ICAME Journal • 48(1) • 2024 • 89–107
DOI: 10.2478/icame-2024-0005

sciendo

ICAME Journal

Mapping shared lexical bundles onto rhetorical moves in nursing research articles: A comparative study of paradigmatic variation

Research Article

Mei Yang

University of Helsinki

Received 11 September 2023; accepted 21 November 2023

Abstract: Previous studies have identified frequent lexical bundles associated with qualitative, quantitative, and mixed methods research paradigms. These paradigmatic investigations of lexical bundles conducted thus far seem to have two limitations. One is that they have primarily concentrated on distinctive lexical bundles, without much analysis of the shared bundles in qualitative, quantitative, and mixed methods research paradigms. Another shortcoming is that they tend not to explore in which contexts lexical bundles are likely to occur. These two problems deserve attention, as shared bundles are also frequently used to facilitate fluent linguistic production and analysing lexical bundles in their surrounding contexts can help reveal their specific textual meanings. To address these two limitations, this study seeks to link shared lexical bundles with rhetorical moves based on a corpus consisting of qualitative, quantitative, and mixed methods nursing research articles. The findings of this study show that in certain move-steps, shared lexical bundles have distinctive discourse functions in mixed methods research. Meanwhile, the findings also show that there are move-steps where shared lexical bundles have similar discourse functions in two or three research paradigms. Revealing shared lexical bundles' discourse functions in specific contexts may enable learners to know where to use the bundles in a text.

Keywords: *lexical bundles • rhetorical moves • paradigmatic variation • nursing genre*

1 Introduction

Lexical bundles, which are sequences of words that most commonly co-occur (Biber et al. 2021), can help construct meanings in specific contexts and make texts coherent (Hyland 2012). Previous studies have examined what functions lexical bundles have in organising academic discourse, as exemplified by Biber et al.'s (2004) classification of lexical bundles into referential expressions, discourse organizers, and stance expressions, and Hyland's (2008) division of lexical bundles into research-oriented, text-oriented, and participant-oriented categories. More recently, these two functional frameworks have been applied to analyse how qualitative, quantitative, and mixed methods research paradigms influence the distribution of lexical bundle functions (e.g. Candarli and Jones 2019; Cao 2021). These studies of paradigmatic variation facilitate learners' comprehension of phraseological patterns as they have analysed how the frequently occurring individual bundles under each broad functional category shape text meanings in each paradigm. However, two limitations emerge which suggest that further work is needed. The first limitation is that these paradigmatic investigations have primarily focused on individual bundles that are distinctive of one research paradigm, and less attention has been paid to the shared bundles that are common to all research paradigms. However, given the importance of frequent bundles not only to fluent linguistic production but also to the acquisition of the specific rhetorical practices of the academic community (Hyland 2008), it is essential to determine specifically what roles shared lexical bundles play in successful research writing. The second limitation is that previous paradigmatic studies

* *Corresponding author: Mei Yang, E-mail: mei.yang@helsinki.fi*

Open Access. © 2024 Mei Yang, published by Sciendo.
This work is licensed under the Creative Commons Attribution-NonCommercial-NoDerivs 4.0 License.

have not analysed individual bundles in their textual contexts, ignoring the important question of where in a text they are likely to occur. This question deserves attention, as lexical bundles "do not represent a complete structural unit" (Biber and Barbieri 2007: 270) and examining the use of lexical bundles in their discourse contexts can show how they "signpost the stages in a text" (Li et al. 2020: 86), reveal their specific textual meanings, and instruct learners in academic writing.

One possible solution to these two limitations is to connect shared lexical bundles with Swales' (1981) by now classical move analysis. Connecting lexical bundles with move analysis is an approach first suggested by Cortes (2013), based on the notion that lexical bundles and moves both comprise building blocks of discourse and help achieve communicative purposes in a text. Following the common practice of mapping lexical bundles onto moves in academic writing (e.g., Omidian et al. 2018; Li et al. 2020), the present study adopts this bundle-move connection approach to explore how shared lexical bundles are used in each move in different research paradigms. The focus is on qualitative, quantitative, and mixed methods research articles (RAs) in the discipline of nursing, a field where all these three research paradigms are common and where novice researchers commonly encounter challenges in writing articles, specifically with reporting data integration in mixed methods research (Younas et al. 2019). Therefore, examining the shared lexical bundles as a core feature of successful academic writing will provide relevant linguistic guidance for novice researchers in nursing, helping them cope with well-known challenges in academic writing.

The rest of the paper is organized as follows. Section 2 presents a review of the literature on lexical bundles and move analysis, points out the gap in existing paradigmatic investigations of lexical bundles, and states the research question to be addressed in this paper. Section 3 introduces corpus composition and procedures of analysing the corpus data. Section 4 describes and discusses the results of the discourse functions of each shared bundle in the move-steps of qualitative, quantitative, and mixed methods nursing RAs. Section 5 concludes this paper with the pedagogical implications of linking lexical bundles with rhetorical moves to analyse paradigmatic variation. Additional tables illustrating the list of journals and corpus data are shown in Appendices.

2 Literature review

2.1 Lexical bundles

Lexical bundles are the sequences of words that most commonly co-occur in a register (Biber et al. 2021). Lexical bundles are primarily n-grams, which are "sequences of words explored as a unit, where *n* denotes how many words there are in that unit" (Crawford and Csomay 2016: 41). However, one difference between lexical bundles and n-grams is that lexical bundles should recur at least a number of times across several texts in a register (Esfandiari and Barbary 2017). As Cortes (2015: 200) claims, "all lexical bundles are n-grams, recurrent groups of three or more words, but not all n-grams are lexical bundles". Lexical bundles are also different from idioms and collocations, although they are all word combinations. Idioms are relatively invariable expressions whose meanings cannot be predicted from the meanings of the parts (e.g., *spill the beans*), and they are not necessarily common expressions (Biber et al. 2021). By contrast, lexical bundles are much more common than idioms. Collocations are associations between lexical words so that the words co-occur more frequently than expected by chance (e.g., *strong tea*) (Biber et al. 2021). Lexical bundles can be regarded as extended collocations, which are words that show a statistical tendency to co-occur.

As "contextualized form-meaning distributions" (Cancino and Iturrieta 2022: 43), lexical bundles have pragmatic functions and help writers achieve communicative purposes in academic discourse (Hyland 2012). Previous studies focusing on academic discourse have investigated the functions of lexical bundles, which can be seen in two seminal studies by Biber et al. (2004) and Hyland (2008). Based on a broad corpus of spoken and written registers including classroom teaching and textbooks, Biber et al. (2004: 384) grouped bundle functions into three categories: referential expressions, i.e. "making direct reference to physical or abstract entities, or to the textual context itself" (e.g., *the size of*

the, *as shown in Figure*); discourse organizers, i.e. "reflecting relationships between prior and coming discourse" (e.g., *as well as the*, *on the other hand*); and stance expressions, i.e. "expressing attitudes or assessments of certainty that frame some other proposition" (e.g., *it is possible that*, *it is important to*). Focusing on research articles, PhD dissertations and Master's theses in four disciplines of electrical engineering, biology, business studies, and applied linguistics, Hyland (2008: 13–14) classified a bundle as research-oriented when it "helps writers to structure their activities and experiences of the real world" (e.g., *the use of the*, *the structure of the*), as text-oriented when it is "concerned with the organisation of the text and its meaning as a message or argument" (e.g., *in the next section*, *in the case of*), and as participant-oriented when it "conveys the writer's attitudes and evaluations" or "addresses readers directly" (e.g., *are likely to be*, *it should be noted*). These two functional frameworks proposed by Biber et al. (2004) and Hyland (2008) have been widely applied to investigate bundle functions in research writing, such as exploring variation across registers (e.g., Biber and Barbieri 2007), L1 and L2 speakers of English (e.g., Ädel and Erman 2012), and disciplines (e.g., Durrant 2017; Hiltunen 2018; Borucinsky and Pritchard 2022).

More recently, researchers have investigated the role of research paradigm as a determinant of the distribution of bundle functions in academic discourse. Candarli and Jones (2019), for example, explored how quantitative and qualitative research paradigms influenced the distribution of bundle functions in education RAs. They found that quantitative RAs contained more referential expressions (e.g., *for each of the*, *at the beginning of*), discourse organizers (e.g., *was found to be*, *in this paper we*), and stance expressions (e.g., *are less likely to*, *it is possible that*), which are used to describe statistical procedures, report relationships between variables and causality, and discuss the generalisability of results to a whole population. Cao (2021) found paradigmatic variation to occur mainly between qualitative and quantitative RAs, with qualitative RAs containing more text-oriented bundles to situate arguments in limited conditions (e.g., *in the context of*) and quantitative RAs containing more participant-oriented bundles to mitigate the strength of the propositional content (e.g., *it may be that*). Such textual variation was linked to the different rhetorical needs of research paradigms: analysing phenomena in dynamic contexts in the qualitative paradigm and establishing causal inference in the quantitative paradigm.

These studies have identified useful phraseological patterns in relation to research paradigms. However, as stated above, this line of research conducted thus far seems to have two shortcomings: not investigating the lexical bundles that are shared across qualitative, quantitative, and mixed methods research paradigms, and not analysing individual bundles in their textual contexts. To address these shortcomings, this study seeks to link lexical bundle analysis with Swales' (1981) move analysis. In what follows, I highlight the specific advantages of mapping lexical bundles onto moves in academic discourse.

2.2 Mapping lexical bundles onto rhetorical moves

Move analysis, which was developed by Swales (1981) as part of genre analysis, is mainly employed to identify rhetorical structures of texts. A *move* refers to a discoursal or rhetorical unit that shares specific communicative purposes in a text (Swales 2004). Each move is typically realized through one or more strategies called *steps*, which are constituent elements working to achieve the communicative purpose of each move (Swales 1990). Swales' (1981) analytic framework of move analysis, particularly the *Create a Research Space* (CARS) model for RA introductions, has been widely applied in the analysis of rhetorical composition in academic discourse. Apart from introductions, other sections such as Abstracts (e.g., Martín 2003), Methods (e.g., Cotos et al. 2017), Results (e.g., Bruce 2009), and Discussion/Conclusion (e.g., Yang and Allison 2003) have also been examined for rhetorical moves. In addition to being applied to analyse the rhetorical structures of texts, move frameworks have also been used to establish a link between moves and specific linguistic and grammatical features such as lexical bundles (Cortes 2013), anticipatory *it* pattern (Ädel 2014), *N1 of N2* constructions (Liu and Lu 2020), and phrase-frames (Lu et al. 2021).

Of specific relevance to the present study are studies connecting rhetorical moves and lexical bundles. Researchers have mapped lexical bundles onto rhetorical moves because moves have been considered

as "segments of discourse that provide the building blocks of texts" (Biber et al. 2007: 9) and in a similar way, lexical bundles have also been seen as "important building blocks of coherent discourse" (Hyland 2008: 8). Pedagogical implications associated with bundle-move connection have also been reported in previous literature. Cortes (2013), for example, examined RA introductions representing writing from 13 academic disciplines and observed that bundles longer than four words (e.g., *the remainder of the paper is organized as follows*) were exclusively linked to one move or step, while shorter bundles occurred in several moves and steps. Cortes (2013) further reported that academic writing instructors could benefit from her findings by introducing lexical bundles identified as frequent in a particular move/step to students. The pedagogical usefulness of lexical bundles is also highlighted by Omidian et al. (2018), who explored RA abstracts from three soft and three hard disciplines. They specifically argued that the investigation of writing conventions through the lens of lexical bundles can help graduate students and early-career researchers develop an understanding of disciplinary knowledge construction in RAs. Similar pedagogical implications were also reported by Mizumoto et al. (2017), who developed a web-based tool powered by bundle-move connection to allow L2 users of English to search for the most frequent bundles in a move within an applied linguistics RA section. More recently, Li et al. (2020) connected five-word sentence-initial bundles with rhetorical moves of arts and humanities PhD abstracts, and indicated that learners would benefit from an awareness of predictable discourse functions of these bundles; these include background bundles (e.g., *It has been suggested that*), purpose bundles (e.g., *The aim of this thesis*), method bundles (e.g., *The data was analysed using*), findings bundles (e.g., *The thesis argues that the*), implications bundles (e.g., *The implications of these findings*), and structure bundles (e.g., *The thesis is divided into*).

These studies connecting lexical bundles with rhetorical moves offer an effective way to instruct students to make use of both moves and lexical bundles as building blocks in the construction of academic discourse. However, the specificity and usefulness of these findings could be further enhanced from two aspects. First, it is not clear how the research paradigm influences the distribution of lexical bundles in rhetorical moves of RAs. Specifically, comparing how lexical bundles are used in rhetorical moves in qualitative, quantitative, and mixed methods RAs can provide more concrete and targeted guidance for constructing coherent discourse in different research paradigms. Second, with the exception of Mizumoto et al. (2017), most of these previous studies have explored only one RA section, which may not be enough to provide writing guidance for students, as each RA section plays a distinctive role in a text and the use of lexical bundles may be related to specific communicative purposes of moves in different RA sections (Zare and Valipouri 2022).

To sum up, this study aims to answer the research question: what discourse functions does each shared bundle have in the move-steps of qualitative, quantitative, and mixed methods nursing RAs?

3 Corpora and methods

3.1 Corpora

This study is based on three corpora of empirical qualitative, quantitative, and mixed methods nursing RAs published in high-ranking journals. Drawing on Creswell's (2014) criteria, this study classified an empirical article as *qualitative* when qualitative data such as observations or interviews are used, as *quantitative* when numerical data such as statistical analyses are employed, as *mixed methods* when qualitative and quantitative methods are combined. The three corpora consist of 150 qualitative RAs, 150 quantitative RAs, and 150 mixed methods RAs, respectively (see Table 1). The journals were selected based on the impact factors released by Thomson Reuters' Journal Citation Report (JCR) (Thomson Reuters 2020), a journal selection criterion recommended by nursing scholars (Giménez-Espert and Prado-Gascó 2019). The journals within JCR Quartile 1 were selected. For each corpus, one article was selected from each journal each year during the six years 2015–2020. Based on the 2019 JCR, a total of thirty nursing journals belong to Quartile 1. Five journals were excluded because not one mixed methods research was published in them in 2015–2020. The twenty-five journals selected are listed in

Appendix 1. All selected RAs were converted to plain text files, with tables, figures, footnotes, endnotes, appendices, and references removed.

Table 1. Corpus composition (whole texts).

Corpus	No. of texts	Words	Av. text length
Qualitative	150	660,991	4406.6
Quantitative	150	621,787	4145.2
Mixed methods	150	713,633	4757.6
Total	450	1,996,411	4436.5

3.2 Macro-structures of RAs

The macro-structures of the empirical RAs in the three corpora were first identified to facilitate subsequent move-step annotation. Section headings were classified into conventional headings, varied functional headings, and content headings following Yang and Allison (2004) and Lin and Evans (2012). An independent heading was coded as a *conventional heading* when it was largely self-explanatory (e.g., Introduction, Methods, Results, Discussion), as a *varied functional heading* when it was not immediately recognisable but still indicated the function of text organisation (e.g., Settings and sample, Findings), and as a *content heading* when the identification of rhetorical function relied on the specific content (e.g., Factors associated with loneliness).

A total of six conventional headings were identified of the RAs selected for the corpora, namely Introduction, Literature Review, Method(s), Results, Discussion, and Conclusion(s). A close reading of the RAs showed that certain functional and content headings achieved the same communicative purposes as the conventional headings did (see Table 2). For this reason, two coders replaced varied functional and content headings with the corresponding conventional headings based on the communicative purposes when identifying RA macro-structures. One of the coders was the author of this paper, and the other coder, who was a doctoral student doing research on applied linguistics, was familiar with the structures of journal articles.

Besides, when the two coders independently identified the section headings, they both observed that in the RAs where no section headings were inserted between Introduction and Methods, the Introduction section tended to be all-encompassing and typically had Literature Review as a subheading. After a joint discussion, the two coders thus decided to incorporate the contents under the section heading Literature Review into the Introduction section. Meanwhile, it was further observed that when the RAs ended with a Discussion section, the Discussion section generally had Conclusion as a subheading. The two coders thus incorporated the contents under the section heading Conclusion into the Discussion section. Therefore, the RAs were segmented into four sections of Introduction, Methods, Results, and Discussion for subsequent move-step annotation.

3.3 Move-step annotation

The rhetorical move-steps of the nursing RAs in the three corpora were annotated drawing on the move-step frameworks developed in the existing literature on empirical journal RA sections: Introduction (Swales 1990, 2004), Methods (Cotos et al. 2017), Results (Yang and Allison 2003), and Discussion (Yang and Allison 2003). A pilot coding, a step of top-down approach to corpus analysis (Biber et al. 2007), was performed on ninety randomly selected RAs (thirty RAs for each research type). The coding scheme was piloted by the two coders, who independently coded ninety nursing RAs following the agreed-upon definitions of moves and steps. The initial schema was then reviewed and fine-tuned until an agreement was reached on the functional-semantic purposes of text segments. The entire nursing corpora were then manually annotated by the two coders following the fine-tuned coding schema, and newly identified move-steps were added to the schema as the annotation proceeded. The final coding schema is shown

Table 2. Macro-structures represented by conventional, varied functional and content headings in nursing RAs.

Macro-structures	Headings	Examples	Total (n/%)		
			Quali	Quan	Mixed
Introduction	Conventional	*Introduction*	115 (76%)	124 (83%)	118 (79%)
	Functional	*Context*	22 (15%)	17 (11%)	19 (12%)
	*Unlabelled**	—	13 (9%)	9 (6%)	13 (9%)
Literature Review	Conventional	*Literature review*	9 (6%)	12 (8%)	11 (7%)
	Functional	*Background*	8 (5%)	6 (4%)	10 (7%)
	Content	*Life with an ICD*	12 (8%)	9 (6%)	13 (9%)
	Omitted	—	121 (81%)	123 (82%)	116 (77%)
Method(s)	Conventional	*Methods*	129 (86%)	126 (84%)	128 (85%)
	Functional	*Materials and methods*	21 (14%)	24 (16%)	22 (15%)
Results	Conventional	*Results*	101 (68%)	133 (89%)	119 (79%)
	Functional	*Findings*	38 (25%)	12 (8%)	22 (15%)
	Content	*A sample narrative*	11 (7%)	5 (3%)	9 (6%)
Discussion	Conventional	*Discussion*	129 (86%)	131 (87%)	124 (83%)
	Functional	*Discussion of quantitative and qualitative findings*	13 (9%)	16 (11%)	20 (13%)
	Content	*Experiences*	8 (5%)	3 (2%)	6 (4%)
Conclusion(s)	Conventional	*Conclusion*	119 (79%)	121 (81%)	118 (79%)
	Omitted	—	31 (21%)	29 (19%)	32 (21%)

Note. * Some RAs in the corpora start with an untitled section, followed by a titled literature review section. The two coders considered the contents presented before the titled literature review as Introduction.

in Figure 1. This final schema deviated from the base analytical frameworks developed in the existing literature. For example, in some cases, it was difficult to distinguish between the *'Interpreting results'* and *'Accounting for results'* steps proposed in Yang and Allison's (2003) framework. This study used the step *'Explaining results'* to conflate the two steps *'Interpreting results'* and *'Accounting for results'*, following Basturkmen (2009). Furthermore, some new move-steps, namely those in italics in Figure 1, were added to accommodate the data in the nursing corpora. The move-steps were annotated using a code editor called Visual Studio Code.

Following Cotos et al. (2017: 95), this study defined the unit of annotation as "a functional segment of text", which could be a sentence, a clause, or a phrase within a sentence. However, the move-step coding was done at the sentence level in the present study for further connection of lexical bundles and move-steps, following Lu et al. (2021) who also matched linguistic features to rhetorical functions. As a result of this practice, some full sentences of the nursing RAs were annotated with multiple tags, which occurred in the following three situations.

First, some sentences conveyed more than one functional meaning. For instance, in Example (1) from a Discussion section, the second sentence mentions a limitation of the study ('*asked… at one point in time*') *<M16S1>*, but also provides background information about methodology ('*were asked*') *<M11>*. In this case, two codes *<M11>* and *<M16S1>* were annotated with the sentence to reflect these dual functions.

(1) <M16S1>Several limitations require consideration.</M16S1> <M11><M16S1>First, participants were asked about experiences and attributes with the caring process at one point in time.</M16S1></M11> <M16S1>Consequently, a possible recall bias is present that could have resulted in a misclassification of care expectations, previous care interactions and possible outcomes by the participants.</M16S1> [Quali_17_Discussion]

Section	Moves and steps	Tag
Introduction	**Move 1 Establishing a territory**	
	Step 1 Claiming relevance of field or presenting the importance of a topic	<M1S1>
	Step 2 Making generalizations about current research in the area	<M1S2>
	Step 3 Reviewing items of previous research	<M1S3>
	Move 2 Establishing a niche	
	Step 1A Counter-claiming	<M2S1a>
	Step 1B Indicating a gap in research area	*<M2S1b>*
	Step 1C Indicating a gap in real world nursing practices	*<M2S1c>*
	Step 1D Question-raising	<M2S1d>
	Step 1E Continuing a tradition	<M2S1e>
	Step 2 Presenting positive justification	<M2S2>
	Move 3 Presenting the present work via	
	Step 1 Announcing present research purposively	<M3S1>
	Step 2 Presenting research questions or hypotheses	<M3S2>
	Step 3 Definitional clarifications	<M3S3>
	Step 4 Summarizing methods	<M3S4>
	Step 5 Announcing principal outcomes	<M3S5>
	Step 6 Stating the value of the present research	<M3S6>
	Step 7 Rationalizing the research design	*<M3S7>*
Methods	**Move 4 Contextualizing study methods**	
	Step 1 Referencing previous works	<M4S1>
	Step 2 Providing general information	<M4S2>
	Step 3 Identifying the methodological approach	<M4S3>
	Step 4 Describing the setting	<M4S4>
	Step 5 Introducing the participants	<M4S5>
	Step 6 Rationalizing conceptualization decisions	<M4S6>
	Move 5 Describing the study	
	Step 1 Acquiring the data	<M5S1>
	Step 2 Describing the data	<M5S2>
	Step 3 Describing study procedures	<M5S3>
	Step 4 Stating ethical considerations	*<M5S4>*
	Step 5 Describing tools	<M5S5>
	Step 6 Identifying variables	<M5S6>
	Step 7 Rationalizing decisions made when carrying out procedural steps	<M5S7>
	Move 6 Establishing credibility	
	Step 1 Preparing the data	<M6S1>
	Step 2 Describing the data analysis	<M6S2>
	Step 3 Rationalizing data analysis	<M6S3>
Results	**Move 7 Preparatory information**	<M7>
	Move 8 Reporting results	<M8>
	Move 9 Commenting on results	
	Step 1 Explaining results	<M9S1>
	Step 2 Comparing results with literature	<M9S2>
	Move 10 Summarizing results	<M10>
Discussion	**Move 11 Background information**	<M11>
	Move 12 Reporting results	<M12>
	Move 13 Summarizing results	<M13>
	Move 14 Commenting on results	
	Step 1 Explaining results	<M14S1>
	Step 2 Comparing results with literature	<M14S2>
	Step 3 Evaluating results	<M14S3>
	Move 15 Summarizing the study	<M15>
	Move 16 Evaluating the study	
	Step 1 Indicating limitations	<M16S1>
	Step 2 Indicating significance/advantage	<M16S2>
	Move 17 Deductions from the research	
	Step 1 Recommending further research	<M17S1>
	Step 2 Stating the necessity of improving nursing practices	*<M17S2>*
	Step 3 Drawing implications for nursing practices	<M17S3>

Figure 1. Move-step framework for nursing RAs.

Second, the clauses within a sentence can have different functional meanings. For instance, in Example (2) from an Introduction section, the two clauses of the sentence convey two distinct functions of making generalisations about current research ('*evidence indicates*') <*M1S2*> and indicating a gap in research area ('*paucity of literature*') <*M2S1b*>.

(2) <M1S2><M2S1b>This compelling body of evidence indicates the benefit of full practice authority for APRNs overall, but there is a paucity of literature that focuses on advanced practice nurses in mental health settings.</M2S1b> </M1S2> [Mixed_04_Introduction]

Third, a segment forming part of a full sentence sometimes carried an additional functional meaning. For instance, in Example (3) from a Methods section, the sentence was annotated with the code <*M6S2*> to indicate the function of describing data analysis ('*were evaluated for significant between-group differences*'), and another code <*M5S5*> was also applied because the segment '*using a one-way ANOVA test*' carried an additional functional meaning of describing tools.

(3) <M5S5><M6S2>Late preterm infant characteristics, such as birth weight and body weight at the time of the study, were evaluated for significant between-group differences using a one-way ANOVA test.</M6S2></M5S5> [Quan_02_Methods]

To ensure the uniformity of the final coding and a sufficiently high level of agreement, this study calculated percent agreement for move-step annotation by the two coders. The percent agreement for move-step annotation was calculated by following four steps. The first step was to count the number of the coded moves/steps in agreement. The second step was to calculate the total number of the coded moves/steps. The third step was to divide the total by the number in agreement to get a fraction, and the fourth step was to convert the fraction to a percentage. An average percent agreement of 90.6 percent was obtained for move annotation and that for step annotation was 83.1 percent. When discrepancies occurred, the two coders addressed the issue by examining the move-step definitions and analysing the surrounding context of the annotated sentence.

3.4 Identifying shared lexical bundles and mapping them onto move-steps

After the RAs were annotated with move-steps, a Python script was developed to calculate the occurrences[1] and tokens of each move and step in the nursing corpora to facilitate subsequent identification of lexical bundles and mapping onto move-steps (see Appendix 2).

Following a common practice, the present study focuses on four-word lexical bundles, which usually provides a suitable amount of data for analysis (e.g., Baker and Chen 2010). Setting frequency thresholds for identifying lexical bundles is 'somewhat arbitrary' (Biber et al. 2004: 376), and different frequency thresholds are used in different studies, such as ten (Biber et al. 2021), twenty (Ren 2021), and forty times (Pan et al. 2016) per million words. This study gave priority to testing the frequency threshold of twenty times per million words by following Candarli and Jones (2019) and Cao (2021), who also explored paradigmatic influence on lexical bundles. This study set a dispersion threshold of five percent of the texts because a reasonable set of bundles were identified following this threshold, which was also adopted in Candarli and Jones (2019).

Four-word lexical bundles were identified using the concordance software *AntConc* (Anthony 2019). The bundles meeting the above frequency and dispersion criteria were extracted, along with the move-step tags where the bundles occurred, and the names of the RA files where the bundles occurred. A total of 78, 72, and 69 lexical bundles were identified in qualitative, quantitative, and mixed methods RAs, respectively. As this study focuses only on shared lexical bundles, the bundles occurring in all the three corpora of qualitative, quantitative, and mixed methods RAs were retained. This practice yielded a total of 26 lexical bundles that are common to all the three types of RAs. The original intention

1 A move (or step) may occur several times in one text, but it was counted only once in the present study, as in Ye (2019).

of this study was to give a detailed qualitative examination of the contexts of each shared bundle to illustrate the similarities and differences in the discourse functions across three research paradigms. However, such elaboration of the specific contexts tends to take up much space, making it unrealistic to analyse each of the 26 shared bundles one by one. As space does not permit detailed analysis of all the shared bundles identified, this study decided to select several shared bundles as representatives to inform learners of how to link lexical bundles with rhetorical moves to analyse the usage of bundles in different research paradigms. The shared bundles that are typical of the move-steps where they occurred were selected as the representative shared bundles. This means that only those bundles that met the frequency threshold of twenty times per million words and dispersion threshold of five percent of the texts in all the move-steps where they occurred were finally retained for further comparative analysis of paradigmatic variation. The final list included five lexical bundles: one research-oriented bundle *the extent to which*, three text-oriented bundles *in the context of*, *on the other hand*, *of the present study*, and one participant-oriented bundle *it is possible that.*[2] This study first identified the move-steps where the five shared bundles are distributed in qualitative, quantitative, and mixed methods nursing RAs. Subsequently, the discourse functions of each shared bundle were qualitatively examined in context in each move-step to demonstrate how each shared bundle is used in qualitative, quantitative, and mixed methods nursing RAs.

4 Results and discussion

4.1 Research-oriented bundle *the extent to which*

As Table 3 shows, this bundle occurs in *<M3S1> Announcing present research purposively* in all three paradigms. This bundle can be viewed as a form of quantification, measuring things that are of "a more abstract sort" (Durrant 2017: 187). Often preceded by *explore*, *investigate*, *examine*, and *analyse*, this bundle is used when research aims are related to the assessment of the magnitude of an effect (4a).

Table 3. Distribution of *the extent to which* in move-steps of nursing RAs.

Section	Move-steps	Frequency		
		Mixed	Quali	Quan
Introduction	*<M3S1> Announcing present research purposively*	11	8	9
	<M3S7> Rationalizing the research design	5	—	—
Methods	*<M5S5> Describing tools*	7	—	10
	<M6S2> Describing the data analysis	9	—	—
Results	*<M8> Reporting results*	15	12	—
Discussion	*<M14S1> Explaining results*	16	12	14
	Total	63	32	33

(4a) <M3S1>One of the objectives of the study was to investigate ***the extent to which*** the intervention would affect clinical practice.</M3S1> [Quan_34_Introduction]

This bundle also occurs in move-step *<M14S1> Explaining results* in all three paradigms when researchers indicate how far a situation develops and use it as an explanation for research findings (4b).

(4b) <M14S1>***The extent to which*** pre-schoolers received meals outside of the family home, such as at daycare and preschool, could affect this outcome.</M14S1> [Mixed_71_Discussion]

2 Hyland's (2008) classification framework was chosen because it was designed specifically for lexical bundles in research writing. The bundle *of the present study* was classified as a text-oriented bundle because this bundle typically acts as a text-reflexive marker that directs readers' attention to discourse goals, findings, limitations, and strengths. This practice has also been adopted in previous studies such as Hyland (2008) and Lu and Deng (2019).

In move-step *<M5S5> Describing tools*, this bundle appears in mixed methods and quantitative RAs, where it is used to describe how a tool is utilised to assess factors (4c). This usage is linked to the practice that mixed methods and quantitative researchers tend to employ an instrument with a series of scales such as a Likert scale, which assumes that the strength of an attitude is on a continuum from strongly agree to strongly disagree (Wilkes et al. 2017). This scale allows respondents to indicate their degrees of opinion, which can be conveyed by using the bundle *the extent to which* as this bundle also can "express the notion of degree" (Cortes 2004: 412).

(4c) <M5S5>The tool is composed of two sections. The first section assesses ***the extent to which*** these symptoms cause disruption in emotional terms.</M5S5> [Quan_63_Methods]

In move *<M8> Reporting results*, this bundle is found in mixed methods and qualitative RAs, where it is used to report research participants' varying responses to certain situations and questions in the interviews designed by mixed methods and qualitative researchers (4d).

(4d) <M8>***The extent to which*** the students had prepared for the simulation varied.</M8> [Quali_79_Results]

In move-step *<M3S7> Rationalizing the research design*, this bundle is only used by mixed methods researchers. Often preceded by *shed light on*, *gain a comprehensive/in-depth understanding of*, *enrich the understanding of*, *provide an insight into*, and *facilitate a more complete understanding of*, this bundle is used to present how a research design combining quantitative and qualitative methods can help address a research issue concerning how great an effect is (4e). This usage is related to the common argument that incorporating both quantitative and qualitative approaches can balance out the limitations of each method (Fetters et al. 2013).

(4e) <M3S7>Neither quantitative or qualitative methods in isolation would adequately answer the research question. </M3S7><M3S7>A mixed methods approach may shed light on ***the extent to which*** commonly used HRQOL measures detect important aspects of functional communication […].</M3S7> [Mixed_77_Introduction].

This bundle also occurs in move-step *<M6S2> Describing the data analysis* only in mixed methods RAs, where it is used to illustrate how far the integration of qualitative and quantitative data goes (4f). This usage reflects the concept in a mixed methods research handbook, which proposes a question "How far do the quantitative and qualitative findings align?" (Ertesvåg et al. 2021: 655) to enlighten researchers about data integration.

(4f) <M6S2>Convergence and divergences were examined by a focus on ***the extent to which*** both types of data corroborate and expand each other.</M6S2> [Mixed_64_Methods]

4.2 Text-oriented bundles

4.2.1 In the context of

As Table 4 shows, this bundle occurs in move-steps *<M1S3> Reviewing items of previous research* and *<M3S1> Announcing present research purposively* in all three paradigms, where it is used to clarify the condition in which findings of previous literature are reported (5a) and to describe the background in which their own research is performed (5b).

(5a) <M1S3>This reflects a tension between risk management ***in the context of*** increased illness severity and involuntary hospitalization (Foster et al., 2007).</M1S3> [Mixed_49_Introduction]

(5b) <M3S1>This study aims to uncover what it really means for nurses to work under time pressure ***in the context of*** oncology.</M3S1> [Quali_03_Introduction]

This bundle is also used in move-steps *<M14S1> Explaining results* and *<M14S2> Comparing results with literature* by all three types of researchers, who use it to present a possible situation that can explain their own research findings (5c), and to introduce the settings of other studies whose findings are relevant to their own findings (5d).

(5c) <M14S1>It may be that nutrition information was provided ***in the context of*** time constraints during pregnancy care visits.</M14S1> [Quali_40_Discussion]

(5d) <M14S2>Similarly, other studies conducted ***in the context of*** inpatient units showed conflicts in recovery orientation (Simpson et al., 2017).</M14S2> [Quan_63_Discussion]

Table 4. Distribution of *in the context of* in move-steps of nursing RAs.

Section	Move-steps	Frequency		
		Mixed	Quali	Quan
Introduction	*<M1S3> Reviewing items of previous research*	11	10	8
	<M3S1> Announcing present research purposively	9	8	8
Methods	*<M6S2> Describing the data analysis*	8	—	—
Results	*<M8> Reporting results*	16	13	—
	<M14S1> Explaining results	17	13	12
	<M14S2> Comparing results with literature	8	7	7
	Total	69	51	35

In move *<M8> Reporting results*, this bundle occurs in mixed methods and qualitative RAs, where it is used to report the situations related to research participants' experiences (5e). This usage may be associated with the use of interviews as data sources in mixed methods and qualitative RAs. As interviews aim at stressing contextualised understandings based on detailed analyses of research participants' experiences and opinions, they naturally give rise to statements where these mental states are verbalised (Yilmaz 2013).

(5e) <M8>Charlotte's cancer occurred ***in the context of*** her disability: she had been a wheelchair user all her life.</M8> [Mixed_64_Results]

In move-step *<M6S2> Describing the data analysis*, this bundle is only used by mixed methods researchers to indicate how qualitative and quantitative findings are related (5f). This usage reflects a characteristic of data integration in a mixed methods research design: "initial quantitative findings may influence the focus and kinds of qualitative data that are being collected or vice versa" (Fetters et al. 2013: 2137). Accordingly, quantitative findings are conditions that may need to be considered in the analysis of qualitative findings, or vice versa.

(5f) <M6S2>Interview findings were considered ***in the context of*** self-report questionnaires to help explain unexpected results and understand […].</M6S2> [Mixed_01_Methods]

4.2.2 On the other hand

As Table 5 shows, *on the other hand* occurs in move-step *<M1S3> Reviewing items of previous research* in all three paradigms, where it is sometimes used to present different points of view in existing research (6a).

Table 5. Distribution of *on the other hand* in move-steps of nursing RAs.

Section	Move-steps	Frequency		
		Mixed	Quali	Quan
Introduction	*<M1S3> Reviewing items of previous research*	12	9	9
Methods	*<M6S2> Describing the data analysis*	8	—	10
Results	*<M8> Reporting results*	16	17	9
Discussion	*<M14S1> Explaining results*	24	12	11
	Total	60	38	39

(6a) <M1S3>On the one hand, nursing students confirmed a negative impact of PSIs on professional self-efficacy (Bohnen et al., 2019). ***On the other hand***, PSIs were also reported to have a positive side for nursing students (Francoeur et al., 2003).</M1S3> [Mixed_02_Introduction]

This bundle is also used in move *<M8> Reporting results* in all three paradigms. Mixed methods and qualitative researchers use it to describe contrasting opinions of research participants (6b), while quantitative researchers use it to report contrasting statistical results (6c).

(6b) <M8>CRC survivors reported that they lacked stamina to participate in sports. ***On the other hand***, they also reported that performing sports regains physical fitness.</M8> [Mixed_73_Results]

(6c) <M8>No significant group differences were observed for smoking and alcohol consumption. ***On the other hand***, there was a significantly higher proportion of overweight/obese among cases compared to controls.</M8> [Quan_75_Results]

In move-step *<M14S1> Explaining results*, this bundle is used by all three types of researchers, who use it to present possible reasons for their findings from different angles (6d). In addition to this function, this bundle is found to have another discourse function in mixed methods nursing RAs: interpreting the contrasting meanings of different types of data (6e). Using the bundle *on the other hand* in the situations where findings from the two sources of quantitative and qualitative data diverge can "expand insights of the phenomenon of interest by addressing different aspects of a single phenomenon" (Fetters et al. 2013: 2144).

(6d) <M14S1>The reason for this discrepancy may be that the control group in this study might also have benefited from […]. ***On the other hand***, the patients in the social media group might have been reluctant to participate actively in social media […].</M14S1> [Quan_11_Discussion]

(6e) <M14S1>Our quantitative data indicate that only about 30% of care workers perceived "care workers' lack of knowledge in pain management" as being problematic. Our qualitative data, ***on the other hand***, show that NAs lack training in pain assessment skills.</M14S1> [Mixed_12_Discussion]

In move-step *<M6S2> Describing the data analysis*, this bundle occurs in mixed methods and quantitative RAs, where it is used to describe how different categories of responses obtained from structured questionnaires are analysed (6f).

(6f) <M6S2>The increase in psychomotor activities was evaluated to be a sign of hyperactive delirium. ***On the other hand***, a decrease in psychomotor activities was considered as hypoactive delirium.</M6S2> [Mixed_57_Methods]

4.2.3 Of the present study

As Table 6 shows, the bundle *of the present study* occurs in move-step *<M3S1> Announcing present research purposively* in all three paradigms. Often preceded by *aim*, *goal*, *purpose,* or *objective*, it is used to state the purpose of the research being carried out (7a).

Table 6. Distribution of *of the present study* in move-steps of nursing RAs.

Section	Move-steps	Frequency		
		Mixed	Quali	Quan
Introduction	*<M3S1> Announcing present research purposively*	9	8	9
Methods	*<M5S4> Stating ethical considerations*	22	27	9
	<M14S1> Explaining results	16	18	15
	<M16S1> Indicating limitations	10	11	13
	<M16S2> Indicating significance/advantage	31	9	8
	Total	88	73	54

(7a) <M3S1>The aim ***of the present study*** was to explore the perceptions of stroke nurses and allied healthcare professionals regarding quality oral health care post stroke.</M3S1> [Quali_28_Introduction]

This bundle also occurs in move-step *<M5S4> Stating ethical considerations* in all three paradigms. In this move-step, it tends to be preceded by *the participants/respondents were informed of/about the purposes/aims*, and often appears at the end of a sentence (7b). This usage is linked to the importance of upholding ethical integrity in research in the discipline of nursing, which typically involves human subjects (Kostas-Polston and Hayden 2006; Uzun 2016).

(7b) <M5S4>The participants were informed of the purpose ***of the present study***.</M5S4> [Quali_126_Methods]

In this function, this bundle is often preceded by *findings* or *results* and followed by verbs such as *indicate*, *suggest*, and *show* in move-step *<M14S1> Explaining results*, where all three types of researchers use it to interpret the findings of their research (7c).

(7c) <M14S1>The results ***of the present study*** indicate that tub bathing helps to prevent temperature loss, stress, and impairments in physiological parameters.</M14S1>[Quan_02_Discussion]

In move-step *<M16S1> Indicating limitations*, this bundle occurs in all three paradigms. As in move-step *<M14S1> Explaining results*, it is often preceded by *findings* or *results* in this move-step *<M16S1> Indicating limitations*. However, it tends to be followed by modal verbs such as *may*, *should*, and *will* to remind readers of research limitations (7d–7f).

(7d) <M16S1>The findings ***of the present study*** may not be fully reflective of the wider carer population. </M16S1>[Quali_118_Discussion]

(7e) <M16S1>The findings ***of the present study*** should be interpreted with caution.</M16S1>[Mixed_133_Discussion]

(7f) <M16S1>The results ***of the present study*** will only be limited to the evaluation of IV catheter insertion skills on the plastic arm model.</M16S1>[Quan_19_Discussion]

In move-step *<M16S2> Indicating significance/advantage*, this bundle occurs in all three paradigms, where it is used to present the advantages of the research (7g).

(7g) <M16S2>The strength ***of the present study*** is the mixed-methods approach, which enables researchers to triangulate data […].</M16S2> [Mixed_126_Discussion]

4.3 Participant-oriented bundle *it is possible that*

As Table 7 shows, all three types of researchers use this bundle to indicate the potential reasons for research results in *<M14S1> Explaining results* (8a) and point out the possible limitations that may affect findings in *<M16S1> Indicating limitations* (8b). The occurrence of this bundle in these two move-steps reflects the typically 'hedged' nature of research writing (Kim and Crosthwaite 2019).

Table 7. Distribution of *it is possible that* in move-steps of nursing RAs.

Section	Move-steps	Frequency		
		Mixed	Quali	Quan
Discussion	*<M14S1> Explaining results*	19	17	22
	<M16S1> Indicating limitations	9	8	26
	Total	28	25	48

(8a) <M14S1>It is surprising that gender in equality did not gain consensus in this study. ***It is possible that*** some female nurse leaders may become unappreciative of the persistent traditional board norms and gender inequalities. </M14S1> [Quali_06_Discussion]

(8b) <M16S1>***It is possible that*** some participants did not completely understand all the terms in the survey, resulting in subjective answers based on their best understanding.</M16S1> [Mixed_96_Discussion]

To sum up, the above findings indicate that exploring what the shared lexical bundles contribute at a rhetorical level by virtue of the notion of rhetorical moves allows us to observe bundles' similar and distinctive discourse functions in three different research paradigms. As Römer (2022: 234) claims, "words in isolation do not mean anything on their own but start to take on meaning(s) when we put them in context". This means that lacking an analysis of the textual contexts of lexical bundles would offer an inadequate foundation for understanding paradigmatic conventions or developing research writing skills. In what follows, the pedagogical implications of sorting the specific contexts of shared lexical bundles in each research paradigm will be presented.

5 Conclusion

Focusing on five frequent bundles shared across qualitative, quantitative, and mixed methods nursing RAs, this study has found out that contrary to what might be expected, shared bundles are not necessarily used in the same way in qualitative, quantitative, and mixed methods paradigms. Three bundles *the extent to which*, *in the context of*, and *on the other hand* were found to have distinctive discourse functions in mixed methods nursing RAs. These distinctive discourse functions are mainly related to integration of qualitative and quantitative data, which is commonly regarded as an essential element of rigorous mixed methods research (Bazeley 2017). Importantly, these differences are glossed over if paradigmatic variation is not taken into account. Considering that so far only a limited number of studies have actually done so (see, e.g., Arizavi and Choubsaz 2021; Cao 2021), the finding provides more nuanced information about the relevant bundles, and by doing so, enables targeted guidance on lexical bundle use for mixed methods researchers, especially novice researchers (see Younas et al. 2019).

Another specific takeaway for novice researchers is the description of how shared bundles are used in specific textual contexts. Accounting for intra-textual variation in the use of lexical bundles is of importance, because four-word lexical bundles (like other short bundles) mainly consist of function words around a key lexical item, like the noun *study* in the bundle *of the present study*. Crucially, the specific meaning of *study* and other similar items can only be found in its surrounding discourse (Cortes 2013), and linking this bundle with rhetorical moves of RAs allows us to zoom in on what precedes or follows it. The bundle *of the present study*, for example, regularly occurs at the end of a sentence in

move-step *<M5S4> Stating ethical considerations*, but in other move-steps it is found at the beginning of a sentence. It is only through systematic analysis of the textual contexts of lexical bundles that such regularised form-function correspondences can be identified, described, and used to enhance genre-based EAP pedagogy. In other words, genre-based EAP pedagogy can be enhanced by examining "the extended co-text of each individual concordance line" (Le and Harrington 2015: 49). The pedagogical implication of linking linguistic features with rhetorical moves has also been documented by Lu et al. (2021: 64), who argue that this kind of linkage can "get to the core of how academic writers use such expressions to realize specific communicative functions". The findings of the current study are potentially important in terms of their practical relevance. For example, learners can construct their own small-scale corpora made up of journal articles that are relevant to the specific research paradigm they are working on and annotate the move-steps of those articles. They can then be taught to use freely available corpus tools such as *AntConc* to sort the context of the search term and see how the bundle is used to help achieve communicative purposes in the move-steps of a specific paradigm.

In all, this study adds to previous paradigmatic investigations of lexical bundles by documenting the distribution of shared bundles in move-steps of RAs. I have argued that simply identifying frequent lexical bundles is only a partial solution to rhetorical challenges faced by novice researchers, and this information needs to be complemented with information about where and how to use them in a text. Connecting lexical bundles with rhetorical moves provides information that is more readily useful for learners. For example, it has been suggested that the bundle *on the other hand* be selected as a candidate bundle for a general EAP course given its high frequency in academic discourse (Hyland 2008). By mapping this frequent bundle onto rhetorical moves, this study has identified concrete contexts of using *on the other hand* and has found that it has a distinctive discourse function of interpreting the contrasting meanings of qualitative and quantitative data in mixed methods research. Therefore, one obvious advantage of such descriptions connecting the rhetorical moves with lexical bundles is that they help to clarify the discourse functions of lexical bundles in texts of different paradigms, which in turn can potentially be used in writing pedagogy. Those courses that focus on the analysis of RAs could benefit from findings like these presented in this study. EAP teachers and materials developers, for example, could use paradigm-tailored corpora for decisions regarding the design of needs-responsive teaching materials and classroom tasks. Academic writing instructors could include the examples extracted from paradigm-tailored corpora to introduce how shared lexical bundles are used in a particular move-step in each paradigm. That way, students could compare the use of bundles to convey particular communicative functions in the RAs of different paradigms.

These results may further provide a potential avenue for experimental studies of lexical bundle learning, for example, in the context of data-driven learning such as concordance searches (Karpenko-Seccombe 2021; O'Flynn 2022). EAP researchers could explore whether learners exposed to lexical bundle concordances labelled with move-step tags learn lexical bundles more effectively than those exposed to concordances without move-step tags. Once precise descriptions are available, it is possible to explore whether concordance-based activities specifically targeting the associations between bundles and moves support learners' mastery of this aspect of academic writing.

References

Ädel, Annelie. 2014. Selecting quantitative data for qualitative analysis: A case study connecting a lexicogrammatical pattern to rhetorical moves. *Journal of English for Academic Purposes* 16: 68–80. https://doi.org/10.1016/j.jeap.2014.09.001

Ädel, Annelie and Britt Erman. 2012. Recurrent word combinations in academic writing by native and non-native speakers of English: A lexical bundles approach. *English for Specific Purposes* 31 (2): 81–92. https://doi.org/10.1016/j.esp.2011.08.004

Anthony, Laurence. 2019. *AntConc* 3.5.8. (Computer software.) Tokyo, Japan: Waseda University. Retrieved from https://www.laurenceanthony.net/software/antconc/

Arizavi, Saleh and Yazdan Choubsaz. 2021. Citation practices in research article introductions: The interplay between disciplines and research methodologies. *International Journal of Applied Linguistics* 31 (3): 383–405. https://doi.org/10.1111/ijal.12337

Baker, Paul and Yu-Hua Chen. 2010. Lexical bundles in L1 and L2 academic writing. *Language Learning and Technology* 14 (2): 30–49.

Basturkmen, Helen. 2009. Commenting on results in published research articles and masters dissertations in Language Teaching. *Journal of English for Academic Purposes* 8 (4): 241–251. https://doi.org/10.1016/j.jeap.2009.07.001

Bazeley, Pat. 2017. *Integrating analyses in mixed methods research*. Thousand Oaks, CA: Sage.

Biber, Douglas and Federica Barbieri. 2007. Lexical bundles in university spoken and written registers. *English for Specific Purposes* 26 (3): 263–286. https://doi.org/10.1016/j.esp.2006.08.003

Biber, Douglas, Ulla Connor and Thomas Upton. 2007. *Discourse on the move: Using corpus analysis to describe discourse structure*. Amsterdam: John Benjamins.

Biber, Douglas, Susan Conrad and Viviana Cortes. 2004. If you look at . . .: Lexical bundles in university teaching and textbooks. *Applied Linguistics* 25 (3): 371–405. https://doi.org/10.1093/applin/25.3.371

Biber, Douglas, Stig Johansson, Geoffrey N. Leech, Susan Conrad and Edward Finegan. 2021. *Grammar of spoken and written English*. Amsterdam: John Benjamins.

Borucinsky, Mirjana and Boris Pritchard. 2022. Lexical bundles in maritime texts. *ICAME Journal* 46 (1): 5–17. https://doi.org/10.2478/icame-2022-0001

Bruce, Ian. 2009. Results sections in sociology and organic chemistry articles: A genre analysis. *English for Specific Purposes* 28 (2): 105–124. https://doi.org/10.1016/j.esp.2008.12.005

Cancino, Marco and Jonathan Iturrieta. 2022. Assessing the impact of the Lexical Approach on EFL perceived oral proficiency: What is the role of formulaic sequences? *Vigo International Journal of Applied Linguistics* 19: 41–65. https://doi.org/10.35869/VIAL.V0I19.3759

Candarli, Duygu and Steven Jones. 2019. Paradigmatic influences on lexical bundles in research articles in the discipline of education. *Corpora* 14 (2): 237–263. https://doi.org/10.3366/cor.2019.0170

Cao, Feng. 2021. A comparative study of lexical bundles across paradigms and disciplines. *Corpora* 16 (1): 97–128. https://doi.org/10.3366/cor.2021.0210

Cortes, Viviana. 2004. Lexical bundles in published and student disciplinary writing: Examples from history and biology. *English for Specific Purposes* 23 (4): 397–423. https://doi.org/10.1016/j.esp.2003.12.001

Cortes, Viviana. 2013. *The purpose of this study is to*: Connecting lexical bundles and moves in research article introductions. *Journal of English for Academic Purposes* 12 (1): 33–43.

Cortes, Viviana. 2015. Situating lexical bundles in the formulaic language spectrum: Origins and functional analysis developments. In V. Cortes and E. Csomay (eds.). *Corpus-based research in applied linguistics*, 197–216. Amsterdam: John Benjamins.

Cotos, Elena, Sarah Huffman and Stephanie Link. 2017. A move/step model for methods sections: Demonstrating Rigour and Credibility. *English for Specific Purposes* 46: 90–106. https://doi.org/10.1016/j.esp.2017.01.001

Crawford, William J. and Eniko Csomay. 2016. *Doing corpus linguistics*. New York: Routledge.

Creswell, John W. 2014. *Research design: Qualitative, quantitative, and mixed methods approach* (4th ed.). Thousand Oaks: SAGE.

Durrant, Philip. 2017. Lexical bundles and disciplinary variation in university students' writing: Mapping the territories. *Applied Linguistics* 38 (2): 165–193.

Ertesvåg, Sigrun K., Pamela Sammons and Ulf Blossing. 2021. Integrating data in a complex mixed-methods classroom interaction study. *British Educational Research Journal* 47 (3): 654–673. https://doi.org/10.1002/berj.3678

Esfandiari, Rajab and Fatima Barbary. 2017. A contrastive corpus-driven study of lexical bundles between English writers and Persian writers in psychology research articles. *Journal of English for Academic Purposes* 29: 21–42. https://doi.org/10.1016/j.jeap.2017.09.002

Fetters, Michael D., Leslie A. Curry and John W. Creswell. 2013. Achieving integration in mixed methods designs – Principles and practices. *Health Services Research* 48 (6): 2134–2156. https://doi.org/10.1111/1475-6773.12117

Giménez-Espert, María del Carmen and Vicente Javier Prado-Gascó. 2019. Bibliometric analysis of six nursing journals from the Web of Science, 2012–2017. *Journal of Advanced Nursing* 75 (3): 543–554. https://doi.org/10.1111/jan.13868

Hiltunen, Turo. 2018. Lexical bundles in Wikipedia articles and related texts: Exploring disciplinary variation. In J. Kopaczyk and J. Tyrkkö (eds.). *Applications of pattern-driven methods in corpus linguistics,* 189–212. Amsterdam: John Benjamins.

Hyland, Ken. 2008. As can be seen: Lexical bundles and disciplinary variation. *English for Specific Purposes* 27 (1): 4–21.

Hyland, Ken. 2012. Bundles in academic discourse. *Annual Review of Applied Linguistics* 32: 150–169.

Karpenko-Seccombe, Tatyana. 2021. *Academic writing with corpora: A resource book for data-driven learning*. New York: Routledge. https://doi.org/10.4324/9780429059926

Kim, Chanhee and Peter Crosthwaite. 2019. Disciplinary differences in the use of evaluative *that*: Expression of stance via *that*-clauses in business and medicine. *Journal of English for Academic Purposes* 41: 1–14. https://doi.org/10.1016/j.jeap.2019.100775

Kostas-Polston, Elizabeth A. and Susan J. Hayden. 2006. Living ethics: Contributing to knowledge building through qualitative inquiry. *Nursing Science Quarterly* 19 (4): 304–310. https://doi.org/10.1177/0894318406292791

Le, Thi Ngoc Phuong and Michael Harrington. 2015. Phraseology used to comment on results in the discussion section of applied linguistics quantitative research articles. *English for Specific Purposes* 39: 45–61. https://doi.org/10.1016/j.esp.2015.03.003

Li, Liang, Margaret Franken and Shaoqun Wu. 2020. Bundle-driven move analysis: Sentence initial lexical bundles in PhD abstracts. *English for Specific Purposes* 60: 85–97. https://doi.org/10.1016/j.esp.2020.04.006

Lin, Ling and Stephen Evans. 2012. Structural patterns in empirical research articles: A cross-disciplinary study. *English for Specific Purposes* 31 (3): 150–160.

Liu, Yingying and Xiaofei Lu. 2020. N1 of N2 constructions in academic written discourse: A pattern grammar analysis. *Journal of English for Academic Purposes* 47: 1–11. https://doi.org/10.1016/j.jeap.2020.100893

Lu, Xiaofei and Jinlei Deng. 2019. With the rapid development: A contrastive analysis of lexical bundles in dissertation abstracts by Chinese and L1 English doctoral students. *Journal of English for Academic Purposes* 39: 21–36. https://doi.org/10.1016/j.jeap.2019.03.008

Lu, Xiaofei, Jungwan Yoon and Olesya Kisselev. 2021. Matching phrase-frames to rhetorical moves in social science research article introductions. *English for Specific Purposes* 61: 63–83. https://doi.org/10.1016/j.esp.2020.10.001

Martín, Pedro Martín. 2003. A genre analysis of English and Spanish research paper abstracts in experimental social sciences. *English for Specific Purposes* 22 (1): 25–43. https://doi.org/10.1016/S0889-4906(01)00033-3

Mizumoto, Atsushi, Sawako Hamatani and Yasuhiro Imao. 2017. Applying the bundle–move connection approach to the development of an online writing support tool for research articles. *Language Learning* 67 (4): 885–921. https://doi.org/10.1111/lang.12250

O'Flynn, James. 2022. Lexical bundles in the academic writing of the Arts and Humanities: From corpus to CALL. *Yearbook of Phraseology* 13 (1): 81–108. https://doi.org/10.1515/phras-2022-0006

Omidian, Taha, Hesamoddin Shahriari and Anna Siyanova-Chanturia. 2018. A cross-disciplinary investigation of multi-word expressions in the moves of research article abstracts. *Journal of English for Academic Purposes* 36: 1–14.

Pan, Fan, Randi Reppen and Douglas Biber. 2016. Comparing patterns of L1 versus L2 English academic professionals: Lexical bundles in Telecommunications research journals. *Journal of English for Academic Purposes* 21: 60–71. https://doi.org/10.1016/j.jeap.2015.11.003

Ren, Junqiang. 2021. Variability and functions of lexical bundles in research articles of applied linguistics and pharmaceutical sciences. *Journal of English for Academic Purposes* 50: 1–16. https://doi.org/10.1016/j.jeap.2021.100968

Römer, Ute. 2022. Applied corpus linguistics for language acquisition, pedagogy, and beyond. *Language Teaching* 55 (2): 233–244. https://doi.org/10.1017/S0261444821000392

Swales, John M. 1981. *Aspects of article introductions*. The University of Aston, Language Studies Unit.

Swales, John M. 1990. *Genre analysis: English in academic and research settings*. Cambridge: Cambridge University Press.

Swales, John M. 2004. *Research genres: Explorations and applications*. Cambridge: Cambridge University Press. https://doi.org/10.1017/cbo9781139524827.008

Thomson Reuters. 2020. 2019 Journal Citation Report. Available from: https://jcr.clarivate.com/jcr/browse-categories

Uzun, Kutay. 2016. A genre analysis of the methodology sections of descriptive medical-surgical nursing articles. *Journal of Computer and Education Research* 4 (7): 65–81. https://doi.org/10.18009/jcer.09009

Wilkes, Lesley, Michelle Doull, Harrison Ng Chok and Gladys Mashingaidze. 2017. Developing a tool to measure the factors influencing nurses' enjoyment of nursing. *Journal of Clinical Nursing* 26 (13–14): 1854–1860. https://doi.org/10.1111/jocn.13483

Yang, Ruiying and Desmond Allison. 2003. Research articles in applied linguistics: Moving from results to conclusions. *English for Specific Purposes* 22 (4): 365–385. https://doi.org/10.1016/S0889-4906(02)00026-1

Yang, Ruiying and Desmond Allison. 2004. Research articles in applied linguistics: Structures from a functional perspective. *English for Specific Purposes* 23 (3): 264–279. https://doi.org/10.1016/S0889-4906(03)00005-X

Ye, Yunping. 2019. Macrostructures and rhetorical moves in energy engineering research articles written by Chinese expert writers. *Journal of English for Academic Purposes* 38: 48–61. https://doi.org/10.1016/j.jeap.2019.01.007

Yilmaz, Kaya. 2013. Comparison of quantitative and qualitative research traditions: Epistemological, theoretical, and methodological differences. *European Journal of Education* 48 (2): 311–325. https://doi.org/10.1111/ejed.12014

Younas, Ahtisham, Maria Pedersen and Jude Laoagan Tayaben. 2019. Review of mixed-methods research in nursing. *Nursing Research* 68 (6): 464–472. https://doi.org/10.1097/NNR.0000000000000372

Zare, Javad and Leila Valipouri. 2022. Lexical bundles in chemistry research articles. *Frontiers in Psychology* 13: 1–13. https://doi.org/10.3389/fpsyg.2022.906641

Appendices

Appendix 1. Journal list.

Journal name	2019 JIF (Journal impact factor)	JIF Quartile*
1. International Journal of Nursing Studies	3.783	Q1
2. Birth-Issues in Perinatal Care	2.705	Q1
3. Journal of Nursing Scholarship	2.655	Q1
4. Nursing Ethics	2.597	Q1
5. Journal of Advanced Nursing	2.561	Q1
6. Nurse Education Today	2.490	Q1
7. International Journal of Mental Health Nursing	2.383	Q1
8. Women and Birth	2.308	Q1
9. European Journal of Cardiovascular Nursing	2.296	Q1
10. Journal of Nursing Management	2.243	Q1
11. Australian Critical Care	2.214	Q1
12. Research in Nursing & Health	2.163	Q1
13. European Journal of Cancer Care	2.161	Q1
14. Journal of Wound Ostomy and Continence Nursing	2.110	Q1
15. International Nursing Review	2.034	Q1
16. Worldviews on Evidence-Based Nursing	1.991	Q1
17. Journal of Clinical Nursing	1.972	Q1
18. International Emergency Nursing	1.959	Q1
19. Journal of Psychiatric and Mental Health Nursing	1.947	Q1
20. Journal of Family Nursing	1.889	Q1
21. Intensive and Critical Care Nursing	1.886	Q1
22. Nursing Research	1.881	Q1
23. European Journal of Oncology Nursing	1.876	Q1
24. Cancer Nursing	1.850	Q1
25. BMC Nursing	1.846	Q1