

Comparative Study of Conjunctive Adverbials (CAs) in Native Researchers' (NRs) and Non-Native Researchers' (NNRs) Experimental Articles

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Abstract-The present study explored the use of CAs between Iranian non-native and native researchers of English in two types of research articles native and non-native corpora compiled by the author. Therefore, a quantitative text analysis study using frequency-counting method seems to be necessary to shed light on how they are used by Iranian articles. For this aim, 180 research articles from different prestigious journals written by English authors as native (N) and non-native ones as (NN) writers in the fields of Psychology, Chemistry, and Applied Linguistics were chosen for analysis. The totals CAs in the native and non-native research samples were manually extracted and then their frequencies were calculated. The CA frequencies were analyzed through Chi-square (χ^2) to determine any difference among the CAs native and non-native users. The analysis was based on word-based on sentence-based usages. On the quantitative dimension, it was found that NN researchers underuse CAs in their articles when the study was based on word-based analysis. However, on the sentence analysis no significant results were found. The paper ends with some teaching suggestions on how to teach CAs in the primary levels to help students learn the complex use of CAs in their writing.

Key words-Conjunctive Adverbials; Native Researchers; Non-Native Researchers; Experimental Articles

1. Introduction

Before defining CAs, it is necessary to define adverbials first. Biber, Johansson, Leech, Conrad & Finegan (1999, p. 762) define adverbials as clause elements with three functions: first, “to add circumstantial information about the proposition in the clause”, second, “to express speaker/writer stance towards the clause” and third, “to link the clause (or some part of it) to some other unit of discourse” so he classifies them into three classes: circumstance adverbials, stance adverbials and linking adverbials.

According to Celce-Murcia and Larsen-Freeman (1999), cohesive devices are categorized into three types: (1) coordinating conjunctions (i.e., and, or, but, yet), (2) adverbial sub-coordinators (e.g., because, even though, since), and CAs (e.g., moreover, thus, however, similarly). Also called adverbial conjunctions, conjunctive adverbs are pathetic, confused little creatures. They can't decide if they are adverbs or conjunctions in traditional grammar! Accordingly, they try to be both. This leads to all sorts of punctuation problems.

Lack of the administration of CAs among Iranian English for foreign language learners (EFL) has made problems in writing English texts in a cohesive way; therefore, research problem focused on discovering a knowledge of how native researchers use CAs which may help NNs practitioners use them better in publishing their effectively through which adverbial connectors are used in a text would certainly present a clearer picture of their role in reader perceptions of NNs writing; thus, we made attempt to provide a clear picture of how Iranian

learners of English use CAs. We might encounter with many students' misusing or under using in writing native and non native experimental articles. In this respect, academic practitioners may use CAs appropriately to convey better meanings and insights ideas as well. The present study seeks to answer the research question: Is there any significant difference between the methods of using CAs (i.e., adequate use, under-use, and over-use) in writing scientific articles (i.e., including psychology, chemistry, and linguistics) published by native researchers and non-native researchers?

2. Review of Literature

Cohesion is defined by Richards and Schmidt (1985, p. 86) as: The grammatical and/or lexical relationships between sentences or between the different part of a sentence. Yule (1985, p. 140) defined it as “ties and connections which exist between sentences” Halliday (1985, p. 311) pointed out that cohesion is, of course, a process, because discourse itself is a process. The concept of cohesion accounts for the essential semantic relations whereby any passage of speech or writing is enabled to function as a text. We can systematize this concept by classifying it into a small number of distinct categories. Each of these categories is represented in the text by particular features which have in common the property of signaling that the interpretation of the passage in question depends on something else. If that something else is verbally explicit, then there is cohesion.

2.1. Conjunction

Since CAs are types of conjunction or connective, discussing conjunction here is worthwhile. Conjunctive relations typically involve contiguous elements up to the size of paragraphs, or their equivalent in spoken language; conjunction (in this sense) is a way of setting up the logical relations that characterize clause complexes in the absence of structural relationships by which such complexes are defined (Halliday, 1985, p. 310). Halliday (1985, p. 324) pointed out that a range of possible meanings within the domain of elaboration, extension, and enhancement is expressed by the choice of conjunctive adjunct or one of the small set of conjunctions *and, or, nor, yet, so then*, typically (and in the case of conjunction obligatory) in thematic position at the beginning of the clause. According to Salkie (1995, p. 76) the term connective does not refer to a part of speech (word class) like conjunction or adverb. It is because they all do the same job of linking parts of a text that we treat but, nevertheless and in spite of as connectives. Salkie (1995, pp. 76 - 78) distinguished four types of connectives: Addition, connectives (AC), Opposition connectives (OC), Cause connectives (CC), and Time connectives (TC).

The first relevant study on using CAs was performed by Crismore (1980). He made attempt to investigate students' mastery of meaning and use in reading and composing of five formal CAs in English (moreover, accordingly, hence, even so, and still) across school level and class type, and intended to find out whether there are differences in using CAs between remedial readers and non-remedial and between secondary students, technical college students and regular collage students. The subjects of the study were 100 students from remedial and non-remedial reading and composition class selected from a rural high school, a vocational technical college and a university, all located in the mid-west. The material in this study was five inter-sentential connectors have been given to students to provide a synonym for each connector and to generate a compound sentence using the connector appropriately between two main clauses in the compound sentences to link the ideas. The results indicated that the proportion of synonym and sentence errors according to connector type and student class level was not significant. However, the proportion of total errors made by all class levels and the proportion of (un)attempted items by connector type and class level were significant. The order of difficulty of the five connector types – from the least to most difficult – was 1) still and hence, 2) even so, 3) accordingly and moreover (Crismore, 1980). Accordingly, he came to this conclusion that “although the development of trend was indicated for acquiring control, the students, in general, had not mastered the connectors needed for literacy by the time they were in college” (Crismore, 1980, p. 1).

Bolton, Nelson, and Hung (2002) believed that the identification of connectors should not be regarded as uncontroversial and given and that a more realistic list of connectors would improve the accuracy of the analysis. The second methodological issue, raised by Bolton, Nelson, and Hung, is the calculation of ratio of frequency. Accordingly, most of the previous corpus-

based connector studies adopted a word-based calculation. For example, Milton and Tsang (1993) calculated the ratio of occurrence by dividing the total number of words in a pool of data with the number of identified connectors. Another widely-used word-based calculation method is that of presenting the ratio of frequency in terms of the number of connectors per 10,000 or 100,000 words; this method was employed in Granger and Tyson (1996) and Altenberg and Tapper (1998). Bolton, Nelson, and Hung, (2002) criticized these word-based methods as "fundamentally flawed" (p.172) because connectors function as cohesive ties at the sentential level and beyond. Therefore, they suggested that sentence, not word, should be the basic unit for analysis.

However, some logical connections like *hence, still, and nonetheless*, as well as the phrase *in spite of (that)*, which were not in the original mentioned list, were added, because as Rahimi and Qannadzade (2010) pointed out, they are viewed by most of the linguists as logical connectors. By means of Pearson Product-Moment Correlation formula, they computed the correlations between the levels of logical/mathematical intelligence of the participants and a) the average token rate and b) the average type-token ratio of the logical-connectors used by them in their compositions, as well as, the correlations between the levels of linguistic intelligence of the participants and the same two quantities mentioned above. Then they compared the degree of significance of the correlation between the logical/mathematical intelligence and the quantitative usage of logical connectors with that of linguistic intelligence. Their findings revealed that Iranian university students majoring in English (as a foreign language) with higher logical/mathematical intelligence tend to use more tokens of logical connectors in their EFL essay writing, though they do not necessarily avoid repetition in using the connectors. Their result also suggested that Linguistic intelligence is less significant to the token rate of logical connectors in EFL essay-writing than the logical intelligence, though the students with higher linguistic intelligence possibly tend to avoid repetition in using logical connectors.

The aims of this study as Peacock (2010, p.17) claimed were to advance and extend previous research on the form, frequency, function and distribution of CAs in RAs across eight disciplines, four science (Chemistry, Computer Science, Materials Science, Neuroscience) and four non-science (Economics, Language and Linguistics, Management, and Psychology), and to develop a more comprehensive list of CAs. The author used a corpus of 320 published RAs, forty from each discipline. These articles were chosen from Four leading refereed journals selected from each discipline .from this corpus a sample of ten empirical RAs from 2007/2008 were randomly chosen from each journal. Results indicated that contrast/concession, addition, and apposition linking adverbials are more common and therefore more important in RAs than previously thought. Regarding individual disciplines, the sciences use significantly fewer linking adverbials than the non-sciences in all four

categories, and he concluded that linking adverbials are more important in RAs as signaling and cohesive devices, and for helping RA authors construct and strengthen claims, than previously thought by experts in this field (Peacock, 2010, pp. 26-29).

Peacock's (2010) study resembles the current study in some aspects, that is, both studies used different disciplines to investigate the use of CAs but comparing the using of conjunctive in different disciplines was one of the purposes of

Peacock's (2010) study, while the current study focus is to compare using CAs in native and non-native researchers.

To sum up, this section offers a review of twelve connector studies. Among these studies, Bolton, Nelson, and Hung, 2002 and Chen, 2006 were of special interest because of the three methodological issues followed in their study. Responding to these important issues, measures are taken in the current study to ensure a more accurate analysis and interpretation of the results.

3. Methodology

3.1. The corpus

The research sample that is used in this study consists of 180 research articles (90 written by NRs of English and 90 written by Iranian researchers as NNRs of English) published in prestigious international journals in the fields of chemistry, psychology, and applied linguistics. Each field of study includes 30 NRs and 30 NNRs scientific articles. These articles will be reviewed from 2000 to 2011 at the international and national levels. The rationale for selecting these fields of study is that many NRs and NNRs speakers of English are written significant articles in these fields. The criterion for selection of the journals is based on non-random

judgment sampling. The focus is put on the fields of chemistry, psychology, and applied linguistics. The other criteria for selection are popularity, history of publishing, the ranks and indices of the articles concerned with academic settings.

3.2 Data analysis and procedure

By this quantitative analysis, the researcher can determine the frequencies of the selected CAs in native and non-native articles within the mentioned fields. The quantitative analysis also enables the author to come to an appropriate conclusion of any difference or similarity on the using of the CAs. All the CAs used in Tables, figures, charts, and appendices in all the articles were calculated. As a result, the total word count performed by Microsoft word office for the non-native corpus was about 296,300 and 298,560 for the native corpus. With regard to sentence count, it is about 40,510 and 42,783 respectively. The frequency of occurrence and percentage of CAs were presented. The percentage of reach conjunctive adverbial in native and non-native articles was computed through the total number of CAs in the whole corpus.

4. Results

A total of 4720 and 5010 CAs were identified in the non-native and native corpora respectively. Table 1 presents the percentage of each type of CAs found in the two corpora.

As can be seen from Table 1, the Iranian researchers in the current study used Additives and Temporals less than English native researchers. CAs are ranked from the highest frequency to the lowest one in Table 2 which deals with the top ten most frequency used CAs as follows:

Table 1. Percentage use of CAs by category

CAs categories	Non-native corpus%	Native corpus%
Additive	33.31	32.26
Adversative	23.83	19.35
Causal	23.84	19.35
Temporal	19.02	29.04

Table 2. Chi-Square for the significance of differences

Statistics (χ^2)	Observed value (χ^2)	Critical value (χ^2)	df	p-value
14.982*	3.841		1	0.05

Table 2 shows these differences are significant ($p < 0.05$). Therefore, the writers in both non-native and native corpora made different uses of CAs in writing experimental writing.

5. Discussion and conclusion

The difference between native and non-native writings in using CAs has been demonstrated by the results of a number of different researchers, some researchers found an over-use pattern while others found an under-use or adequate use of CAs in non-native writings. Some

studies revealed that some individual connectors are used more while some others are used fewer in NNS writing than that used in NS writing, however; an overall pattern to show how CAs are used by non-native researchers cannot be found (Shea, 2009). The current study findings show that the differences are not significant, different approaches used to calculate the frequency of CAs yield different results. Results from the sentence-based analysis add credence to the null hypothesis while those from the word-based do not.

This paper has presented a quantitative analysis of CAs in published experimental articles in the fields of psychology, chemistry, and applied linguistics and a comparison of all the CAs extracted from Iranian published articles to those extracted from published journal articles of English native speaker researchers. The purpose was to determine if there is any difference among the CAs native and Iranian non-native users.

As a group, Iranian researchers in the current study were found to slightly underuse connectors when the analysis was based on word-based level. This underuse problem may be related to the researchers' inability in writing complex sentences. Such problems often result in using simple and incoherent sentences. Since the basic knowledge of learners is very influential and effective in their future writing, indeed more rigorous training on connectors' usage is needed for non-native students of all proficiency levels. In addition to raising students' awareness of stylistic restriction of certain connectors, teachers also need to train their students to "think through their argument before deciding on how it might be refined with logical connectives" (Crewe, 1990. P. 324). A good example of such training is given by Lee (1988). This study is limited by size of two corpora. Although, it is not clear how big of a corpus we need for this kind of study, researchers can aim of collecting as many writing sample as possible for the target group.

The next problem concerns with the classifications of the CAs. Different classification was mentioned in chapter two. Each author categorizes them differently and determines different boundaries for them. So the adopted classification in this study might be limited to some particular conjunctive adverbial and other potential CAs not mentioned in this list ignored. On the other hand, sometimes different type of CAs overlap and a conjunctive adverbial can have two function, e.g. *on the other hand*, has both addition and adversative function, but since in the adopted classification this conjunction belongs to the adversative type, while counting, the author takes it just as adversative; however this conjunction in some situations just add some point to what has been mentioned.

This study is merely quantitative and considers just the difference in the frequency of CAs. A qualitative research also can be done to take the position of CAs into account. As mentioned before, CAs occupy different position in a text. They as cohesive devices have different syntactic functions and positions and take different punctuations. They may come e.g. at the beginning, middle or at the end of a sentence, and each position may be under or over used in non-native researchers. According to Quirk et al. (1985), in English, many connectors can have a changeable position in clauses and sentences. Even though the clause initial position is the norm for most connectors, some connectors are common in medial position (e.g. *however*) or final position (e.g. *anyway*).

A contrastive analysis study on the type and position of CAs in English and Persian on the basis of any classification mentioned in this study can also be done to predict what problems students might encounter based on the differences, if any, existed in two language systems and to discover whether students transfer the use of connectives from their first language to English. Furthermore, this study can provide a list of CAs in Persian. Underuse of others may be due to a difference in French/English argumentation. If statements about contrastive rhetoric are to be made, then much more research needs to be carried out in this area.

As mentioned in chapter one, this study is limited to the frequency comparison of CAs in just research articles. Further studies can be done to compare the frequency and position of CAs in native and non-native essays, compositions, and letter and to provide important implications for the teaching of CAs in those genres.

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