

Analysis of Contrastive Discourse Markers Implementation in ESP Books of Computer Science Developed by Non-native (Iranian) and Native (British) Authors

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ABSTRACT

Discourse markers (DMs) as connective words guide interlocutors to the proper comprehension of discourses. Therefore, this study tried to evaluate contrastively and descriptively 'contrastive' discourse markers' implementation in ESP books of computer science developed by non-native (Iranian) and native (British) authors. To do so, a corpus of two academic ESP books which are used by ESP teachers in Iranian universities was chosen and all contrastive discourse markers in the first reading parts of the books (totally 32 texts, each book 16 readings) were counted and classified based on Fraser's (2006) taxonomy. Then results were analyzed by SPSS software (version 21.0) using chi-square formula. As far as this research was concerned, the results indicated that the employment of contrastive discourse markers is not significantly different in non-native and native developed texts. Moreover, results showed that 'but' followed by 'however' are more common contrastive discourse markers both in native and non-native developed texts. Also, contrastive discourse markers were more frequent in native-authored texts (% 0.54) than their non-native counterpart (% 0.36). It is hoped that further studies on larger corpora shed more light on the importance of discourse markers and help EFL learners, teachers, and material providers.

Keywords: discourse markers, ESP, coherence, cohesion, discourse analysis

INTRODUCTION

Nowadays, English plays the role of a lingua franca in worldwide relations (Bahrami, 2012). This role is played in all aspects of interactions from academic to personal, commercial, political affairs, etc. One of the important interactions is transmitting academic and technical information. That is the way which ESP has got to pave. As internet and technology develop, more need is felt for proficient written and spoken communication in ESP fields. To meet the need, all aspects of language learning should be taken into account.

Discourse markers as connective words help to make discourses cohesive and coherent. Feng (2010, pp. 300-304) writes, “discourse markers play an important role in a text’s cohesion and coherence”. Therefore, he goes on to say that teachers should be aware of the students’ need to learn discourse markers role and function in cohesion and coherence of discourse. Based on his research results, Feng argues that when teachers do not take discourse markers seriously, several problems may occur. For example, some students avoid using them as far as possible. Another issue he experienced is the inappropriate use of discourse markers by EFL learners. Feng concludes that although discourse markers are not the only key to English writing, “we can’t deny they have a great effect on the cohesion and coherence of writing”.

The same notion is concluded by Lahuerta Martínez (2004, p. 66) as “it is plausible to suppose that those non-native speakers who are competent in the use of the DMs of the L2 will be more successful in interaction (both oral and written) than those who are not”.

Discourse

Discourse, as “any instance of language-in-use or any stretch of spoken or written language” (Gee, 1999, p. 205), acts the part of a communicative tool in interactions. Widdowson (2007, pp. 49-51) argues that a discourse to be meaningful should be coherent and cohesive simultaneously. He writes cohesion is based on contextual words presented in a text while coherence relies on shared knowledge between producer and receiver.

Therefore, discourse markers as connectors of meaning should be taken seriously. If they are not used appropriately or adequately the communication may fail (Lahuerta Martínez, 2004, p. 64; Rezvani Kalajahi, Abdullah, Mukunda, & Tannacito, 2012, p. 1661).

As far as this paper is concerned, although some studies have been done on the role of discourse markers, it seems that the part of these cohesive devices (in this case contrastive ones) are not paid enough attention in learning language skills (listening, reading, speaking, and writing) in Iran specially in ESP fields. Thus, developers of ESP materials and instructors should spend more time on the role discourse markers play in negotiation of meaning. Unfortunately, Rezvani Kalajahi, Abdullah and Baki (2012, p. 197) report that “the findings ... [reveal] the under representation of DMs in existing teaching materials and in subjects’ teaching”.

Models

Since the 1980s or so discourse markers have got increasing status in literature. Many aspects of them (their role, function, meaning, identity, etc.) have been investigated so far (Fraser, 1999; Waring, 2003; Lahuerta Martínez, 2004; Rezvani Kalajahi, Abdullah & Baki, 2012).

As these markers are named differently in the literature (e.g., linking words, connectives, discourse operators, and discourse connectors), there are also distinct models for comparing and contrasting them. For instance, Rezvani Kalajahi, Abdullah, Mukunda, and Tannacito (2012) mentioned some famous ones: Halliday and Hasan, 1976; Schiffrin, 1987; Fraser, 1999; Biber et al., 1999; Celce-Murcia and Larsen-Freeman, 1999.

Fraser's model

Fraser (1999, p. 938) defines discourse markers as connectors which “impose a relationship between some aspects of the discourse segment they are a part of, call it S2 [segment 2], and some aspect of a prior discourse segment, call it S1 [segment 1]. In other words, they function like a two-place relation, one argument lying in the segment they introduce the other lying in the prior discourse”. He divides discourse markers into two major groups:

1. *Discourse markers which relate messages* (involves DMs which relate some aspect of the messages conveyed by the segments S2 and S1) which are classified into four subclasses:
 - 1.1 *Contrastive discourse markers* (the DM signals that the explicit interpretation of S2 contrasts with an interpretation of S1),
 - 1.2 *Collateral/Elaborative discourse markers* (the DM signals a quasi-parallel relationship between S2 and S1),
 - 1.3 *Inferential discourse markers* (the DM signals that S2 is to be taken as a conclusion based on S1),
 - 1.4 *Fourth subclass or Reasoning discourse markers* (this group specifies that S2 provides a reason for the content presented in S1).

2. *Discourse markers which relate topics or topic relating discourse markers* (involves an aspect of discourse management and this level only).

The second group has no subclasses but it mostly deals with spoken context ('to return to my point', 'while I think of it', 'with regards to', 'back to my original point', 'before I forget', 'by the way', 'incidentally', 'just to update you', 'on a different note', 'speaking of X', 'that reminds me', 'to change to' are discourse markers related to this group).

Fraser (2006) presents a new elaborated classification in which the second group has been omitted. Although several outstanding scholars presented different discourse markers classifications, this study limited itself to Fraser's (2006) taxonomy which was chosen among different models. As far as the study was concerned, Fraser's model was more up to date and practical than other classifications modeled by outstanding scholars. Moreover, it is dedicated to written discourse rather than that of spoken.

In addition, to control the scope of the study, just contrastive discourse markers are paid upon. One reason to focus on contrastive discourse markers is the frequent use of them in native and non-native texts (Talebinejad & Namdar, 2011; Alghamdi, 2014). Also, Lahuerta Martínez (2004) found that contrastive discourse markers preceded by elaborative ones are more frequent in his study.

Fraser's (2006) model is presented in table 1.

Table 1. Fraser's model (2006)

Classification	Discourse markers
a. Contrastive Discourse Markers	but, alternatively, although, contrariwise, contrary to expectations, conversely, despite (this/that), even so, however, in spite of (this/that), in comparison (with this/that), in contrast (to this/that), instead (of this/that), nevertheless, nonetheless, (this/that point), notwithstanding, on the other hand, on the contrary, rather (than this/that), regardless (of this/that), still, though, whereas, yet
b. Elaborative Discourse Markers	and, above all, also, alternatively, analogously, besides, by the same token, correspondingly, equally, for example, for instance, further(more), in addition, in other words, in particular, likewise, more accurately, more importantly, more precisely, more to the point, moreover, on that basis, on top of it all, or, otherwise, rather, similarly, that is (to say)
c. Inferential Discourse Markers	so, after all, all things considered, as a conclusion, as a consequence (of this/that), as a result (of this/that), because (of this/that), consequently, for this/that reason, hence, it follows that, accordingly, in this/that/any case, on this/that condition, on these/those grounds, then, therefore, thus
d. Temporal Discourse Markers	then, after, as soon as, before, eventually, finally, first, immediately afterwards, meantime, meanwhile, originally, second, subsequently, when

Based on the topic of this study and Fraser's (2006) classification of discourse markers the following questions were proposed:

Q. 1: Are contrastive discourse markers statistically different in texts developed by native (British) and non-native (Iranian) authors?

Q. 2: Are contrastive discourse markers descriptively different in texts developed by native (British) and non-native (Iranian) authors?

According to aforementioned questions, the following null hypotheses were formulated to meet the research ends:

Ho. 1: Contrastive discourse markers are not statistically different in texts developed by native (British) and non-native (Iranian) authors.

Ho. 2: Contrastive discourse markers are not descriptively different in texts developed by native (British) and non-native (Iranian) authors.

LITERATURE REVIEW

English for Specific Purposes (ESP)

Hutchinson and Waters (1987, p. 19) put, “ESP must be seen as an approach not as a product. It is not a particular kind of language... [Rather] it is an approach to language learning, which is based on learner need... ESP, then, is an approach to language teaching in which all decisions as to content and method are based on the learner's reason for learning”.

Mohammadi and Mousavi (2013, p. 1014) maintain, “ESP deals with preparing the learners to be able to use English in academic (students of different fields), professional (people of different professions such as doctors, engineers, and nurses), or workplace (technicians for example) settings”.

ESP and discourse analysis

Dudley-Evans and St John (1998, p. 87) note that “any study of language or, more specifically, text at a level above that of the sentence is discourse study”.

As the rhetorical/discoursal structure of particular scientific field differs from that of the others (Hutchinson & Waters, 1987, p. 12), discourse analysis (text analysis) plays a main role in ESP (Hutchinson & Waters, 1987; Dudley-Evans & St John, 1998).

Hutchinson and Waters (1987) comment there are some uses of discourse analysis in ESP: Firstly, by discourse analysis different stages or phases of a communication in a certain field will be revealed. Secondly, the study of relative positions of the sentences will show how meaning is represented in a text (pp. 34-35). Stevens (1988), quoted by Dudley-Evans and St John (1998, p. 3), also explaining the definition of ESP, believes that ESP involves language which is “...centered on language appropriate to those activities in syntax, lexis, discourse, semantics and so on, and analysis of the discourse”. Dudley-Evans and St John (1998, p. 1) name “practical outcomes” as the main focus of ESP. They believe that the fundamental interests for ESP have been always “needs analysis, text analysis”, and to prepare learners to communicate.

The Importance of discourse analysis

McCarthy (1991, p. 12) to explain the significance of discourse analysis, writes “with a more accurate picture of natural discourse, we are in a better position to evaluate the descriptions upon which we based our teaching, the teaching materials, what goes on in the classroom, and the end products of our teaching, whether in the form of spoken or written output”.

Olshtain and Celce-Murcia (2001) argue that the goal of language teaching is learning how to communicate in target language (communicative approach). To achieve the assumed goal, learners should be encountered with real and practical instances of communication or discourse. One way, they propose, is to use discourse analysis. They put:

It would be ill-advised to teach language via the communicative approach without relying heavily on discourse analysis. In fact discourse analysis should provide the main frame of reference for decision-making in language teaching and learning. Creating suitable contexts for interaction, illustrating speaker/hearer and reader/writer exchanges, and providing learners with opportunities to process language within a variety of situations are all necessary for developing learning environments where language acquisition and language development can take place within a communicative perspective. (707)

Trujillo Saez (2003) citing Connor (1996) puts that different languages have different style of writing. These rhetorical distinctions are based on three principles: 1) "Language and writing are cultural phenomena", 2) "Each language has rhetorical conventions unique to it", and 3) "The linguistic and rhetorical conventions of the first language interfere with writing in the second language". Therefore, a contrastive strategy should be taken into consideration "to understand ... and ... propose teaching methodologies appropriate to tackle these differences" (Description of the research).

Pragmatics

Yule (1996) emphasizing the role of context and the way it modifies what is said, elucidates pragmatics as "the study of contextual meaning". He states that the interpretation of what is said shows that everything is not expressed in a communication, rather some hidden messages is conveyed by the sender and interpreted by the receiver. Yule puts, "pragmatics [as well] is the study of how more gets communicated than is said". He, again, exploring other aspects of pragmatics refers to the quantity of what should be said and what should not be said based on the shared knowledge between speaker and listener. To him the closeness or relationship of interlocutors no matter physical, social, or conceptual controls the level of common experience between sender and receiver. Therefore, pragmatics is described by him as "the study of the expression of relative distance [closeness/relationship]" (p. 3).

M. Bloor and Bloor (2007) write, "pragmatics is a branch of study related to, but separate from, linguistics," because it clarifies discourse features which cannot be justified by linguistics (p. 19). They enumerate those discourse features as reference, communicative function, presupposition, and implicature:

1. Reference: plays a crucial role in the cohesion of discourses. The way we replace words, phrases, and clauses by pronouns and other parts of speech may influence our intended meaning (p. 20).
2. Communicative function: "is closely related to the notion of speech act, which encapsulates the idea that when we are talking to each other we are 'doing things' with our words" (p. 20).
3. Presupposition: while communicating there are some assumptions presumed by interactants. The interpretation of these assumptions relies on the context (p. 22). Johnstone (2008, p. 275), in other words, expounds presupposition as "what is assumed

in using or interpreting a sentence, as opposed to what is asserted. To give a famous example, someone who says 'The king of France is bold' presupposes that there is a king of France".

4. Implicature: "what is suggested or hinted at but not explicitly stated" (M. Bloor & Bloor, 2007, p. 174).

At the end, they (p. 176) briefly concluded that pragmatics is "the study of meaning in a context."

Pragmatics and discourse analysis

According to Yule (1985, p. 139) listeners/readers to appreciate the given message need to analyze the text. That is, to comprehend what is intended we should examine what is meant rather than what is said based on the lexical and physical context, what is a set of coherent sentences rather than scrambled ones, and what is the correct interpretation of the text. This examination, to him, is called discourse analysis.

Yule (1985, p. 140) outlines cohesion and coherence as some information on which we rely to interpret and consequently come to pragmatic meaning of discourse.

Yule (1996, p. 84) argues that pragmatics plays an important role in discourse analysis. To him pragmatics "tends to focus specifically on aspects of what is unsaid or unwritten (yet communicated) within the discourse being analyzed". To put pragmatics into action in a discourse, he comments that we should pay "attention to psychological concepts such as background knowledge, beliefs, and expectations" rather than forms, structures, and social concerns. He goes on to say, "in the pragmatics of discourse, we inevitably explore what the speaker or writer has in mind".

Discourse markers

Discourse markers are variously named by different scholars. Fraser (1999, pp. 931-932, 937) lists some of them: discourse markers, discourse connectives, discourse operators, pragmatic connectives, sentence connectives, discourse particles, discourse signaling devices, phatic connectives, pragmatic expressions, pragmatic formatives, pragmatic markers, relational phrases, semantic conjuncts, and cue phrases. To him, these discourse elements are "a class of lexical expressions drawn primarily from the syntactic classes of conjunctions, adverbs, and prepositional phrases".

Schiffrin (2001, p. 65) states that defining discourse markers has always been problematic. She calls the problem "a discussion of definitional issues". Schiffrin referring to her previous work (1987) calls, "discourse markers as sequentially dependent elements that bracket units of talk ... i.e. nonobligatory utterance-initial items that function in relation to ongoing talk and text" (p. 57). She goes on, "discourse markers tell us not only about the linguistic properties (e.g. semantic and pragmatic meanings, source, functions) of a set of frequently used expressions, and the

organization of social interactions and situations in which they are used, but also about the cognitive, expressive, social, and textual competence of those who use them" (p. 67).

Trujillo Saez (2003) proposes, "the speaker [uses discourse] markers to reduce the cognitive effort required from the hearer to interpret the utterance, by signaling which inference reflects more accurately the speaker's meaning" (Definition of Discourse Markers section). Lahuerta Martínez (2004, p. 65), also, states that speakers use discourse markers in order to direct their audiences to appropriate interpretation of the discourse communicated. In other words, discourse markers are one of the linguistic devices which help hearer to comprehend the message correctly.

Lahuerta Martínez (2004, p. 65) citing Blakemore (1993) continues that discourse markers are those clues which narrow down the relevant context to help hearer/reader interpret the intended meaning. He argues, "since DMs [discourse markers] facilitate communication, it is logical to suppose that the lack of DMs in an L2, or their inappropriate use could, to a certain degree, hinder successful communication or lead to misunderstanding".

Fraser (2006) categorizes discourse marker under 'pragmatic markers'. He defines discourse markers as those "which signal a relation between the discourse segment which hosts them, and the prior discourse segment" (Introduction section). He mentioned that discourse markers do not "create a relationship between" two segments, rather the relationship exists beforehand. They just help the receiver interpreting the relationship accurately (Definition section).

Fraser (2006) explicitly eliminates "non-verbal gestures, syntactic structures, and aspects of prosody such as intonation or stress" from discourse markers (Definition section, para. 2). On the contrary, Schifffrin (1987), quoted by Fraser, includes non-verbal gestures in discourse markers. She (2001, pp. 57, 59) names interjections like *oh*, *ah*, *aha*, *ouch*, *yuk* and lexical phrases like *y'know* and *I mean* as discourse markers. Similarly, Waring (2003, p. 416) as well as Green (2006) cited by Buyukkarci and Genc (2009, p. 42) incorporate these interjections into discourse markers.

Review some contrastive analyses of discourse markers use

Very briefly the results of some contrastive analyses on discourse markers' implementation are reviewed. Rashidi and Ghaffarpour (2010, pp. 87-105) surveyed the use of discourse markers in teaching and linguistic research article abstracts written in Persian and English. They quoting Moreno (1997) argue that although genre analysis shows some united boundaries for writing, cultural deviations also proved to be influential in employing discourse markers by different communities. They cumulated the outcomes to state that cultural factor may have a significant effect on discourse differences. Moreover, specific genres, the research concludes, have their own way to employ discourse markers which would be helpful in teaching English for Specific Purposes.

Kaveifard and Allami (2011, pp. 1786-1791) made an inquiry into the inferential discourse markers use in discussion section of psychological articles written by English native speakers, Persian non-native English speakers, and Persian native speakers. They used Fraser's (1999) and Halliday and Hassan's (1976) taxonomies to examine the frequency of inferential discourse markers in the selected corpora. Based on findings, 'therefore' followed by 'thus' are more frequent discourse markers used. Moreover, a significant difference exists among English native, non-native, and Persian native speakers from inferential discourse markers point of view.

Talebinejad and Namdar (2011, pp. 1590-1602) inspected the frequency of discourse markers occurrence in Iranian high school course books and different Native books taught in private institutes in Iran. Based on Fraser's (1999) classification the results demonstrated that the use of discourse markers in Iranian books 1, 2, and 3 is not adequately sufficient in contrast with native books, while their frequency in Iranian book 4 is acceptable. Another conclusion represented that the use of 'contrastive markers' are more frequent in Iranian books 1, 2, and 3, while 'elaborative markers' are more common than the others in book.

Allami and Iranzad (2012) surveyed the employment of discourse markers in oral communication between native English and Iranian EFL speakers. They recorded a non-native speakers' corpus and compared it with a native one. The result made them to believe that non-native EFL speakers used discourse markers more frequently than native speakers (Abstract).

Alghamdi (2014, pp. 294-305) studied the use of discourse markers in narrative and argumentative papers of undergraduate native and non-native (Arab, Chinese, Korean, and Georgian) students at Midwest University. The researcher using Fraser' (1999) category explored the corpus of written texts. The results showed that no significant difference exist between Ns and NNs both in narrative and argumentative papers. Detailed enquiry proved that Ns and NNs used 'elaborative markers' more than the others, again in both narrative and argumentative texts.

Alavi-Nia and Mozaffari (2014, pp. 161-170) had an interesting point of view toward discourse markers. They compared the use of discourse markers in three EFL and three PFL (Persian as Foreign Language) course-books to see whether the employment of markers (they call them discourse particles) are the same and if Iranian curriculum designers keep the pace with their international counterparts. Moreover, they compared the dialogues in course-books to evaluate the extent to which EFL and PFL course-books mirror natural use of language in English and Persian communities. To do so, they used the conversations in some American and Iranian TV series. The results proved that discourse markers are more frequent in American books than Iranian ones. In addition, PFL book designers need to try hard to keep pace with English designers on the one hand, and utilize more natural sources to enrich the PFL materials on the other hand.

Peyman (2014, p. 229) quoted Khaghani (1996) contrastive analysis of discourse markers between Persian and English. In this study Khaghani compared two English books with their Farsi translations. It was hypothesized that there are some differences in the use of discourse markers of Persian and English corpora. At the end, the researcher accumulated all evidences to claim that English texts employ more discourse markers than Persian ones.

To sum up, it is believed that discourse markers play an important role in cohesion and coherence, and consequently, communicating the intended meaning of speaker/writer. They are bridges which fill the gaps of communication and guide the addressees to decode the flow of received information. To the extent the literature reviewed shows, there are significant differences and similarities between frequency and use of discourse markers applied by native and non-native EFL learners. This phenomenon should be paid upon in classroom situations by language teachers to help learners to come up with a more native like English language competence and performance. This aim is also concluded by Buyukkarci and Genc (2009, p. 49) in their study of discourse markers use by Turkish EFL learners. The present study aimed to explore the same idea to see whether it is the case in computer ESP texts developed by native (British) and Iranian authors or not.

PURPOSE OF THE STUDY

The purpose of the study has been discovering the differences and similarities of contrastive discourse markers` use in computer ESP books developed by native (British) and non-native (Iranian) authors available in Iranian book markets. It was also to describe the employment of contrastive discourse markers in compared texts.

Feng (2010, p. 303) quoting Schiffrin (1987) writes, “because the functions of markers are so broad, any and all analyses of markers– even those focusing on only a relatively narrow aspect of their meaning or a small portion of their uses– can teach us something about their role in discourse”.

It is hoped that the result of this contrastive and descriptive study help computer ESP practitioners and learners improve their awareness of how to negotiate meaning in written texts. It may promote learning and appreciation of English language as native-like as possible

METHOD

The objective of this study is to compare and describe the use of contrastive discourse markers in two academic computer science books of ESP courses developed by native (British) and non-native (Iranian) authors. Therefore, to shed light on the steps taken, these parts are to be discussed here: source materials, procedure, and design.

Source materials

In this study the following materials were analyzed:

1. A native ESP textbook for computer science developed by native authors (British) which is named:

Brown, P. C. & Mullen, N. D. (1987). English for Computer Science (New ed., Rev. and updated). Oxford: Oxford University press.

2. The second textbook is a non-native ESP book for computer science developed by a non-native author (Iranian) which is named:

Haghani, M. (2013). Special English for the Students of Computer. Iran: SAMT Publication.

As counted, the corpus had 21385 words (8365 words in native book and 13020 words in non-native one).

This study focused just on contrastive discourse markers of the very first "Reading Section" of the two aforementioned native and non-native texts. The other parts within each unit of the books were excluded. Moreover, as non-native material has sixteen units, the first sixteen readings from native book were chosen to be analyzed and compared.

Procedures

Based on Fraser's taxonomy (2006), the differences and similarities of contrastive discourse markers have been discovered using the native and non-native ESP books. To do so, these steps were taken into consideration:

1. To gain the exact extent of the corpus, all 32 units' words (from native and non-native sources) were counted.
2. To minimize personal errors two raters (the researcher and another MA student majoring in English) counted the number of contrastive discourse markers in native and non-native texts independently.
3. Based on Fraser's (2006) classification, contrastive discourse markers were ordered by this study into a table to make it more practical and easy to review.
4. Raters were asked to count discourse markers and write the numbers in the table separately for each book and unit.
5. After counting, there have been some differences (of course not significant) between two raters' statistics based on personal errors or different understandings of some markers. Therefore, both raters discussed differences one by one and settled them. The agreed statistics were summed up and filled in a final table. The final table's statistics were the basis for comparative/contrastive, and descriptive analysis of contrastive discourse markers.

SPSS software version (21.0) analyzed the statistics and using Fraser's (2006) model the differences and similarities were examined and compared to see to what extent two

texts are different and similar in their use of contrastive discourse markers. The results are shown in tables and graphs to represent the findings clearly.

Design

To achieve the objectives of the research, the design of the study was Descriptive and Comparative in order to compare frequency counts and compute Chi-square of contrastive discourse markers in the analysis of native and non-native ESP books.

RESULTS

The purpose of this study was to compare and describe the frequency and use of contrastive discourse markers in ESP texts of computer science developed by native (British) and non-native (Iranian) authors. In order to meet the above-mentioned objectives of the study, each hypothesis is dealt with one by one:

Testing the first research hypothesis

The first research hypothesis of the present study predicted that contrastive discourse markers are not statistically different in texts developed by native (British) and non-native (Iranian) authors. In order to test this hypothesis, the analysis of crosstabs (two-way Chi-square) was conducted. Before discussing the results of Chi-square, the frequencies, percentages and standardized residuals (Std. Residual) for the contrastive discourse markers employed in texts developed by native and non-native authors were computed and presented in Table 2. If Std. Residuals go beyond ± 1.96 (Field, 2009), it is indicated that the utilization of contrastive discourse markers is significantly beyond expectations. If not, their use is not considered important.

Table 2 Frequencies, Percentages and Std. Residuals for Utilization of Contrastive Discourse Markers in Native and Non-native Texts (Continued)

			Contrastive discourse markers				
Language			Although	But	However	In contrast	In spite of
Native	Count		5	16	10	0	1
	% within		10.9%	34.8%	21.7%	0.0%	2.2%
	Std. Residual		.3	-.5	-.1	-1.2	.0
Non-Native	Count		4	21	11	3	1
	% within		8.5%	44.7%	23.4%	6.4%	2.1%
	Std. Residual		-.3	.5	.1	1.2	.0
Total	Count		9	37	21	3	2
	% within		9.7%	39.8%	22.6%	3.2%	2.2%
			Contrastive discourse markers				
Language			Instead	On the other hand	Rather than	Still	
Native	Count		0	3	3	2	
	% within		0.0%	6.5%	6.5%	4.3%	
	Std. Residual		-1.0	1.2	.3	.4	
Non-Native	Count		2	0	2	1	
	% within		4.3%	0.0%	4.3%	2.1%	
	Std. Residual		1.0	-1.2	-.3	-.4	
Total	Count		2	3	5	3	

		% within	2.2%	3.2%	5.4%	3.2%
Contrastive discourse markers						
			Though	Whereas	Regardless of	Total
Language	Native	Count	1	4	1	46
		% within	2.2%	8.7%	2.2%	100.0%
		Std. Residual	.0	1.4	.0	
	Non-Native	Count	1	0	1	47
		% within	2.1%	0.0%	2.1%	100.0%
		Std. Residual	.0	-1.4	.0	
Total		Count	2	4	2	93
		% within	2.2%	4.3%	2.2%	100.0%

The results of two-way Chi-square that was run to check the first hypothesis are provided in Table 1.3 below. Chi-square results revealed that the differences observed in Table 1.2 are not statistically significant ($\chi^2(11) = 13.35$, $n = 93$, $p = .27$, $p > .05$) in which the p value (.27) exceeds the selected significant level for this study (.05); consequently the first null hypothesis of the current study as “Contrastive discourse markers are not statistically different in texts developed by native (British) and non-native (Iranian) authors” is retained. It should be mentioned that p values bigger than 0.05 are not considered important, while those lower than 0.05 are judged statistically significant.

Table 3 Chi-Square Test for Application of Contrastive Discourse Markers in Native and Non-native Texts

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	13.359	11	.271
Likelihood Ratio	18.003	11	.082
Linear-by-Linear Association	2.611	1	.106
N of Valid Cases	93		

The graphical representation of the results in Table 1.2 is demonstrated in Figure 1.

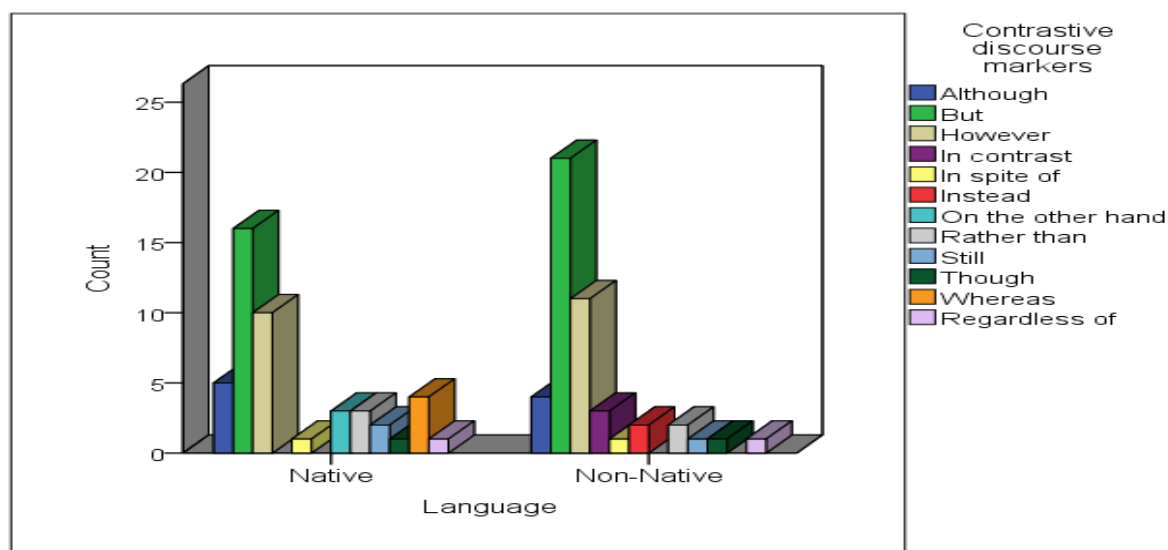


Figure 1. Use of contrastive discourse markers in native and non-native texts

Testing the second research hypothesis

The second research hypothesis of the current study proposed that contrastive discourse markers are not descriptively different in texts developed by native (British) and non-native (Iranian) authors. The frequencies, percentages and standardized residuals (Std. Residual) for them were computed and laid out in Table 1.2 above. As the results indicate that the use of none of the contrastive discourse markers is beyond expectation, i.e. Std. Residuals do not exceed $-/+ 1.96$. Table 1.3 (above) also showed that the p value (0.271) is bigger than the significant level of this study (0.5). Therefore, the second null hypothesis of the current study which claims "Contrastive discourse markers are not descriptively different in texts developed by native (British) and non-native (Iranian) authors" is retained.

DISCUSSION

According to Table 1.2 (above), the most frequent contrastive discourse marker in British-authored texts is '*but*' (16 counted) followed by '*however*' (10 counted). Similarly, in non-native book the same phenomenon was considered, in which '*but*' amounted to 21 and '*however*' to 11. Al-Yaari, Al Hammadi, Alyami, and Almaflehi (2013) investigating the use of English discourse markers by Saudi EFL learners also reported '*but*' as the most common used contrastive discourse marker placed after '*and*' as an elaborative discourse marker. In addition, British-authored book used no '*in contrast*' and '*instead*', and Iranian-developed book made no use of '*on the other hand*' and '*whereas*'.

Results also show that %0.54 of words in native-authored texts was contrastive discourse markers (46 out of 8365), while % 0.36 of words in non-native-developed book was contrastive ones (47 out of 13020). On the contrary, Eslami-Rasekh, Eslami-Rasekh, and Simin (2012) concluded that discourse markers are more common in Iranian EFL lectures than North-American lectures.

Therefore, it is indicated that the use of contrastive discourse markers in ESP books of computer science developed by British and Iranian authors is not statistically and descriptively deferent. But Iranian text book developers should pay more attention to the role discourse markers (in this case contrastive ones) paly in negotiation of meaning and provide more native like texts for computer students at Iranian universities.

CONCLUSION

Contrastive discourse markers as a group of discourse markers help to convey the meaning of discourses more appropriately. They indicate the contrast/difference of messages negotiated by segments in the process of communication.

Although many studies on the role and use of discourse markers have been done, little attention was paid to their application in ESP contexts. This study was to discover and describe the differences and similarities between contrastive discourse markers use in

computer science ESP books developed by native (British) and non-native (Iranian) authors.

To the extent this study was concerned, findings confirmed that there are no significant differences statistically and descriptively between the employment of contrastive discourse markers in native (British) and non-native (Iranian) computer science ESP texts (used in Iran's universities).

In addition, results proved that contrastive discourse markers are more frequent in native (British) ESP book of computer science (% 0.54) than the non-native (Iranian) one (%0.36). As a result, it may be inferred that Iranian computer science ESP course book designers and practitioners should be aware more of the role contrastive discourse markers play in communication. Along the same line, Alavi-Nia and Mozaffari (2014, p. 170) in their study of the role of discourse markers in EFL and PFL (Persian as a Foreign language) course books concluded that "it seems that they [curriculum designers and book developers] need to take more consideration of learners' communicative needs and find richer sources to enrich the pragmatic aspect of the course-books they design".

IMPLICATIONS

First, the results can be useful for computer science ESP curriculum designers and book developers who would deduce that contrastive discourse markers (or discourse markers as a whole) merit more attention in teaching process; hence, perform an exact need analysis in order to provide the most native-like materials for language learners. Second, computer science ESP students may concentrate more closely on the role discourse markers have in language learning and negotiating meaning both in written and spoken communication. Finally, this study would be applicable for all language syllabus designers, EFL instructors and learners of general English to care more for contrastive discourse markers (or discourse markers as a whole).

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