

Generic Structure of Research Article Abstracts

STRUCTURE GÉNÉRIQUE DES RÉSUMÉS DES ARTICLES DE RECHERCHES

DONG Hai-lin¹

XUE Huan²

Abstract: As an academic genre, the research article (RA) abstracts play an important role in academic community. This paper aims to explore the differences between RA abstracts by native and non-native speakers of English in terms of the generic structure. Theoretically, the commonly accepted *IMRD model* (*Introduction-Method-Results-Discussion*) and Swale's *Move-Step model* are adopted to analyse the macro- and micro-structure respectively. It is found that the Introduction Move is obligatory for English RA abstracts by non-native speakers as opposed to the Introduction and the Results move by native speakers.

Key words: Research Article; Genre Analysis; Generic Structure

Resumé: En tant que genre académique, les résumés des articles de recherches (AR) jouent un rôle important dans la communauté universitaire. Ce document vise à explorer les différences entre les résumés des AR rédigés par des auteurs de langue anglaise maternelle et par ceux qui ne le sont pas en termes de structure générique. Théoriquement, le modèle généralement admis, le modèle IMRD (*Introduction-Méthode-Résultats-discussion*) et le modèle Move-step de Swale sont adoptés pour analyser les macro-et micro-structures respectivement. Il est constaté que, pour les auteurs qui ne sont pas de langue anglaise maternelle, l'introduction est obligatoire dans les résumés des AR, par opposition à l'introduction et aux résultats par des auteurs de langue anglaise maternelle.

Mots-clés: article de recherches, analyse de genre; structure générique

1. INTRODUCTION

In view of the fact that different cultures affect academic discourse and that English has been taken as the language of international academic communication, it is rather important for nonnative English academics to familiarize themselves with the discourse conventions of English academic writing and try to adopt them in their own writing. As an academic genre, research article (RA) abstracts play an important role in

¹ Associate Professor, College of Foreign Languages, Hebei Polytechnic University, Tangshan 063000, China.

² College of Light Industry, Hebei Polytechnic University, Tangshan 063000, China.

*Received 5 June 2010; accepted 26 August 2010

academic community. They serve as a time-saving device by informing the readers of the main content of the article, indicating whether the full text deserves their attention.

The current research aims to explore the differences between RA abstracts by native and nonnative speakers of English. By understanding the major differences, the nonnative speakers of English may be aware of how to produce satisfactory English abstracts to have their research findings understood and recognized internationally.

2. RESEARCH BACKGROUND

2.1 ESP Genre Analysis

Based on Swales' *Aspects of Article Introduction* (1981), ESP Genre Analysis has received prominence in the area of English for Specific Purposes. ESP genre analysis has been adopted to analyze the spoken and written language that non-native speakers have to use in academic and professional settings (Swales, 1990). In this field, genres are viewed as oral and written text types defined by their formal properties and communicative purposes within social contexts (Hyon, 1996). As a representative of ESP genre analysis, Swales investigates on the introduction of research articles by taking *Move-Step Model* as an analytical tool to explore genre from the functional perspective. It is found that there is a regular pattern of "moves" and "steps" which appear in a certain order in most of the introductions of research articles investigated. This research helps him establish the famous three-move *CARS Model* for Research Article Introductions which is presented as follows:

Table 1: The CARS Model by Swales (1990)

Move 1 Establishing a territory	
Step 1 Claiming centrality (and/or)	↓ Declining rhetorical efforts
Step 2 Making topic generalization(s)	
Step 3 Reviewing items of previous research	
Move 2 Establishing a niche	
Step 1A Counter-claiming (or)	↓ Weakening knowledge claims
Step 1B Indicating a gap (or)	
Step 1C Question-raising (or)	
Step 1D Continuing a tradition	
Move 3 Occupying the niche	
Step 1A Outlining purposes (or)	Increasing explicitness
Step 1B Announcing present research	
Step 2 Announcing principal findings	
Step 3 Indicating RA structure	

As is seen clearly in Swale's model, the relevant analytical units are "move" and "step". "Move is a text segment made up of a bundle of linguistic features which give the segment a uniform orientation and signal the content of discourse in it." (Nwogu, 1991). With regard to "step", it is a rhetorical strategy to realize a "move". In fact, a "move" can be realized by one "step" or a combination of "steps". (Yang & Allison, 2003).

2.2 View of Related Studies

Some studies have been done to analyze the global organization of RA abstracts (Graetz, 1985; Swales, 1990; Salager-Meyer, 1990; Bhatia, 1993; Stein, 1997; Hyland, 2000). Among them, the most widely accepted framework is probably the IMRD format--a functional division of RA into Introduction, Method,

Results and Discussion. Most of the studies describe the structure of the RA abstracts by following the IMRD format but their research results have some deviations from the IMRD standard pattern.

Graetz (1985) examines 87 abstracts and identifies the rhetorical structure of RA abstracts as Problem-Method-Results-Conclusion. Salvager-Meyer (1990) examines 77 medical English abstracts of three text types of research papers, case reports, and review articles and four research categories of clinical, basic, epidemiological, and operative research. Six moves are identified to account for the generic organization of a medical research article abstract. They are: Statement-Purpose-Corpus/Methods-Results-Conclusion-Recommendation. He also points out that a well-organized abstract should have all the obligatory moves in relation to the IMRD format and that all the moves should be sequential. Bhatia (1993), in his classical work *Language Use in Professional Settings*, identifies four moves in RA abstracts: (a) Introducing Purpose, (b) Describing Methodology, (c) Summarizing Results, (d) Presenting Conclusions. Stein (1998) studies the conference abstract of "Teaching English to the Speakers of Other Languages" (TESOL) in terms of its rhetorical function. It is found that abstracts can be classified into empirical abstracts and pedagogical abstracts. The empirical abstracts consist of four moves: Introduction-Method-Results-Discussion (IMRD), while the pedagogical abstracts fail to conform to the IMRD pattern, which has only three moves—Introduction, Lecture and Finale (ILF). Key Hyland (2000) distinguishes the writer's statement of the research purpose from the *Introduction* section, classifying the abstracts into five moves: Introduction, Purpose, Method, Product and Conclusion.

3. ETHODOLOGY

The present study is a contrastive genre analysis on the structure of English RA abstracts by native and nonnative speakers. In order to investigate the two aspects, the author first established two corpora of NSC (native-speakers-corpus) and NNSC (nonnative-speaker-corpus) containing 20 English abstracts written by native and nonnative speakers. The NSC is made up of 10 abstracts selected at random from recent publications in several leading international journals in the field of linguistics, such as *Lingua*, *Language & Communication*, *Cognitive Science*, and *English for Specific Purposes*. Likewise, the NNSC consist of another 10 English RA abstracts taken randomly from several prestigious Chinese journals in the field of linguistics, such as *Foreign Language Teaching and Research*, *Journal of Foreign Languages*, *Foreign Language Education*, *Shandong Foreign Language Teaching Journal*, *Foreign Language World*, and *Foreign Language Research*. Second, the abstracts under study were analyzed quantitatively by identifying the rhetorical structure. In analyzing the structure, the commonly accepted IMRD model and Swale's Move-Step model were adopted to deal with the macro- and micro-structure of these English abstracts respectively. Then, the research results were presented.

3.1 Research Results

3.1.1 The Macro-Structure

As is shown in Table 2, the macro-structure of English abstracts in NSC and NNSC reveals salient deviations from the well recognized IMRD framework. In the two corpora, only Text No. 5 in NSC has the standard IMRD pattern. Another three English abstracts in NSC have three units of *Introduction*, *Method and Results* with Text No. 10 having the structural order of *Introduction*, *Results and Method*. In addition, Text No. 6 has a macro-structure of IRD. As for the rest abstracts in NSC, they all have the two-unit structure of *Introduction and Results*. The ten English abstracts in NNSC display a more simplified macro-structure, half of which only have the introduction unit. The rest five abstracts have two-unit structure, either Introduction-Result pattern or Introduction-Method pattern. Text No. 11, 14, 17, 19 have the former pattern, while Text No. 6 adopts the latter pattern.

Table 2: Macro-Structure of the Abstracts in the Two Corpora

Text No.	Corpus	Structure	Text No.	Corpus	Structure
1	NSC	IMR	11	NNSC	IR
2	NSC	IR	12	NNSC	I
3	NSC	IR	13	NNSC	I
4	NSC	IR	14	NNSC	IR
5	NSC	IMRD	15	NNSC	I
6	NSC	IRD	16	NNSC	IM
7	NSC	IR	17	NNSC	IR
8	NSC	IR	18	NNSC	I
9	NSC	IMR	19	NNSC	IR
10	NSC	IRM	20	NNSC	I

In order to find out the differences about the macro-structure of English abstracts in NSC and NNSC, the author counts the structural units and their occurrences. And the results are shown in Chart 1.

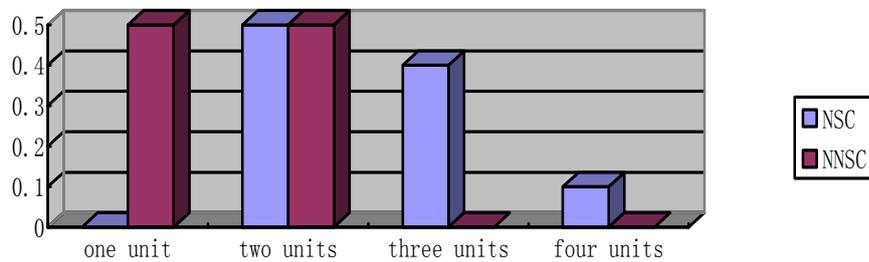


Chart 1: Number and Frequency of Units

The above chart illustrates the number and the frequency of structural units of English abstracts in NSC and NNSC. The English abstracts in NSC are represented by light blue while those in NNSC are represented by dark purple. The X axis stands for the number of structural units of the English abstracts in the two corpora. The Y axis symbolizes the frequency of occurrence of the structural units. As is shown clearly in the chart, the English abstracts in NNSC contain two major structural patterns: one unit structure and two-unit structure, with each accounting for 50%. As for the English abstracts in NSC, there are three structural patterns: two-unit, three-unit and four-unit structure with each accounting for 50%, 40%, and 10% respectively. It is also recognized that the English abstracts in NSC have more complex structures than those in NNSC owing to their comparatively various structural patterns.

Salager-Meyer (1990) claims that a well-structured abstract should state all the four components, which are fundamental and obligatory in the process of scientific inquiry. However, the research results shown in Chart 1 indicate that seldom do English abstract writers for RAs produce a complete four-unit model as expected. In addition, nonnative speakers produce a more simplified structure of English abstracts than those by native speakers. In order to contrast the English abstracts in NSC and NNSC in great detail, the author provides two pie charts: Chart 2 and Chart 3.

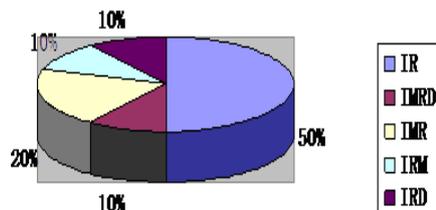


Chart 2: Generic Structure of English Abstracts in NSC

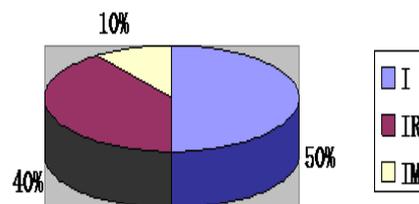


Chart 3: Generic Structure of English Abstracts in NNSC

Chart 2 illustrates the generic structure of English abstracts in NSC. In terms of different structural patterns, the pie chart is divided into five parts presented by different colors. The IR pattern occupies 50% of the ten English abstracts in NSC. The IMR pattern accounts for 20%. And each of the other three patterns: IMRD, IRD, and IRM accounts for 10%. Although the structural patterns of English abstracts in NSC vary, it can still be inferred that the Introduction Unit and the Results Unit are indispensable and obligatory while the Method Unit and the Discussion Unit are optional for English abstracts of RAs by native speakers.

Chart 3 shows the generic structure of English abstracts in NNSC. In the light of different structural patterns, the pie chart is divided into three parts characterized by different colors. The Introduction pattern occupies 50% of the ten English abstracts in NNSC. The IR pattern accounts for 40%, and the rest 10% belongs to the IM structural pattern. Although the structural patterns of English abstracts in NSC vary, it can still be stated that the Introduction Unit is obligatory for English abstracts for RAs by nonnative speakers while the Method, the Result, and the Discussion Unit are optional.

Based on the research results presented in the above charts, the author compares and contrasts the English abstracts in NSC and NNSC. It can be inferred that the Introduction Unit is the most important part for English abstracts and is never ignored no matter who the writer is. In addition, the native speakers emphasize the importance of research results. Therefore, they tend to present them in English abstracts.

3.1.2 The Micro-Structure

As is shown in Table 3, the *Introduction* moves are obligatory, most of which are realized by two steps: making topic generalization and stating the purposes. The *Result* moves are generally realized by the sole step of announcing the principal findings. The *Method* move only appears in Text No. 16 with the step of presenting methods of analysis. Table 4 indicates the micro-structure of move and step of English abstracts in NSC. The *Introduction* move and the *Result* move are obligatory. The *Result* moves are generally realized by the step of announcing the principal findings. The *Method* moves are usually realizing by introducing the corpus and research design. The detailed analysis of each move of the English abstracts in the two corpora will be presented in the following sections.

Table 3: Micro-Structure of English Abstracts in NNSC

Text No.	Move	Step
11	Introduction	1) Making topic generalization
		2) Stating the purposes
12	Introduction	1) Announcing principal findings
		2) Stating the purposes
13	Introduction	1) Making topic generalization
		2) Stating the purposes
14	Introduction	1) Making topic generalization
		2) Claiming centrality
15	Result	1) Announcing principal findings
		2) Claiming centrality
16	Introduction	1) Stating the purposes
		2) Claiming centrality
17	Method	1) Presenting methods of analysis
		2) Claiming centrality
18	Introduction	1) Reviewing related concepts
		1) Announcing principal findings
19	Introduction	1) Claiming centrality
		2) indicating the research importance
20	Introduction	1) Stating the purposes
		2) Reviewing related concepts
20	Result	1) Announcing principal findings
		2) Stating the purposes

Table 4: Micro-Structure of English Abstracts in NSC

Text No.	Move	Step
1	Introduction	1) Stating the purposes
		2) Claiming centrality
	Method	1) Indicating the nature of the study
2	Introduction	2) Presenting methods of analysis
		1) Announcing principal findings
	Result	1) Making topic generalization
3	Introduction	2) Stating the purposes
		1) Announcing principal findings
	Result	1) Announcing principal findings
4	Introduction	1) Claiming centrality
		2) Making topic generalization
	Result	1) Announcing principal findings
5	Introduction	1) Making topic generalization
		2) Claiming centrality
		3) Reviewing previous research
	Method	1) Describing the research design
	Result	1) Announcing principal findings
	Discussion	1) Evaluating the research results
	Introduction	1) Making topic generalization
		2) Reviewing related concepts
		3) Claiming centrality
	Result	1) Announcing principal findings
	Discussion	1) Presenting the implications
	Introduction	1) Raising research questions
	Result	1) Announcing principal findings
	Introduction	1) Making topic generalization
		2) Stating the purposes
		3) Reviewing previous research
	Result	1) Announcing principal findings
	Introduction	1) Making topic generalization
	Method	2) Claiming centrality
		1) Describing the corpus
Result	2) Presenting methods of analysis	
	1) Announcing principal findings	
Introduction	1) Stating the purposes	
Result	1) Announcing principal findings	
Method	1) Presenting methods of analysis	

3.1.2.1 The Introduction Move

As is shown in Table 5, the *Introduction Move* is realized by one or two steps. All English abstracts in NNSC have the first step as opposed to 80% of those having the second step. The first step can be making topic generalization, stating the purposes, claiming centrality, reviewing related concepts or indicating the nature of the study, each accounting for 40%, 30%, 10%, 10% and 10% of the English abstracts in NNSC. As for the second step, claiming centrality, indicating the research importance, or reviewing related concepts can be the options.

According to Table 6, it can be stated that the *Introduction Move* is realized by one, two or three steps in NSC. All English abstracts in NSC have the first step as opposed to 80% of the English abstracts containing the second step. And only 30% of English abstracts in NSC consist of three steps. Step one can be making topic generalization, stating the purposes, claiming centrality, and raising research questions, whose frequencies of occurrence are 60%, 20%, 10% and 10% respectively. With regard to the second step,

claiming centrality, stating purposes, reviewing related concepts and reviewing items of previous research can be chosen from. The third step can either review previous research or claim centrality.

Table 5: Steps of Introduction Move in NNSC

Step No.	Step Content	Occurrence	Frequency
1	Making topic generalization	4	40%
1	Stating the purposes	3	30%
1	Claiming centrality	1	10%
1	Reviewing related concepts	1	10%
1	Indicating the nature of the study	1	10%
2	Stating the purposes	4	40%
2	Claiming centrality	2	20%
2	Indicating the research importance	1	10%
2	Reviewing related concepts	1	10%

Table 6: Steps of Introduction Move in NSC

Step No.	Step Content	Occurrence	Frequency
1	Making topic generalization	6	60%
1	Stating the purposes	2	20%
1	Claiming centrality	1	10%
1	Raising research question	1	10%
2	Claiming centrality	3	30%
2	Stating the purposes	3	30%
2	Making topic generalization	1	10%
2	Reviewing related concepts	1	10%
3	Reviewing previous research	2	20%
3	Claiming centrality	1	10%

Based on Table 5 and Table 6, it is observed that both native and nonnative speakers are accustomed to take the following options as the first step: making topic generalization, stating purposes and claiming centrality. As for the second and the third step, it can be noticed that some options used in the first step apply to these two steps, such as stating purpose and claiming centrality. Therefore, the sequence of the options is flexible in serving the communicative purpose of the Introduction Move.

3.1.2.2 The Method Move

As is seen in Table 7, the Method Move doesn't appear frequently in English abstracts, with only one text in NNSC as opposed to four texts in NSC containing the Method Move.

Table 7: Steps of The Method Move of English Abstracts in NSC and NNSC

Step No.	Step Content	Corpus	Occurrence	Frequency
1	Presenting methods of analysis	NNSC	1	10%
1	Indicating the nature of the study	NSC	1	10%
1	Describing the research design	NSC	1	10%
1	Presenting methods of analysis	NSC	1	10%
1	Describing the corpus	NSC	1	10%
2	Presenting methods of analysis	NSC	3	30%

According to Table 7, it is found that the step of presenting methods of analysis is the representative step in serving the communicative purpose of this move, which can appear either in the first or the second step.

Comparatively, the native speakers use the Method Move more often in English abstracts than nonnative speakers. In addition, the former use various steps in achieving the communicative purpose of the method

move. For instance, the first step adopted by native speakers can be indicating the nature of the study, describing the research design, presenting methods of analysis, or describing the corpus. In NSC, each of them accounts for 10%. As for the second step, 30% of the English abstracts in NSC choose to present methods of analysis.

3.1.2.3 The Results Move

As is shown in Table 8, the frequency of occurrence of the Result Move in NSC is 100%, which indicates that the Result Move is obligatory in English abstracts written by native speakers. In contrast, only 40% of the English abstracts written by nonnative speakers contain this move. As for the step, it is seen clearly that only one step of announcing principal findings is involved in realizing the rhetorical function of the Result Move.

Table 8: Steps of Results Move of English Abstracts in NSC and NNSC

Step No.	Step Content	Corpus	Occurrence	Frequency
1	Announcing principal findings	NNSC	4	40%
1	Announcing principal findings	NSC	10	100%

3.1.2.4 The Discussion Move

Based on the data collected from NSC and NNSC, it is claimed that the Discussion Move is the least frequently used move, for it only appears once in Text No. 5 of NSC where the Discussion Move is realized by the only step of evaluating the research results.

4. CONCLUSION

The present study is a genre-based contrastive analysis of RA abstracts by native and nonnative speakers of English, aiming to explore the differences in terms of the generic structure. The English abstracts in NNSC display a more simplified macro-structure, having two major structural patterns: one-unit structure and two-unit structure. Each of them accounts for 50%. The Introduction pattern occupies 50% of the ten English abstracts in NNSC. The IR pattern accounts for 40%, and the rest 10% belongs to the IM structural pattern. It can be inferred that the Introduction Move is obligatory for English RA abstracts by nonnative speakers while the Method, the Results and the Discussion Move are optional.

Compared with the English abstracts in NNSC, those in NSC have more complex structure. The English abstracts in NSC have three structural patterns: two-unit, three-unit and four-unit structure with each of them accounting for 50%, 40%, and 10% respectively. The IR pattern occupies 50% of the ten English abstracts in NSC. The IMR pattern accounts for 20%. And each of the IMRD, the IRD, and the IRM pattern accounts for 10%. Although the structural patterns of English abstracts in NSC vary, it can still be inferred that the Introduction Move and the Result Move are indispensable while the Method and the Discussion Move are optional.

REFERENCES

- Barton, E., Dickson, B., & Kinloch, V. (1999). Discourse Research in Applied Linguistics: Contrastive Rhetoric and Genre Analysis [J]. *Word*, 50 (3): 375-386.
- Bhatia, V.K. (1993). *Analyzing Genre: Language Use in Professional Settings [M]*. London & NY: Longman.
- Bhatia, V.K. (1997). Introduction: Genre Analysis and World Englishes[J]. *World Englishes*, (16): 313-319.
- Brown, J. D. (2001). *Understanding Research in Second Language Learning [M]*. Beijing: Foreign Language Teaching and Research Press.

- Henry, A., Roseberry, R.L. (1997). An Investigation of the Functions, Strategies and Linguistic Features of the Introductions and Conclusions of Essays [J]. *English for Specific Purposes*, 25 (4): 479-495.
- Swales, J.M. (1990). *Genre Analysis: English in Academic and Research Settings*. Cambridge: Cambridge University Press.
- Swales, J.M. (1981). *Aspects of Article Introductions*. The University of Aston, Language Studies Unit, Birmingham, UK.