04

RHETORICAL STRUCTURES

IN RESEARCH ARTICLES: A COMPREHENSIVE REVIEW OF GENRE ANALYSIS MODELS

ESTRUCTURAS RETÓRICAS EN ARTÍCULOS DE INVESTIGACIÓN: UNA REVISIÓN EXHAUSTIVA DE LOS MODELOS DE ANÁLISIS DE GÉNERO

Marc Anthony Carbonell-Valdés[1]
E-mail: manthonycarbonell@gmail.com
ORCID: https://orcid.org/0009-0002-9409-7271
Yuliet González-Madariaga[2]
E-mail: yulietenfrance@gmail.com
ORCID: https://orcid.org/0000-0001-8953-302x
Irene de la Caridad Sierra-Betancourt[1]
E-mail: ireneserrabetancour02@gmail.com
ORCID: https://orcid.org/0009-0005-6795-8832
[1] Universidad de Cienfuegos "Carlos Rafael Rodríguez". Cuba.
[2] Universidad Central Marta Abreu de Las Villas. Santa Clara. Cuba.

ABSTRACT

The research article (RA) is a fundamental genre in academic communication, facilitating the structured dissemination of research findings. Over the past decades, extensive studies have examined the rhetorical organization of RAs, with John Swales' Creating A Research Space (CARS) model serving as a foundational framework for analyzing RA introductions. Subsequent research has extended Swales' approach, adapting move analysis to various RA sections—Introduction, Methods, Results, and Discussion (IMRD)—and to diverse academic disciplines. This study provides a comprehensive review of rhetorical move models used for RA analysis, highlighting the most widely adopted frameworks, including Swales' CARS model for introductions, Hyland's abstract structure, Lim's method section model, and Yang & Allison's model for results and discussion. Findings indicate that while standardized structures exist, rhetorical patterns vary across disciplines and publication venues. The study underscores the need for discipline-specific analytical frameworks, offering a reference for researchers and academic writers seeking to navigate RA conventions effectively.

Keywords:

Research article, rhetorical moves, genre analysis, academic writing.

RESUMEN

El Artículo Científico es un género fundamental en la comunicación académica, que al facilitar la difusión estructurada de los resultados de la investigación. En las últimas décadas, se han realizado numerosos estudios sobre la organización retórica de los artículos científicos, y el modelo CARS (Creating a Research Space) de John Swales ha servido de marco fundamental para el análisis de las introducciones de estos artículos. Investigaciones posteriores han ampliado el enfoque de Swales, adaptando el análisis de las movidas retóricas a varias secciones de los artículos científicos – Introducción, Métodos, Resultados y Discusión (IMRD) – y a diversas disciplinas académicas. Este estudio ofrece una revisión exhaustiva de los modelos de movidas retóricas utilizados en el análisis de los artículos científicos, destacando los más reconocidos por la comunidad académica, incluyendo el modelo CARS de Swales para introducciones, la estructura propuesta por Hyland para el análisis de los resúmenes, el modelo de la sección de los métodos de Lim, y el de Yang y Allison para los resultados y la discusión. Los resultados indican que, si bien existen estructuras estandarizadas, los patrones retóricos varían según las disciplinas y las revistas en las que son publicados. El estudio señala la necesidad de un análisis específico de cada disciplina, que ofrezca una referencia a los investigadores y escritores académicos que deseen navegar por las convenciones de los artículos científicos de manera efectiva.

Palabras clave:

Artículo científico, movidas retóricas, análisis de género, escritura académica.

INTRODUCTION

The analysis of texts based on their genres is a practice that has developed over the past decades. This procedure focuses not only on the information contained in the texts but also on the features and conventions employed to make a text resemble others. One of the most widespread genres in the academic community nowadays is the Research Article (RA), as it allows for a comprehensive disclosure of the various steps leading to research findings.

The researcher John M. Swales (1981) was one of the pioneers of research article analysis, contributing the CARS model (Creating A Research Space) to describe and explain the organizational pattern of these articles through a series of rhetorical moves.

Many authors, such as Cooper (1985); Crookes (1986); Peng (1986); Thompson (1993); Dudley-Evans (1994); Skelton (1994); Nwogu (1997); Holmes (1997); Posteguillo (1999); Hyland (2000); Peacock (2002); Yang & Allison (2003); Lorés; (2004); Samraj (2005); Koutsantoni (2006); Lim (2006); Keshavarz et al. (2007); Fryer (2012); Kanoksilapatham (2012); Amnuai & Wannaruk (2013); Doró (2013); Akbaş & Farnia (2021); and Karimah et al. (2023), have centered their study on analyzing the RA genre to describe the organizational and linguistic devices characterizing specific sections of the RA (Introduction, Methods, Results and Discussion) or its overall organization. These researchers have extended their studies to various academic disciplines, e.g., Nwogu (1997), on medicine; Peng (1986), on chemical engineering; Posteguillo (1999), on computer science; Thompson (1993), on biochemistry; or Yang & Alisson (2003), on linguistics.

Although numerous studies have been conducted in this field, not every model can be used to analyze every RA, and some have become outdated in the current academic writing style. This study aims to provide a review of the existing literature due to the immense amount of information regarding rhetorical moves in different disciplines.

DEVELOPMENT

We carried out a thorough search spanning from 1981 to 2025, which revealed a plethora of studies analyzing the rhetoric structure of the RA, either describing a specific section or its overall structure. All of these authors agree that Swales' full-scale analysis of RA Introductions in 1981 was the stepping stone for subsequent rhetorical moves research that has emerged until today.

Swales (1990) was the first that analyzed the rhetorical structure of the English Research Article, defining it as *"a written text (although often containing non-verbal elements), usually limited to a few thousand words, that reports on some investigation carried out by its author or authors. In addition, the RA will usually relate the findings within it to those of others and may also examine issues of theory and/or methodology. It is to appear or has appeared in a research journal or, less typically, in an edited book-length collection of papers".* (p. 93)

Additionally, Swales (1990), stated that research articles should follow a standard structure, that is, Introduction, Methods, Results and Discussion (IMRD). He explained that the writer begins the article by providing an overview of the specific field and posing a research question in the Introduction section, followed by the Methods and Results section where the study is defined, and finally the Discussion section, where the results are related to broader issues in the field.

Research articles are among the most published types of articles today, thus becoming a crucial element in the academic community. As Swales (1990), claims, *"the research article has become a standard product for the knowledge – manufacturing industries"*. (p. 95)

This foundation allowed for the possibility of analyzing RAs not only as a whole, but also divided into various segments, focusing on the different disciplines existing in the academic community. This perspective enabled researchers to study the RA as a genre, concentrating not only on the information contained in the texts have but also on the features and conventions employed to make the text resemble others.

As Bathia (1993), points out, discourse analysis is a 'multidisciplinary activity', that needs to be observed from different angles. First, he states that linguistic analysis allows for a focus on the textualization and rhetorical organization in the investigation of texts; however, concerning genre, many aspects remain to be explored further. Therefore, the second orientation he proposes is sociological, emphasizing that the text itself is not a complete object possessing meaning on its own; it should be regarded as an ongoing process of negotiation. Finally, the psycholinguistic aspect of genre analysis focuses mainly on the writer's way of structuring the text, making the writing more effective while keeping any special reader requirements in mind (Bathia, 1993).

Move analysis

The primary objective of linguists is to comprehend how a conversation is structured and organized. One of the most popular methods for doing so today is through the analysis of rhetorical moves. John Swales developed a model he named Create a Research Space (CARS) to describe and explain the organizational pattern of research articles, comprising moves and steps. He defines moves as words or phrases that together convey a clear message in written or spoken communication (Swales, 2004).

This definition has been the basis of multiple studies carried out by renown linguists, such as Nwogu, who defined these discoursal units as "*text segment[s] made up of a bundle of linguistic features (lexical meaning, propositional*

meanings, illocutionary force, etc.) which give the segment a uniform orientation and signal the content of discourse in it" (Nwogu, 1997, p. 122). This analysis involves a series of steps as well, which are parts that come together to make up information in the move (Nwogu, 1997).

Swales represented his CARS model as follows:

Move 1 Establishing a territory

Step 1 Claiming centrality

and/or

Step 2 Making topic generalization(s)

and/or

Step 3 Reviewing items of previous research

Move 2 Establishing a niche

Step 1A Counter-claiming

or

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

Step 1B Announcing present research

Step 2 Announcing principal findings

Step 3 Indicating Research Article structure

Many of these authors argue that move analysis provides a deeper understanding of the structure and organization of research articles and can be used to improve reading and writing instruction in academic settings. Therefore, the academic community has decided to adapt Swales' model to all disciplines, such as linguistics, medicine, computer science, etc. After an exhaustive analysis of the published literature in this regard, we selected the most influential and up-to-date models that authors use to describe the different sections of the RA.

Rhetorical Moves Models

The entirety of the academic community agrees that different genres require different move and steps models to describe the rhetoric structure of the RA; therefore, researchers have adapted Swales' model to each of the genres they need to analyze. This framework has inspired numerous adaptations and extensions, leading to the development of discipline-specific and section-specific models for analyzing research articles.

Abstract Section

The Abstract section is often analyzed using the model proposed by Hyland (2000), which proposes a five-move structure:

1. Introduction: states the purpose of the study.
2. Purpose: indicates the thesis or hypothesis and outlines the intention behind the paper.
3. Methods: describes the research design.
4. Product: states the main findings or results, the argument, or what was accomplished.
5. Conclusion: declares the implications or recommendations.

This model is widely used for analyzing abstracts across disciplines (Hyland, 2000).

Introduction Section

The Introduction section of research articles is most commonly analyzed using Swales' CARS model (Swales, 1990). This model identifies three key moves:

1. Establishing a Territory: involves claiming the centrality of the research topic and reviewing previous literature.
2. Establishing a Niche: identifies gaps or limitations in existing research.
3. Occupying the Niche: outlines the purpose and contributions of the current study.

The CARS model has been widely adopted across disciplines due to its clear structure and adaptability (Swales & Feak, 2012).

Methods Section

The Methods section is often analyzed using Lim's model (2006), which focuses on the rhetorical moves specific to methodological descriptions. Lim identified three key moves:

1. Describing Data Collection Procedures: details participants, materials, and instruments.
2. Delineating Procedures for Measuring Variables: explains statistical or qualitative methods.
3. Elucidating Data Analysis Procedures: provides rationale for the selected methods.

This model is widely used in science and social science disciplines (Lim, 2006).

Results and Discussion Section

The Results and Discussion section often appear as a single section across different research articles. The most commonly used model to analyze these sections is Yang

and Allison's model (2003). This model identifies seven key moves:

1. Background Information: contextualizes the study.
2. Reporting Results: summarizes key findings.
3. Summarizing Results: presents a summary of the results.
4. Commenting on Results: interprets the findings.
5. Summarizing the Research: typically found in the final part of the research to state the main findings.
6. Evaluating the Research: indicates limitations and the importance/advantages of the study.
7. Deductions from the Research: suggests future research or practical applications.

This framework is widely used in teaching and research on academic writing (Yang & Allison, 2003).

Nonetheless, other authors, such as Fryer (2012), prefer to separate these two sections. The Results section would consist of only one move: **Report of observations**, where the author would report data obtained in relation to methodology. The Discussion section, on the other hand, would consist of three main moves:

1. Discussion of Main Finding: to discuss findings in relation to hypothesis/objective and compare them with the literature.
2. Study Limitations: where the strengths/weaknesses of the study would be disclosed.
3. Conclusion: which summarizes the main findings, the implications of the study, and recommendations/suggestions for future research (Fryer, 2012).

References Section

The References section is typically analyzed using Swales and Feak's model (Swales & Feak, 2012), which focuses on the accuracy and organization of citations. This model emphasizes the importance of following specific citation styles (e.g., APA, MLA, Chicago) and ensuring consistency in formatting. It is widely used in teaching academic writing and citation practices.

CONCLUSIONS

The research article (RA) is a vital academic genre, essential for knowledge dissemination, with a rich history of analysis from 1981 to 2025. Swales' foundational work on the RA's rhetorical structure, particularly the IMRD format and the Create a Research Space (CARS) model, has guided subsequent studies and reshaped how RAs are understood and taught.

The RA has evolved into a standardized tool for academic communication, with distinct sections and varying conventions across disciplines. Rhetorical move analysis, developed by Swales and expanded by others, has provided

deeper insights into RA organization. Nonetheless, the RA rhetorical structure can vary greatly from one genre to another, even form one journal to another.

This study intends to serve as a guide to the most recurrent models selected to analyze specific sections, since there is no single model that can be used to describe the structure of all types of research articles.

References

Akbaş, E., & Farnia, M. (2021). Exploring rhetorical moves in a digital academic genre: A cross-disciplinary study of the highlights section. *Ibérica, 42*, 85-114. https://www.revistaiberica.org/index.php/iberica/article/view/600

Amnuai, W., & Wannaruk, A. (2013). Investigating move structure of English Applied linguistics research article Discussions published in international and Thai journals. *English Language Teaching, 6*(2), 1-13. https://ccsenet.org/journal/index.php/elt/article/view/23360

Bathia, V. K. (1993). *Analysing Genre – Language Use in Professional Settings.* Longman.

Cooper, C. (1985). Aspects of article introductions in IEEE publications. *MSc. dissertation*. University of Aston.

Crookes, G. (1986). Towards a validated analysis of scientific text structure. *Applied Linguistics, 7*(1), 57-70. https://academic.oup.com/applij/article-abstract/7/1/57/191387

Doró, K. (2013). The Rhetoric Structure of Research Article Abstracts in English Studies Journals. *Prague Journal of English Studies, 2*(1), 119-139. https://webkajl.pedf.cuni.cz/documents/journal/volume-2/PJES2013-0007.pdf

Dudley-Evans, T. (1994). Genre analysis: an approach to text analysis for ESP. In, M. Coulthard, *Advances in Written Text Analysis.* (pp. 219–228). Routledge.

Fryer, D. L. (2012). Analysis of the generic discourse features of the English-language medical research article. *Functions of Language, 19*(1), 5-37. doi:http://dx.doi.org/10.1075/fol.19.1.01fry

Holmes, R. (1997). Genre Analysis, and the Social Sciences: An Investigation of the Structure of Research Article Discussion Sections in Three Disciplines. *English for Specific Purposes, 16*(4), 321-337. https://www.sciencedirect.com/science/article/abs/pii/S0889490696000385

Hyland, K. (2000). *Disciplinary discourses: Social interactions in academic writing.* Pearson Education.

Kanoksilapatham, B. (2012). Research Article Structure of Research Article Introductions in Three Engineering Subdisciplines. *IEEE Transactions on Professional Communication, 55*(4), 294-309. https://doi.org/10.1109/TPC.2012.2223252

Karimah, N. A., Munir, A., & Anam, S. (2023). Rhetorical Moves of Research Article Abstracts Written by American and Indonesian Authors : Comparative Study. *Lensa: Kajian Kebahasaan, Kesusastraan, dan Budaya, 13*(1), 82-94. https://jurnal.unimus.ac.id/index.php/lensa/article/view/10923

Keshavarz, M. H., Atai, M. R., & Barzgar, V. (2007). A contrastive study of generic organization of research article organizations written by Iranian and non-Iranian writers in Applied linguistics. *TELL, 1*(2), 13-33. https://www.teljournal.org/article_113086.html

Koutsantoni, D. (2006). Rhetorical strategies in engineering research articles and research theses: Advanced academic literacy and relations of power. *Journal of English for Academic Purposes, 5*(1), 19-36. https://www.sciencedirect.com/science/article/abs/pii/S1475158505000524

Lim, J. M. (2006). Method sections of management research articles: A pedagogically motivated qualitative study. *English for Specific Purposes, 25*(3), 282–309. https://www.sciencedirect.com/science/article/abs/pii/S088949060500058X

Lorés Sanz, R. (2004). On RA abstracts: From rhetorical structure to thematic organisation. *English for Specific Purposes, 23*(3), 280-302. https://eric.ed.gov/?id=EJ731011

Nwogu, K. N. (1997). The Medical Research Paper: Structure and Functions. *English for Specific Purposes, 16*(2), 119-138. https://doi.org/10.1016/s0889-4906(97)85388-4

Peacock, M. (2002). Communicative moves in the discussion section of research articles. *System, 30*(4), 479-497. https://jolantasinkuniene.wordpress.com/wp-content/uploads/2014/03/peacock-communication-moves-in-discussion-section-of-ra.pdf

Peng, J. F. (1986). An investigation of rhetorical and organisational features of the discussion sections of Chemical Engineers' papers. (Master dissertation). University of Birmingham.

Pho, P. D. (2008). How can Learning about the Structure of Research Articles Help International Students? (Paper). 19th International Conference. Auckland, New Zealand.

Posteguillo, S. (1999). The schematic structure of computer science research articles. *English for Specific Purposes, 18*(2), 139–158. https://eric.ed.gov/?id=EJ577544

Samarj, B. (2005). An explanation of genre set: Research article abstracts and introductions in two disciplines. *English for Specific Purposes, 24*(2), 141-156. https://www.sciencedirect.com/science/article/abs/pii/S088949060300067X

Skelton, J. (1994). Analysis of the Structure of Original Research Papers: An Aid to Writing Original Papers for Publication. *British Journal of General Practice, 44*(387), 455-459. http://bjgp.org/content/bjgp/44/387/455.full.pdf

Swales, J. (1981). *Aspects of Article Introductions.* University of Michigan Press.

Swales, J. (1990). *Genre Analysis: English in Academic and Research Settings.* Cambridge University Press.

Swales, J. (2004). *Research genres: Explorations and applications.* Cambridge University Press.

Swales, J. M., & Feak, C. B. (2012). *Academic writing for graduate students: Essential tasks and skills* (3rd ed.). The University of Michigan Press.

Thompson, D. K. (1993). Arguing for experimental "facts" in science: A study of research article results sections in biochemistry. *Written Communication, 10*(1), 106-128. https://onlinelibrary.wiley.com/doi/10.1002/bmb.1993.5690210342

Yang, R., & Allison, D. (2003). Research articles in applied linguistics: Moving from results to conclusions. *English for Specific Purposes, 22*(4), 365-385. https://www.sciencedirect.com/science/article/abs/pii/S0889490602000261