 (65)	15 (75)	18 (90)	16 (80)	18 (90)
M2	4 (26.6)	12 (60)	14 (70)	10 (50)	12 (60)	14 (70)
M3	12 (80)	19 (95)	18 (90)	17 (85)	19 (95)	19 (95)
M4	8 (53.3)	11 (55)	9 (45)	3 (15)	7 (35)	8 (40)
M5	12 (80)	16 (80)	13 (65)	18 (90)	16 (80)	19 (95)
M6	5 (33.3)	13 (65)	6 (30)	10 (50)	15 (75)	11 (55)
M7	11 (73.3)	18 (90)	18 (90)	19 (95)	17 (85)	16 (80)
M8	8 (53.3)	10 (50)	8 (40)	9 (45)	12 (60)	9 (45)
M9	12 (80)	14 (70)	10 (50)	13 (65)	15 (75)	13 (65)

M1 (*Information move)*, M2 (*Statement of* result), M3 (*Findings*), M4 ((*Un) expected outcome),* M5 (*Reference to previous research),* M6 (*Explanation*), M7 (*Claim),* M8 (*Limitation*), M9 (*Recommendation*)

To find any significant difference between the frequency of each move over the two time periods, a *chi-square* test was applied first to each journal, then to all three journals.

3. Results

3.1 The Frequency of Moves in the Three Selected Journals

In order to examine the changes in the two datasets over the two time periods, the total frequencies of individual moves were counted and the percentages were calculated. The results are shown in Table 3.

Table 3. Distribution of Moves in the Journals in Group A and Group B

Move	Group A N = 55 F (%)	Group B N = 60 F (%)
M1	41 (74.5)	52 (86.6)
M2	30 (54.5)	36 (60)
M3	49 (89.09)	55 (91.6)
M4	28 (50.9)	18 (30)
M5	41 (74.5)	53 (88.3)
M6	22 (40)	36 (60)
M7	47 (85.4)	52 (86.6)
M8	26 (47.2)	30 (50)
M9	36 (65.4)	41 (68.3)

The overall frequencies shown in Table 3 indicate no major differences in the number of occurrence of each move for the three selected journals over the two time periods. In order to see whether these changes were statistically significant, the *chi-square* test was also run (Table 4).

Table 4. Chi-Square Tests of Distribution of Moves in the Journals

Asymp. Sig. (2-sided)	Df	Value	
.269	2	2.623(a)	Pearson Chi-Square
.268	2	2.630	Likelihood Ratio
.325	1	.970	Linear-by-Linear Association
		680	N of Valid Cases

0 cells (.0%) have expected count less than 5. The minimum expected count is 91.95.

Findings indicated that the differences observed in Table 4 were not deemed as statistically significant. This may emanate from the fact that sub-disciplinary variations were not revealed in the selected journals of applied linguistics.

Overall, M3 (*Finding)*, M7 (*Claim),* M1 (*Information move)* and M5 (*Reference to previous research)* occurred most frequently in group A; similarly, with a little difference in their occurrence, M3, M5, M1 and M7 were found to be the most frequent moves in group B. Higher usage of M3 in the two chronological periods can be anticipated from its functions since it announces the main findings of the study. As revealed from Table 3, a rise in M1 from 74.5

percent to 86.6 percentage showed a growing emphasis on "purposive argument" (Simpson, 2001) in the second chronological period.

Overall, the least observed moves were M6 (*Explanation*), and M8 (*Limitation*) in group A. Similarly, M4 and M8 were among the least frequent moves in group B. The most variation was observed in M4, (*Un/expected outcome*) and M6 (*Explanation*). The downgrading use of M4 by about 20 percentage showed that writers tend to avoid threatening their stance by depicting unexpected results in articles. On the other hand, an increase of 20 percentage in the frequency of M6 revealed a growing tendency toward more argumentation to support claims or contrastive findings. These results will be discussed later in the Discussion section.

3.1.1 Move cycles

Dudley-Evans' (1994) tripartite model of the discussion (introduction, evaluation, and conclusion) that combines two or more moves was found to be appropriately applicable in the present study; however, a number of moves and move cycles were not predicted by the model. Analysis revealed that the overall patterns of more frequent move cycles in the three selected journals over the two time periods were almost the same. These move cycle patterns are shown below:

(1980s)

Introduction: 1+3/5+7, 1+5, 2/3+5/7

Evaluation: 7/3+5, 2/3+5/7, 4/7+6

3/7+8/9, 8+9

(2005-2010)

Introduction: 3/7+5, 1+5, 2/3+1/5, 1

Evaluation: 3/7+5, 2/3+7/5, 5+7, 4/7+6

Conclusion: 3/9+7, Conclusion: 3/9+7, 3+8/9, 8+9

3.1.1.1 Introduction

Results indicated that the preference for using opening moves changed. While *introductions* often started with M1 (*information move*) + M5 (*Reference to previous research*), or move 1 in group A articles, they mostly began with move 3 (*Finding*) or 3+5, in group B. M2 (*Statement of* results) accounted for five percent in the *introduction* part in the 1980s, while it was found in 15% of all starting moves between 2005-2010. It was observed that M7 was also used as a starting move in applied linguistics RAs (group A 8%, group B 12%).

Table 5. Percentage of M1 and M3 in the Two Corpora

Move	1980s		2005-2010	
Journal	M1 (%)	M3 (%)	M1 (%)	M3 (%)
ESP	9(60)	4(26.6)	5(25)	11(55)
TESOL	8(40)	9(45)	5(25)	13(65)
MLJ	9(45)	7(35)	7(35)	12(60)
Total	26(47.2)	20(36.3)	17(28.3)	36(60)

Table 5 indicates that during the 1980s, authors were willing to use M1 (*Information move*) as the opening move in ESP, TESOL, and MLJ (60%, 40%, and 45% respectively), whereas the

percentage dropped to 25 percent in ESP and TESOL and 35 percent in MLJ during the 2005-2010 period. Instead, they preferred to use M3 (*Finding*) as the opening move (36.3% in group A vs. 60% in group B). This marks the growing trend among authors to put more emphasis on deduction and the outcome of research and their willingness to open the scene by presenting readers with what they have found, so as to make the research more visible and to introduce what data are to be presented.

3.1.1.2 Evaluation

Analysis showed that the cycles 3+5 and 7+5 occurred most frequently with almost the same percentage of about 62% over the two time periods. Congruent with Dudley-Evans' (1994) predicted model on the evaluation phase, the results indicated that M3 (*Finding)* and M7 (*Claim)* were mostly followed by M5 (*Reference to previous research)*, especially during the years 2005-2010:

> *(1) This result means that, although the learners have different affective reactions to the two languages, L1 reading attitude transfers to L2* ***[M3]****…This result supports findings from previous studies that reported connections between L1 and L2 reading attitudes (e.g., Jiménez et al., 1995, 1996, Kamhi-Stein, 2003; Yamashita, 2004)* ***[M5]****. That affective reactions transfer from L1 to L2 is much the same for the cognitive aspects of reading* **[M3]***.* (TESOLd30)

Moving from M3 (*Finding*) or M7 (*Claim*) to M5 (*Reference to previous research*) and again back to M3 or M7 seems to suggest that present-day writers prefer to put the findings within a strong foundation of a well-known discourse community in order to find firm support and a reliable justification for their claims.

Findings showed that two move cycles, 4 *(Un/expected outcome)* +6 (*Explanation*) and 7 (*Claim*) +6 (*Explanation*) were not part of the model. Twelve percent of the move cycles 4/7+6 were observed in the 1980s while the amount rose to 26 percent during 2005-2010. This result might contribute to the fact that writers tended to provide more supporting arguments and to present justifications for their proposed claims. The growing application of these two move cycles also emphasizes the changing nature of discussions to challenge more argumentations.

3.1.1.3 Conclusion

About 59 percent of all selected RAs closed with move 9 (*Recommendation*). The cycles 3 (*Finding*) / 9 (*Recommendation*) + 7 (*Claim*) were also common and accounted for 26% and 32% in group A and group B respectively. Here again, the cycle 9+7 was not predicted by Dudley-Evans's (1994) model. Note the following example:

> *(2) Students should be taught how to utilize positive transfer and avoid interference, and they must be given enough opportunity to practice using idioms in contextualized situations* **[M9].** *By doing this, we can help students overcome their "idiomphobia" and learn to produce English idioms correctly, both in and outside of class* ***[M7]****.* (TESOLd17)

3.2 Verb Tense

Verb tense, as a linguistic feature, has been investigated in comparative genre studies (Crossley, 2007; Gunawardena, 1989; Li & Ge, 2009; Malcolm, 1987). In this study, a total of five used tenses were identified in the two datasets, namely the simple past, simple present, present perfect, past perfect, and future. However, the two most frequently used tenses were the simple past and simple present tense. M1 (*Information move)* and M3 (*Finding)* were considered

for analyzing the variation of verb tenses because they were the lengthiest parts in our dataset. M7 (*Claim*) was put aside, as the criterion for recognizing this move was the use of hedges and modals. M5 (*Reference to previous literature*) was excluded because it appears that writers stick to the conventions of using verb tense in representing literature. In addition, other *moves* mostly consisted of two or three verbs, so they were discarded in the analysis of verb tenses in both periods. As a result, the chronological changes of these two tenses were investigated in *Information move* and *Findings*. The results are shown in Tables 6 and 7.

Table 6. Chi-square for Verb Tense change in M1

tense time	Past (%)	Present (%)	x^2	df	Sig
1980s	69(33.8)	115(56.3)			
2005-2010	86(40.9)	109(51.9)	1.679	1	0.004

Of the mentioned five tenses, a total of 204 verbs in group A and 210 verbs in group B were detected. The frequency of the simple past was 69 in group A and 86 in group B. This shows an increase of about 23 percent in the occurrence of the simple past tense during the years 2005-2010. On the other hand, the frequency of the simple present tense accounted for 115 in the 1980s and 109 during the years 2005-2010, showing a reduction of 4.4 percent in group B. In order to see whether these changes are meaningful or not, a *chi-square* test was run. The result showed that the value of *chi-square* at the significance level of $p<0.05$ was more than the critical value and therefore the differences were significant.

Table 7. Chi-Square of Changes of Verb Tense in M3

tense time	Past (%)	Present (%)	x^2	Df	Sig
1980s	135(32.7)	236(57.2)			
2005-2010	345(49.2)	331(47.2)	5.410	1	0.004

Regarding M3 (*Finding*), a total of 412 verbs in the 1980s and 701 verbs in 2005-2010 were identified throughout this move. As indicated in Table 7, the frequency of the occurrence of the simple past and simple present tense was respectively 135 and 236 in the 1980s, while the frequency of the occurrence of these tenses was 345 vs. 331 in group B. The results show that the simple past sharply increased by 16.5%, whereas the frequency of occurrence of the simple present tense decreased by 10% in 2005-2010. In order to find out any significant diachronic differences between the two tenses, *chi-square* was utilized, confirming that these changes were significant over time. The higher frequency of the simple past tense in 2005-2010 is consistent with the findings of Li and Ge's (2009) chronological study of medical RAs in that they found the simple past tense as an inclination to specificity.

Based on Malcolm (1987), making generalizations is in the present tense and reference to a specific experiment is in the past tense. Note the following two examples:

> *(5) Specific feedback on errors draws attention to material not adequatel learned, allowing the student to focus there and not be distracted by too much re- examination of work done well.* (TESOLd5)
>
> *(6) In the present study, all of the learners except Anthony revealed in their interviews That they did not disagree with their teachers … and avoided asking their teachers Questions when they felt it would disturb the flow of teaching.* (MLJd38)

In extract (5) which is taken from group A, the writer reported on the general findings of the study and might be considered as a reporting hypothesis, showing a generalization, while

example (6), extracted from group B, reveals a more detailed explanation about the findings of the study.

4. Discussion

In what follows, the results of the study will be interpreted by presenting a genre-based analysis of the changes in the discussion sections selected from the three journals over the two time periods. In terms of the research questions posed in the introduction section, the linguistic features and signals of each move typically found in research article discussions are distinguished, and a comparison is made between the frequencies of each move. The significant rhetorical structures of the discussion section will be investigated through showing the most important differences which exist in the structure of the three selected journals across time.

4.1 Structural Analysis of RA Discussions in the Two Corpora

As suggested earlier, chronological changes are due to specific social changes (Bazerman, 1988; Gross, et. al, 2002). As a result, the slight movement of the discussion section toward being more argumentative, as revealed in the use of these moves that carry argumentation via providing detailed explanations, may be due to the fact that the world is moving toward complexity. The discussion section becoming more argumentative can be considered as an aspect of evolution. In the 1980s, this part mostly had been merged with other sections, i.e. results, findings, conclusion, summary, and implications, but from 2005-2010, most research articles were willing to allocate a separate section to *Discussion*. For example, of the 106 ESP articles downloaded in the 1980s, the heading *Discussion* appeared in just 15 articles. On the whole, one thing is obvious; the discussion section is moving toward being a more argumentative and quantitative section and as it will be discussed in more detail, many of the changes occur to fulfill this purpose. Readers, along with the discussion section, are to be guided into a precise, specific, and focused representation of data. More consistent would be an explanation of change in terms of increased complexity − greater volumes of data − coupled with a dramatic increase in the number of scientific articles.

The similarity of the rhetorical structure of RA discussion sections over the two time periods is an important finding of this reported survey. According to Table 7, no statistically significant differences were found in the frequency of the nine moves recorded in the two corpora. However, some representational features, or *steps,* in these moves, which have been subject to change, will be examined.

4.1.1 Move 1: Information move

Move 1 was found to be present in 41 of the 55 RAs in group A versus 52 out of 60 RAs in group B. Swales (1990) defines an information move as a "free standing" move that may occur in any part of the move cycle (p. 172). An increase of 12.1 percent during 2005-2010 showed that present-day writers try to present readers with more detailed background information and the specific activities running through the study.

Dudley-Evans (1994) states four criteria for move 1, namely providing background information, presenting the aim of the study, explaining the methodology implemented, and referring to previous research. Although the general findings revealed no meaningful differences, an interesting result of this study showed that the preference for using these four criteria has changed. There was no significant difference between three of these criteria but for the methodology used. During the 1980s, the percentage of using this criterion in ESP, TESOL,

and MLJ were (23.07%), (30.7%), and (26.6%) respectively, whereas during 2005-2010, the percentages increased to (50%), (68.7%), and (66.6%). Note the following examples:

> *(7) The purpose of this paper is to foster increased dialogue between research on the language problems of foreign teaching assistants and ...* (ESPd5)
> *(8) For sentences containing two animate nouns, however, the participants in the current study had to process some sort of structural information, be it word order or case markings, in order to comprehend the target sentence correctly.* (MLJd29)

In example (7), the author presented the *information move* by stating the main focus of the study, whereas in extract (8), the emphasis was on the methodology used.

The emphasis on methodology observed in group B suggests that writers have the tendency to stress importance by describing how the study was done in order to attract the attention of professional researchers. Explaining the details allows the writer to argue how carefully the research is designed in order to convince readers of how reliable the results are. This finding is in line with Bazerman's (1988) since he claims that referring to the research methods and procedures can be regarded as a sign for the appropriateness of the research. In addition, providing the details of the methodology used directs readers through the processes and helps them feel as if they conducted the research themselves so they may better judge what was passing through the writer's mind. Furthermore, sufficient details and a clear elaboration on the methodology used can help other researchers duplicate the research if they desire to investigate related subjects and conduct comparable experiments.

4.1.2 Move 2: Statement of results

Move 2 presents an objective account of the results by referring to tables and numerical values. Although the overall frequency of the occurrence of move 2 showed no significant differences between the two groups, it revealed an increase of 5.5% during 2005-2010. The result of this analysis was not directly in line with that of Hopkins and Dudley-Evans (1988), who found this move obligatory. However, the relatively low frequency of move 2 in the two datasets (54.5 % in group A and 60 % in group B) might raise questions about the way we collected our data. It is likely that the statistical results were mostly discussed under the heading of "Findings and Discussion" or "Results and Discussion" rather than "Discussion", which fell outside the scope of this study.

4.1.3 Move 3: Findings

Findings objectively report the main results of a study. Analysis of the data revealed that the researchers in the two chronological periods used quite similar strategies in utilizing M3 through the discussion sections. Although the frequency of this move increased from 89.09 percent to 91.6 percent, it was the most frequently used move in the two periods. Resemblance of the most frequent moves in the two corpora showed that presenting new findings and claims and justifying the need for conducting such research through the highlighting of existing literature has always been the main challenge for authors. Similarly, emphasizing M3 in the two corpora may refer to the main purpose of a study that will be realized through presenting and reporting the findings of a research.

4.1.4 Move 4: (Un) expected outcome

The function of this move is to provide a comment on the results, especially when the outcome is unexpected or surprising and when the hypotheses have been rejected by the findings. The overall frequency of the occurrence of move 4 showed a reduction of 20.9 percent in group B. The total number of move 4 instances in group A was 28 (50.9%), whereas it was 18 in group B (30%). This result is in congruence with Nwgou's (1997) findings that all of the results

are not always depicted in an article. Generally, this relatively significant drop in the use of move 4 may be due to the growing number of published articles in local and international journals. One of the most important interests of researchers is a need to get their papers published in a professional journal if they want to be accepted in a scientific discourse community. Thus, one possible explanation is that the writers seem to avoid using this move in order to find a reliable space for publication. Using negative evaluation would make it difficult to have their articles accepted. Furthermore, authors tend to prove their own hypotheses rather than refute them since they think that rejection may spoil their reputation (Jalilifar et al., 2012).

4.1.5 Move 5: Reference to previous research

The aim of this move is to place the present research within the context of existing literature in a specific field. The analysis showed that the three journals revealed a rather similar realization of move 5 over the two time periods. The overall analysis of move 5 depicted an increase in its frequency of occurrence in group B − from 41 occurrences (74.5%) in group A to 53 occurrences (88.3%) in group B. The increasing frequency of Move 5 seems to challenge previous research. It appears that writers are more willing to move towards the argument, which has nowadays become the main aim of the discussion section.

Dudley-Evans (1994) and Swales (1990) consider two main sub-types for move 5: reference to comparing present research with previous literature and reference to providing support for present research. The findings revealed that during the years 2005-2010, writers had the tendency to use supporting reference more frequently than making comparisons. The percentages of this criterion in ESP (group A, 41.6% vs. group B, 77.7%), TESOL (group A 56.2% vs. group B 68.7%) and MLJ (group A 38.4% vs. group B 89.4%) were recorded as illustrated in the following examples:

> *(9) In a study of referential pronouns in conversation, Thavenius (1983) attempted …. <u>While</u> she concluded that it may be impossible to determine completely all of the distinctive factors at work, we can begin to initiate a study of the factors affecting contextualized utterances.* (ESPd8)
>
> *(10) This finding <u>corroborates</u> results from Schulz's (1996, 2001) studies, which found that students' opinions about grammar teaching were more favorable than teachers' opinions.* (MLJd33)

Using the word *while* in example (9) showed that the author contrasted her study with that of Thavenius, whereas in example (10) the writer used existing literature to find support for his own study and compared his study to past finding to indicate certain consistencies.

This finding appears to be due to the fact that present-day writers try to build their research applying a strong supporting background. In addition, researchers strengthen their research in a convincing and trustable stance among existing literature. Furthermore, with supporting references, researchers may show to what extent their research is compatible with previous endeavors in order to validate their study. Min (2008) emphasized the efficacy of the role of reviewers on the researchers' interpretation of their transcripts without obtaining the writers' perspectives. As a result, another possible explanation of the increased use of supporting references may lie in the fact that researchers are attempting to attract the reviewers' positive attitude.

4.1.6 Move 6: Explanation

The function of this move is to explain the results of the study especially when they are unexpected or when they are different from previous research. The criteria for recognizing this move was commenting on the reporting results using hedges and modals, especially when following a claim or an unexpected result as depicted in example 11:

*(11) Instead, a strong focus on grammar and vocabulary was found, even during group work, and … **[M4]**. One possible reason for the focus on form in the ESL classes is that the ESL learners in this study, unlike the FSL learners, had considerable opportunity for acquisition outside the classroom and that because of this, the ESL teachers may have felt that the language code was the appropriate focus for the classroom**[M6]**.*

(TESOLd14)

In this example, the word *instead*, shows the contrast with what has been said before. In using M6 (*Explanation*), as it is seen, the explanations which are based on the writer's own interpretation are tentatively declared with cautious expressions.

Results of the study, in general, reveal a higher occurrence in group B. The higher frequency of M6 in the three journals during the years 2005-2010 may be related to the need to find a strong justification for the findings, especially when they are in contrast with those of previous research. Therefore, the more convincing the explanation, the more trustable the research will be. It also reveals the need to more closely employ arguments in presenting the data leading to their claims and results. Another explanation seems to lie in the expansion of the World Wide Web. The world of science is flooded with the shower of journals which are published worldwide. The rise in the number of scientific journals as well as the number of researchers has opened a way of being critically judged by critics. Claims require careful arguments concerning the cause of the results as well as the conditions required for the results; therefore, using M6 suggests a way by which authors can confirm their claims and strengthen their position in their own peer-community.

4.1.7 Move 7: Claim

Hopkins and Dudley-Evans (1988) and Swales (1990) defined this move as deduction and a hypothesis in which the writer makes a generalized claim about the results. However, Dudley-Evans (1994) combines these two into one move, *claim*. Distinguishing *claim* from *findings* was not always clear, so to avoid confusing these two moves, the criterion for recognizing M3 (*Finding*) was mostly reporting verbs and for M7 (*Claim*) it was the use of modals and hedges, as seen in the following examples:

*(12) Results indicate that easing the dual cognitive processing load by having students deal with culturally familiar material increases fluency **[M3]**.* (MLJd9)

*(13) Many of these differences in temporal perspectives can probably be attributed to lack of knowledge about the intrinsic temporal properties **[M7]**.* (ESPd19)

The selected journals applied M7 in a relatively similar way and no significant differences were observed in the corpora (see Table 3 and Table 4). However, a gradual increase can be traced through the data. A growing desire to be accepted as a member of a discourse community as well as the growing number of local and international journals has made authors take cautious steps. According to Crossley (2007), the use of modals and hedges allow the writers not to break any politeness rules such as face saving acts, and authors need to show their modesty to avoid being criticized of subjectivity. In addition, the motivation for applying hedges and modals as a strategy stems from the desire to avoid dogmatism. Writers are concerned about not being criticized by readers. Again, the role of reviewers as well as readers will be highlighted in that their reflection on the articles caution researchers about generalizing the findings.

4.1.8 Move 8: Limitation

Limitation is used to introduce the caveats of a study and mostly appears at the end of an article. This move changed from 47.2% in group A to 50% in group B. It was among the least frequent moves in the two corpora. The findings corroborate Swales's (1990) claim that writers may not be interested in "giving advantages to others in an increasingly competitive market for research grants" (p. 173).

The lower percentage in group A might be related to the point that some writers presented the limitations of their study under a separate heading *Limitation*. However, an author's growing interest in stating limitations is likely to suggest that present-day writers anticipate the restrictions of their own studies and express them to avoid any possible negative opinions by reviewers and other researchers.

4.1.9 Move 9: Recommendation

Move 9 typically makes suggestions for further research related to that specific study and for improvements in the methodology followed in reported research. This move accounted for 65.4% of the occurrences in the 1980s and a frequency of 68.3% during 2005-2010. The findings showed that authors followed a similar procedure in utilizing this move, with a relatively high percentage, during the two time periods. This finding is consistent with Posteguillo's (1999) finding that *recommendation* was quite frequent in computer science research articles. Huckin (as cited in Swales, 1994) believes that writers abandoned using M9 in order not to give advantage to other researchers. A gradual increase of *Recommendation*, however, seems to show attitude changes in researchers. They are likely to prefer opening a vast view before the eyes of scholars to make improvements in similar studies and to conduct further research in related fields.

4.2 Verb tense

Along the lines laid down by Li and Ge (2009), this study reveals that there is a shift from simple present tense in the 1980s to the simple past tense from 2005-2010 in presenting M1 (*Information move)*. Malcolm (1987) stated that the simple past tense is used to refer to specific events or actions. Therefore authors, nowadays, use the past tense to report procedures of their own experiments. The shift from the simple present tense to the simple past tense shows a shift from reporting results to the activities that went on during the research. This confirmed the results of the present study which showed the writer's tendency to explain the methodology used in more detail in order to be more specific.

By the increase of the simple past tense in M3 (*Finding*) in group B, writers take more tentative steps in generalizing the findings. Furthermore, they used the simple past tense to present actual experimental or observational narratives related to the specific findings of the study as illustrated below:

> *(14) The strong priority for ST syntax use by Ll and L2 expert and novice writers, and the significant effect of background knowledge on ST syntax use (experts use more ST syntax than novices) present evidence that choice of syntactic structures cannot be avoided in writing.* (ESPd4)

As indicated by example (14), using the reporting verb *present* without referring to any researchers indicates *generalization* and is thus in the present tense, whereas extract (15) refers to a specific experiment using a direct reference to other researchers, so the past tense has been used:

> *(15) In this course, we used both types of corpora and found that they complemented each other.* (ESPd21)

Swales (1990) argues that the rationale for communicative purposes influences the choice of content and style. Therefore, the use of the simple past tense may be attributed to the communication of specificity. It is likely that the development of more systematic communication through the World Wide Web, calls for depicting more detailed information. Generally speaking, the analysis of verb tense revealed that present-day RA authors prefer to use the past tense, rather than the present tense, to emphasize the writers' tendency to present a detailed description of the data in a more specific fashion to satisfy the readers' expectation.

5. Conclusion

Studies on chronological changes are conducted in order to shed light on the developments of a genre and a scientific discourse community. This study has sought not only to inform readers about the most significant textual features of the discussion section in two time periods, but to equally explore the changes of utilizing Dudley-Evans (1994) nine-move model over time.

Comparing the data from the two sets revealed no dramatic changes, and the study indicated the similarity of the discussion section over the two chronological periods. Furthermore, in accordance with Holmes's (1997) and Peacock's (2002) claim, the results showed no obligatory move in the three journals. However, there were some modifications in some features of the moves to make them change toward more argumentation, complexity and specificity in order to meet the requirements of the discourse community. A growing tendency was found in using the *Information move, Reference to previous studies*, *and Explanation,* but a reduction of the frequency of *(Un) expected result* was witnessed. These changes mark a greater concern with argumentation and with the methodology used, and an increased emphasis on caution and reduction of face-threat. The results of this study also support the idea that change in RAs is not sudden and abrupt but gradual. The study confirmed that the gradual evolution in some features of RAs occur with caution. The results gained from the changes in moves, such as the increase in the use of *Claim* and *Explanation,* showed a gradual movement towards explanation and a consequent increase in supporting arguments.

5.1 Pedagogical Implications

Writing the discussion section of an RA is one of the challenging parts of research writing. There also has been a growing interest in academic writing with the pedagogical purposes especially in the context of English for Academic Purposes (EAP) and English for Specific Purposes (ESP). The genre-based approaches to the understanding of the rhetorical structure will help obtain useful information about the nature of different types of texts in order to write more effectively and successfully. Consequently, awareness of the conventions of academic writing and adopting them is very important. On the other hand, many researchers pay special attention to studies that emphasize the developing nature of genres (Atkinson, 1992, 1996; Li & Ge, 2009; Salager-Meyer, 1999a, 1999b, 2000, among others). Such studies are undoubtedly important as they shed light on our understanding of how a specific genre evolves and in what way they may change in accordance with social needs. Research might mentally and intellectually prepare researchers in advance for the changes that might occur in a specific type of genre. As Atkinson (1996) claims, "examining the evolving symbolic means…we can therefore attain a powerful perspective on the developing scientific form of life" (p. 334). The findings of this study may help RA writers better understand the structural development of RAs in applied linguistics. The present-day authors' awareness of the linguistic features of RAs may help them produce RAs that are more likely to be accepted by international English journals. There is hope that this study may contribute to the understanding of genre conventions in the academic teaching of writing, especially in English for specific purposes. The findings of the present study may have some implications for EAP writing pedagogy. In teaching students how to organize their RA discussions, attention should be paid to the patterns prevalent in the discipline.

5.2 Suggestions for Further Research

The present study has taken account of possible differences found in the rhetorical structure of discussion sections of applied linguistics articles during two periods of time. Therefore, this study can be extended by considering emerging changes in other parts of an RA, such as *Introduction, Methodology*, or even *Citation*. Since the purpose of this study was investigating the overall changes in the three selected journals, drawing on changes in each journal individually can also be the subject of research. Besides, this study was restricted to the organization of moves within a single discipline − applied linguistics − so the structures were similar to each other. A further study focusing on the variation of the moves within two disciplines might provide more significant insights into the rhetorical organization of RA discussions across time. In addition, similarities in move structures might result from the relatively short span that existed between the two selected periods; therefore, other studies can be interesting regarding longer chronological distance in order to find more plausible differences. Furthermore, a larger group may be needed to determine the extent to which the findings can be generalized.

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