

## Quality of Iranian EFL Learners' Argumentative Essays: Cohesive Devices in Focus

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**Abstract** The ability to compose a piece of argumentative text is important for EFL and ESL learners. Despite its importance, there is a gap in the literature about how Iranian students write essays in this genre that this study intends to fill. Building upon Halliday and Hasan's (1976) cohesion theory, this study intended to investigate Iranian graduate non-English majors' use of cohesive devices in argumentative essays, and also the relationship between the number of cohesive devices and writing quality. An analysis of forty argumentative essays written by forty Iranian graduate non-English majors showed that the students were familiar with various cohesive devices and used them in their writings. Among the cohesive devices used lexical devices had the largest percentage of the total number of cohesive devices, followed by reference devices and conjunction devices. Furthermore, it was found that there was no significant relationship between the number of cohesive devices used and quality of writing. The findings of the study have some important implications for EFL writing teachers and learners.

**Keywords:** Argumentative essays- cohesive features- Iranian EFL learners

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### 1. Introduction

Writing is one of the most authentic and interactive ways of transferring thoughts and ideas to others. Halliday (1989) refers to writing as a negotiative and explanatory act, requiring great judgement. The ability to express one's ideas in writing in a second or foreign language coherently and accurately is a major achievement that even many native speakers of English never truly master it (Celce- Murcia, 2001). Learning to write efficiently a text is a long process that requires much practice and sometimes explicit and formal instruction. For students who have not yet acquired all the skills needed to translate their ideas into a coherent text, writing is difficult and effortful. In recent years, researchers have given considerable attention to how EFL and ESL learners actually write and what problems they usually encounter in their writing. Several studies have indicated the problems that L2 writers have while writing (Chen, 2007; Crewe, 1990; Kanno, 1989; Wu, 2006).

Learners' writing must show some form of cohesion and coherence in their presentation of ideas. At the discourse level, analysis of cohesion provides a useful measure of the effectiveness and quality of written text. Since the publication of *Cohesion in English* by Halliday and Hasan (1976), many researches have been made in the field of cohesion and coherence in the English texts. Halliday and Hasan describe cohesion as one of the linguistic system's major resources for text construction (p. vii). In fact, cohesion refers to the presence or absence of explicit cues in the text that allow the reader to find relations of meaning within it. It is part of the system of language which has the potentials for meaning enhancement in texts. In Wikborg's (1990) study, it was found that Swedish students often showed cohesion problems in their writing ranging from missing or misleading sentence connection to malfunctioning cohesive devices to too great a distance between the cohesive items in a cohesive chain.

In addition to having knowledge about the internal features of written texts, familiarity with different genres can affect writing quality of the learners to a large extent. The notion of

genre is defined as “abstract, socially recognized ways of using language” (Hyland, 2003, p. 21) which are purposeful communicative activities employed by members of a particular discourse community (Swales, 1990). Argumentative writing is a fundamental writing style which is required in higher education to compose various writing tasks. The goal of argumentative writing is to convince an audience, and it is done in a situation where there exists a conflict between the beliefs and attitudes of the writer/speaker and the reader/audience (Hinkel, 2002).

The purpose of the present study is to investigate cohesive devices used in argumentative essays composed by Iranian graduate non-English majors, and the relationship between the use of cohesive devices and quality of their essays.

## **2. Theoretical Background**

Writing plays an important role in our personal and professional lives. Writing, by definition, is an act of communication, a purposeful means of addressing an audience. However, writing is currently viewed in academic circles as more than just a tool for communication. Therefore, the ability to convey meaning proficiently in written texts is a critical skill for academic and professional success. Indeed, college freshmen’ writing skills are among the best predictors of academic success (Geiser & Studley, 2001), and even outside of academia, writing skills continue to be important and are an important attribute of professional competence (Light 2001). However, many students, particularly those attempting to write in their second language, rate writing activities among the least enjoyable or beneficial for learning English (Barkhuizen, 1998; Spratt, 2001). As such, developing a better understanding of characteristics of good writing is an important objective, both for theoretical and applied reasons.

Cohesion and coherence, two important textual elements (Halliday and Hasan, 1976; Halliday, 2000), have long been recognized as important features of “good” writing. In Halliday and Hasan’s definition, coherence refers to the elements internal to the text, consisting of cohesion and register: “A text is a passage of discourse which is coherent in these two regards: it is coherent with respect to the context of situation, and therefore consistent in register; and it is coherent with respect to itself, and therefore cohesive” (p. 23). Cohesion refers to the relations of meaning that exists within a text, in other words, cohesion can be defined as linguistic devices that are used to link one part of a text to another. Halliday and Hasan (1976: 04) mention that cohesion occurs where the interpretation of some elements in the discourse is dependent on that of another. Halliday and Hasan (1976: 04) note that concept of tie makes it possible to analyze a text in terms of its cohesive properties and it gives a systematic account of its patterns and texture. Cohesive ties can manifest in form of reference(i.e., the indication of information from elsewhere such as personals, demonstratives, and comparatives), substitution(i.e., the replacement of one component by another), ellipsis(i.e., the omission of a component), conjunction (i.e., the indication of specific meaning which presupposes present items in the discourse, such as additive, adversative, casual, and temporal)and lexical cohesion(i.e., the repetition of the same or relative lexical items).

A number of researchers have investigated the relationship between the use of cohesive devices and the overall quality of writing produced. However, the findings of these studies have been somewhat inconsistent or contradictory. For example, some studies have contended that there is a positive correlation between the number of cohesive devices and good writing (Cox and Tinzmann 1987; Ferris, 1994; Field & Oi, 1992; Hasan 1984; Jin, 2001; Liu & Braine, 2005; Pappas 1985). In contrast, other studies have not shown a significant relationship between the number of cohesive features used and the quality of writing (Castro, 2004; Jafarpur, 1991; Johnson, 1992; Neuner, 1987; Zhang, 2000). Some researchers also maintain that lexical devices formed the largest percentage of the total number of cohesive devices, followed by references and conjunctions in students’ writings (Johns, 1980; Liu & Braine, 2005; Zhang, 2000).

In his study, Olateju (2006) investigated the extent to which ESL learners have been able to achieve cohesion in their written texts by examining the cohesive devices used by the students during their continuous writing sessions at school. The data used were drawn from seventy final year students in a secondary school. The elicitation technique was an essay writing exercise in which the students were given two essay questions which would enable them to demonstrate their knowledge of cohesive devices in English. Although the students' work showed evidence of the use of some of the cohesive devices identified by Halliday and Hasan (1976 and 1985), some of the few used were wrong which made it difficult for understand the texts. An analysis of the data revealed that the students lacked competence in their use of cohesive devices despite the fact that they had been exposed to intensive teaching of English for six years in the secondary school.

Writing in some genres is believed to be more difficult than writing in others. The task of constructing a successful piece of argumentative writing is complex and demanding conceptually and structurally in comparison to composing a piece of narrative. The writing of formal argument places heavy cognitive demands on the writer. The organization of argument is more difficult than the chronological order of narratives. Argumentative compositions by foreign students often deviate characteristically from expected forms.

Producing the content of writing is also challenging. Argumentative texts are also considered more difficult to write than narratives because they involve logical and coherent reasoning, which are acquired late in cognitive development (Siegler, 1996). Studies in various countries have reported poorer performance in argumentative writing than in other genres. In the United Kingdom, major assessments of the writing of 11- and 15-year-olds conducted by the National Foundation for Educational Research, found better performance on narrative writing than on persuasive writing for both age groups, though the difference was not great (Gorman et al., 1988).

However, the ability to compose a piece of argumentative text is considered important for "academic success and for general life purposes" (Crowhurst, 1990, p. 349) and students need to write dozens of lengthy papers before finishing their college careers.

Connor (1990) identifies four dimensions of argumentative texts that are unique to this genre. *Superstructure* refers to the "organizational plan of any text and ... the linear progression of the text" (p. 74). The second feature is the quality of *logical reasoning* which is assessed by analyzing the interrelationships of writers' assertions and the associated support or data provided to substantiate those claims. The third feature of good argumentative writing is identified as *persuasive appeal*, including affective appeal and establishment of writer credibility. Finally, she notes that *audience awareness* is an important characteristic of successful argumentative writing. The writer must observe an awareness of the reader's perspective by "dealing implicitly or explicitly with possible counterarguments" (p. 76).

Using Halliday and Hasan's (1976) analysis of elements in text cohesion, Crowhurst (1981) examined differences in the argumentative prose written by 105 students in sixth, tenth, and twelfth grade. The scale used to examine the students' writing contained 15 types of cohesive ties. Crowhurst found a significant difference among grades for the frequency of four kinds of cohesion: same lexical item, other lexical items, long-distance ties, and long-distance ties in the last three T-units. These differences reveal that the older students were more likely to foreshadow and summarize their arguments, thus producing long-distance ties and the repetition of the same lexical items in summaries. In addition, the older students, who have larger vocabularies, more frequently used a variety of terms to refer to the same concept. In this study Crowhurst found no significant difference among grade levels in the number of students using the various types of cohesion. Crowhurst notes that the finding of differences in only 4 of the 15 types of cohesion does not reveal very much about the distinctions in argumentative writing ability among the three age groups.

In her study, Castro (2004) compared the degree of cohesion and coherence in the essays written by thirty Filipino college freshmen. Though the results of the cohesion analysis indicated no significant difference in the number and types of grammatical or lexical cohesive devices in the low, mid and highly rated essays, the results can be useful for writing teachers who can teach the students the appropriate cohesive markers and emphasize their importance in writing.

Using Stephen Toulmin's (2003) model of argument, Chen and Cheng (2009) examined the use of English argumentation features in Taiwanese and US college freshmen's writings. The findings indicated that Taiwanese student arguments were less extended and complex, and displayed a limited range and quantity of argumentative structure in comparison to American arguments. Yet, both Taiwanese and American students were weak at handling oppositional structures, an essential trait differentiating Chinese and English rhetoric. Equally important, Taiwanese students, when composing Chinese texts were able to construct certain argument features in a way similar to American students. This illustrated that culture may not necessarily account fully for the argument features manifested in Taiwanese writing of English. Other factors, such as L2 language proficiency and developmental factors also played a mediating role in the use of argument structures.

McNamara et al (2010) used linguistic indices of cohesion and language sophistication provided by the computational tool Coh-Metrix (Graesser, McNamara, Louwerse, & Cai, 2004) to analyze a corpus of 120 argumentative essays written by college undergraduate and scored by expert raters using a holistic rubric. The essays were scored on a 1-6 scaled SAT rubric and then categorized into two groups: essays judged as low versus high quality. The results indicated that there were no differences between these two groups according to indices of cohesion (e.g., word overlap, causality, connectives). By contrast, indices related to language sophistication (lexical diversity, word frequency, and syntactic complexity) showed significant differences between the groups.

Wang and Cho (2010) examined two major academic genres of writing: argumentative and technical writing. Three hundred eighty-four undergraduate student-produced texts were analyzed through a computational tool called Coh-Metrix. The results showed that students used genre-dependent cohesive devices in a limited way to write research papers. Students' writings were examined in seven dimensions of textual cohesion. For instance, it was found that students' argumentative writing texts tend to have complex syntactic structures (due to overuse of pre-modifications) that affect the cohesion of texts. Furthermore, students employed impersonal constructions (passive voice) in their technical writing; however, over-indulgence in passive voice may also cause ambiguous meanings. As to the causal cohesion dimension, the results suggested that college students write argumentative writing with more causal cohesion than for their technical writing. On the dimension of connectives, it was found that college students' argumentative texts include significantly more connectives in their argumentative writing than in their technical writing, excepting the use of positive temporal connectives. In addition, it was found that students' technical writing showed significantly higher co-referential cohesion than students' argumentative writing for all measures. At the dimension of density of part of speech, students used personal pronouns are used less in their technical writing than in their argumentative writing. Regarding syntax complexity, students used significantly more modifiers in their technical writing than in their argumentative writing. Finally, students-produced argumentative texts are more difficult to comprehend than their technical writing texts.

Many researchers have explored the relationship between the use of cohesive devices and the quality of the writing produced. However, the results of various studies have been at best inconsistent. In order to shed some light on this area of debate, the present study investigated Iranian non-English major graduates' use of cohesive devices in argumentative writing and the relationship between the number of cohesive devices and quality of their writing. Argumentative writing has been chosen as the focus of the present study since it is important both for academic success and for general life purposes. University students must be able to write argumentative

papers in order to join the conversation in the academic community. Despite its importance, there is no accurate picture of how Iranian students compose English argumentative writing and how effective their English argumentation is.

Having reviewed previous studies on argumentative writing and cohesive devices, this study was conducted in an EFL context, Iran, to address the following questions:

1. What types of cohesive devices are used by Iranian graduate non-English majors in their argumentative writing?
2. How frequently do Iranian graduate non-English majors use cohesive devices?
3. Is there a significant relationship between the number of cohesive devices used and the quality of writing produced?

### **3. Method**

#### *3.1. Participants*

The participants in this study were 40 Iranian EFL graduate non-English major who enrolled in an English Writing course at a private language institute in Isfahan. None of them had any formal instruction about writing before starting this course. The participants came from different departments ranging from Law to Medical sciences to Statistics. All of them had passed a placement test to be at the expected level of proficiency before starting the course. They were taught basic writing skills and different genres and styles. At the end of the course, they were expected to be able to write different types of essays including narrative and argumentative ones among others. The number of male and female participants was equal, 20 female and 20 male. Their age range was 22 to 30.

#### *3.2. Data Collection Procedure*

At the first session, objectives and requirements of the course were clearly specified for the students. Therefore, the students found out what they should do during the course and what is expected of them at the end of the course. During the term, the students were taught principles of rhetoric and organization, provided with a text of a specific genre for classroom discussion, analysis, and interpretation, were required a writing assignment of that genre, and finally their writings were read and commented by their teacher. In addition, the concepts of cohesion and coherence were explicitly emphasized in each sample throughout the course. Therefore, the students had a clear idea about how they should compose their writing assignments. In the final session, the researcher asked them to write an argumentative essay on the topic, "Drinking a lot of water can help you to become healthier" within 25 minutes. The participants were required to state their viewpoints about this topic and defend it.

#### *3.3 Data Analysis Procedures and Results*

Following Liu & Braine's study (2005) and Zhang's (2000)'s study, the data in this study were analyzed through two procedures: identifying and counting the number of cohesive devices and evaluating the quality of written texts. For the first phase of data analysis, Halliday and Hasan's (1976) cohesion taxonomy was used to examine the kinds of cohesive ties used in argumentative texts. Then, frequency, mean and standard deviation of the cohesive devices in each category were computed using SPSS statistical software package. However, two categories of cohesive devices, substitution and ellipsis, were not analyzed because "they are more characteristically found in dialogues" (Halliday, 2000, p. 337) and "they are seldom used in formal writing" (Liu & Braine, 2005, p. 647).

For the second and the qualitative phase of the study, the argumentative texts were independently rated by two raters, i.e., the researcher and another English teacher who had at least 4 years of experience teaching composition classes. A holistic rating scale (Educational Testing Service, 2004) ranging from zero to five points was used. Then, the inter rater reliability was calculated to show the consistency of scoring. The inter-rater reliability was .813, which indicated the overall writing scores were consistent and reliable. Then, the relationship between the frequency of the use of cohesive devices and the quality of writing was examined through the use of Pearson Correlation.

Forty essays were evaluated by the two raters for the present study. The scores given to each composition by the raters were averaged and the mean was determined as the final score for that piece, and the averaged scores were correlated with the number of cohesive devices used by students to reveal the potential relationship between the numbers of cohesive devices and writing quality. The results are presented in Table-1 below:

**Table 1.** Mean, Standard Deviation, Range, and Other Statistics Related to the Argumentative text Scores

Mean	Standard deviation (SD)	Standard error (SE)	Minimum	Maximum	Range	Median
3.26	0.6	0.1	2.50	4.50	2.00	3.12

As shown in Table-1, the mean score of the 40 compositions is 3.26 (out of a maximum score of 5) and the standard deviation is 0.6. Thus, the compositions scored four points or above were considered the best, while those scored three or below were regarded the weakest. The range of distribution of score was narrow. This may indicate that the students in this study are far apart in terms of writing ability, and also it can be concluded that the participants' average writing proficiency was at high-intermediate level.

### 3.3.1. Cohesive Devices Used in Argumentative Text

The type and number of cohesive devices used in each argumentative text were analyzed using Halliday and Hasan's (1976) cohesive framework as the basis for data analysis. Table 2 illustrates the frequency, mean per essay, standard deviation, and percentages of the different subcategories of cohesive devices identified in the texts. This shows that the students in the present study used a variety of cohesive devices, and they employed some types of devices more frequently than others. From the data it is evident that the participants used lexical devices (52.2%) more frequently than reference devices (27.6%) followed by conjunction devices (20.2%).

**Table 2.** Cohesive Devices Used in Essays

Type of cohesive devices	Reference devices	Conjunction devices	Lexical devices	Total number of cohesive devices
Frequency	1154	844	2186	4184
Mean per composition	28.85	21.2	54.65	104.7
Standard deviation	5.95	3.84	15.97	10.91
Range	53	29	68	68
Percentage based on total	27.6%	20.2%	52.2%	100%

These findings concerning the frequency order of different types of cohesive devices are compatible with that of previous research studies (Liu & Brain, 2005; Neuner, 1987; Yvette and Yip, 1992; Zhang, 2000). Following Liu & Braine's study (2005), the definite article 'the' was also calculated and integrated into reference devices. Therefore, higher percentage of reference devices used may be due to the inclusion of the definite article. To pinpoint the variety of different subcategories of cohesive devices, a more detailed analysis of them is presented below.

### 3.3.2. Reference Devices Used in Essays

The data displayed in table 3 indicate that among the three sub-categories of reference devices, pronominal devices (51.3%) occupied the largest percentage of use, followed by the definite article (26.7%), the comparatives (12%), and demonstratives (10%) which had the least percentage of use.

**Table 3.** Reference Devices Used in Essay

Reference devices	Pronominal devices	Demonstratives	The definite article	Comparative devices	Total number of reference devices
Frequency	593	115	309	137	1154
Mean per essay	14.82	2.87	7.72	3.42	28.83
Standard deviation	5.69	1.81	3.38	1.86	5.95
Range	26	11	17	9	53
Percentage	51.3%	10%	26.7%	12%	100%
Most frequently used cohesive Items	You- we- I your- our	There- that- this	–	More- much- less- the most	

The findings correspond to Liu & Brain (2005), but differ from Neuner (1987) in which the number of demonstratives was slightly higher than the definite article. In terms of the most frequently used pronouns, 'you' was used the most followed by 'I' and 'we'. It might reflect the fact that most of the students were more comfortable at using first and second persons to make their writings more subjective and personal. This observation shows that the students should be taught to use third person pronouns in order to make their argumentative writings more objective and authoritative. Among demonstratives, students used 'this' and 'that' more than 'these' and 'those'. It shows that the students preferred to use singular demonstratives more than plural ones. The following are some of the extracts taken from the students' essays:

#### Example 1

What if someone told you, you could lose weight with no effort on your part? What if there was a secret to losing weight that didn't involve our exercise or decrease calorie.

#### Example 2

The secret to much fast weight loss without exercise or diet changes is to drink more water. I think this can also make you more healthier.

### 3.3.3. Conjunction Devices Used in Essays

**Table 4** demonstrates the frequency, percentage and standard deviation of the four

subcategories of conjunction devices. Among these subcategories, additive devices (51.2%) had the largest percentage of use, followed by the Causal devices (19.3%), adversative devices (15.5%), and temporal devices (14%). These findings are somewhat different from those of Liu & Brain (2005) in which the number of temporal devices was higher than the adversative devices.

In terms of the most frequently used conjunction devices, it is interesting to find that in each category, the students in this study strongly preferred using simple words to longer phrases to connect different parts of their writing together. The cohesive items with the highest frequency among additive devices were 'and', 'or', and 'also'. Among adversative devices, the students employed item 'but' and 'however' the most frequently, whereas they rarely used items like 'on the contrary' and 'on the other hand'. In terms of causal devices, the items 'because', 'because of', and 'for' had the highest percentage. As to temporal, the students employed 'first', 'second', 'finally', and 'at the end of' more than others to show the order of their reasoning. It might manifest the fact that most of them lacked familiarity with or had difficulty with using other conjunction devices. This observation could inform writing teachers to emphasize complex conjunction devices more in their teaching.

**Table 4.** *Conjunction devices used*

Conjunction devices	Additive devices	Adversative devices	Causal devices	Temporal devices	Total number of conjunctive devices
Frequency	432	131	163	118	844
Mean per essay	10.8	3.27	4.07	2.95	21.09
Standard deviation	3.16	1.43	2.09	1.06	3.84
Range	13	6	9	4	29
Percentage	51.2%	15.5%	19.3%	14%	100%
Most frequently used cohesive Items	And, or, also	But, however	Because, because of, for	First, second, finally, at the end	

### Example 3

Finally, because water is such an important and necessary component of your body, it makes sense that it can play a vital role in your health and body conditions.

### Example 4

First, water is very useful and helpful for our kidneys, because it can clean them...  
Second, drinking water leads to less eating and more weight loss. Also it helps to lose our appetite, because we don't feel hungry.

### 3.3.4 Lexical Devices Used in Essays

Among the five sub-categories of lexical devices, repetition (76%) accounted for the largest percentage of use, followed by synonym (8.7%), collocation (7.9%), antonym (4.8%), and sperordinate (2.6%), as shown in Table 5. The results are in line with Liu & Brain (2005), Neuner (1987), and Zhang (2000) studies, and indicate that the students had a tendency to use the same vocabulary item to emphasize their ideas and support their argument. It can be due to the fact that the students have a limited knowledge of vocabulary; hence they should repeat them in their



writings. As can be seen from Table 5, the most frequently repeated vocabulary items were 'water', 'body', 'drink', and 'weight' which were directly related to the topic of the essay. The followings are some extracts from students' essays:

**Table 5.** *Lexical devices use*

Lexical devices	Repetition	Antonym	Synonym	Superordinate	Collocation	Total number of lexical devices
Frequency	1663	104	189	58	172	2186
Mean per essay	41.57	2.6	4.72	1.45	4.3	54.64
Standard deviation	9.11	0.90	1.86	0.63	1.93	15.97
Range	49	4	9	3	11	68
Percentage	76%	4.8%	8.7%	2.6%	7.9%	100%
Most frequently used cohesive Items	Water-calorie-body-human-drink	Easy-difficult Useful-harmful Advantage-disadvantage	Get-obtain Exercise-activity	Liquid-water Exercising-running	Put on weight-lose weight Do exercise	

### 3.3.5. The Relationship Between the Number of Cohesive Devices and Writing Quality

In addition to the general description of the frequency of use of cohesive devices, another major purpose of this study was to investigate relationship between the number of cohesive devices used and the quality of writing produced. To answer research question 3 regarding this point, the numerical essay scores and the number of each cohesive category (i.e., total devices per composition) were correlated by Pearson Product Moment Correlation Coefficient.

**Table 6.** *Correlation between Essays Scores and Cohesive Devices*

	Essay scores	Reference devices	Conjunction devices	Lexical devices	Total number of cohesive devices
Essay scores	1				
Reference devices	-0.306	1			
Conjunction devices	-0.026	0.710(**)	1		
Lexical devices	-0.201	0.803(**)	0.857(**)	1	
Total number of cohesive devices	-0.306	0.887(**)	0.710(**)	0.686(**)	1

\* $p < 0.05$

\*\* $p < 0.01$

The correlation matrix in Table 6 indicates non-significant and even negative correlations between (1) the essay scores and the number of reference devices ( $r = -0.306$ ), (2) the essay scores and the number of conjunction devices ( $r = -0.026$ ), (3) the essay scores and the number of lexical devices ( $r = -0.201$ ), and (4) the essay scores and the total number of cohesive devices ( $r = -0.306$ ). It is evident that the number of cohesive devices and writing quality were shown not to be significantly related. The greater use of cohesive devices in writing did not indicate better writing quality.

One possible explanation may be that the participants in this study overused cohesive devices and in some cases even misused them in their essays. It seems logical to conclude that their problems with using the cohesive devices had negative effect on their writing quality. Analyzing their essays revealed that most of them didn't know how to use those cohesive devices properly. Some of the participants' problems were related to the use of reference devices. For instance, regarding the use of definite article 'the', it seemed to be some interference from the Persian language. The participants tended to confuse the use of definite and indefinite articles or insert unnecessary ones. In addition, in some cases, they employed double-comparative structures (e.g., *the more healthier or the least harmfullest or the more better...*). Apart from the difficulties with reference devices, the students tended to overuse additive devices (e.g., *and, or...*) and causal devices (e.g., *because, because of...*) in their essays. Participants sometimes used such causal devices without any clear cause-effect relationships among parts of sentences. A more salient problem was initial positioning of conjunction devices even when it is allowed to place them in non-initial position. That is, most of conjunctive words or phrases appeared at the beginning of sentences. Similar finding was found in Zhang's study (2000). Lexical devices were the most problematic area for the participants in this study, even though they accounted for the highest percentage of cohesive devices identified in argumentative essays. The students used a limited number of lexical items and most of the lexical devices were just repetitions of the same items. Other types of lexical devices were rarely used in the writing essays. Furthermore, analysis of data revealed that the participants had difficulty choosing right words and right collocations (e.g., *miss some weight*). There may be two sources for the students' problems in this regard. One is that limited exposure to authentic materials and related readings. The other one is the interference from mother to second language.

#### 4. Discussion and Conclusions

The findings of this study, in general, are consistent with those of previous research studies. In this study, Halliday and Hasan's (1976) cohesive framework was used to analyze students' use of cohesive devices. To summarize, the results of this study suggest that the participants, Iranian graduate non-English majors, had knowledge of cohesive devices and were capable of employing a variety of them in their argumentative writings. However, some of the cohesive devices employed were wrongly used which made it difficult to comprehend the text. Among the three cohesive devices examined, lexical devices (52.2%) formed the highest percentage of the total number of cohesive devices used in the argumentative essays, followed by reference devices (27.6%) and conjunctions (20.2%).

A more detailed analysis of the cohesive devices used in the argumentative essays showed that, in reference devices category, pronominal devices (51.3%) were the most frequently used while demonstratives (10%) the least frequently used. This finding corresponds to that of Liu & Brain's study (2005), while the percentage of use is a little different. Regarding the use of conjunctions, the qualitative analysis of the essays indicated that the participants of this study preferred using simple conjunctions like 'and', 'but', 'because' more frequently than others like 'nonetheless', 'on the other hand', 'furthermore'. It may be due to the fact that the students learn the simple ones in early stages of second language learning, hence feel more comfortable using them. It was found that Iranian graduate non-English majors in this study were in general weak

in lexical cohesion, though it constituted the highest percentage of total cohesive devices used in the essays. Extensive use of lexical devices was reasonable because this genre requires forming arguments and elaborating ideas to support them which necessitate the effective use of various lexical devices. The students' vocabulary repertoire was limited. It can be understood by the fact that a great percentage of the lexical devices was merely repetition of the same lexical items (76%). In addition, some of the lexical items used, especially the collocations, were misused. This finding is in line with that of Liu & Brain's study (2005). To understand any relationship between the frequency of cohesive devices used and the quality of writing, correlation was computed between the numerical essay scores and total number of cohesive devices in essays. The correlation matrix indicated that there was no statistically significant relationship between the essay scores and the number of cohesive devices used in the same essay. This finding is in line with those of the previous research studies (Castro, 2004; Jafarpur, 1991; Johnson, 1992; Karasi, 1994; Neuner, 1987; Zhang, 2000). Therefore, the number of cohesive devices cannot be a differentiating factor between 'good essays' and 'poor ones'.

Generally speaking, lack of cohesion in writing is a problem that cannot be ignored. The findings of this study suggest the following implications both for writing teachers and EFL learners. The first one is for the students to improve their lexical knowledge. Acquiring lexical knowledge is fundamental in learning the four skills of the second or foreign language. Inclusion of meaningful vocabulary exercises in writing course syllabuses may address this issue. In addition, new vocabulary items should not be presented in isolation rather in context, since it may help the learners to distinguish the differences between them. Well-organized lexical knowledge can help the learners to compose more lexically cohesive essays.

Second, as most of the students in the sample were found to have difficulty employing the cohesive devices accurately and properly, it seems necessary to teach cohesion and cohesive devices explicitly and to provide them with ample examples in English classes. Since in most cases, learners are familiar with different types of cohesive devices; however, they simply do not know how to use them correctly.

Third, future research should be done to consider the growth of cohesion knowledge that results from a variety of instructional sources and its time in learners. This is especially important to consider because the time of learning about cohesion needs to be identified in order to develop instructional programs to facilitate such learning.

A final word is that although this study did not analyze a large number of essay samples, it may be considered a helpful contribution, particularly in our country, Iran, where few studies have examined cohesion in Iranian EFL learners' writings, and especially the relationship between use of cohesive devices and (argumentative) writing quality.

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