

Genre Analysis of English and Chinese Research Articles in Clinical Medicine

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We selected 30 complete research articles (RAs) in clinical medicine written by native speakers both from English and Chinese journals, and made a detailed comparative genre analysis of them with reference to Swales' model of genre analysis and Nwogu's schema. Our results showed that English and Chinese RAs in clinical medicine shared generally a similar generic structure of 11 moves as well as present some obvious differences in the frequency, sequence, and length of these moves. Our findings will provide some practical guidance for Chinese medical workers in reading and writing medical RA.

Keywords: move, genre analysis, research articles, clinical medicine

Introduction

The medical research article (RA) has always been one of the most important indicators for evaluating biomedical achievements and talents in the world (Xu & Lin, 2011). Medical RA is a specific genre with constrained choice of content and style (Swales, 1990), namely, "Introduction, Methods, Results and Discussion", the traditional IMRD sections (Nwogu, 1997). There have been some studies on the generic structures of medical RAs both in western countries and China. Salager-Meyer (1994) conducted a thorough survey of 15 research papers in medical English written discourse to determine how the communicative purpose of the different rhetorical sections influences the frequency and category distribution of hedges used in each section. Williams (2010) examined first-person verbs use in the methods sections of English and Spanish medical research articles to figure out the cultural differences in academic discourse. Zhao and Wu (2009) made a comparative analysis of the use of active voice and passive voice in Chinese and English medical research articles. He (2010) investigated the differences and similarities between the method section of research articles written in English and those written in Chinese in medical field. Qiu (2015) analyzed the frequency, types, and distribution of hedges in English abstracts of Chinese and American medical journals. However, the previous studies mainly focus on particular characteristics or certain sections of a medical RA, while only few studies discuss its generic structure.

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We aimed at elucidating the generic structures of medical RAs both in Chinese and English, as well as exploring the similarities and differences between them and finding out the possible factors that lead to these similarities and differences.

Methods

Theoretical Framework

Genre is a class of communicative events, the members of which share some set of communicative purposes (Swales, 1990). In genre analysis of English for specific purpose (ESP), the recognition of “move” and “step” is of great importance, and ESP genre analysis began with Swales’ pioneering work (1981; 1990) on the introduction section of RAs. He provided a Four-Move Model (establishing field-summarizing previous research-preparing for present research-introducing present research) to analyze RA introductions (1981), and revised it into a three-move analysis of CARS (Create A Research Space) model (1990). The texts are described as being made up of moves and each move further contains one or more steps characterized by some linguistic features.

The use of Swales’ (1990) Move-Step Model of genre analysis has achieved a great success in the analysis of academic research articles in various disciplines. Nwogu (1997) explored the schematic structure of experimental medical RA using Swales’ (1981; 1990) Genre-Analysis Model, and identified an 11-move schema, of which nine were found to be normally required and two optional. Therefore, the present study adopted Swales’ (1990) Move-Step analysis and Nwogu’s (1997) schema as reference to make a comparative genre analysis of English and Chinese RAs in clinical medicine.

Data Collection

We selected journals based on the principles of representativity, reputation, accessibility, and timeliness by referring to Nwogu’s (1997) sampling approach. Representativity refers to that all RAs were in clinical medicine and written by native speakers; reputation refers to that all the selected English journals ranked among the top in biomedical journals impact factor rankings of 2015, while all the selected Chinese journals were journals of Chinese Medical Association; accessibility refers to that the full text was available for downloading; timeliness refers to that the text was published in the last five years.

Then we established the two corpora of 30 complete RAs by random sampling, one including 15 RAs selected from *The New England Journal of Medicine (NEJM)*, *The Lancet*, *the Journal of the American Medical Association (JAMA)*, and *The British Medical Journal (BMJ)*, written by native English researchers, while another one including 15 RAs selected from *Chinese Journal of Internal Medicine*, *Chinese Journal of Surgery*, *Chinese Journal of Cardiology*, *Chinese Medical Journal*, and *Chinese Journal of Oncology*, written by Chinese researchers.

Data Analysis

we carried out the study according to the following procedures: (1) read the full text to get a general understanding of the RA; (2) checked each section of the RA and identified the moves in each section in light of Swales’ (1990) CARS model and Nwogu’s (1997) method of identifying sections; (3) recorded the distribution and frequency of moves in both corpora; (4) established an English model and a Chinese model for each section

in both corpora; (5) summarized the similarities and differences (if any) in the generic structures between the two corpora; (6) discussed the possible reasons that may cause the similarities and differences in each section between the two corpora. The moves and signal markers for these moves or steps were counted and recorded manually, and the results were calculated. In order to reduce the influence of subjectivity as much as possible, we repeated and checked analyses (≥ 3 times), and consulted the medical experts in case of any difficult to identify move for we work in a medical university where we can easily reach for help.

Results and Discussion

The Distribution of Moves in English and Chinese RAs

The present study revealed that both English and Chinese medical RAs consist of 11 common moves (see Table 1), and each move has its own linguistic features and signal markers.

Table 1

Common Moves and Their Functions

Introduction	Move 1: presenting background information Move 2: reviewing related researches Move 3: announcing present research
Methods	Move 4: clarifying study design Move 5: performing data analysis
Results	Move 6: reporting objective results Move 7: highlighting overall outcome Move 8: explaining main findings
Discussion	Move 9: reviewing previous researches Move 10: indicating limitations Move 11: stating conclusions

The 11 moves were found to occur with varying degrees of regularity in English and Chinese RAs. As seen in Figure 1, in English RAs, nine of the 11 moves (2, 3, 4, 5, 6, 7, 8, 10, 11) occurred in all the 15 texts, and Move 1 occurred in all but one text, while Move 9 occurred less frequently in texts. In Chinese RAs, eight of the 11 moves (1, 2, 4, 5, 6, 8, 9, 11) occurred in all the 15 texts, and Move 3 occurred in all but one text, while Moves 7 and 10 occurred less frequently in texts.

In the section of introduction, Move 2 (reviewing related researches) occurred in all the English and Chinese RAs (100.00%), and Move 1 (presenting background information) occurred in 14 English RAs (93.33%) and 15 Chinese RAs (100.00%), while Move 3 (announcing present research) occurred in 15 English RAs (100.00%) and 14 Chinese RAs (93.33%). Moves in the section of methods and results (clarifying study design, performing data analysis, and reporting objective results) occurred in all the English and Chinese RAs (100.00%). In the section of discussion, Moves 8 (explaining main findings) and 11 (stating conclusions) occurred in all the English and Chinese RAs (100%); Move 7 (highlighting overall outcome) occurred in 15 English RAs (100.00%) and 13 Chinese RAs (86.67%); Move 9 (reviewing previous researches) occurred in 10 English RAs (66.67%) and 15 Chinese RAs (100.00%); Move 10 (indicating limitations) occurred in 15 English RAs (100.00%) and 8 Chinese RAs (53.33%) (see Figure 1).

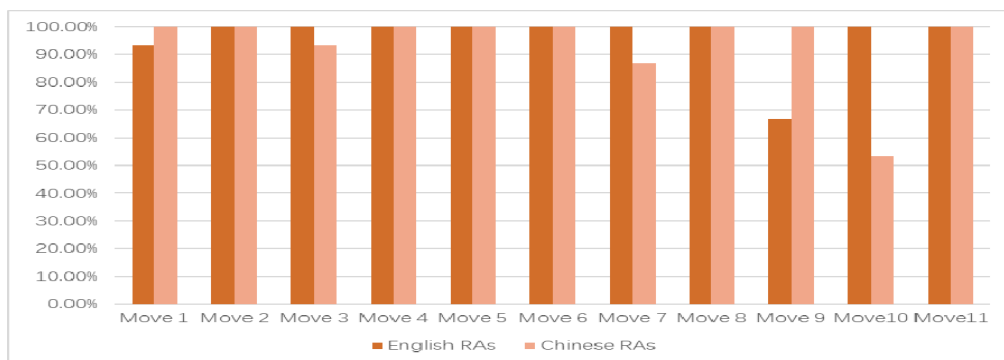


Figure 1. Frequency counts of moves in the two corpora.

The section of introduction.

Presenting background information (Move 1). Presenting background information was the first move in almost all the involved RAs (except for one English RA). At the very beginning of a RA, some necessary background information was introduced for the topic of present study to prepare the readers for better understanding. In English RAs, it was often written in the simple present tense. The objective fact was stated with the use of verb root (such as “is”, “are”, “是”, “为”, etc.), adverbs (such as “often”, “usually”, “一般”, “常见的”, etc.), and numbers (fractions, percentages, 分数, 百分比, etc.) to show generality, regularity, and truthfulness.

Example 1: *Cardiovascular disease is the leading cause of death and complications in patients with Type 2 diabetes.*

Example 2:

2型糖尿病(T2DM)患病率近10年来在世界范围内显著升高。2007-2008年的流行病学调查,我国20岁以上成年人的糖尿病患病率为9.7%,总数达9,240万,据推算95%以上为T2DM患者。

Reviewing related researches (Move 2). Reviewing some representative researches is for the purpose of showing existing achievements in the research field and suggesting the limitations in previous researches, thus inspiring the present research motivation. In English RAs, it was often written in the present perfect tense or past tense, and the common signal markers were some summarizing statements, such as several large trials have tested...; ...has been the aim of many previous study...; four trials failed to show...; and some transitional conjunctions, such as however; unfortunately; despite, etc. In Chinese RAs, the common signal markers were as follows: 有文献报道; 有研究显示; 均有报道; 然而; 但……; 尚未。

Example 3: *Despite this evidence and expert opinion that..., these findings have not been incorporated into clinical practice...*

Example 4:

一些研究显示……, 但大多研究表明……。这项手术的安全性和有效性如何, 患者的长期预后如何, 影响长期预后的因素有哪些, 国内尚未见大规模的临床研究。

Announcing present research (Move 3). This was the most important part of the introduction, where the authors focus on the present study by announcing its purpose, and sometimes a brief description of study design as well. In English RAs, it was often written in the simple past tense, and the common signal markers were as follows: the goal/objective of this study was to...; therefore, we conducted..., etc. In Chinese RAs, the common signal markers were as follows: 因此; 本研究; 我们; 本文。

Example 5: *On the basis of these preclinical data, we conducted... The primary objectives were to determine... Secondary objectives were to assess... an exploratory objective was added to evaluate...*

Example 6: 本研究中, 我们分析了……, 研究了……, 探讨……, 为……提供理论依据。

The section of methods.

Clarifying study design (Move 4). This was a very huge move composed of three steps: research subject (subjects and materials), research protocol (methods and evaluation), and outcomes. In different journals, the content of this move could be presented briefly or detailedly, and the structure of this move could be one paragraph or several paragraphs with several subtitles. For example, the common subtitles in *NEJM* included “study/trial design”, “patients/participants”, “procedures”, and “outcomes”, while in *The Lancet*, the common subtitles were “participants”, “randomization and masking”, “procedures”, and “outcomes”. Because of the above mentioned contents are embodied in different structures or subtitles, the author summarized them as one move. In English RAs, it was written in the simple past tense, and the common signal markers were as follows: patients were eligible if they...; key inclusion criteria were...; the exclusion criteria included...; the primary/secondary outcome was..., etc. In Chinese RAs, the common signal markers were as follows: 选取……; 纳入标准; 排除标准; 主要终点为……

Example 7: *The ATACAS trial was a multicenter, double-blind trial with a 2-by-2 factorial design... Eligible participants included adults who were... The primary outcome of the trial was... The prespecified secondary outcomes were...*

Example 8:

回顾分析2012年4月-2015年7月于北京大学口腔医院就诊的24例儿童口腔颌面-头颈部软组织肉瘤患儿
 纳入标准: 排除标准:
 活检明确病理学诊断, 根据疾病类型及病变部位制定治疗方案……

Performing data analysis (Move 5). Data analysis mainly referred to the statistical analysis, involving the specific statistical methods, measuring apparatus, and the modification for statistics, etc., and some research conducted the sensitivity analysis as well. In English RAs, it was often written in the simple past tense, and the most common signal marker was: “...was/were performed/compared/summarized/analyzed with the use of...”. In Chinese RAs, the common signal markers were as follows: 使用……对数据进行分析; 计量资料用……表示; 计数资料用……表示; 组间比较采用……

Example 9: *We used χ^2 tests to compare demographic factors, the prevalence of risk factors... We analysed time from myocardial infarction to death...using Cox proportional hazards models to produce adjusted hazard ratios...*

Example 10:

使用SPSS21.0统计学软件对数据进行分析。正态分布的计量资料用 \bar{x} 表示, 组间比较采用配对 t 检验, 非正态分布的计量资料用 $M(Q_R)$ 表示, 组间比较采用秩和检验……

The section of results. Move 6, reporting objective results, was also a big move in the results section, which stated the results of all the involved items without any subjective comments, and could be processed in chronological order (e.g.: at 26 weeks...; at 52 weeks...) or in the order of importance (e.g.: first primary outcome and secondly other outcomes). Generally speaking, in English RAs, the results were often described in the simple past tense, although tables and figures were presented in the simple present tense with the most common signal

markers as “table/figure shows/summarises”. This move often involved the comparison between the experimental group and the control group, with the common signal markers as follows: were similar in; no difference in; versus; significantly increased/decreased; was greater than; 高于; 低于; 下降; 上升; 有/无统计学意义.

Example 11: *Figure 1 shows patient disposition throughout the study. ...was similar in... However, more patients withdrew in...than in the placebo group. ...was very high (99%) in both groups.*

Example 12: 治疗前后免疫功能变化: ... 在治疗前后有差异 ($P < 0.05$) ; 两两比较结果显示,明显上升 (P 值均 < 0.05) ;变化差异无统计学意义 (表1、2)

The section of discussion.

Highlighting overall outcome (Move 7). This move served to answer the proposition in the section of introduction by reporting the overall outcome of the research with a brief interpretation of the outcome. In English RAs, it was often written in the simple past tense, and the common signal markers were as follows: in this study, we showed...; the study demonstrated that...; in this trial, we confirmed our primary hypothesis that..., etc. In Chinese RAs, the common signal markers were as follows: 本研究显示.....; 可见.....; 研究发现.....

Example 13: *The addition of Infliximab to initial therapy did not affect treatment resistance.*

Example 14:

可见, 改良Ponticelli方案治疗我国肾病综合征、IMN患者的临床疗效并不亚于传统的两种治疗方案。

Explaining main findings (Move 8). This was the most detailed move in the discussion section, which further involved the explanation and interpretation for the study results and data although they might have been presented in Move 6, thus validating the research conclusion. In English RAs, the common signal markers were as follows: the major novel findings are...; there was also a significant change in...; in particular, we saw..., etc. While in Chinese RAs, the common signal markers were as follows: 本研究结果也表明; 本研究还显示.....; 本研究还发现.....

Example 15: *Patients with COPD...had less cardiovascular comorbidity and fewer exacerbations... Patients with frequent exacerbations have more symptoms and more dyspnea than those with infrequent exacerbations.*

Example 16:

本研究结果也表明, 与2D-RT比较, 3D-CRT在局部控制、远处转移和OS上有显著的优势 本研究单因素分析也显示.....多因素分析显示.....

Reviewing previous researches (Move 9). Reviewing previous researches is aimed to find consistent or inconsistent results. The consistent results would further explain and support the present study, thus verifying its reliability, while inconsistent results required the reasonable defense, which may just create the newness of this study. In English RAs, it was often written in the simple past tense when purely reviewing a particular research, with the common signal markers as follows: in one study..., the other study reported...; the first case report of...was published in 2014; an analysis of...from 2001 to 2006 showed..., etc. While it was often written in the simple present tense when the comment on the comparison between the present study and previous studies was made, and the common signal markers were as follows: ...is compatible with...; ...is similar to...; ...are not entirely consistent with previous reports, etc. In Chinese RAs, the common signal markers were as follows: 有研究显示; XX等报道了.....; 有研究表明.....; 与.....结果类似.

Example 17: *In one study... The other study reported...*

Example 18:

一项全部纳入中国NSCLC患者的IV期临床研究显示 ... 一些回顾性研究也显示了 ...
 一项全部纳入中国NSCLC患者的IV期临床研究显示 ... 一些回顾性研究也显示了 ...
 Shen等的回顾性研究显示……

Indicating limitations (Move 10). Any RA would have some limitations although the study is reliable on the whole, such as small sample size as a common one in clinical study. In English RAs, both the present and past tenses could be seen, and the common signal markers were as follows: this study also had limitations...; a number of limitations are worthy of mention; the major limitation of our study was..., etc. In Chinese RAs, the common signal markers were as follows: 样本量较少; 一定的局限性; 不足之处在于……

Example 19: *However, several limitations are also present. First... Second... Third... Fourth... And finally...*

Example 20: 本研究样本量小, 随访期短, 结论尚需要进一步研究。

Stating conclusions (Move 11). Stating conclusions should be the finishing move of whole article. Except for restating the results, as well as emphasizing the importance of this study, it would also point out the direction for the further research. In English RAs, both the present and past tenses were workable, and the common signal markers were as follows: in conclusion, our results showed that...; in summary, we found no evidence that...; the results have important implications for..., etc. In Chinese RAs, the common signal markers were as follows: 综上所述; 总之; 尚需要……

Example 21: *In conclusion, our results showed that... Our data also showed that...*

Example 22: 综上所述……均可达到较为满意的疗效。

Comparison of the Employment of Moves

The findings of this study revealed that the English and Chinese medical RAs in clinical medicine shared generally a similar generic structure of 11 schematic units or moves, while there were still some differences in the employment of these moves between the two corpora.

Move 5: performing data analysis. Move 5 was more detailed in English RAs than in the Chinese counterparts, and in English RAs, it often involved quite a few paragraphs, but in most Chinese RAs, it was only in one paragraph. This phenomenon may be explained by the research practices in different cultures. Western culture has been developed in a long history of natural sciences, where quantitative method in study design is emphasized, while the Chinese culture, with humanities and arts oriented, has traditionally preferred the qualitative method. Therefore, Chinese authors should pay much attention to this discrepancy when they submit papers to international journals.

Move 9: reviewing previous researches. Move 9 was more frequently used and much longer in Chinese RAs than in the English counterparts, and Chinese authors were inclined to use abundant related studies to explain and support their researches. These differences can be explained from the perspective of individualism and collectivism. One of the mainstream values in western culture is “individualism”, an emphasis on personal space, freedom, creativity, self-celebration, and personal judgements. However, Chinese culture is developed in a long history of collectivism emphasizing shared traditions and interests and maintaining face, so the Chinese

authors tend to gain support and agreement from others' researches for their own interests.

Move 10: indicating limitations. Move 10 occurred more often and was more detailed in English RAs than in the Chinese counterparts, and English authors would elaborate the limitations in more detail, as shown in Example 19. This phenomenon is likewise also ascribed to the influence of individualism and collectivism. In English RAs, the authors would elaborate the limitations in details, hoping to call attention for further research or inspire other researchers, but this behavior is not favorable in traditional Chinese society, where Chinese authors would not like to admit their imperfections in public because they are afraid of losing face or failed acceptance.

Conclusion

The present study shows that the English and Chinese RAs in clinical medicine share generally a similar generic structure of eleven moves, and present some obvious differences in the employment of moves as well. Most of the similarities in structural format can be explained from the perspective of communicative purposes of the same genre, whereas the differences have largely resulted from the discrepancies in cultural factors.

The present research expands the application of move-step analysis to the comparative genre analysis of the English and Chinese RAs in clinical medicine, thus filling in a gap in the preceding academic researches. And the findings of the present study would have some practical guidance for Chinese medical workers, ESP teachers, as well as medical translators.

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