

A CORPUS-BASED ANALYSIS OF PREFABRICATED STRUCTURES IN PAKISTANI RESEARCH ABSTRACTS

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ABSTRACT

Prefabricated structures referred to as poly-word strings or lexical bundles are recognized as the fundamental building blocks in academic discourse. They build fluency in academic discourse, helping to shape coherence and meaning in a speech or text. For decades, lexical bundles have captivated a considerable amount of attention in corpus-based research in English for Academic Purposes. However, in the Pakistani context, less research has been carried out to explore lexical bundles in academic discourse. Therefore, the present study aimed to examine prefabricated structures employed in the scientific research abstracts of theses and articles from social and physical sciences. A specialized corpus was built from the 1200 research abstracts from social and physical sciences. AntConc software was utilized for the extraction of lexical bundles. Biber structural model of lexical bundles was employed as a theoretical framework. The study found 42 four-word lexical bundle types and 659 tokens in soft sciences. On the other side, the study found 55 four-word lexical bundle types and 950 tokens in physical sciences. Besides, this corpus-based study found 11 common core four-word lexical bundles in social and physical sciences. Moreover, the present study also contributed some new structures to the respective structural model of lexical bundles. If Pakistani science scholars are introduced with these lists of lexical bundles obtained from this study, their rhetorical practice of writing research abstracts can be significantly improved. The results yielded from this study can be substantially used for ESP and EAP further to enhance the academic discourse of the research scholars.

Keywords: Corpus-based study, lexical bundles; physical sciences; research abstracts; social sciences.

INTRODUCTION

English is the international lingua franca; it is used for different purposes in various domains of life worldwide. Education is one of the areas where English holds sway (Hoffman, 2000). English is the language of international media, both electronic and print. It is playing an undeniable role in spreading academic knowledge; also, several reputable journals get published in English. In Pakistan, English is not only used as a second and an official language but also used as the language of higher education as most of the scientific journals get published in English. Therefore, researchers in science need to be competent and proficient in English concerning academic writing purposes, primarily writing for publication.

In writing for publication, the most challenging part is composing a well-established abstract. An abstract is the indispensable and integral part of research: research papers and research theses. For writing an excellent abstract according to the generic required convention, it needs a lot of consideration and hard work to manage it well as it is also known as the face of a thesis or research article. An abstract encapsulates the accompanying article or thesis to promote it. An abstract plays a fundamental role since it represents the summary of the entire research article or thesis. Therefore, it

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is the first thing that readers evaluate to determine if they should read the whole article. Writing the abstract of a scientific research article could be challenging for Pakistani research scholars due to the lack of writing awareness in academic genres, mainly using specific lexical bundles or prefabricated structures.

There are diverse approaches to improve academic writing. The lexical bundle approach is one of the procedures (Conrad & Biber, 2005; Granger, 2014). Lexical bundles (henceforth, LBs) are the essential academic discourse segments; they have been illustrated as specifically constituting, frequent, and significant building blocks in academic writing (Hyland, 2008b). LBs were first studied and defined by Biber et al. (1999) as a bundle or string of words that show a statistical tendency to co-occur and as expressions that are recurrent, regardless of their idiomaticity and regardless of their structural status. For extracting LBs from a corpus, computer-program such as Lancsbox, Antconc, and Wordsmith are considered.

Lexical bundles are fundamental in language production; they play a vital role in academic discourse (Hyland, 2012). LBs frequently exist in academic discourse in opposition to general awareness. In reality, LBs are recognized as indicators of proficiency in academic discourse because of their high presence. Cortes (2004) argues that “competent language use within a register appears to indicate the frequent use of LBs to the point that register use learning conventions may partly consist of learning how to use certain fixed phrases” (p. 398). Therefore, comprehension of LBs is one of the most critical topics for coping well with academic discourse. LBs are an integral component of academic discourse and an essential component of fluent linguistic development (Hyland, 2012); they help form context directly in a given discourse and often add to our sense of coherence in a text (Hyland, 2008a).

In the previous literature, several studies have addressed lexical bundles or prefabricated structures in academic discourse, both in spoken and written language (e.g., Stubbs & Barth, 2003; Biber & Barbieri, 2007; Biber et al., 2004a; Cortes, 2004; Pickering & Byrd, 2008). Lexical bundles in self-study books have also been studied to explore the difference between lexical bundles in these books and bundles in English as a lingua franca (Allan, 2017). However, in the Pakistani context, there is less research on lexical bundles. In research abstracts, they are still not explored. Therefore, the present study aimed to perform structural analysis of prefabricated structures in Pakistani research abstracts of research articles/theses from physical and social sciences.

According to the academic perceptions, the list of lexical bundles employed in Pakistani research abstracts can be significant for scholars to enhance their academic discourse further. Previously conducted studies on lexical bundles emphasize the pedagogical importance of prefabricated structures. According to them, they can be taught to improve academic discourse further. Similarly, the list of lexical bundles provided by this research study can also be fruitful concerning ESP and ESAP, significantly enhancing the composition of research abstracts.

REVIEW OF LITERATURE

In recent decades, corpus linguistics has been preferred for analytical and pedagogical purposes concerning ESP/EAP/ESAP. In particular, corpus linguistics has been preferably considered for analyzing various genres to explore different genres’ distinctive features (Chang & Kuo, 2011; Rutherford, 2005; Swales, 2002). Genre-based corpora-oriented language materials for teaching-learning purposes can be more effective as they are language use instances from real life (Flowerdew, 2002). Learning resources should be focused on the study of the desired discourse genre (Hyland, 2012). Through integrating corpus linguistics into the analysis of various genres, it helps scholars to investigate the specific and unique features of a given discourse, such as lexical bundles, which are the essential subject of this corpus-based study. The present research paper deals with the research article and theses-genre (abstracts: sub-genre) in order to examine lexical bundles, their structural characteristics and to recognize similarities and differences in lexical bundles. This study’s results may be incorporated into EAP/ESAP resources to keep them up-to-date and corpus-informed. Similarly, the generic practice of composing research abstracts can be further improved.

Research abstracts gain considerable attention among the academic community scholars as an integral part of the research articles or theses (Al-Khasawneh, 2017). A well-organized and well-composed abstract will draw more readers and boost the possibilities for indexing and quoting. Research Articles (RAs) and Theses are from the most significant genres that gained substantial

interest in studying the genre (ibid). Research abstracts have become extremely important due to the vast amount of academic information in the world. In discussing abstracts, they are viewed as a readers' door to viewing an article or thesis, selecting journals for making significant contributions, and accepting or rejecting papers at conferences (Lores, 2004). Therefore, recent research publications have a greater chance of being accompanied by abstracts that include an increasing amount of relevant information, which would make it possible for these pieces to be published in globally renowned journals. In sum, abstracts are the most significant parts of the research articles and theses. They need to be given proper attention while writing. This corpus based research study attempted to explore polyword strings or LBs employed in abstracts of research theses and papers from both hard and soft sciences (biology, chemistry, physics, psychology, political science, and English studies) in the Pakistani context.

Lexical bundles were first explored, identified, and defined by Biber et al. (1999). The way is empirical to examine and identify LBs in the corpora using computer software. In the previous literature, there are various terms used for lexical bundles, such as poly-word strings, formulaic sequences, lexical bundles, and prefabricated structures (Wray, 2002). There are different parameters to identify lexical bundles, such as corpus size, frequency of occurrences, and the number of texts files from the same genres (Biber et al., 2004). LBs frequently occur in a single text, also more than expected by chance.

In this particular corpus based research, the theoretical framework provided by Biber et al. (2004) has been used to conduct a structural analysis of the lexical bundles. Concerning structures of LBs, they have been arranged into three main categories regarding their core grammatical features, which have further been divided into more subcategories (Biber et al., 2004). In the three vital categories of various structures of LBs, the first and the second are clausal, and the last third one is the phrasal one. The first group consists of verb phrase fragments like 'you know this is' and 'it's going to be'. The second category comprises dependent clause fragments like 'I want you to' and 'if we look at'. The third group consists of a noun or prepositional phrase fragments like 'the end of the' and 'of the things that'. All these three main groups of structural types of lexical bundles, further divided into seventeen subcategories which can be viewed in Biber et al. (2004). Details of these categories have been given in the research methodology section of this paper.

In discussing the difference between LBs found in academic prose and conversation, Biber et al. (1999) studied the differences between lexical bundles found in conversation and academic prose. They pointed out that, in various academic texts, lexical bundles appear everywhere in academic discourse with specific characteristics. Similarly, in their earlier research, Biber et al. (2004) distinguished between lexical bundles in textbooks classroom teaching, and in conversation and academic prose (Biber et al. 1999). The results found that teaching in the classroom uses more lexical bundles than prose, textbooks, or discourse in academia. On the other side, when seen in conversation that is face to face, classroom instruction uses more stance bundles. As used in scholarly writing, it often utilizes several referential bundles.

Besides, in the academic setting, Biber (2006) examined lexical bundles to explain how lexical bundles vary by genre, register, and discipline. The results found that bundles of a higher density occur in classroom teaching than in discussion and textbooks. Also, lexical bundles were analyzed by Pickering and Byrd (2008) and Stubbs and Barth (2003), and the phraseological characteristics that model specific forms of composed discourse were identified. Moreover, Hyland (2008a) examined lexical bundles in doctoral dissertations, theses of master level, and published research papers in electrical engineering, business studies, applied linguistics, and biology. The results revealed variations in the frequencies and characteristics of polyword strings or LBs used in the various fields above. The outcomes of Hyland contrast with the findings of Simpson-Vlach & Ellis (2010).

Furthermore, in five self-learning English language books and ELF, Allan (2017) conducted the comparative analysis of the effectiveness and frequency of LBs. By establishing and proposing that the collection of LBs be employed in self-study books, she notified the self-study book. Besides, at ELF business meetings, Allan (2016) investigated LBs; suggested a list of bundles to be used in the teaching course of the ELF business language. Besides, Jablonkai (2010) researched LBs in English European Documents (EU) and proposed that the explicit directions of LBs should be part of courses in English for EU purposes.

Furthermore, a study on LBs in medical research papers was carried out by Jalali and Moini (2014). They stressed that teachers should develop and conduct activities that raise knowledge of LBs among students. Furthermore, to improve Iranian students' writing skills, Kazemi, Katiraei and Rasekh (2014) conducted longitudinal research on teaching LBs. Their experiments found promising results on student writing; they concluded that preference should be given to LBs in every writing course. Besides, in cross-disciplinary English study articles, Jalilifar, Ghoreishi & Emam Roodband (2016) generated a list of core LBs and suggested that these valuable LBs could be converted into test and learning materials. The use of LBs by EFL teachers to encourage English L2 was studied by Hajizadeh, Sahragard & Ahmadi (2018). They indicated that writing assignments based on LBs would increase students' involvement in the text and enable the text to be more discussed by learners. Another study showed that LBs could be used by language material developers in teaching and used in teaching-learning processes (Ranjbar, Pazhakh & Gorjian, 2012).

In addition, Taghi, Afghari, and Koosha (2012), which presented a collection of LBs employed in research articles of physics, conducted a research report on LBs. Furthermore, Kashiha and Heng's conducted a study concerning LBs (2014). The primary teaching of LBs that would enable students to learn a language was suggested, and the pedagogical principles of LBs were also emphasized. In Pakistan, LBs in academic discourse are researched by Yousaf and Shehzad (2018). To make it cross-disciplinary, the data used for their research were PhD dissertations from three separate disciplines. In terms of frequency and form, LBs have been seen to vary from discipline to discipline.

In sum, in the above studies, concerning pedagogical implications of lexical bundles have been particularly emphasized. Keeping in view the pedagogical importance of LBs concerning EAP/ESAP, the present study explored lexical bundles structurally used in Pakistani research abstracts of articles and theses from both soft and physical sciences. The present study has the following objectives.

- To identify four-word common core lexical bundles employed in the research abstracts of articles and theses from social and physical sciences.
- To structurally categorize four-word LBs identified in the research abstracts of articles and theses from social and physical sciences.

RESEARCH METHODOLOGY

This corpus based research study is quantitative to identify and analyze four-word common core lexical bundles in research abstracts of articles and theses from social and physical sciences. Corpus linguistics has been used as a methodological framework in this study. The specialized corpus was compiled from the abstracts of research theses and articles from both social and physical sciences.

Research Data

For this study, data has been taken from both social and physical sciences. In social science, English, Political Science, and Psychology were selected. On the other hand, from the physical sciences, Physics, Chemistry, and Biology were selected. In total, 1200 abstracts were selected from both of the disciplines: 600 from each discipline. Within each discipline, 200 abstracts were selected from each subject: 100 from research articles and 100 from research theses. Details of the data have been shown in the following table 1.

Table No. 1 Data: Collection of abstracts

Discipline		Number of Abstracts		
Subjects	Hard Sciences			Total
	Articles	Theses		
Biology	100	100		200
Chemistry	100	100		200
Physics	100	100		200
	Soft Sciences			
English Studies	100	100		200
Political Science	100	100		200
Psychology	100	100		200
Total Number of Abstracts	600	600		1200

Corpus Composition

A specialized corpus was constructed named Pakistani Corpus of Research Abstracts (PCRA). Abstracts of theses and research articles from two disciplines were included: physical sciences and social sciences. Three subjects were selected within each discipline. Physics, chemistry, and biology from physical sciences or hard sciences. On the other hand, from the social sciences, English studies, political science, and psychology were selected. 100 abstracts were selected from each subject. In total, 1200 abstracts were selected. In the PCRA, there are 403077 words, almost 0.4 million. There are 115068 words from articles' abstracts and 288009 words from theses' abstracts. The details of the corpus composition are given in the following table 2.

Table No. 2 Composition of the Corpus: Pakistani Corpus of Research Abstracts

Discipline		Number of Words		
Hard/Physical Sciences				
Subjects	Articles	Theses	Total	
Biology	23316	56286	79602	
Chemistry	18620	49438	68058	
Physics	14550	48935	63485	
Soft/Social Sciences				
English Studies	19265	40781	60046	
Political Science	20607	46530	67137	
Psychology	18710	46039	64749	
Total Number of Words	115068	288009	403077	

There are 191932 words from social sciences and 211145 from physical/natural sciences. Details of the words in the respective corpus have been displayed in the accompanying table 3 and figure 1. Interestingly, a number of words from social sciences and hard sciences seem balanced as there is no considerable difference in the number of words from both of the disciplines, for this figure 1 can be seen.

Table No. 3 Composition of Pakistani Corpus of Research Abstracts

Discipline	Words
Social Sciences	191932
Physical/Natural Sciences	211145
Total Words	403077

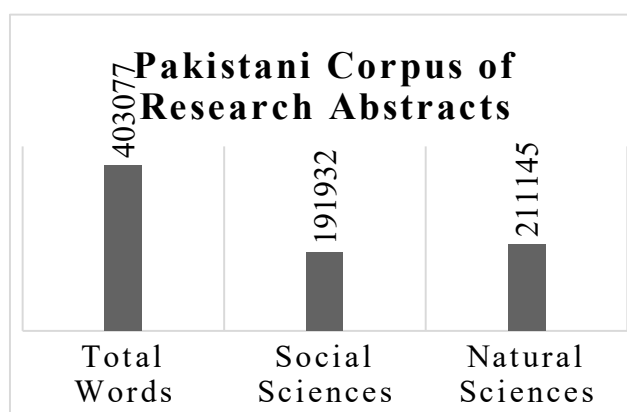


Figure 1 Composition of Pakistani Corpus of Research Abstracts

Identification and Extraction of Lexical Bundles

In discussing the extraction of LBs, AntConc version 3.5.2 was used. In discussing features of this software, Clusters/N-Gram option was operated to get a list of 4-word LBs. N-Gram maximum and minimum size were set on 4. Moreover the minimum frequency of lexical bundles was set on 5. On the other hand, the minimum range was also set at 5, it has also been shown in figure 2. In the previous research studies, cut-off frequency rates 20 to 40 times per million words (PMWs) have been used. Liu (2012), Biber and Conrad (1999), and Hyland (2008) used 20 PMWs cut-off, and Biber and Barbieri (2007), and Biber et al. (2004) used 40 PMWs cut-off. However, in Biber et al. (1999) the

minimal cut-off frequency for three-word LBs is 10 PMWs, and that for four-word LBs is 5 PMWs. The current study is the investigation of four-word LBs. All those lexical bundles were extracted that occur at least five times in the corpus in five different text files.

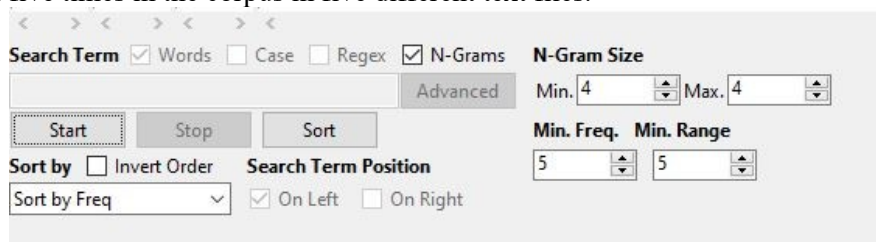


Figure 2 Extraction Criteria of Lexical Bundles

Theoretical Framework

In this research, the structural model devised by Biber et al. (2004) has been employed as a theoretical framework. In this model, there are three main structural categories of lexical bundles, which are further divided into 17 subcategories. The structural model of LBs by Biber et al. (2004) has been presented in the following tables 4, 5 and 6.

Table No. 4 Lexical bundles that incorporate verb fragments

Structures	Examples
(connector +) Ist/Second person pronoun + VP fragment	I am going to, you don't have to
(connector +) 3rd person pronoun + VP fragment	that's is one of the, it's going to be
Discourse marker + VP fragment	I mean you know, you know it was
Verb phrase (with a non-passive verb)	is going to be, take a look at
Verb phrase with a passive verb	is based on the, can be used to
Yes-no question fragment	does that make sense, do you want to
Wh-question fragment	how many of you, what do you think

Table No. 5 Lexical bundles that incorporate dependent clause fragments

Structures	Examples
Ist/2nd person pronoun + dependent clause fragment	you might want to, I don't know if
Wh-clause fragments	what I want to, what's going to happen
If-clause fragments	If we look at, if you have a
(verb/adjective +) to-clause fragment	to be able to, to come up with
That-clause fragments	that this is a, that I want to

Table No. 6 Lexical bundles that incorporate noun phrase and prepositional phrase fragment

Structures	Examples
(connector +) A noun phrase with an of-phrase fragment	one of the things, the end of the
A noun phrase with other post-modifier fragment	the way in which, a little bit about
Other noun phrases expressions	a little bit more, something like that
Prepositional phrases expressions	at the end of, at the same time
Comparative expressions	as far as the, greater than or equal

FINDINGS AND DISCUSSION

By carefully examining the data, the present study found 42 LB types and 659 tokens in the corpus of social sciences. These lexical bundles are common across the subjects of English, political science, and psychology within the respective discipline. Besides, these 42 bundles are also common across abstracts of theses and research articles. In this study, Biber et al. (2004) have been employed as a theoretical framework. The structures of lexical bundles have been categorized according to the respective theoretical framework. Structurally, LBs have been mainly classified by Biber et al. (2004,

p.380) into three categories concerning core grammatical characteristics, which have further been subcategorized into more groups/classes. In these three main structural categories, the first two are clausal, and the third one is phrasal. The first category includes verb phrase fragments like ‘you know this is’ and ‘it’s going to be’. The second category comprises dependent clause fragments like ‘I want you to’ and ‘if we look at’. The third category includes noun or prepositional phrase fragments like ‘the end of the’ and ‘of the things that’. All these three main groups of structural types of lexical bundles, further divided into seventeen subcategories, have been discussed and shown in the tables in the methodology section. The following tables 6, 7 and 8 show the structures which occur in the abstracts of social sciences. Some categories do not occur in the data from social sciences. They have been highlighted by making them bold in the following table. On the contrary, this study also contributed some new structures that are given in the following table 9.

Table No. 6 Lexical bundles that incorporate noun phrase and prepositional phrase fragment

Structures	Examples
(connector +) A noun phrase with an of-phrase fragment	the analysis of the the findings of the the purpose of the the purpose of this findings of the study
A noun phrase with other post-modifier fragment	
Other noun phrases expressions	one of the most
Prepositional phrases expressions	at the same time for this purpose the in the area of in the context of in the development of in the face of in the form of in the light of in the present study of the present study of the role of of the study was of this research is of this study is on the basis of on the other hand with the help of
Comparative expressions	as one of the as well as in as well as the

Table No. 7 Lexical bundles that incorporate dependent clause fragments

Structures	Examples
Ist/2nd person pronoun + dependent clause fragment	
Wh-clause fragments	
If-clause fragments	
(verb/adjective +) to-clause fragment	to find out the
That-clause fragments	that there is a

Table No. 8 Lexical bundles that incorporate verb fragments

Structures	Examples
(connector +) Ist/Second person pronoun + VP fragment	
(connector +) 3rd person pronoun + VP fragment	this study is to
Discourse marker + VP fragment	
Verb phrase (with a non-passive verb)	is an attempt to keeping in mind the
Verb phrase with a passive verb	is based on the
Yes-no question fragment	
Wh-question fragment	

The present study also contributed some new structures into the Biber et al. (2004) categories of structures. The new structures are listed in the following table.

Table No. 9 Lexical bundles with new structures

Structures	Examples
anticipatory it + verb	it is concluded that it was found that it has also been
There and that fragments	there is a need
Verb Phrase or/and noun Phrase + that- Phrase Fragment	the study revealed that the findings revealed that
Noun Phrase + Verb Phrase Fragments	study was designed to study is based on the present study aims the present study is

According to the set parameters of detecting lexical bundles through AntConc software, there are 55 four-word LB types and 950 bundle tokens in physical/natural sciences. The LBs occurring in hard sciences have been displayed in the following tables 10, 11 and 12. However, some categories do not occur in the data; they have been highlighted in bold in the following table 13.

Table No. 10 Lexical bundles that incorporate noun phrase and prepositional phrase fragment

Structures	Examples
(connector +) A noun phrase with an of-phrase fragment	the aim of this the effect of different objective of this study
A noun phrase with other post-modifier fragment	
Other noun phrases expressions	the current research work the present study the the present research work
Prepositional phrases expressions	for the determination of for the treatment of in the form of in the presence of in the present study in the range of in this study the as a result of of the present study

Comparative expressions	of this study is on the basis of on the other hand with the increase in as compared to other as compared to the as well as the
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Table No. 11 Lexical bundles that incorporate dependent clause fragments

Structures	Examples
Ist/2nd person pronoun + dependent clause fragment	
Wh-clause fragments	
If-clause fragments	
(verb/adjective +) to-clause fragment	to find out the to investigate the effect
That-clause fragments	

Table No. 12 Lexical bundles that incorporate verb fragments

Structures	Examples
(connector +) Ist/Second person pronoun + VP fragment	
(connector +) 3rd person pronoun + VP fragment	this study is to
Discourse marker + VP fragment	
Verb phrase (with a non-passive verb)	is one of the
Verb phrase with a passive verb	can be used as can be used for can be used to
Yes-no question fragment	
Wh-question fragment	

In addition, the data contributed some new structural categories into Biber et al. (2004) structural categories. Five new structural categories have been added to the existing structural model of lexical bundles by Biber et al. (2004) that have been given in the following table.

Table No. 13 Lexical bundles with new structures

Structures	Examples
anticipatory it + verb	it was concluded that it was found that it was observed that
Verb Phrase or/and noun Phrase + that-Phrase Fragment	the results revealed that
Noun Phrase + Verb Phrase Fragments	study was designed to study was conducted to study was aimed to samples were collected from
Passive + prepositional-Phrase Fragment	the present study was was carried out by was carried out to was found to be was used for the were compared with the were found to be

Verb + Noun Phrase	investigate the effect of showed the presence of study the effect of
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Concerning lexical bundles, there are 42 lexical bundle types in social sciences and 55 in hard sciences. All the above-mentioned lexical bundles have been analyzed structurally. After successful data analysis, the study found 11 lexical bundle types common across both of the selected disciplines. Common bundles have been mentioned in the following table 14. Apart from common bundles, the rest of the bundles are different from one discipline to another.

Table No. 14 Common lexical bundles in social sciences and hard sciences

S. No.	Bundles in Social Sciences	Bundles in Hard Sciences	Common Bundles
1	as one of the	as a result of	as well as the
2	as well as in	as compared to other	in the form of
3	as well as the	as compared to the	in the present study
4	at the same time	as well as the	it was found that
5	findings of the study	can be used as	of the present study
6	for this purpose the	can be used for	of this study is
7	in the area of	can be used to	on the basis of
8	in the context of	for the determination of	on the other hand
9	in the development of	for the treatment of	study was designed to
10	in the face of	in the form of	this study is to
11	in the form of	in the presence of	to find out the
12	in the light of	in the present study	
13	in the present study	in the range of	
14	is an attempt to	in this study the	
15	is based on the	investigate the effect of	
16	it has also been	is one of the	
17	it is concluded that	it was concluded that	
18	it was found that	it was found that	
19	keeping in mind the	it was observed that	
20	of the present study	objective of this study	
21	of the role of	of the present study	
22	of the study was	of this study is	
23	of this research is	on the basis of	
24	of this study is	on the other hand	
25	on the basis of	showed the presence of	
26	on the other hand	study the effect of	
27	one of the most	study was aimed to	
28	study is based on	study was conducted to	
29	study was designed to	study was designed to	
30	that there is a	the aim of this	
31	the analysis of the	the current research work	
32	the findings of the	the effect of different	
33	the findings revealed that	the present research work	
34	the present study aims	the present study the	
35	the present study is	the present study was	
36	the purpose of the	the results revealed that	
37	the purpose of this	this study is to	
38	the study revealed that	to find out the	
39	there is a need	to investigate the effect	
40	this study is to	was carried out by	
41	to find out the	was carried out to	

42	with the help of	was found to be
43		was used for the
44		were compared with the
45		were found to be
46		with the increase in

CONCLUSION, IMPLICATIONS AND RECOMMENDATIONS

This research study attempted to explore LBs in Pakistani research abstracts of theses and articles from social sciences and physical sciences. A specialized corpus was constructed from the selected abstracts. AntConc software was utilized to extract lexical bundles. This research study found 42 four-word LBs in the social sciences corpus and 55 in the physical sciences corpus. Besides, 11 common core lexical bundles have been found in both of the disciplines. All lexical bundles found in both of the corpora have been analyzed structurally. The present study also contributed some new structures into the Biber et al. (2004) model. On the other hand, some structures in the theoretical framework were not found in the data. Recommendations for future researchers have been given at the end.

In the existing research studies on LBs, while discussing implications, special focus is on the usage of LBs in the pedagogical practices. The explicit teaching of lexical bundles can significantly enhance learners' academic discourse. Indeed, some of the previous study reports, such as, Jones and Haywood (2004), Cortes (2006), Byrd and Coxhead (2010), highly encouraged the use of LBs as the basis for content design and curriculum design. As these typical LBs occur in Pakistani research abstracts, the findings/results are corpus-informed (LBs list). As Cortes (2006) conducted an experimental analysis to assess the impact of the usage of LBs in language teaching (LT) and Jones and Haywood (2004) have assessed the effectiveness of LBs in teaching and learning. They decided on the pedagogical relevance of lexical bundles.

In light of the findings of this study, a variety of tests may be designed to determine the level of English language ability possessed by students by using the list of LBs provided. The list of LBs provided by this research may be used to build additional reading and writing resources for students to use in completing a variety of activities and exercises related to reading and writing.

Besides, if students for research abstracts learn these typical LBs, their hearing awareness and speech coherence may significantly improve as LBs successfully lead to four language skills. Also, LBs may be taught at the phrasal level: sentences/chunks for learners. Learners are typically taught words individually. If LBs are introduced, all four language skills may be successfully improved. As a consequence, learners will be knowledgeable and good enough to grasp well what they learn and will be willing to generate the intellectual discourse they desire.

Also, the list given by this study might be valuable for learners in different academic writing tasks. As academic composition is difficult task, students need to learn it in order to perform well in academic discussion; Biber (2006) and Swales and Feak have emphasized the same issue (2012). The usage of LBs allows learners to generate correct bits of discourse (Millar, 2011).

A more practical application of this analysis, the list of common bundles given by this analysis, can be put into fair use when the EAP curriculum is planned. Curriculum designers can incorporate recurring LBs and create blocks of academic discourse. Reading and writing abilities of learners will increase as a result of using LBs. The instruction of LBs not only enables students to produce rapid and accurate academic discourse, but it also serves to improve students' understanding, and it assists students in reading and interpreting a variety of text types (Wray, 2002). The final pedagogical suggestion is that a connection must be developed between LBs. Further relative LBs may be created to be added to the list given by this research study, such as on the other hand, in the other hand, on the other side, etc.

Since only four-word lexical bundles were investigated for this particular research project, it could be beneficial to analyze three-, five-, and six-word lexical bundles in further work. Similar to how the current study explored lexical bundles in research abstracts, future scholars may likewise analyze lexical bundles in research articles. Other parts of research articles and theses, such as the introduction, the literature review, the conclusion, and so on, may also be taken into account. In the course of their investigation of lexical bundles, future scholars may also use a variety of textbooks. In addition, a controlled experiment may be carried out as a part of a research study in order to determine whether or not the teaching of lexical bundles in relation to academic English is successful.

REFERENCES

- Al-Khasawneh, F. M. (2017). A genre analysis of research article abstracts written by native and non-native speakers of English. *Journal of Applied Linguistics and Language Research*, 4(1), 1-13.
- Allan, R. (2016). Lexical bundles in ELF business meetings. *The Linguistics Journal*, 10(1), 141-163.
- Allan, R. (2017). From Do You Know to I Don't Know: An Analysis of the Frequency and Usefulness of Lexical Bundles in Five English Language Self-Study Books. *Corpus Pragmatics*, 1(4), 351-372.
- Biber, D. (2006). *University language: A corpus-based study of spoken and written registers*. Amsterdam, Netherlands: John Benjamins.
- Biber, D., & Barbieri, F. (2007). Lexical bundles in university spoken and written registers. *English for Specific Purposes*, 26(3), 263-286.
- Biber, D., Conrad, S., & Cortes, V. (2004). If you look at...: Lexical bundles in university teaching and textbooks. *Applied Linguistics*, 25(3), 371-405.
- Biber, D., Johansson, S., Leech, G., Conrad, S., & Finegan, E. (1999). *The Longman Grammar of Spoken and Written English*. London, UK: Longman.
- Byrd, P., & Coxhead, A. (2010). On the other hand: Lexical bundles in academic writing and in the teaching of EAP. *University of Sydney Papers in TESOL*, 5, 31-64.
- Chang, C. F., & Kuo, C. H. (2011). A corpus-based approach to online materials development for writing research articles. *English for Specific Purposes*, 30(3), 222-234.
- Conrad, S. M., & Biber, D. (2004). The frequency and use of lexical bundles in conversation and academic prose. *Lexicographica*, 20, 56-71.
- Cortes, V. (2004). Lexical bundles in published and student disciplinary writing: Examples from history and biology. *English for Specific Purposes*, 23(4), 397-423.
- Cortes, V. (2006). Teaching lexical bundles in the disciplines: An example from a writing intensive history class. *Linguistics and Education*, 17, 391-406.
- Flowerdew, J. (2002). Genre in the classroom: A linguistic approach. In Johns, A. M. (Ed.), *Genre in the classroom: Multiple perspectives* (pp. 91-104). Mahwah, NJ: Lawrence Erlbaum.
- Granger, S. (2014). A lexical bundle approach to comparing languages: Stems in English and French. *Languages in Contrast*, 14(1), 58-72.
- Hajizadeh, R., Sahragard, R., & Ahmadi, A. (2018). How can EFL teachers use lexical bundles to promote English L2? *International Journal of Research in Humanities, Arts and Literature*, 6(5), 279-294.
- Hoffman, C. (2000). The spread of English and the growth of multilingualism with English in Europe. In J. Cenoz & U. Jessner (Eds.), *English in Europe: The acquisition of a third language* (pp. 1-21). Clevedon, UK: Multilingual Matters.
- Hyland, K. (2008a). As can be seen: Lexical bundles and disciplinary variation. *English for Specific Purposes*, 27(1), 4-21.
- Hyland, K. (2008b). Academic clusters: Text patterning in published and postgraduate writing. *International Journal of Applied Linguistics*, 18(1), 41-62.
- Hyland, K. (2012). Bundles in academic discourse. *Annual Review of Applied Linguistics*, 32, 150-169.
- Jablonkai, R. (2010). English in the context of European integration: A corpus-driven analysis of lexical bundles in English EU documents. *English for Specific Purposes*, 29(4), 253-267.
- Jalali, Z. S., & Moini, M. R. (2014). Structure of lexical bundles in introduction section of medical research articles. *Procedia-Social and Behavioral Sciences*, 98, 719-726.
- Jalilifar, A., Ghoreishi, S. M., & Emam Roodband, S. A. (2016). Developing an inventory of core lexical bundles in English research articles: A cross-disciplinary corpus-based study. *Journal of World Languages*, 3(3), 184-203.
- Jones, M., & Haywood, S. (2004). Facilitating the acquisition of formulaic sequences: An exploratory study in an EAP context. In N. Schmitt (Ed.), *Formulaic sequences* (pp. 269-291). Amsterdam, Netherland: John Benjamins.

- Kashiha, H., & Heng, C. S. (2014). Structural analysis of lexical bundles in university lectures of politics and chemistry. *International Journal of Applied Linguistics and English Literature*, 3(1), 224-230.
- Kazemi, M., Katiraei, S., & Rasekh, A. E. (2014). The impact of teaching lexical bundles on improving Iranian EFL students' writing skill. *Procedia-Social and Behavioral Sciences*, 98, 864-869.
- Lores, R. (2004). On RA abstracts: From rhetorical structure to thematic organization. *English for Specific Purposes*, 23(3), 280-302.
- Millar, N. (2011). The processing of malformed formulaic language. *Applied Linguistics*, 32(2), 129-148.
- Pickering, L., & Byrd, P. (2008). Investigating connections between spoken and written academic English: Lexical bundles in the AWL and in MICASE. In D. Belcher & A. Hirvela (Eds), *Oral/Literate connection: Perspective on L2 speaking, writing and other media interactions* (pp. 110-132). Ann Arbor, MI: University of Michigan Press.
- Ranjbar, N., Pazhakh, A., & Gorjian, B. (2012). The effect of lexical bundles on Iranian EFL learners linguistic production fluency. *International Education Studies*, 5(4), 243.
- Rutherford, B. A. (2005). Genre analysis of corporate annual report narratives: A corpus linguistics-based approach. *The Journal of Business Communication*, 42(4), 349-378.
- Simpson-Vlach, R., & Ellis, N. C. (2010). An academic formulas list: New methods in phraseology research. *Applied Linguistics*, 31(4), 487-512.
- Stubbs, M., & Barth, I. (2003). Using recurrent phrases as text-type discriminators: A quantitative method and some findings. *Functions of language*, 10(1), 61-104.
- Swales, J. M. (2002). Integrated and fragmented worlds: EAP materials and corpus linguistics. In Flowerdew, J. (Ed.), *Academic discourse* (pp. 150-164). London, UK: Routledge.
- Swales, J. M., & Feak, C. B. (2012). *Academic writing for graduate students: Essential tasks and skills*. Ann Arbor, MI: University of Michigan Press.
- Taghi, M.F., Afghari, M., & Koosha, M. (2012). Analysis of four-word lexical bundles in physics research articles. *Advances in Digital Multimedia*, 1(3), 134-139.
- Wray, A. (2002). *Formulaic language and the lexicon*. Cambridge, UK: Cambridge University Press.
- Yousaf, M & Shehzad, W. (2018) Prevalence of prefabricated structures in academic discourse: A corpus-based study. *International Journal of English Linguistics*, 8(5), 297-306.