# Corpus-based Exploration of Linking Adverbials of Result: Discovering What ELT Writing Coursebooks Lack

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## ABSTRACT

*The purpose of this study was to examine four linking adverbials (LAs) of result, which are THUS, THEREFORE, HENCE, and SO, in the Corpus of Contemporary American English (COCA), focusing on written academic English. The data was collected from 1,200 concordance lines of the target LAs randomly selected from ACADEMIC genre in COCA. The findings revealed that the most frequent LA was THUS. The second and third most common were THEREFORE and HENCE respectively, while the SO occurred with the least frequency. With regard to the patterns in which these LAs are used, contrary to prior studies that reported SO to be the most frequently occurring in spoken English in the initial position, over 90% of SO in academic written English was found in the middle position. The patterns of the other target LAs in the corpus-informed data also outnumbered those available in the surveyed ELT coursebooks. Pedagogically speaking, it is highly recommended that English teachers incorporate more salient LA patterns based on authentic corpus-based data into their lessons to enhance the textbook information.*

*Keywords: linking adverbial; language corpora; ELT coursebook; academic writing; corpus-based study*

## INTRODUCTION

The linking adverbial (LA), for example *furthermore, however, therefore, for example, in summary,* is considered one of the most crucial factors contributing to cohesion and coherence in English academic writing (Naderi, Keong & Latif, 2013). Professional writers or even learners with less L2-writing experience  need to possess a great number of LAs of various types in their linguistic repertoire in order to produce a logical and well-organised text in which LAs are used to "make explicit the relationship between two units of discourse" (Biber, Johansson, Leech, Conrad and Finegan 1999, p. 765). Of all the common types of LAs in English, LAs of result, like *so, thus, therefore, hence, consequently, accordingly, as a result, as a consequence,* appear the most frequent in academic writing and semantically significant especially in writing cause-and-effect essays, since this type of cohesive devices effectively connects sentences or units of discourse (Biber et al. 1999).

Considering the vital role of LAs of result, English teachers who would like to promote their students' use of this particular LA category should take into account what to be introduced to learners in such a writing class. A major teaching material on which teachers usually depend in the LA writing instruction appears to be widely used in commercial coursebooks. Nevertheless, a survey of those well-known ELT coursebooks has indicated more focus on only a few positions or patterns of use at the expense of other possible frequent ones as discovered in native-speaker corpora. To bridge this research gap, a corpus-based present study on LAs of result concentrating on their various positions which native speakers of English naturally use was undertaken, in comparison with the patterns of use included in writing textbooks.

## DEFINITION OF LINKING ADVERBIAL AND OTHER RELATED TERMS

A variety of terms are used in different studies to refer to linking devices. Liu (2008) divides these terms into two major types. The first type includes *connective adjuncts, connectives, linking adjuncts*, and *logical connectors*, all of which cover linking devices which are adverbials, coordinating conjunctions, and subordinating conjunctions. The second group, which refers to only those devices functioning as adverbials, includes the terms *conjunctive adverbials, conjuncts, connective adverbs*, and *linking adverbials*.

Despite the fact that the aforementioned terms are close in meaning to a certain extent, the present study, following Biber et al., (1999), uses *linking adverbial* (LA), whose function is "to make semantic connection between spans of discourse of varying length" (Biber et al. 1999, p. 558) because of two reasons. First, the word *linking*, as observed by Ha (2015), is clearer and more familiar to readers in general, as opposed to the word *conjunct*. The second reason lies in the fact that the word *adverbial*, compared with *adverb*, is more inclusive as the former can also refer to multi-word linking devices, such as *on the other hand, in contrast, as a result*, etc.

LAs are divided into into six semantic categories (Biber et al. 1999), as follows:
1. Enumeration and addition (e.g., *first, second, third, also*)
2. Summation (e.g., *to conclude, in summary, in conclusion*)
3. Apposition (e.g., *for example, that is*)
4. Result/inference (e.g., *so, therefore, thus*)
5. Contrast/concession (e.g., *however, although, even though*)
6. Transition (e.g., *by the way*)

As the present study is focused on LAs of result, e.g., *so, therefore, thus, hence*, each of the target LAs will be fully discussed in terms of meaning and usage in subsequent sections.

### LINKING ADVERBIALS OF RESULT

LAs of result are commonly used in written and spoken English, which contributes to making connections between two discourses (Biber et al. 1999). The syntactic forms of LAs of result can be separated into two types, i.e., single-word adverbs, and prepositional phrases, which can be found in both general English and specific registers, for instance, written news and broadcast news (Yin 2015). Examples of single-word LAs are *so, thus, therefore, hence, thereby, consequently, accordingly*, while some instances of prepositional phrases are *as a result, in consequence/as a consequence*. The main focus of the present study, however, was on single-word or lexical adverbials *so, thus, therefore,* and *hence* (Yin 2015), which occur with very high frequency in different genres (Biber et al. 1999, Charles 2011). One of the reasons why LAs of result are highlighted in the current study is due to the fact that this type of adverbial is the most frequent in academic writing and is often used to indicate a writer's conclusion and link claims to supporting data (Biber et al. 1999).

With respect to the meaning and usage of each LA of result, Longman Dictionary of Contemporary English or LDOCE (2014) precisely defines these LAs, i.e. *so*, *thus*, *therefore*, and *hence*, as in (a), (b), (c), and (d), illustrated by clear examples in (1), (2), (3), and (4) respectively.

***So***
(a) is used to say that someone does something because of the reason just stated
(1) *I was feeling hungry, <u>so</u> I made myself a sandwich*.

(LDOCE 2014, p. 1736)

### Thus

(b) means as a result of something that you have just mentioned

(2) *Most of the evidence were destroyed in the fire. Thus, it would be almost impossible to prove him guilty.*

(LDOCE 2014, p. 1918)

### Therefore

(c) means as a result of something that has just been mentioned

(3) *Progress so far has been very good. We are, therefore, confident that the work will be completed on time.*

(LDOCE 2014, p. 1902)

### Hence

(d) means for this reason

(4) *The cost of transport is a major expense for an industry. Hence, factory location is an important consideration.*

(LDOCE 2014, p. 861)

Academic writing textbooks generally supply usage of LAs of result in cause-and-effect paragraph or essay writing. Even though most of them provide patterns of use, positions of punctuations, and sample sentences, the information given in these textbooks is not comprehensive enough to represent the authentic use of LAs of result that native speakers commonly use in academic writing.

According to a survey of four series of English academic writing textbooks, namely *Writing to Communicate* (Boardman and Frydenberg 2008), *Ready to Write* (Blanchard and Root 2010), *Engaging Writing: Essential Skills for Academic Writing* (Fitzpatrick, 2011), and *Longman Academic Writing Series* (Oshima and Hogue 2013, Meyers 2013), *so* and *therefore* are the most common LAs of result that all of the coursebooks share. *Thus* was found in only two series, i.e., *Ready to Write* and *Longman Academic Writing Series,* whereas *hence* is present only in the latter. It is worth noting that some other LAs of result, e.g., *as a result, consequently, as a consequence of, for this reason,* are included in the advanced level of some of the textbook series.

It is interesting that the explored textbooks give only some possible patterns of use. Most of the sentence examples of LAs concern *so* and *therefore,* with *so* being a coordinating conjunction placed after a comma, as in (5), whereas *therefore* having two major patterns, i.e. *Therefore*, S + V and ; *therefore*, S + V, as in (6) and (7) respectively.

(5) The country's economy grew*, so* the people's lifestyle improved.

(Fitzpatrick 2011), p. 107)

(6) There was a big snowstorm. *Therefore,* we couldn't go skiing.

(Boardman and Frydenberg 2007, p. 108)

(7) It was raining*; therefore,* we canceled the soccer game.

(Blanchard and Root 2010, p. 112)

As regards *thus*, two patterns, namely *Thus*, S + V and ; *thus*, S + V, as in (8) and (9) respectively, are found in two textbook series.

(8) Factories have fewer recyclables to convert into new products. *Thus,* I am improving air quality.

(Oshima and Hogue 2013, p. 162)


(9) It was raining*; thus,* we canceled the soccer game.

(Blanchard and Root 2010, p. 112)


*Hence* appears to be the least common, as it appears in only one textbook series, i.e. Meyers (2013), without any sample sentence given.


## PREVIOUS STUDIES ON LAs

Several corpus-based studies have so far investigated English LAs of result (e.g. Biber et al. 1999, Charles 2010, Peacock 2010, Yin 2015).

One of the most comprehensive corpus-based studies on LAs is Biber et al. (1999)'s, which investigated six kinds of linking adverbials, including the LAs of result, e.g. *consequently, therefore, thus, so, hence, as a result, in consequence,* etc. Biber et al. compiled a 40-million-word corpus referred to as the Longman Spoken and Written English Corpus (LSWE), comprising 37,244 texts, divided into four core registers, i.e., conversation, fiction, news, and academic prose. Each register consists of 5 million words from spoken English and the other 5 million words from written English. The corpus data of the three registers, by and large, represent both British and American English, with the exception of *news*, the data of which was mainly based on British English.

Biber et al. discovered that *so* is the most common LA in conversation, and *thus* occurs with slightly higher frequency than *therefore* in academic prose. *Hence* appears with the lowest frequency. The LA *so* plays a key role in conversational discourse development. "[*so*] moves the story along, making clear how one event follows from another", remarked Biber et al., (1999 p. 886). By contrast, in academic prose, the LAs *thus*, *therefore*, and *hence* are distributed in various ways. In a nutshell, more than 70% of tokens of *hence* existed in academic texts, whilst *therefore* and *thus* were common in most academic texts. It is worth noting that, semantically speaking, these three LAs are interchangeable in many contexts. Albeit the comprehensive findings of Biber et al.'s (1999) research, the data of which was primarily gathered from general conversations, newspapers and academic prose, less attention has been given to how these adverbials of result are used in other written genres.

Biber et al. (1999) also revealed the positions of LAs based on corpus-informed results. Generally, LAs in conversation and academic prose were used in the initial position with the highest frequency. The second most frequent position in conversation was the final one, while seldom did the LAs occur in the medial position. In academic prose, the findings were opposite because the medial positions turned out to be the second highest in frequency, and LAs in the final position were scarce.

In particular, the LA of result, *so,* as one of the most common LAs in conversation, largely occurred in the initial position, as in (10).


(10) I mean Strawberry's Hill's about --twenty five, twenty minutes, like the station, walk away. *So* it's easier to go to Witham.

(Biber et al. 1999, p. 891)


Two common LAs of result in academic prose, i.e., *therefore* and *thus*, often occur in medial positions, i.e., right after the subject, as in (11) and (12).

(11) Einstein, *therefore,* set to work to try to demolish the accepted version
of quantum mechanics.

(12) The support of Group Communication *thus* requires: the availability of
quantum mechanics.

(Biber et al. 1999, p. 892)

Another medial position of *thus* is between an auxiliary *be* and an adjective phrase, as
in (13).

(13) It is *thus* necessary to generate a model in which the final design is achieved by
iteration and tested against the major constraints of shape, function and
manufacturing.

(Biber et al. 1999, p. 892)

In addition, the LA *therefore* occurs right after a modal in academic prose, as in (14),
and between a verb and a compliment clause, as in (15).

(14) Scientific work to improve further agricultural production must *therefore*
concentrate on the identification of constraints.

(15) It would appear *therefore* that in this particular soil type a gravimetric moisture
content of about 6.0% is required before water becomes generally available to the
eggs.

(Biber et al. 1999, p. 892)

Liu (2008) examined LAs in five different registers, i.e., Spoken English, Academic
Writing, Fiction, News Writing, and Other Writings, in the British National Corpus (BNC).
Following Biber et al. (1999), LAs were classified into four types, i.e., Additive, Adversative,
Causal/Resultative, and Sequential. Speaking is the register in which Causal/Resultative LAs
occurred the most frequently, followed by Academic Writing. On the whole, *so* appeared to
be the most common LA, followed by *therefore, thus, as a result (of), hence, naturally,
accordingly, consequently,* and *as a consequence (of),* respectively. Liu, furthermore,
categorised LAs into three bands according to frequency. In Band 1, the Causal/Resultative
LAs with frequency of 50 and above per million words were *as a result (of), so, therefore,
thus, otherwise,* and *then.* In Band 2, those with a frequency of 10 through 49.99 per million
words were *accordingly, consequently, hence,* and *naturally.* In Band 3, finally, the LAs
occurring under 10 per million words were *all things considered, as a consequence (of),
because of it/ this/ that, in consequence, in such a case/ cases,* and *in that case.*

With a closer investigation into specific genres, 2,685 out of 3,457 were the tokens of
*so* in Speaking, whereas *therefore* (152 tokens) and *as a result (of)* (37 tokens) were the
second and the third in frequency respectively. It is noteworthy that the most common LA in
Academic Writing is not *so* probably because it is a prevalent feature of spoken rather than
written English. As a matter of fact, it was *thus* (583 tokens) and *therefore* (551 tokens) that
occurred with the highest frequency in writing.

Peacock (2010) explored LAs in a corpus of 320 published research articles (RAs)
across eight disciplines, i.e., four sciences (i.e., Chemistry, Computer Science, Materials
Science, and Neurosciences,) and four non-sciences (i.e., Economics, Language and
Linguistics, Management, and Psychology). Forty LAs from each discipline were chosen in a
random fashion. Through an analysis of the form, frequency, function, and disciplinary

variation of the LAs using WordSmith Tool, the findings demonstrated that while LAs of result/inference appeared the most common in academic prose (43%), as shown by Biber et al., (1999), this LA type was found to be the lowest frequent in Peacock's study (Non-science 20% and Science 21%). According to Peacock (2010), it is noteworthy that different genres or registers can lead to differences in the form, frequency, and function that writers use.

Another corpus-based study was undertaken by Charles (2011). The data from two corpora of native English speakers' theses was drawn. The first corpus contained 190,000 words in a soft discipline, i.e., politics, and the other was composed of 300,000 words in a hard discipline, i.e., materials science. As indicated in the major findings, *thus* was the most common LA in both disciplines, followed by *therefore,* which is in line with Biber et al. (1999). The third most common LA in politics was *then,* and the third one in materials science was *hence*. The data from the two corpora showed that the least frequent LAs were *consequence/as a consequence*. Charles, nonetheless, targeted only two different disciplines using corpus-based data from British English. There apparently exist several other disciplines worth researchers' further analysis.

LAs used in news were studied in Yin (2015). The study investigated three aspects of the usage patterns of LA, i.e., the usage pattern of a form, meaning, and positions of LAs. Yin compared the research results between broadcast news and written news from the Wellington Corpora of Spoken and Written New Zealand English (WWS and WSC). Moreover, the entire sub-corpus of radio broadcast news was collected (21,623 words), whereas that of written news reportage was selected at random (21,001 words).

As for the frequencies of LAs in news, spoken news used more explicit connections between two units of meaning than written news (170 vs. 98). With regard to the forms of LA in both registers, single-word adverbs (e.g., *however, thus, also,* etc.) were far more frequently used than prepositional phrases (e.g. *in contrast, as a result, as well*, for instance, etc.), which accords with Biber et al. (1999, p. 884), who revealed more uses of single-word adverbs and prepositional phrases in conversation and academic writing. For this reason, the present study focuses on single-word LAs rather than prepositional LAs. Statistics showed that written news is significantly different from broadcast news in that although single-word adverbs occur with higher frequency in the spoken news, single-word adverbs in written news exhibit more variety (15 types), i.e., *however, then, also, but, thus, so, therefore, and, still, furthermore, rather, or, meanwhile, thereby,* and *anyway* than the spoken news does (8 types), i.e. *however, also, but, so, and, meanwhile, finally,* and *meantime*.

Yin also discovered that the LAs in written news contained nine different meanings, namely *adversative, addition, result, condition, comparison, alternative, conclusion, logical,* and *opposite*. In contrast, the LAs in broadcast news carried eight different meanings, i.e., *addition, adversative, formulaic ending, comparison, result, initiating a topic, listing,* and *signal of evidence*. Furthermore*,* four meanings of LA: *addition, adversative, result, and comparison*, were present in both registers. It is apparent that LAs occur not just in conversation and academic prose but also in news settings.

To the best of the researcher's knowledge, there have been few studies that aim at comparing the patterns of LAs of result found in traditional writing textbooks with those in native-speaker corpora. In response to this need, the present study was set out to address the following research questions and objectives:


RESEARCH QUESTIONS


1. How do the English linking adverbials of result *so, thus, therefore* and *hence* occur in corpus-based written academic American English in terms of frequency?

2. What are the similarities and differences between the patterns of use of English linking adverbials of result in COCA and those in traditional textbooks?

## OBJECTIVES OF THE STUDY

1. To investigate the frequency of the English linking adverbials of result *so, thus, therefore* and *hence* in corpus-based written academic American English

2. To compare and contrast the patterns of use of English linking adverbials of result in COCA and those in traditional textbooks

## RESEARCH METHODOLOGY

### TARGET LAs OF RESULTS

The main criterion for target word selection is frequency of LAs of result in native-speaker English. As demonstrated by Biber et al. (1999), the most frequent LAs of result in conversation and academic prose are *so, thus, therefore*, and *hence* respectively. In particular, *so* seems to be the most common in spoken English, whereas *thus* is the first in frequency in academic prose, followed by *therefore* and *hence,* respectively in both genres. Accordingly, these four frequent LAs of result were selected as the target words of the present study.

### DATA COLLECTION

The first 300 concordance lines from COCA showing the authentic use of American English of LAs of result: *so, thus, therefore*, and *hence* in academic English were investigated. Regarding the data collection method, the present study focuses on the occurrences of *so, thus, therefore,* and *hence,* as shown in COCA, developed by Mark Davies from Brigham Young University in the United States. COCA provides language researchers with authentic spoken and written English stemming from a variety of disciplines (Kittigosin and Phoocharoensil 2015). The corpus-based data from COCA informs users of the frequency of words, phrases, and collocations, representing how native speakers of American English actually speak and write.

 In this study, a total of 1,200 concordance lines were collected from COCA. The target LAs were randomly searched from the written academic genres (ACAD). COCA allowed the researchers to investigate the frequency and patterns of use of these adverbials, which helps address the first research question. It, nevertheless, seems unlikely that all of the 300 concordance lines suit the analysis with respect to the LA *so* as it can have different meanings and parts of speech. Thus, the tokens of *so* not functioning as a LA of result, as in (16), (17), and (18), were first excluded.

(16) I'm *so* glad to see you

(www.oxforddictionaries.com)

(17) She spoke *so* quickly! She sounded like an auctioneer.

(www.englishpage.com)

(18) I do love it *so*.

(www.oxforddictionaries.com)

Obviously *so* in (16) and (17) has the same meaning as the intensifier *very,* used to modify adjectives and adverbs respectively, while *so* in (18) serves as an adverb to emphasise the degree of feeling. It should be noted here that in searching for the concordance lines of *so*, approximately 400 lines were targeted first and only the first 300 lines of *so* used as conjunctions were then selected.

In order to differentiate the LA of result *so* from the other various possibilities, the present study used part-of-speech (POS) tagging to generate the data. First of all, the word *so* was placed in the WORD(S) field. For the next step, the tag *[cs*]* was inserted at the end of the string in that field. Meanwhile, a period was also used between a search word and a POS tag so that the search word of *so* as only a conjunction would be retrieved.

However, some inaccuracy was still noticed in the elicited data at this stage since some tokens of the word *so* appearing in the preliminary results were still beyond the scope of the study, e.g., *so that* and *so far*, as in (19) and (20). The researchers therefore manually screened the data of each concordance line in a careful manner to eliminate such undesirable data before the actual data analysis.

(19) could flourish. The Germans were also valued for their farming skills and technologies, <u>*so that*</u> all over Eastern and Central Europe one finds German agricultural communities that may or…                                                        (line 33)

(20) with conflict, Italians also admired the success of the Jews and emulated them in <u>*so far*</u> as you could.                                                        (line 25)

In relation to the patterns of use of target LAs, the corpus-based data was compared with that from four traditional academic writing textbook series widely used in Thai universities, repeated here for convenience, i.e. *Writing to Communicate* (Boardman and Frydenberg 2008), *Ready to Write* (Blanchard and Root 2010), *Engaging Writing: Essential Skills for Academic Writing* (Fitzpatrick 2011), and *Longman Academic Writing Series* (Oshima and Hogue 2013). The findings help answer the second research question.

DATA ANALYSIS

The theoretical framework selected for the data analysis was Biber et al. (1999)'s major categories of LAs, with focus on those associated with result/inference. The four target LAs of result, based on the framework, were quantitatively and qualitatively analysed in the following aspects. Firstly, the frequency of all the target words of 1,200 concordance lines was counted. In calculating the frequency of the LA *so*, it was necessary to make sure that the frequency obtained from COCA truly represented *so* as an LA rather than an adverb or an intensifier. Accordingly, POS tagging was used, as mentioned above, to exclude unsolicited tokens of *so*. Nevertheless, the screened tokens still included a number of the conjunction *so that*, which was beyond the scope of this study. In order to gain the exact frequency of the LA *so*, the researchers searched for the frequency of *so that* before subtracting this frequency from the total frequency of the tagged conjunction *so*.

Secondly, in case of intra-rater agreement, both researchers reconsidered the analysis of all the occurrences after a week to ensure that the data had been properly coded. As for inter-rater reliability, another corpus linguist as an intercoder cross-checked the researcher's evaluation of patterns of each adverbial in each concordance line to reach an inter-rater agreement. Finally, the patterns of use of these adverbials found in COCA were classified and then compared with the information from the aforementioned well-known traditional textbooks.

The next section deals with the findings of this study, followed by discussion in relation to the aforementioned research questions.

## FINDINGS

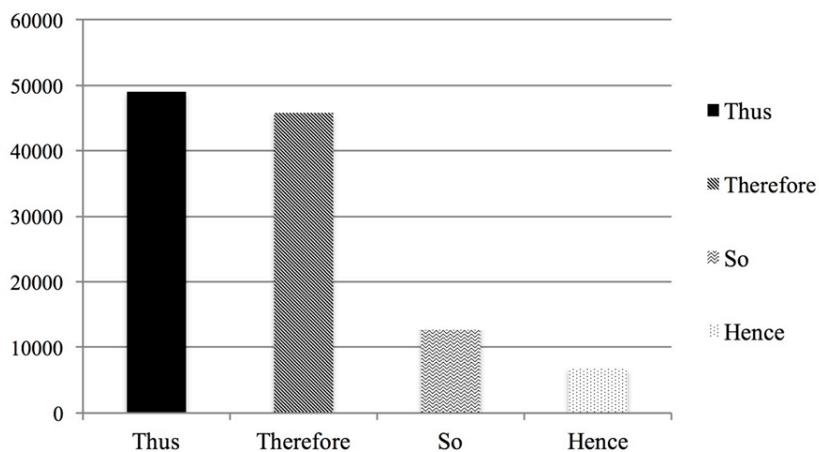### THE FREQUENCY OF LAs of RESULT IN WRITTEN ACADEMIC ENGLISH



FIGURE 1. The frequency of the target LAs of result

Figure 1 demonstrates that in academic American English the LA of result *thus* occurred with the highest frequency (48,991 tokens), slightly outnumbering *therefore* (45,755 tokens), ranked second in frequency. The third most common LA was *so* (10,590 tokens), while *hence* (6,856 tokens) appeared to be the least.

What seems to be more interesting concerns the patterns of use in which these LAs can occur in authentic English, represented through the corpus data, to be comprehensively illustrated in the following subsection.

### LA-of-RESULT PATTERNS OF USE

Table 1 shows eight grammatical patterns of the LA *thus* found in the COCA. The data indicates that *Thus (,) + S + V* was the highest frequency (53%), as in (21).

(21) significant, indicating there was significant variance to explain (see Table 4). ***Thus***, conditional models were appropriate. The results of the analyses of the unconditional models

The *and thus* construction was the second most common pattern (17%). To be more specific, without reference to commas, the *and thus* construction that occurred with a finite verb phrase is the highest frequency subtype (8%), as in (22). While 4% of the construction of *and thus* usually precedes a noun phrase, as in (23), the third sub-patterns ranked with the same frequency (1.33%) were the constructions of *and thus + an adjective phrase* and *and thus + a complete sentence*, as in (24) and (25) respectively.

(22) will cause EPA to insist upon submission of the SIP by the original deadline ***and thus*** trigger potential sanctions.

(23) were hospitalised at the time of review, enabling easier access to medical records, ***and thus*** a quicker review process.

(24) the short to medium term, security polities are important for the United States ***and thus*** important for New Zealand.

(25) …College students are products of our culture***, and thus,*** their personal approach to education reflects these conflicting learning models.

Regarding the third most frequent structure of *thus*, *S + thus + verb phrase* was the most common subtype (7.33%), as in (26), while *S + be + thus + V.3/adjective,* as in (27) and (28), was second in terms of frequency (2.33%), followed by *S + modal + thus + verb in the infinitive form* (1.33%), as in (29).

(26) their inability to comfort the child and to take away their pain. The parent ***thus*** feels victimised.

| Rank | Grammatical pattern of *thus* | Frequency | | | | | |
|------|-------------------------------|-----------|---|---|---|---|---|
| | | Punctuation | | | | Total | % |
| | | Comma | % | Without comma | % | | |
| 1 | Thus + (,) + S + V | 123 | 41.00 | 36 | 12.00 | 159 | 53.00 |
| 2 | 2.1) (,) + and thus + (,) +VP | 5 | 1.67 | 19 | 6.33 | 24 | 8.00 |
| | 2.2) (,) + and thus + (,) + NP | 4 | 1.33 | 8 | 2.67 | 12 | 4.00 |
| | 2.3) (,) + and thus + (,) + Adj.P | 1 | 0.33 | 3 | 1.00 | 4 | 1.33 |
| | 2.4) (,) + and thus + (,) + S + V | 3 | 1.00 | 1 | 0.33 | 4 | 1.33 |
| | 2.5) (,) + and thus + (,) + V.3 | 1 | 0.33 | 2 | 0.67 | 3 | 1.00 |
| | 2.6) (,) + and thus + (,) + PP | 2 | 0.67 | 1 | 0.33 | 3 | 1.00 |
| | 2.7) , + and thus + , + to V.inf | 1 | 0.33 | - | 0.00 | 1 | 0.33 |
| | Subtotal | 17 | 5.67 | 34 | 11.33 | 51 | 17.00 |
| 3 | 3.1) S + thus + VP | - | 0.00 | 22 | 7.33 | 22 | 7.33 |
| | 3.2) S + be + thus \| + V.3 + Adj. | - | 0.00 | 7 | 2.33 | 7 | 2.33 |
| | 3.3) S + Modal + thus + V.inf | - | 0.00 | 4 | 1.33 | 4 | 1.33 |
| | 3.4) S + have/has + thus + V.3 | - | 0.00 | 3 | 1.00 | 3 | 1.00 |
| | 3.5) S + be + thus + V.ing | - | 0.00 | 2 | 0.67 | 2 | 0.67 |
| | 3.6) S + be + thus + PP | - | 0.00 | 1 | 0.33 | 1 | 0.33 |
| | 3.7) S + be + thus + NP | - | 0.00 | 1 | 0.33 | 1 | 0.33 |
| | Subtotal | 0 | 0.00 | 40 | 13.33 | 40 | 13.33 |
| 4 | (,) + thus + V.ing | 27 | 9.00 | 4 | 1.33 | 31 | 10.33 |
| 5 | 5.5) ; + thus + (,) + S + V | 9 | 3.00 | 3 | 1.00 | 12 | 4.00 |
| | 5.2) , + thus + S + V | 2 | 0.67 | - | 0.00 | 2 | 0.67 |
| | Subtotal | 11 | 3.67 | 3 | 1.00 | 14 | 4.67 |
| 6 | 6.1) , + thus + PP | 1 | 0.33 | - | 0.00 | 1 | 0.33 |
| | 6.2) , + thus + V.3 | 1 | 0.33 | - | 0.00 | 1 | 0.33 |
| | Subtotal | 2 | 0.67 | - | 0.00 | 2 | 0.67 |
| 6 | It is + (,) + thus + (,) | 1 | 0.33 | 1 | 0.33 | 2 | 0.67 |
| 7 | There + be + thus + NP | - | 0.00 | 1 | 0.33 | 1 | 0.33 |
| | Grand Total | 181 | 60.33 | 119 | 39.67 | 300 | 100.00 |

TABLE 1. The frequency of grammatical patterns of *thus* in COCA

(27) efforts to mask lies make detecting other lies harder. Distinguishing    troth   from deception is ***thus*** fudged.

(28) polities and armed groups. 259 # Differential access to and willingness to use power are ***thus*** necessary to help explain differences in access to food by different groups on and around

(29) of reimbursement will result in more money being available for salaries and training and will ***thus*** improve claim accuracy.

The next *thus* pattern concerned *(,) + thus + V.ing* (10.33%), as in (30). What seemed to occur with a lower frequency (4%) was the pattern of the LA *thus* between a semi-colon (;) and comma (,), as in (31). This pattern, which is infrequent in authentic academic English, is often available in most ELT academic writing textbooks.

(30) and allows the symptoms of possible stroke to be identified and acted upon swiftly***, thus*** reducing the risk of death and disability.

(31) the country. As for Iraq, almost two- thirds of the country is desert***; thus,*** agricultural production is highly dependent upon the Tigris and Euphrates Rivers for irrigation water

Table 2 presents the pattern frequency of the LA *therefore*. It is evident that *therefore* occurred in seven syntactic patterns, with *Therefore (,) + S + V* showing the highest frequency (33.33%), as in (32).

(32) Neoplatonic terms that are a common language for Christianity, Islam, and Judaism. ***Therefore,*** the argument might prove to be transferable to these other traditions.

Second to the pattern of sentence-initial *therefore* in frequency was *S +V + therefore* (21.67%). To be more specific, *S +(,) + V + therefore + (,) + VP,* as in (33), was the most frequent (16%).

(33) the real cost of books astronomical. The public library, wherever it exists***, therefore*** becomes much more crucial to democratizing information.

The pattern with the third highest frequency involved *and therefore* (19.33%). More precisely, 9.33% of the *and therefore* construction, in particular, occurred with a finite verb phrase, as in (34). Furthermore, both *(,) + and therefore + S + V* and *(,) + and therefore + Adj.P* shared the same frequency (3.67%), as in (35) and (36), respectively.

| Rank | Grammatical pattern of *therefore* | Frequency | | | | | |
|---|---|---|---|---|---|---|---|
| | | Punctuation | | | | Total | % |
| | | Comma | % | Without comma | % | | |
| 1 | Therefore (,) + S + V | 90 | 30.00 | 10 | 3.33 | 100 | 33.33 |
| 2 | 2.1) S + (,) + therefore + (,) + VP | 20 | 6.67 | 28 | 9.33 | 48 | 16.00 |
| | 2.2) S + V + , + therefore + , + Adj.P | 5 | 1.67 | - | 0.00 | 5 | 1.67 |
| | 2.3) S + V + (,) + therefore + (,) + that + (,) + S + V | 3 | 1.00 | 1 | 0.33 | 4 | 1.33 |
| | 2.4) S + V + (,) + therefore + (,) + PP | 1 | 0.33 | 2 | 0.67 | 3 | 1.00 |
| | 2.5) S + V + , + therefore + , + Obj. | 3 | 1.00 | - | 0.00 | 3 | 1.00 |
| | 2.6) S + V + (,) + therefore + V.ing | 1 | 0.33 | 1 | 0.33 | 2 | 0.67 |
| | Subtotal | 33 | 11.00 | 32 | 10.66 | 65 | 21.67 |
| 3 | 3.1) (,) and therefore + VP | 12 | 4.00 | 16 | 5.33 | 28 | 9.33 |
| | 3.2) (,) and therefore + S + V | 5 | 1.67 | 6 | 2.00 | 11 | 3.67 |
| | 3.3) (,) and therefore + Adj.P | 2 | 0.67 | 9 | 3.00 | 11 | 3.67 |
| | 3.4) (,) and therefore + NP | 6 | 2.00 | 1 | 0.33 | 7 | 2.33 |
| | 3.5) and therefore + V.3 | - | 0.00 | 1 | 0.33 | 1 | 0.33 |
| | Subtotal | 25 | 8.33 | 33 | 11.00 | 58 | 19.33 |
| 4 | 4.1) S + Modal + (,) + therefore + (,) + VP | 9 | 3.00 | 17 | 5.67 | 26 | 8.67 |
| | 4.2) S + be + (,) + therefore + (,) + V.3 | 1 | 0.33 | 12 | 4.00 | 13 | 4.33 |
| | 4.3) S + be + therefore + Adj.P | - | 0.00 | 10 | 3.33 | 10 | 3.33 |
| | 4.4) S + be + (,) + therefore + (,) + NP | 1 | 0.33 | 1 | 0.33 | 2 | 0.67 |
| | 4.5) S + be + , + therefore + , + PP | 1 | 0.33 | - | 0.00 | 1 | 0.33 |
| | Subtotal | 12 | 4.00 | 40 | 13.33 | 52 | 17.33 |
| 5 | 5.1) ; + therefore + (,) + S + V | 16 | 5.33 | 1 | 0.33 | 17 | 5.67 |
| | 5.2) therefore + S + V | - | 0.00 | 1 | 0.33 | 1 | 0.33 |
| | 5.3) : + therefore + , + S + V | 1 | 0.33 | - | 0.00 | 1 | 0.33 |
| | Subtotal | 17 | 5.67 | 2 | 0.67 | 19 | 6.33 |
| 6 | It - is/was - (not) + Adj. / There + be + NP = (,) + therefore + (,) + that + S + V | 3 | 1.00 | 1 | 0.33 | 4 | 1.33 |
| 7 | PP + , + therefore + , + S + V | 2 | 0.67 | - | 0.00 | 2 | 0.67 |
| | Grand Total | 182 | 60.67 | 118 | 39.33 | 300 | 100.00 |

TABLE 2. The frequency of grammatical patterns of *therefore* in COCA

(34) no doubt appears to endanger the wall of separation between church and state, *and therefore* warrants intense scrutiny.

(35) Women can mobilise precisely because their gender is not associated with political life, *and therefore* their supposedly nonpolitical identity disguises their political actions.

(36) is important to keep in mind that the vast majority of Afghans are illiterate *and therefore* largely impervious to the propagandistic effects of print.

The fourth sub-patterns were concerned with *S + be/ modal + therefore* (17.33%). The most frequent one (8.67%) was *S + modal + (,) + therefore + (,) + VP,* as in (37), followed by *S + be + (,) + therefore + (,) + V.3* (4.33%), as in (38), and *S + be + therefore + (,) + Adj.P* (3.33%), as in (39).

(37) of skiers. # Ski resorts, ski instructors, ski manufacturers and parents may *therefore* enhance ski safety by helping to transmit news about ski-related fatalities, especially targeting younger

(38) and climate. Here we are outside the areas of our primary research and are **_therefore_** bound by the norms of scientific argument without being able to rely on direct personal

(39) whole groups of persons. Bottom-up processing requires conscious attention to incoming information and is **_therefore_** likely to consume more working-memory capacity than top-down processing.

The next grammatical pattern of *therefore* co-occurred with semi-colon and comma. That is, 5.67% of the construction *; + therefore + (,) + S +V*, as in (40), was found. It is worth noting that this particular pattern is highlighted in a number of academic writing textbooks, despite its low frequency.

(40) employment noted that travel and tourism professional are not highly regarded in many countries**_; therefore,_** very little emphasis is placed on the travel and tourism education.

From Table 3, the corpus-based data is clearly demonstrated that the LA *hence* occurred in many different structures. In particular, the most frequent pattern is *Hence (,) + S + V* (59%), as in (41).

(41) along a contour until this pairwise distance between two sets of points is minimised. **_Hence,_** all contours of a set can be aligned one after the other.

The second common pattern deals with the *and hence* construction (25.33%). In detail, as can be seen in Table 4.4, 12.67% of the sub-pattern of the *and hence* construction occurred with a noun phrase, as in (42), whereas 6% was followed by a verb phrase, as in (43). In addition, 3% of this structure belonged to *(,) + and hence + (,) + S + V,* as in (44).

| Rank | Grammatical pattern of *hence* | Frequency | | | | | |
|------|-------------------------------|-----------|-----|----------------|------|-------|------|
| | | Punctuation | | | | Total | % |
| | | Comma | % | Without comma | % | | |
| 1 | Hence + (,) + S + V | 127 | 42.33 | 50 | 16.67 | 177 | 59.00 |
| 2 | 2.1) (,) + and hence + (,) + NP | 21 | 7.00 | 17 | 5.67 | 38 | 12.67 |
| | 2.2) (,) + and hence + (,) + VP | 9 | 3.00 | 9 | 3.00 | 18 | 6.00 |
| | 2.3) (,) + and hence + (,) + S + V | 8 | 2.67 | 1 | 0.33 | 9 | 3.00 |
| | 2.4) (,) + and hence + (,) + PP | 4 | 1.33 | 1 | 0.33 | 5 | 1.67 |
| | 2.5) and hence + V.ing | - | 0.00 | 2 | 0.67 | 2 | 0.67 |
| | 2.6) (,) + and hence + (,) + V.3 | 1 | 0.33 | 1 | 0.33 | 2 | 0.67 |
| | 2.7) , + and hence + , + Adj.P | 1 | 0.33 | - | 0.00 | 1 | 0.33 |
| | 2.8) , + and hence + , + V.inf | 1 | 0.33 | - | 0.00 | 1 | 0.33 |
| | Subtotal | 45 | 15.00 | 31 | 10.33 | 76 | 25.33 |
| 3 | ; + hence (,) + S + V | 10 | 3.33 | 11 | 3.67 | 21 | 7.00 |
| 3 | 3.1) , + hence + NP | 10 | 3.33 | - | 0.00 | 10 | 3.33 |
| | 3.2) , + hence + S + V | 7 | 2.33 | - | 0.00 | 7 | 2.33 |
| | 3.3) , + hence + V.ing | 2 | 0.67 | - | 0.00 | 2 | 0.67 |
| | 3.4) , + hence + to + V.inf | 1 | 0.33 | - | 0.00 | 1 | 0.33 |
| | 3.5) , + hence + Adj.P | 1 | 0.33 | - | 0.00 | 1 | 0.33 |
| | Subtotal | 21 | 7.00 | 0 | 0.00 | 21 | 7.00 |
| 4 | 4.1) S + hence + (,) + VP | 1 | 0.33 | 1 | 0.33 | 2 | 0.67 |
| | 4.2) S + V + , + hence + , + NP | 1 | 0.33 | - | 0.00 | 1 | 0.33 |
| | Subtotal | 2 | 0.67 | 1 | 0.33 | 3 | 1.00 |
| 5 | 5.1) be + hence + Adj. | - | 0.00 | 1 | 0.33 | 1 | 0.33 |
| | 5.2) be + hence + V.3 | - | 0.00 | 1 | 0.33 | 1 | 0.33 |
| | Subtotal | 0 | 0.00 | 2 | 0.67 | 2 | 0.67 |
| | Grand Total | 205 | 68.33 | 95 | 31.67 | 300 | 100.00 |

TABLE 3. The frequency of grammatical patterns of *hence* in COCA

(42) between students who receive passing grades and those who do not receive passing grades ***and hence*** a low degree of success for the discriminant function.

(43) traditional American values provides a cover for the expression of deeply felt prejudice***, and hence*** is evidence of racial hostility.

(44) For example, the response to the newspaper advertisements was relatively low, ***and hence*** we asked train passengers to participate in order to bolster our sample size.

The third most common patterns of the LA *hence* occurring with the same frequency (3.00 %) were the construction of *; + hence + (,) + S + V,* as in (45) and that of *, + hence*.

(45) lifetime number of sexual partners variable evidenced outliers (0 to 100 partners)***; hence,*** the variable was standardised for the analyses.

(46) they yield the position and width of facade of the old church***, hence,*** the position and width of the old nave including its side walls.

| Rank | Grammatical pattern of *so* | Frequency | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| | | Punctuation | | | | Total | % |
| | | Comma | % | Without comma | % | | |
| 1 | (,) + so + S + V | 211 | 70.33 | 72 | 24.00 | 283 | 94.33 |
| 2 | So + S + V | - | 0.00 | 10 | 3.33 | 10 | 3.33 |
| 3 | (,) + and + so + S + V | 4 | 1.33 | 2 | 0.67 | 6 | 2.00 |
| 4 | And + so + S + V | - | 0.00 | 1 | 0.33 | 1 | 0.33 |
| | Grand Total | 215 | 71.67 | 85 | 28.33 | 300 | 100.00 |

TABLE 4. The frequency of grammatical patterns of *so* in COCA

Table 4 illustrates the frequency of the patterns of the LA *So.* The findings revealed that *so* was used in four different patterns. To be more specific, the most frequent pattern was *(,) + so + S + V* (94.33%), which outnumbered the other three patterns of *so*, as in (47). Additionally, the second most common pattern was *So + S + V* (3.33%), followed by the construction of *(,) + and + so + S + V* (2%) and the pattern of *And + so + S + V* (0.33%). as exemplified in (48), (49), and (50) respectively. It is apparent that the pattern of the LA *so* which is placed after a comma to join two independent clauses often occurred in many academic writing textbooks. However, the other possible less-frequent patterns are scarcely presented.

(47) Model organise complex ideal types ***so*** we can simplify and understand social phenomena.

(48) illness at an average age of 25, compared with 40 for the general population.1. ***So*** the South Asian community get diabetes more commonly and at an earlier age.

(49) options for young people in terms of what they could do during the day ***and so*** they were out on the streets.

(50) of paternity uncertainty, and the two other grandparents are in the middle. ***And so*** you would expect the maternal grandmother to invest the most in her grandchildren, the

In response to the second research question, the textbook and corpus-based information was compared to explore the similar and different patterns in which each LA of result occurred. As can be seen in the four selected textbooks, while *so* was shown to occur frequently after a comma, as in (50), two common patterns of *thus* and *therefore* are shown, i.e. *Thus/ Therefore, S + V,* as in (51) and (52), respectively, and *; thus/ therefore, S + V,* as in (53).

(50)   The country's economy grew*, so* the people's lifestyle improved.

(Fitzpatrick 2011, p. 107)

(51)   Factories have fewer recyclables to convert into new products. *Thus,* I am improving air quality.

(Oshima and Hogue 2013, p. 162)

(52)   There was a big snowstorm. *Therefore,* we couldn't go skiing.

(Boardman and Frydenberg 2007, p. 108)

(53)   It was raining*; thus/ therefore,* we canceled the soccer game.

(adapted from Blanchard and Root 2010, p. 112)

## DISCUSSION OF THE FINDINGS

The findings of the current study, overall, find support for a number of past studies. To be more specific, the LA *thus* was the most frequent, followed by the LA *therefore* in written academic English. This is in line with Biber et al. (1999), who reported that *thus* was the most frequent LA of result, with a slightly higher frequency than *therefore*, in academic prose. The discovery by Biber et al. (1999) regarding far fewer occurrences of *hence* in academic texts also supports the results of the present study. In addition, as shown in the COCA data, *so* appeared to be less frequent, in particular, approximately half of the frequencies of *thus* and *therefore*. Furthermore, fewer occurrences of *so* in academic English accord with Biber et al. (1999) probably because *so* is apparently characteristic of spoken English, especially in conversation.

The present-study findings are also consistent with Liu (2008), who investigated a variety of LAs in five different registers, i.e., Spoken English, Academic Writing, Fiction, News Writing, and Other writings, in the British National Corpus (BNC). The LAs of result, referred to as Causal/Resultative in his study, were prevalent in spoken British English, with *so* being the most common of this type. The LAs in his study were classified into three bands based on frequency. *Thus* and *therefore* were assigned to Band 1, as they both were among those occurring with the highest frequency. More specifically, *thus* (583 tokens) and *therefore* (551 tokens) were found with the highest frequency in Academic Writing, which the results of the present study support. Moreover, the finding that *hence* was less common than *thus* and *therefore* in academic writing gives support to Liu (2008) in that *hence* was included in a less frequent type, i.e., Band 2.

The fact that *thus* and *therefore* exceeded other LAs of result in number, as indicated by the findings of our study concentrating on American English, also holds true in the genre-

specific study of Charles (2011), the focus of which was on LAs of result in written British English of two distinct disciplines, namely politics and materials science. It is noteworthy that the frequency order revealed in Charles' study was *thus, therefore*, and *hence*, which is in line with the present study.

It is also evident that most of the traditional textbooks widely used in Thai universities do not sufficiently explain the usage of the grammatical patterns of LAs of results. Moreover, these textbooks do not provide enough example sentences for the purpose of improving the academic writing skill of English learners. To make it worse, students' problems probably are due to the fact that they are provided with lists of non-equivalent LAs as equivalent alternatives often appearing in tables in academic writing textbooks. As seen in the findings of the present study, the target LAs were different in terms of patterns of use, and substituting one LA for another using the same pattern may lead to non-standard use (Park, 2013). Such a problem in LA teaching is also in line with Ha (2015), who remarked that "as many EFL teachers often provide their students with a semantically sorted long list of linking adverbials without detailed information on their individual usage. More importantly, they should be given advice on how to use the items in authentic context" (p. 12).

By contrast, language data from corpora, e.g. COCA, seems to be more informative than that in the textbooks. In other words, corpus-based information supplies learners with frequencies of LAs, enabling them to know which LAs are commonly used in authentic academic English. More importantly, many patterns of LAs of results shown in most textbooks do not cover all the possible common uses found in native-speaker corpora. In summary, LA information as found in the textbooks is outdone by that from corpus-based data.

In comparison with the well-known corpus-based study by Biber et al. (1999), which explored different kinds of LAs in general, the findings of the present study suggest even more possible patterns or positions of the target LAs. That is, while Biber et al. found the uses of *therefore* and *thus* in the medial positions, e.g., right after a subject, after a modal, or between a verb and a complement clause, such sentence positions were confirmed by the current study. Additionally, the COCA data demonstrates further patterns of *thus* and *therefore* not reported by Biber et al. (1999), e.g., the *and thus/therefore* construction, and *thus + V.ing*. As regards *so*, which was most common in conversations and occurred in the initial position, as shown by Biber et al. (1999), this LA in academic written English, in contrast, mostly occurred medially in COCA.

Biber et al. (1999) did not explicitly mention the position of *hence*, alongside *so, thus*, and *therefore*, giving only some example sentences of *hence* in the initial position. Conversely, the findings from the current research are concerned with other positions of this LA, e.g., *the and hence construction*, and ; *hence + (,) + S + V*. Apparently the present study has revealed additional patterns not reported by Biber et al. (1999), probably because Biber et al. aimed to explore all types of LAs, not limiting their data presentation to LAs of result. Due to the limited space shared by different types of LAs, Biber et al, might not have been able to include all the possible patterns of LA of result, in contrast to the present study, the focus of which was on only LAs of result.

## CONCLUSION

The main focus of this corpus-based study was single-word LAs of result *thus, therefore, hence,* and *so*, with the data being collected COCA. Drawn from academic written English, the data revealed unexpected findings as regards frequency and LA patterns of use. With regard to frequency, the most common LA was *thus*, followed by *therefore, hence*, and *so,*

respectively. In addition to frequency, this research project discovered some new authentic patterns of these LAs. In comparison with the limited patterns found in the surveyed textbooks, more possible patterns which exist in written American English were observed. Pedagogically speaking, some of these common patterns that the textbooks lack need to be included in lessons on LAs of result. In other words, English language teachers should be exhorted to incorporate corpus-based information on common LA patterns into their instruction now that having access to these patterns will familiarise learners with the authentic use of these Las, enabling them to apply the real patterns and positions of the LAs in their own academic writing.

The findings of the present study have the following implications for English language teaching. The study revealed that the patterns of LAs included in the surveyed textbooks do not represent all the common patterns that native speakers of English naturally use in academic writing. Out of the four textbooks, only one contained the LA *hence* without any examples of its usage; nonetheless, a number of patterns were found in the corpus consulted in which *hence* occurred in academic writing. Furthermore, the patterns of *thus* and *therefore* in these books concerned only *Thus/ Therefore, S + V* and ; *thus/ therefore, S + V* despite the fact that there were up to three patterns of *thus, i.e.,* the *and thus* construction, *S + auxiliary/ modal + thus*, and *thus + V.ing*, which were higher in frequency than ; *thus, S + V,* i.e. one of the patterns presented in the textbooks. As regards *therefore*, three patterns in real American English, i.e. *S + V + (,) + therefore*, the *and therefore* construction, and *S + be/ modal + therefore*, occurred more frequently than ; *+ therefore + (,) + S + V*. In addition to the three LAs, the information of *so* in the textbooks was slightly limited. Although COCA data showed a very high frequency of *(,) + so + S + V,* which was the only pattern in the textbooks explored, three further different patterns also existed in the corpus data.

The findings from the current study may benefit EFL/ESL teachers who need to prepare academic writing lessons on LAs of result, e.g., a lesson on cause-and-effect essays. Evidently the information in these common textbook series turns out to be relatively limited and not representative of what native English speakers actually use. In order to promote learners' use of such LAs in a way that native speakers perceive as naturally acceptable, ELT practitioners are encouraged to employ authentic materials on LAs, regardless of whether they are simplified ones or not, based on language corpora. Put differently, frequent patterns of LA use, as found in COCA, that ELT coursebooks usually omit should be added to lessons so that students will be exposed to how these LAs are naturally used in authentic English.

## RECOMMENDATIONS FOR FURTHER RESEARCH

Firstly, the data of the current study were collected from COCA, which represent the authentic use of American English. It seems that LAs in other varieties of native-speaker English, e.g. Australian English, Canadian English, can be further explored. It would also be useful to take LAs in ESL Englishes, e.g. Singapore English, Malay English, Indian English, into consideration. Another recommendation deals with the number of concordance lines. Only 300 concordance lines for each LA were collected due to the time limitation. If time allows, the number of concordance lines should be increased in order to enhance the generalizability of the findings. Lastly, the present study emphasised the first four most-frequent single word LAs. However, the other low-frequent LAs, e.g. *as a result, as a consequence*, should also be taken into account in further studies. Therefore, the future research on LA should aim at exploring more or even all of this LA category to obtain a clearer picture of how most LAs commonly occur in written English.

REFERENCES

Biber, D., Johansson S., Leech G., Conrad S. & Finegan E. (1999). *Longman Grammar of Spoken and Written English*. Singapore: Pearson.

Blanchard, K & Root, C. (2010). *Ready to Write 1: A First Composition Text*. New York: Pearson Education ESL.

Blanchard, K & Root, C. (2010). *Ready to Write 2: Perfecting Paragraphs*. New York: Pearson Education ESL.

Blanchard, K & Root, C. (2010). *Ready to Write 3: From Paragraph to Essay*. New York: Pearson Education ESL.

Boardman, C.A. & Frydenberg, J. (2007). *Writing to Communicate 1: Paragraphs.* New York: Pearson Education ESL.

Boardman, C.A. & Frydenberg, J. (2008). *Writing to Communicate 2: Paragraphs and Essays.* New York: Pearson Education ESL.

Boardman, C.A. & Frydenberg, J. (2008). *Writing to Communicate 3: Essays and the Short Research Paper*. New York: Pearson Education ESL.

Charles, M. (2011). Adverbials of result: Phraseology and functions in the problem-solution pattern. *English for Academic Purposes. Vol. 10*(1), 47-60.

Fitzpatrick, M. (2011). *Engaging Writing 1: Essential Skills for Academic Writing*. New York: Pearson Education ESL.

Fitzpatrick, M. (2011). *Engaging Writing 2: Essential Skills for Academic Writing*. New York: Pearson Education ESL.

Ha, M. J. (2015). Linking adverbials in first-year Korean university EFL learners' writing: A corpus-informed analysis. *Computer Assisted Language Learning.* 1-14.

Kittigosin, R. & Phoocharoensil, S. (2015). Investigation into learning strategies and delexical verbs used by Thai EFL learners. *3L: The Southeast Asian Journal of English Language Studies. Vol. 21*(2), 63-72.

Liu, D (2008). Linking adverbials. An across-register corpus study and its implications. *International Journal of Corpus Linguistics. Vol. 13*(4), 491-518.

Longman dictionary of contemporary English (2014). Essex: Pearson Education.

Meyers, A. (2013). *Longman Academic Writing Series, Level 5: Essays to Research Paper.* Essex: Pearson Education ESL.

Naderi, S., Keong, Y. C., & Latif, H. (2013). The use of referential cohesion in academic texts by Persian EFL learners. *GEMA Online[®] Journal of Language Studies. Vol. 13*(3), 45-62.

Oshima, A., & Hogue, A. (2013). *Longman Academic Writing Series, Level 3: Paragraphs to Essays.* Essex: Pearson Education ESL.

Oshima, A., & Hogue, A. (2013). *Longman Academic Writing Series, Level 4: Essays.* Essex: Pearson Education ESL.

Park, Y. (2013). Korean college EFL students' use of contrastive conjunctions in argumentative writing. *English Teaching. Vol. 68*(2), 55-77.

Peacock, M. (2010). Linking adverbials in research articles across eight disciplines. *Ibérica: Revista de la Asociación Europea de Lenguas para Fines Específicos (AELFE). Vol. 20*, 9-34.

Yin, Z. (2015). The use of cohesive devices in news language: Overuse, underuse or misuse?. *RELC Journal. Vol. 46*(3), 309-326.