Language Teaching and Educational Research

e-ISSN 2636-8102

Volume 5, Issue 2 | 2022

Lexical Bundles and Disciplinary Variation in Master Theses

Abbas Hadizadeh
Sonia Jahangirian

To cite this article:

Hadizadeh, A., & Jahangirian, S. (2022). Lexical bundles and disciplinary variation in master theses. *Language Teaching and Educational Research (LATER), 5*(2), 59-79. https://doi.org/10.35207/later.1152493

View the journal website

Submit your article to *LATER*

Contact editor

Copyright (c) 2022 *LATER* and the author(s). This is an open access article under CC BY-NC-ND license (https://creativecommons.org/licenses/by-nc-nd/4.0/)

LATER
http://dergipark.org.tr/later

Language Teaching and Educational Research
e-ISSN: 2636-8102 *LATER*, 2022: 5(2), 59-79
Turkish JournalPark ACADEMIC

Research Article

Lexical bundles and disciplinary variation in master theses

Abbas Hadizadeh* ORCID
Assistant Professor, Faculty of Educational Sciences, Final International University, TURKISH REPUBLIC OF NORTHERN CYPRUS
Sonia Jahangirian ORCID
Senior Lecturer, School of Foreign Languages, Final International University, TURKISH REPUBLIC OF NORTHERN CYPRUS

Abstract

Lexical bundles, as fixed-form recurrent word combinations of multiple words, constitute a significant portion of academic writing and play a pivotal role in producing fluent texts. Extant studies on lexical bundles have documented difficulties that second language learners, and particularly writers experience in producing these bundles in their academic writing. However, despite an extensive existing body of research on the use of lexical bundles in various fields, the use of such linguistic devices across various disciplines, particularly in the Iranian context is an under-researched area. Thus, this study examined the frequency, functions and structure of 4-word lexical bundle use in master theses of native English-speaking writers and Iranian second language (L2) writers across four different disciplines. For this purpose, two corpora, each containing 60 master theses, 120 theses in total, were selected and analyzed following a corpus-based approach. The findings of the study revealed that, overall, Iranian writers incorporated more lexical bundles in their texts than their native English counterparts and that their use varied functionally and structurally across not only native and nonnative corpora but also across disciplines. The study has important implications for Iranian L2 writers of the respective disciplines as well as genre-based instruction in English for both academic and specific purposes.

Received
01 April 2022

Accepted
21 November 2022

Keywords
academic writing
corpus
lexical bundles
disciplinary variations

Suggested APA citation: Hadizadeh, A., & Jahangirian, S. (2022). Lexical bundles and disciplinary variation in master theses. *Language Teaching and Educational Research (LATER), 5*(2), 59-79. https://doi.org/10.35207/later.1152493

Note(s) from the author(s)
≫*Corresponding author
≫ This paper is part of the MA thesis of the second author in this study.

Author(s)' statements on ethics and conflict of interest
Ethics statement: We hereby declare that research/publication ethics and citing principles have been considered in all the stages of the study. We take full responsibility for the content of the paper in case of dispute.
Statement of interest: We have no conflict of interest to declare.
Funding: None
Acknowledgements: None

Introduction

Graduate students are generally expected to possess an adequate knowledge of academic writing in English, particularly in an international context. However, research on second language academic writing has demonstrated the challenging nature of writing for L2 writers (Belcher, 1994). A number of second language researchers have also reported variation across academic writing in different fields of study (e.g., Durrant, 2014; Hyland & Tse, 2007) and the different needs of students from even inter-related disciplines (Durrant, 2017). Thus, academic writing in L2 for graduate students means not only familiarity with academic writing conventions but also a good knowledge of their study discipline, which is usually a distinct genre with its own special discoursal and linguistic elements (Durrant, 2017). One important aspect of academic discourse is formulaic language, specifically lexical bundles which is defined as fixed recurrent word combinations of multiple words (Biber & Conrad, 1999). Lexical bundles have been reported to play a pivotal role in the development of fluent linguistic production and establishing membership in various academic disciplines (Ädel & Erman, 2012). Moreover, these frequent lexical combinations are an indication of fluency in successful writing and the lexico-grammatical foundation of language (Coxhead & Byrd, 2007) which act as the basis for other language aspects (Ellis, 1996).

The studies conducted on the use of lexical bundles by Iranian L2 writers in the Iranian context have focused mainly on articles in the humanities and social sciences, particularly in the field of Applied Linguistics (e.g., Amirian et al., 2013; Esfandiari & Barbary, 2017; Jalali et al., 2008; Safarzadeh et al., 2015). There is also a scarcity of research comparing the use of bundles by graduate students, particularly across disciplines, by Iranian L2 writers. This is mainly because access to Iranian L2 writers' theses is quite limited and difficult since universities across Iran usually do not allow full access to theses and dissertations and even if access is granted, the theses are not usually in English. Thus, the current study examined the use of lexical bundles in master theses by native English-speaking and Iranian L2 students outside the Iranian context across four different areas of study, two from hard sciences (mechanical engineering [ME] and civil engineering [CE]), and two from soft sciences (Business [BS] and tourism [TR]), by focusing on three aspects namely, frequencies, functions and structures.

The early studies on lexical bundles are ascribed to Altenberg (1993, 1998) who conducted a comprehensive study on word combinations. However, the term lexical bundle was first appeared in Biber et al.'s (1999) study and has since been extensively researched in L2 academic writing (e.g., Hyland, 2008a; Xu, 2012). Lexical bundles differ from word combinations such as idioms and collocations. They are "extremely common"; "not idiomatic in meaning and not perceptually salient" which surpass a given threshold, and "usually do not represent a complete structural unit" (Biber & Barbieri, 2007, pp. 269-270).

Studies on lexical bundles have revealed that the frequency, structure and functions of such word combinations vary across genre (e.g., Biber, 2006; Chen, 2010; Hyland, 2008a; Qin, 2014), registers (Biber et al., 1999; Biber et al., 2004), proficiency levels (Ädel & Erman, 2012; Cortes, 2004; Pan et al., 2016; Salazar, 2014), and more importantly disciplines (Durrant, 2017; Hyland, 2008b). In this study, we investigated the frequency, structure and functions of these word sequences by comparing and contrasting the academic thesis texts of Iranian L2 and native English writers.

Frequency-based analysis

By investigating the academic texts of the Longman Spoken and Written English Corpus, Biber et al. (1999) found three-word and four-word lexical bundles as the most frequently used types of bundles in academic texts comprising more than 20% of around 5.5 million words. This finding emphasized the frequency as an important aspect of lexical bundles that needs to be investigated (Biber et al., 2004). Thus, a number of scholars became interested in exploring the differences in the frequency of lexical bundle use across writings of native English and nonnative English writers (e.g., Ädel & Erman, 2012; Bychkovska & Lee, 2017; Hyland, 2008a; Xu, 2012). Some of the studies indicated that L2 users of English incorporated more lexical bundles in their writings than native English speakers of English (e.g., Ädel & Erman, 2012; Chen & Baker, 2010). However, later research revealed that proficiency as well as study level of the writers (bachelor, master or PhD) also play a significant role in L2 writers' use of lexical bundles and need to be taken into account. In this regard, Hyland (2008a) reported a discrepancy between the number of bundles used by Chinese master and doctoral students in their theses surpassing the number of bundles utilized by native English authors in their articles. Some later studies also reported similar findings by Chinese university bachelor students (Bychkovska & Lee, 2017; Pang, 2009).

In line with these findings, with regard to Iranian L2 writers' use of lexical bundles, Jalali et al. (2008) examined the use of lexical bundles by Iranian graduate students and native English writers in Applied Linguistics and found that Iranian students employed significantly more lexical bundles than native English writers. Similar results were reported by Alipour and Zarea (2013) and Amirian et al. (2013) on the use of lexical bundles by Iranian students and native English students or writers.

However, a number of studies have also reported quite opposite findings on Iranian L2 writers and authors' use of lexical bundles. For instance, Safarzadeh et al. (2015) noted that Iranian published authors used fewer bundles than native English-speaking professional writers. Esfandiari and Barbary (2017) also reported similar findings on the use of such bundles by professional Iranian and English expert writers. Overall, research on the frequency of lexical bundles use by Iranian L2 writers has reported contrary findings.

Studies on functional analysis

Lexical bundles serve various functions in both spoken and written texts. Following Biber et al.'s (2003, 2004) earlier studies, Biber et al. (2004) and Biber and Barbieri (2007) categorized bundles functionally into three main groups: stance expressions, discourse organizers and referential expressions. The findings of these studies demonstrated that spoken discourse comprised mostly of *stance* and *discourse organizer bundles* while written discourse relied mainly on *referential bundles*. Adopting the Biber et al. (2004) and Biber and Barbieri's (2007) functional taxonomy, later studies reported that native English-speaking student writers and scholars tend to use *referential* and *stance* bundles more, while L2 students and expert writers mostly utilized *discourse organizer* bundles in their texts (e.g., Ädel & Erman, 2012; Pérez-Llantada, 2014; Uçar, 2017; Xu, 2012).

Following Biber et al. (2004) and Biber and Barbieri's (2007) line of research, Hyland (2008a) proposed a new taxonomy of functional bundles based on a 3.5 million word corpus of research articles, doctoral dissertations and master's theses written by L1 Cantonese speakers

and native English experts from four disciplines: applied linguistics, business studies, electrical engineering, and microbiology. The study identified three major functions of lexical bundles in academic texts: research-oriented, text-oriented and participant-oriented bundles. Research-oriented bundles comprise of the ideational function of language such as location (e.g., *the top of the, the center of the*), procedure (e.g., *the purpose of this, for the purpose of*), quantification (e.g., *growth rate of the, the majority of the*), description (e.g., *in the form of, the length of the*) and topic (e.g., in the ELT field). Text-oriented bundles are related to text organization or textual functions which deal with transition signals (e.g., *in addition to the*), resultative signals (e.g., *were found to be*), structuring signals (e.g., *as shown in figure*) and framing signals (e.g., *when it comes to*). On the other hand, participant-oriented bundles are concerned with interpersonal functions which include stance features (e.g., *it is important to*) and engagement features (e.g., *it can be seen*). Hyland's (2008a) results further illustrated that masters' students extensively relied on research-oriented bundles in their theses while PhD students like published research article writers preferred more text-oriented and less research-oriented bundles in their writings.

Adopting Hyland's (2008a) functional framework, studies conducted on Iranian L2 writers' use of lexical bundles have reported different findings. In this regard, Jalali et al. (2008) found that both native English-speaking and Iranian L2 writers relied mainly on research-oriented bundles and utilized fewer participant-oriented clusters, while Amirian et al. (2013) comparing the use of bundles by native English and Iranian L2 students noted that Iranian students used research-oriented clusters the most and native English-speaking students text-oriented bundles the most in their writings. On the contrary, Esfandiari and Barbary (2017) found that both native English-speaking and Iranian scholars incorporated text-oriented bundles the most and participant-oriented clusters the least in their articles.

Studies on structural analysis

Lexical bundles are also composed of a variety of structural units (Hyland, 2008b). In this regard, Biber et al. (1999) categorized bundles in academic texts into three main structural groups: phrasal, clausal and other expressions totaling 12 widely-used structural patterns. Studies conducted by Biber et al. (1999) and Biber et al. (2004) on spoken discourse indicated that the most highly used structural pattern in conversation was verb phrase lexical bundles with about 90% occurrences, which consisted of 50% personal pronoun + verb phrase (e.g., *they want to*), 19% extended *verb phrase fragments* (e.g., *should be noted that*) and 17% question fragments (e.g., *do they ask to*). However, in academic prose, noun phrase and prepositional phrase were found to be the dominant structural pattern comprising 60% of the bundles used by writers. Overall, these studies pointed out that *noun phrase, prepositional phrase*, *passive verb phrase* and *anticipatory-it bundles* were the most used bundles in academic writing (Hyland, 2008a).

However, studies on lexical bundle use by native English and Iranian L2 writers have not yielded a consistent pattern. Some of the studies have reported structural differences across Iranian L2 and English writers' texts in that *prepositional phrases with of* were more frequently employed by native-English speaking scholars than Iranian experts and post graduate writers (Esfandiari & Barbary, 2017; Jalali et al., 2008). Some studies have also found that *anticipatory*

it bundles had the lowest occurrence in master and PhD students' writings of Iranian graduate students (Amirian et al., 2013; Jalali, 2017; Jalali et al., 2008).

Thus, this study attempted to bridge these gaps by investigating the use of lexical bundles in master thesis writings of Iranian L2 writers and by comparing and contrasting the use of such devices both across native and nonnative corpora and across different disciplines. The study also specifically examined one particular genre, master thesis writings, of Iranian L2 writers which is either unavailable or nonexistent in the Iranian context.

Methodology

Corpus building procedure

This study adopted a convenience-sampling method by developing two sub-corpora of 120 theses, written by Iranian L2 writers and L1 English writers. The first corpus of 60 theses was collected from Iranian graduate student L2 writers who studied at a Northern Cyprus university; while the other corpus comprised of 60 theses written by native writers of English at three USA universities: California State University, Iowa State University and the University of Nevada. It should be mentioned here that at the time of data collection, the number of theses written by the Iranian students in the study context was limited which in turn impacted the selection of the size of the corpus for native English writers. The theses were collected from four disciplines, two from hard science (mechanical engineering and civil engineering) and two from soft sciences (business and tourism). The reason for selecting only one university from Northern Cyprus was its large Iranian graduate student population and free access to the theses.

To identify the theses writers as native English speakers we followed Wood's (2001) criterion (selection of commonly used English names) which was also taken into account for the selection of Iranian L2 writers' theses. We are aware of the limitations of this selection criterion, however, we think that this is the most practical and convenient approach possible for the selection.

The corpus collected for this study consisted of 1,387,885 words which was comprised of two main sub-corpora: the native speaker corpus (NSC hereafter) and the nonnative speaker corpus (NNSC), including 712,728 and 675,157 words respectively. Each corpus also comprised of smaller sub-corpora. Table 3.1 displays information on the size of the sub-corpora in the current study.

Table 1. Word counts and lengths of the sub-corpora

	NSB	NSCE	NSME	NST	NNSB	NNSCE	NNSME	NNST
Theses	15	15	15	15	15	15	15	15
Words	150,295	239,825	170,610	151,998	129,461	170,388	132,128	243,180
Length	10,019	15,988	11,374	10,133	8,630	11,359	8,808	16,212

Note: NSB: Native speaker business, NSCE: native speaker civil engineering, NSME: native speaker mechanical engineering, NST: native speaker tourism, NNSB: nonnative speaker business, NNSCE: nonnative speaker civil engineering, NNSME: nonnative speaker mechanical engineering, NNST: nonnative speaker tourism

Bundle identification

The two main corpora each consisted of 4 sub-corpora from four disciplines (business, civil engineering, mechanical engineering and tourism). The theses selected for these sub-corpora were written between years 2010 and 2017. The researchers downloaded the theses from the digital repositories of the universities mentioned earlier and converted the files into word documents. The non-textual annotations were then removed and the files were subsequently converted into text, for the final analysis. This study focused on the use of 4-word lexical bundles in the corpora due to their higher rate of occurrence (Cortes, 2004) and their wider variety of structures and functions (Hyland, 2008b).

To analyze the frequency of the bundles in this study, a cut-off frequency criterion with 40 times per million word (pmw) was adopted (Biber & Barbieri, 2007). Range or number of bundle occurrence in different texts was considered 20%, that is, for lexical bundle frequency, we only selected the bundles that at least appeared in 3 different texts (theses in this case). Thus, in native speaker civil engineering (NSCE) sub-corpus, for example, the frequency cut-off point is 9 since the size of the corpus is 239,825 and range is 3 theses (20 percent of the texts, 15 theses in each sub-corpus). It should be stated here that frequency cut-off point varied to a smaller degree from one sub-corpus to another due to the variation in word lengths in each sub-corpus.

Table 2. Frequency and range of the sub-sections of the two corpora

Discipline	NSB	NSCE	NSME	NSTE	NNSB	NNSC	NNM	NNST
Frequency	6	9	7	6	5	7	5	9
Range	3	3	3	3	3	3	3	3
Word count	150295	239825	170610	151998	129461	170388	132128	243180

The concordance software used to analyze the data in this study was AntConc computer software version 3.5.2 (Anthony, 2018). First all the bundles were identified in both native and nonnative sup-corpora and then we looked at the distribution of bundles in the sub-corpora.

Findings and Discussion

Bundle frequency in the corpora

The frequency analysis of bundles across our two main sub-corpora showed that Iranian L2 writers relied heavily on bundles than the native English-speaking writers overall; however, in the civil engineering sub-corpus, a reverse trend was observed, that is, native English speaker writers incorporated more bundles in their writings (see Table 3). There were 351 different bundle types in the nonnative word corpus, totaling nearly 4,916 individual cases while in the native corpus, the number was 268 different bundles reaching 3,655 tokens.

Table 3. The frequency of lexical bundles across the four sub-corpora

Corpus	Thesis	Words	Types	Token
NSB	15	150,295	43	426
NST	15	151,998	68	810
NCE	15	239,825	141	2137
NSME	15	170,610	92	988
NNSB	15	129,461	130	1098
NNST	15	243,180	96	1582
NNSCE	15	170,388	90	1030
NNSME	15	132,128	140	1206

Note: Type: the frequency of each unique bundle; Token: the total occurrence of all bundles in the given set. It should be mentioned here that like previous studies we also used type to refer to lexical bundle use.

The difference across native and nonnative corpora were very large in some cases (see Table 3 above); for example in the business sub-corpus, Iranian L2 students incorporated around three times more bundles than the native English writers in their theses. This result confirmed the findings of previous studies conducted in the Iranian contexts, namely Alipour and Zarea (2013), Amirian et al. (2013) and Jalali et al. (2008), as well as studies done in other contexts (e.g., Bychkovska & Lee, 2017; Hsu et al., 2017; Pang, 2009; Pérez-Llantada, 2014), which reported that nonnative English writers utilized more lexical bundles in their writings than native English writers. This heavy reliance on lexical-bundle use by Iranian L2 writers could also be explained by academic writing courses that focus on lexical phrases and bundles. That is, formulaic language can be overused, underused or misused by nonnative English writers (Schmitt & Carter, 2004) due to various factors such as proficiency or study level (Ädel & Erman, 2012; Hyland, 2008a; Salazar, 2014).

The result of the study on the frequency of bundle use in the civil engineering master students' corpus (141 to 90 types by English-speaking and Iranian L2 writers respectively) confirms the results of some other studies which reported a heavy reliance on lexical bundles by native English students (e.g., Ädel & Erman, 2012; Karabacak & Qin, 2013). This particular result only corroborates the findings of Esfandiari and Barbary (2017) and Safarzadeh et al. (2015), who reported that Iranian L2 writers used fewer lexical bundles than native English-speaking writers.

Variation across native and nonnative corpora

Further analysis of the bundles across native and nonnative sub-corpora revealed that in some disciplines, Iranian L2 writers' use of bundle patterns tended to be closer to their native counterparts. For example, by comparing the top 30 four-word bundle types across both native and nonnative corpora (see the Appendix), we found that business and mechanical engineering Iranian L2 students behaved like native English writers by using similar bundles in their writing than the other two disciplines (civil engineering and tourism). In this regard, in business theses, nine bundles were identified as the most commonly used bundles by both native and nonnative business student writers, namely *in the case of*, *it is important to*, *at the same time*, *on the other hand*, *when it comes to*, *one of the most*, *the value of the*, *as a result of*, and *is one of the;* while in the mechanical engineering theses, eight bundles were observed to

be the most frequently employed bundles by mechanical engineering master student writers: *as shown in figure*, *is shown in figure*, *can be seen in*, *shown in figure the*, *is shown in fig*, *as a result the*, *the performance of the*, and *it can be seen.*

However, in the other two sub-corpora, fewer bundles were found to be mutually employed by the native and Iranian L2 writers; that is, in civil engineering five lexical bundles (*as shown in figure*, *is shown in figure*, *shown in figure the*, *can be seen in*, and *it can be seen*) and in the tourism student theses, four bundles (*in the United States*, *one of the most*, *as well as the,* and *is one of the)* were found to be the shared most used bundles (see the Appendix).

Furthermore, by comparing the top 30 frequently used bundle in the Iranian L2 student writer theses, we found that three lexical bundles (*on the other hand*, *is one of the*, and *one of the most*) were the most highly utilized bundles in all the sub-corpora followed by three highly-used bundles (*as a result of, in the case of, of the most important*) occurring in three sub-corpora (see Table 4 below).This result corroborates the findings of Ädel and Erman (2012), Chen and Baker (2010) and Esfandiari and Barbary (2017) who identified the same bundles as the most frequently used ones regardless of discipline, genre, or first language background.

Table 4. The most frequently used four-word lexical bundles by the Iranian writers

NNSB	NNST	NNSC	NNSM
on the other hand	on the other hand	on the other hand	on the other hand
is one of the	is one of the	is one of the	is one of the
one of the most	one of the most	one of the most	one of the most
as a result of	as a result of	as a result of	
in the case of	in the case of	in the case of	
of the most important	of the most important	of the most important	

Additionally, a careful examination of these highly employed bundles showed that native student writers chose *one of the most* to serve quantification; however, Iranian L2 writers employed it to demonstrate mainly the significance of the topic (extract 1), to introduce the topic (extract 2 and 3) and in some cases to organize their discourse (extract 4).

> *Extract 1:* Immigration is *one of the most* influential facts for such considerable changes in the demographics. (NNST2)
> *Extract 2: One of the most* excessive and approved model in extant literature is profit chain model. (NNST7)
> *Extract 3: One of the most* popular types of tourism is the student/tourists that attract many tourists to the destinations for higher educational purposes (Woo & Uysal, 2013). (NNST8)
> *Extract 4:* Netherlands is located at the mouth of the Rhine River, which is *one of the most* polluted waters in Europe. (NNST12)

Variations across disciplines

There were also some disciplinary variations across the four discipline sub-corpora as well; that is, the Native English-speaking civil engineering texts contained the greatest range

of bundles with 141 types of 4- word strings meeting the 40 per million words threshold (across 20% of texts). On the other hand, native writers in the soft sciences incorporated the lowest range of bundles in their texts (43 types in business and 68 types in tourism sub-corpora).

There was also great interdisciplinary variation in terms of the types of bundles used in each sub-corpus; that is, each discipline writers mainly resorted to their discipline-specific bundles confirming the results of Jalilifar and Ghoreishi (2018). In this regard, nonnative business, nonnative mechanical and native civil engineering corpora were the three sub-corpora with the highest discipline-specific bundles (85, 77 and 76 types, respectively). There were also a few shared items that specifically occurred in the hard sciences. However, as illustrated in Table 5, *is shown in figure*, *it can be seen*, *it was found that*, and *is due to the* were only shared by writers in the hard sciences (mechanical and civil engineering). This finding can be related to the argument patterns in hard sciences since in hard sciences, writers tend to avoid authorial tone by focusing on facts (Hyland, 2008b).

Table 5. Shared bundles across the hard sciences sub-corpora

	NSB	NST	NSME	NSCE	NNSB	NNST	NNSME	NNSCE
As shown in figure	0	0	35	83	0	10	13	10
is shown in figure	0	0	21	50	0	0	26	17
it can be seen	0	0	28	33	0	0	26	18
it was found that	0	0	13	32	0	0	27	18
is due to the	0	0	9	12	0	0	5	0

Functional categorization of lexical bundles and their structural manifestations

As stated earlier, in the current study, Hyland's (2008a) functional taxonomy was employed to analyze the functions of four-word lexical bundles in the two corpora. The taxonomy categorizes the functions of lexical bundles into three main groups of research-oriented, text-oriented, and participant-oriented bundles divided further into other sub-groups. The functional analysis of lexical bundles revealed some variations across native and nonnative corpora. That is to say, in all the sub-corpora except mechanical engineering one, native English writers' utilization of research-oriented bundles surpassed that of the Iranian L2 writers which confirmed Hyland's (2008a) study finding that native English speakers use more research-oriented bundles than L2 writers. However, the Iranian L2 writers resorted extensively to text-oriented bundles in all the sub-corpora except in tourism corpus. This finding is not consistent with the study results of Amirian et al. (2013) on the predominance of text-oriented bundles in English writers' texts and heavy reliance of Iranian L2 writers on research-oriented bundles.

Table 6. Frequency distribution of functions of native and nonnative writers' lexical bundles

	Function	Business N/NN		Tourism N/NN		Civil Engineering N/NN		Mechanical Engineering N/NN		Total N/NN
Research-oriented	Location	3/8	11	4/7	11	11/7	18	7/6	13	25-28
	Procedure	6/7	13	9/8	17	15/5	20	13/11	24	43-31
	Quantification	7/11	18	6/13	19	19/6	25	11/16	27	43-46
	Description	4/12	16	11/10	21	14/2	16	8/6	14	37-30
	Topic	4/7	11	12/17	29	11/9	20	1/7	8	28-40
	Total		69		97		99		86	
Text-oriented	Transition signals	5/14	19	3/5	8	6/5	11	4/7	11	18-31
	Resultative signals	3/24	27	3/13	16	23/13	36	17/22	39	46-72
	Structuring signals	1/13	14	8/7	15	18/17	35	16/40	56	43-77
	Framing signals	4/18	22	2/10	12	9/12	19	7/6	13	22-46
	Total		82		51		101		119	
Participant - oriented	Stance features	6/10	16	5/7	12	1/2	3	1/6	7	13-25
	Engagement features	1/9	10	6/2	8	18/12	30	7/12	19	32-35
	Total		16		20		33		26	
	Grand Total	44/133		69/99		145/90		92/139		

Note: the number on the left represents Native-English speaking writers'(N) and the one on the right represents Iranian L2 writers' (NN) use of lexical bundles; the third number in each sub-corpus illustrates the total number of bundle use by both native speaker and Iranian L2 writers.

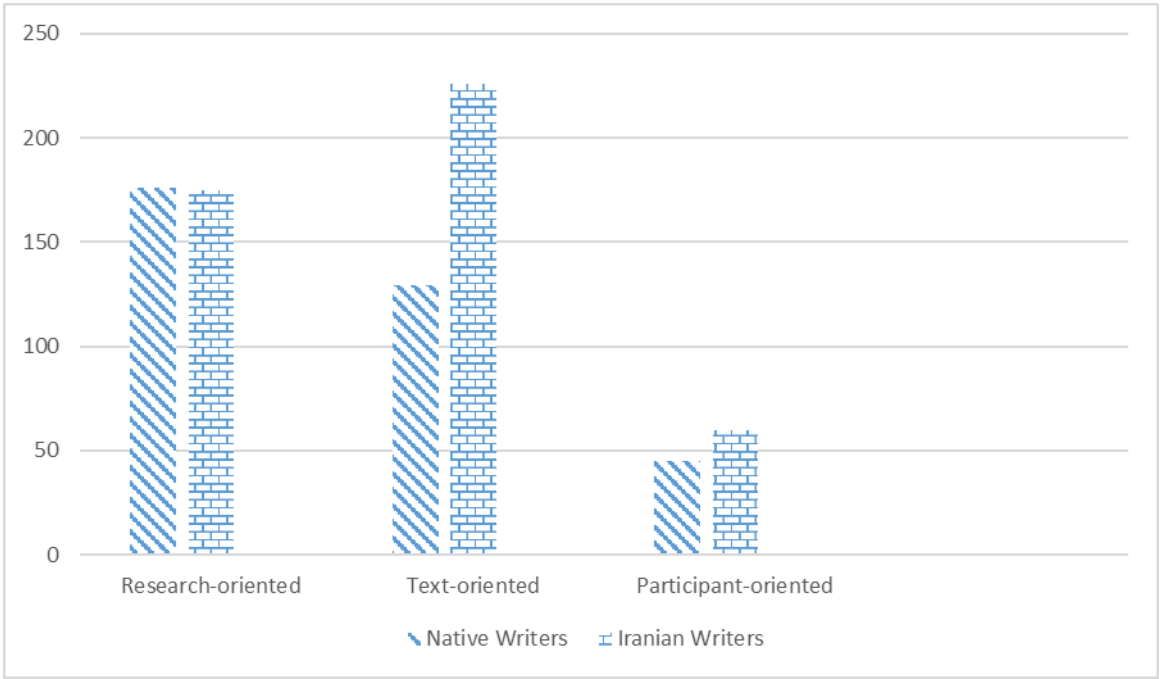

Figure 1. The distribution of main functional categories of lexical bundle use by native and nonnative writers

As mentioned in the previous section, research-oriented lexical bundles are placed the first on the list of ranking of main functional categories for English writers. In this regard, the frequency distribution of research-oriented bundles revealed that with 43 types each, procedure and quantification bundles surpassed other subcategories in native English sub-corpus. Description is placed the second in the list representing 37 types, followed by topic and location with 28 and 25 types respectively (see Table 6 above).

However, in the Iranian L2 writings, text-oriented lexical bundles ranked the first as the main functional category and structuring signal bundles with 77 types as the first subcategory. Placing second and third were resultative signals with 72 types and framing signals with 46 types respectively (see Table 6 above).

In what follows, we will examine the three main functions of lexical bundles as well as their structural variations across native and nonnative corpora and across the four disciplines.

Research-oriented bundles

Research-oriented lexical bundles constituted the majority of the bundles in native business corpora. An interesting case was the tourism sub-corpus in which both native and nonnative writers relied extensively on research-oriented bundles with 42 (60.8%) and 55 (55.5%) types respectively. In both native and nonnative toursim sub-corpora, research-oriented bundles that contribute to the topic stood at the top of the list, with 12 (17.3%) and 17 (17.1%) types respectively. Such an extensive use of topic-oriented bundles in tourism texts can indicate that writers in this field tended to utilize more subject-related expressions and clusters to bring unity to their writing (Amirian et al., 2013) and to relate more to their subject under study (Hyland, 2008a).

Table 7. Distribution of functional bundles across native and nonnative and discipline sub-corpora

Disciplines	Research-oriented %		Text-oriented %		Participant-oriented %	
	N	NN	N	NN	N	NN
Business	54.5	33.8	29.5	51.8	15.9	14.2
Tourism	60.8	55.5	23.1	35.3	15.9	9
Civil Engineering	48.2	32.2	38.6	52.2	13	15.5
Mechanical Engineering	43.4	33	47.8	53.9	8.6	12.9

Note: N: native writers, NN: nonnative writers (Iranian L2 writers)

The structural analysis of topic bundles in tourism sub-corpora revealed that they typically took similar forms such as *other prepositional phrase* (extracts 5 and 6), noun phrase with *other post-modifier fragment* (extract 7), and other noun phrase (extract 8).

Extract 5: It is also implied that these results can be used for hotel employers and

employees *in the hospitality industry*. (NT 5)
Extract 6: In the United States, as Opie (2006) confirmed, there was a great revolution in power generation and usage. (NNT 10)
Extract 7: In *North Cyprus as a* tourist destination, there are many hotels and inns for tourist accommodation which are ranging from 1,2,3,4 to 5 star hotels. (NNT 4)
Extract 8: Both receive golfers from off *the Las Vegas strip* and the two share an 800# reservation system for booking tee times in advance. (NT 4)

Further structural analysis of tourism texts revealed that noun phrase-based category of bundles was the most frequently utilized lexical bundles by native and Iranian L2 writers (36.76 % and 39.57 %, respectively, extracts 9 and 10). This result confirms the findings of Salazar (2014) and Jalilifar and Ghoreishi (2018) who found that published research writers incorporated noun phrases extensively in their writing to objectively document research activities and report results.

Extract 9: Also, *the findings of this research* provide significant managerial implication for the practitioner as well as tourism marketers and managers for marketing hospitality and Tourism destination. (NNT 6)
Extract 10: Employees must be taught to see *the needs of the guest* as more important than their own schedule or their own convenience. (NT 13)

Text-oriented bundles

The functional analysis of the lexical bundles in this study further showed the greater concentration of text-oriented bundles in the engineering (particularly mechanical and Iranian L2 civil engineering corpora) texts which was at variance with Hyland's (2008b) study. A preference which amounted to almost half of the total bundles in the native mechanical texts (44 types, 47.8%) and more than half in the nonnative mechanical (75 types, 53.9%) and civil engineering corpora (47 types, 52.2%), as shown in Table 8. The two extensively utilized functional subcategories of lexical bundles in both native and nonnative corpora were resultative and structuring signals (with 46 and 43 types for native English writers and with 72 and 77 types, for Iranian writers) which significantly occurred more than the other sub-categories in the Iranian L2 corpus, (see Table 7 above). By utilizing resultative signal bundles, engineering student writers signaled the conclusions drawn from their studies and highlighted the inferences they intended their readers to make from their discussions (see extracts 11, 12, and 13 below). Such linguistic devices also allowed the engineering master students to "frame an assertive construal of events" displaying their positions/stances and "directing readers to a categorical understanding" (Hyland, 2008b, p.17).

Table 8. Distribution of functional bundle sub-categories across native and nonnative and discipline sub-corpora (%)

	Function	Business	Tourism	Civil Engineering	Mechanical Engineering
Research-oriented	Location	6.8/6	5.7/7	7.5/7.7	7.6/4.3
	Procedure	13.6/5.2	13/8	10.3/5.5	14.1/7.9
	Quantification	15.9/8.2	8.6/13.1	13.1/6.6	11.9/11.5
	Description	9/9	15.9/10.1	9.6/2.2	8.6/4.3
	Topic	9/5.2	17.3/17.1	7.5/10	1/5
Text- oriented	Transition signals	11.3/10.5	4.3/5	4.1/5.5	4.3/5
	Resultative signals	6.8/18	4.3/13.1	15.8/14.4	18.4/15.8
	Structuring signals	2.2/9.7	11.5/7	12.4/18.8	17.3/28.7
	Framing signals	9/13.5	2.8/10.1	6.2/13.3	7.6/4.3
Participant-oriented	Stance features	13.6/7.5	7.2/7	0.6/2.2	1/4.3
	Engagement features	2.2/6.7	8.6/2	12.4/13.3	7.6/8.6
	Total	100/100	100/100	100/100	100/100

Note: the number on the left represents Native English-speaking writers' and the one on the right represents Iranian L2 writers' percentage of bundle use.

The structural analysis of bundles in native mechanical engineering corpus revealed that resultative lexical bundles were mainly realized by noun phrases (11), anticipatory *it* phrases (12), and clausal structure (13):

Extract 11: The results of the TTR strategy showed significant fan energy savings at a site containing a wide range of zone types. (NM 3)
Extract 12: It was found that this method had a much higher ability to control and maintain a steady injection pressure. (NM 12)
Extract 13: Notice that the fluorescence quantum yield *has been shown to* be dependent on temperature, pressure, and excitation wavelength. (NM 6)

Additionally, the functional analysis of lexical bundles in the nonnative hard sciences corpora (mechanical and civil engineering) indicated that structuring signals with 40 (28.7%) and 17 (18.8%) cases were used the most in mechanical and civil engineering texts respectively, as shown in Table 8. This finding supports Hyland (2008b) who found structuring signals as one of the highly incorporated functional category of lexical bundle in academic texts. The predominance of these clusters in the Iranian L2 writers' texts in general and their extensive use in the hard sciences, in particular, indicated that engineering master students were aware of the significant role of these discoursal bundles and the need to present their arguments in a coherent and organized manner as competent writers (Hyland, 2008b). The heavy reliance on these lexical bundles also demonstrated the engineering master students' dependence on graphical and numerical information in presenting their arguments (see extracts 14, 18 and 19 below). The high concentration of these sequences in the Iranian L2 texts may be attributed to the proficiency level of the writers (although we did not have any evidence regarding their

proficiency level) and seemingly their struggle to cogently frame, present and scaffold their arguments and conclusions in their writing.

A further structural analysis revealed that the structuring signals were mainly realized by certain structures in the nonnative hard sciences, namely passive verb + propositional phrase fragment (14 and 15), other prepositional phrase fragment (16 and 17), and adverbial clause fragment (18 and 19).

Extract 14: The geometry of a two dimensional numerical simulation *is shown in Fig*. 4.13. (NNM 12)
Extract 15: These results *will be discussed in* the next chapter according to the requirements of the Iranian Code, RAA446/2009. (NNC 1)
Extract 16: In the following sections, the comparison of the presented results and results published previously are explained. (NNM 1)
Extract 17: In this chapter the significant results were reviewed and discussed briefly. (NNC 8)
Extract 18: As illustrated in Figure 5.15 for each sample two areas have been photographed by the microscope. (NNM 2)
Extract 19: As shown in Figure 14, BIM workflow will help in uniformity of estimations from the stakeholders' points of view. (NNC 13)

Participant-oriented bundles

Participant-oriented bundles provide a structure for the dialogic interaction between the reader and the writer in texts through conveying two major types of meaning: stance and engagement (Hyland, 2008b). Stance bundles are to do with "the ways writers explicitly intrude into the discourse to convey epistemic and affective judgements, evaluations and degrees of commitment to what they say" while engagement "refers to the ways writers intervene to actively address readers as participants in the unfolding discourse" (Hyland, 2008b, p. 18).

A comparison of stance and engagement bundles in the student writers' theses demonstrated that their distributions varied across the sub-corpora. The majority of the participant-oriented bundles in business and tourism sub-corpora were the writers' stance bundles with a total of 11 and 17 types respectively (see Table 7), which was in line with the findings of Salazar (2014), Cortes (2006) and Hyland (2008b). Through the utilization of these bundles, the writers of these disciplines seemed to explicitly establish their claims by creating a convincing and persuasive discourse for their readers (Hyland, 2008b; Salazar, 2014). Some examples have been provided below from the tourism and business sub-corpora:

Extract 20: Subordinates who are perceived as having lower performance *are more likely to* become targets for supervisor hostility. (NB 13)
Extract 21: By limiting the number of questions, a respondent *is more likely to* answer all of the questions. (NT 12)
Extract 22: This may be *due to the fact that* people who work in the organization for a longer period of time are more satisfied with their jobs. (NNB 7)
Extract 23: In this regard, this approach *can be considered as* an alternative to green

consumerism to some extent. (NNT 2)

As the previous examples illustrate, the writers of the tourism and business studies tended not to express complete commitment to their propositions through the use of stance markers in their writings.

However, the analysis of the participant-oriented bundles in the hard sciences revealed opposite findings in that the writers of the mechanical and civil engineering disciplines largely employed bundles which sought to engage readers in the interpretation of their writings (25 and 24 types respectively). A careful examination of these bundles use demonstrated that the writers of the said discipline tended to use more directives, by acknowledging explicitly the presence of the 'reader-in-the-text' (Thompson, 2001) and as such directing and hence convincing their readers to see their propositions, arguments and interpretations (Hyland, 2008b). Some examples have been given below:

Extract 24: It should be noted that the laboratory detail was constructed without the foundation pile in the pile cap. (NC 12)
Extract 25: Thus, *it is important to* understand and test the effects that drugs might have on the BBB through in vitro design. (NM 15)
Extract 26: It should be mentioned that DCR for beams in shear did not change after rehabilitation and adding braces do not have any effect on beam's shear too. . (NNC 15)
Extract 27: As can be seen, the thermal efficiency decreases by almost 1% when the condenser pressure varies from 8 to 12 kPa gradually. (NNM 3)

The dominance of these linguistic features in the participant-oriented bundles of the hard sciences showed that writers of the hard sciences in this study relied extensively on precision to express the procedures and results and expected their readers to share the same theoretical knowledge and routine practices which is not usually the case in soft sciences where opinions usually overshadow facts (Hyland, 2008b). Moreover, the difference in the use of the participant-oriented bundles among soft and hard sciences indicated that engineering students benefited from precision and technical argument to establish their claims more objectively (Hyland, 2008b).

Conclusion

This study compared and contrasted the use of lexical bundles by native English and Iranian L2 master students across four different disciplines of study. The findings of the study revealed variations across native and nonnative corpora as well as across the four studied disciplines in terms of frequency, functions and structures. The variations in each sub-corpus indicated that the writers of different disciplines relied on different linguistic devices with varying functional patterns, that is, discipline-specific bundles, (Hyland, 2008b) to persuade their readers, develop their arguments, structure and organize their discourses and thus establish credibility in their academic written texts (Hyland, 2008a, 2008b; Salazar, 2014). A further analysis of the findings in the Iranian L2 writers' texts also demonstrated that the Iranian L2 writers' use of lexical bundles varied both functionally, structurally, and in terms of frequency with that of their native counterparts; that is, Iranian L2 writers either overused or

underused these multi-word sequences in their academic texts. Such divergences might cause some nonnative feeling (Li & Schmitt, 2009) and may hinder L2 writers from reaching out to their readers and establishing effective communication in their field of study (Hyland, 2012).

Moreover, the knowledge of word combination can be seen as a critical aspect of membership in different discourse communities (Ädel & Erman, 2012; Pawley & Syder, 1983) and an essential component of writing fluency (Hyland, 2008a). Thus, the exploration of lexical bundles in different study disciplines can have significant implications for both novice and experienced (confident or less confident) Iranian L2 writers in acquiring and becoming familiar with the rhetorical practices of their respective communities (Hyland, 2008b) as well as the appropriate use of such linguistic devices (Cortes, 2015) in their writing.

The study also has some important pedagogical implications for course designers and practitioners to include instructions on the use of discipline-specific lexical bundles and their functions in various academic texts in their syllabuses and materials. The findings of the present study can also provide some implications for genre-based pedagogies in English for specific purposes (Hyland, 2003) by raising the awareness of ESP and EAP teachers over the importance of teaching both discipline-specific and general lexical bundles in academic writing.

The study also had some limitations namely the size of the corpora and thus sub-corpora, the limiting number of Iranian L2 writers' theses available in the study context, study level of the writers (Master students all), as well as the lack of information regarding the proficiency level of the Iranian L2 writers in this study. Thus, the study suggests exploring the lexical bundle use of Iranian students in other disciplines and across different study levels such as bachelor, master and doctoral texts. Finally, we are aware of the fact that the discrepancy in the use of bundles between native and nonnative corpora in this study could be also related to a host of other factors which the study did not investigate; namely, cross-linguistic influence, instructional differences, lack of rhetorical conventions and norms of disciplines, writers' proficiency levels, vocabulary knowledge and writers' strategic differences.

References

Ädel, A., & Erman, B. (2012). Recurrent word combinations in academic writing by native and nonnative speakers of English: A lexical bundles approach. *English for Specific Purposes*, *31*(2), 81-92.

Alipour, M., & Zarea, M. (2013). A disciplinary study of lexical bundles: The case of native versus nonnative corpora. *Taiwan International ESP Journal*, *5*(2), 1- 20.

Altenberg, B. (1993). Recurrent word combinations in spoken English. In J. M. D'Arcy (Ed.), *Proceedings of the Fifth Nordic Association for English Studies Conference* (pp. 17-27). Reykjavik, Iceland: University of Iceland.

Altenberg, B. (1998). On the phraseology of spoken English: The evidence of recurrent word-combinations. In A. P. Cowie (Ed.), *Phraseology: Theory, analysis, and applications* (pp. 101-122). Oxford, United Kingdom: Oxford University Press.

Amirian, Z., Ketabi, S., & Eshaghi, H. (2013). The use of lexical bundles in native and nonnative post-graduate writing: The case of applied linguistics MA theses. *Journal of English Language Teaching and Learning*, *5*(11), 1-29.

Anthony, L. (2018). *Antconc 3.5.2: A free text analysis software.* Available from http://www.antlab.sci.waseda.ac.jp/

Belcher, D. (1994). The apprenticeship approach to advanced academic literacy: Graduate students and their mentors. *English for Specific Purposes, 13*, 23-34.

Biber, D. (2006). *University language: A corpus-based study of spoken and written registers*. Philadelphia, PA: John Benjamins Publishing Company.

Biber, D., & Barbieri, F. (2007). Lexical bundles in university spoken and written registers. *English for Specific Purposes, 26*(3), 263-286. doi:10.1016/j.esp.2006.08.003

Biber, D., & Conrad, S. (1999). Lexical bundles in conversation and academic prose. *Language and Computers*, *26*, 181-190.

Biber, D., Conrad, S., & Cortes, V. (2003). Lexical bundles in speech and writing: an initial taxonomy. In A. Wilson, P. Rayson & T. McEnery (Eds.), *Corpus linguistics by the Lune: a festschrift for Geoffrey Leech* (pp. 71–93). Frankfurt: Peter Lang.

Biber, D., Conrad, S., & Cortes, V. (2004). If you look at …: lexical bundles in university teaching and textbooks. *Applied Linguistics, 25*(3), 371-405. doi:10.1093/applin/25.3.371

Biber, D., Johansson, S., Leech, G., Conrad, S., & Finegan, E. (1999). *Longman grammar of spoken and written English*. London, United Kingdom: Longman.

Bychkovska, T., & Lee, J. J. (2017). At the same time: lexical bundles in L1 and L2 university student argumentative writing. *Journal of English for Academic Purposes*, *30*, 38-52.

Chen, L. (2010). An investigation of lexical bundles in ESP textbooks and electrical engineering introductory textbooks. In D. Wood (Ed.), *Perspectives on formulaic language: Acquisition and communication* (pp. 107-125). London, United Kingdom: Continuum International Publishing Group.

Chen, Y. H., & Baker, P. (2010). Lexical bundles in L1 and L2 academic writing. *Language Learning & Technology, 14*(2), 30-49.

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

Cortes, V. (2006). Teaching lexical bundles in the disciplines: An example from a writing intensive history class. *Linguistics and Education, 17*, 391-406.

Cortes V. (2015). Situating lexical bundles in the formulaic language spectrum: Origins and functional analysis development. In V. Cortes, E. Csomay (Eds.), *Corpus-based research in applied linguistics: Studies in honor of Doug Biber* (pp. 197–216). John Benjamins.

Coxhead, A., & Byrd, P. (2007). Preparing writing teachers to teach the vocabulary and grammar of academic prose. *Journal of Second Language Writing*, *16*(3), 129-147.

Durrant, P. (2014). Corpus frequency and second language learners' knowledge of collocations: A meta-analysis. *International Journal of Corpus Linguistics*, *19*(4), 443-477.

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

Ellis, N. C. (1996). Sequencing in SLA: Phonological memory, chunking, and points of order. *Studies in Second Language Acquisition, 24,* 143-188.

Esfandiari, R., & Barbary, F. (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.

Hsu, J. W. K., Chen, H. J. H., Yang, T. Y. C., & Liu, C. Y. (2017). A study on the use of lexical bundles in native and nonnative English academic writing. *English Teaching & Learning*, *41*(2), 55-98.

Hyland, K. (2003). Genre-based pedagogies: A social response to process. *Journal of Second Language Writing*, *12*(1), 17-29.

Hyland, K. (2008a). Academic clusters: Text patterning in published and postgraduate writing. *International Journal of Applied Linguistics, 18*(1), 41-62. doi:10.1111/j.1473-4192.2008.00178.x

Hyland, K. (2008b). As can be seen: lexical bundles and disciplinary variation. *English for Specific Purposes, 27*(1), 4-21. doi:10.1016/j.esp.2007.06.001

Hyland, K. (2012). Corpora and academic discourse. In K. Hyland, C. M. Huat & M. Handford (Eds.), *Corpus applications in applied linguistics* (pp. 30-46). London, United Kingdom: Continuum.

Hyland, K., & Tse, P. (2007). Is there an "academic vocabulary"?. *TESOL Quarterly*, *41*(2), 235-253.

Jalali, H. (2017). Reflection of stance through it bundles in Applied Linguistics. *Ampersand, 4*, 30-39.

Jalali, H., Eslami Rasekh, A., & Tavangar Rizi, M. (2008). Lexical bundles and intradisciplinary variation: The case of applied linguistics. *Iranian Journal of language Studies*, *2*(4), 447-484.

Jalilifar, A., & Ghoreishi, S. M. (2018). From the perspective of: Functional analysis of lexical bundles in Applied Linguistics research articles. *International Journal of English Studies*, *18*(2), 161-186.

Karabacak, E., & Qin, J. (2013). Comparison of lexical bundles used by Turkish, Chinese, and American university students. *Procedia-Social and Behavioral Sciences, 70*(0), 622-628. doi:10.1016/j.sbspro.2013.01.101

Li, L. (2016). *Sentence initial bundles in L2 thesis writing: A comparative study of Chinese L2 and New Zealand L1 postgraduates' writing* (Doctoral dissertation). University of Waikato, New Zealand.

Pan, F., Reppen, R., & Biber, D. (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.

Pang, P. (2009). A study on the use of four-word lexical bundles in argumentative essays by Chinese English-majors: A comparative study based on WECCL and LOCNESS. *CELEA Journal, 32*(3), 25-45.

Pawley, A., & Syder, F. H. (1983). Two puzzles for linguistic theory: Nativelike selection and nativelike fluency. In J. C. Richards & R. W. Schmidt (Eds.), *Language and communication* (pp. 191-226). London, United Kingdom: Longman.

Pérez-Llantada, C. (2014). Formulaic language in L1 and L2 expert academic writing: Convergent and divergent usage. *Journal of English for Academic Purposes, 14*, 84-94. doi:10.1016/j.jeap.2014.01.002

Qin, J. (2014). Use of formulaic bundles by nonnative English graduate writers and published authors in applied linguistics. *System, 42*(1), 220-231. doi:10.1016/j.system.2013.12.003

Safarzadeh, M. M., Monfared, A., & Sarfeju, M. (2015). Native and nonnative use of lexical bundles in discussion section of political science articles. *Iranian Journal of Applied Language Studies*, *5*(2), 137-166.

Salazar, D. (2014). *Lexical bundles in native and nonnative scientific writing*. Amsterdam, Netherlands: John Benjamins Publishing Company.

Schmitt, N., & Carter, R. (2004). Formulaic sequences in action: An introduction. In N. Schmitt (Ed.), *Formulaic sequences: Acquisition, processing, and use* (pp. 1-22). Philadelphia, PA: John Benjamins Publishing Company.

Thompson, G. (2001). Interaction in academic writing: Learning to argue with the reader. *Applied Linguistics, 22*(1), 58-78.

Uçar, S. (2017). A corpus-based study on the use of three-word lexical bundles in the academic writing by native English and Turkish nonnative writers. *English Language Teaching*, *10*(12), 28.

Wood, A. (2001). International scientific English: The language of research scientists around the world. In J. Flowerdew, & M. Peacock (Eds.), *Research perspectives on English for academic purposes* (pp. 71-83). Cambridge: Cambridge University Press.

Xu, F. (2012). The use and developmental features of lexical bundles in Chinese learners' English academic writing. *Foreign Languages and Their Teaching, 4*, 51-56. doi:10.13564/j.cnki.issn.1672-9382.2012.04.013

Appendix

Top 30 four-word bundle across disciplines and native and nonnative corpora (the italicized bundles represent the shared bundles across native and nonnative sub-corpora)

Rank	Native Business	Nonnative Business	Native Tourism	Nonnative Tourism	Native Civil Eng.	Nonnative Civil Eng.	Native Mechanic Eng.	Nonnative Mechanic Eng.
1	in the united states	*on the other hand*	*in the united states*	*one of the most*	*as shown in figure*	on the other hand	can be used to	on the other hand
2	are more likely to	*is one of the*	it is important to	*is one of the*	as well as the	is one of the	*as shown in figure*	is one of the
3	at the end of	the effect of the	*one of the most*	on the other hand	*is shown in figure*	one of the most	as well as the	as can be seen
4	*in the case of*	*one of the most*	*as well as the*	in the context of	*shown in figure the*	in the construction industry	*is shown in figure*	*can be seen in*
5	the end of the	as can be seen	the purpose of this	in the case of	the results of the	*as shown in figure*	the top of the	*is shown in figure*
6	the purpose of this	that there is a	studies have shown that	as a result of	was found to be	used in this study	*can be seen in*	one of the most
7	in addition to the	is significant at the	in the hospitality industry	as one of the	*can be seen in*	as a result of	the size of the	presented in table and
8	in order to be	*in the case of*	the needs of the	*as well as the*	*it can be seen*	*can be seen in*	it is important to	*the performance of the*
9	*it is important to*	*at the same time*	*is one of the*	in the process of	it was found that	*it can be seen*	as a function of	be seen in figure
10	as a result the	*as a result of*	in addition to the	customer satisfaction and loyalty	can be seen that	one of the main	the results of the	the other hand the
11	as well as the	of goods and services	in the Las Vegas	of this study is	it is important to	*is shown in figure*	as a result of	is shown in fig.
12	growth rate of	of the most important	of the united	of the most important	in addition	of the most important	et al developed a	which is shown in

	the		states		to the			
13	to be able to	of this study is	of this paper is	for the purpose of	in order to determine	are shown in figure	*shown in figure the*	*as shown in figure*
14	*at the same time*	an increase in the	this paper is to	image of a destination	be seen in figure	as it can be	*is shown in fig*	in this study the
15	*on the other hand*	the results of this	to the success of	of the study this	the bottom of the	in this chapter the	an example of the	the aim of this
16	*when it comes to*	and as a result	the purpose of THIS	the findings of this	the top of the	the percentage of the	are shown in figure	the efficiency of the
17	*one of the most*	is defined as the	can be used to	that there is a	the center of the	in the case of	*as a result the*	can be seen from
18	the growth rate of	is going to be	purpose of this paper	at the same time	can be used to	in the following sections	as seen in figure	in most of the
19	*the value of the*	the null hypothesis of	purpose of this study	an important role in	it should be noted	management in construction industry	as well as a	as illustrated in figure
20	*as a result of*	there is a significant	the success of the	between customer satisfaction and	the length of the	to be used in	it was found that	at the end of
21	as a way to	*when it comes to*	the united states and	is located in the	the total number of	at the end of	on the order of	In table and illustrated
22	in the form of	are presented in table	an example of this	customer satisfaction and customer	in the number of	in the field of	figure provides an example	it is possible to
23	*is one of the*	in order to get	are more likely to	of the study the	were found to be	in this study the	provides an example of	*Table and illustrated in*
24	it is necessary to	in the long run	as part of the	can be considered as	should be noted that	*shown in figure the*	*the performance of the*	*as a result the*
25	the rest of the	in the short run	of this study was	one of the main	the accuracy of the	the compressive strength of	used in this study	is due to the
26	the success of the	*it is important to*	the end of the	satisfaction and customer loyalty	the distance to the	the other hand the	is dependent on the	is to investigate the
27	is similar	of the	the creation	all over the	the use of	in	is the	*it can be seen*

	to the	Iranian economy	of the	world	the	comparison with the	number of	
28	it is not surprising	that there is no	the success of a	North Cyprus as a	in the United States	is based on the	*it can be seen*	it is necessary to
29	that make up the	the findings of the	a part of the	in the form of	of the number of	the results of this	the accuracy of the	*shown in figure the*
30	will need to be	*the value of a*	an important part of	*in the united states*	the behavior of the	in order to find	the bottom of the	the effect of the