

Titles of Architecture Research Articles in English and Spanish: Cross-language Genre Analysis for Disciplinary Writing

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ABSTRACT

Research articles titles show lexical, syntactic, and semantic complexity that vary across disciplines and languages. This study analysed architecture English and Spanish Research Articles (RA) titles to identify their main characteristics and to know to what extent they differ between English and Spanish. A genre analysis study was performed following Bhatia's (2002) multi-perspective model. The authors analysed 360 titles in English and Spanish from articles published in six journals indexed in Scopus. Also, architects who were high-ranked researchers were consulted for a better understanding of the practices of the community for RA's title writing. Results showed similarities (e.g., length) and differences (e.g., title types) across languages. Lexical density was higher in English than in Spanish ($t_{(358)} 5.077, p = .000, d = 0.90$). Titles tend to be very informative, but the elements informed (e.g., topic or method) and the use of punctuation marks vary across languages ($p = .000$). The colon (:) emerged as the most commonly used punctuation mark in both languages. It is concluded that architecture RA titles in both languages mostly accomplish the characteristics of a good title proposed in the literature (i.e., introduce the topic, indicate the scope, be self-explanatory, and indicate the nature of the study). These similarities and differences should be included in writing courses for a better understanding of the discursive practices of the Architecture community for RA title writing.

Keywords: genre analysis; disciplinary writing; architecture; research articles; title study

INTRODUCTION

Scientific production has increased worldwide in all disciplines (Gómez-Crisóstomo & Luna-Sáez, 2022; Turpo-Gebera et al., 2021). Among the different genres published in scientific journals, research articles (RA hereafter) are the outstanding academic genre for researchers to share the results of their studies (Diao, 2021). In this context, good RA titles are helpful for the reader (to gain time) and the writer (to gain visibility), especially because RA is seen as the main vehicle for science communication (Hong & Pham, 2024).

Titles' importance has been recognised, and proper title writing has proven to be challenging and demanding (Yang, 2019). Titles constitute the first contact with the text. Therefore, they can influence the decision to read (and possibly cite) the article (Boyd et al., 2019; Li & Xu, 2019; Morales et al., 2020; Morales, Perdomo, Cassany, & Izarra, 2020a; Yang, 2019). Consequently, most researchers rely on title reading to make decisions about reading the abstract and then the whole article (Li & Xu, 2019). Furthermore, title characteristics and quality affect citation rates (Xie, 2020; Zhu & Liu, 2023).

Writing courses should be based on sound disciplinary genre studies to fill the gap between what the university is currently teaching and what the students, including future architects, need to know to successfully incorporate into their discourse community (Morales, Perdomo, Cassany, & Izarra, 2020a; Perdomo, 2021). Spector and Damron (2017) claim that, in the case of architects and architecture students, the mastery of disciplinary writing will help students and practitioners become better writers and better professionals. The idea of the architect just as a master of buildings is changing (Spector & Damron, 2017); however, genre analysis and academic writing in architecture have been neglected. Particularly, the study of research articles and the genres embedded in them (i.e., titles and abstract) is scarce (Kloppmann-Lambert, 2018; Spector & Damron, 2017). Also, the lack of comparative studies is a gap to be filled because the literature has proven that differences may occur for the same genre across languages (Shahidipour & Alibabae, 2017; Uba, 2020).

Several studies have been conducted for a better understanding of RAs title writing (Anthony, 2001; Diao, 2021; Kerans et al., 2020; Li & Xu, 2019; Moattarian & Alibabae, 2015; Morales et al., 2022; Xie, 2020). Title studies have changed the advice on effective title writing from generic and ineffective to discipline-oriented (Kerans et al., 2020). Nowadays, there is enough evidence on the syntactical and rhetorical differences between genres across disciplines (e.g., Anthony, 2001; Diao, 2021; Kerans et al., 2020; Moattarian & Alibabae, 2015; Xie, 2020). Consequently, genres from each academic area need to be studied, but in some communities (like architecture), this issue remains unexplored, and instructors lack evidence for teaching disciplinary writing effectively.

Genre knowledge and academic disciplinary writing are inherent to any discipline in higher education (López & Atienza, 2022). Genres reflect the conventions of the established community to accept new members to produce and share knowledge (García, 2019; Kotátková, 2020). There are unique genres in the architectural community. Even when novice and established architects appear to have comparable levels of technical knowledge, a deficiency in genre knowledge can be a distinguishing factor for success regarding writing for publication (Spector & Damron, 2017). Nevertheless, there is scarce empirical evidence about architecture community genres for effective academic writing teaching to undergraduate and graduate students.

Póveda (2008) claimed that genres produced by the architecture community had received little attention in genre studies. Almost two decades after Póveda's statement, nothing has changed. There are few rhetorical studies on genre analysis in architecture (Noorzadeh-Honami & Chalak, 2018; Póveda, 2010). To date, no study has been found to describe the syntactic and linguistic characteristics of architecture RA titles despite the importance of this genre for that academic community and for writing instructors.

Genre researchers have approached the study of titles considering length, syntactic structure, use of punctuation marks, informativity, and specialised vocabulary in a variety of disciplines (Diao, 2021; Kerans et al., 2020; Moattarian & Alibabae, 2015; Xiang & Li, 2020). There is evidence indicating that RA title's lexical, syntactic, and semantic complexity varies across disciplines, so authors encourage researchers to approach title studies in the discourse communities neglected by genre studies (Diao, 2021). In the case of architecture, there is no evidence of titles of architecture RA published in English and Spanish in high-quality journals, even when architectural scholarly production is growing significantly (Sauvé et al., 2022).

Research has proven that genres from one discipline may differ across languages (Uba, 2020). Cross-language studies provide insight for practitioners to teach academic writing. They have been recommended to raise students' awareness of linguistic and social conventions for a

genre in different languages. Those differences have been found for different genres; for instance, RA (Dontcheva-Navratilova, 2018; Uba, 2020), abstracts (Behnam, 2014; Cárcamo, 2019; Pratiwi & Kurniawan, 2021), and clinical cases (Morales et al., 2022). Nevertheless, RA title studies have been mainly addressed from a disciplinary perspective, and there is a gap in cross-language studies (Xie, 2020).

In that vein, the authors of the present research designed a genre study based on Bhatia's (2002) multi-perspective model. It aimed to analyse English and Spanish RA titles. The research questions were: (a) What are the main characteristics of architecture RA titles? and (b) Are there differences between architecture RA titles across both languages? To fill the gaps, this paper presents evidence about the RA title's syntactic and linguistic features in the architecture community in both languages; this insight will be valuable in the academic context for the teaching and learning of disciplinary writing. A succinct literature review is provided to set the theoretical basis of the research. It is followed by the description of methods for data collection and analysis, the results, and a discussion with some concluding remarks, including pedagogical implications of the findings.

LITERATURE REVIEW

TITLES IN ACADEMIC WRITING

The most remarkable antecedent of RAs was written communication (letters) among scientist for sharing and discussing their findings. However, as the scientific and academic world changed, the audience became wider, and the RA emerged as the main genre for science dissemination to scholars and the general population (Hong & Pham, 2024). This genre has been the object of study for many researchers, as well as the genres embedded in it (Kerans et al., 2020; Moattarian & Alibabae, 2015; Noorizadeh-Honami & Chalak, 2018; Xiang & Li, 2020). Particularly, RA titles have been approached because their importance and impact on readers have been widely recognised. Titles help the reader to decide about reading the paper, and there is evidence about the role of titles in RA's impact (Boyd et al., 2019; Pearson, 2021; Rosenkrantz et al., 2018; Yang, 2019).

The title of a research article is a textual construction that describes the article's content and, like any discursive genre, reflects the socio-discursive practices of the discursive community in which it conveys information (Hartley, 2007; Li & Xu, 2019; Xie, 2020). Nord (2019) states that titles are instruments for communication between authors and readers. Therefore, they should properly achieve specific communicative goals. Different authors have expressed their criteria for good titles. Diao (2021) indicates that titles need to be clear and accurate to reflect the article's content. Swales and Feak (2004) say that a title fully accomplishing its function should specify the scope of the research, announce the topic of the study, be self-explanatory, and indicate the nature of the study. Finally, Dewan and Gupta (2016) describe good titles as concise, specific, and descriptive; according to them, authors should avoid interrogative and declarative titles as well as acronyms/abbreviations. However, this latter feature may be present in engineering RA titles because some procedures and materials are commonly abbreviated (Fyliasova, 2020); a similar phenomenon may be noticed in medicine.

A title is an embedded genre, that is, an independent genre, even when it is part of another. Auken (2021) explains that when readers approach some genres, they realise that those include other genres which need to be understood and mastered to be fully competent for writing the main

one. Particularly, the RA includes two embedded genres: title and abstract. They function individually because they accomplish all the requirements of a genre, but without any of them, the RA is not complete. In sum, to write an RA, you also need to master these two embedded genres because part of a successful RA also relies on proper title and abstract written production (Costello et al., 2019).

Salager-Meyer and Alcaraz (2013) and Xiang and Li (2020) discuss the importance of titles' study and review the approaches to this genre observed in the literature. Scholars have established the term 'titleology' to refer to the study of this genre. Xiang and Li (2020) and Diao (2021) summarise titleology history and provide a chronology of the term since it was referred to as *titleologie* (in French) to the present day. They explain that, in the beginning, title research mainly focused on literary texts, but later, it extended to other domains.

There have been titles studies for different main genres like systematic reviews (Chrastina, 2020; Morales, Perdomo, Cassany, & Izarra, 2020b), RA (Diao, 2021; Moattarian & Alibabae, 2015; Pearson, 2021; Xie, 2020), clinical cases (Salager-Meyer et al., 2013), thesis (Slougui, 2018), conference presentations, (Afful, 2017; Nord, 2019) and other genres in different disciplines and languages. Also, the interest in genres embedded in RA has grown across disciplines and languages. For instance, we find RA abstracts across disciplines and languages (Behnam, 2014) and studies of titles for different disciplines (Appiah et al., 2019) and languages (Soler, 2011). However, in architecture, this knowledge about RA titles is scarce. Only RA's abstracts have been approached (Noorizadeh-Honami & Chalak, 2018),

Title studies have become popular in the last decades (Afful, 2017; Haggan, 2004; Pearson, 2021). The literature shows research in different disciplines except for Architecture. However, it is relevant to briefly review those previous studies (see Table 1).

TABLE 1. Genre studies on RA titles in different disciplines

Authors	Discipline	Language	Average Length (words)	Most Frequent Punctuation marks
Appiah et al. (2019)	Business	English	11.67	Colon
	gynaecology		11.18	
	law		12.88	
Diao (2021).	Library science	English	12.83	1. Colon
	and scientometrics		12.72	
Fylasova (2020)	Petroleum studies	English	15	1. Hyphens 2. Commas 3. Colons
Kerans et al. (2020)	Clinical medicine	English	16.6	Not included in the analysis
Moattarian and Alibabae (2015)	Applied linguistics	English	12.88	Not included in the analysis
	civil engineering		10.38	
	dentistry		13.54	
Morales et al. (2020)	Dentistry	Spanish	15.5	1. None 2. Colon 3. Period
Xie (2020)	Natural sciences and social sciences	Chinese and English	9.87-13.70	Colon

Table 1 illustrates that most studies have been conducted in English, and only one study included the study of titles in both English and Spanish. The authors have registered information about title length. Among all these studies, only two did not analyse punctuation marks. However, the literature shows the importance of the study of both features in titles because they are related

to RAs' citation rates (Boyd et al., 2019; Costello et al., 2019; Rosenkrantz et al., 2018; Yang, 2019).

FEATURES FOR TITLE STUDY

RA titles are expected to accomplish a communicative goal: to inform about the content of the article. Hence, titles study needs to address the features to accomplish their function. Researchers have considered title length, syntactic structure, use of punctuation marks, informativity, and specialised vocabulary in a variety of disciplines (Diao, 2021; Kerans et al., 2020; Méndez & Alcaraz, 2017; Moattarian & Alibabae, 2015; Xiang & Li, 2020).

Morales et al. (2020) proposed the study of length, punctuation marks, style, morphosyntactic structures, rhetorical relationships, lexical density, informativity, and specialised language. For a better understanding of the criteria for title analyses, a brief explanation for each is provided:

- Length: Number of words in the title. A word is the minimal unit of sense occurring between spaces. In that sense, abbreviations and words joined by a hyphen (-) are considered one (Appiah et al., 2019; Salager-Meyer & Alcaraz, 2013).
- Punctuation marks: This implies the analysis of their use in the text in terms of presence and function.
- Title style: It covers the identification of single and multiple-unit titles. Single-unit titles convey the message through a single phrase or sentence. Multiple-unit titles are composed of two or more units and are separated by a punctuation mark.
- Morphosyntactic structures: The presence of nominal phrases, full sentences, gerund phrases, and prepositional phrases in both single and multiple unit titles.
- Rhetorical relationships in multiple unit titles: The way all units are presented according to their rhetorical function: topic-scope, topic-method- topic-description-method, question-topic, question method (Anthony, 2001; Morales et al., 2020).
- Lexical density: According to Méndez and Alcaraz (2017), to know lexical density, it is necessary to divide the content into function words. The former includes nouns, adjectives, adverbs, participles (both present and past), symbols (e.g., mathematical symbols), and verbs (either conjugated or in base form). The latter refers to auxiliary verbs, determiners (articles and possessives), conjunctions, prepositions, and interrogative pronouns.
- Informativity: Refers to how much the title informs about the content of the RA. It is expressed through some specific content words. Its analysis includes the study of words referring to results (e.g., effect, impact, and correlation), describing actions (e.g., assessment, study, analysis), and giving information about some aspects of the study (e.g., method, scope, area), the sample or context of the study (e.g., sample, name of places, name of communities) and words belonging to the speciality (e.g., architecture, designs).
- Specialised terms: Methodology and content terms belonging to the discipline.

METHODS

This study is framed in the genre analysis theory. A genre analysis study was performed following Bhatia's (2002) multi-perspective model. It recognised the importance of the context for a comprehensive understanding of genre as proposed by NR and the study of patterns in genres as proposed by Swales' ESP school (Miller et al., 2018; Swales & Feak, 2004). In this approach to the genre, the textual and the contextual analysis provide a deep understanding of it (Swales, 1990). This approach has been recommended and used in recent studies because it provides a comprehensive understanding of the socio-discursive practices of academic communities. It helps to reveal the social norms, values and conventions of the community through the genre. These practices include discourse structure, linguistics realisations, and topics that are considered valid by the community. This is possible because this approach recognises genres as the result of social interactions that determine what is considered 'scientific' and valid within a given field and reflect the dynamics of power and authority in that scientific community. Details about the corpus, data gathering, and analysis are presented below.

The corpus consisted of 4,878 running words from 360 titles (180 in English and 180 in Spanish). Titles were randomly selected from RA published between 2019 and 2023 in six journals indexed in Scopus (three in English and three in Spanish).

The corpus was selected according to Biber's (1993) and Banks' (2005) criteria for corpus representativeness and size. Relatively small corpora are useful in title studies because they allow the researchers to perform detailed manual analyses. Even when software may be useful for the analyses of other genres, it can lead to different results regarding simple issues such as word count (Banks, 2005). In that sense, Belcher and Hirvela (2005) claim that small corpora analysed this way has much to offer. Hence, manual analysis was performed to get reliable results.

There were clear criteria for the selection of the corpus and the experts. The first step was to select the journals (see Table 2) according to the following criteria:

- Indexed in Scopus: a worldwide database that indexes high-impact architecture journals.
- Open access journals: Any reader can have free access.
- Classified by Scopus in the Architecture category: particularly relevant and representative of architect's writing practices.

TABLE 2. Journals were selected to retrieve the articles

Title	Per cent		
	Cited	Quartile	Sample
Buildings (B)	74	1	60
Journal of Asian Architecture and Building Engineering (JAABE)	45	2	60
Journal of Architecture and Urbanism (JAU)	38	2	60
Habitat Sustentable (HS)	14	3	60
Revista INVI (INVI)	41	2	60
Informes de la Construcción (IC)	37	2	60

Note: Source Scopus sources list.

Secondly, in line with Anthony's (2001) claims and Biber's (1993) criteria for representativeness, RA selection was conducted by avoiding very specific features like being the most cited articles or dealing only with a determined research area of architecture. Anthony (2001) states that the generalizability of results may be affected when article selection is based on very particular or outstanding papers that are not representative samples of academic production in the

community in general. He also explains that choosing articles merely based on their order in a journal's issue (e.g., selecting just the first articles) or selecting all articles from a single issue or volume implies the risk of bias. Also, the author confirmed that the RA was based on empirical research: traditional and systematic reviews, essays and other genres were not considered because literature has shown differences in title writing depending on the main genre in which they are embedded (Diao, 2021). All papers were published between 2019 and 2023.

Finally, a set of four experts agreed to be interviewed. They were architects with PhD degrees who were frequent readers of journals indexed in Scopus. All the experts were authors of RA published in any journal in the sample during the period of study. They were interviewed as part of the contextual analysis as recommended by Bhatia (2002) in genre analysis. The experts' opinion was helpful to better understand how "members of a particular discourse community see their discipline and its forms of communication" (Bhatia, 2002, p. 13).

Quantitative analysis criteria of titles comprised length, punctuation marks, title style (single and multiple units), morphosyntactic structures, rhetorical relationships in multiple unit titles, lexical density, informativity, and specialised language (methodological and discipline vocabulary). The qualitative analysis included prototypical exemplars and some interviews with experts. Their answers yielded a better understanding of socio-discursive practices of the Architecture community publishing in Scopus.

A database was created, and each title was codified according to language (English 1, Spanish 2), journal (the initials of their names), and number from one to sixty (1-60). For example, title 2-INVI-14 was a title in the Spanish sub-corpus, retrieved from the journal INVI (and was the fourteenth title retrieved from that journal).

Quantitative and qualitative analyses were performed by two researchers independently and validated by an external experienced researcher on genre analysis to avoid bias. Online interviews with the experts were performed after the statistical analyses to understand the rationales of the writing practices observed.

Descriptive and inferential analyses were performed with the Statistical Package for the Social Sciences (IBM-SPSS 27). Quantitative analyses included descriptive statistics (frequencies, percentages, means, and dispersion measures). However, some authors have criticised genre studies focused on the use of only descriptive statistics that do not offer solid evidence of potential differences among genres, disciplines, and languages (Hartley, 2007). Then, inferential tests to assess statistically significant cross-language differences were performed (t-test, Chi-Square, and Exact Fisher Test, all set at $\alpha = .05$).

RESULTS

TITLE LENGTH

Title length was similar for both English and Spanish (see Table 3). The experts were asked about this result. They considered these variations may be related to the length places' names and the length of the names of the variables involved.

TABLE 2. Title length in both languages

Language	Mean	SD	Min-Max
English	15.15	4.17	9-30
Spanish	14.95	4.51	7-31

To assess differences across languages, a t-test at 95% IC was performed. It showed no statistically significant differences between English and Spanish ($t_{(358)} 2.50, p= .802$). In other words, there is a pattern for title length that is common for architects in both languages, English and Spanish.

Architecture RA titles in English in this study are larger than in computer science (Anthony, 2001), civil engineering, applied linguistics and dentistry (Moattarian & Alibabae, 2015), business, gynaecology and law (Appiah et al., 2019), and shorter than RA titles in clinical medicine (Kerans et al., 2020). RA titles in Spanish showed a similar length to RA titles in dentistry (Morales et al., 2020). As previously claimed by Diao (2021) in scientometrics, architects seem to understand the potential benefits of a balanced length and the association between length and informativity. Long and complicated titles may cause a loss of interest for readers (Dewan & Gupta, 2016), but if titles are extremely short, they may affect citation rates (Boyd et al., 2019; Costello et al., 2019). This knowledge, as indicated by Xie (2020), is helpful in guiding researchers to compose appropriate RA titles. Likewise, it is useful to plan discipline writing courses.

PUNCTUATION MARKS

Many titles lacked punctuation marks (70 % in English and 43.3 % in Spanish). Table 4 shows more variety in punctuation marks for both languages.

TABLE 4. Punctuation marks observed in the corpus

Punctuation mark	Spanish		English	
	fi	%	fi	%
None	75	42	126	69.4
Hyphen	3	1.7	3	1.7
Colon	42	23.6	42	23.6
Period	39	21	3	1.7
Semicolon	3	1.7	0	0
Colon-other	18	10	6	3.6
Total	180	100	180	100

The colon (:) was the most commonly used punctuation mark (23.6 % for both English and Spanish), followed by the period (.) in Spanish (21 %) (Table 3). The Exact Fisher test was performed at $p= .05$. The result yielded a statistically significant difference ($p= .000$) with more variety in the use of punctuation marks for Spanish titles. This finding is consistent with previous studies in library science, business, gynaecology, and law (Appiah et al., 2019; Diao, 2021). This trend in the use of colon may be a consequence of the controversial belief that hanging or colonic titles (titles with units separated by a colon) are partially related to high citation rates (Rosenkrantz et al., 2018; Xie, 2020).

Some titles showed more than one punctuation mark (see Table 3 above). This use of punctuation marks was observed in multi-unit titles like these in examples (1)-(4)¹.

- (1) From paddy fields to sustainable town in four decades: Tight integration of urban planning and place management in Yukarigaoka, Japan (JAU-02)
- (2) Challenges of civic engagement in the (post-socialist) transitional society: experiences from waterfront urban areas Mezapark in Riga and Kalarand in Tallin (JAU-10)

¹ All the examples of titles have been transcribed verbatim from the original sources.

- (3) Minga: modelo replicable de renovación urbana sostenible, caso Buenaventura [Minga: replicable model of sustainable urban renewal, Buenaventura case] (RHS-04)
- (4) Vivienda sustentable: una discusión sobre el manejo eficiente del uso agua en instalaciones domiciliarias. Caso de estudio: Santa Fe –Argentina [Sustainable housing: a discussion on the efficient management of water use in domestic installations. Case study: Santa Fe -Argentina] (RHS-15)

Authors tend to use more punctuation marks in Spanish than in English. The finding of RA titles in Spanish is like (Morales et al., 2020) in dentistry; they found that most titles lacked punctuation marks and, in those who used them, colon (:) and period (.) were the most frequently observed. However, there are no previous studies in architecture in English or Spanish to establish comparisons.

TITLE TYPES AND SYNTACTIC STRUCTURES

Two types of titles (single and multiple units) were observed for both languages. Results are presented in Table 5.

TABLE 5. Types of titles according to their components

	Spanish		English	
	fi	%	fi	%
Single Unit	75	41.6	126	70
Multiunit	105	58.4	54	30
Total	180	100	180	100

Examples (1)-(4) above illustrate single and multiple-unit titles in English and Spanish. Examples (5)-(6) below are single-unit titles for both languages.

- (5) Self-awareness of Soviet Lithuanian architects in their creative power and social significance (B-45)
- (6) Practicidad y comunicación de lo técnico en las tipologías de vivienda CORVI [Practicality and communication of the technical aspects of CORVI housing typologies] (INVI-18)

The chi-square set at 95% CI analysed the possible association between language and type of title (single and multiple-unit titles). There was a statistically significant association $X^2(1, N=360) = 9.766; p = .002$. It means that single-unit titles are more frequently used in English, whereas multi-unit titles are preferred for Spanish RA titles. Experts were asked about those preferences. English authors indicated they like to be as concrete and informative as possible, and Spanish authors indicated that they like to provide as much information as possible; in that sense, they may need more than one content unit.

The syntactic structure of titles was analysed for both single and multiple-unit titles (Table 6). The most prevalent structures for both languages were NPh (75 in Spanish and 114 in English) and NPh-NPh (75 in Spanish and 42 in English) (see Table 6).

TABLE 6. Syntactic structures in single and multiple unit titles

Syntactic structures	Spanish		English	
	fi	%	fi	%
NPh	75	41.67	114	63.3
NPh-NPh	75	41.67	42	23.3
NPh-NPh-NPh	6	3.33	6	3.3
NPh-NPh-NPh-NPh	12	6.67	0	0.0
GPh-NPh	3	1.67	3	1.7
NPh-GPh	3	1.67	0	0
FullSentence-NPh	6	3.33	0	0
PrepPh-NPh	0	0.00	3	1.7
FullSentence	0	0.00	3	1.7
GPh	0	0.00	9	5.0
Total	180	100	180	100

Note: NPh= nominal phrase, GPh= gerund phrase,
 PrepPh= prepositional phrase.

Examples (5)-(6) above are examples of NPh in single unit titles. All full-sentences found were interrogative sentences; see examples (7)-(8).

- (7) ¿Todos los caminos conducen a la vivienda social? Trayectorias residenciales como factor de diferenciación [Do all roads lead to social housing? Residential trajectories as a differentiating factor] (INVI-06)
- (8) Analytical methodologies concerning historic neighbourhoods for urban renewal in southern Chile. How do we understand the place to intervene? (JAU-57)

Concerning syntactic structures and title types, nominal titles, also referred to as indicative or descriptive (Salager-Meyer et al., 2017), are highly present in both languages. The higher presence of NPh is like other findings in different disciplines (Appiah et al., 2019; Diao, 2021; Méndez & Alcaraz, 2017; Morales et al., 2020). The most prevalent structures for both languages were NPh and NPh-NPh. Four-unit titles were observed for titles in Spanish. In the case of English, similar to Diao's (2021) study, four-unit titles did not occur.

Descriptive statistics analyses in Table 6 (above) show some differences across languages. According to the Fisher Exact test, those were statistically significant (15.124; $p = .017$). In other words, architects do not use the same syntactical structures in English and Spanish. Examples (9)-(10) illustrate four-unit titles found only in Spanish and GPh titles found just in English, respectively.

- (9) Edificios prefabricados en Chile: diagnóstico energético a 40 años de Su construcción. Caso de estudio: edificios KPD, Santiago de Chile [Prefabricated buildings in Chile: energy diagnosis 40 years after their construction. Case study: KPD buildings, Santiago de Chile] (RHS-06)
- (10) Pursuing the concept of existence in the designs of civic centres: the 17th–18th – Century Persia (JAU-16)

This finding reveals similarities with other disciplines and languages (Appiah et al., 2019; Diao, 2021; Méndez & Alcaraz, 2017; Morales et al., 2020). It may be explained by the fact that opting for nominal group titles is a linguistic tactic frequently followed in scientific discourse

(Xie, 2020) because this kind of construction seems to be a fitting structure for titles, as it enables the realisation of informative content (Soler, 2011).

The present results are consistent with Diao's (2021) statements. Authors prefer nominal phrases in single-unit and multiple-unit titles. Nevertheless, a cross-language difference was observed for title types. Single-unit titles are more common in English; this finding is consistent with Moattarian and Alibabae (2015). Multiple-unit titles prevailed in Spanish, as found by Haggan (2004) and Hartley (2007). Hartley (2007) noticed that this kind of title is common in the arts and humanities.

RHETORICAL RELATIONSHIPS OF COMPOUND TITLES

As shown in Table 7, Topic-Description was the most frequent rhetorical relationship in both English (n= 49) and Spanish (n= 25). There were differences across languages for the type of relationships; those were more varied in Spanish (seven) than in English (four). Fisher Exact test confirmed statistically significant differences for rhetorical relationships across languages (16.537; p= .010).

TABLE 7. Rhetorical relationships in titles

Rhetorical relationship	Spanish	English
	fi	fi
Topic-Method	15	21
Method-Topic	3	0
Topic-Scope	12	15
Question-Topic	9	0
Topic-Description	49	25
Topic-Description-Method	3	0
Topic-Description-Method-Scope	14	0
Topic-Question	0	3
Total	105	66

Interviewed experts suggested that this trend may be related to the type of study; however, the present research did not approach such a relationship. They claimed that, in English, it is important to present the topic, whereas talking about the method in the title may not be very relevant, except for case studies.

LEXICAL DENSITY

Lexical density was higher in English (M= 71.35; SD= 8.16; Min-Max 50-89) than in Spanish (M= 63.57; SD=8.59; Min-Max= 42-89). This difference was found statistically significant ($t_{(358)} 5.077$; p= .000; d= 0.90). Table 8 shows details about the frequency of function and content words in both sub-corpora.

TABLE 8. Descriptive results for content and function words in both English and Spanish

	English			Spanish		
	M	SD	Min-Max	M	SD	Min-Max
Content words	10.78	3.21	1-9	9.42	2.86	5-18
Function words	4.37	1.72	1-9	5.53	2.24	1-13

Example (11) illustrates a title with high lexical density (50 %) in English and (12) in Spanish (47 %).

- (11) An exploratory analysis of housing and the distribution of COVID-19 in Sweden (B-02)
 (12) El diseño político del proceso de financiarización de la vivienda y la infraestructura en Chile
 [The political design of the housing and infrastructure financialization process in Chile]
 (INVI-51)

Experts indicated that it is not surprising to find differences across languages regarding lexical density. They claim that languages being more synthetic (e.g., English) tend to show more lexical density whereas in Spanish more function words are needed. In other words, they consider that the differences in lexical density obey to language differences themselves. Further studies could approach this issue with titles of genres produced by the architecture community.

INFORMATIVITY

RA titles are expected to persuade the readers to approach the whole text. The information of titles about the respective enclosing text should be enough to describe the latter and appeal to readers' attention, but not too exhaustive because the reading might become superfluous (Nord, 2019). In a few words, authors need to know what to inform and how to do it to reach the target audience. Informativity was studied through the presence of words referring to actions (e.g., study, analysis), giving an idea of expected results in the study (e.g., effect, correlation), identifying the method or design (e.g., case study), sample (i.e., participants, geographical area, context), and speciality (i.e., words that indicate that the study refers to any of the architecture areas or specialities). Table 9 shows the frequency of titles showing those words. It is worth mentioning that some titles provide different types of information.

TABLE 9. Information provided in the titles

Information provided	English	Spanish	Total
	N Titles	N Titles	
Samples	132	150	282
Method	33	42	75
Results	51	45	96
Actions	150	141	291
Specialty	150	159	309

The number of words per title was also analysed to determine the average in both English and Spanish (see Table 10). The present study shows some practices differing from other disciplines. For instance, architects include fewer types of words informing about methodology than authors in scientometrics and library sciences (Diao, 2021) or Dentistry (Morales et al., 2020). Informativity of Architecture RA titles is mainly related to actions, samples, and speciality; those issues seem to be more relevant than methods and results.

We asked experts about his findings. They explained that it is natural for architects to be clear about what to inform in a title. Architects tend to go straight to the issue, and when they read RA, they like the authors to directly inform about the content. They want to read about techniques and materials. In this sense, authors need to draw their attention by educating them as much as possible. One of the experts explicitly said:

“We are architects. We know what architects want. As architects and authors, we need to express what we would like to receive from an author. It is simple: Architects don’t want to spend time guessing. We need to know what was done, where and in what field or speciality. If we are not informed, we move to another paper. We don’t have time to waste. Then, titles need to be as informative as possible, and that information should be relevant to us”.

(This answer as transcribed verbatim)

TABLE 10. Descriptive results for informative words per title

Words referring to	English			Spanish		
	M	SD	Min-Max	M	SD	Min-Max
Samples	2.15	1.62	0-6	2.30	1.62	0-6
Method	0.25	0.60	0-3	0.25	0.47	0-2
Results	0.28	0.45	0-1	0.27	0.48	0-2
Actions	1.23	0.81	0-3	1.12	0.804	0-3
Specialty	2.08	1.36	0-6	2.73	1.75	0-7

The analysis showed that titles in architecture RA tend to be very informative. As noticed in example (13), some titles in English include information about actions, results and samples or context.

(13) Comparison of effects of spatial anticrime in open communities in China (JAABE-17)

Appiah et al. (2019) considered that research-related expressions and phrases, such as 'investigation of', 'study of', or 'observation on', are ineffective in titles. However, the corpus showed a trend to highlight case studies in Spanish (n=30) more than in English (n=15). No statistically significant differences were observed across languages (see Table 11). When expert informants were asked about their opinion of this finding, they confirmed that case studies are very important for architects in Spanish. Then, they consider that indicating that it is a case study attracts Spanish readers’ attention.

TABLE 11. Results of t-tests for informative words

Words referring to	t	gl	p
Samples	0.505	358	.614
Method	0.000	358	1
Results	195	358	.846
Actions	0.791	358	.430
Specialty	2.262	358	.026

In English, authors inform about case studies in parenthesis or as an independent unit separated by a colon (14-15), but in Spanish, it is a unit separated mostly by a semicolon or a period (16-17).

(14) The impact of environmental construction on the spatial configuration of traditional Iranian housing (case study: comparison of Dezfoul and Boroujerd traditional housing) (JAU-06)

(15) Factors influencing street use frequency and evaluation of street image in densely built-up areas: a case study in Shinyo neighbourhood, Nagata Ward, Kobe (JAABE-07)

(16) Análisis de la Modulación Arquitectónica en Edificaciones Menores de CLT; estudio de casos. [Analysis of Architectural Modulation in CLT Minor Buildings; case study]. (RDC-12)

- (17) Mejoras en el desempeño energético de edificios en verano mediante la integración de envolventes ventiladas en fachadas norte y cubiertas. El caso de Mendoza, Argentina. [Improvements in the energy performance of buildings in summer through the integration of ventilated envelopes in north facades and roofs. The case of Mendoza, Argentina] (HS-21).

TABLE 3. Abbreviated terms in titles

Abbreviate Terms	Spanish		English	
	fi	%	fi	%
Yes	12	6.7	12	6.7
No	168	93.3	168	93.3
Total	180	100	180	100

The presence of abbreviated terms referring to speciality was analysed because speciality words have been found along with abbreviations in almost 30 % of the corpus in previous studies in other discourse communities (Fyliasova, 2020). In the present study, both languages showed little use of abbreviations (Table 11). The low presence of abbreviations may not be a surprise because, as Dewan and Gupta (2016) reported, architects consider that abbreviations and acronyms do not add quality or informativity to texts. Experts were asked about this finding. They agree with Dewan and Gupta (2016). They state that abbreviations affect informativity, and this feature is especially important for architects. One expert added that in some cases, they need to use abbreviations due to word limits, but this does not reflect a trend or preference for abbreviated forms.

CONCLUSION

Regarding the first research question, architecture RA titles in English and Spanish seem to accomplish most of the characteristics of a good title proposed by Swales and Feak (2004): introduce the topic, indicate the scope, be self-explanatory, and indicate the nature of the study (just in case study). Concerning the second research question, there are cross-language differences regarding title type and the use of punctuation marks.

The results in the present paper seem to support previous claims about variations across languages (Noorizadeh-Honami & Chalak, 2018). Research and academic writing instructors should consider those differences when teaching. However, future research might include comparative studies with balanced corpora from architecture and other disciplines to get a clearer view of the issue.

The results of this study have pedagogical implications: First, it is valuable for the design of discipline-based reading and writing courses in both languages. Secondly, it represents useful insight for the architects aiming to publish RA according to their academic community conventions but have not received formal training in disciplinary writing. The analyses and experts' opinions presented in this study may guide architects in presenting RA's titles according to their community conventions in any of the languages studied.

There is still little research and few papers addressing the study of genres published by architects. Further studies on other embedding genres (e.g., RA, reviews and essays) and embedded ones (e.g., abstracts and titles) in this academic community are strongly recommended. Those studies would contribute to increasing knowledge about the socio-discursive practices of

the architectural community and to enhancing disciplinary reading and writing courses for undergraduate and graduate students. Deepening their knowledge of architecture genres will help architects to be more competent in publishing the results of their research in high-quality journals like recognised members of their academic community.

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