Rhetorical Structure of Applied Linguistics Research Article Discussions: A Comparative Cross-Cultural Analysis

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ABSTRACT

Background. Recent years have seen tremendous research efforts in the development of English for academic and research publication purposes, utilising an established approach to comparative genre analysis. This growing interest is primarily driven by the global dominance of Anglophone writing conventions, which necessitates raising awareness among researchers, particularly in non-Anglophone contexts.

Purpose. This study explored and analysed the communicative intents of the discussion sections in research articles in two different contexts to investigate the effect of nativeness on the structural organisation in this genre. The focus of the study was on the rhetorical structure and employment of Moves in the applied linguistics research article Discussions, written in English by Iranian and native English-speaking researchers.

Methods. A mixed-methods research study was conducted on two corpora, comprising 40 Discussions written by Iranian scholars and 40 Discussions written by native English-speaking scholars, selected from research articles published in international peer-reviewed journals.

Results. The comparison of the two corpora revealed similarities and differences in the frequency, type, structure, sequence, and cyclicity of Moves. While there were significant differences in the frequency and sequence of Moves and Steps, both corpora employed the same types. They featured cyclical structures with no evidence of linear patterns across the Discussions. Both groups of researchers found it essential to provide background information and report and comment on the results in the research article Discussions, however, with notable differences in commenting strategies, i.e., Steps. The results indicated that socio-cultural conventions might have influenced the scholars' under- and over-employment of certain Moves and Steps in the research article Discussions.

Implications. The findings of this study provide research-based evidence to practically and pedagogically assist in the context of English for academic and specific purposes, particularly in teaching English for research publication purposes to non-native English-speaking scholars.

KEYWORDS:

research article, discussion section, academic writing, communicative purpose, genre-based study, move analysis, rhetorical organisation, applied linguistics

INTRODUCTION

Research publication facilitates spreading, preserving, and transmitting knowledge to the next generation. Genre analysis has, therefore, paid significant attention to research articles (RAs) over the past several decades. Successful academic writing is as much the result of appropriate rhetorical and linguistic choices as the quality of the content. Hence, much research has been conducted to ensure quality research publications. English is considered the principal medium of scientific communication and publication. Consequently, academic writing is dominated by Anglophone conventions in the global context, and non-native scholars are increasingly willing to communicate their ideas in English to gain international recognition and enhance their scholarly impact. It has been widely recognised that writing for scholarly publication in English is a critical dimension of national and international academic and professional standing

(Stoller & Robinson, 2013; Yang, 2016). However, complying with the requirements of the genre in RAs is significantly more challenging for non-native English speakers (hereafter NNES) than native English speakers (hereafter NES) (Burrough-Boenisch, 2003; Cho, 2004; Sadeghi & Shirzad Khajepasha, 2015), even for expert professionals (Glasman-deal, 2020; Lei & Hu, 2019). The underlying reason for this issue is partly due to the undeniable impact of cultural and contextual factors on the form and structure of academic writing. In addition, insufficient knowledge of rhetorical structures and the Anglophone conventions concerning the semantic, syntactic, and pragmatic choices in the presentation of information places NNES at a significant disadvantage against NES for the publication of RAs in English.

To express their communicative intent, researchers use a variety of structural organisations for which the information is segmented into functional units of discourse, commonly referred to as "Move". Moves are units of discourse structure that have a uniform orientation, a particular structure, and clearly defined functional characteristics (Nwogu, 1989). It has been a significant focus of recent scholarship to examine and dissect the rhetorical structure of the canonical sections of scientific papers. Several studies have explored and presented frameworks for all sections of RAs (e.g., Kanoksilapatham, 2005; Lewin et al., 2001; Nwogu, 1989), while others have focused on specific sections such as the introduction (e.g., Samraj, 2002; Swales, 1990), methods (e.g., Chen & Kuo, 2012; Lim, 2006), results (e.g., Brett, 1994), and discussion (e.g., Basturkmen, 2012; Peacock, 2002). As a text analytical approach, many researchers have adopted Move analysis to identify the structure of information in different contexts, registers, and genres, such as academic prose (e.g., Alamri, 2020; Alinasab et al., 2021; Hu & Liu, 2018; Loi et al., 2016; Marefat & Mohammadzadeh, 2013). Researchers classified Moves as conventional if they appeared in 50% (Holmes, 1997; Swales, 1990), 60% (Kanoksilapatham, 2005), or 66% (Hatzitheodorou, 2014), and obligatory if they appeared in 90% (Santos, 1996) or 100% (Cross & Oppenheim, 2006; Kanoksilapatham, 2005) of the investigated genre.

Given that the importance and contribution of findings are established in the discussion section of RAs (Ruiying & Allison, 2003), extensive research has employed Move analysis to investigate the rhetorical structure of this section (e.g., Amirian et al., 2008; Amnuai, 2019; Arabi, 2019; Atai & Falah, 2005; Basturkmen, 2012; Peacock, 2002). Hopkins and Dudley-Evans (1988) conducted an early study on this subject. They proposed an eleven-Move scheme based on their detailed analysis of the discussion section of theses and published articles in biology. In his Create a Research Space (CARS) model, Swales (1990, 2004) glossed over the eleven-Move schemes suggested by Peng (1987) and Hopkins and Dudley-Evans (1988), proposing a list of the eight most frequent Moves occurring in repeated cycles in RA Discussions. Holmes (1997), based on his research on the discussion sections of social science RAs, found that there is no entirely obligatory Move in this RA section. Similarly, in a study carried out by Peacock (2002), no compulsory Move was found in the corpus of 252 discussion sections from seven disciplines.

Another research carried out on the discussion sections of RAs is that of Ruiying and Allison (2003), who investigated the results, discussion, conclusion, and pedagogical implication sections of 20 applied linguistics English RAs. Their study aimed to explore the relationship between the sections and their communitive purposes. However, they did not examine the potential impact of nativeness and contextual factors, such as the first language writing conventions, on the information organisation, i.e., the realisation of Moves. As in Kanoksilapatham (2003), Ruiying and Allison (2003) used two levels of structure, i.e., Move and Step, in their analysis to "distinguish the communicative purposes from the rhetorical techniques realising the purposes" (p. 379). Rather than a linear scheme, they proposed a hierarchical seven-Move framework for RA Discussions in applied linguistics, further elaborated in the following section. According to the authors, commenting on results and reporting results are respectively obligatory and quasi-obligatory, and the rest are optional Moves in the discussion sections. They further elaborate that the communicative focus in this section is on the obligatory Move, i.e., commenting on results, where the significance of findings is established, and interpretation goes beyond the 'objective' results.

Even though there are some similarities between the rhetorical structure of RAs, previous research has shown that the realisation of Moves may vary in different sections, depending on the genre and field of study. In his analysis of written medical texts, Nwogu (1989) identified two Moves in RA Discussions, comprising several constituent elements. In a later study, Lewin et al. (2001) found five Moves prototypical for RA Discussions in social science, with each Move consisting of one or more component acts. In her rhetorical model for biochemistry RAs, Kanoksilapatham (2003) determined four Moves in Discussions, each realised by various steps. All these Discussion frameworks share particular Moves, such as stating the research outcome, offering interpretations, and indicating the significance of the study. However, while research limitations were indicated in medical (Nwogu, 1989) and biochemistry (Kanoksilapatham, 2003) RA Discussions, they were not outlined by Lewin et al. (2001) in social science texts. Furthermore, the potential counterclaims and implications of results were found to be common Moves in social science and biochemistry RA Discussions, whereas they were not addressed in medical texts.

RA Discussions have been the topic of considerable research, primarily to explore cross-disciplinary variations (e.g., Holmes, 1997; Hopkins & Dudley-Evans, 1988; Peacock, 2002; Ruiying & Allison, 2003; Stoller & Robinson, 2013) and cross-linguistic characteristics of rhetorical structures (Arabi, 2019; Loi et al., 2016; Sadeghi & Alinasab, 2020; Sol-

er-Monreal, 2015). However, few comparative, cross-cultural studies focus on the discourse structures of RAs written by NES and NNES (e.g., Moreno, 2021). Previous research has demonstrated the effect of socio-cultural factors on the written product of non-native speakers (e.g., Ahmadi, 2022; Marefat & Mohammadzadeh, 2013; Moreno, 2021; Tahririan & Jalilifar, 2004). That said, most cross-cultural, genre-based studies have focused on abstract (e.g., Kafes, 2015; Marefat & Mohammadzadeh, 2013; Samar et al., 2014; Tankó, 2017) and introduction sections (e.g., Del Saz Rubio, 2011; Lu et al., 2021; Soler-Monreal, 2015). Little evidence is available about comparative, cross-cultural, genre-based studies on the discussion sections of applied linguistics RAs written by NES and Persian native speakers as NNES, thus calling for further research.

This study fills the gap in previous research by investigating the use of rhetorical Moves in terms of frequency, type, status, structure, and sequence in applied linguistics RA Discussions written by NESs and NNESs. Additionally, attempts were made to analyse significant features from a socio-cultural and contextual perspective. Moreover, the conformance of RA Discussions written by NESs and NNESs to Ruiying and Allison's (2003) Move framework was studied and analysed. In other words, the analysis sought to determine how closely RA Discussions written by NESs and NNESs adhered to the Move framework outlined by Ruiying and Allison (2003) concerning the rhetorical structure and whether nativeness had an impact on the organisation of information. Considering that Ruiying and Allison (2003) developed their framework based on the structural organisation of applied linguistics RAs, regardless of the authors' native language, the present research looked into the consistency of the framework, taking linguistic and contextual factors into account. The results of this study will have pedagogical implications in teaching English for academic (EAP) and specific purposes (ESP), writing practices, and research by assisting instructors in selecting and adapting their teaching materials. As Anthony (2018) points out, the biggest challenge in the classroom is choosing suitable materials. On top of that, the selected teaching materials need to be adapted (Darwis, 2019; Woodrow, 2017), for which the learners' needs should be identified. The findings may also prove helpful to novice NNES academic writers in English. As novice NNESs typically use discursive patterns typical of their native language, publishing their research in English may present additional challenges; hence, the need for them to learn about the rhetorical structure and organisation of information in English RAs.

METHODS

Data Collection

A collection of 150 English RA Discussions in applied linguistics was initially formed, comprising 75 Discussions written by NES and 75 Discussions written by Iranian NNES, published between 2013 and 2020 in international journals. Overall, 80 English RA Discussions, 40 from each corpus, were chosen and compiled. The NNES corpus was selected from the following Scopus-indexed journals: *System, The Journal of Asi-aTEFL, Iranian Journal of Language Teaching Research, Journal of Research in Applied Linguistics, Applied Research on English Language.* The NES corpus was selected from the following Scopus-indexed journals: *Applied Linguistics, Journal of English for Academic Purposes, Language Learning & Technology, Language Teaching Research, The Modern Language Journal.*

A simple random sampling method was used to create the corpora to ensure an unbiased sample. The RAs were carefully chosen for this study based on predetermined criteria, and those that did not comply were excluded. First and foremost, the RAs were restricted to empirical studies which conformed with the IMRDC (Introduction-Method-Results-Discussion-Conclusion) standard. In cases where functional headings such as "Results and Discussions" and "Discussion and Conclusion" were employed, the RAs with a distinct subsection and subheading for Discussion were selected; otherwise, they were ignored. As for the authors' nationality, judgements were primarily made based on their names; when in doubt, an online search for their background, affiliation, and native language was conducted. The RAs were excluded when the authors' nationality could not be verified, a paper by the same corresponding author had already been selected, and a non-native-speaking scholar was involved in a multi-authored RA.

Data Analysis

Both qualitative and quantitative methods were applied to conduct the rhetorical Move analysis of RA Discussions. For the identification of Moves and Steps, the hierarchical seven-Move framework of Ruiying and Allison (2003) was employed since it was developed based on research on applied linguistics which is the focus of the present study. Ruiying and Allison's (2003) model is a two-layer analysis comprising Moves and Steps, where a Move is realised by one or more Steps (Figure 1). A Move "captures the function and purpose of a segment of text at a more general level" (Ruiying & Allison, 2003, p. 370) and can involve one or more Steps, defined as rhetorical realisations of the function of Move.

To identify Moves and Steps in texts, they were segmented into sentences as units of analysis. Sentences are considered a complete unit of meaning and have been commonly used in the genre analysis literature (e.g., Basturkmen, 2012; Holmes, 1997; Zhang & Wannaruk, 2016). Besides, since there were very few instances of writers embedding two or more moves within the same sentence, adopting a unit of analysis below that level was deemed unnecessary. Having divided the texts into the unit of analysis, each sentence was carefully examined and annotated by Move and Step based on its communicative intent. In cases where a unit of text served multiple communicative functions, it was assigned

Figure 1

Ruiying and Allison's (2003) seven-Move model for the research article Discussions

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Move 1: Background information
Move 2: Reporting results
Move 3: Summarising results
Move 4: Commenting on results
        Step 1: Interpreting results
        Step 2: Comparing results with literature
        Step 3: Accounting for results
        Step 4: Evaluating results
Move 5: Summarising the study
Move 6: Evaluating the study
        Step 1: Indicating limitations
        Step 2: Indicating significance/advantage
        Step 3: Evaluating methodology
Move 7: Deductions from the research
        Step 1: Making suggestions
        Step 2: Recommending further research
        Step 3: Drawing pedagogic implication
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to the most salient Move and Step (e.g., Del Saz Rubio, 2011; Holmes, 1997). The results of the initial qualitative analysis of Moves and Steps were subsequently subjected to the quantitative analysis. More specifically, the frequency and percentage of Moves and Steps in each RA Discussion and across all RAs in each corpus, along with the percentage of RAs per corpus featuring each Move and Step, were calculated and recorded. The obtained results were tabulated and analysed per corpus to determine the structural pattern and complexity of Moves. Additionally, statistical tests were conducted to determine whether the rhetorical structure of RA Discussions differed significantly between the two corpora.

The quantitative results were compared using the Mann-Whitney U test for statistical variations in Move occurrence between the two datasets. The test was conducted on the relative frequency, i.e., the percentage of each Move against the total frequency of Moves per corpus, to eliminate the impact of text length variation. The status of Moves and Steps in each corpus was subsequently identified based on their relative frequency. The cut-off point for Move and Step classification was set based on Kanoksilapatham's (2005) criterion, classifying each Move as obligatory, conventional, or optional in terms of their occurrence in 100%, 60-99%, and below 60% of RAs, respectively. Chunks of text were selected as the unit of analysis to evaluate the cyclicity of Moves in Discussions according to their communicative intent. To elaborate, a group of adjacent sentences featuring the same Move constituted one chunk of text. Text chunks were annotated, tabulated, and analysed for their structure and cyclicity. The present study conducted a literature search to identify the contextual factors that may have influenced the use of Moves by NNES writers.

Reliability Measures

The two corpora were analysed and coded on two occasions within a 2-month interval to establish the reliability of Move

identification. The intra-rater reliability was measured using Cohen's kappa test for each corpus, both of which were calculated to be above 0.95.

RESULTS AND DISCUSSION

Rhetorical Move Analysis

To investigate the employment of Moves and Steps in terms of their frequency, status, structure, and sequence between RA Discussions in NES and NNES corpora, the relative frequency of Moves and Steps was juxtaposed to disregard the effect of text length variation. The Mann-Whitney U tests showed no statistically significant difference in the occurrence of Move 1, i.e., background information ($U = 700.5$, $p = 0.336$), as well as Move 2, i.e., reporting results ($U = 609$, $p = 0.065$), between the NES corpus ($f_{DM1} = 16.39\%$, $f_{DM2} = 20.51\%$) and the NNES corpus ($f_{DM1} = 19.40\%$, $f_{DM2} = 21.40\%$). However, a significant difference was observed in the occurrence of Move 3, i.e., summarising results ($U = 468$, $p = 0.001$) between the two corpora – the NES corpus ($f_{DM3} = 4.76\%$) and the NNES corpus ($f_{DM3} = 2.31\%$). As for Move 4, even though there was no significant difference in the overall occurrence of the Move ($U = 779.5$, $p = 0.843$) between the NES corpus ($f_{DM4} = 38.19\%$) and the NNES corpus ($f_{DM4} = 51.5\%$), significant differences were observed in the second Step, i.e., comparing results with literature ($U = 587$, $p = 0.04$), and the fourth Step, i.e., evaluating results ($U = 456.5$, $p = 0.01$). The tests showed no statistically significant difference in the occurrence of Move 5, i.e., summarising the study ($U = 781$, $p = 0.663$), which was barely used in the discussion sections of both the NES corpus ($f_{DM5} = 0.24\%$) and the NNES corpus ($f_{DM5} = 0.31\%$). The most significant difference was observed in Move 6, i.e., evaluating the study ($U = 427$, $p = 0$) between the NES corpus ($f_{DM6} = 11.5\%$) and the NNES corpus ($f_{DM6} = 3.23\%$). All the three Steps of Move 6 had significant differences – the largest of which was observed in the first Step, i.e., indicating

limitations (U = 492.5, p = 0.001), accounting for 5.64% and 0.92% of the NES corpus and the NNES corpus, respectively. Similarly, the test showed a statistically significant difference in Move 7, i.e., deductions from the research, and all the three Steps of the Move (U = 447, p = 0) between the NES corpus (f_{DM7} = 8.87%) and the NNES corpus (f_{DM7} = 2%). The largest difference in Move 7 was observed in the first Step, i.e., making suggestions (U = 487, p = 0), comprising 3.88% and 0.87% of the NES corpus and the NNES corpus, respectively. To further elaborate, Table 1 summarises the frequency of Moves and Steps across all RAs.

As shown in Table 1, Move 4 was identified as the most frequent Move in both corpora, which was an expected outcome since it is the communicative purpose of Discussions to elaborate, establish meaning, and indicate the contribution of findings in the field of study. This result is consistent with that of Ruiying and Allison (2003). However, Move 4 was employed significantly more by NNESs, who dedicated more than half of the Discussions to this Move. With regard to the Steps, there was a significantly higher tendency in NNES RAs to compare research results with previous studies. In contrast, NES RAs approached this Move primarily by justifying the research results. A closer examination revealed that NNESs also relied on earlier studies for reasoning purposes. This finding may have cultural underpinnings. It is possible that in the Iranian context, authors are more concerned about the validity of their judgment and, thus, are more inclined to seek approval for their opinions and interpretations in the light of other studies. Correspondingly, in his research on Iranian master's theses, Nodoushan (2011) refers to Iranian writers' concern with the validity of their research. Nevertheless, this hypothesis will need further qualitative investigation.

Regarding the Steps of Move 4, as the most common Move in both corpora, some discrepancies were observed between the findings of this study and those of Ruiying and Allison (2003). In their research, the most prominent Steps across the applied linguistics RA Discussions were "interpreting results" and "accounting for results". However, although the latter was the most frequent Step employed by NESs and the second most frequent Step used by NNESs in this study, "interpreting results" is the least frequent Step in both corpora. The results of the present study indicated "comparing results with literature" to be the most prominent Step in the realisation of "commenting on results" employed by NNESs and the second most frequent Step used by NESs, which is in contrast with Ruiying and Allison's (2003) findings, as well. Furthermore, contrary to their finding that Move 1, i.e., background information, was rarely used in Discussions, the current study found that both NESs and NNESs employed this Move extensively, making it the third most common Move in Discussions. In addition to Move 1, Ruiying and Allison (2003) found Move 5, i.e., summarising the study, equally infrequent in RA Discussion. In the same vein, the results of the current study showed this Move to be the least frequent

Move in both corpora, indicating that it may not be expected in Discussions.

To determine the status of each Move and Step in RA Discussions, in terms of obligatory, conventional, or optional, the frequency and percentage of RA Discussions featuring each Move and Step were calculated. Table 2 presents the status of Moves and Steps in both NES and NNES corpora. The results showed similarities and differences in Move occurrence in the two data sets. Move 1 (background information), Move 2 (reporting results), and Move 4 (commenting on results) were found to be the obligatory Moves across all RA Discussions in both NES and NNES corpora, indicating their inclusion by all the authors. This finding is, to some extent, inconsistent with that of Ruiying and Allison (2003), showing "commenting on results" as the only obligatory Move in RA Discussions, with "reporting on results" being quasi-obligatory, i.e., employed in all but one RA Discussions. Similar findings were reported by Basturkmen (2012) and Le and Harrington (2015), indicating "commenting on results" to be the most crucial Move in the discussion sections in dentistry and applied linguistics RAs, respectively. Moreover, reporting research results, i.e., Move 2, has been reported as an obligatory Move in several previous studies, as well (e.g., Alamri, 2020; Amirian et al., 2008; Atai & Falah, 2005; Dudley-Evans, 1994; Hopkins & Dudley-Evans, 1988; Nodoushan, 2011; Peng, 1987). However, little research has reported Move 1 as an obligatory Move (e.g., Rasmeenin, 2006, as cited in Nodoushan, 2011).

Move 6, i.e., evaluating the study, and Move 7, i.e., deductions from the research, were identified as conventional Moves in the NES corpus, having occurred in most RA Discussions. In contrast, the results indicated that these two Moves were optional in the NNES corpus, with less than one-third of the RAs employing them. This finding, which is consistent with the results of other studies (e.g., Arabi, 2019; Atai & Falah, 2005; Ruiying & Allison, 2003), might be due to the reason that the appearance of these Moves in Discussions is influenced by the subsequent sections, such as Conclusion (Ruiying & Allison, 2003). Accordingly, in RAs that include both sections, there seems to be a tendency to comment on results in Discussions and evaluate the study in Conclusions. The lack of tendency of NNESs to assess their findings may also be attributed to a cultural assumption in the Iranian context that evaluation is a task for others, not one's own. Undoubtedly, this hypothesis will require further investigation from cultural and contextual perspectives.

Move Sequence and Structure

Regarding the sequence, pattern, and cyclicity of Moves, it was observed that the NESs and NNESs did not necessarily progress sequentially through Moves and Steps; that is, RA Discussions in both corpora had a highly cyclical structure. This finding supports previous research highlighting cyclic patterns, rather than linear or compositional, i.e.,

Table 1

Frequency and Percentage of Occurrence of Moves and Steps

Move/Step		NES (N = 40)			NNES (N = 40)		
		f	*%f*	*x̄*	*f*	*%f*	*x̄*
Move 1	Background information	279	16.39	6.98	252	19.40	6.30
Move 2	Reporting results	349	20.51	8.73	278	21.40	6.95
Move 3	Summarising results	81	4.76	2.03	30	2.31	0.75
Move 4	Commenting on results	650	38.19	16.25	667	51.35	16.68
Step 1	Interpreting results	62	3.64	1.55	76	5.85	1.90
Step 2	Comparing results with literature	204	11.99	5.10	297	22.86	7.43
Step 3	Accounting for results	217	12.75	5.43	201	15.47	5.03
Step 4	Evaluating results	167	9.81	4.18	93	7.16	2.33
Move 5	Summarising the study	4	0.24	0.10	4	0.31	0.10
Move 6	Evaluating the study	188	11.05	4.70	42	3.23	1.05
Step 1	Indicating limitations	96	5.64	2.40	12	0.92	0.30
Step 2	Indicating significance/advantage	50	2.94	1.25	14	1.08	0.35
Step 3	Evaluating methodology	42	2.47	1.05	16	1.23	0.40
Move 7	Deductions from the research	151	8.87	3.78	26	2.00	0.65
Step 1	Making suggestions	66	3.88	1.65	7	0.54	0.18
Step 2	Recommending further research	51	3.00	1.28	8	0.62	0.20
Step 3	Drawing pedagogic implications	34	2.00	0.85	11	0.85	0.28

Note. f = frequency of Move/Step across all RAs. %f = the percentage of Move/Step across all RAs.
x̄ = average occurrence of Move/Step per section.

the compositions of Moves without adhering to the linear or cyclic structure, in RA Discussions (e.g., Amnuai & Wannaruk, 2013; Atai & Falah, 2005; Holmes, 1997; Hopkins & Dudley-Evans, 1988; Loi et al., 2016; Peacock, 2002; Peng, 1987; Swales, 1990). Peacock (2002), for example, highlights the presence of Move cycles in RA Discussions, particularly those written by NNESs specialising in language and linguistics. In the present study, the analysis of the sequence of Moves demonstrated the highly cyclical structure of Discussions in the majority (96%) of RAs in the NNES corpus (e.g., M1-M2-M4-M1-M2-M4-M2-M4-M2-M4-M2-M4-M6-M4-M7), and all the RAs in the NES corpus (e.g., M4-M6-M2-M4-M6-M3-M4-M2-M4-M6-M1-M6-M4-M6). This finding supports Peacock's (2002) notion regarding the highly cyclical structure of Moves in the NNES corpus.

The most frequent two-Move cycle in both corpora was Move 2, i.e., reporting results, followed by Move 4, i.e., commenting on results, an example of which is presented below. Among all RA Discussions featuring two-Move cycles, 38% in the NNES corpus and 23% in the NES corpus were realised through the repetition of Move 2 followed by Move 4. In other words, NNESs showed a higher tendency to comment on the results immediately after their report, which, as mentioned before, was mainly done by comparing their findings

with previous studies. In contrast, NESs approached this Move primarily by accounting for the results. The prevalence of Move 2 instead of Move 3, i.e., summarising the results, indicates that both groups of NES and NNES writers tend to establish their evaluations based on individual, main results rather than on a projection of findings.

Furthermore, the complexity of the cyclical structure of RA Discussions was analysed according to Move repetitions. The results showed that 100% of NES RAs and 90% of NNES RAs employed one-Move and two-Move cycles. At a more complex level, 67.5% of NES RAs and 45% of NNES RAs featured three-Move cycles in their Discussions (e.g., **M3-M4-M2**-M4-M6-M2-**M3-M4-M2-M3-M4-M2**-...). Only one instance of the four-Move cycle was seen in NES RAs (**M1-M3-M2-M4**-M1-M2-M4-M2-M4-M6-**M1-M3-M2-M4**-...), with no occurrences in the NNES corpus. These findings indicated a more complex cyclical pattern in NES RA Discussions, which may have been due to the employment of more Move categories in the RAs, as shown in Table 1 and Table 2.

An example of the cyclicity of Moves:

> *[Move 2:] The results of the study [...] revealed that the participants' written accuracy in revised compositions was significantly affected*

by OIF. [Move 4/Step 3:] This finding is in line with the findings of the study conducted by Nassaji (2011), who explored the role of oral negotiation in response to written errors in L2 classrooms. [...] [Move 2:] Given the findings of the second research question, the results of the study indicated that OIF had a significant effect on the written accuracy of the participants on the post-test in the OIF group in comparison with the EF group. [Move 4/Step 3:] With respect to OIF and retention, this finding supports the results of the study by Lyster and Saito (2010b), who investigated the impact of different kinds of oral CF on learners' oral errors and found that CF plays a facilitative role for L2 development and that its impact is sustained at least until delayed posttests. (NNES, D6)

Apart from the structural pattern, the opening and closing Moves were also studied. The Moves featured in NES and NNES RAs to open and conclude Discussions are presented in Table 3. As illustrated, there is a similarity between the two corpora regarding the main opening Move. Most RAs in both NES and NNES corpora tended to start Discussions with Move 1 (background information). However, Move 3 (summarising the results) was more frequently used as the opening Move in NES RAs compared to their NNES counterparts, where it was used only once for this purpose. Furthermore, the two corpora differed significantly in their

featured Moves to conclude Discussions. NESs showed an almost equal tendency to close the section with Move 7 (deductions from the research) or Move 4 (commenting on results), mainly to introduce further research and evaluate the results, respectively. However, a significant proportion of NNES RAs concluded Discussions using Move 4, most often by comparing the results with previous studies. Contrary to NES RAs, Move 7 (deductions from the research) and Move 6 (evaluating the study) were notably less used in NNES RAs to conclude Discussions. A closer surface-level examination of NNES RAs showed that non-native writers tended to employ these Moves in RA Conclusions rather than Discussions.

Examples of opening Moves:

[Move 1:] The purpose of the present study was to examine the significance of teachers' self-efficacy and collective teacher efficacy in predicting teachers' psychological well-being among Iranian English teachers. (NNES, D2)

[Move 3:] This study has demonstrated that analytic judgments of collocation accuracy, lexical diversity, and word frequency are highly predictive of holistic judgments of lexical proficiency for both written and spoken samples. (NES, D16)

Table 2

Distribution and Status of Moves and Steps

Move/Step		NES (N = 40)			NNES (N = 40)		
		n	%	Status	n	%	Status
Move 1	Background information	40	100	***	40	100	***
Move 2	Reporting results	40	100	***	40	100	***
Move 3	Summarising results	29	72.5	**	16	40	*
Move 4	Commenting on results	40	100	***	40	100	***
Step 1	Interpreting results	26	65	**	30	75	**
Step 2	Comparing results with literature	37	92.5	**	36	90	**
Step 3	Accounting for results	38	95	**	33	82.5	**
Step 4	Evaluating results	39	97.5	**	32	80	**
Move 5	Summarising the study	3	7.5	*	2	5	*
Move 6	Evaluating the study	30	75	**	19	47.5	*
Step 1	Indicating limitations	21	52.5	*	8	20	*
Step 2	Indicating significance/advantage	20	50	*	9	22.5	*
Step 3	Evaluating methodology	17	42.5	*	5	12.5	*
Move 7	Deductions from the research	26	65	**	12	30	*
Step 1	Making suggestions	19	47.5	*	4	10	*
Step 2	Recommending further research	15	37.5	*	6	15	*
Step 3	Drawing pedagogic implications	16	40	*	7	17.5	*

Note. n = the number of RAs featuring Move/Step; % = the percentage of RAs featuring Move/Step.
  *** = obligatory.
  ** = conventional.
  * = optional.
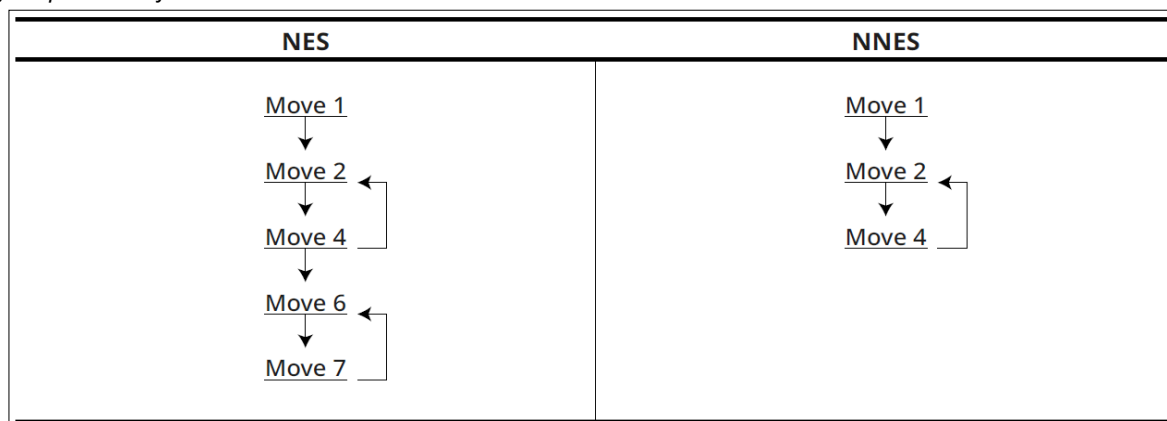
Figure 2

Typical cyclic patterns of the core Moves

Table 3

Distribution of Opening and Closing Moves

	Opening Moves			Closing Moves		
	Move	**n**	**%**	**Move**	**n**	**%**
NES	Move 1	24	60	Move 7	16	40
(N = 40)	Move 3	8	20	Move 4	14	35
	Move 2	5	12.5	Move 6	6	15
	Move 4	3	7.5	Move 2	4	10
NNES	Move 1	30	75	Move 4	23	57.5%
(N = 40)	Move 2	6	15	Move 7	7	17.5%
	Move 4	2	5	Move 2	5	12.5%
	Move 3	1	2.5	Move 1	3	7.5%
	Move 6	1	2.5	Move 6	2	5.0%

Examples of closing Moves:

> *[Move 4/Step 2:] As mentioned earlier, the literature has document-ed a positive relationship between teachers' individual efficacy and collective efficacy, which hand in hand influence student achieve-ment (Goddard & Goddard, 2001; Goddard et al., 2000, Goddard, Hoy, & Woolfolk Hoy, 2004; Kurz & Knight, 2004; Tschannen-Moran & Barr, 2004). (NNES, D33)*

> *[Move 7/Step 1:] Though neither the survey findings nor the inter-view findings are generalisable, they nevertheless suggest a need for greater attention to diversity in sampling for studies of proof-reading in higher education. (NES, D34)*

Overall, the results indicated conformance with Ruiying and Allison's (2003) Move framework concerning the types of Moves. However, no linear pattern of Moves and Steps was found in any Discussions. Moreover, the results did not sup-port the chosen framework regarding the status of Moves. This disagreement in results may be due to the distinction between the datasets used for the studies. In Ruiying and Allison's (2003) research, only 8 RAs with a distinct discus-sion section were included in the corpus of study. However, the present research meticulously selected 80 RAs that fol-lowed the IMRDC structure. The reliability of findings may be affected by the sample size.

The results of this study showed parallels and variances in the organisation of information, i.e., realisation of Moves, between NES and NNES corpora. Considering the relative frequency of Moves, the most prominent, i.e., obligatory, Moves across each corpus were similar, i.e., Move 1, Move 2, and Move 4, with some differences in their level of employ-ment (see Tables 1 and 2). On the other hand, there were significant disagreements between the two sets of data re-garding the Steps of obligatory Moves and the employment of conventional and optional Moves. A cyclic structure of Moves was found in both NES and NNES corpora, featuring the same two-Move cycle, i.e., Move 2-Move4. Nevertheless, the differences in the occurrence of Moves across the two corpora were also evident in their cyclic patterns. As illus-trated, Moves 6 and 7 were used cyclically by NESs but not by

their NNES counterparts (see Figure 2). Furthermore, NESs and NNESs mainly used the same Move to open the Discussion, i.e., Move 1; however, their strategy differed for closing the section (see Table 3). Researchers have previously attributed writers' rhetorical choices to cultural and social contexts (e.g., Kafes, 2015; Marefat & Mohammadzadeh, 2013). Previous research has also indicated the effect of cultural and contextual conventions on the written product of Iranian researchers (e.g., Marefat & Mohammadzadeh, 2013; Tahririan & Jalilifar, 2004). Past writing experiences, writing strategies in first and second language (Zhang, 2018), and fear of negative evaluation (Schmidt, 2004; Shang, 2013), have also been identified as influential factors in second language writing. As discussed earlier, the differences observed between the two sets of RA Discussions in this study might be due to any of these issues.

It is essential to acknowledge some limitations in the current study to avoid over-generalising the findings. The present research focused on English RAs in one academic discipline, i.e., applied linguistics, and analysed the rhetorical Move structures in one section of published RAs, i.e., Discussions. Future research may expand upon the inclusion of different academic disciplines and other sections of RAs. Moreover, the study's data was limited by size; thus, the generalizability of the current findings can be increased by expanding the size of the datasets. It is also recommended that future studies include the investigation of lexico-grammatical features, i.e., linguistic realisations, of the rhetorical Moves in NES and NNES RAs. Furthermore, interviews can be conducted with RA authors to analyse the impact of their educational background, whether they have been taught academic writing, cultural background, and other influential factors on their written products, as explained above.

CONCLUSION

The present comparative study provides an insight into the distinct communicative intents and functions of RA Discussions written by NESs and NNESs, i.e., Iranian scholars. For non-native English-speaking scholars to maintain their professional standing nationally and internationally, and in response to the so-called academic doctrine of 'publish or perish', it is imperative to write and publish RAs in English, which is the academic lingua franca in the global context. The findings of this study provide further research-based evidence that the rhetorical organisation and structure of RAs are culturally and contextually dependent.

The present research offers several practical and pedagogical implications in the context of English for academic or specific purposes, particularly for research publication purposes. Researchers can benefit from such analytical comparisons by gaining a clearer understanding of the differences in norms and practices of scholarly communication in local and international discourse communities. Novice researchers, in particular, can gain valuable insight into the common rhetorical practices in Anglophone academic writing and the effect of first-language contextual factors. Such knowledge and awareness will enable non-native English-speaking scholars to make more informed rhetorical choices and to present their arguments more effectively. Furthermore, education specialists could find the results helpful in preparing appropriate materials and designing curriculums tailored to the learners' needs and aligned with the rhetorical conventions adopted by the academic community. Move analysis can also help teachers become more familiar with the distribution of information across RA Discussions. Teachers can use this research-based knowledge to set more practical objectives, provide better feedback, adopt appropriate instructional strategies, and design tasks and assignments that facilitate novice writers' understanding of rhetorical patterns.

CONFLICT OF INTERESTS

The author declares that she has no conflict of interest.

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