

# Research Practices in Cohesive Devices' Studies: Benefiting from Chaos

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**Abstract**—This study has as its main goal exploring the possibility of benefiting from the chaotic status that permeates discourse analysis research done on cohesive devices since their inception by Halliday and Hasan (1976). These research studies have been categorised based on the foci of the research questions and the genres to which the analysed texts belong. The research practices of the reviewed papers have been analysed, compared and contrasted, and evaluated apropos the research design, methodology, literature review and findings. The analysis of the research practices found that the dominant feature of the reviewed studies is incompatibility. On a cautious note, while it is acknowledged that variance is imbued with research purposes, variance can be the product of certain flaws in the research design. This paper seeks to serve three purposes: 1) To critically survey the empirical studies conducted on cohesive devices, 2) to identify the problematic practices that led to the chaotic status, and 3) to propose a host of practices that can be followed in future research done on cohesive devices. Concomitant with this review a brief account of the cohesive devices model that was espoused by the majority of the studies addressed in this paper.

**Index Terms**—cohesive devices, cohesion, research practices

## I. INTRODUCTION

Since its inception by Halliday and Hasan (1976), the cohesive devices model that classifies the linguistic items involved in textual ties into grammatical and lexical devices has been employed as an instrument of discourse analysis in an ample body of research (e.g. Abu Ayyash, 2013; Ali, 2016; Bahaziq, 2016; Crossley, Salsbury & McNamara, 2010; Granger & Tyson, 1996; Leo, 2012; Na, 2011). The reason behind adopting the 1976 model is that it has been considered the most comprehensive account of cohesive devices so far (Moreno, 2003; Xi, 2010), and that it is “the best known and most detailed model of cohesion available” (Baker, 1992, p. 180). Acknowledging the seminal contribution of the 1976 model to discourse analysis studies, it does not seem much to suggest that after 40 decades since it was first introduced, time is probably ripe to consider building on it and expanding its categories to accommodate the upheavals that occur within discourses and text types. Although this call for updating the model is in order here, the main focus of the present paper is the empirical studies that used this model, and the chaotic status that engulfs them. In essence, the current study is set in service of three purposes:

- To critically survey the empirical studies conducted on cohesive devices to highlight the various research practices espoused by the researchers.
- To identify the problematic practices that led to the chaotic status.
- To propose a host of practices that can be followed in future research done on cohesive devices.

Before embarking on the review of the papers done on cohesive devices, a brief account of Halliday and Hasan’s (1976) model is in order here as the majority of the studies have used it as the instrument of the linguistic/textual analysis they have conducted. Table 1.1 lists the main categories of cohesive devices and the types of ties usually involved in their usage. The linguistic items involved in creating cohesive ties are boldfaced.

TABLE 1.1  
 EXAMPLES OF COHESIVE DEVICES

Main Categories	Type of tie	Example
Grammatical cohesion	Reference	Clifton achieved the highest <b>grade</b> in the test. <b>He</b> must have studied well.
	Substitution	I bought the red blouse. My sister preferred the red <b>one</b> .
	Ellipsis	A: Are the guests coming soon? B: Yes, they are ( <b>coming</b> ).
	Conjunctions	Mark failed to meet the assignment’s deadline. <b>Therefore</b> , he failed the module.
Lexical cohesion	Repetition	They were lost in the <b>woods</b> for three days. The <b>woods</b> were really frightening.
	Collocation	Let’s <b>go swimming</b> this evening.
	Hyponymy	I bought a number of <b>electronic devices</b> last month. I got an <b>iPhone</b> , an <b>iPad</b> and an <b>iPod</b> .
	Synonymy	I <b>left</b> my house last year. Actually, I <b>departed</b> the whole area.
	Antonymy	My friend lives in a <b>small</b> villa. It is located in a <b>huge</b> compound.
	Meronymy	My <b>car</b> broke last night. There was something wrong with its <b>engine</b> .

The reason behind the classification of cohesive devices into grammatical and lexical is that “cohesion is expressed partly through the grammar and partly through the vocabulary” (Halliday & Hasan, 1976, p. 5). Grammatical cohesion

is subdivided into four textual ties, which are reference, substitution, ellipsis and conjunctions, whereas lexical cohesion involves vocabulary ties, such as repetition/reiteration, collocation, hyponymy, synonymy, antonymy and meronymy. Quite understandably, the choice of cohesive devices as a linguistic analysis tool to investigate certain types of texts lends itself to the fact that it is cohesive devices that make a text a text (Halliday & Hasan, 1976) and therefore can be used as a tool to determine whether a sequence of sentences can or cannot be described as a text (Cook, 1989; Hatch, 1992; Thornbury, 2005). Accordingly, an in-depth analysis of the research practices imbricated within the studies that used cohesive devices as instruments of analysis is expected to inform future research apropos the practices conducive to effective investigation of discourses employing these pivotal linguistic tools.

### 1. Practices in Research on Cohesive Devices

This section of the paper reviews the research practices of the studies conducted on cohesive devices and is divided into sub-sections based on the genres, or, more loosely, text types, to which the analysed texts belong. The majority of the studies belong to the 'monster' genre of academic texts; in this paper, the studies that address university and school students' pieces of writing have been included within the first sub-section 2.1 pertaining to academic texts. Studies that analysed the use of cohesive devices in non-academic text types are reviewed in terms of the research practices in 2.2.

#### 2.1 Academic-Text Studies of Cohesive Devices

A considerable number of the studies that conducted textual analysis of cohesive devices in academic texts have focused on whether there is a relationship between the employment of cohesive devices in students' written compositions and essays and the quality of the produced piece of writing. Based on the findings of these studies, there is no definitive answer, or so it seems to me, as to whether or not the employment of cohesive devices leads to high-quality texts (Ghasemi, 2013). This part introduces a review of the research practices utilised in different studies that have come up with incompatible results, and, therefore, a quandary about the role and the impact of cohesive devices on written academic discourse.

Both Liu and Braine (2005) and Yang and Sun (2012) analyse the correlation between cohesive devices and the quality of argumentative essays written by college students. While Liu and Braine (2005) analyse a random sample of 50 argumentative compositions of Chinese non-English majors, Yang and Sun (2012) use a random sample of 30 second year, male and female and 30 fourth year, male and female university students. Both studies have established a significant link between cohesive devices and the quality of argumentative writing. Although both studies are quantitative designs, Yang and Sun's (2012) results seem more reliable as they utilise *t*-tests, which indicate that the observed difference between the two sample groups is statistically significant and is not due to chance (Johnson & Christensen, 2008), and Pearson correlation analysis "...to observe the association between the (correct) use of cohesive devices and the writing quality" (Yang & Sun, 2012, p. 36).

In harmony with the above findings, Mohamed and Mudawi (2015) have found that using cohesive devices in writing leads to writing quality improvement. However, this paper clearly falls short of meeting the conditions of both validity and reliability of quantitative designs. Firstly, the questionnaire has been distributed to a number of teachers who work in different universities whereas the study is conducted on 100 students who come from only one university in Sudan. Undoubtedly, teachers' responses to the questionnaire reflect their own students' status, which challenges the claims that teachers' responses can be taken as a basis for the study being conducted on a group from one university. Secondly, the questionnaire's items presented in the study are too general to come up with decisive conclusions regarding cohesive devices. For example, how can the question 'Handwriting inside the class affects positively the student writing skill' (p. 3486) lead to a conclusion that is relevant to the students' status as far as cohesive devices usage is concerned? In fact, hardly can the majority of the questionnaire items measure what they have been claimed to be measuring, which lays much doubt on the tool's validity. Thirdly, the pre-test and post-test design of the study does not specify the test items and does not refer to the kind of intervention conducted on the control and experimental groups. Finally, there is no clear indication what cohesive devices have been introduced, how they were presented and how they have been marked or rated. Accordingly, with all these shortfalls in the design, hardly can the findings be considered valid and reliable.

The role of cohesion has been found more patent in compositions in the study of Jafarpur (1991). What is different about this study is that it has investigated whether having cohesive ties and types as *the basis* for scoring compositions has any correlation with holistic rating or not. The sample of the study consists of thirty-eight compositions written by EFL learners and rated by four instructors. What adds authenticity to this research is that the learners belong to different proficiency levels, which means that the quality of the use of cohesive devices has varied from one learner to another. The results of the study are harmonious with those of Liu and Braine (2005) and Yang and Sun (2012) in that the cohesive-type-based scoring has shown significant correlation with the holistic rating of the compositions. Similarly, cohesive devices have been found as determiners of the quality of descriptive writing of college students across proficiency levels (Abdul Rahman, 2013).

Bae (2001) takes children narrative written essays as the text type to explore the relationship between cohesion and writing quality. In addition to the quantitative tools, such as percentages, correlations and multiple regression, the study also employs qualitative analysis to further validate the findings. Although the findings of Bae (2001) are to a great extent harmonious with those that have established a correlation between cohesive devices and writing quality, it has maintained that not all cohesive types have held this kind of correlation. By way of elaboration, the study has found that

lexical cohesive devices are significant predictors of coherence and an index of the overall writing quality, yet it has also found that this correlation does not entirely apply to grammatical cohesive devices, excluding reference. That is to say, ellipsis and substitution have been found to have weak correlation with the overall writing quality, which contradicts the finding that substitution can be taken as a tool for improving the writing quality instead of resorting to repetition alone (Bahaziq, 2016). A strong point, though, about (Bae, 2001) is that the study does not rely on quantitative measures alone because these fall short of identifying the inaccurate use of cohesive devices, which has been investigated by the qualitative analysis, which has found, for example, that reference has been used inaccurately in several occasions. Establishing a correlation between cohesive ties and quality in children's writing can also be found in an earlier study (Cox, Shanahan & Sulzby, 1990), which maintains that cohesive ties positively correlate with ratings of quality of Grade 3 and Grade 5 children's expository texts.

Linking children's writings with ratings has been also approached by Struthers, Lapadat and MacMillan (2013) yet from a different perspective. The authors link the knowledge about the role of cohesion in children's writing to assessment by developing a checklist for marking cohesion. The method applied in this paper is literature survey since it relies heavily on the converging findings of previous research papers on cohesive devices. It should be noted that developing this assessment tool of cohesion has been built on informed and well-established methodology that has integrated the findings of previous literature, initial item development that has taken into account accuracy, distance and variety of cohesive devices, collecting materials for piloting the initial checklist and finally a large-scale checklist evaluation. It can be rightly argued that this study has overcome several shortcomings found in other research papers, such as the focus on the literature review section, which has led to a clear situation of the article and has provided the rationale behind espousing the final checklist format. In fact, the scanty account of the previous literature is manifested in a considerable number of studies on cohesion (e.g. Ali, 2016). In addition to the paucity in the studies within the literature review section, other relevant problems have been also identified, such as mere listing of the cited studies without critiquing them (e.g. Rostami, gholami & Piri, 2016) and discussing the concepts only in the literature without referring to empirical studies (e.g. Bahaziq, 2016).

The results of these studies combined, however, have been challenged by Green (2012), who concludes that cohesive devices have not been found as markers of various proficiency levels, a finding that is particularly at odds with Abdul Rahman's (2013) and Jafarpur's (1991) findings. The study has utilised an automated analysis tool, which is the Coh-Metrix to investigate whether cohesive types can be an indication of various proficiency levels. In order to come up with valid results, the study uses three corpora that represent three different proficiency levels. As far as the study's instrument is concerned, Coh-Metrix is acknowledged to provide accurate indices for the characteristics of texts on multiple levels of analysis, one of which is sentence and discourse relationships (McNamara, Crossley & Roscoe, 2013), which are the types of associations analysed in the study. Nevertheless, the validity of this automated tool lends itself to the purpose and the design of the paper. One shortcoming of this tool, for example, is that "it does not provide a qualitative analysis of spelling errors" (Puranik et al., 2012, p. 265), which can be much relevant to the study at hand. With the corpus representing the low-proficiency level in the study, this issue can be of considerable significance since spelling mistakes are expected to occur within the cohesive devices used in the writings present in the sample corpus. That it is to say, it is hard to take the automated analysis of this particular corpus as valid without being accompanied by a qualitative analysis of potential spelling mistakes.

Zhao (2014) also employed the Coh-Metrix but that has incompatible findings with Green (2012). Investigating the use of lexical cohesive devices in the Chinese corpus English for Academic Purposes (EAP), the study has found that the employment of these devices is less than their employment in the British corpus BAWE. Although the findings of Zhao (2014) accords with the findings of studies conducted in other contexts, such as the context of Vietnamese learners (Hung & Thu, 2014), whether this result is reliable or not is rightly questionable. Zhao (2014) puts the average words produced by a Chinese writer in the EAP corpus at 150 words, whereas the average is 250 words in the BAWE corpus. Having this enormous difference in the number of words might impact the indices produced by Coh-Metrix. Therefore, while a purely quantitative design is highly indicative as far as numerals of the tested corpora are concerned, it might not similarly be an index to language proficiency, which is one of the four purposes set for the paper.

Castro (2004) explores whether or not the employment of grammatical and lexical cohesive devices affects the rating of essays written by Filipino, first-year college students. Castro contends that, "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" (2004, p. 222). The results of Castro (2004) accord with the findings of a number of studies that have investigated the impact of cohesive devices on academic writing (e.g. Chen, 2008).

Chen (2008) has addressed four questions, one of which is related to whether or not there is a correlation between the number of cohesive devices and text quality by investigating two types of essays, which are definition essays and opinion essays written by 23 EFL college students who belong to the same language proficiency level. The study uses Halliday and Hasan's (1976) taxonomy, but excludes ellipsis and substitution from the analysis. This exclusion has some backgrounding since these two devices have been found to be either rarely occurring in academic texts (Liu & Braine, 2005) or, if present, having weak correlation with text quality (Bae, 2001). Using Pearson's correlation, Chen (2008) finds no correlation between cohesion and text quality in this type of text. Likewise, from the Arabic context, Khalil (1990) uses Halliday and Hasan's (1976) model to analyse the correlation between text cohesion and coherence

in 20 compositions written by Arab freshman EFL learners. The study has used holistic rating of the twenty compositions and descriptive statistics to count the number of cohesive devices employed in them. With a coefficient correlation of  $r = 0.18$ , the author concludes that there is a very weak correlation between the number of cohesive ties and coherence. This finding has been at odds with the results reported by Aidinlou and Pandian (2011), yet supported by a number of studies that found no relationship between the number of cohesive devices and the quality of students' writing (e.g. Johnson, 1992; Neuner, 1987). Therefore, the majority of the studies that approached cohesive devices quantitatively by looking at the number of cohesive devices in certain types of texts, mostly academic ones, have found that cohesive devices are not a determiner of text quality.

In an enlightening study about the reader's role, Klebanov and Shamir (2007) conducted a research to find lexical cohesive patterns in 10 texts that belong to three text types, which are news articles, journalistic writing and fiction given to 22 students to annotate whatever lexical patterns they can find in the ten texts. The study has revealed much diversity in the readers' responses although all of them were provided with clear explanation of lexical cohesive devices ahead of the study, thus emphasising the role of the reader in interpreting the patterns of cohesive devices that exist in a text, a finding supported by a number of authors who emphasised the role of the reader in text interpretation regardless to cohesive devices (e.g. Carell, 1982; Hoey, 2001; McNamara, 2013). Taking a milder stand, Wang and Guo (2014) and Ebrahimpourtaher and Eissaei (2013) maintain that coherence involves the cooperation between the text producer and its reader, and involves linguistic and nonlinguistic factors. The following sub-section reviews the research practices in studies that employed cohesive devices in, loosely speaking, non-academic text types.

## 2.2 Cohesive Devices in Different Text Types

Within the context of literature, Jabeen, Mehmood & Iqbal (2013) attempt to explore how cohesive devices, particularly reference, substitution and ellipsis, contribute to meaning in Chekhov's *The Bear*. The paper touches on major concepts in textual analysis, such as cohesion, coherence and stylistics and provides a rather brief account of the three cohesive devices that are used as the instrument of analysis. Providing barely any examples on reference, substitution and ellipsis is a major drawback since these three compose the model used for analysing the selected literary work. The purpose of the study, which is to establish the links between cohesive devices and coherence, is hardly achieved. The study merely explains the selected texts from the play, identifies instances of cohesive devices, yet fails to create the link between the meaning of the text and the use of the cohesive devices. For example, the paper claims that the instances of clausal substitution used in the play indicate lack of respect, without providing any backgrounding, social or textual, to support their claims, which makes them subjective ones.

By the same token, Kaur (2015) analyses cohesive devices in Keats's "Ode to Autumn", basically using the model of Halliday and Hasan (1976). The study sets its aim as to show how cohesive devices link the various parts of the text together, which is what cohesive devices have for long been acknowledged to do. In fact, the absence of a literature review section that addresses the previous studies of cohesive devices in pieces of literature makes it hard to recognise the contribution of this paper. In addition, the claims made in the conclusion that "the analysis...reveals that cohesion ties contribute to the stability, economy and efficiency of the text" can hardly be accepted because the analysis does not refer to stability and efficiency, while referring only once to economy in the part that looks at the role of reference. In essence, both Jabeen, Mehmood and Iqbal (2013) and Kaur (2015) have not gone beyond the surface level and can be considered as attempts to merely list what cohesive devices exist in the selected literary texts.

In an earlier study, Yeibo (2012) attempts to investigate the role of cohesive devices, particularly *reference*, *ellipsis* and *conjunction* in the poems of J.P. Clark-Bekederemo. A plus of the study is that it provides a detailed account of the three devices that it has employed to analyse the selected poems. However, the study does not go beyond the mainstream research on cohesive devices as it merely lists examples of how these tools link the sentences together, and concludes that "linguistic devices have text-binding value" and "that they can function as agents of cohesion in texts" (p. 866). Seemingly, Paramartha (2013), who analyses the use of substitution in *Pygmalion*, focuses on this device as a merely cohesive tool and provides a list of excerpts where this device has been used as an inter-sentential connecting tool. The redundancy in the approaches towards literary texts analysis using cohesive devices can be seen clearly as the studies looked at so far have failed to go off-mainstream and maintained the 'listing-of-examples' style in their presentation.

The issue of looking at cohesive devices as merely inter-sentential linking tools accompanied by lists of their occurrences can also be seen in research examining other types of texts, such as psychology papers. Sharif (2015) puts the objective of her study as "to analyse and identify the lexical cohesive devices in the psychology research articles" (p. 128). In order to do so, the paper uses a closed set of seven cohesive types, which are *result/consequence/summary*; *contrast* and *comparison*; *giving examples*; *reinforcement* and *addition*; *giving reasons*, *connective*, *position*, *highlighting*; *listing/enumeration* and *adverbs*. Apart from the inaccurate conception of the study that takes these sets as lexical cohesive ties, the paper merely lists examples and occurrences of these types in the examined papers without linking their usage to meanings beyond the normal functions of the devices, which are known and common in a huge number of grammar books (Hatch, 1992). For example, the paper holds that in order to summarise, or give results and consequences, the studied articles have utilised devices like *therefore*, *in sum* and *thus*, which can be hardly taken as an addition to the knowledge about these conjunctive words. Thus, one has the right to question the addition this paper has made to the literature so far done on cohesive devices.

Mere listing of cohesive devices can also be seen within the Arabic context in papers that have looked at identification of these tools within certain types of texts. Ilyas (2014) uses the model of Halliday and Hasan (1976) to identify what cohesive devices exist in the short suras (chapters) of the Holy Quran. The study does not go beyond naming the linguistic ties that exist in the studied suras. Some errors in the analysis reveal that there are some misconceptions about cohesive devices that have led to erroneous interpretations at the identification level. For example, the study refers to الكوثر /alkawthar/, meaning the Fount (of abundance), as being an antonym of الأبتَر /al'abtar/, meaning cut off (from future hope), although there is no such lexical relation between the two.

At extreme odds with studies that solely account for occurrences of cohesive devices, Prados (2012) extends the analysis of these tools to study the patterns they have in addition to their persuasive function in three political speeches. An obvious merit of this study is that it espouses an integrated instrument of analysis that harbors Halliday and Hasan's (1976) and de Beaugrande and Dressler's (1981) models of cohesive devices. This is considered a plus because Halliday and Hasan's (1976) model, though a comprehensive and clear taxonomy, has been criticised by many scholars (e.g. Brown & Yule, 1983) and has gone through several adaptations and additions (e.g. de Beaugrande & Dressler, 1981) that it has become no longer *the* model, but better the core, or the spring board, of several models. Prados (2012), therefore, adjusts Halliday and Hasan's (1976) instrument to include reference, substitution, ellipsis, conjunctives and lexical, with the last of these being divided to repetition (total repetition, partial repetition, parallelism, paraphrase) and replacement (synonymy, superordinate, general word). Applying this adjusted model, the study has concluded that cohesive devices have a variety of functions, which are maintaining texture, emphasising ideas and urging the audience to think of the speakers' meaning.

In the world of media, Yin (2015) examines the set of conjunctions, or linking adverbials, in broadcast news and written news through investigating their usage patterns at three levels, which are form, meaning and position. A conspicuous merit of the study is that it provides a detailed account of the previous literature on conjunctions and a profuse depiction of the concepts involved with it in a variety of studies. Doing so, the study situates itself within the literature and builds its significance since it fills a gap that has not been attended in previous studies in depth. After surveying the literature, Yin (2015) rightly concludes that "previous studies have lacked depth in providing a detailed discussion of all the three aspects..." (p. 2). One de-merit of the study is that the corpus it uses has been fairly small, 21, 623 words, yet the qualitative analysis done in the study may justify the use of a small corpus. At the level of meaning, the study concludes that conjunctions can serve a total of 14 meanings: Addition, formulaic ending, initiating a topic, listing, condition, adversative, result, comparison, alternative, conclusion, logical, consequence, opposite, and signal of evidence. It can be clearly noticed that the sets of meanings are all present in the model produced by Halliday and Matthiessen (2014), except for listing, which was introduced by Locke (2004).

As far as organisation is concerned, Morley (2006) emphasises that lexical cohesion plays a major function in structuring arguments of newspaper articles. This finding accords with the emphasis that cohesive devices are necessary tools for building connections between ideas (Crossley & McNamara, 2009). Morley (2006) twins qualitative discourse analysis and corpus linguistics to analyse the relationship between the structure of arguments in newspaper articles and the employment of lexical cohesion. The study has found that the distribution of lexical cohesive devices that belong to the same semantic field is a key determiner of the argument's structure. It also indicates that lexical items used in headlines can be used as triggering tools for the words that occur within a certain semantic field, which corresponds with Scott & Tribble's (2006) concept of keyness. It can be noted that the use of corpus linguistics has ameliorated the possibility of considering some findings as subjective claims, such as the statement that *a moment for* is used to donate important moments. To this end, the integration of corpus linguistics has provided an objective verification of the results (McEnery & Wilson, 2001). To its credit, the paper investigates a corpus of one hundred million words from four newspapers. The methodology used in the paper has conspicuously served its purpose in two ways. Firstly, corpus linguistics has provided a huge amount of data to verify the results. Secondly, the qualitative analysis has provided the thick description (Merriam, 2009) needed to explain the linguistic occurrences of lexical cohesive devices within the corpus.

Crane (1994) analyses cohesive devices based on Halliday and Hasan's (1976) model in the Newsweek article *Ruins with a View*, and tries to show "how cohesion functions within texts to create semantic links" (p. 132). Still, the analysis hardly goes beyond what has so far been acknowledged as what cohesive devices 'usually' do. For example, the study states that personal reference has been used to "keep track of participants throughout the text" (p. 137), which is obviously a 'built-in' characteristic of this type of reference. Lexical cohesion has been identified as the most prominent cohesive type employed in the studied article; however, the number of occurrences of cohesive devices has not been linked to any sort of meaning or any level that goes beyond the linguistic analysis. Compare this to the studies that have found strong links between the way lexical cohesive devices are used in the press and their impact on forming the ideologies of the readers (e.g. Bloor & Bloor, 2007). The study of Crane (1994) calls for two more comments. The first one is that the study lacks an account of previous empirical literature on cohesive devices. As discussed earlier, this part is of paramount importance to situate the study within what has been accomplished in order to flag the significance of the study (Bell, 2005). It is true that cohesive devices have been presented and explained in the paper with reference to a number of researchers, yet there is a need to account for the literature that addresses the use of these tools at least in the press context. The second issue is that the paper has not specified what method is used to analyse the newspaper article.

These two major components are actually found to be missing from another study that has conducted a similar investigation. Hameed (2008), who provides a detailed account of the frequency of cohesive devices in a newspaper article, has also failed to provide neither an account of the previous literature nor of the method used to analyse the article.

Jambak and Gurning (2014) also focus on the frequency and density of cohesive devices but with a focus on newspaper headlines rather than articles. The study found that the most frequent cohesive device is conjunction with 349 occurrences in the studied column headlines, followed by reference with 162 occurrences and lexical cohesion with 36 incidences. In line with many studies that examined cohesive devices, ellipsis and substitution come at the end of the list of occurrences with 34 and 4 respectively. Nevertheless, the validity of the results is highly questionable because the study has revealed a number of misconceptions about cohesive devices. For instance, Jambak and Gurning (2014) introduce the following example: “The Children never cease asking for their parents and siblings” (p. 66), and comment that it includes two conjunctions, which are *and* and *for*. The authors inaccurately explain that *for* is a conjunction of purpose. While *for* is mentioned in Halliday and Matthiessen (2014) and Halliday and Hasan (1974) as a conjunction of causality, it cannot be considered as such in each and every occurrence in language, one of which is the example introduced above. Since the results of the study are based on providing the frequencies of cohesive devices, misconception about what is and what is not a cohesive device is of paramount importance as it affects the validity of the results. In addition to this issue, the study does not provide an account of the previous literature, so one can rightly argue that the significance and rationale of it are not obvious, given that a lot of studies have been done on the density of cohesive devices.

Going beyond the surface-level analysis of cohesive devices, Abu Ayyash (2013) maintains that cohesive devices play a major role in consolidating the arguments of English editorials. The sample editorial is analysed qualitatively using Halliday and Hasan’s 1976 model of cohesion, and the article used in the analysis has been selected based on purposive sampling. Abu Ayyash (2013) states that, “this article was chosen to be the unit of analysis...because it is rife with cohesive devices” (p. 242). Cohen, Manion and Morrison (2000) emphasise that “In purposive sampling, researchers handpick the cases to be included in the sample on the basis of their judgment of their typicality” (p. 103). Generally, what is typical about a purposive sample is that the participants or texts are selected because they are available and convenient as far as the purpose of the study is concerned (Gorard, 2001; Merriam, 2009). Adopting a purposive sampling strategy, then, makes the results context-specific and non-generalisable to wider populations (Kumar, 2011). Although Abu Ayyash (2013) states that he is using the micro-analytic approach, the study’s scope encompasses broader than the textual level, which makes the method improperly described. According to Celce-Murcia and Olshtain (2000), a micro-analytic approach involves decontextualising the text, focusing on linguistic elements and function. Obviously, Abu Ayyash (2013) analyses the newspaper article in terms of cohesive devices but goes beyond their textual functions to link the analysis with context and genre. To its credit, the study employs descriptive statistics and links them to the purpose served by certain cohesive devices. For example, to show how conjunctions reflect the argumentative nature of the argument, the study explains how adversative conjunctions outnumber other types, such as additives and causals.

## II. BENEFITING FROM CHAOS

This part will delineate the major problematic research practices that might have led to the chaotic status in the cohesive devices studies conducted so far in order to propose well-established recommendations apropos the practices of future research on cohesion. Considering the above review of the studies that have investigated the use of cohesive devices in a wide variety of text types, a number of research-practice-related issues have arisen. These are related to the scope of the analysis, the literature review, the methodology and the research design among others.

The scope of the analysis of cohesive devices is one major research-practice issue to be considered. Although studying cohesive devices as merely inter-sentential connection ties goes with the mainstream research on these tools, there is another level of analysis that links cohesive devices to the meta-linguistic level. This type of analysis is of paramount importance because it shall add value to many approaches that call for going beyond the sentence level in analysis, such as considering text quality, text type, coherence and the readers. As a matter of fact, owing to the current research practice that gets studies of cohesion mired in sole textual analysis, there is substantial paucity in the studies that link cohesive devices to context, be it the situational context or the cultural context. To investigate the former, there is a need to look at exophoric reference, the linguistic device that can be decoded only by referring to the context and that assumes a shared world between the reader and the writer which will enable the reader from interpreting the referential item (Widdoson, 2004). As for the latter, there is a need to investigate the linguistic items that link the text to the culture, and therefore, exploring the use of homophoric reference (Paltridge, 2012).

Apart from the scope of the studies, the linguistic-level analysis of the reviewed studies suffers from more ‘lacerations’. Firstly, it is apparent that a significant number of studies which attempted to analyse ALL the cohesive devices in certain texts ended up listing the occurrences of these linguistic tools without any further critical analysis of their usage. Quite understandably, due to the variety of text types, and owing to the fact that the use of cohesive devices lends itself in no small part to human variances, the findings of such studies were hugely incongruent. A recommended research practice in this regard involves avoiding placing ALL the cohesive devices in one basket, and, instead,

focusing on one or two subcategories at a time, a practice found in some papers, such as (Jafarpur, 1991). Another linguistic-level practice that calls for comment is the employment of the cohesive devices model as an instrument of analysis without providing a conceptual explanation of the linguistic tools that constitute the bone of the model, or instrument. While this research practice of providing a detailed conceptual framework is found in some papers (e.g. Yeibo, 2012; Yin, 2015), it was completely absent in others (e.g. Jabeen, Mehmood & Iqbal, 2013).

Studies that investigate the correlation between cohesive devices and the quality of writing are recommended both to validate their data gathering tools and not to exclude qualitative discourse analysis from the design as it is hard to establish such correlations without exploring the accuracy of cohesive devices usage, which cannot be accounted for by employing quantitative methods alone. This issue is conspicuously evident in studies that employed electronic tools, such as the Coh-Metrix, since these programmes fall short of accounting for accuracy-related phenomena in texts (e.g. Green, 2012). Still, positivist researchers who have merely quantitative preferences can approach such correlations by employing more than one test, such as the t-tests and Pearson correlation analysis, since the latter is a good tool to observe associations with some focus on the correct usage. However, when studying the relationship between cohesive devices and coherence, it is evident from the literature that linguistic analysis alone is not sufficient, and, therefore, the readers have to be part of the study as can be found in a number of research papers and authoritative books (e.g. Carell, 1982, Hoey, 2001, Johns, 1986). Akin to this inclination, McNamara (2013) stresses that the reader's epistemic knowledge plays a major role in determining whether a text is easily comprehended or not.

Also linked to methodology are a number of issues patent in the research practices imbricated within the reviewed papers here. Utilising the right data gathering and or analysis instrument is of paramount importance. In order for this usage to be optimal, some recommendations can be forwarded based on the discussion of the research practices. Firstly, it is significant to validate the instrument before using it, since failing to do so will have deleterious impact on the results. Secondly, it is strongly recommended that using automated tools, such as the Coh-Metrix, be accompanied with qualitative analysis directed towards overcoming the problems with these tools, which include the areas of spelling and text length. One more issue is the use of the proper research design before claiming that certain findings are 'accurate'. For example, in pre-test, post-test research design, it is of paramount importance to explain the intervention conducted between the two tests.

The above review also found that there are a number of research practices that undermined the role of the literature review section. Literature review should be thoroughly discussed as this practice leads to making informed decisions and choices about the study. For example, Struthers, Lapadat and Macmillan (2013) built an assessment tool of cohesion. Some of the literature-review identified issues include providing a scanty account of the literature, for example (Ali, 2016) cited only four articles, listing the studies without a critical eye (e.g. Rostami, Gholami & Piri, 2016), providing studies that are not recent enough, for example in (Ali, 2016) the most recent study cited on cohesion was conducted in 1984, and finally, providing a conceptually-based literature that is almost free from empirical research on cohesion (e.g. Bahaziq, 2016). The other extreme of the latter can be found in studies which only focused on the empirical research, failing to account for the concepts of cohesion. This has probably led to an ignorance about notions introduced after the 1976 model. With very few exceptions (e.g. Pardos 2012), the majority of the studies have utilised the model of Halliday and Hasan (1976) as the instrument of their textual analysis. While as mentioned earlier, this tool is acknowledged to be a seminal contribution, there is a need for an integrated instrument, or model, that takes into account not only the adaptations to the 1976 model but also the criticisms of it.

What seems rather surprising in the literature review above is that literary texts have not received deep analyses, with the studies focusing primarily on what cohesive devices occur in the studied texts and whether they link various parts at the surface level or not. Given that literature usually contains deep meanings and distinguished stylistics, analysis of cohesive devices is expected to yield results on how these tools serve a variety of functions that go along with the nature of the literary texts.

### III. CONCLUSION

Acknowledging the contribution of the studies reviewed in this paper, it is important to point out that this review aims to explore the research practices on studies about cohesive devices in order to come up with a set of recommendations that might guide the research conducted on these linguistic tools afterwards. One more obvious tendency regarding the previous literature is that a profuse number of papers that have investigated the relationship between cohesion and coherence and/or text quality have come up with incompatible results. It is also noticed that a considerable number of studies that have found no significant correlation between the number of cohesive ties and the quality of writing or coherence have utilised sole quantitative designs. Nevertheless, it cannot be definitively concluded that statistically-driven analyses do not suffice to establish such associations because some other quantitative designs have held that there is a strong correlation between the number of cohesive devices and coherence, or text quality. These discrepancies also apply to studies that have employed automated tools to investigate such relationships. Still, studies that have utilised a quantitative tool accompanied by some kind of qualitative analysis have catered for this type of investigation more fully. More research-practice issues identified in this paper encompass practices related to the literature review, research design, and limiting the analysis to the linguistic level. On a caution note, every study

reviewed here has its own contribution to the literature, yet it is hoped that the humble review presented here will lead to better practices in research in this area.

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