

Syntactic Realisations of Linking Adverbials in EFL Learner Writing: A Cross Proficiency Corpus Analysis

Arwa Aldawood¹

¹ Department of English and Literature, Prince Sattam bin Abdulaziz University, Alkharj, Saudi Arabia

Correspondence: Arwa Aldawood, Department of English and Literature, Prince Sattam bin Abdulaziz University, Alkharj, Saudi Arabia.

E-mail: a.aldawood@psau.edu.sa

Received: May 18, 2026

Accepted: September 18, 2026

Online Published: September 24, 2026

doi:10.5430/wjel.v17n1p68

URL: <https://doi.org/10.5430/wjel.v17n1p68>

Abstract

This study investigates the syntactic realisations of linking adverbials in EFL learner writing across three proficiency levels (B1, B2, and C1). Drawing on a learner corpus of essays, linking adverbials were analysed according to the five structural categories proposed by Biber et al. (2021): single adverbs, adverb phrases, prepositional phrases, finite clauses, and non-finite clauses. The study employed a mixed-methods approach combining quantitative corpus analysis, including normalised frequencies and mixed-effects models, with qualitative concordance analysis.

The findings revealed that all five structural categories occurred across the proficiency levels, although finite and non-finite clauses were comparatively rare. Single adverbs were the most frequently used category, followed by prepositional phrases, whereas adverb phrases occurred less frequently. Significant differences were identified across proficiency levels, particularly between B1 learners and the higher-level groups. Advanced learners (C1) demonstrated greater use of noun phrase structures and more formal written-style linking adverbials, while lower-level learners relied more heavily on personal pronouns and spoken-style linkers such as *now* and *first of all*.

Overall, the findings suggest that increasing proficiency is associated with greater structural sophistication and a gradual shift from spoken-like patterns toward more formal written-like use of linking adverbials.

Keywords: Linking adverbials, writing, EFL learners, syntactic forms, corpus linguistics

1. Introduction

Developing writing proficiency is a fundamental aspect of learning a second or foreign language. Producing a coherent written text requires attention to several linguistic features, particularly the semantic relationships between ideas, which contribute to textual continuity and cohesion (Halliday & Hasan, 1976). Cohesion has been widely recognised as an important factor in facilitating reading comprehension (McNamara, 2001; McNamara, Crossley, & McCarthy, 2010) and supporting coherent cognitive processing during text interpretation (McNamara et al., 2010).

A key feature of academic writing is the ability to express clear relationships between different parts of a text. Writers are expected to indicate how ideas are logically connected, such as when one claim is derived from another, when ideas contrast with or support each other, when examples are provided to clarify a point, or when information is organised in a sequence or list. In English academic writing contexts, these relationships are generally expected to be expressed explicitly through the use of linking adverbials (LAs), including items such as *however*, *in addition*, and *on the other hand*.

Linking adverbials therefore constitute an important component of linguistic and academic development in EFL writing. Despite their significant role in establishing coherence and logical relations within texts, relatively little research has examined their developmental use among Saudi EFL learners across different proficiency levels. The present study aims to contribute to a deeper understanding of this area by investigating the syntactic realisations of linking adverbials in the written production of Saudi EFL learners at different proficiency levels. More specifically, the study examines variations in the use of these syntactic structures across proficiency levels. By exploring the developmental patterns of linking adverbials, the study seeks to provide insights into learners' writing development and to offer pedagogical implications for the teaching of cohesion and coherence in ESL/EFL writing contexts.

2. Linking Adverbials in EFL Writing

Research on linking adverbials has received considerable attention in corpus linguistics and second language writing because of their important role in establishing cohesion and coherence in written discourse (Biber et al., 2004; Biber et al., 2021; Chen & Baker, 2016). Previous studies have shown that the effective use of linking adverbials is closely associated with writing proficiency and development of academic writing skills (Biber et al., 2004).

Within the Arab context, Aziz and Nuri (2021) reported that Arabic EFL learners tended to favour additive and causal linking adverbials and preferred sentence-initial positions. More recently, research on Saudi EFL learners has begun to examine the use of linking adverbials in

greater detail. For example, Alshlowi (2023) found that Saudi high school learners overused listing and contrastive linking adverbials and showed a strong preference for sentence-initial placement. Similarly, Alanazi (2024) demonstrated that the frequency and functions of linking adverbials varied across academic disciplines. Although these studies have advanced our understanding of linking adverbial use among Saudi EFL learners, they have not examined how the syntactic realisations of linking adverbials develop across different proficiency levels. The present study addresses this gap by investigating the syntactic forms of linking adverbials in the writing of Saudi EFL learners at the B1, B2, and C1 proficiency levels.

3. The Syntactic Forms of Linking Adverbials

Carter and McCarthy (2006, p. 257) describe linking adverbials as “a large class that includes single-word and phrasal items,” referring to the structural forms of linking adverbials. According to their classification, single-word forms include items such as *likewise* and *too*, whereas multi-word expressions such as *in addition* and *in particular* are grouped under phrasal forms. However, this classification lacks sufficient precision. More specifically, Carter and McCarthy (2006) place all multi-word linking adverbials within a broad “phrasal/clausal” category without clearly distinguishing between phrasal and clausal structures. Consequently, the boundaries between these categories remain unclear for both language learners and researchers.

In contrast, Biber et al. (2021) provide a more systematic and explicit classification of the syntactic forms of linking adverbials. They identify five major structural categories: single adverbs (e.g., *however*, *nevertheless*, *therefore*), adverb phrases (e.g., *even so*, *more precisely*), prepositional phrases (e.g., *for example*, *on the other hand*, *in conclusion*), finite clauses (e.g., *that is*), and non-finite clauses (e.g., *to conclude*, *to sum up*). Their analysis further shows that “single adverbs” constitutes the most common syntactic form of the linking adverbials, whereas “prepositional phrases” is the second most frequent category across conversation and academic prose (Biber et al., 2021):

In both conversation and academic prose, the majority of linking adverbials are realised by single adverbs. In conversation, almost all linking adverbials are single adverbs. In academic prose, prepositional phrases are also relatively common as linking adverbials.

The present study adopts the five-category classification proposed by Biber et al. (2021) because it provides a more explicit and systematic framework for analysing the syntactic forms of linking adverbials. Representative examples of each category are presented below:

Single adverb – *anyway*, *however*, *nevertheless*, *so*, *though*, *therefore*

Adverb phrases – *even so*, *first and foremost*, *more precisely*

Prepositional phrases—*by the way*, *for example*, *in addition*, *in conclusion*. Finite clauses—*that is*, *that is to say*

Non-finite clauses—*added to that*, *to conclude*

The following examples illustrate each syntactic category of the linking adverbials.

Example 1 illustrates **however** functioning as a single-word adverb:

1. Students were encouraged to be creative in their ideas; **however**, they were not assisted with the conventions of print, the generation of ideas and structure of the texts. (COCA academic written sub-corpus)

In example 2, **even so** is regarded as adverb phrase:

2. Less dramatically, the strong moral imperatives to help a child grow and develop do not apply with the same force to, say, purchased pets, even though many pet owners truly love them. **Even so**, a world in which commodification of children was commonplace might very well erode the strong norms governing the raising of children by blurring the lines between children and pets. (COCA academic written sub-corpus)

In example 3, there is an illustration that **as a result** is a prepositional phrase:

3. Of the remaining 30 articles, six articles were excluded because no confirmed genotype data in both case and control groups were obtained. **As a result**, a total of 24 eligible case-control studies (3,6-28) were enrolled. (COCA academic written sub-corpus)

In example 4, **that is** is a finite clause:

4. // **that is** how I made the decision for myself. (COCA academic written sub-corpus)

The last example shows that **to conclude** is non-finite clause

5. Hearing these arguments, a reader might expect Kaufman **to conclude** that banking systems would function best if governments dispensed with regulation, including prudential regulations, altogether. (COCA academic written sub-corpus)

4. Frequency of the Syntactic Forms of Linking Adverbials in L1 Writing

Yin (2016) investigated the syntactic realisations of linking adverbials across four corpora: WWC, WSC, BNC, and COCA, with particular emphasis on the larger corpora, namely BNC and COCA. The findings revealed that native English writers showed a clear preference for single-adverb linking adverbials over other syntactic forms, such as prepositional phrases and adverb phrases. This tendency suggests that L1 writers favour concise and efficient structures when expressing logical relationships in written discourse. Among the single-adverb

linkers, however, but, and also were identified as the most frequently used items in academic writing and written news.

The findings reported by Yin (2016) are consistent with those of Biber et al. (2021), who likewise observed that single-adverb forms constitute the most frequently used category of linking adverbials in native English writing. These findings also have important pedagogical implications, suggesting that explicit instruction in the effective use of frequent single-adverb linkers may help L2 learners improve the coherence and fluency of their academic writing, particularly in formal written registers.

5. Frequency of the Syntactic Forms of Linking Adverbials in L2 Writing

Several studies have employed learner corpus methodologies to investigate the syntactic forms of linking adverbials in the written production of EFL learners. One notable study is Yin (2016), who examined the use of linking adverbials in both written and spoken English. The data were drawn from the Wellington Corpora of Written and Spoken New Zealand English (WWC and WSC). Yin analysed a random sample of approximately 20,000 words selected from five registers: academic prose, academic lectures, conversation, written news, and broadcast news. The corpus data were manually analysed to identify the syntactic forms of linking adverbials.

The findings from the written corpus revealed that single-word adverbs were the most frequently used form in academic prose, while prepositional phrases represented the second most common category in written English. These results are consistent with those reported by Biber et al. (2021) regarding the dominant syntactic forms of linking adverbials. However, Yin (2016) did not identify any examples of the non-finite clause category in the written data.

Another study focusing on the syntactic forms of linking adverbials was conducted by Costa (2015), who examined the use of linking adverbials in applied linguistics research articles written by native and non-native English speakers. Two corpora were compiled for this purpose: the Corpus of Research Articles Written by Brazilians (CRAB) and the Corpus of Research Articles Written by Native Speakers (CRAN). Quantitative analysis was conducted using the concordancing software AntConc.

The findings demonstrated that single-word adverbs and prepositional phrases were the most frequently occurring syntactic forms in both corpora. Brazilian writers showed a strong preference for single-word adverbs to connect ideas between sentences, whereas native English writers tended to favour prepositional phrases in academic writing. Comparing these findings with those of Biber et al. (2021), Costa (2015) concluded that Brazilian EFL writers generally followed common usage patterns found in English academic discourse. Similar to Yin (2016), Costa's study did not report any examples of linking adverbials functioning as non-finite clauses.

Although these studies have contributed to the understanding of the syntactic forms of linking adverbials, they provide limited discussion of the non-finite clause category. Furthermore, neither study examined how the syntactic forms of linking adverbials vary across learner proficiency levels. Therefore, the present study adopts the five -category framework proposed by Biber et al. (2021), as it offers a more explicit and systematic classification of the syntactic forms of linking adverbials. The study also investigates the frequency of each syntactic form across Saudi EFL learners at different proficiency levels and compares their usage with that of native speakers in the COCA corpus. In doing so, the study aims to provide further pedagogical insights for the effective use of linking adverbials in academic writing.

6. Methodology

This study adopts a mixed-methods design that combines quantitative corpus analysis with qualitative discourse analysis to investigate the use of the syntactic forms of linking adverbials in the academic writing of Saudi EFL learners at the B1, B2, and C1 proficiency levels. The quantitative component focuses on identifying and comparing the frequency of linking adverbial forms across proficiency levels and against a reference corpus. The qualitative component examines their contextual use and structural patterns through concordance analysis, with particular attention to multifunctionality in authentic learner data.

6.1 Learner Corpus

The learner data were drawn from the EF Cambridge Open Language Database (EFCAMDAT) (Geertzen et al., 2013; Huang et al., 2018), which contains written assignments submitted by learners of English. It is a publicly available learner corpus developed by EF Education First and Cambridge University researchers. It is freely available for research purposes and has been periodically expanded through new learner submissions.

The corpus is designed to capture developmental patterns in second language writing across proficiency levels aligned with international frameworks such as CEFR, IELTS, and TOEFL.

EFCAMDAT includes texts across 16 proficiency levels corresponding to CEFR levels from A1 to C2. For the present study, only B1, B2, and C1 levels were selected. Lower levels (below B1) were excluded because pilot inspection showed that texts were very short and contained minimal use of linking devices, which limited their suitability for analysing linking adverbial structures. The C2 level was also excluded because the EFCAMDAT corpus contained only a very limited number of texts produced by Saudi learners at this level. Including such a limited dataset would not have provided a sufficiently reliable basis for statistical comparison or for examining developmental patterns across proficiency levels.

The study focuses specifically on essays written by Saudi EFL learners. The resulting dataset contains approximately 7,023 texts with a total of 660,126 words. The corpus is divided into three sub-corpora: the B1 sub-corpus (467,112 words), the B2 sub-corpus (154,546 words), and the C1 sub-corpus (38,468 words). To ensure valid comparisons across the three learner sub-corpora despite their unequal sizes, all frequencies of linking adverbials were normalised per 1,000 words. Following the exclusion of items that did not function as

linking adverbials in context, the B1 sub-corpus contained 2,841 linking adverbials (6.25 per 1,000 words), the B2 sub-corpus contained 1,352 linking adverbials (6.68 per 1,000 words), and the C1 sub-corpus contained 428 linking adverbials (6.53 per 1,000 words). These normalised frequencies formed the basis for all subsequent quantitative comparisons and statistical analyses.

6.2 Reference Corpus

The Corpus of Contemporary American English (COCA) (Davies, 2008) was used as a reference corpus for comparison. COCA contains over one billion words from multiple genres, including spoken language, fiction, newspapers, magazines, academic writing, television subtitles, blogs, and web texts. For the purpose of this study, the academic writing sub-corpus of COCA was used as the main point of comparison, as it provides native-speaker academic usage of linking adverbials and allows reliable frequency-based comparison across registers.

6.3 Statistical Analysis

Statistical analyses and data visualisations were conducted using R software (R Core Team, 2014). Mixed-effects models were fitted to examine whether differences in the use of linking adverbials across B1, B2, and C1 proficiency levels were statistically significant.

The modelling procedure consisted of three stages. First, the maximal model was specified, including both fixed and random effects. The fixed effects included proficiency level and word count, while the random effects included learner, topic, and grade.

Second, the optimal random-effects structure was determined through a stepwise procedure in which each random effect was removed individually and model fit was compared to the full model. A random effect was retained only if its removal significantly reduced model fit.

Third, the optimal fixed-effects structure was identified by sequentially removing non-significant predictors while evaluating changes in model quality. Only predictors whose removal significantly worsened model fit were retained.

In all stages, model fit was assessed using the Akaike Information Criterion (AIC). Additionally, violin plots were generated to visualise the distribution of linking adverbial frequencies per text across proficiency levels.

6.4 Analysis of Linking Adverbials Structures across Levels

The structural classification of linking adverbials in this study is based on Biber et al. (2021), who distinguish five syntactic categories: single adverbs, adverb phrases, prepositional phrases, finite clauses, and non-finite clauses.

To identify and analyse linking adverbials, the KWIC (Key Word in Context) function in AntConc software (version 4.2.0) was used. All occurrences of linking adverbials in each sub-corpus were extracted and manually examined according to their syntactic category. This enabled a systematic comparison of how learners at different proficiency levels use linking adverbials and how these patterns align or differ across B1, B2, and C1 levels.

The mixed-effects models were used to examine whether statistically significant differences existed among proficiency groups. The results are presented in the Findings.

7. Findings

7.1 Syntactic Forms of Linking Adverbials in EFL Learner Writing

The present study addressed the following research question: *What syntactic forms of linking adverbials are used in essays written by EFL learners at B1, B2, and C1 proficiency levels?* The analysis was based on the five structural categories of linking adverbials proposed by Biber et al. (2021): single adverbs (e.g., *however*, *nevertheless*), adverb phrases (e.g., *first of all*), prepositional phrases (e.g., *for example*, *in addition*, *on the other hand*), finite clauses (e.g., *that is*), and non-finite clauses (e.g., *to conclude*).

Frequency analysis was conducted across the B1, B2, and C1 sub-corpora to examine how the use of these syntactic forms varied across proficiency levels. The results showed that all five categories were present across the three groups; however, finite and non-finite clauses occurred only infrequently in all sub-corpora.

Overall, single adverbs emerged as the predominant syntactic form of linking adverbials in the learner corpus. Prepositional phrases ranked second and were also commonly used alongside single-adverb forms. These results suggest that EFL learners rely primarily on single adverbs and prepositional phrases when expressing discourse relations, while other syntactic forms are considerably less frequent. This pattern is in line with the findings of Biber et al. (2021), who likewise report that single adverbs and prepositional phrases are the most frequent linking adverbial structures in written discourse.

7.1.1 Token Distribution

The analysis of the distribution of the syntactic forms across the learner sub-corpora revealed noticeable variation among the proficiency groups. Table 1 presents the frequencies and percentages of linking adverbials according to their structural categories across the B1, B2, and C1 sub-corpora.

Table 1. Token Distribution of the Linking Adverbials across the Structural Taxonomy (%=Proportion, Freq= Normalised Frequency per 1000 Words)

	B1	B2	C1
Structural types	% (Freq)	% (Freq)	% (Freq)
single adverb	71.44 (4.96)	75 (5.17)	72 (5.17)
adverb phrase	02.70 (0.19)	.02 (0.14)	.01 (0.10)
prepositional phrase	25.95 (1.81)	21 (1.48)	24 (1.76)
finite clause	.00 (0)	0 (0)	.01 (0.07)
non-finite clause	.00 (0.01)	.00 (0.01)	0 (0)
Total	100 (6.97)	100 (6.81)	100 (7.12)

A comparison of the percentages of each structural category across the EFL learner sub-corpora showed that the single-adverb category remained the most dominant form of linking adverbials at the B1, B2, and C1 proficiency levels. The second most frequently occurring structural category in all three sub-corpora was prepositional phrases. Adverb phrases ranked third across the proficiency levels, whereas finite clauses and non-finite clauses appeared only rarely or were entirely absent in some cases.

Consequently, the analysis primarily focuses on the three most frequently occurring categories single adverbs, adverb phrases, and prepositional phrases because of their consistent presence across all proficiency levels. In contrast, finite clauses and non-finite clauses were excluded from further analysis due to their very low frequency in the learner data.

To determine whether the differences observed among the sub-corpora were statistically significant, mixed-effects models were employed. A more detailed explanation of the statistical analysis is provided in the following section.

7.1.2 Structural Categories Analysis of the Linking Adverbials

7.1.2.1 Comparison of Single Adverb of LAs

Consistent with earlier research (Costa, 2015; Yin, 2016), the present study found that EFL learners relied predominantly on single-adverb linking adverbials more than any other structural category in their written production. The distribution of single-adverb linking adverbials across the three proficiency levels is presented in Figure 1:

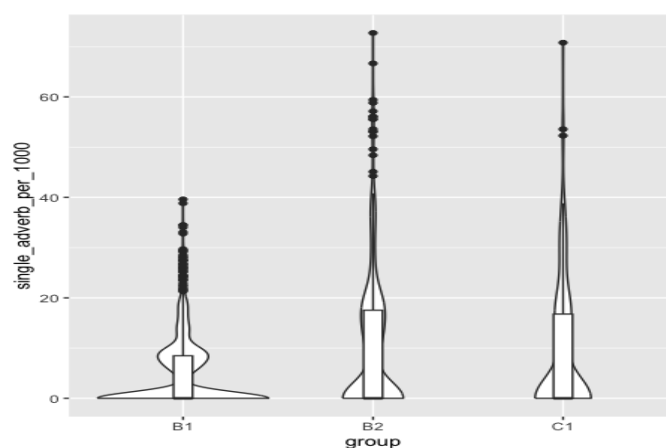


Figure 1. Single Adverb Distribution per Text across B1, B2 and C1 Sub-corpora

Figure 1 illustrates and compares the mean frequency of single-adverb linking adverbials per text across the B1, B2, and C1 sub-corpora. To determine whether the differences among the proficiency levels were statistically significant, mixed-effects models were applied, as presented in Table 2.

Table 2. Mixed-Effect Models Determining the Single Adverb of LAs among B1, B2 and C1 Levels

Fixed effects:					
	Estimate	SE	df	t value	Pr(> t)
(Intercept)	4.73	0.44	68.22	10.60	<.001 ***
Group: B2	5.40	0.44	2133.25	12.16	<.001 ***
Group: C1	4.09	0.82	1872.63	4.98	<.001 ***
Random effects:					
Groups	Variance	SD			
learner	7.05	2.65			
topic	6.57	2.56			
Residual	72.27	8.50			

Table 2 presents the results of the mixed-effects model in which the outcome variable was the normalised frequency of the single-adverb category of linking adverbials. The model included Group as a fixed effect, while Learner and Topic were treated as random effects.

The mixed-effects model revealed significant differences in the use of single-adverb linking adverbials between the B1 and B2 groups, as well as between the B1 and C1 groups. To examine the difference between B2 and C1, the model was restructured by redefining B2 as the reference level. The analysis revealed no statistically significant difference between the B2 and C1 groups ($E = -1.30$, $t = -1.51$, $p = 0.13$). Overall, these findings suggest that proficiency level significantly influenced the use of single-adverb linking adverbials among the learner groups. Table 3 shows the top linking adverbials within the single -adverb category at each level B1, B2 and C1.

Table 3. Frequency per 1000 Words of the Top Linking Adverbials at B1, B2 and C1 Levels (Single-Adverb Category)

linking adverbials	B1	B2	C1
now	0.82	0.80	0.90
finally	0.70	0.84	0.77
first	0.55	0.67	0.67
however	0.57	0.54	0.54

In the present analysis, linking adverbials were included only if they occurred with reasonable frequency within each proficiency level. As noted by Durrant et al. (2024), determining what counts as “reasonably frequent” does not involve a fixed threshold; rather, it requires balancing reliability by avoiding thresholds that are either too low or too restrictive. Accordingly, the present study considered linking adverbials with a normalised frequency higher than 0.50 within each proficiency level to be noteworthy within the single-adverb category.

Among the most frequent single-adverb linking adverbials across the B1, B2, and C1 sub-corpora were *now*, *finally*, *first*, and *however*. One particularly notable item was *finally*, which demonstrated interesting variation across the proficiency groups. Table 4 presents the different structural patterns occurring after the linking adverbial *finally* at the B1, B2, and C1 levels, including combinations with pronouns, noun phrases, imperative verbs, and conditional sentences.

To ensure a balanced comparison across the corpora, and because the C1 sub-corpus contained only 30 occurrences of *finally*, a manual analysis was conducted on 30 concordance lines from each sub-corpus (B1, B2, and the COCA academic writing sub-corpus). For the B1 and B2 sub-corpora, where more than 30 occurrences were available, a random sample of 30 concordance lines was selected. Each occurrence had an equal chance of being included, and the sampled lines were then manually examined to identify the structural pattern following *finally*. Using the same number of concordance lines across all corpora ensured comparability while avoiding bias resulting from unequal sample sizes.

Table 4. Structure of the Linking Adverbial *finally* at B1, B2 and C1 Levels Compared with COCA Writing Sub-corpus within Single-Adverb Category (Freq = actual number)

	B1	B2	C1	COCA writing
Structural form	Freq	Freq	Freq	Freq
finally + noun phrase	0	0	11	27
finally + pronouns	26	25	19	3
finally +imperative verbs	2	1	0	0
finally +conditional sentences	2	4	0	0
Total	30	30	30	30

As shown in Table 4, learners at all proficiency levels used the linking adverbial *finally* followed by personal pronouns. However, only the C1 learners in the present dataset produced instances of *finally* followed by noun phrases. In this study, a noun phrase is defined as a noun or a noun-headed structure that may include determiners and/or modifiers, such as *the major problem* (see Example 6).

6. We must not show any information about trade secrets and internal company structure. Finally, the major problem with social networks is their strength: they encourage open interaction among users. (C1 sub-corpus)

By contrast, B-level learners tended to use *finally* with imperative forms and conditional constructions, as illustrated below:

7. The second thing is making them to cooperate with each other and help the youngest to finish their works. Finally, try to make them enjoy the camp as long as they stay by bringing the favourite entertainment for kids. (B1 sub-corpus)

8. Also, try to turn your enemies into friends by your nobility. Finally, if you have a problem with your boss, try to keep yourself calm and try come up with a solution please both of you and don't let your problem leaks out of his\her office at all because there are many deceptive colleagues who are waiting this chance to get into your good relationship. (B1 sub-corpus)

9. The fourth of my plan is applying my new certificate for same company. Finally, if this company doesn't improve my job, I will make new CV and applying a new job. (B2 sub-corpus)

10. Steer clear of deep emotional problems or trauma. Finally, avoid any issue that may be considered unpleasant, for example, death, illnesses, disasters, or accidents. (B2 sub-corpus)

An examination of *finally* in the COCA academic writing sub-corpus revealed similar patterns to those observed in the learner data, as shown in Table 4. A closer inspection of the concordance lines indicates a clear similarity between C1 learners and native speakers in their use of *finally*. In particular, Table 4 shows that C1 learners, like native speakers, are the only learner group to use *finally* followed by noun phrases, a structure that is also frequent in native academic writing:

11. Then, 1.8 ml 1X BD buffer was added to remove biotin, followed by centrifugation at 300 x g for 7 min. Finally, the cells were

resuspended in 500 µl of 1X BD buffer, followed by addition of equal volume of beads solution. (COCA academic sub-corpus)

The examples suggest that *finally* performs different discourse functions depending on the grammatical structure that follows it. Examples 6 and 11, produced by C1 learners and native speakers respectively, show that *finally* followed by a noun phrase is typically used to present statements or claims about a topic. In contrast, Examples 7–10, produced by B-level learners, occur in instructional contexts where *finally* is followed by imperative or conditional structures.

These differences may partly reflect variation in writing tasks across proficiency levels rather than proficiency alone. While B1 and B2 learners were more frequently required to complete instructional or future-oriented writing tasks, C1 learners more commonly produced argumentative essays, which naturally encourage more elaborated nominal expressions. Therefore, the observed differences should be interpreted with some caution, as task type may have influenced the structural patterns associated with *finally*.

Nevertheless, the greater use of *finally* followed by noun phrases in the C1 sub-corpus is also consistent with previous research on the development of academic writing. Válková and Kořínková (2015) found that advanced L2 writers increasingly employ more complex noun phrases, including pre-modified nominal structures. Similarly, Durrant et al. (2021) argue that complex noun phrases are a defining characteristic of mature academic writing. From this perspective, the occurrence of *finally* followed by noun phrases in the C1 learner corpus may indicate a developmental shift towards more information-dense and academically appropriate writing. However, further research controlling for task type would be needed to determine the extent to which this pattern reflects proficiency development rather than differences in writing prompts.

By contrast, the association of *finally* with imperative and conditional constructions in the B1 and B2 sub-corpora suggests that lower-proficiency learners relied more frequently on directive and instructional discourse. These findings indicate that, as learners' proficiency develops, they appear to move beyond simpler clause-based constructions towards a wider range of structurally more complex and academically appropriate discourse patterns.

Among frequently occurring linking adverbials in the single adverb category, *first* also shows clear variation across proficiency levels. Table 5 presents the structural patterns following *first* at B1, B2, and C1 levels. A manual analysis of 30 randomly selected concordance lines per sub-corpus was conducted to enable comparison across levels.

Table 5. Structure of the Linking Adverbial *first* at B1, B2 and C1 Levels Compared with COCA Writing Sub-corpus within Single-Adverb Category (Freq= Actual Number)

	B1	B2	C1	COCA writing
Structural form	Freq	Freq	Freq	Freq
first +personal pronoun	19	17	5	14
first+ noun phrase	6	8	25	16
first +imperative verbs	1	5	0	0
first +conditional sentences	4	0	0	0
Total	30	30	30	30

Table 5 shows that learners at the C1 level most frequently used the linking adverbial *first* followed either by personal pronouns or, more commonly, by noun phrases. This indicates a clear preference at this proficiency level for more nominal and structurally complex realizations of this adverbial:

12- *Architecture or even houses have built with a strange design. First, the Centre which is a commercial skyscraper located in the business district of Riyadh, Saudi Arabia.* (C1 sub-corpus)

13 - *I have some ideas for future. First, I want to go abroad for six months to strengthen my English.* (C1 sub-corpus)

In contrast, learners at the B1 proficiency level more frequently used the linking adverbial *first* followed by personal pronouns rather than noun phrases. In addition, this adverbial occasionally co-occurred with imperative verbs and conditional sentence structures, although such instances were relatively infrequent. The following examples illustrate its use in the B1 sub-corpus:

14- *Let me explain symptoms of Claustrophobia. First, you might have feeling of anxiety.* (B1 sub-corpus)

15- *I have some complaints about the Blue Cruise Alaska. First, the ship wasn't new and it wasn't a ship cruise; in fact, it was a horrible, shabby little boat.* (B1 sub-corpus)

16- *I will introduce some of the etiquette tips. First, if you are submitting a coffee, a juice, or anything to a Saudi you have to use your right hand.* (B1 sub-corpus)

Similarly, B2 EFL learners employed the linking adverbial *first* followed by personal pronouns, noun phrases, and, less frequently, imperative verb forms. Its usage in the B2 sub-corpus is illustrated below:

17- *But he has so many problems there. First, he had found the service in a trip very bad.* (B2 sub-corpus)

18- *Remedies are more beneficial than using medicine because the weather is very cold, and I suggest selling these remedies. First, the garlic is good to make the immune system of the body very strong.* (B2 sub-corpus)

19- *Follow these instructions to have a fun game: First, collect 10 bottles of plastic and fill them with a little water.* (B2 sub-corpus)

The greater use of the linking adverbial *first* followed by noun phrases at the C1 level, compared with B1 and B2 learners who tend to prefer personal pronouns in this position, may be attributed to their higher level of linguistic proficiency. At this stage, learners

demonstrate a stronger ability to produce complex noun phrases, resulting in more frequent use of nominal structures after *first*. This pattern reflects a more advanced and refined command of English and indicates greater syntactic sophistication in academic writing.

A detailed examination of *first* in the COCA academic writing sub-corpus shows that C1 learners display usage patterns closely resembling those of native speakers. Native writers frequently use *first* followed by either personal pronouns or noun phrases in academic texts, as illustrated in the following examples:

20- *This paper adds to the literature in two major ways. First, we decompose aid and verify the impact of different aid instruments on productivity in Sub-Saharan African states.* (COCA academic sub-corpus)

21- *There are several candidate explanations for the differences between DeDe's (2015) study and our study. First, the divergent results might be attributed to the differences in participants' educational experience.* (COCA academic sub-corpus)

Similar to the sequential linker *finally*, the grammatical patterns associated with *first* used by EFL learners particularly *first + noun phrase* and *first + personal pronoun*—closely resemble those found in native-speaker academic writing. This overlap suggests a strong link between form and discourse function, especially in introducing arguments and organising ideas.

The linking adverbial *however*, one of the most frequent items in the single-adverb category, is also widely used in academic writing (Biber et al., 2021; Yin, 2016). Table 6 presents the structural patterns following *however* across B1, B2, and C1 proficiency levels.

Table 6. Structure of the Linking Adverbial *however* at B1, B2 and C1 Levels Compared with COCA Writing Sub-corpus within Single-Adverb Category (Freq= Actual Number)

	B1	B2	C1	COCA writing
Structural form	Freq	Freq	Freq	Freq
however + personal pronoun	17	23	22	4
however + noun phrase	9	5	6	23
however + anticipatory it + verb/adjective phrase	4	2	2	3
Total	30	30	30	30

Table 6 indicates that, in the EFL sub-corpora, sentences containing the linking adverbial *however* are realised through several structures, including *however* followed by personal pronouns, noun phrases, and anticipatory *it* combined with a verb or adjective phrase, particularly at the B1 and B2 proficiency levels:

22- *Many people reckon that Century is traditional and old. However, it is original and trusted by many people.* (B1 sub-corpus)

23- *My mother-in-law will be very disappointed and heartbroken if we cancel her party and come to your house instead. However, we would really like to invite you and your wife to dinner at our house on Thursday at 8 pm next week.* (B1 sub-corpus)

24- *I trained to be a lawyer at Pennsylvania State University. However, I still have to pass one final test.* (B2 sub-corpus)

25- *Our plan to study a master's degree together in the local college may be paused or even stopped. However, the positive side is that I will be paid a double salary.* (B2 sub-corpus)

Similarly, C1 learners also employed *however* in structurally comparable ways. Their use included *however* followed by personal pronouns, noun phrases, and anticipatory *it* + verb/adjective phrases to express contrast between discourse segments:

26- *I did not take any dessert. I drank fresh juice. However, the fruit was not locally grown.* (C1 sub-corpus)

27- *Although he was gentle, kind and loving, he sometimes became very bizarre. She said that I did not tend to kill him; however, I just wanted to stop him from shouting.* (C1 sub-corpus)

A detailed analysis of concordance lines in the COCA academic writing sub-corpus shows that EFL learners at different proficiency levels partly differed from native speakers in their use of *however*. Although both groups frequently use *however* followed by personal pronouns or noun phrases to signal contrast between discourse segments, native-speaker academic writing showed a stronger preference for noun phrase structures. This tendency is consistent with Durrant and Brenchley (2023), who argue that more proficient writers increasingly rely on complex noun phrase constructions.

The following examples illustrate native-speaker usage in the COCA academic sub-corpus:

28- *It would be very interesting to analyse the impact of sectoral aid on productivity. However, the data on decomposed aid is available only from 2005.* (COCA academic sub-corpus)

29- *Compared with single B doping, using coupled doping methods and increasing the dosage rate of the dopants did not further affect the polymorph of belite. However, they still increased the hydraulic reactivity of belite, though not as significantly as the effect of polymorph.* (COCA academic sub-corpus)

In addition, native-speaker usage also reflects a pattern observed in EFL writing, where *however* is followed by anticipatory *it* + verb or adjective phrase. This structure is commonly used in academic writing (Biber et al., 2021) and serves to express impersonal evaluation (Ädel & Erman, 2012):

30- *The rate of morbidity was independent of the time between surgery and the drainage procedure; however, it is important to note that bleeding risk is likely more important in cases of early drainage.* (COCA academic sub-corpus)

Another frequently occurring linking adverbial in the single-adverb category is *now*. EFL learners generally used *now* followed by the

first-person pronoun *I* in their written texts. This structural pattern was identified as a recurrent feature of learner writing; however, it should be interpreted with caution, as it is likely influenced by the writing tasks and prompts rather than proficiency alone.

The following examples illustrate the use of *now* in the EFL sub-corpora:

31- *I have applied to the director about completing my studies, but he has rejected my application. Now, I have many obstacles.* (B1 sub-corpus)

32- *We were married one year later. Now, I have a baby boy from him.* (B2 sub-corpus)

33- *I hated phone calls, and it was too difficult to text on my old mobile phone. Now, I just need to buy a better battery and get more memory so that I can watch movies and text all night.* (C1 sub-corpus)

Compared with the COCA academic writing sub-corpus, the linking adverbial *now* occurred considerably less frequently in native-speaker academic writing than in the learner corpus. This suggests that Saudi EFL learners rely on *now* more extensively than native writers when organising discourse in academic texts. One possible explanation is that learners use *now* to introduce new stages of personal narratives or explanations, reflecting a style that is less typical of formal academic prose.

This interpretation is consistent with previous research showing that L2 writers often transfer conversational discourse features into written texts (Field & Yip, 1992). Consequently, the frequent use of *now* in the learner corpus may reflect a preference for more speech-like discourse organisation rather than the conventions of academic writing.

Overall, the findings indicate that EFL learners across proficiency levels share several patterns in their use of single-adverb linking adverbials. While items such as *finally*, *first*, and *however* increasingly resemble native-speaker academic usage at higher proficiency levels, *now* remains a characteristic feature of learner writing and appears to reflect a less formal style of discourse organisation.

7.1.2.2 Comparison of Prepositional Phrase of LAs

This section compares the use of prepositional-phrase linking adverbials across the three proficiency groups. Consistent with previous research (Yin, 2016), the present study found that prepositional phrases represent the second most frequently used category of linking adverbials after single adverbs. The distribution of prepositional-phrase linking adverbials per text across the three sub-corpora is illustrated in Figure 2.

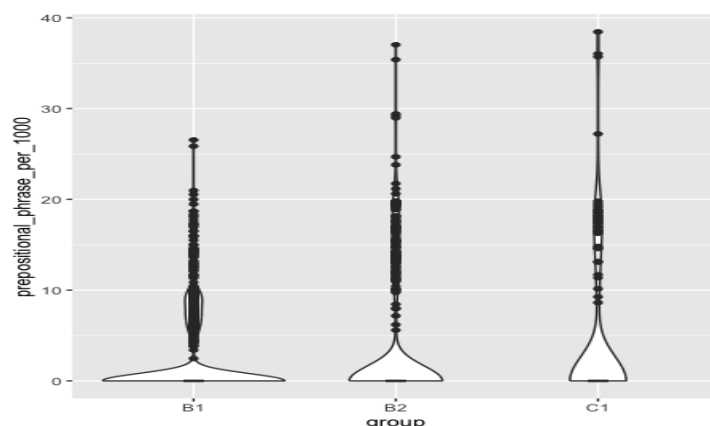


Figure 2. Prepositional Phrase Distribution per Text across B1, B2 and C1 Sub-corpora

Figure 2 illustrates the distribution of linking adverbials belonging to the prepositional-phrase category per text across the B1, B2, and C1 proficiency groups. To determine whether the observed differences among the proficiency levels were statistically significant, mixed-effects models were applied, as shown in Table 7.

Table 7. Mixed-Effect Models Determining the Prepositional Phrase of LAs among B1, B2 and C1 Levels

Fixed effects:					
	Estimate	SE	df	t value	Pr(> t)
(Intercept)	2.14	0.22	66.12	9.34	<.001 ***
Group: B2	0.88	0.24	2033.25	3.64	<.001 ***
Group: C1	1.43	0.44	1851.16	3.22	<0.01 **
Random effects:					
Groups	Variance	SD			
learner	7.05	2.65			
topic	6.57	2.56			
Residual	72.27	8.50			

Table 7 presents the results of the mixed-effects model, which revealed significant differences in the use of prepositional-phrase linking adverbials between the B1 and B2 groups, as well as between the B1 and C1 groups. To further examine differences between B2 and C1, the

model was restructured by setting B2 as the reference level. The results indicated no statistically significant difference between B2 and C1 in their use of linking adverbials within this category ($E = 0.55$, $t = 1.16$, $p = 0.24$). In contrast, the difference between B1 and C1 was particularly pronounced, with a p -value < 0.01 .

For this analysis, only linking adverbials that occurred with sufficient frequency across the proficiency levels were included. Within the prepositional-phrase category, linking adverbials with frequencies above 0.34 were considered particularly noteworthy. Based on this criterion, *for example* and *after that* emerged as the most frequently used items across the learner groups. Table 8 displays the most common linking adverbials in the prepositional-phrase category within the B1, B2, and C1 sub-corpora.

Table 1. Frequency per 1000 Words of the Top Linking Adverbials at B1, B2 and C1 Levels (Prepositional Phrase Category)

linking adverbials	B1	B2	C1
for example	0.50	0.54	0.59
after that	0.35	0.42	0.72

The prepositional-phrase linking adverbial *for example* was the most frequently used item among prepositional linkers in the EFL learner corpora. The following examples illustrate its use across different proficiency levels:

34- *The second step is to start to do everything on time. This is important because it helps you avoid backlog. For example, when you buy new things such as clothes, try to put them immediately in the closet.* (B1 sub-corpus)

35- *We must also recognize that modern technology has both advantages and disadvantages. For example, the smartphone has become a crucial part of our lives.* (B2 sub-corpus)

36- *There are too many commercials on TV in my country. For example, most shows have 20 minutes of commercials in an hour.* (C1 sub-corpus)

A detailed concordance analysis revealed that EFL learners across proficiency levels used *for example* in a manner broadly similar to native speakers in the COCA academic writing sub-corpus. In both datasets, *for example* was primarily used to introduce illustrative examples, clarify ideas, and support explanations, as shown in the following example:

37- *Some plants may be used for antifertility purposes in some regions, while in others they are used for fertility purposes. For example, the stem bark paste of *Hibiscus rosa-sinensis* L. is used as a contraceptive in Orissa, India, while it is used as a therapy against menstrual disorders in Karnataka, India.* (COCA academic sub-corpus)

In the COCA corpus, *for example* occurs most frequently in the academic writing sub-corpus, accounting for approximately 50% of all instances, compared with lower frequencies in spoken language (13%), fiction (2%), magazines (2%), and news (12%). This distribution reflects the strong association of *for example* with academic writing and explains its widespread use across learner groups.

Another frequently used prepositional linking adverbial in the EFL corpora is *after that*. Table 9 illustrates the structural patterns of *after that*, showing its occurrence followed by either personal pronouns or noun phrases in learner writing.

Table 2. Structure of the Linking Adverbial *after that* at B1, B2 and C1 Levels Compared with COCA Writing Sub-corpus within Prepositional Phrase Category (Freq= Actual Number)

	B1	B2	C1	COCA writing
Structural form	Freq	Freq	Freq	Freq
after that +personal pronoun	22	25	17	9
after that+ noun phrase	8	5	13	21
Total	30	30	30	30

A close analysis of *after that* revealed that EFL learners across proficiency levels used this linking adverbial in a broadly similar way to native speakers in the COCA academic writing sub-corpus. In particular, it commonly occurred in the structure *after that* followed by either a personal pronoun or a noun phrase. However, as shown in Table 9, a difference can be observed in the frequency of noun phrase usage, with COCA writers employing noun phrases more frequently than EFL learners. The following examples are drawn from the B1, B2, C1 sub-corpora and the COCA academic writing sub-corpus:

38- *The education system must ensure that students receive sufficient information, and teachers should review previous lessons before introducing new ones. After that, the teachers give an exam to the students.* (B1 sub-corpus)

39- *Nowadays, I am preparing to travel to the US to complete my graduate studies there. After that, I will think about having my own home.* (B2 sub-corpus)

40- *At the very beginning of the meeting, the CEO discussed our new project with Sadara company and emphasized that all employees should give their best in this phase. After that, the CEO discussed the pending payment and possible solutions to this problem.* (C1 sub-corpus)

41- *Stable CHO-K1 cell lines were generated and cultured in the presence of the selection antibiotic until the culture was established. After that, the selector was removed to allow the silencing of the recombinant gene.* (COCA academic sub-corpus)

The examples above indicate a clear relationship between the grammatical structures following *after that* and its discourse function in learner writing. Across proficiency levels, EFL learners consistently used *after that* followed by either personal pronouns or noun phrases to express temporal sequencing, linking events across discourse segments.

Overall, these findings indicate that EFL learners at different proficiency levels demonstrate broadly consistent use of prepositional linking adverbials such as for example and after that. Their usage patterns closely resemble those found in native-speaker academic writing in the COCA corpus. This suggests a clear convergence in the functional deployment of these prepositional linkers and indicates a growing alignment between learner writing and native-speaker academic discourse.

6.1.2.3 Comparison of Adverb Phrase of LAs

The adverb-phrase category was the third most frequently used syntactic category across the learner sub-corpora. It was relatively more common at the B1 level (0.02%) than at the B2 and C1 levels. The distribution of adverb-phrase linking adverbials per text across the B1, B2, and C1 groups is illustrated in Figure 3.

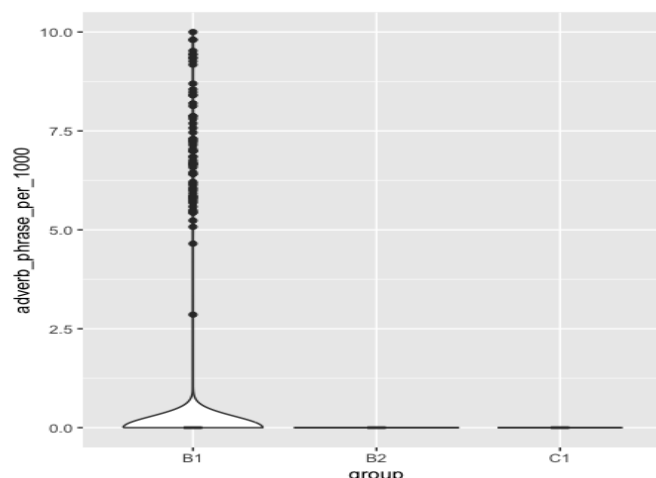


Figure 3. Adverb Phrase Distribution per Text across B1, B2 and C1 Sub-corpora

Figure 3 illustrates that adverb-phrase linking adverbials were used more frequently by B1 EFL learners than by those at B2 and C1 levels. To assess whether the observed differences among the three proficiency groups were statistically significant, mixed-effects models were applied, as presented in Table 10.

Table 10. Mixed-Effect Models Determining the Adverb Phrase of LAs among B1, B2 and C1 Levels

Fixed effects:					
	Estimate	SE	df	t value	Pr(> t)
(Intercept)	0.28	0.05	66.58	5.23	<.001 ***
Group: B2	-0.30	0.05	1378.74	-5.53	<.001 ***
Group: C1	-0.26	0.10	1166.32	-2.64	<0.01 **
Random effects:					
Groups	Variance	SD			
learner	7.05	2.65			
topic	6.57	2.56			
Residual	72.27	8.50			

Table 10 presents the results of the LME model, which indicate a significant difference in the use of adverb-phrase linking adverbials between the B1 and B2 groups, as well as between the B1 and C1 groups. To further examine the difference between B2 and C1, the model was re-estimated with B2 set as the reference level. The results showed no statistically significant difference between B2 and C1 in the use of adverb-phrase linking adverbials ($E = 0.03$, $t = -0.34$, $p = 0.72$).

The adverb-phrase category comprises five linking adverbials: *first of all*, *all in all*, *what is more*, *mind you*, and *anyway*. Among these, *first of all* was the most frequently used item and occurred consistently across all proficiency levels (B1, B2, and C1). In contrast, the remaining linkers appeared only rarely at all levels, as shown in Table 11. As a result, the analysis mainly focuses on the use of *first of all*.

Table 11. Frequency per 1000 Words of the Top Linking Adverbials at B1, B2 and C1 Levels (Adverb Phrase Category)

linking adverbials	B1	B2	C1
First of all	0.18	0.11	0.05
all in all	0.00	0.02	0.02
what is more	0.00	0	0
mind you	0.00	0	0
any way	0	0	0.02

The linking adverbial *first of all* is a listing device typically used to structure written discourse by introducing points in sequence or presenting ordered information (Biber et al., 2021). In the present study, it was used more frequently by B1 EFL learners, whereas it

appeared only rarely in the C1 sub-corpus. In contrast, it was highly prevalent in the COCA spoken sub-corpus, accounting for 82% of occurrences, compared with much lower frequencies in fiction (3%), magazines (4%), news (3%), and written academic texts (4%). A detailed analysis of concordance lines revealed that B-level learners typically used this linker followed by personal pronouns, conditional structures, and noun phrases, as illustrated below:

42- When someone invites you to dinner or a party, I will explain it from both the host's and guest's perspectives. First of all, if you are a guest and have been invited to a friend's house, you should respond as soon as possible, whether you accept or not. (B1 sub-corpus)

43- Let me tell you why you should apply. First of all, the job looks very interesting since you will work with amazing animals, so I urge you to consider it. (B1 sub-corpus)

44- There are some ideas and manners when visiting someone. First of all, if you receive an invitation to a dinner party, make sure that you reply quickly, whether you intend to go or not. (B2 sub-corpus)

45- We can help the community recover from this disaster. First of all, we need financial support to provide sufficient assistance. (B2 sub-corpus)

A similar structural pattern was observed in native-speaker usage in the COCA spoken sub-corpus, as shown in the following example based on concordance analysis:

46- I think there are a couple of things. First of all, they're going to come back on Tuesday, and that's going to be a time of intense focus. (COCA spoken sub-corpus)

The examples from both EFL learners and native speakers demonstrate the use of listing expressions to organise and structure ideas. However, Gilquin and Paquot (2007) note that first of all is more characteristic of spoken language than academic writing, as it is more strongly associated with conversational discourse than formal written registers.

Overall, adverb-phrase linking adverbials occur across all EFL proficiency levels, with higher frequency in the B1 sub-corpus. The most dominant item in this category is first of all, particularly in B1 learner writing. Comparison with the COCA spoken sub-corpus indicates that this linker is strongly associated with spoken discourse. Overall, the use of adverb-phrase linkers in learner writing suggests the influence of spoken-language features in EFL written production, particularly at lower proficiency levels.

8. Discussion

This study examined differences in the use of linking adverbials among B1, B2, and C1 EFL learners and compared their usage with native-speaker patterns in the COCA corpus. Consistent with previous research by Costa (2015) and Yin (2016), the findings showed that EFL learners relied more heavily on single adverb linking adverbials than on other syntactic categories. Mixed-effects models further revealed statistically significant differences across proficiency levels in the use of single-adverb linkers. A more detailed analysis of the most frequent items indicated that C1 learners tended to use linking adverbials such as finally and first followed by more complex noun phrases, whereas B-level learners more commonly used these linkers with personal pronouns, imperative forms, and conditional structures. Similarly, mature writers in the COCA academic writing sub-corpus strongly favoured constructions involving complex noun phrases.

These findings support earlier work by Biber et al. (2021) and Liu and Li (2016), who argue that extensive use of noun phrases is a defining characteristic of academic writing and an indicator of advanced language proficiency. Likewise, Durrant and Brenchley (2023) found that complex noun phrases are closely associated with sophisticated academic discourse. The preference for noun-phrase constructions among C1 learners therefore appears to reflect a shift toward more advanced academic writing practices.

In contrast, the frequent use of personal pronouns and imperative forms after sequential linkers such as finally and first by B-level learners may reflect the nature of the writing tasks, which often required explanation, demonstration, or instruction. This suggests a relationship between discourse function and grammatical structure. For instance, C1 learners and native speakers commonly used the pattern finally + noun phrase to make claims or present statements about a topic, whereas B-level learners frequently used patterns such as finally + imperative form, conditional sentences, or personal pronouns to provide instructions or guidance.

The linker however, which was the most frequent item within the single-adverb category, also showed variation across proficiency levels and between learner and native-speaker writing. Although both groups commonly used however followed by personal pronouns and noun phrases to express contrast, C1 learners and COCA writers demonstrated a stronger preference for noun-phrase constructions. Valkova and Korinkova (2015) similarly observed that advanced writers increasingly employ more complex noun phrases. This observation aligns with broader research on grammatical complexity in second language acquisition. Earlier studies often measured complexity through clause-based indices such as T-unit length and dependent clauses (Connor-Linton & Polio, 2014), whereas more recent work has highlighted the importance of phrasal complexity, including noun-phrase length and density (Byrnes, Maxim, & Norris, 2010; Lu, 2011). Biber (1988) argues that advanced written discourse tends to favour dense phrasal structures rather than clausal elaboration. In line with the register-based framework proposed by Biber et al. (2011), the increasing use of noun phrases by C1 learners suggests a shift toward more informationally dense and academically appropriate writing.

Another notable finding concerns the linking adverbial now. Rather than indicating developmental differences, this pattern is more likely to reflect a shared preference among Saudi EFL learners, possibly influenced by the communicative nature of the writing tasks. This interpretation is consistent with Gilquin and Paquot (2007), who argue that learner writing often incorporates features associated with spoken discourse, and with Hinkel (2005), who observes that L2 writers tend to overuse conversational linking devices in academic texts.

Together, these findings suggest that the distinction between spoken and written discourse markers remains a challenge for EFL learners, even at higher proficiency levels.

The analysis of prepositional phrase linking adverbials produced additional insights. Consistent with Yin (2016), this category was the second most frequent after single adverbs. Mixed-effects models demonstrated significant differences between B1 and both B2 and C1 learners, whereas the difference between B2 and C1 was not statistically significant. This suggests substantial development between beginner and intermediate levels, followed by more gradual refinement at advanced stages.

Within the prepositional-phrase category, for example and after that were the most frequent items. Yin (2016) similarly identified for example as the most common prepositional linker in learner writing. According to Biber et al. (2021), Quirk et al. (1972), Carter and McCarthy (2006), and Huddleston and Pullum (2002), for example functions as a device of apposition, elaboration, and exemplification. Appel (2020) also found that Arabic EFL learners frequently use appositional linkers such as for example in academic essays. The high frequency of this linker in the present study likely reflects its important role in clarifying and supporting arguments. Furthermore, detailed analysis showed that both EFL learners and COCA writers used for example similarly to introduce illustrations and clarify ideas. This supports Yin's (2016) claim that there is little difference between learner and native-speaker usage of this linker. Its high frequency in the COCA academic writing sub-corpus further confirms its strong association with academic discourse.

The linker after that belongs to the semantic category of temporal or sequential linkers (Carter & McCarthy, 2006; Halliday & Hasan, 1976). Ummul and Wey (2023) also identified it as a frequent sequential linker in EFL argumentative writing, supporting the findings of the present study. However, Yin (2016) and Yin and Aphiwit (2022) did not report its frequent use, possibly due to differences in genres, such as newspaper writing. The current findings therefore suggest that after that may be more common in genres requiring chronological or sequential organisation, such as argumentative or instructional writing. Although both learners and COCA writers frequently used after that followed by personal pronouns or noun phrases, native speakers employed noun phrases more extensively, again reflecting the greater phrasal density associated with academic writing (Biber et al., 2021; Liu & Li, 2016).

The findings also show that EFL learners across all proficiency levels generally used prepositional-phrase linkers in ways similar to native speakers in the COCA academic writing sub-corpus. This suggests that learner usage of these linkers approximates native academic writing more closely than some other categories.

The adverb-phrase category displayed a different pattern. Mixed-effects models showed significant differences across proficiency levels, with B1 learners using this category more frequently than B2 and C1 learners. This may indicate that adverb-phrase linkers are more characteristic of lower-level learner writing, whereas single adverbs and prepositional phrases are more typical of advanced proficiency.

Within the adverb-phrase category, first of all emerged as the most frequent linker across all levels. According to Biber et al. (2021), Quirk et al. (1972), Carter and McCarthy (2006), and Huddleston and Pullum (2002), this linker belongs to the semantic category of ordering and enumeration. However, the present analysis showed that it was used far more frequently by B1 learners than by C1 learners. Comparison with the COCA corpus revealed that first of all is particularly common in spoken discourse, and the structures surrounding this linker in learner writing closely resembled those found in the COCA spoken sub-corpus. Gilquin and Paquot (2007) similarly argue that first of all is more characteristic of speech than formal academic writing.

These findings suggest that lower-level EFL learners may transfer spoken-language features into their written production. One possible explanation is the influence of classroom interaction and teacher talk, as learners may internalise and reproduce spoken expressions encountered during instruction. Accordingly, raising learners' awareness of register variation and the appropriateness of specific linkers in academic writing may help them develop more formal and academically appropriate discourse styles

9. Conclusion

In conclusion, the analysis of linking adverbials in EFL learner writing and the COCA reference corpus reveals both shared patterns and systematic developmental differences across proficiency levels. Overall, three structural categories single, adverbs, prepositional phrases, and adverb phrases, were consistently observed across all groups. Single adverbs emerged as the most dominant form, followed by prepositional phrases and then adverb phrases. This overall pattern is consistent with previous research (e.g., Yin, 2016; Biber et al., 2021), which similarly identifies single adverbs and prepositional phrases as the most frequent forms in written discourse, suggesting a broad convergence between EFL learner usage and native-speaker academic writing.

A more fine-grained comparison across proficiency levels revealed clear systematic variation. In the single-adverb category, C1 learners more frequently used sequential linkers such as finally and first followed by more complex noun phrases, resembling patterns observed in COCA academic writing. In contrast, B-level learners tended to rely on simpler constructions, often combining these linkers with personal pronouns or imperative forms. Similarly, with however, both learners and native speakers commonly used personal pronouns and noun phrases to express contrast; however, C1 learners and COCA writers showed a stronger preference for noun-phrase constructions, reflecting more advanced academic-style usage.

In the prepositional-phrase category, significant differences were observed between B1 and the higher proficiency levels (B2 and C1), indicating clear developmental progression from lower to intermediate stages. In contrast, differences between B2 and C1 were minimal, suggesting that refinement at higher levels becomes more gradual. The most frequent items in this category for example and after that were used in broadly similar ways by both EFL learners and native speakers, particularly in providing exemplification and marking temporal

sequence. Nevertheless, native writers tended to employ more noun-phrase-heavy constructions, reflecting greater syntactic density in academic writing.

By contrast, the adverb-phrase category was most prominent at the B1 level, largely due to the frequent use of first of all. This item showed strong similarity to spoken-language patterns in the COCA spoken sub-corpus, suggesting that lower-proficiency learners may rely more heavily on spoken discourse features when producing written texts.

Taken together, these findings suggest that linking adverbial usage in learner writing is shaped by both proficiency development and register awareness. While higher-level learners increasingly approximate native-speaker academic patterns particularly through their increasing preference for more complex noun-phrase structures lower-level learners tend to rely more on spoken-like and less elaborated forms. At the same time, task type and topic effects in the learner corpus may also have influenced these patterns. Therefore, differences across proficiency groups should be interpreted as the combined outcome of language development and writing context rather than as direct deviations from native-speaker norms.

Acknowledgement

This study is supported via funding from Prince sattam bin Abdulaziz University project number (PSAU/2026/R/1448).

Acknowledgments

I greatly appreciate the valuable support provided by the Deanship of Scientific Research, Prince Sattam bin Abdulaziz University, Saudi Arabia under the project number PSAU/2026/R/1448.

Author contributions

Dr. Arwa A. Aldawood was responsible for all the stages of the research, from conceptualizing idea to producing the final draft.

Funding

This study is supported via funding from Prince sattam bin Abdulaziz University project number (PSAU/2026/R/1448).

Competing interests

The author declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Informed consent

Obtained.

Ethics approval

The Publication Ethics Committee of the Sciedu Press.

The journal's policies adhere to the Core Practices established by the Committee on Publication Ethics (COPE).

Provenance and peer review

Not commissioned; externally double-blind peer reviewed.

Data availability statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Data sharing statement

No additional data are available.

Open access

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).

Copyrights

Copyright for this article is retained by the author(s), with first publication rights granted to the journal.

References

- Ädel, A., & Erman, B. (2012). Recurrent word combinations in academic writing by native and non-native speakers of English: A lexical bundles approach. *English for specific purposes* 31(2), 81-92. <https://doi.org/10.1016/j.esp.2011.08.004>
- Alanazi, Z. (2024). An Exploratory Analysis of Linking Adverbials in Research Articles Across Different Disciplines. *Theory and Practice in Language Studies*, 14(4), 1181-1192. <https://doi.org/10.17507/tpls.1404.26>
- Alshlowi, A. (2023). The Usage of Adverbial Connectors by Saudi Female EFL Learners. *Journal of English Language Teaching and Applied linguistics*, 5, 91-95. <https://doi.org/10.32996/jeltal.2023.51.10>
- Appel, R. (2020). An exploratory analysis of linking adverbials in post-secondary texts from L1 Arabic, Chinese, and English writers.

- Ampersand, 7(100070). <https://doi.org/10.1016/j.amper.2020.100070>
- Aziz, A., & Nuri, R. (2021). Iraqi Kurd EFL Learners' Uses of Conjunctive Adverbials in Essays. *Arab World English Journal*, 12(2), 222-237. <https://doi.org/10.24093/awej/vol12no2.15>
- Biber, D. (1988). *Variation across speech and writing*. Cambridge, England: Cambridge University Press. <https://doi.org/10.1017/CBO9780511621024>
- Biber, D., Conrad, S., & Cortes, V. (2004). *If you look at ...: Lexical Bundles in University Teaching and Textbooks*. *Applied Linguistics*, 25(3), 371-405. <https://doi.org/10.1093/applin/25.3.371>
- Biber, D., Gray, B., & Poonpon, K. (2011). Should we use characteristics of conversation to measure grammatical complexity in L2 writing development? *TESOL Quarterly* 45 (1), 5-35. <https://doi.org/10.5054/tq.2011.244483>
- Biber, D., Johansson, S., Leech, G., Conrad, S., & Finegan, E. (2021). *Longman Grammar of Spoken and Written English*. Amsterdam and Philadelphia: John Benjamins. <https://doi.org/10.1075/z.232>
- Byrnes, H., Maxim, H., & Norris, J. (2010). Realizing advanced L2 writing development in a collegiate curriculum: Curricular design, pedagogy, assessment. *Modern Language Journal* 94(Monogr), 1-221. <https://doi.org/10.1111/j.1540-4781.2010.01148.x>
- Carter, R., & McCarthy, M. (2006). *Cambridge grammar of English*. Cambridge, New York: Cambridge University Press.
- Chen, C., & Baker, P. (2016). Investigating criterial discourse features across second language development: Lexical bundles in rated learner essays, CEFR B1, B2 and C1. *Applied Linguistics*, 37(6), 849-880. <https://doi.org/10.1093/applin/amu065>
- Connor-Linton, J., & Polio, C. (2014). Comparing perspectives on L2 writing: Multiple analyses of a common corpus. *Journal of Second Language Writing*, 26, 1-9. <https://doi.org/10.1016/j.jslw.2014.09.002>
- Costa, D. (2015). *Linking Adverbials in Applied Linguistics Research Articles: A corpus-based study [Unpublished master thesis]*. Federal University of Minas Gerais, Brazil.
- Davies, M. (2008). *The Corpus of Contemporary American English (COCA)*. Available online at <https://www.english-corpora.org/coca/>
- Durrant, P., & Brenchley M. (2023) Development of Noun Phrase Complexity Across Genres in Children's Writing. *Applied Linguistics*, 44(2), 239-264. <https://doi.org/10.1093/applin/amac032>
- Durrant, P., Akbas, E., Barbaros, E., & Aldawood, A. (2024). Linking adverbials in children's writing: exploring variation across year groups, genres, and disciplines. *Applied linguistics*, 84. <https://doi.org/10.1093/applin/amae084>
- Durrant, P., Brenchley M., & McCallum, L. (2021). *Understanding Development and Proficiency in Writing: Quantitative Corpus Linguistic Approaches*. Cambridge University Press. <https://doi.org/10.1017/9781108770101>
- Field, Y., & Yip, L. (1992). A Comparison of Internal Conjunctive Cohesion in the English Essay Writing of Cantonese Speakers and Native Speakers of English. *RELC Journal*, 23(1), 15- 28. <https://doi.org/10.1177/003368829202300102>
- Geertzen, J., Alexopoulou, T., & Korhonen, A. (2013). Automatic linguistic annotation of large scale L2 databases: The EF-Cambridge Open Language Database (EFCAMDAT) in Proceedings of the 31st Second Language Research Forum (SLRF), Carnegie Mellon, Cascadia Press.
- Gilquin, G., & Paquot, M. (2007). *Spoken features in learner academic writing: Identification, explanation and solution*. Proceedings of the 4th Corpus Linguistics Conference, University of Birmingham, 27-30.
- Halliday, M., & Hasan, R. (1976). *Cohesion in English*. London: Longman.
- Hinkel, E. (2005). Hedging, inflating, and persuading in L2 academic writing. *Applied Language Learning*, 15(1/2), 29.
- Huang, Y., Murakami, A., Alexopoulou, T., & Korhonen, A. (2018). Dependency parsing of learner English. *International Journal of Corpus Linguistics* 23, 28-54. <https://doi.org/10.1075/ijcl.16080.hua>
- Huddleston, R., & Pullum, G. (2002). *The Cambridge grammar of the English language*. New York: Cambridge University Press. <https://doi.org/10.1017/9781316423530>
- Liu, L., & Li, L. (2016). Noun Phrase Complexity in EFL Academic Writing: A Corpus-based Study of Postgraduate Academic Writing. *The Journal of AsiaTEFL*, 13(1), 48-65. <https://doi.org/10.18823/asiatefl.2016.13.1.1.48>
- Lu, X. (2011). A corpus-based evaluation of syntactic complexity measures as indices of college-level ESL writer's language development. *TESOL Quarterly*, 45, 36-61. <https://doi.org/10.5054/tq.2011.240859>
- McNamara, D. S. (2001). Reading both high-coherence and low-coherence texts: Effects of text sequence and prior knowledge. *Canadian Journal of Experimental Psychology / Revue canadienne de psychologie expérimentale*, 55(1), 51-62. <https://doi.org/10.1037/h0087352>
- McNamara, D., Crossley, S., & McCarthy, P. (2010). Linguistic features of writing quality. *Written Communication*, 27(1), 57-86. <https://doi.org/10.1177/0741088309351547>

- Quirk, R.; Greenbaum, S.; Leech, G., & Svartvic, J. (1972). A grammar of contemporary English. London: Longman. *Journal of Linguistics*, 11(2), 277-280.
- R Core Team. (2014). *R: A Language and Environment for Statistical Computing*. R Foundation for Statistical Computing. Retrieved from <http://www.R-project.org>
- Ummul, A., & Wey, L. (2023). The Use of Linking Adverbials in Malaysian Students' Argumentative Essays. *International Journal of Social Science And Human Research*, 3(12), 416-425. <https://doi.org/10.47191/ijsshr/v3-i12-08>
- Válková, S., & Kořínková, J. (2015). The complex noun phrase in advanced students' writing. In G. J. Bell & K. Nemčoková (Eds.), *From Theory to Practice 2014: Proceedings of the Sixth International Conference on Anglophone Studies* (pp. 77-86). Zlín, Czech Republic: Univerzita Tomáše Bati ve Zlíně.
- Yin, S., & Aphiwit, L. (2022). A Corpus-Based Study of the Use of Temporal Markers in English Writing of Thai EFL Writers. *English Language Teaching*, 15(4), 23. <https://doi.org/10.5539/elt.v15n4p75>
- Yin, Z. (2016). Register-specific meaning categorization of linking adverbials in English. *Journal of English for Academic Purposes*, 22, 1-18. <https://doi.org/10.1016/j.jeap.2016.01.004>