



A corpus-based study of linking adverbials through contrastive analysis of L1/L2 PhD dissertations

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Abstract

The quality of a writing highly depends on cohesion and coherence as they affect the tone of writing to a great extent. Linking adverbials (LAs) are among the types of cohesive devices which help connect ideas in a more smooth way. However, use of linking adverbials is often problematic for non-native speakers of English as they often overuse, underuse or misuse them in their writings (Granger & Tyson, 1996; Lei, 2012). This study aimed to compare LAs used by Turkish native speakers (TNSs) in their English written PhD dissertations with LAs used in PhD dissertations of native English students in terms of frequency of using linking adverbials, and detect if LAs are overused or underused by TNSs. AntConc software was utilized for the quantitative analysis. Frequency counts and log-likelihood calculations were utilized to determine if the frequency differences between two corpora reached statistical significance. The results indicated a significant overuse of linking adverbials by Turkish doctoral students in their PhD dissertations. The study concluded with discussions of overused LAs as well as pedagogical implications and suggestions to improve teaching practices and materials such as implementing extensive awareness-rising activities on LAs and including authentic examples in the ELT materials.

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Keywords: Corpus linguistics, corpus-based study, linking adverbials, academic writing, L2 writing

1. Introduction

Writing is one of the most crucial skills in foreign language learning which requires a good mastery of linguistic, cognitive, and sociocultural competencies (Barkaoui, 2007). The ability to convey the meaning appropriately bears a great importance in L2 writing, especially in academic settings. The quality of writing highly depends on the properties of cohesion and coherence which necessitate well organized sentences and ideas, affecting the tone of writing to a great extent. According to Azadnia, Biria, and Lotfi (2016) cohesion, as the main agent for achieving discourse coherence, is one of the most essential factors in the assessment of second language writing.

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Textual cohesion can be achieved with the help of using cohesive devices appropriately. Linking adverbials (LAs) are among the types of cohesive devices which help connect ideas logically and smoothly. According to Biber, Johansson, Leech, Conrad, and Finegan, (1999), the primary function of linking adverbials is “to state the speaker/writer’s perception of the relationship between two units of discourse” (p. 875) and “to make semantic connections between spans of discourse of varying length” (p. 558). Therein, linking adverbials play a crucial role in ensuring the logical cohesion and coherence of a text. However, the use of linking adverbials is often problematic for non-native writers of English (Anderson, 2014; Crewe, 1990). The research have shown that the problems mainly arise from overuse, underuse or misuse of the linking adverbials (e.g., Chen, 2006; Gao, 2016; Lei, 2012). In this sense, the usage of LAs in L2 academic writing need to be closely examined in their authentic contexts.

In the present study, linking adverbials are going to be examined through using language corpora. Utilizing language corpora and computer-based analysis tools for language teaching have increased enormously in recent years (Kern, 2006; Ha, 2016). Among the software tools, concordancing tool has drawn the greatest interest which displays words or chunks on the computer screen with their context. Many researchers emphasized the importance of concordancing feature as it demonstrates authentic language use within its surrounding context (e.g., Flowerdew, 1996; Cobb, 1997).

The field of corpus linguistics can offer abundance of facilities for language teachers, especially in terms of teaching grammar, vocabulary, and writing. Many studies (e.g., Chan & Liou, 2005; O’Keeffe, McCarthy & Carter, 2007) indicated the usefulness of corpus based instruction on the acquisition of vocabulary and grammar. Additionally, Lee and Swales (2006) and Yoon and Hirvela (2004) reported that using corpora is useful for developing writing skills of L2 writers. For example, Friginal (2013) conducted an experimental study on the effectiveness of corpus based instruction on the research report writing skills of the college-level students. Linking adverbials were among the selected features for analyzing. Results indicated that corpus based instruction positively affect the usage of LAs by the students in their research report writings.

2. Review of Literature

A lot of alternative terms have been used for linking adverbials such as logical connectors (Quirk & Greenbaum, 1973), cohesive conjunctions (Halliday & Hassan, 1976) and linking expressions (Raimes, 1987). In addition, a great many of categorizations have been made for linking adverbials so far. For instance, Sinclair (2005) categorized them into two groups as lexical and phrasal LAs. Moreover, Biber et al. (1999) assorted them according to their semantic categories, which are enumeration, summation, apposition, result/inference, contrast/concession, and transition. Carter and McCarthy (2006) also

created a taxonomy to classify them into additive, concessive, contrastive, inference, listing, meta-textual, resultative, summative, and time adverbials. Apart from these, Liu (2008) divided them into four main categories as additive, adversative, causal/resultative and sequential.

There are a multitude of corpus studies comparing the use of linking adverbials in the writings of native and non-native speakers of English from different countries like France (Granger & Tyson, 1996), China (Gao, 2016), Korea (Ha, 2016), Japan (Ishikawa, 2010), Sweden (Altenberg & Tapper, 1998), Norway (Eia, 2006), Iran (Sabzevari, Haghverdi & Biria, 2016), and Turkey (Uçar & Yükselir, 2017). They investigated whether non-native speakers underuse, overuse or misuse linking adverbials when compared to native speakers. While some of the studies revealed the patterns of overuse (e.g., Field & Yip, 1992; Milton & Tsang, 1993; Lei, 2012; Ha, 2016) some studies unveiled underuse patterns (e.g., Altenberg & Tapper; 1998; Eia, 2006; Uçar & Yükselir, 2017).

Most recently, Gao (2016) has compared the corpora of research articles in the fields of Physics, Computer Science, Linguistics and Management written by English native speakers (ENSs) and Chinese native speakers (CNSs), in terms of LA use. Findings did not indicated any significant difference in frequency of LA use between two corpora in terms of frequency of LAs. However, it was found out that CNSs relatively underused additive and adversative LAs when compared to ENSs.

Ha (2016) also compared the frequency and usage patterns of LAs in essays of first year Korean students with essays of native English students. It was found that Korean students overuse LAs in all of the semantic categories; especially in the sequential and additive categories.

Lei (2012) investigated the difference between the use of LAs in the academic writings of Chinese doctoral students in the area of applied linguistics and a control corpus of 120 published articles in six international journals of applied linguistics. According to results, Chinese doctoral students overuse 33 LAs and underuse 25 LAs when compared to control corpus.

In Turkey, the usage of ‘on the other hand’ was examined by Tazegül (2015) by comparing academic writing of Turkish doctoral students with academic essays written by native speakers with The Corpus of Contemporary American English (COCA). Results revealed that Turkish doctoral students overuse ‘on the other hand’ in comparison with ENSs but they do not misuse them. In addition, Uçar and Yükselir (2017) investigated whether the linking adverbial ‘thus’ is overused, underused or misused by the Turkish advanced learners of English in comparison with English native speakers. According to results, Turkish native speakers (TNSs) underuse ‘thus’ in their academic writings although they use them appropriately in their writings.

The review of literature reveals that there is not a consistency between the findings of the studies. It can be deduced that the results of the studies from different cultural backgrounds differ greatly. Therefore, further exploration of this area around the world and in Turkey is fundamental. Against this background, this study aims to compare LAs used by TNSs in their English written PhD dissertations with LAs used in PhD dissertations of native English students and detect if LAs are overused or underused by TNSs. To that end, the study seeks answers to the following research questions:

1. Do Turkish doctoral students overuse/underuse LAs in their PhD dissertations?
2. If yes, which sub-categories of LAs are overused/underused by Turkish doctoral students?
3. What are the top ten LA items in each corpora? Do they differ greatly?
4. Which of the LAs are overused/underused by TNSs, if any?

3. Methodology

3.1. Corpus selection

The samples which compose the learner corpus were gathered from 118 English PhD dissertations, written by native speakers of Turkish studying at different universities in Turkey, in the discipline of theoretical and applied linguistics. The dissertations were downloaded randomly from the Council of Higher Education-Thesis Center, an online database for Dissertations written in Turkish Universities.

The samples which compose the control corpus were gathered from 102 PhD dissertations written by native speakers of English studying same disciplines in the United States and United Kingdom. The dissertations were downloaded randomly from ProQuest, an online database for Dissertations.

Of all the chapters, conclusion chapters were selected for the analysis since they involve less paraphrasing, less direct quotations and less numerical data. Moreover, it is the section where the writers summarize the study and offer some implications with their own sentences and ideas. As a result, the total word count for the learner corpus is 295.054, and 292.808 for the control corpus.

Table 1. Number of dissertations and running words used in learner and control corpora

	Learner Corpus	Control Corpus
Number of dissertations	119	102
Number of words	295.054	292.808

In this study, the contributions of thesis supervisors is acknowledged but have to be ignored as it would be impossible to track details of the input from them. Therefore it is assumed that only the students are responsible for the language used in the dissertations.

After the compilation of dissertations, they were converted into .txt format, as recommended by Antconc software. Then, conclusion parts of the theses were extracted for the data analysis.

3.2. Data analysis/procedure

In this study, Liu's (2008) taxonomy of linking adverbials were taken as a reference as it is one of the most comprehensive lists with a total number of 110 linking adverbials. Liu classifies LAs into four categories and thirteen subcategories (see Table 2).

Table 2. Liu's (2008) categorization of linking adverbials

Category	Subcategory	Examples
Additive	Emphatic	Besides
	Appositional/reformulation	For example
	Similarity comparative	Likewise
Adversative	Proper adversative/concessive	However
	Contrastive	In fact
	Correction	Instead
	Dismissal	In any case
Causal/ Resultative	General causal	As a result
	Conditional causal	In that case
Sequential	Enumerative/listing	First/firstly
	Simultaneous	Meanwhile
	Summative	To summarize
	Transitional to another topic	By the way

AntConc (3.4.4w) software was utilized for the quantitative analysis. For the analysis, first, all of the linking adverbials were searched in learner and control corpora respectively. After all the concordance lines of the LAs were extracted, they were checked manually, and then some items which did not function as LAs were deleted.

After the frequencies of each individual LA were determined, the frequencies of four subcategories of LAs and the total number of LAs were identified. Then, an online log-likelihood calculator (<http://ucrel.lancs.ac.uk/llwizard.html>) was utilized to determine if the frequency differences between two corpora have reached statistical significance.

4. Results and Discussion

4.1. Frequency and usage between writer groups: General findings

The averaged normed frequencies (per 1000 words) of the four subcategories of LAs found in the two corpora are presented in Table 3. The frequencies of all the 110 LAs in two corpora are provided in Appendix A.

Table 3. The averaged normed frequency of the four subcategories of LAs in ENS and TNS corpora (frequency per 1000 words)

Linking adverbials	Learner corpus	Reference corpus
Additive	4.55	2.76
Adversative	2.93	2.75
Causal	3.41	2.04
Sequential	1.56	1.04
Total	12.45	8.59

Table 3 indicates more frequent use of LAs by TNSs than ENSs in all subcategories. The usage differences between ENSs and TNSs in the distribution of adversative LAs are not statistically significant, while additive ($p < 0.0001$, critical value: 130.85), causal ($p < 0.0001$, critical value: 102.28) and sequential ($p < 0.0001$, critical value: 30.81) adverbials are overused by TNSs. Ha (2016) also found that Korean writers overuse LAs in all subcategories. Likewise, Chen (2006) and Gao (2016) revealed the overuse of additive, causal and temporal LAs by Taiwanese and Chinese learners respectively. This finding is corroborated with the conclusion of Ishikawa (2010) who indicated that Asian learners tend to overuse additive types of LAs. In both of the corpora, additive adverbials are the most frequently used LAs, while the sequential adverbials are used the least frequently. This finding supports the findings of Lei's (2012) study.

The total number of LAs used in TNS and ENS corpora are 3677 and 2518 respectively. The result of log-likelihood test indicates that TNSs significantly overuse LAs in their PhD dissertations in contrast with ENSs ($p < 0.0001$; critical value: 209.35). Parallel to this finding, several studies (e.g., Chen, 2006; Field & Yip, 1992; Lee & Chen, 2009; Lei, 2012; Milton & Tsang, 1993; Sabzevari et al., 2016) also unveiled LA overuse by non-native speakers of English in their writings. For example, Field and Yip (1992)

found that Cantonese writers overuse cohesive devices in their writings when compared to their native counterparts. Likewise, Chen (2006) found that MA students from Taiwan slightly overuse conjunctive adverbials in their academic writings in comparison with their native speakers of English. Furthermore, Sabzevari et al. (2016) reported that Iranian EFL (English as a Foreign Language) writers overuse sentence initial conjunctive adverbials in their writings.

According to Lei (2006), the reason why non-native speakers overuse linking adverbials might be because they try to “achieve surface logicity and to disguise their poor writing” (p. 268). For Granger and Tyson (1996) and Tapper (2005), this might be the result of the negative transfer from their mother tongue. Another reason might stem from inappropriate information provided by language teachers, textbooks and dictionaries that offer students a list of LAs and state that they are synonyms although they are not (Crewe, 1990; Lei, 2012). This makes students think that they can use LAs alternatively in any context, which leads to improper usage or overuse of LAs.

4.2. Comparisons of the top ten LA items

Table 4 presents the top ten most frequently used LAs in each corpus. As can be seen, first two most frequently used linking adverbials and their rankings are the same in the two corpora, which are ‘however’ and ‘therefore’. Apart from them, the adverbials of ‘thus’, ‘so’, ‘also’ and ‘though’ are among the top ten most frequently used LAs in both corpora as well. What makes them different is that ‘in addition (to)’, ‘moreover’, ‘on the other hand’ and ‘because of’ are among the most frequently used LAs in the learner corpus, but they are not in the control corpus. By contrast, ‘for example’, ‘then’, ‘yet’ and ‘as well’ are among the most frequently used LAs in the control corpus, yet they are not in the learner corpus. It can be seen that there is not any sequential adverbial in the top ten list of both corpora.

Table 4. The top ten most frequently used LAs in learner and control corpora

Learner Corpus			Control Corpus		
Rank	LA	Frequency	Rank	LA	Frequency
1	However	473	1	However	352
2	Therefore	315	2	Therefore	149
3	Thus	234	3	Though	139
4	In addition (to)	232	4	For example	116
5	Moreover	210	5	Also	110
6	Also	193	6	Thus	108

7	So	140	7	Then (often used with “if”)	100
8	On the other hand	85	8	Yet	93
9	Because of it/this/that	83	9	As well	85
10	Though	82	10	So	84

The result of log-likelihood ratio has indicated that (see table 5) although ‘however’ and ‘therefore’ shares the same ranking, they are overused by the TNSs. Likewise, the adverbials ‘thus’, ‘so’, ‘also’, ‘in addition (to)’, ‘moreover’ and ‘on the other hand’ are also detected to be overused by TNS though they are common in both lists. The adverbials ‘for example’, and ‘then’ which are among the top ten list of control corpora but not in learner corpora, have been detected to be underused by TNS.

4.3. Overuse and underuse of the linking adverbials

Log-likelihood ratio was calculated to reveal if there is a statistical difference between two corpora. Table 5 shows the linking adverbials which are found to be overused or underused by TNSs.

Table 5. Overused and underused linking adverbials

Type	LAs	O1	%1	O2	%2	LL
Additive (Emphatic)	Also	193	0.07	110	0.04 +	22.40
	Besides	66	0.02	11	0.00 +	43.17
	In addition (to)	232	0.08	82	0.03 +	73.52
	Moreover	210	0.07	32	0.01 +	145.07
Additive (Apposition)	For example	28	0.01	116	0.04 -	58.43
Additive (Similarity comparative)	Likewise	50	0.02	9	0.00 +	31.08
	Similarly	63	0.02	27	0.01 +	14.54
Adversative (Concessive)	However	473	0.16	352	0.12 +	16.90
	Nevertheless	35	0.01	10	0.00 +	14.52
	Though	82	0.03	139	0.05 -	15.31
	Conversely	2	0.00	16	0.01 -	12.50
	On the other hand	85	0.03	34	0.01 +	22.19
Adversative (Correction)	On the contrary	11	0.00	0	0.00 +	15.17
Resultative (General causal)	Accordingly	20	0.01	1	0.00 +	20.93
	As a result (of)	80	0.03	30	0.01 +	23.20

	Hence	74	0.03	14	0.00 +	44.42
	So	140	0.05	84	0.03 +	13.72
	Therefore	315	0.11	149	0.05 +	59.46
	Thus	234	0.08	108	0.04 +	46.57
Resultative (Conditional causal)	Then (often used with “if”)	34	0.01	100	0.03 -	34.48
Sequential (Summative)	To conclude	14	0.00	1	0.00 +	13.35
	To sum up	27	0.01	1	0.00 +	29.99

$P < 0.001$ (critical value: 10.83); O1 is observed frequency in the learner corpus, O2 is the observed frequency in the control corpus; + indicates overuse in the learner corpus relative to control corpus; - indicates underuse in the learner corpus relative to control corpus.

According to results of the log-likelihood ratio, a total of 19 linking adverbials are overused while four adverbials are underused by the Turkish doctoral students. The most overused LA is ‘moreover’ with a critical value of 145.07. The second and third overused LAs are ‘in addition (to)’ and ‘therefore’ respectively. In terms of the subcategory of the overused linking adverbials, six are additive adverbials (also, besides, in addition (to), moreover, likewise, similarly), four are adversative adverbials (however, nevertheless, on the other hand, on the contrary), six are resultative (accordingly, as a result (of), hence, so, therefore, thus) and two are sequential (to conclude, to sum up). As can be seen, the most overused LAs belong to the additive and resultative categories.

Myriad of researchers also found that ‘moreover’ is overused by Korean (Ha, 2016), Chinese (Bolton, Nelson & Hung, 2002, Gao, 2016; Ma & Wang, 2016; Milton & Tsang, 1993), Japanese (Ishikawa, 2010), French (Granger & Tyson, 1996), and Swedish (Altenberg & Tapper, 1998) students.

Overuse of ‘therefore’ by Korean, Chinese and Iranian students also reported by a lot of studies (Bolton et al., 2002; Gao, 2016; Ha, 2016; Ishikawa, 2010; Lei, 2012; Milton & Tsang, 1993; Sabzevari et. al., 2016).

One of the significantly overused LAs is ‘thus’ in Turkish students’ writings. This result is corroborated by the studies of Bolton et al. (2002) and Ha (2016). However, it contradicts with the study of Uçar and Yükselir (2017) who has revealed that ‘thus’ is underused by Turkish advanced EFL learners.

Another overused LA by Turkish writers is ‘besides’. In their studies, Chen (2006), Ha (2016), Lee and Chen (2009), Li (2014), Milton and Tsang (1993), and Sabzevari et al. (2016) also discovered the overuse of ‘besides’ by non-native speakers. Related to this issue, Field and Yip (1992) states that ‘besides’ is a colloquial expression, thus, its usage is not appropriate in written form. Apart from this, ‘besides’ was reported to be misused

by many non-native writers. Although the writers use ‘besides’ mostly by adding another important idea, it is actually used for adding information which is less important than previously stated sentence (Lee & Chen, 2009). This problem again stems from lack of register-awareness of the writers for linking adverbials.

Lastly, it was found out that ‘on the other hand’ is overused by Turkish doctoral students which is substantiated by the findings of Lei (2012) and Tazegül (2015).

In this study, the most underused LA is ‘for example’ with a critical value of 58.43. This result contradicts with the results of studies conducted by Altenberg and Tapper (1998), Granger and Tyson (1996) and Narita, Sato and Suguira (2004), which concluded that Japanese, French, and Swedish learner groups overuse ‘for example’ in their writings. The reason why Turkish writers underuse ‘for example’ in their doctoral dissertations may be due to the fact that they regard ‘for example’ as a colloquial term, thus, abstaining from using it in their academic writings. Other underused adverbials are ‘then’, ‘though’ and ‘conversely’ respectively. Narita et al. (2004) also found that ‘then’ is underused by Japanese learners.

5. Conclusion and Pedagogical Implications

This study aims to provide English language teachers and learners, and also researchers with a thorough understanding of how Turkish speakers of English use linking adverbials in their academic writing and how this compares to native speakers’ use of LAs in academic writing. For this purpose, a corpus of PhD dissertations written by Turkish students and native English students was created. The main focus of analysis was to investigate if LAs are overused or underused by TNSs. An online software tool, Antconc, was utilized for the quantitative analysis. Frequency counts and log-likelihood calculations were used to detect the overuse/underuse and to find out whether the frequencies of linking adverbials are statistically significant. According to results, statistical significance was reached in the frequencies of additive, causal and sequential adverbials. In both corpora, ‘however’ was the most frequently used LA, followed by ‘therefore’, although they were overused by Turkish writers when compared to native writers. A total of 19 linking adverbials were found to be significantly overused while four adverbials were found to be significantly underused by the Turkish doctoral students. The most significantly overused LA is ‘moreover’ while ‘for example’ is the most significantly underused LA. Results revealed that Turkish doctoral students significantly overuse linking adverbials in their PhD dissertations which may affect their tone of writing negatively.

In the light of these findings, following suggestions are made for language teachers and material designers. (1) Teaching methods of linking adverbials need to be changed; they need to be taught explicitly and explained by providing authentic and concrete examples. (2) Extensive awareness-raising activities need to be done for the register-

appropriate usages of LAs. (3) ELT materials need to be revised as they would present linking adverbials in their authentic contexts. This study also demonstrates the importance and necessity of using language corpora in understanding the use of LAs in academic writing and how this can be reflected in designing ELT materials.

For future research, more corpus-based studies need to be conducted with Turkish EFL writers. Replication of this study can be done with other levels of EFL students (e.g. high school, university or masters' degree students). Further study can also look for the usage patterns of individual LAs and detect if they are misused by Turkish EFL writers or not.

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Appendix A. The frequencies of all the 110 LAs in Turkish and Native corpora.

A.1. The frequencies of Additive LAs in both corpora

ADDITIVE LAs	Turkish	Native
Emphatic		
Above all	2	2
Additionally	74	66
Again (sentence initial)	6	11
Also (sentence initial) (in “and also”) (in “not only...but also”) (in “but also” independently)	193	110
As I/you/we say	-	-
As well	57	85
As a matter of fact	4	1
Besides	66	11
In addition (to)	232	82
Further	8	14
Furthermore	78	77
Moreover	210	32
Not to mention	-	-
Of course	2	6
To crown it all	-	-
To cap it all	-	-
Too	13	11
What’s (is) more	9	3
<i>Subtotal</i>	954	511
Apposition /reformulation		
i.e.	28	29

That is	38	25
That is to say	7	10
In other words	79	18
For example	28	116
For instance	53	44
For one (another) thing	-	1
Namely	35	13
To put it another way	-	-
To put it bluntly /mildly	-	-
What I'm saying is	-	-
What I mean is	-	-
Which is to say	-	-
<i>Subtotal</i>	268	256
Similarity comparative		
Alternatively	7	5
By the same token	1	-
Correspondingly	1	
Likewise	50	9
Similarly	63	27
<i>Subtotal</i>	122	41
Additives total	1344	808

A.2. The frequencies of Adversative LAs in both corpora

ADVERSATIVE LAs	Turkish	Native
Proper adversative /Concessive		
At the same time (with and, but, yet, and while)	3	8
However	473	352
Nevertheless	35	10
Nonetheless	10	16
Of course	2	6
Then again	-	-
Though (including contrastive* meaning)	82	139

Yet (sentence initial) (after a comma) (in “and yet...”) (in other positions)	57	93
<i>Subtotal</i>	662	624
Contrastive		
Actually	2	1
As a matter of fact	4	1
Conversely	2	16
In/by comparison	-	2
In/by contrast	7	13
In fact	29	26
In reality	-	-
On the other hand	85	34
<i>Subtotal</i>	129	93
Correction		
Instead	8	14
On the contrary	11	-
Rather,	3	15
<i>Subtotal</i>	22	29
Dismissal		
Admittedly	-	-
After all	1	1
All the same (often used with but)	-	-
Anyhow	-	-
Anyway	-	-
At any rate	-	-
Despite n/this/that	44	52
In any case	1	1
In spite of this/that/etc	4	3
Still,	2	4
<i>Subtotal</i>	52	61
<i>Adversative total</i>	865	807

A.3. *The frequencies of Causal/Resultative LAs in both corpora*

CAUSAL/RESULTATIVE LAs	Turkish	Native
General causal		
Accordingly,	20	1
As a consequence (of)	2	1
As a result (of)	80	30
Because of it/this/that	83	83
Consequently	7	15
In consequence	2	0
Hence	74	14
Naturally (sentence initial)	-	1
So (sentence initial) (after a comma) (in “and so” not sentence initial)	140	84
Therefore	315	149
Thus	234	108
<i>Subtotal</i>	957	486
Conditional causal		
All things considered	2	1
In such a case/cases	2	-
In that case	3	1
Otherwise	9	10
Then (often used with “if”)	34	100
<i>Subtotal</i>	50	112
Causal total	1007	598

A.4. *The frequencies of Sequential LAs in both corpora*

SEQUENTIAL LAs	Turkish	Native
Enumerative/listing		
Afterwards	5	-

Eventually (sentence initial)	-	-
First/firstly	54	46
First and foremost	4	1
First of all	37	3
In the first place (sentence initial)	1	1
To begin with	16	-
Second/secondly	50	32
Third/thirdly	16	13
Fourth/fourthly	3/-	5/-
Finally (sentence initial)	70	76
Last/lastly	32	-/13
Last but not least	5	-
Last of all	2	-
Next	11	10
Then (sentence initial) (in “and then” sentence initial) (in “and then”)	61	51
<i>Subtotal</i>	367	251
Simultaneous		
At the same time	15	19
In the meantime (sentence initial)	-	-
Meanwhile	3	-
<i>Subtotal</i>	18	19
Summative		
All in all	13	5
In a word	-	-
In conclusion	9	12
In short	7	2
In summary/sum	3	12
To conclude	14	1
To sum up	27	1
To summarize	3	2

<i>Subtotal</i>	76	35
Transitional to another topic, etc.		
By the by	-	-
By the way	-	-
incidentally	-	-
<i>Subtotal</i>	0	0
<i>Listing total</i>	461	305
Total	3677	2518

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