Epistemic Lexical Bundles in Applied Linguistics Literature Reviews: A Corpus-Based Study of Expert and Student Writing

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Abstract

Lexical bundles, recurring multiword sequences, are often regarded as the foundational elements of discourse, serving crucial functions in language. Acknowledged as integral to fluent linguistic expression, these bundles play a pivotal role in conveying evaluations, opinions, and attitudes in both spoken and written communication. Despite their significance in articulating personal and professional assessments, the utilization of lexical bundles in the review genre remains a relatively unexplored area of study. This paper aims to explore the use of epistemic lexical bundles within the context of applied linguistics literature reviews, comparing two distinct groups of writers: experts and student writers. Through a corpus-based contrastive analysis conducted on the Expert Literature Review Corpus (ELRC) and the Malaysian Literature Review Corpus (MLRC), four-word lexical bundles were automatically generated using Wordsmith Tools 6.0 (Scott, 2012). The identification of Epistemic Personal and Impersonal lexical bundles followed the categorizations of Epistemic Stance Bundles proposed by Biber et al. (2004). The findings reveal noticeable differences in the preferences of experts and student writers regarding the use of Epistemic bundles,

particularly the absence of subcategory Personal bundles in the learner corpus. However, some shared bundles suggest a certain degree of alignment in writing style, vocabulary, and expression of epistemic stance between the two groups when reviewing existing literature. These insights carry implications for academic writing, emphasizing the necessity for further exploration in this domain.

Keywords: Epistemic lexical bundles, Literature review writing, Experts, Student writers, Corpus-based contrastive analysis

1. Introduction

Review genres serve as critical platforms where writers express their perspectives, convey their commitments, and establish their credibility (Hyland & Diani, 2009). According to Zou and Hyland (2020), review genre can be defined as a family of academic genres that are written with the explicit purpose of evaluating research, texts, and contributions of fellow academics. This family of genres includes traditional book reviews, book review articles, review articles, book blurbs, and literature reviews in research articles (Hyland & Diani, 2009; Hsiao, 2019; Zou & Hyland, 2020). Within the academic discourse landscape, literature reviews hold a critical role in scholarly articles, theses, and dissertations. They function to synthesize and appraise relevant research, offering a comprehensive understanding of a specific topic. Furthermore, literature reviews justify the significance of research, distinguishing between what has been explored and what remains to be investigated (Hart, 1998; Kwan, 2006). By linking previous studies to the present study and critically evaluating prior works, writers could justify gaps to be addressed and underscore the relevance and significance of their own study.

Despite their integral role in advancing knowledge, it is noteworthy that studies focusing specifically on the linguistic features and discourse strategies within the literature review genre are surprisingly limited. One area that remains underexplored involves the examination of multi-word expressions, also known as 'n-grams,' 'fixed expressions,' 'formulaic language,' and 'lexical bundles' (Biber et al., 1999; Chen & Baker, 2010; Cortes, 2004; Wray, 2000). According to Chen and Baker (2010), lexical bundles are sequences of words identified through a corpus-driven approach with specified frequency and distribution criteria. These recurrent sequences constitute fixed multi-word units with pragmatic and discourse functions recognized and used by speakers or writers within specific contexts. Moreover, these multi-word expressions have a significant impact on contributing to the distinction of registers and shaping text meanings, including literature reviews (Hyland, 2008). Research demonstrates that certain words frequently co-occur, forming strings or bundles that act as foundational building blocks for various types of texts (Biber et al., 2004). For example, expressions like 'as a result of' and 'it should be noted' characterize academic registers (Hyland, 2008).

Previous studies have also emphasized that these recurrent word combinations serve specific functions, such as referential, organizational, or interpersonal functions, contributing to the organization and meaning of discourse (Biber et al., 2004; Hyland, 2008; Hyland, 2012; Shirazizadeh & Amirfazlian, 2021; Zhang et al., 2021). Certain multi-word expressions, such

as 'it is important to' and 'is more likely to', are employed by writers to convey their personal opinions and assessments, thereby shaping the meanings of the texts. Wright (2019) notes that writers who successfully comprehend and compose texts using lexical bundles correctly are likely to be perceived as fluent readers or writers of that language. Despite the significant influence of lexical bundles in academic writing, the intricacy of these multiword structures poses challenges for new academic writers to master (Wright, 2019). For example, while Epistemic stance bundles can convey either certainty or uncertainty, most Personal bundles tend to express uncertainty, whereas Impersonal bundles indicate varying degrees of certainty. This distinction can pose challenges for student writers when assessing the certainty of information in certain claims and propositions.

While much is known about lexical bundles, there remains a research gap in terms of in-depth exploration and detailed descriptions of Epistemic stance bundles used by experts and student writers within the domain of literature review texts in the field of applied linguistics. Therefore, this study aims to explore the use of Epistemic lexical bundles by expert writers and student writers in applied linguistic literature review texts. Additionally, the study seeks to compare and contrast the similarities and differences found in the utilization of Epistemic stance bundles by expert writers and student writers in terms of the Personal and Impersonal roles they play in applied linguistic literature review texts.

2. Literature Reviews

Lexical bundles, often called recurring word combinations, are important units of analysis in several linguistic fields and play a vital role in language use. According to Biber and his colleagues, lexical bundles are repeating word combinations that occur more frequently than would be predicted by chance (Biber et al, 1999). Lexical bundles are more precisely defined by Cortes (2004) as extended collocations, which are word sequences consisting of three or more words that statistically co-occur in a register. She also underlines that lexical bundles are defined by their frequency of occurrences; a bundle must occur more than 20 times in a million words to be considered one (Cortes, 2004). However, this criteria can change based on the specific study being conducted.

Lexical bundles can be categorized in several ways based on their structures and functions. Hyland (2008) proposes that lexical bundles can be divided into three categories: participant-oriented bundles, which focus on the writer/reader aspects of the discourse; text-oriented bundles, which organize the text or argument; and research-oriented bundles, which describe research experiences. On the other hand, lexical bundles are classified by Biber et al. (2004) based on their discursive roles, which include stance expressions, discourse organizers, and referential expressions. Stance bundles serve as linguistic tools employed by writers to articulate their attitudes or assessments about certain propositions. There are two categories of stance bundles including Epistemic and Attitudinal or Modality. Biber (2006) defines Epistemic stance as the expression of personal feelings and assessments related to the certainty, uncertainty, or likelihood of information presented in discourse. It conveys the speaker's or writer's perspective on the veracity, reliability, or truthfulness of a proposition, indicating their level of confidence or doubt regarding the information being

discussed. This can be done explicitly (Personal Epistemic Stance) or implicitly (Impersonal Epistemic Stance). Discourse organizers play a crucial role in elucidating relationships between preceding and subsequent segments of discourse. Meanwhile, referential bundles function to directly reference physical or abstract entities within the text or the broader context. These references may serve the purpose of identifying a particular entity or emphasizing a specific attribute, adding depth and clarity to the narrative (Biber & Barbieri, 2007). There are several subcategories associated with each of these main discourse functions as illustrated in the following table:

Table 1. Lexical Bundles' Functional Categorization (Biber et al., 2004, p.384)

Functional Categories	Subcategories	Examples
Stance Bundles	A. Epistemic Stance	
	Personal	*I don't know if, I think it was*
	Impersonal	*are more likely to, the fact that the*
	B. Attitudinal/Modality Stance	
	B1) Desire	
	Personal	*I don't want to, what do you want*
	B2) Obligation/Directive	
	Personal	*you need to know, I want you to*
	Impersonal	*It is necessary to, it is important to*
	B3) Intentional/Prediction	
	Personal	*I'm not going to, are we going to*
	Impersonal	*is going to be, are going to be*
	B4) Ability	
	Personal	*To be able to, to come up with*
	Impersonal	*Is is possible to, can be used to*

Discourse Organizers	A. Topic Introduction/Focus	*in this chapter we, the study of the*
	B. Topic Elaboration/Clarification	*on the other hand, this process is called*
Referential Expressions	A. Identification/Focus	*one of the most, is one of the*
	B. Imprecision	*and things like that*
	C. Specification of Attributes	
	C1) Quantity Specification	*a little bit of, is the amount of*
	C2) Tangible Framing Attribute	*in the form of, the size of the*
	C3) Intangible Framing Attribute	*The nature of the, in such a away*
	D. Time/ Place/ Text Reference	
	D1) Place Reference	*in the United States*
	D2) Time Reference	*at the same time*
	D3) Text Deixis	*as shown in Figure N*
	D4) Multi-functional Reference	*at the end of the*

Numerous comparative and corpus-based studies have been carried out to investigate the application of lexical bundles and potential parallels and/or divergences in various genres, disciplinary domains, and writing proficiency levels. Cortes (2004) discovered that writers in biology research articles employed more lexical bundles than writers in the history field in her study on disciplinary differences in the use of multi-word expressions. When Hyland (2008) looked at how 4-word lexical bundles were used in four academic domains—applied linguistics, business studies, biology, and electrical engineering— he identified disciplinary discrepancies, with some bundles used by experts in one subject not being used by experts in another. He also discovered that authors in the domains of business studies and applied linguistics used lexical bundles to frame, scaffold, and present arguments as an organized arrangement that shows writers' awareness of the discoursal expectations of readers from their disciplines.

Past research investigating the utilization of lexical bundles in the field of applied linguistics has uncovered intriguing yet conflicting insights when comparing experts to learners or student writers. These studies highlight notable features of student writing, including an incomplete mastery of stance expressions (Zhang et al., 2021), a proclivity for employing lexical bundles across a broad spectrum of discursive functions (Jalali, 2013), and a divergence in the selection of bundles compared to published writers (Jalali, 2014). In a different study by Shirazizadeh & Amirfazlian (2021) who compared lexical bundles in theses, articles, and textbooks of applied linguistics, it was found that writers put a strong emphasis on research-oriented bundles as compared to text-oriented bundles and participant-oriented bundles to refer to various dimensions of research content and process, conveying an empirical and objective impression to readers. These bundles play a crucial role in presenting research findings and discussing research methodologies within theses (Shirazizadeh & Amirfazlian, 2021). While there is a wealth of literature comparing various linguistic devices for expressing stance or criticality (Bruce, 2014) and examining lexical bundles in stand-alone literature reviews across diverse fields such as psychology, education, and medicine (Wright, 2019), there remains a scarcity of studies specifically addressing the use of lexical bundles within the review genre. Identifying these gaps and recognizing the limitations of existing studies, this study aims to fill this void by exploring the patterns of lexical bundle usage among experts and student writers in literature reviews within the applied linguistics field. In particular, this study focuses on expressions of Epistemic stance between these two groups of writers, exploring the prevalence of Personal and Impersonal four-word lexical bundles in the context of literature review texts.

3. Problem Statement

Lexical bundles play a crucial role in achieving linguistic fluency, with experienced writers in a field employing specific bundles that may be unfamiliar to novice writers. Despite their importance, new academic writers such as student writers often struggle with the incorporation of these multi-word expressions. Existing studies reveal that student writers tend to use lexical bundles less frequently, and often opt for simpler alternatives (Joharry, 2021). However, a notable gap exists in research concerning the utilization of lexical bundles in literature reviews within the realm of applied linguistics. This study seeks to address this gap by examining how both experts and student writers utilize specific four-word lexical bundles to convey their Epistemic stance—namely, the expression of Personal and Impersonal Epistemic stance. The research aims to provide valuable insights into the effective presentation of Epistemic stance in applied linguistics literature reviews by these distinct groups.

4. Methodology

Two sets of specialized corpora of literature reviews written by experts and student writers were compiled to fit the objectives of the study. The expert corpus, the Expert Literature Review Corpus (ELRC) is the reference corpus, comprises of literature reviews in published research article Introduction sections from three high-ranking linguistics and applied linguistics journals (e.g., English for Academic Purposes (EAP), English for Specific

Purposes (ESP), and Language and Communication (LNC)). Following Lee and Chen (2009), these journal papers were classified as expert compositions due to the stringent quality control measures they underwent. These measures included publication in prestigious journals, meticulous proofreading, rigorous peer review, and thorough editorial processes. Whereas the learner corpus, the Malaysian Literature Review Corpus (MLRC) corpus is the target corpus, consisting of literature review chapters of applied linguistics master theses from three public universities including Univerisiti Teknologi MARA (UiTM), Universiti Kebangsaan Malaysia (UKM), and Univerisiti Putra Malaysia (UPM). Table 2 summarizes the details about the corpora:

Table 2. Number of Texts and Tokens for ELRC and MLRC

Corpora	Number of Texts	Tokens
ELRC	1045	1,264,734
MLRC	90	696,494

Wordsmith Tools 6.0 (Scott, 2012) was used to automatically generate four-word lexical bundles and identify their frequency. It has tools like KeyWords, WordList, and Concord that are used to analyse texts of different kinds and lengths. Using the WordList tool, an index list was compiled to identify lexical bundles. The word clusters or bundles can be automatically generated by imposing several restrictions which involve choosing how many words a bundle should have and how many of each bundle must be found in the corpus. Following Cortes (2004), and Chen and Baker (2010), this study examines only 4-word lexical bundles, as previous studies on academic writing and history writing had focused on this length of expressions. Furthermore, the decision for the cut-off frequency was made based on the small size of corpora whereby, the normalized frequency was set at 5 and must occur in at least 5 five different texts to avoid idiosyncrasies from individual (Chen & Baker, 2010). The tool was also given instruction to stop counting bundles at sentence breaks since a bundle which spans across two sentences is not likely to make sense (Scott, 2015).

Functionally, Biber et al. (2004) categorization of Epistemic Bundles was used to classify the 4-word lexical bundles into two subcategories which are Personal and Impersonal Epistemic bundles. Regular discussions among the researchers were conducted to ensure ongoing alignment in the classification process. Following this categorization, the results have been compared whereby excerpts from the two corpora were selected to serve as examples as well as to examine the similarities and differences of how experts and student writers use Epistemic bundles in the literature review texts.

5. Findings

The findings of this study are explained based on Epistemic Stance Bundles Categorizations proposed by Biber et al. (2004) which classified Epistemic bundles into two subcategories, Personal and Impersonal. Since the total number of words for both corpora are not the same,

the frequency of occurrence for Epistemic Stance Bundles found in ELRC and MLRC were normalized per million words to allow direct comparison. Shared bundles between the two groups of writers are italicised and underlined.

Table 3 shows the comparison of Epistemic Personal and Impersonal lexical bundles identified in ELRC and MLRC. Overall, it can be observed that only experts employed both Personal and Impersonal subcategories under Epistemic Bundles when evaluating the existing literature whereby the student counterparts preferred the use of Impersonal bundles to comment on the status of knowledge of the information presented in the literature.

Table 3. Comparison of Epistemic Personal and Impersonal Lexical Bundles in ELRC and MLRC

ELRC				MLRC			
Personal Bundles	**Texts**	**Norm'd Freq.**	**Prop. (%)**	**Personal Bundles**	**Texts**	**Norm'd Freq.**	**Prop. (%)**
I argue that the	13	10.28	1.24	-	-	-	-
I will argue that	10	9.49	0.96	-	-	-	-
Impersonal Bundles	**Texts**	**Norm'd Freq.**	**Prop. (%)**	**Impersonal Bundles**	**Texts**	**Norm'd Freq.**	**Prop. (%)**
the fact that the	40	34.01	3.83	due to the fact	20	67.48	22.22
to the fact that	25	21.36	3.35	*are more likely to*	17	54.56	18.89
are more likely to	34	31.64	3.25	it can be said	17	37.33	18.89
is likely to be	27	22.15	2.58	can be said that	16	34.46	17.78
it is argued that	20	15.82	1.91	can be seen as	14	35.89	15.56
are likely to be	18	16.61	1.72	it is believed that	14	27.28	15.56
it is possible to	17	13.45	1.63	*the fact that the*	14	25.84	15.56
more likely to be	16	13.45	1.53	can be considered as	14	21.54	15.56
there appears to be	16	12.66	1.53	*it is possible to*	10	17.23	11.11

by the fact that	15	11.87	1.44	*more likely to be*	9	17.23	10.00
is more likely to	14	12.66	1.34	could be said that	6	15.79	6.67
of the fact that	13	10.28	1.24	it could be said	6	15.79	6.67
the fact that these	11	9.49	1.05				
considered to be the	11	8.70	1.05				
it has been found	10	9.49	0.96				
it is likely that	10	8.70	0.96				
may be used to	10	8.70	0.96				
appears to be a	10	7.91	0.96				
from the fact that	10	7.91	0.96				

Only two Personal bundles have been identified in ELRC which were 'I argue that the' and 'I will argue that'. Experts have been observed to be explicit when demonstrating their commitments by emphasizing their personal perspectives through the use of Self-Mention first person pronoun, 'I' and verb 'argue' as indicated in the table. This also implied their direct involvement and presence when expressing criticality in the literature review texts as illustrated below:

In this article *I will argue that* while this semantic analysis may be a correct analysis for the middle GET-passives today, historically we have to include in our grammatical analysis quite detailed knowledge of cultural practices of the time.

ELRC_LNC306

On that ground, drawing on Cameron's (1995) and Duchêne and Heller's (2007) argument that discourses on languages are discourses about other types of issues which take place within the scope of language, *I argue that the* managerial discourse on diversity in an international institution ("diversity talk" according to Moore [2015]) is a discursive terrain for naturalizing more general state political and ideological agendas.

ELRC_LNC229

Furthermore, Experts displayed more variations of Impersonal bundles with a total of 19 different lexical bundles as compared to 12 by the student writers. There were four types of

Impersonal bundles shared by both experts and student writers involving bundles like 'the fact that the', 'are more likely to', 'it is possible to', and 'more likely to be' which indicates a certain degree of similarity in writing style between the two groups of writers in terms of expressions of impersonal stance in literature reviews.

That is, very frequent linguistic items are easily accessed and *are more likely to* be learned, which should mean that learners are more likely to produce these linguistic items than other, less frequent ones; this hypothesis will be tested in the present study.

ELRC_EAP168

Meanwhile, the low proficiency students *are more likely to* be extrinsically motivated in learning English language whereas the high and average proficiency students are intrinsically motivated in learning second language.

MLRC_UiTM30

In terms of language ideology, *it is possible to* see that the speakers' views on their language and culture can vary to extreme opposites.

ELRC_LNC148

From the explanation given, it seems that *it is possible to* learn a language informally and at the same time, the students can enhance on the English skills as well.

MLRC_UKM29

It can also be observed that 'the fact that the' and 'are more likely to' are the two most frequently used Impersonal bundles by experts, appearing in more than 30 texts across the expert corpus. Whereas, 'due to the fact' is the most used Impersonal bundle that occurs in more than 20% of the texts of the learner corpus.

Moreover, a notable difference that could be observed was that experts used the verb 'appear' in four-word lexical bundles which lessened the level of commitment implied in their claims. The bundles involved were 'there appears to be' and 'appears to be a' which surprisingly was not found in the learner corpus.

Among the existing research studies that have examined the expression of a critical viewpoint through written text, *there appears to be* little agreement on either terminology or approaches to defining and operationalizing the underlying construct in research.

ELRC_ESP142

Taken together, *there appears to be*, currently, a mismatch between the calls for research-informed practice in EAP and the practical possibility of achieving it for teachers.

ELRC_ESP235

Furthermore, Impersonal bundles used by experts and student writers were seen to imply uncertainty and possibility through the use of adverbs like 'likely' and nouns like 'possible' in bundles such as 'it is possible to,' 'it is likely that,' and 'are more likely to.' Nonetheless, experts were observed to rely on evidence when expressing their evaluations and perspectives implicitly, using bundles like 'the fact that the,' 'to the fact that,' 'of the fact that,' 'the fact that these,' 'by the fact that,' and 'from the fact that,' often providing citations from previous studies as evidence or reference for their claims.

> Despite *the fact that the* quality of the translation is often regarded as poor in comparison to human translations, the use of MT is now reaching a much wider audience than before (Hutchins, 2006), and the development of more sophisticated MT options is receiving more substantial attention from policymakers (Bellos, 2012).

ELRC_ESP123

> As Hafner (2010) points out, professional legal genres falling into the category of 'lawyering skills' are relatively under researched. Part of this is due to *the fact that the* texts that lawyers write in everyday practice largely form 'occluded genres' (Swales, 1996) that are not as easily accessible as student texts or published documents.

ELRC_ESP81

The study's findings reveal that experts utilize both personal and impersonal approaches to express their critical evaluations regarding the certainty, uncertainty, or likelihood of information presented in literature reviews within the Introduction sections of published research articles. Conversely, student writers tend to favor an impersonal approach, with fewer variations of 4-word lexical bundles when assessing literature.

6. Discussion

In comparing the learner (MLRC) and expert (ELRC) corpora, it is noteworthy that ELRC exhibits a greater frequency of Impersonal bundles than MLRC. This aligns with the findings of Chen and Baker (2010), indicating that lexical bundles in expert-authored academic writing demonstrate a more diverse usage compared to those in student writing. The extensive use of various types of Impersonal bundles by experts in expressing assessments and evaluations during literature reviews is considered indicative of proficient language use within a specific register, particularly in academic writing (Cortes, 2004). Conversely, this underscores a relative lack of fluency or familiarity in the literature review writing of student counterparts.

It is observed that both experts and student writers prefer the use of Impersonal bundles and exercise caution in expressing assessments within literature reviews. This aligns with existing studies indicating that student writers tend to adopt an impersonal stance (e.g., Hyland, 2008; Jalali, 2013; Zhang et al., 2021). However, in this study, despite the alignment in preference

for impersonality, student writers employed fewer Impersonal bundles in their literature reviews compared to experts. This suggests a somewhat reserved approach among student writers in providing critical comments on the status of knowledge presented in literature reviews. It is suggested that students might be hesitant to associate themselves with specific claims or evaluations in this high-stakes genre, as highlighted by Hyland (2008) in his study on lexical bundles and disciplinary variation.

Interestingly, the manner in which experts express impersonality differs from their student counterparts, as certain bundles used by experts, like 'based on the assumption that', 'it is argued that', 'there appears to be', and 'may be used to', were not found in the learner corpus. This implies that experienced writers are cognizant of the effective use of certain nouns and lexical verbs in conveying critical expressions during literature evaluation. The authors' awareness of the objectives in their literature reviews enhances the effectiveness of their expressions and the presentation of arguments, claims, assumptions, and observations, achieved implicitly through the use of Impersonal bundles.

Comparing with other studies, not many Impersonal bundles found in ELRC and MLRC were observed in similar studies, except for certain bundles such as 'the fact that the' and 'to the fact that', which align with Hyland's (2008) and Jalali's (2013, 2014) findings in the applied linguistics field. Bundles such as 'are more likely to' and 'it is possible that', frequently occurring in ELRC and MLRC, are similar to Wright's (2019) findings, suggesting a consistent use of these bundles in stand-alone literature reviews to convey Impersonal stances. While Wright (2019) contends that the lexical bundles identified in his study align with those observed in previous academic writing research, implying the potential existence of a fundamental core set of bundles for written academic prose, it is equally plausible that the similar Impersonal bundles discovered in this study might represent the prevalent lexical bundles for constructing literature review texts.

7. Conclusion

The present study attempts to explore the use of Epistemic Lexical Bundles employed by experts and student writers in literature review texts. The findings implied that student writers could use Personal bundles to emphasize direct involvement and stronger commitment in the arguments made when reviewing the literature. Furthermore, they too could be more versatile by applying a wider variety of Impersonal bundles to critically express their assessments as shown by the experts in their writings. Learners need to also observe certain Impersonal bundles to avoid overuse which could signal limited range of expression, repetitiveness, and lack of precision when providing critical evaluation of the literature. It is hopeful that the findings of the study are beneficial in constructing pedagogical instructions and guidelines for writers in their critical analysis of literature review texts. By understanding how experts and student writers approach the expression of certainty, uncertainty, and likelihood in their evaluations, educators can design targeted instructional materials and methodologies aimed at improving students' ability to engage critically with academic literature.

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