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Syntactic structure and rhetorical combinations of Iranian English research article titles in medicine and applied linguistics: A cross-disciplinary study

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This corpus-based cross-disciplinary study investigated the syntactic structures and rhetorical combinations of 200 research article titles in two disciplines, namely, medicine (100) and applied linguistics (100). The RA titles were selected from four reputable Iranian English journals. The authors were all Iranian researchers in these two disciplines. The titles were analyzed in light of Dietz taxonomy. First, the frequencies and percentages of each syntactic and rhetorical construction occurrence have been calculated. Next, the authors performed a *t*-test regarding title length and the chi-square test to decide whether syntactic or rhetorical construction is a discipline-specific convention. The findings revealed thatmedical titles were longer than the linguistic ones. The frequency and percentage of both single- and multi-unit RA titles were essentially the same in both disciplines. Concerning the syntactic components of single-unit RA titles, the most frequently used structure was the nominal construction, followed by verbal and prepositional ones. The most recurrent syntactic components of the nominal structure in both disciplines were post- and pre-modified, with medical titles overtaking the linguistic titles in all nominal categories. In terms of verbal constructions, the dominant structure in medicine was the full sentence, and in applied linguistics, gerund phrases. Regarding the rhetorical components of multi-unit RA titles, medical titles took precedence over the linguistic titles in using the topic method. The topic scope and topic description organization are mostly reported in applied linguistics titles. In this study, however, two new rhetorical combinations were identified. The chi-square test results only confirmed the verbal structures of single-unit and the rhetorical combinations of multi-unit RA titles as distinctive features for each discipline.

KEYWORDS

applied linguistics, medicine, research article titles, rhetorical organization, syntactic structure

Introduction

Over the last three decades, titles and their features in different genres (e.g., dissertations, research articles, and review papers) have enticed most researchers and readers into researching them (Jalilifar et al., 2012). In fact, a title brings about an identity for any academic piece of work; that is why it is worth investigating. Furthermore, as Haggan (2004) mentioned, authors work on the title, and readers read it as the first part of an article. Therefore, the title has a critical role in readers' decision to read a paper or ignore it; in other words, it can motivate or demotivate the readers to read an article (Archibald, 2005; Hartley, 2005, 2007).

Since the 1990s, the genre has found a prominent role in different types of text analysis. Genre-based analysis originated from discourse analysis and has been widely used in English for a specific purpose (Swales, 1990; Dudley-Evans, 1994; Bhatia, 2008; Martín and León Pérez, 2014). Research articles (RAs) received considerable attention in genre-based analysis research because they are considered primary mediums for scientific communication and the worldwide distribution of academic knowledge (Peacock, 2002). Therefore, a growing appeal emerged to present patterns of scientific and literary texts for genre-based research in RAs (Martin, 2003). Swales (1990) book on genre analysis motivated researchers to study different aspects of RAs: micro-structures such as voice, tense, and pronouns, and macro-structures like introduction, method, result, and discussion. Researchers, in the last three decades, conducted numerous research on the titles in various academic genres, like review articles (Soler, 2007), dissertations (Dudley-Evans, 1984), and original research articles (Goodman, 2000; Haggan, 2004; Wang and Bai, 2007). However, the syntactic construction of titles has not been widely researched in comparative RA studies, especially in medicine and applied linguistics in an EFL context. To the best of the researcher's knowledge, little research has been conducted in this domain. Therefore, the purpose of the present study is to highlight the syntactic structures of RAs in the two fields, namely, medicine and applied linguistics, and shed light on the differences, if any, between these disciplines in terms of syntactic constructions of RA titles.

Literature review

As Cheng et al. (2012) stated, several studies have been conducted until now to examine research titles syntactically, highlighting the title length (e.g., Yitzhaki, 1994; Anthony, 2001; Haggan, 2004), structural organizations of titles (e.g., Haggan, 2004; Wang and Bai, 2007; Salager-Meyer and Alcaraz Ariza, 2013; Archibald, 2017), titles in different genres (e.g., Hamp-Lyons, 1987; Soler, 2007; Méndez and Alcaraz, 2017), titles in various fields (e.g., Buxton and Meadows, 1977; Moattarian and Alibabaee, 2015; Nagano, 2015; Shahidpour and Alibabaee, 2017), and titles in different languages (e.g., Soler, 2007).

According to the existing literature, researchers used mono- and cross-disciplinary methods to study various aspects of titles in academic texts. However, cross-disciplinary studies do not have mono-disciplinary research restrictions; therefore, they have set the scene in interpreting extant phenomena by highlighting similarities and differences. Furthermore, cross-disciplinary research brings novelty to language studies and integrates new knowledge (Herieg, 2011). Buxton and Meadows (1977); Fortanet Gómez et al. (1998); Haggan (2004), Lewinson and Hartley (2005), Soler (2007), and Haggan (2004), Wang and Bai (2007), Moattarian and Alibabaee (2015); Shahidpour and Alibabaee (2017) are among those researchers who have conducted cross-disciplinary studies on RA titles in terms of syntactic structures and other aspects of RA titles. All of these studies have shed light on the correlations between different facets and patterns of titles across a range of disciplines as RA titles reveal the researchers' approach to their disciplinary practices and how well they can reach their potential readers.

In fact, the research titles mirror how the authors appeal to their readers. Researchers want their academic papers to be read and cited; however, with the tsunami of research papers in every discipline, this becomes a challenging job. Thus, to fulfill this objective, the authors have resorted to various means, including length, style, cultural allusions, compounds, and questions. In truth, some researchers have conducted various studies to tap into different methods of writing research titles in different fields.

Title formats

Among all the researchers, Buxton and Meadows (1977) pioneered research on RA titles. They investigated RA titles related to natural and social sciences in English, French, and German journals by observing content words. The researchers reported more informativity in natural sciences RA titles, especially chemistry and botany, than in social sciences. In addition, they reported frequent use of nouns and readers' inclination to retrieve information as the primary difference between RA titles in these fields.

Fortanet Gómez et al. (1997) investigated the structure and content of RA titles in different disciplines, including computer science, applied linguistics, business, economics, and chemistry. The study results indicated that chemistry RA titles had the highest number of words, and linguistics had the lowest. In addition, the study showed that the length of titles varied across the different disciplines. For example, most titles in chemistry and the minority in linguistics represented the general topic and specific focus of the research. By contrast, one-third of the titles indicated the nature of the study conducted. Since then, a trend has appeared toward investigations of syntactic

structures of RA titles (Moattarian and Alibabaee, 2015). A year later, Fortanet Gómez et al. (1998) studied 800 titles in terms of their syntactic structures in computer science, applied linguistics, business and economics, and chemistry. The authors came up with noun phrases as the most frequently used syntactic structures, including a pre-modifier, head, and post-modifier, with the highest frequency in chemistry and computer science. Also, the scrutiny revealed that both applied linguistics and business and economics indicated a majority of –ing forms of the verbs (gerunds) in their titles.

Busch-Lauer (2000) also examined linguistic and medical titles of research articles and conference proceedings written in German and English. The results showed 8.4-word titles in linguistics and 9.9-word titles in medicine, which implies that titles in linguistics are shorter than those in medicine. Appiah et al. (2019) also worked on both natural and social sciences. After investigating title structures in a corpus of 574 titles in three disciplines, namely, gynecology/obstetrics, business, and law, Appiah et al. (2019) found that noun phrases were observed widely in the titles across the three fields; however, business titles were longer than those in gynecology and law and more probable to have compound units including a colon. Syntactically, nominal structures largely dominated single-unit titles in the three disciplines, and both pre- and post-modified titles were dominant in all the disciplines.

Nagano (2015) and Milojevic (2017) also argued that the length of research titles differs between disciplines. Nagano (2015) investigated the structures of a 3,200-title corpus of RAs published in authoritative journals in botany, fluid engineering, geology, and medicine as hard sciences, and economics, education, history, and sociology as soft sciences. The findings revealed the soft sciences had shorter titles, more multi-unit titles, fewer titles with noun phrases, a lower word rate, and higher application of the article "the" to initiate a title unit than the hard sciences. Along the same lines, Milojevic (2017) investigated the features of 500 research article titles in nursing and argued that the title length varies between disciplines. The results also indicated significant differences represented in article titles of internationally high-impact factor journals regarding the four features of style, length, structure, and content. Milojevic also found that the titles are longer in hard sciences such as medicine than in discursive sciences like sociology. Soler (2007) noted the same point after investigating syntactic title structures in biological and social sciences research and review papers. The findings indicated that soft sciences titles were shorter than hard sciences titles. The primary syntactic structures were nominal (the most frequently used), question, full-sentence, and compound constructions. The author claimed that the differences are not limited to disciplines, and they even exist between examined genres: research papers and review articles. For instance, the full-sentence structure was common in medicine, biology, and biochemistry RA titles, but there was no such construction in the review paper titles. Also, no incidence of the full-sentence structure was observed in linguistics and psychology titles.

In their study, Hyland and Zou (2022) explored the key features of 5,070 titles in the highly ranked journals of six disciplines in the sciences, social sciences, and humanities to seek their typical structural patterns and characteristics of titles across a range of disciplines. A variety of disciplinary differences discovered were traced to distinct features of the fields. The findings are in contrast to the previous ones, showing that titles in the more discursive soft fields were lengthier, more interrogative, contained compound forms, and, except for history, were more likely to comprise the approach or findings. As it is evident, there is variation in interests and foci with titles regarding different topics, journals, and disciplines. One justification is that titles are intended to attract and inform the readers in various ways in different contexts (Hyland and Zou, 2022).

Title syntactic structures

Besides, some studies have taken a normative stance, encouraging the researchers the ways to entice their audience by employing title characteristics that are linked to high citation counts (e.g., Paiva et al., 2012; Thelwall, 2017). Examples of those structures are nominal, prepositional, and verbal, which are identified in different discipline-specific titles. For instance, Doykova (2016) examined the syntactic structures of 500 RA titles, written for reputable medicine and dental medicine journals (2010-2016) by non-native speakers of English. In addition to the title, word length and type were studied. This corpus-based study focused on the typical keywords and collocations employed as headings. It was revealed that the nominal title and its subtypes were the most stable structures.

Similarly, Haggan (2004) studied syntactic differences among research articles titles in linguistics, literature, and science. He classified the titles as full-sentence titles (especially in science), compound titles (especially in literature), and the remaining title structures. The last category included three subcategories: noun (especially in literature and linguistics), prepositional, and participial phrases. The author also found that science titles had 13.8 words, whereas literature and linguistics titles consisted of 8.8 words, implying science titles are longer than the other two fields. This finding is consistent with that claimed by Busch-Lauer (2000) and Fortanet Gómez et al. (1997). Furthermore, the results indicated that among phrasal structures, the prepositional phrase had the lowest frequency, with linguistics and literature reflecting a higher incidence of such structure than science. Finally, the author reported that compound or nominal structures occurred more frequently than complete sentences, prepositional structures, and V-ing phrases in research article titles.

Cheng et al. (2012) also examined the syntactic structures of 796 RA titles in applied linguistics journals indexed in the Social Sciences Citation Index (SSCI). Compound, nominal, full-sentence, V-ing, and prepositional phrases were the syntactic structures identified by the authors. Compound and nominal titles were the most frequently observed titles, respectively. However, other structures hardly occurred. For compound titles, a total of 11 categories were identified, including topic scope, topic method, topic description, topic source, metaphor topic, and topic question. Concerning nominal titles, the authors identified two types of discipline-specific and non-discipline-specific heads. Most of the discipline-specific heads characterize compound nouns. Post-modifiers are prepositional phrases.

In another study by Wang and Bai (2007), 417 titles were studied in medical research articles. They analyzed the structure of RA titles. The authors came up with an average length of 10.9 words. Most of the titles were nominal groups (99%), having single heads (75%), followed by prepositional post-modifiers (68%). In terms of rhetorical functions and syntactic structures, in their cross-disciplinary and cross-linguistic corpus study, Shahidpour and Alibabaee (2017) studied 750 English RA titles and 750 Persian ones published in electrical engineering, psychiatry, and linguistics journals. They followed Dietz (1995) taxonomy and reported rhetorical functions and syntactic structures of RA articles. The findings indicated that the differences mainly occurred in title components, length, and style. Persian titles were longer than their English counterparts in length. Titles related to linguistics journals were the shortest, while those of psychiatry were the longest. Most titles were single-unit ones. The English researchers used multi-unit titles more than the Persian researchers. The incidence of multi-unit titles was most observed in linguistic RA titles. The authors found no significant difference concerning the combinations of multi-unit titles in the two languages. Yet, topic description structures were the most occurring combination in electrical engineering and linguistics titles, while in psychiatry titles, topic method construction was the most dominant combination. The most frequent syntactic structure among single-unit titles was the post-modified nominal group.

In another comprehensive cross-genre study, Gesuato (2008) analyzed the syntactic structure of 250 titles from four genres within applied linguistics, namely, books, dissertations, journal articles, and conference proceedings (CPs). She found that the noun phrase was the most frequently used structure in all examined genres, including books, dissertations, RAs, and CPs, with 87.5, 86.9, 83.5, and 82.0% frequency, respectively. Furthermore, dissertations had the longest titles, whereas books had the shortest titles. In another study, Moattarian and Alibabaee (2015) investigated the syntactic structures of RA titles in applied linguistics, dentistry, and civil engineering. They analyzed 420 randomly selected RA titles using Dietz (1995) taxonomy for the syntactic structure of RA titles and Anthony's classifications for the compound-unit titles. They found some discipline-specific differences in title components, mirroring academic conventions of title constructions of respective fields.

Title punctuation patterns

Punctuation has also attracted attention to see whether compound titles are correlated with higher citations. Jacques and Sebire (2010) and Buter and van Raan (2011), for example, advocated the use of compound structures including colons, while Hartley (2007) and Jamali and Nikzad (2011) noted that titles including a colon were followed by both fewer downloads and fewer citations. Regarding discipline-specific inclinations, Lewinson and Hartley (2005) argued that academicians are interested in using the colon as one type of punctuation, especially in the titles of single-authored papers in arts and social sciences. This finding aligns with Hartley (2007) findings that art and humanities research articles have longer titles compared with other disciplines. Lewinson and Hartley (2005) also reported discipline-specific differences in terms of structure (e.g., complete sentences preferred over sentences divided by colons), length (e.g., article titles are longer than book titles), and content (including a general subject, the methodology, a question, a precise theme, and the author's argument) of titles in different genres, such as books and RAs.

Dillon (1981) conducted a corpus study and investigated the use of the colon in journal articles titles. The study results showed that colon was more frequently observed in theoretical research journals, followed by empirical and pedagogical research journals, respectively. One year later, Dillon (1982) studied 1,150 journal article titles regarding the use of colons in three disciplines of education, psychology, and literary criticism over 100 years (1880–1980). The findings showed that colon use in articles developed gradually and steadily across the disciplines, initially in literacy criticism journals. Moreover, Kerans et al. (2020) worked on medical research titles, identifying the number of parts of the titles and their punctuation. They found 10 subtypes. Anthony (2001) found nine-word titles for research articles in computer science sub-disciplines. The findings revealed that title length noticeably varied within sub-disciplines. Moreover, it was disclosed that on average, 13% of the titles were two-unit titles, separated by a colon. The two most frequent rhetorical organizations observed in these compound titles were "name description" and "topic scope". Cianflone (2010) analyzed a small corpus of 63 RA titles, including noun phrases, compounds, full-sentence declaratives, or questions from three reputable journals on veterinary medicine. These patterns were observed with the examples of compound sentences using punctuations like colon for indicating research methods in the second parts of the titles.

Although the literature review reveals a scant number of comparative empirical research articles on RA articles' syntactic structures and their rhetorical organizations written

by non-native authors in medicine and applied linguistics, especially in an EFL context, which is an often unnoticed aspect of academic discourse research, they play a key role in knowledge construction. In fact, they help readers notice and cite new research. Most large-scale analyses confirmed various syntactic structures of RA titles in different disciplines. Still, they did not investigate the differences, especially between these two fields of study in a cross-disciplinary course. Moreover, most studies suffice to report a descriptive analysis just reporting the frequencies and percentages of occurrences. However, inferential statistics is required to see if the cross-disciplinary differences in syntactic structures and rhetorical organizations are statistically significant and considered discipline-specific features.

The theoretical framework of the study

The comparison of the syntactic structures of titles in medicine and applied linguistics has been based on the continuum of hard (e.g., medicine) and soft (e.g., applied linguistics) disciplines, which was first presented by Hyland (2000). Their knowledge structures and intellectual inquiry manifested in the rhetorical conventions of disciplines differentiated them (Moattarian and Alibabaee, 2015). The reason behind this recourse is that comparing the syntactic structures and rhetorical functions with these hard and soft science fields may help us better understand whether and how these structures are more geared toward hard or soft sciences. Moreover, this study analyzes the syntactic structures of RA titles in light of Dietz (1995), as cited in Bush-Lauer, (2000) taxonomy. This is attributed to the fact that this taxonomy captures different title lengths and focuses on different title styles and their classifications; consequently, it will give researchers a more comprehensive look at syntactic structures in titles. Figure 1 presents the framework.

As the repeated measuring of syntactic structures of multi-unit titles might make frequency counts and interpretation complicated and unclear, the researchers decided to analyze single-unit and multi-unit titles separately. This action aligns with Moattarian and Alibabaee (2015) decision to avoid double-counting the same structures for different title styles. Thus, the statistical data analysis includes the analysis of the structures of single-unit and multi-unit RA titles. For the single-unit titles, Dietz (1995) taxonomy has been followed in which the syntactic features of length and style were identified. According to this taxonomy, the style of titles can be single or multiple. Analyzing the constituent components of the multi-unit RA titles, the researchers used Anthony (2001) taxonomy of compound constructions. The classification incorporates five categories, namely, name–description, description–name, topic–description, topic–scope, and topic–method combinations, closely examining the link and association between title units. In terms of Dietz's taxonomy, single-unit title patterns were identified as nominal, verbal, prepositional, and adjectival/adverbial structures. The nominal titles are categorized as unmodified, pre-modified, post-modified, and pre- and post-modified grammatically. Verbal structures are indicated as either a full sentence or a gerund phrase, and there is no specific categorization specified for the prepositional and adjectival/adverbial structures in this taxonomy.

Significance of the study

The style manuals for writing scientific RA titles insufficiently specify what criteria should be followed for an appropriate title (Day, 1989; Ebel et al., 1993). There are some guidelines in the journals on how to write RA titles. Yet, considering original titles, we readily notice that they do not often follow the requirements for an appropriate title (Busch-Lauer, 2000). This issue makes classifying scientific literature in line with content areas relatively challenging by only relying on the titles. That is why the researchers study the titles and their constructions in scientific papers. As the literature review indicates, most corpus studies conducted tend to explore many article titles published in different journals with various disciplines. However, the studies are restricted to examining only a few features such as title length and punctuation use or, for example, colons like the studies conducted by Dillon (1981, 1982) and Lewinson and Hartley (2005). Or, if the study adopts a broader scope, the discipline investigated is limited, such as the research conducted by Gesuato (2008). Although the focus of this cross-disciplinary study revolves around a limited number of RA titles, the researchers pursued an in-depth analysis of the syntactic structures and rhetorical organization to have a more comprehensive, detailed, and in-depth look at the issue in an EFL context.

Besides, as the review of literature unveils, there has been a body of research denoting the differences between disciplines which bifurcate into natural and social sciences (Buxton and Meadows, 1977), biological and social sciences (Soler, 2007), hard and soft sciences (Nagano, 2015), etc. In this cross-disciplinary study, the logic behind the selection of titles from two distinct disciplines, namely, medicine and applied linguistics, was to divulge the discipline-specific differences in title components, length, and style, reflecting upon their academic conventions. The aim was to see how far the medical and non-medical titles might show the communicative and rhetoric differences and/or similarities characterized by the nature of their research. Such studies help one to cross over the boundaries of disciplinary research, integrate knowledge, and bring novelty to language research (Herieg, 2011). Furthermore, most studies in the literature reported only the counts and frequencies of the occurrences and did not examine the

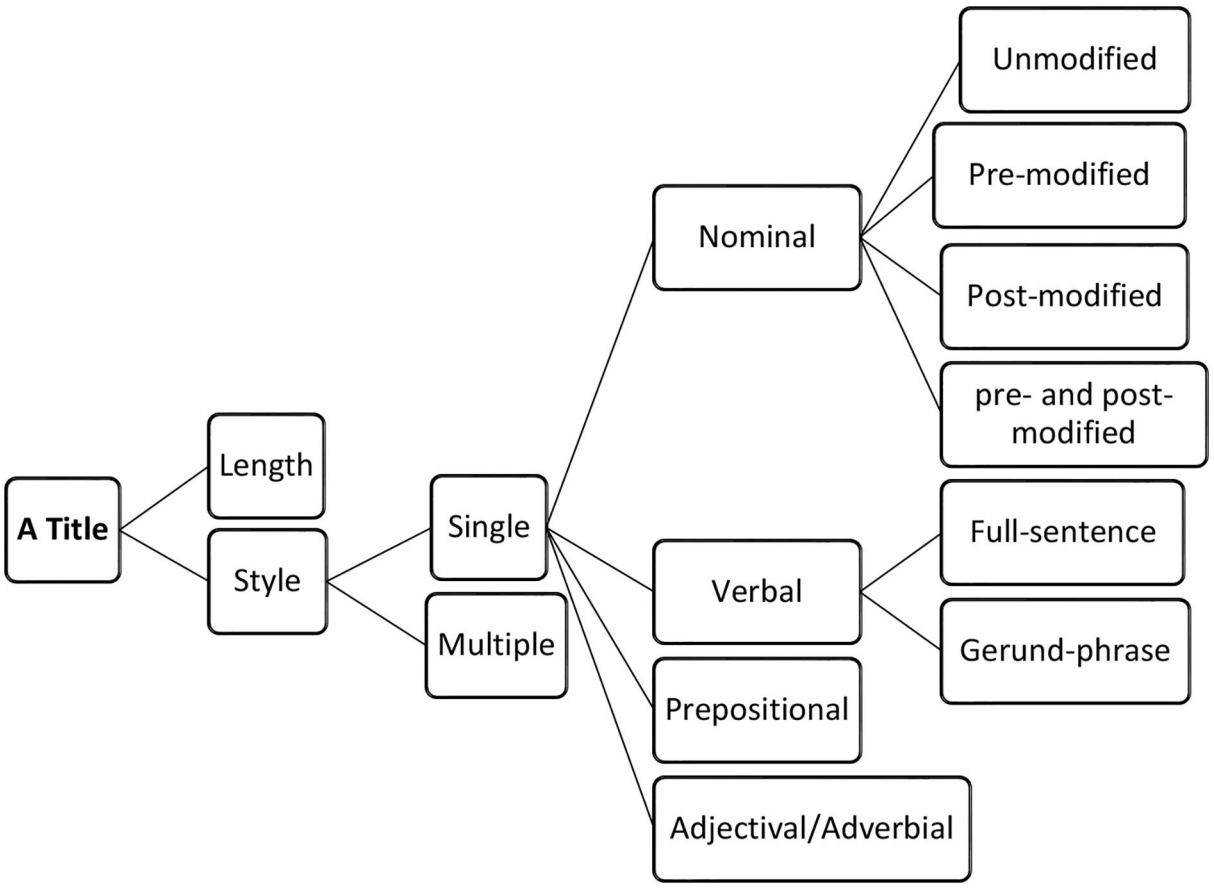

FIGURE 1
A framework adapted from Dietz (1995) taxonomy to analyze syntactic structures of RA titles.

significance of differences or the meaningful relationship between the intended structure and the discipline under investigation; therefore, it is difficult to see if cross-disciplinary studies, especially with small samples, have the statistical power for valid comparisons in any case (Kerans et al., 2016). As indicated earlier, many researchers studied different aspects of RAs. Although RA titles have a significant role in motivating or demotivating a reader to read a scientific article, there is a limited number of cross-disciplinary body of research articles on the syntactic structures of RA titles written in medicine and applied linguistics by non-native researchers in renowned English journals published in an EFL context, such as Iran.

Thus, the present study investigates the frequency and percentage of syntactic structures of RA titles written by Iranian researchers in two groups of disciplines, namely, medicine and applied linguistics, in high-quality and reputable Iranian research journals in English. The study explores any statistically significant difference between RA titles in these disciplines in terms of title length. Moreover, the study investigates whether there is a statistically meaningful relationship between various syntactic structures and rhetorical combinations on the one hand and the two disciplines, medicine and applied linguistics, on the other hand. This study hopes to come up with conclusions to find syntactic structures and rhetorical organizations that scholars in those specialties frequently use to fulfill RA title requirements in reputable and renowned journals in each field, as mentioned earlier. Accordingly, the following research questions are raised:

1. Is there a statistically significant difference between medicine and applied linguistics RA titles in terms of title length?
2. Is there a statistically meaningful relationship between the two categories of RA title style (single and multiple units) and the two disciplines (medicine and applied linguistics)?
3. Is there a statistically meaningful relationship between syntactic components of single-unit RA titles (nominal, verbal, and prepositional) and the two disciplines (medicine and applied linguistics)?

4. Is there a statistically meaningful relationship between syntactic components of RA nominal structures (un-, pre-, post, and pre- and post-modifiers) and the two disciplines (medicine and applied linguistics)?
5. Is there a statistically meaningful relationship between syntactic components of verbal structures (full sentence and gerund phrase) and the two disciplines (medicine and applied linguistics)?
6. Is there a statistically meaningful relationship between the rhetorical organization of verbal structures (e.g., topic–scope, topic–method, and topic–description) and the two disciplines (medicine and applied linguistics)?

Methods

Research design

This corpus-based cross-disciplinary study investigates the syntactic structures and rhetorical organization of 200 RA titles in medicine (100 titles) and applied linguistics (100 titles). The authors selected reputable Iranian English journals indexed in Scopus. This study incorporated a framework developed by Dietz (1995) as cited in Busch-Lauer (2000) to analyze the title length, title styles, and title syntactic components of single-unit RA titles. Furthermore, the authors used a framework developed by Anthony (2001) to explore the rhetorical organization of multiple or compound RA titles. Although descriptive and inferential statistical analyses were carried out, the study is primarily quantitative. However, qualitative data analysis has contributed to more comprehensive views toward comparing the different syntactic structures and rhetorical functions of each structure in RA titles written by Persian authors of English scientific papers in these disciplines.

Materials

The materials in this study are research article titles in two significant fields of study, namely, medicine and applied linguistics, published in Iranian renowned English journals. First, the authors randomly selected two Iranian English journals in each discipline to collect data. Then, through random sampling, the authors selected 100 RA articles in each major: 50 RA titles from the *Journal of Research in Applied Linguistics*, 50 RA titles from *Language Related Research*, 50 RA titles from the *Iranian Journal of Medical Sciences*, and 50 RA titles from *Medical Journal of the Islamic Republic of Iran*. It is worth mentioning that these Iranian English journals were selected because they are authoritative and eminent journals indexed in *Scopus*. Furthermore, the authors selected the articles published in 2018–2021 to control and eliminate the effect of changes in language use during that time.

Data collection and analysis procedures

First, the authors applied the taxonomy adopted from Dietz (1995), as cited in Busch-Lauer (2000) to analyze the data. They incorporated this framework into the study to investigate the syntactic features of the RA titles as follows:

1) title length (number of words per title),
2) title style (single-unit or multi-unit structures), and
3) title unit components (single-unit syntactic structures).

The authors counted words as strings of letters preceded or followed by spaces or punctuation marks to know the title length. However, they considered capitalized abbreviations and hyphenated compounds a single word. For instance, they counted seven words in the title "Turn-Taking, Preference, and Face in Criticism Responses". So, they considered the title constituent parts in analyzing the title style. Title styles according to the framework bifurcated into single-unit and multi-unit structures. Single-unit titles were made of a single phrase or sentence, while multi-unit structures were composed of two or more phrases or sentences separated by a colon. They were examined separately since the syntactic structures in these two styles differ. Dietz's framework was employed to analyze the single-unit structures. This framework classifies single-unit titles into nominal, verbal, prepositional, and adjectival/adverbial syntactic constructions.

a) Nominal structures: A nominal title includes one or more nouns, often called head(s), with or without pre-modifiers and/or post-modifiers (Wang and Bai, 2007). The main section of the nominal phrase is the head. In Wang and Bai (2007) term, further specifications have grammatical or semantic relationships to the head (Richards et al., 1998). The four following titles can well reflect various nominal constructions of this study: Coercion and Construction Grammar (unmodified) Modified; Semiotic Analysis of Tejarat Bank Advertisements (pre-modified); Politeness and Impoliteness in Persian-speaking Youngsters' Novels (post-modified); and Analysis of the Textual Cohesion of a Sonnet by Hafiz based on its Thematic Structure (pre-and post-modified).

b) Verbal structures: Gerund-phrase titles and full-sentence titles are two primary groups of verb phrase titles whose instances are indicated in the following titles: 9-cis-Retinoic Acid and 1,25-dihydroxy Vitamin D3 Improve the Differentiation of Neural Stem Cells into Oligodendrocytes through the Inhibition of the Notch and Wnt Signaling Pathways (full-sentence structure); and Estimating the Net Survival of Patients with Gastric Cancer in Iran in a Relative Survival Framework (gerund phrase structure).

c) Prepositional structures: When a title starts with a preposition followed by an object, it is called a propositional title (e.g., "From Intertextual Relations to Intermediality Aspects").

d) Adjectival or adverbial phrase titles: Adjectives and adverbs inform the readers of their general focus in the title. However, the authors did not observe any incidence of these types.

Anthony's classification of compound constructions was followed for the rhetorical analysis of constituent elements of multiple titles. According to this framework, multiple constructions are given as follows: a) Name–description titles bear a name or abbreviation in the first unit and describe it in the second part (e.g., "NIDDM: Noninsulin-Dependent Diabetes Mellitus"); b) description–name titles act on the reverse, that is, provide a description and then its name or abbreviation; c) topic–description titles introduce the main topic in the first unit and provide the specific description in the second part (e.g., "National Minimum Data Set for Antimicrobial Resistance Management: Toward Global Surveillance System"); d) topic–scope titles depict the primary topic and then the scope of the study (e.g., "Incorporating E-learning in teaching the English language to medical students: exploring its potential contributions" or "On the Validation of a Preliminary Model of Reading Strategy Using SEM: Evidence From Iranian ELT Postgraduate Students"); e) topic–method titles first bring the main topic into notice and then the study's research (e.g., "The Effect of Remote Ischemic Preconditioning on the Incidence of Acute Kidney Injury in Patients Undergoing Coronary Artery Bypass Graft Surgery: A Randomized Controlled Trial").

The incidence of each structure was first identified, counted, and finally reported through frequencies and percentages. Subsequently, the comparison was made the syntactic and rhetorical structures of the RA titles in medicine and applied linguistics through a statistical procedure, namely, the chi-square test *via* SPSS, to see if a statistically significant relationship exists between the particular structure or rhetorical organization of each discipline.

Results and discussion

Title length

The first research question posed in this study revolves around the title length or the number of words per title. The question is whether there is a statistically significant difference between medicine and applied linguistics RA titles in terms of title length.

Table 1 shows that medical titles are longer than linguistic ones in terms of title words. There are 1,559 words in medicine titles and 1,291 words in linguistics ones. The average text length of RA titles in medicine is 15.59, whereas in applied linguistics the average is 12.91 words per title. However, linguistic titles capture minor variance or inconsistency.

Table 2 indicates the results of a *t*-test for equality of means in terms of the title length in medicine and applied linguistics. As the *p*-value is less than the significance level of 0.05 (i.e., sig = 0.00 < 0.05), there is a statistically significant difference between the two fields of medicine and applied linguistics. Therefore, the answer to the first research question is positive. As a result, the statistically meaningful difference between the two discipline title lengths should be considered. This finding corroborates other researchers' similar findings that title length could be captured as a cross-disciplinary distinct feature. The finding contradicts the results found by Hyland and Zou (2022) and aligns with the findings of Busch-Lauer (2000), Haggan (2004), Soler (2007), Nagano (2015), Moattarian and Alibabaee (2015), Nagano (2015), Shahidpour and Alibabaee (2017), Milojevic (2017), and Appiah et al. (2019), indicating that title length is not only contingent upon the disciplines but also becomes more pronounced in hard science disciplines such as medicine than in soft science fields like applied linguistics in this study. That is, hard disciplines have longer titles than soft ones. One reason might be that in hard science and, more

TABLE 1 Descriptive of title length across disciplines.

Disciplines	N	Minimum	Maximum	Sum	Mean		Std. Deviation	Variance
					Statistic	Std. Error		
Medicine	100	6	29	1,559	15.59	0.464	4.636	21.497
Applied linguistics	100	4	27	1,291	12.91	0.455	4.546	20.669
Total	200	4	29	2,850	14.25	0.338	4.773	22.781

TABLE 2 *T*-test for the equality of means.

t	df	Sig (2-tailed)	Mean difference	Std. error difference	95% Confidence interval of the difference	
					Lower	Upper
4.127	198	0.000	2.680	0.649	1.399	3.961
4.127	197.924	0.000	2.680	0.649	1.399	3.961

TABLE 3 Frequency and percentage of single and multi-unit titles in the two disciplines (chi-square test).

		Title style		Total	Sig
		Single unit	Multiple units		
Medicine	Count	58	42	100	0.557
	% within disciplines	58.0%	42.0%	100.0%	
	% within Title style	50.0%	50.0%	50.0%	
	% of Total	29.0%	21.0%	50.0%	
Applied linguistics	Count	58	42	100	
	% within disciplines	58.0%	42.0%	100.0%	
	% within Title style	50.0%	50.0%	50.0%	
	% of Total	29.0%	21.0%	50.0%	
Total	Count	116	84	200	
	% within disciplines	58.0%	42.0%	100.0%	
	% within Title style	100.0%	100.0%	100.0%	
	% of Total	58.0%	42.0%	100.0%	

specifically, in medical and clinical titles, there is a tendency toward elaborating on the opening statements or topics in terms of their scope, description, and methodology for the physicians. As a result, they sometimes draw conclusions based on merely looking at the RA titles (Goodman, 2000). More compound words have also lent themselves to longer titles in such disciplines. However, the point is that, unlike the previous research, this study once more ratifies the former findings in a new context, an Iranian EFL setting, where the authors are all non-native speakers.

Title style

The second feature captured in this study is title style, which is defined as the number of units in each title. According to the Dietz taxonomy, there are two style categories: single- and multi-unit RA titles. The single one is characterized by the occurrence of the title in one whole unit. The multi-unit or compound titles are those in which the title is manifested in more than one unit linked by an appropriate punctuation mark, commonly a colon (Nagano, 2015).

Table 3 displays the frequency and percentage of both single- and multi-unit titles that are unexpectedly similar in both disciplines. In both medicine and applied linguistics, single-unit title structures account for 58%, and multiple constructions constitute 42% of all. Therefore, in this corpus of 200 titles, no difference has been observed in terms of the title style. This finding is even evident within the title style in Table 3, where the percentage of occurrence (50%) is the same for each discipline. The chi-square test does not indicate any statistically meaningful relationship between the title style and the disciplines (sig = 0.557 > 0/05). Consequently, the answer to the second research question in this study is negative, that is, there is no statistically meaningful relationship between the title style and the investigated disciplines. Unlike the previous studies, such as those conducted by Hartley (2007), Cheng et al. (2012), Moattarian and Alibabaee (2015), Nagano (2015), Shahidpour and Alibabaee (2017), and Hyland and Zou (2022), the findings of this study do not verify the nature of discipline-specific feature of title styles in medicine and applied linguistics. Most of the literature (e.g., the studies mentioned previously) lends itself to using multiple units more in the soft fields such as humanities (e.g., applied linguistics) than in sciences. However, the results in this study contradict those findings as no meaningful relationship was found. This striking similarity might be attributed to the fact that over time, the non-native Iranian physicians' and linguists' knowledge regarding the rhetorical organizations of the RA titles has changed toward a similar style. This finding may suggest that title style is no longer a discipline-specific feature in these two majors. However, more comprehensive corpus-based diachronic research should be conducted to investigate the development of patterns over time.

Syntactic components of single units

Dietz's taxonomy divides single-unit titles into nominal, verbal, prepositional, and adjective/adverb structures. As Table 4 indicates, the use of nominal, verbal, and prepositional structures in the field of medicine accounts for 89.7, 8.6, and 1.7%, respectively. In applied linguistics, the use of nominal constructions reduces to 87.9%, while verbal structures are raised to 12.1%. There is no incidence of prepositional structures in this discipline.

TABLE 4 Frequency and percentage of title components or syntactic structures in single-unit titles in the two disciplines (chi-square test).

		Nominal	Verbal	Prepositional	Total	Sig
Medicine	Count	52	5	1	58	0/511
	% within disciplines	89.7%	8.6%	1.7%	100.0%	
	% within syntactic structures	50.5%	41.7%	100.0%	50.0%	
	% of Total	44.8%	4.3%	0.9%	50.0%	
Applied linguistics	Count	51	7	0	58	
	% within disciplines	87.9%	12.1%	0.0%	100.0%	
	% within syntactic structures	49.5%	58.3%	0.0%	50.0%	
	% of Total	44.0%	6.0%	0.0%	50.0%	
Total	Count	103	12	1	116	
	% within disciplines	88.8%	10.3%	0.9%	100.0%	
	% within syntactic structures	100.0%	100.0%	100.0%	100.0%	
	% of Total	88.8%	10.3%	0.9%	100.0%	

As the findings represent, the most frequently used structure within single-unit RA titles in both disciplines is the nominal structure, followed by less observed constructions, that is, verbal and prepositional phrases. Moreover, there are no adjectival or adverbial structures in medicine and applied linguistics corpus. As the chi-square test in Table 4 reveals (sig = 0.511 > 0.05), despite the observed differences between medicine and applied linguistics in terms of nominal, verbal, and prepositional structures, there was no meaningful relationship between the disciplines and such structures. Therefore, the answer to the third research question is negative. For the Iranian authors in these majors, the structures mentioned here in RA titles have no meaningful relationship with their field of study. As most of the studies are cross-disciplinary, the authors have to see whether the differences across the majors regarding such syntactic constructions can be meaningfully attributed to the disciplines under investigation or not. As the literature review discloses, the most recurrent and prevalent syntactic construction corresponded to the nominal group structure, followed by verbal and prepositional structures (e.g., Haggan, 2004; Soler, 2007; Wang and Bai, 2007; Cheng et al., 2012; Moattarian and Alibabaee, 2015; Nagano, 2015; Doykova, 2016; Shahidpour and Alibabaee, 2017). The reason can be attributed to the fact that even the authors (here in this study, the non-native RA writers) are inclined to summarize the essence of their studies and pack more information through nominal construction. As Soler (2007) and Wang and Bai (2007) declared, nominal structures can bring about efficient information use through different modifiers pre- and/or post-ones. In nominal structures, heads, which are nouns, present the focus of the study, and modifiers provide more detailed specifications to better elaborate on the intended issue (Wang and Bai, 2007). That is why the next section is devoted to analyzing different subsections and specifications of the nominal structures in research articles.

Nominal structures

Table 5 illustrates the frequency and percentage of unmodified (UM), pre-modified (PRM), post-modified (POM), and pre- and post-modified (PPM) structures in RA nominal titles in medicine and applied linguistics.

The findings reveal that PPM accounts for most of the RA titles in medicine and applied linguistics (75.0 and 72.5%, respectively). The next dominant feature is the POM, which occurred in medicine and applied linguistics (19.2 and 17.6%, respectively). The other two nominal components, namely, PRM and UM, were the least occurred structures (medicine, 3.8% and applied linguistics, 7.8% for pre-modified construction) and (medicine, 1.9% and applied linguistics, 2.0% in terms of unmodified structures). The results reveal that medical nominal titles override linguistic nominal titles in terms of PPM and POM, although the difference is not considerable. Regarding PRM and UM, the linguistic nominal constructions take over the medical ones. However, as the chi-square test results uncover (sig = 0.858 > 0/05), there is no meaningful relationship between the use of the four categories of nominal construction by the non-native Iranian RA authors and the two disciplines. Therefore, the answer to the fourth research question is not positive. This study's findings on the frequency of the most dominant nominal PPMs, which accounts for 73.8% of all the cases, corroborate other studies (e.g., Fortanet Gómez et al., 1998) but are in contrast to those of Haggan (2004), Wang and Bai (2007), Cheng et al. (2012), Moattarian and Alibabaee (2015); and Shahidpour and Alibabaee (2017) who found post-modifiers as the most frequently used constructions. However, this research is in line with the mentioned studies in that the least frequent nominal title is an unmodified nominal construction that constitutes only 1.9% of all the nominal structures. The reason can be attributed to the tendency among the RA authors to provide more details and specifications, as Wang and Bai (2007) once stated, to better elaborate on the general focus of the

TABLE 5 Frequency and percentage of syntactic structures of nominal constructions in single-unit titles in the two disciplines (chi-square test).

		Syntactic structures				Total	Sig
		UM	PRM	POM	PPM		
Medicine	Count	1	2	10	39	52	0.858
	% within disciplines	1.9%	3.8%	19.2%	75.0%	100.0%	
	% within syntactic structures of nominal	50.0%	33.3%	52.6%	51.3%	50.5%	
	% of Total	1.0%	1.9%	9.7%	37.9%	50.5%	
Applied linguistics	Count	1	4	9	37	51	
	% within disciplines	2.0%	7.8%	17.6%	72.5%	100.0%	
	% within syntactic structures of nominal	50.0%	66.7%	47.4%	48.7%	49.5%	
	% of Total	1.0%	3.9%	8.7%	35.9%	49.5%	
Total	Count	2	6	19	76	103	
	% within disciplines	1.9%	5.8%	18.4%	73.8%	100.0%	
	% within syntactic structures of nominal	100.0%	100.0%	100.0%	100.0%	100.0%	
	% of Total	1.9%	5.8%	18.4%	73.8%	100.0%	

studies and have a more comprehensive view of the content of the papers. However, the current study shows that the frequency of these specifications is not necessarily linked to the disciplines under investigation. Therefore, these nominal components are not distinctive in medicine and applied linguistics.

Verbal structure

The second most recurrent syntactic structures employed by both disciplines are verbal structure. The full-sentence (FS) and gerund phrase (GPH) titles constitute RA verbal titles.

Table 6 shows that the incidence of FS in medicine is 60.0%, while this structure is absent in applied linguistic titles. The Iranian researchers in linguistics have not used full sentences. The results show that the use of GPHs accounts for all the structures used in applied linguistics. In other words, Iranian authors preferred to use gerundive phrases as the only verbal structure in writing their RA titles. The use of GPHs in medicine constitutes 40.0% of all the verbal titles in this discipline. The chi-square test results (sig $= 0.045 < 0.05$) reveal a statistically meaningful relationship between the use of FS and GPH verbal bifurcation, on the one hand, and the studied disciplines, on the other hand. It can, therefore, be concluded that these two verbal syntactic titles can be considered distinctive features in medical and linguistic RA titles. The findings are in accord with that reported by Soler (2007), who suggested that FS verbal titles are typical of medicine, biology, and biochemistry. Still, there was no incidence of full-sentence structures in linguistics and psychology titles.

Moreover, the incidence of full-sentence titles was reported by Cianflone (2010) in veterinary medicine and by Haggan (2004) concerning science titles. However, the findings of this research are in contrast to those of some studies. For example, Cheng et al. (2012) found full-sentence titles in linguistics. Moattarian and Alibabaee (2015) also came up with a disciplinary peculiarity relating to the incidence of full-sentence titles in dentistry RA titles, which suggested a marked contrast to the titles of applied linguistics and civil engineering. Hyland (2004) stated that it is to express claims through elaborate exposition and considerable tentativeness in social sciences. In biological sciences, introducing ideas through full-sentence constructions seems easier (cited in Soler, 2007). Moattarian and Alibabaee (2015) mentioned that the authors could use the full-sentence construction to present their studies' results decisively and synthetically in one single structure. Yet, other studies such as Shahidpour and Alibabaee (2017) stated that English linguistics authors used full-sentence titles more than V-ing phrases compared with researchers in hard sciences.

Concerning gerund or, in some studies, V-ing titles, the present study findings lend to those found by Moattarian and Alibabaee (2015) in that such titles are more observed in applied linguistics than in medical sciences like dentistry. One reason can be attributed to briefly highlighting the research process or activity or presenting the primary topic and research process concurrently. According to Wang and Bai (2007), RA authors use such construction to enhance readers' conciseness and attractiveness.

Prepositional, adjective, and adverb structures

Prepositional structures are rarely used as the initiating constructions in the RA titles. This study did not show the incidence of such structures and adjectival or adverbial titles. This finding strongly corroborates other studies such as those conducted by Haggan (2004), Cheng et al. (2012), Moattarian and Alibabaee (2015), and Shahidpour and Alibabaee (2017). Accordingly, these structures are the least frequent ones in

TABLE 6 Frequency and percentage of syntactic structures of verbal constructions in single-unit titles in the two disciplines (chi-square test).

		q6		Total	Sig
		FS	GPH		
Medicine	Count	3	2	5	0.045
	% within disciplines	60.0%	40.0%	100.0%	
	% within syntactic structures of verbal	100.0%	22.2%	41.7%	
	% of Total	25.0%	16.7%	41.7%	
Applied linguistics	Count	0	7	7	
	% within disciplines	0.0%	100.0%	100.0%	
	% within syntactic structures of verbal	0.0%	77.8%	58.3%	
	% of Total	0.0%	58.3%	58.3%	
Total	Count	3	9	12	
	% within disciplines	25.0%	75.0%	100.0%	
	% within syntactic structures of verbal	100.0%	100.0%	100.0%	
	% of Total	25.0%	75.0%	100.0%	

TABLE 7 Rhetorical combinations in multi-unit titles in the two disciplines (chi-square test).

		Multiple units					Total	Sig
		TS	TM	TD	TM+TS	TM+TD		
Medicine	Count	5	23	6	7	1	42	0.001
	% within disciplines	11.9%	54.8%	14.3%	16.7%	2.4%	100.0%	
	% within in multiple unit	26.3%	79.3%	30.0%	46.7%	100.0%	50.0%	
	% of Total	6.0%	27.4%	7.1%	8.3%	1.2%	50.0%	
Applied linguistics	Count	14	6	14	8	0	42	
	% within disciplines	33.3%	14.3%	33.3%	19.0%	0.0%	100.0%	
	% within in multiple unit	73.7%	20.7%	70.0%	53.3%	0.0%	50.0%	
	% of Total	16.7%	7.1%	16.7%	9.5%	0.0%	50.0%	
Total	Count	19	29	20	15	1	84	
	% within disciplines	22.6%	34.5%	23.8%	17.9%	1.2%	100.0%	
	% within in multiple unit	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	
	% of Total	22.6%	34.5%	23.8%	17.9%	1.2%	100.0%	

single-unit titles. The justification may be that they are not informative enough (Shahidpour and Alibabaee, 2017).

Rhetorical organizations of multi-unit titles

Table 7 displays the counts and percentages of the occurrence of different rhetorical combinations, namely, topic–scope (TS), topic–method (TM), topic–description (TD), topic–method + topic–scope (TM+TS), and topic–method + topic–description (TM+TD), in multiple or compound RA titles in two majors of medicine and applied linguistics.

As the findings indicate, the most frequently employed combination in medicine RA titles is TM (54.8%). The lowest incidence is related to the TM+TD combination (2.4%). In applied linguistics, most of the rhetorical combinations are TS and TD (both equally make up 33.3% of all cases), and the least rhetorical organization is the TM combination. There is no incidence of TM+TD combination in this discipline; however, there is only one occurrence of TM+TD. The most to the least dominant combinations used by the Iranian authors in both disciplines are TM (34.5%), TD (23.8%), TS (22.6%), TM+TS (17.9%), and TM+TD (1.2%). The chi-square test results indicate (sig = 0.001 < 0.05) that there is a meaningful relationship between different rhetorical categories of multi-unit titles and the disciplines under study.

Consequently, these combinations constitute distinctive disciplinary features in medicine and applied linguistics. Thus, the answer to the last research question is positive. Moattarian and Alibabaee (2015) believed that topic–method combination is common and prevalent in medical titles, while

name–description and description–name combinations are not. This claim aligns with the current study findings. The often employed TM combination might be due to the physicians' willingness to introduce a general topic, including a medical problem, and then present how the study is conducted to better capture various aspects and methods through which that medical problem can be solved.

Moreover, this study confirms the findings revealed by Moattarian and Alibabaee (2015). They claimed that applied linguistics RA titles mostly had a topic–scope organization. According to these authors, one reason for this is the linguists' tendency to use such comprehensive RA titles, giving the readers the required information regarding the study context, samples, and site. Also, the findings align with Anthony (2001) study, which indicates that hard sciences like computer engineering did not frequently use the topic–description combination. However, the current study findings conflict with Anthony's results that name–description and topic–scope are the frequently used combinations in such sciences. Shahidpour and Alibabaee (2017) also found the topic–method combination as the most frequent rhetorical function in psychiatry, and topic–description as the dominant combination in linguistics, which can ratify the findings of this study.

Conclusion

This corpus-based cross-disciplinary study investigated the syntactic structures and rhetorical combinations of RA titles in terms of stylistic conventions dominant in two disciplines on the soft–hard continuum presented by Hyland (2000), namely, medicine as a hard science and applied linguistics as a soft science. The RA titles were randomly selected from four reputable Iranian English journals indexed in Scopus. The authors were all Iranian researchers in the target disciplines, and this has provided the study with a different fresh perspective to look at the same problem of title construction. This study presents the counts and percentages of the occurrences in each syntactic and rhetorical construction. The point is that, unlike the other similar studies, the authors used a chi-square test to see whether these frequencies led to a meaningful relationship between the intended title structure and the discipline to justify better if that syntactic or rhetorical construction can be defined as a discipline-specific feature. Findings through the application of the *t*-test revealed that there exists a statistically significant difference between the two fields of medicine and applied linguistics in terms of title length, with medical titles longer than the linguistic ones. However, the frequency and percentage of both single- and multi-unit RA titles were exceptionally similar in both disciplines.

Consequently, the chi-square test did not indicate any statistically meaningful relationship between the title style and the investigated disciplines. Concerning the syntactic components of single-unit RA titles, the most frequently used structure was the nominal construction, followed by verbal titles. The prepositional ones are the last with the least frequency. However, the chi-square test results indicate these features are not discipline-specific since no meaningful relationship has been reported. The most to the least frequently employed syntactic components of a nominal structure in both disciples were PPM, POM, PRM, and UM, with medical titles taking precedence over linguistic titles in all these aspects. However, the differences were not statistically meaningful. Medical titles included two syntactic structures of verbal constructions, with full sentences outweighing gerund phrases. Yet, in linguistic RA titles, the dominant structure was gerund phrases (100%), without any incidence of full-sentence titles.

Regarding the rhetorical components of multi-unit RA titles, medicine prioritized linguistic titles using TM, and applied linguistics titles included TS and TD rhetorical organizations. However, two new rhetorical combinations were recognized in this study, namely, TM+TS and TM+TD, while the former outnumbered the latter in both disciplines. Furthermore, the chi-square test results defined each discipline's distinctive rhetorical categories.

Consequently, the scrutiny of these findings indicates the inclination of the authors in each field of study to use some particular RA title structures as their academic conventions. Some but not all structures may be more geared to a specific discipline. An RA title's communicative and rhetorical effectiveness can mirror the essence of research in that discipline. Such discipline-induced conventions can develop English for specific purposes, especially in academic writing courses in both fields, so novice writers, especially the non-native ones in EFL contexts like Iran where exposure to English is limited, will become more conscious of syntactic structures and rhetorics for title design. Cheng et al. (2012) claimed that the title has a critical role in showing the priority and distinction of the article over diverse research done. For instance, Goodman (2000) believed that RA titles sometimes have a remarkable role in physicians' clinical decisions.

This study can bear some pedagogical implications for ESP reading and writing teachers to teach various title structures so that non-native medical and language students can better satisfy the discipline's rhetorical needs and title requirements. The cross-disciplinary studies give the researchers and teachers better insights into the potential differences across various disciplines' conventions, strengths, and weaknesses. Consequently, the ESP syllabi can be reformulated to encapsulate valuable instructions on how to write the titles in each field of study more efficiently. Along with its merits, this study had some specific limitations. The corpus was restricted in terms of the disciplines investigated. More disciplines with larger corpora taken from more

authoritative Iranian journals in English can enrich our studies, bringing more confidence in the generalizability of results. The reason behind selecting these four reputable Iranian English journals was that all of them have been indexed in Scopus. However, it is worth noting that greater diversity should not become an obstacle in performing in-depth analysis. Besides, variety in corpus development, methodology, or problem statement should not lead to difficulty in interpreting the results (Kerans et al., 2016). More diachronic studies are also suggested to better reflect the changes over time to be familiar with the recent trends in title construction. Furthermore, the study of titles in different genres such as conference paper titles, case report titles, book titles, and dissertation titles can enhance the quality of such studies. Hence, further research is recommended to be conducted at a greater breadth while not falling short in terms of depth and richness.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Author contributions

SM conducted data collection, data analysis, and prepared the first draft of the manuscript. RK revised the first draft semantically and syntactically and prepared the manuscript for submission. Both authors contributed to the article and approved the submitted version.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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