

Modeling Claim - Evidence - Stance link in the Discussion Section of Research Genres: A Comparative Case Study of Expert and Student Writers in Applied Linguistics

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Abstract: The previous genre-based studies have emphasized the rhetorical organization of the discussion section in research articles or thesis writing. The present study extends this trend by exploring the argumentative structure and its link to stance-taking features in the discussion part-genre written by both expert and student writers. Two corpora were compiled, including discussion samples taken from published research articles and those chosen from Master's theses in applied linguistics. Both quantitative and qualitative analyses were conducted to identify any differences and similarities between the two groups of writers in terms of their organization of argumentative structure and the stance-taking manner. The results demonstrated that expert and student writers significantly differ in the manipulation of supporting evidence albeit their similar tendency to craft claim-evidence link. The significant differences were particularly found in the realization of interpretive arguments, with student writers employing more use of reason-result pattern whereas established writers presenting the higher occurrence of concessive clauses to reinforce the strength of arguments. Besides, the study also revealed that student writers tend to favor more numerical data while expert writers show greater preferences for generalized evidential and research evaluation to seek support for knowledge claims. Furthermore, the analysis of stance markers highlighted that stance-taking devices are inextricably interwoven with the claim-evidence link, with hedges and self-mentions predominantly serving for the interpretive evidence, attitude markers for both evidential and evaluative labels, and boosters for claim sets and factual evidence. Statistically significant differences between two corpora were also observed across the allocation of stance markers in relation to argumentative structures. The findings of the study have both theoretical and pedagogical implications for EAP writing instruction and learning needs.

Keywords: Argumentative Patterns, Stance Markers, Discussion Section, Corpus-Based Analysis

1. Introduction

The discussion section is essential to the generic construction of both research articles and thesis writing. This specific part-genre often involves reporting and consolidating findings of the study, evaluating research significance, making suggestions and recommendations for future research [3, 7, 41-42], thus it can facilitate potential readers to gain access to a snapshot of what the entire study is about. A multitude of genre-based studies has been conducted on this particular part-genre, particularly with an emphasis on

revealing its generic structure with the identification of moves and steps [2, 3, 8, 26-27, 29, 35, 48]. These previous studies have provided valuable insights into the rhetorical structure of discussion genre and their significance in carrying forward the argument. It can be concluded that the analysis of schematic structure helps us gain an extensive understanding of how the discussion writings are generically structured and what particular role each move and step plays in it.

Despite the wide recognition of the rhetorical importance of move-step constellations in composing the discussion part, a missing point from the existing literature is a thorough

examination of such a genre from an argumentative perspective. This negligence should merit attention because the driving force underlying the move-step schematic construction of the discussion part-genre eventually turns to an issue of how to make a persuasive argument. As noted in [31], the locus of argument in the discussion section is to defend the writer's research position or legitimate research claims by elaborating on research findings. The writing of discussion is also regarded as "an argument used to prove knowledge claims" [34]. On such account, the success of discussion writing lies in its power of persuasion through making a compelling argument. According to [46], developing an argument involves at least three major components, including the evaluation of subject knowledge, which requires writers to distinguish the relevant information from those irrelevant ones; the establishment of a position, where writers are allowed to express their voice and stance; and the development of the position, which allows for a coherent display of pieces of evidence to construct a well-developed structure. Of great relevance to this study is the latter two elements, i.e. claim sets and supporting evidence.

The previous research interest in argumentation has been primarily reflected in studies of argumentative genres such as essays. One line of investigation has explored students' perceptions of challenges that they encounter in developing arguments and supporting their claims with persuasive evidence [13, 17-18, 36]. Other studies have examined the argumentative structure of research artifacts [30, 37] as well as the assessment of argument quality [40]. For instance, Qin and Karabacak analyzed the structures and quality of argumentative papers produced by Chinese students and found the students' success in supporting their claim with strategic evidence but their failure to intensify the argument with both sets of counterarguments and rebuttal claims and data [37]. Wingate probed into students' understanding of argumentation and the difficulties that students face in developing arguments in their essay writing. The study claimed that students' lack of knowledge about a successful argument may lead to their failure to manage an argument appropriately [46]. Interestingly, it is in these studies that the writer's capacity to establish a position has been considered the key component of argumentative writing [1, 21, 46], through which writers are allowed to express their voice and engage with their reader or discourse community. Nonetheless, few studies ever investigated how an argument develops in the discussion genre.

The purpose of this study is to address this gap in the literature by examining the argumentative structure of the discussion part-genre in terms of the claim-evidence link and its relation to stance-taking in a self-compiled corpus of the discussion samples written by experts and Chinese EFL students in applied linguistics. The consideration of the stance-taking features across this claim-evidence connection mainly stems from the notion that the argument in the discussion part appears quite high-demanding, where "argument is emphasized" and stance is more likely to take place to a greater extent than other sub-parts of research articles or theses [22].

Specifically, a comparative analysis was conducted to reveal the extent to which both groups of writers differ in their

appropriation of claim-evidence link, and uncover how authorial stance rhetorically contributes to the formulations of argument structures such as claim sets and evidence sets. This comparison is crucially necessary partly because understanding professional writers' argumentative strategies in discussion writing can better inform novice writers of disciplinary norms and expectations in presenting arguments, and also provide insights into EAP instruction for scaffolding student writers' genre knowledge and developing their academic literacy in constructing a successful argument. Two research questions are addressed in this study:

- 1) What are the similarities and differences between expert and student writers in presenting claim-evidence links in the discussion part-genre? Do Chinese EFL students construct the argument structure in an expert-like way?
- 2) How do stance features discursively contribute to the claim-evidence link in discussion writing of expert and student writers?

2. Methods

2.1. Corpus Compilation

In this study, two corpora were created, namely samples of research article discussion sections (RADs) and master thesis writing discussion sections (MTDs). Each corpus contains 50 samples. Table 1 provides the details of the corpus information. It can be seen that the RADs corpus comprised a total size of 65,959 word tokens, with an average length of 1319 words. The corpus of MTDs contained a total number of 114,458 word tokens, averaging 2289 words for each text. Individual text was extracted and saved as a plain text file. Semiotic resources such as tables, figures, and footnotes were strapped off and only verbal information was considered for the analysis.

The RADs samples were taken from research articles published between the years 2014-2019 in the field of applied linguistics. Several criteria were considered for inclusion of articles, which basically rely on Sinclair's basic principles for building a corpus [38]. First, three leading journals such as *English for Specific Purposes* (ESP), *Journal of English for Academic purposes* (JEAP), and *Journal of Second Language Writing* (JSLW) were taken into account for the representativeness of the selected articles given their widely recognized impact this area of research [25]. Second, articles were randomly selected across these three journals with the consideration of the Introduction – Method – results – Discussion – Conclusion (IMRD) format, which has been conventionally recognized as a conceptual schemata used for mapping the generic structure of research articles [41-42]. Third, the chosen articles should report empirical research and be written by different authors.

The samples of MTDs were retrieved from Chinese Ph.D./MA Theses Database subsumed under the CNKI database. The involved theses were submitted in partial fulfillment of requirements for the Degree of Master of Arts between the year of 2014 and 2019. To ensure the

representativeness of the collected data, samples sourced from seven top Chinese universities (e.g., 985, 211) were chosen. These include seven different degree-granting institutions such as Nanjing University and Zhejiang University from the eastern part of China, Beijing Normal

University from north China, and Wuhan University from central China, etc. The inclusion of data also considers discussion sections of thesis writings which are separately located after the Results/Findings sections and before the Concluding sections.

Table 1. Corpus information.

Corpora	No. of Ds	Ave. length	SD	Range	Tokens
RADs	50	1319.18	531.58	538-2481	65,959
MTDs	50	2289.16	1129.34	531-5187	114,458
Total	100				180,417

Note. Ave. length=average discussion length; SD=standard deviation; Range=minimum-maximum values.

2.2. Analytical Framework

Two analytical frameworks were of great relevance to the present study. First, building on previous influential works on argumentative elements [37, 40, 44, 46], an analytical model was developed for identifying the argumentative structure of the discussion sections. For instance, scholars [37, 40] presented the analysis of argumentative structures in students' argumentative essays and provide a clear-cut categorization of sets of claims and data drawing on Toulmin's model. Arguably, while the previous studies set the basis for the understanding of argument structures in academic genres, these attempts are primarily focused on analysis and construction of claims at the micro -level, thus failing to provide a nuanced description of evidence sets that support writers to achieve an persuasive argument. Hence, this current study proposed a refined model characterizing the claim-evidence link in the discussion part-genre, aiming at revealing how the development of an argument is achieved through the interaction between positioning claims and supporting evidence in such a genre.

The proposed model constitutes two essential sets of argumentative elements, namely claim sets and evidence sets. The former component can be further divided into two broad categories, including *general claims* and *research-oriented sub-claims*. By definition, a general claim refers to the main argument of a relevant study that the writer seeks to posit. Research-oriented claims relate to specified sets of claims logically linked to the research questions that the writer attempts to answer.

The latter component, *evidence sets*, is defined as a group of supporting data that help writers uphold their claims and persuade their potential readers to accept their argument. These supportive data can be grouped into four categories: factual data, evidential data, interpretive data, and evaluative data. *Factual evidence* accounts for either statistical or observational evidence that is explicitly indicated in the

discourse. The former relates to numerical (tables or figures), data-oriented (extracted samples) evidence to support claims, and the latter concerns more about reported evidence which comes after close observation of research objects under investigation. *Evidential evidence* refers to the source of information from other texts [22], which can be linguistically realized as *according to X/ (Y, 2018)* or *Z argues...* Writers use cited sources to acknowledge previous works, create comparisons or contrast between the current and prior research, or make generalizations of the findings, etc. When it comes to *interpretive evidence*, it points to any discursive attempt to enact a range of inter-propositional relationships [11] such as reason result, concession contra-expectation, grounds-conclusion, means-purpose to justify or reinforce the research claims made by authors. *Evaluative evidence* relates to the writer's critical viewpoints through which the laudable contributions or potential limitations of the study under investigation are acknowledged. It should be noted that the marked distinction between both the interpretive and evaluative data resides in that the former mainly contributes to the justification of research-oriented sub-claims, whereas the latter largely concerns the potential weakness or significance of the whole research. This newly developed analytical model with exemplified samples is given in Table 9 (See Appendix).

Second, Hyland's categorization of stance marker [21] was applied to identify the linguistic elements used for stance-taking in the development of each argument structure in both MTDs and RADs. The framework includes four principal categories, such as hedges, boosters, attitude markers, and self-mentions, which rhetorically perform to incorporate authority or beliefs onto the writer's arguments [23]. The integration of stance-taking features into the analysis of argumentative structures can provide complementary evidence to substantiate our claims about claim-evidence-stance modeling. The adopted model of stance markers was given in the following Table 2.

Table 2. A model of stance markers in discussion sections.

Devices	Function	Examples
Hedges	Withhold the writer's full commitment to the proposition	may, suggest, likely, perhaps, possible
Boosters	Emphasize force or writer's certainty in the proposition	must, prove, establish, show, demonstrate, obvious
Attitude markers	Express the writer's attitude to the proposition	agree, unfortunately, important, even, essential, consistent with
Self-mentions	Explicit reference to the author (s)	I, we, my, our

2.3. Data Analysis

Both qualitative and quantitative analyses were conducted. For qualitative analyses, the study used *Nvivo 11* plus software, a qualitative analysis program, to analyze and code the target linguistic features in both corpora. Specifically, linguistic units characterizing claims and evidence sets were manually identified from texts in RADs and MTDs based on the analytical model (See Table 9). These functional units represent a particular argumentative element with definitive rhetorical purposes. Nodes were created in Nvivo program for each argumentative structure and then instances were manually dragged into each corresponding node after the scrutinized reading of each unit of analysis. The annotation process involved consideration of rhetorical cues including lexical, phraseological, and structural indicators of rhetorical intent and shift. Argumentative elements may involve more than one category, in such cases, elements were coded according to their most salient function. To develop the codes, the author engaged in a round of open coding through the close reading of all relevant instances. In the second round, an invited expert coded 30% of the dataset independently. Differences were discussed between two coders, the proposed codes were then examined, grouped, and refined, and agreement was reached through subsequent discussions. Finally, an interrater reliability analysis using the Kappa statistic was performed to determine inter-rater consistency. Cohen's Kappa presented a total reliability of 0.88, indicating an 'almost perfect' agreement between the two raters [45].

Besides, explicit stance markers across argumentative components were further automatically filtered using AntConc 3.5.8 corpus tool. Concordance lines were thoroughly checked to ensure that each instance of stance marker contributes directly to either claim-making or evidence-oriented propositions.

In addition to qualitative analysis, quantitative analyses were done using Statistical Package for the Social Sciences (SPSS, version 23) (IBM Corp., 2015). The frequency counts of each argumentative element were calculated and compared between the two corpora. All frequencies were normalized at a rate per 10,000 words. To reveal the differences between expert and student writers, a Mann-Whitney U test was performed to identify any statistically significant differences between RADs and MTDs both in terms of the organization of argumentative structure and the stance-taking manner in the discussion part-genre. A p-value less than 0.05 was considered statistically significant.

3. Results and Discussion

This section reports pronounced findings concerning two research questions addressed in the present study. Additionally, some observed significant differences were also discussed with relevant literature.

3.1. The General Pattern of Argumentative Structure in Both Corpora

Overall, the analysis yielded a total number of 1495 functional units representing claims and evidence identified from RADs, and 1663 cases concerning claims and evidence emerged from MTDs, respectively. Table 3 shows the frequency distribution of major argumentative element across both corpora. It can be seen from the table that sub-claims were the most frequently identified claim types in both corpora, with RADs taking up 87.5% and MTDs explaining 95.7% of the total claim sets. Comparatively, the provision of general claims appears to be somewhat quite optional. Regarding evidence sets, interpretative evidence was found the most prominent category, which accounts for 41.7% and 47.2% of whole evidence sets in RADs and MTD, respectively. The second commonly observed category goes to evidential evidence, explaining 27.9% and 25.7% in both corpora. Factual evidence falls within the third label which was followed by evaluative one as the least frequent type.

Table 3. Frequency distribution of argumentative structural elements in both corpora.

Categories	RADs (n=50)		MTDs (n=50)	
	Frequency	Percentage	Frequency	Percentage
<i>Claim sets</i>				
General claims	18	12.5	8	4.25
Sub-claims	126	87.5	180	95.75
Total	144	100	188	100
<i>Evidence sets</i>				
Factual	258	19.1	355	24.1
Evidential	377	27.9	379	25.7
Interpretive	563	41.7	696	47.2
Evaluative	153	11.3	45	3.0
Total	1351	100	1475	100

The results indicated that both groups of writers displayed a similar tendency to craft claim-evidence link, which was particularly reflected by their preferences for positioning arguments through sub-claims and supporting their arguments by frequently adopting more interpretive and evidential evidence. It is worth mentioning that the relatively higher presence of interpretive evidence suggests that the two groups of writers are in favor of the language of interpretation to support arguments and legitimize knowledge claims. This finding is in line with [20, 33], which contend that academic writing in the humanities and social sciences is generally known to place greater emphasis on the interpretation of findings.

3.2. The Specific Realization of Argumentative Elements

Despite the similar argumentative pattern in crafting the discussion genre, the analysis revealed marked differences between two corpora in terms of specific realizations of argumentative structures reported above. Table 4 presents the frequency distribution of specific realization features that particularly contribute to certain argumentative elements

under the label of evidence sets.

Regarding the interpretive category, it was observed that linguistic devices such as grounds conclusion, reason result, and concession contra-expectation were found the most prevalent realization strategies. Among the others, the grounds conclusion takes the highest rate (58.1% and 46.3 respectively), followed by reason-result taking up 19.3% and 43.9%, and concession for 13.5% and 5.3% (see Table 4).

Table 4. Frequency counts of sub-categorical elements in evidence sets.

Subcategories	RADs	Range	MTDs	Range
Factual data				
Observational	150	37	137	37
Statistical	108	29	218	38
Evidential data				
Acknowledge	64	26	86	33
Comparative	121	38	128	33
Contrastive	44	28	52	20
Direct quotation	50	27	39	14
Generalizations	98	40	74	26
Interpretive data				
Grounds-conclusion	327	48	322	50
Reason-result	109	42	306	49
Concession	76	36	37	23
Condition-consequence	6	5	14	11
Means-purpose	14	13	7	7
Means-result	14	8	10	7
Specification	7	5	0	0
Statement-exemplar	10	8	0	0
Evaluative data				
Implications	60	29	10	6
Limitations	40	14	1	1
Suggestions	53	16	34	11

The findings of the frequent use of grounds Conclusion, Reason Result, and Concession Contraexpectation in this study are consistent with [6], which demonstrated that linguistic realizations of such kinds were essential for the construction of critical statements in social sciences texts such as English literature and sociology. The rhetorical importance of ground conclusion in making arguments is a key finding in this study. The higher use of ground conclusion in both corpora likely suggests that the binary grounds-conclusion structure would be central to the crafting argumentation in the discussion part-genre.

Mann-Whitney U tests demonstrate that a significant difference was found for reason-result ($p=0.000$), with student writers making significantly more use of reason-result resources to back up their claims compared to the expert cohorts. Another statistical significance was detected in the use of concession contrast ($p=0.001$), indicating that expert writers employed significantly more frequent concession expressions to reinforce their arguments than the student group (See Table 5). Typical examples of both reason-result and concession contrast are presented below.

Example 1 It is hypothesized that the difference in the employment of FO between native English speakers and Beijing dialect speakers might be due to the transfer from L2 learners' native language. [MTD10.txt].

Example 2 While patterns from the current study could be seen as conflicting with the prevailing narrative of Generation

1.5 research, another interpretation is that the current study refines our understanding of early arrival Generation 1.5 writers.... [RAD43].

The findings of reason-result pattern echo several previous studies [15, 39], which showed that L2 writers tend to use more causative subordination than L1 writers. One possible explanation may be that Chinese student writers might acknowledge the function of causal relationships as an important linguistic device in helping them support arguments with a somewhat simplified account of the logical reasoning. Unlike reason-result combination, expert writers' greater preferences for concession clauses may serve to "present ideational content in a balanced fashion to provide evidence of the writer's credibility" [16], emphasize their need to avoid 'mybias' in argumentation, and position themselves with other-side arguments [47] or to introduce and concede the validity of a projected reader's view and interact with their readers [4-5, 28].

Turning to the evidential category, it is noted that comparative evidential, referring to the writer's use of previous works to make a comparison with the present findings, was indicated as the main type of source-based supporting data (Example 3). It was followed by generalizations as the second frequently used linguistic items and others such as simple acknowledgment of source, direct quotation, and contrastive citation explaining the remaining cases. However, the significant difference was only found in the use of generalizations ($p=0.023$), with expert writers presenting significantly higher use of generalized citations than their student counterparts (Example 4).

Example 3 Our findings are consistent with the close relationship found by Durrant (2017) between BAWÉ 'History' and 'Politics' holdings in his study of 4-grams and lexical bundles across all BAWÉ disciplines. [RAD18.txt].

Example 4 Previous research has focused on analyzing the product (e.g., Gebril & Plakans, 2013; Johns & Mayes, 1990; Keck, 2006, 2014; Shi, 2004) or the process (e.g., Plakans, 2008; Plakans, 2009b; Plakans & Gebril, 2012) of L2 source-based writing. [RAD16.txt].

In line with previous studies [20, 24, 32], the significant difference in the use of generalizations confirmed that experienced writers are more sensitive to using multiple generalizations to best support their arguments. This may be ascribed to the rhetorical importance of such citation use in building the high density of intertextual networks in the discussion part-genre [43]. Citations of particular pertinence to discussions are those "constellations of propositions" that are crucial resources for the writers to defend their claims or viewpoints by introducing, supporting, signposting, crediting, or engaging prior literature, etc. [14].

Furthermore, the study also revealed some interesting findings from the analysis of both factual and evaluative evidence types. According to Table 5, the comparison between the two groups indicates that Chinese MA writers significantly outperformed professional writers in providing statistical data ($p=0.004$). Concerning the linguistic realization of evaluative data sets, it was also found that expert writers

appear to evaluate their research more commonly, particularly in light of their contribution to the research field, limitations of the study, and recommendations for future work. On the contrary, Chinese learners exhibited a lower performance in these aspects of evaluation than the professionals do. The results from the Mann-Whitney U test show that their differences were also verified to be statistically significant.

Example 5 According to the questionnaire, 68% of the students in the teacher feedback group and 82% of the students in the peer feedback preferred teacher feedback plus peer feedback. [MTD14.txt].

Example 6 The findings also contribute to the limited research on the uptake of language-based writing interventions, particularly at the university level. [RAD 31.txt].

Table 5. Mann-Whitney U tests for cross-corpora argumentative elements.

	RADs (n=50)		MTDs (n=50)		Sig.
	Mean	Std. Deviation	Mean	Std. Deviation	
Factual data					
Observational	2.98	3.16	2.74	3.24	0.651
Statistical	2.16	3.13	4.36	18.93	0.004
Evidential data					
Comparative	1.28	1.59	1.78	2.17	0.271
Generalizations	1.96	1.73	1.48	2.12	0.023
Interpretive data					
Grounds-conclusion	6.56	3.68	6.44	4.59	0.422
Reason-result	2.18	1.87	6.10	4.40	0.000
Concession	1.52	1.37	0.74	1.08	0.001
Evaluative data					
Implications	1.20	1.78	0.20	0.57	0.000
Limitations	0.80	1.56	0.02	0.14	0.000
Suggestions	1.06	1.87	0.68	1.71	0.249

3.3. Distribution of Stance Markers Across Different Argumentative Structures

Further analyses were also conducted to carve out differences in the use of stance markers across argumentative structures in the two corpora. Table 6 reports the frequency distribution of stance markers across RADs and MTDs. It can be seen that hedges were the most prominent stance marker compared to other categories in both corpora, which had 132.96 occurrences in the RADs and accumulated to 66.05 occurrences in the MTDs per 10,000 words. In terms of total frequency counts, statistical analyses revealed that the expert writers showed significantly greater writer visibility than student writers ($p < 0.05$), and that student writers tend to

employ significantly more frequent use of boosters than experts ($p < 0.05$). This means student writers are shown to very frequently boost their claims in comparison with expert writers. This finding resonates with the observation of Aull and Lancaster [1] that developing academic writers frequently use boosters and fewer hedges, whereas the opposite is the case with the use of hedging, which is used more frequently by the more advanced writers. The lower frequency of hedging by the expert group is unsurprising as RAs writers in applied linguistics are under great pressure to publish their findings in mainstream international journals and consequently face a culturally diverse readership. Therefore, making tentative knowledge claims would allow writers to present their argument with appropriate caution [22].

Table 6. Cross-corpora comparison of stance markers in terms of overall distribution.

	RADs (n=50)			MTDs (n=50)			Sig.
	Raw frequency	Mean	SD	Raw frequency	Mean	SD	
Hedges	877	17.54	11.01	756	15.12	12.89	0.072
Boosters	189	3.78	2.73	349	6.98	4.58	0.000
Attitude markers	173	3.46	2.61	171	3.42	3.94	0.237
Self-mentions	291	5.82	7.65	51	1.02	1.98	0.000

When it comes to the inspection of stance markers across each argumentative structure, some pronounced findings were generated. Table 7 provides the distribution of stance markers across different argumentative structures in both corpora. The results of Mann-Whitney tests were given in Table 8. It is surprising to find that the majority of hedges occurred in interpretive sets (Figure 1), particularly in grounds-conclusion and reason-result operational relationships (56.3% for RADs and 65.1% for MTDs). By comparison, the analysis shows a significant difference between the two groups of writers in their use of hedges in grounds-conclusion, with experts

deploying significantly more use of hedges than student writers ($p = 0.020$). (Table 8) The results of further comparison also indicate that Chinese learners tend to employ a significantly higher range of hedges in causal relations than those professionals ($p = 0.011$). Examples of hedges in these two constructions are presented below.

Example 7 Therefore <ground-conclusion>, her analysis of this genre sample seemed <hedges> to have been organized around the interrelated focus on macro-level organizational features, micro-level lexico-grammatical features, and the communicative purposes behind these features, the tripartite

focus intended in the ESP genre analysis framework developed by Swales (1990). [RAD3.txt].

Example 8 The students did not appear<hedges> to be giving enough consideration to the writer-reader relationship

in the ways that they opened and structured their messages, perhaps <hedges> because <reason-result> they were unable to summon up the sense of context that would <hedges> be available to writers in real workplace settings. [RAD30.txt].

Table 7. Distribution of stance markers across different argumentative structures.

Sub-structure	RADs (n=50)				MTDs (n=50)			
	Hedges	AM	SM	Booster	Hedges	AM	SM	Booster
Claim sets								
General claims	9	3	6	0	1	0	0	8
Sub-claims	46	10	32	57	63	5	2	72
Factual data								
Observational	47	4	47	44	40	12	15	103
Statistical	17	8	10	28	16	3	6	105
Evidential data								
Acknowledge	10	1	0	0	28	0	0	0
Comparative	25	44	30	5	12	74	0	12
Contrastive	7	9	15	2	6	30	1	6
Generalizations	18	15	3	2	12	25	0	1
Interpretive data								
Grounds-C	377	30	51	28	259	14	19	26
Reason-result	117	19	22	2	233	8	4	7
Concession-C	62	8	18	12	22	0	2	1
Others	28	2	5	0	14	0	0	8
Evaluative data								
Implications	25	6	32	7	2	0	2	0
Limitations	30	3	15	0	1	0	0	0
Suggestions	58	10	5	2	47	0	0	0

Note: AM=attitude marker, SM=self-mention

It is worth mentioning that predominant occurrences of hedges in grounds-conclusion and reason-result suggest that writers' interpretation of research findings is in great need of permeating plenty of stance markers such as hedges to achieve persuasive quality [10, 19]. One possible explanation is hedging can ward off full commitment to the author's claims and open an evaluative space for discourse community.

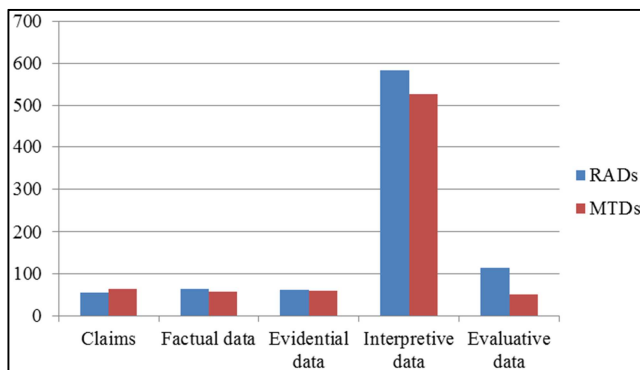


Figure 1. Hedges across the different argumentative structure of discussions.

In addition, another noteworthy observation of stance-taking was that attitudinal markers in both corpora were more likely to occur in both evidential and interpretive supporting data sets, which were largely distributed over the comparative evaluation and ground conclusion. It indicates that expert writers primarily utilize a higher frequency of attitude markers in interpretive data, while student writers tend to employ higher instances of attitude markers in evidential data (Figure 2). Specifically, we note

that the learner employed quite a larger portion of attitude markers in comparative evidential than the expert used, which appears to suggest that students were much aware of connecting own research to relevant literature and evaluating them. However, established writers prone to use more attitude markers in the ground conclusion than learner writers in discussion writing, suggesting that professionals place much emphasis on evaluative language when they put forward their deductions.

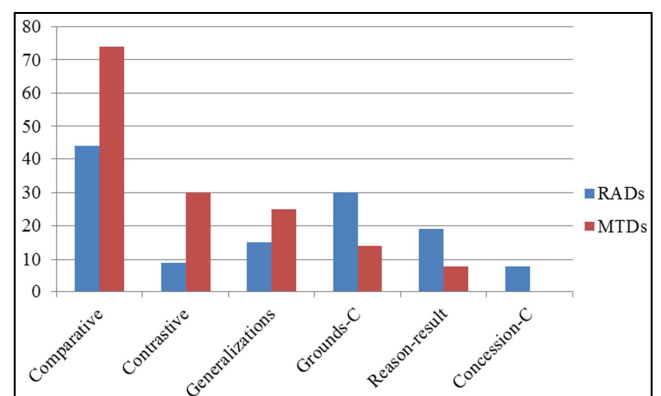


Figure 2. Distribution of attitude markers across prominent realizations.

A larger occurrence of attitude markers in comparative evidential, particularly in student writing, is opposite to findings in an earlier study by Cooley and Lewkowicz [9], who noted that students have difficulty with the positioning of arguments with reference to prior literature. It has been evidenced that students tend to either overstate or understate

the significance of their findings in the discussion section due to their lack of ability in using modal verbs to make claims appropriately. However, the complete difference between the two groups existed in light of the ground conclusion.

With regard to the use of self-mentions across argumentation structure, it was found that the highest percentage of self-mentions also occurred in the interpretive data sets, among which the instances of self-mention in the ground conclusion were demonstrated in the highest rank across all subcategories. However, there is no significant difference in the use of self-mentions for making ground conclusion statement ($p=0.054$). Besides, professional authors were more likely to indicate authorial presence both in making claims and presenting implications (Table 7). The finding indicates that establishing an appropriately-constructed authorial persona is a valuable strategy for probing relationships [22]. From this point of view, it seems that student writers are quite underdeveloped to gain control of authorial visibility to reflect the confidence in claim-making as presented in established writers.

In the last category of stance marker, i.e. booster, the results show that boosters in both corpora largely distribute over sub-claims and factual datasets (Table 7). Interestingly, the statistical analysis also shows that the learner group used a significantly higher degree of boosting devices to emphasize the certainty of the knowledge claims than those in the expert group (Table 8). The finding is congruent with [12], which shows that learner writers tend to use boosting devices more frequently than professional writers.

Table 8. Cross-corpora comparison of stance markers across prominent argumentative elements.

	RADs		MTDs		Mann-Whitney
	Mean	SD	Mean	SD	
Hedges					
Grounds-conclusion	7.54	6.29	5.18	5.34	0.020
Reason-result	2.34	2.65	4.66	5.17	0.011
Concession	1.24	1.76	0.44	0.97	0.014
Attitude markers					
Comparative	0.88	1.19	1.48	1.81	0.116
Ground conclusion	0.60	0.86	0.28	0.64	0.029
Self-mention					
Grounds-conclusion	1.02	2.35	0.38	0.81	0.054
Booster					
Sub-claims	1.14	1.34	1.44	1.58	0.434
Observational	0.88	1.24	2.06	2.83	0.061
Statistical	0.56	1.51	2.10	2.62	0.000

Appendix

Table 9. The Analytical Model for the Argumentative Structure of Discussion Sections.

Elements	Definition	Example
General claim	The general position of the writer claimed in the relevant study	[RAD1] The current study confirmed that collaborative prewriting tasks encouraged students to engage in reflection about their own and their peers' ideas, but also confirmed that the relationship between students' reflection during prewriting tasks and text quality may be tenuous.
Sub-claim	Specified sets of claims logically linked to the research questions that the writer addressed to answer.	[RAD12] Considering the source misuse strategies, secondary and opaque citations were the most common types employed by the Writers.
Factual evidence	It directs to both observational or statistical evidence that can be explicitly indicated from the discourse.	

4. Conclusions

This study examined the way that both expert and student writers organize argumentative structures in the discussion part-genre and manage stance-taking interwoven with the claim-evidence link. The results of the present study highlight a similar argumentative pattern that both professional and student writers adopt to compose argument. However, marked differences between the two groups were observed particularly across specific manifestations of evidence sets such as interpretive, evidential, evaluative, and factual supporting elements. Additionally, the findings also showed noticeable features characterizing the interconnected link between the claim-evidence link and stance-taking features. For example, stance markers such as hedges and self-mention dominantly occur in interpretive evidence, attitude markers are largely connected to both evidential and evaluative evidence, and boosters are the most frequently used indicators in claim sets and factual evidence.

The findings of this study have some implications. First, the study provides a corpus-based analytical framework for deconstructing argumentative structure in the discussion part-genre. The model is valuable in training students to acquire genre knowledge of discussion writing and assisting EFL instructors to organize curriculum design and materials. Most importantly, the study also extends the previous studies on discussion genre, which was overwhelmingly confined to the description of the move-step analysis, by offering novel perspectives for interpretation and explanation.

The current study also acknowledges several potential limitations. The data samples chosen for the analysis may be a bit small. A larger size of data would be considered for future investigations to validate the applicability of the newly proposed analytical model. Furthermore, the perceptions of challenges posed by Chinese MA students both in crafting argumentation and stance-taking are out of reach in the present study. Methodological tools like a self-report questionnaire and interviews could be beneficial to deepen our understanding of how Chinese students get themselves involved in the argumentation process and mediating authorial intrusion.

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Elements	Definition	Example
Observational	Scientifically reported evidence that derives from the close observation of research objects.	[RAD16] Analysis of the essays showed that students most commonly drew on the source information to actually introduce an idea.
Statistical	Numerical (tables or figures) explanations or source data exemplification supportive of claims.	[RAD40] The variables in the regression model explained 42% of the variance for the human scores in the test set. Of the 13 cohesion variables that showed significant growth in the longitudinal analysis, eight additional variables showed significant correlations with human judgments of combined scores...
<i>Evidential evidence</i>	According to Hyland (2014, p. 135), it references to the source of information from other texts.	
Acknowledge	The way to acknowledge the originality of the source and assign credits for others.	[RAD24] Translation or code switching is associated with unilingual settings, such as the Italian setting described by Costa (2012) and Italian and French immersion classrooms (Lyster & Ranta, 1997).
Comparative	Evidential used for building solidarity between the present study and prior research.	[RAD4] These findings are in line with Lewis's (1997) and Nattinger and DeCarrico (1992) beliefs in the effectiveness of having L2 learners practice the use of some formulaic sequences that function as sentence builders or frames.
Contrastive	Evidential used for claiming differences between the present study and prior research.	[RAD13] It contrasts with the findings in Holmes (1997), who found that the move functioning as Stating the results is the most used opening move in a dataset of 30 RA discussion sections from three social science disciplines.
Generalizations	Summary citations containing a bunch of previous studies relevant to the present investigation	[RAD29] A range of research has explored drawing attention to form in second language classrooms (Dobinson, 2001; Ellis, 2001; Ellis et al., 2001; Laufer & Rozovski-Roitblat, 2011; Long, 1991; Plonsky & Loewen, 2013; Swain & Lapkin, 1998; Zhao & Bitchener, 2007) and content focused classrooms (Basturkmen & Shackleford, 2015; Costa, 2012).
Direct quotation	The deployment of original claims directly into the target text.	[RAD12] Shi (2008) interprets this act as the writers' "attempt to maintain a balance between a reliance on source texts for support and an attempt to establish their own voice by choosing not to cite" (p. 21).
<i>Interpretive evidence</i>	The author's justification of knowledge claims by enacting a range of operational relationships (Crombie, 1985)	
Grounds - conclusion	A conclusive deduction drawn on the basis of some preceding observations.	[RAD33] Given this variation, it may be inferred that the decision to fund a project or not did not always take into consideration the BI plan, and that the reviewers may<hedges> benefit from a training in BI writing and analysis as much as the proposers.
Reason-result	The cause-effect relations established via observations	[RAD44] Possibly due to time constraints and workload demands, some participants expressed the view that citing sources was something of a burdensome obligation that was largely unconnected to the expression of their own ideas and arguments.
Concession - Contra-expectation	The denial of truth of inference	[RAD30] Although the students on the course were introduced to the whole notion of intertextuality, in which texts are connected to and constructed from other texts, it is not clear how much this affected their thinking when it came to performing these email tasks.
Condition - consequence	The assumption made on a hypothetical condition.	[RAD15] If an L2 word is cognate with its equivalent in the learner's L1 it may be semantically transparent, meaning that the learner can have receptive knowledge of that word on first acquaintance with it.
Means-purpose	Rationalization of research by building means-purpose connection.	[RAD12] To avoid populating the text with so many quotations, the writer imports exact or very near copies of the original text into the manuscript.
Means-result	The achievement of results accompanied by their operational manner	[RAD21] Importantly, by working with other agents within the university, recruiting volunteers, and emphasizing the common goal of internationalization, the need for additional funds can be kept to a minimum.
Statement - exemplification	A general statement followed with some examples.	[RAD14] Some overlap exists between p-frames and other types of academic expressions. For example, complete variants of the p-frames, when examined individually, are reminiscent of formulas and phrases, and the fillers of the p-frames may remind one of collocations.
<i>Evaluative evidence</i>	It is related to the evaluative viewpoints by promoting laudable contributions, pinpointing potential weaknesses, or offering insightful	
Implications	Statements used to clarify he contributions made by the study.	[RAD28] Our study expands the notion of voice in emails by adding a professional dimension to the concept.
Limitations	Statements used for the presentation of shortcomings of the study.	[RAD6] This study focused on reading-based integrated writing tasks, and thus, the results may not be generalizable in other task types.
Suggestions	Statements used for recommendations for future research.	[RAD1] It would be interesting to explore in future studies how collaboratively- and individually-oriented students interact when asked to work with peers who have either a similar or different orientation.

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