



The Dispersion of Discourse Markers in Academic Publications: A Comparative Interlanguage Corpus-Assisted Analysis

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Abstract:

This study is a comparative interlanguage corpus-assisted analysis of the dispersion of discourse markers in academic publications. This study analyzed 60 published academic articles in accredited journals from Iraqi and native English writers across different disciplines (30 Iraqi English writers, 30 Native English writers). The study was grounded upon Fraser's (1999) theorization of syntactic-semantic-pragmatic aspects of discourse markers and his triadic classification of discourse markers. Besides, we employed a corpus linguistic tool named AntConc to spot the discourse markers and their frequencies in both Iraqi and Native English corpora. The findings revealed that evaluative discourse markers were the most frequently used discourse markers in both corpora. However, the Iraqi and Native English corpora differed only in the frequencies of the evaluative discourse marker items. This is whilst the inferential discourse markers appeared to be the least frequently used classification in both corpora. The overall frequency analysis indicated that the Iraqi English writers used significantly fewer discourse markers than the native English writers. This finding might be due to the significant typological features of Arabic in discourse organization properties that negatively interfere with the appropriate employment of discourse markers through English texts. In addition to typological differences, we argued that the reduced use of discourse markers in the Iraqi corpus may be due to cultural, structural, language acquisition, identity, and cognitive differences.

Keywords: Academic publications; Corpus linguistics; Discourse markers; Interlanguage; Iraqi English writers; Native English writers

Introduction

The process of writing in a second language is quite complex since it is influenced by target language proficiency, literacy in the first language, and cultural and rhetorical differences (Nunan, 1991). In an academic context, writing not only involves the process of developing an idea through words and sentences but also cares for the outcome of that process (Nunan, 1991). However, the purpose and audience of the writing significantly influence the final product. As writers engage in writing, they utilize various grammatical, cognitive, and communicative knowledge (Sanders and Noordman, 2000). Writing skill is considered the most challenging in the process of language learning, especially

in a second or foreign language. This is mainly because it tests the writer's language proficiency and their ability to navigate cultural differences between their first language and second language (Akef, 2007). Besides, writing is a means to develop communicative knowledge involving language use to express personal identities, perform actions, and build relationships with others (Schiffrin, 2001).

Several features and elements contribute to the acceptability of a piece of writing. According to Halliday (2000), acceptable writing is defined by cohesion and coherence ties. Cohesion stands for the "relations of meaning that exist within a text" (Halliday and Hasan, 1976). Discourse markers (DMs) are subcategorized as grammatical cohesion markers that link chains of clauses and sentences to form

a longer piece of discourse. Richards and Schmidt (2002) describe DMs as “expressions that typically connect two discourse segments but do not contribute to the meaning of either. Examples include adverbials (e.g., however, still), conjunctions (e.g., and, but), and prepositional phrases (e.g., in fact)” (p.162). Essentially, DMs are linguistic devices that connect pieces of language or expression, signaling continuity in the text and the relationship between existing and new discourse (Barbieri, 2007).

DMs contribute to producing effective and well-structured writing and organizing meaning throughout the passage. Any shortcomings or inappropriate use of DMs, especially by second language learners, can disrupt communication (Zhang, 2016). Without sufficient and appropriate use of discourse markers, a text may fail to be understood by its readers, making it crucial for L2 writers to acquire the necessary knowledge of correct DM usage.

Academic writing differs from other forms of writing since it is research-based and intended for a scholarly audience. It aims to present facts clearly and be easy to read, following specific grammar, punctuation, and organization rules. Effective use of discourse markers is central to academic writing, and a lack of it suggests that the L2 writer is inexperienced (Hyland, 2008; Li and Schmitt, 2009).

Research indicates that non-native English speakers often struggle with the proper utilization of discourse markers. According to Li and Schmitt (2009), L2 writers’ problems with discourse markers result in either excessive employment of a short list of frequently used phrases or lacking a wide resources to use discourse markers like a native speaker/writer, making their writing seem non-native. Additionally, the research emphasizes the pivotal function of discourse markers in building discourse coherence, which is even more essential in academic writing (Dulger, 2007; Hernandez, 2008; Schiffrin, 2001).

The comparative investigation of discourse markers through examining a corpus consisting of academic articles developed by non-native writers and native writers of English has proven to be a prime area of research that has not been widely addressed. The constellation of scholarly works in this connection addresses some contradictory results. In this concern, while some studies claim that native and non-native writers and speakers are similar in employing discourse markers (Vaez Dalili and Vahid Dastjerdi, 2013), other works are reporting wider discrepancies in the use of discourse markers between native and non-native speakers (Bolton et al., 2002; Hinkel, 2002).

Given the varied aims and types of texts compared in these studies, the question remains: How similar or different are NS and NNS in utilizing discourse markers in the written academic discourse? This study aims to challenge or confirm the existing literature while adding a new perspective. It adopts an NS-NNS comparative study to investigate the frequency of discourse markers used in the published academic articles by Iraqi and native English writers/authors. Specifically, it embarks upon comparatively examining the distributional statistics of discourse marker items in published papers across various areas of science.

The study investigates the nature of discourse markers

utilized by both Iraqi and native English writers/authors in a corpus of their journal-published papers. This is a corpus-based study, comparing NS and NNS in the form of Contrastive Interlanguage Analysis (Granger, 1993). Drawing upon the contrastive interlanguage analysis method, this study intends to compare the native and non-native writers/authors in terms of the statistics and function of discourse markers in their published papers.

In the meantime, the guiding research questions in this study are as follows:

What are the quantitative and qualitative features of discourse markers employed in the academic publications of Iraqi writers of English in comparison with native English speakers (NS)?

What discourse marker items are mostly employed by Iraqi English writers, and how do they differ from those used by NS English writers in journal-published papers?

What are the key similarities and differences in using discourse markers between NNS Iraqi writers and NS English writers?

Literature review

Discourse markers can be delineated as verbal and non-verbal linguistic devices, serving as contextual cues for working out meaning created through the ongoing process of producing text and talk (Schiffrin, 1987). The key role discourse markers play is to aid writers in creating effective and satisfactory written discourse. For Fraser (1999), discourse markers fall into different categories, including conjunctions, adverbials, prepositional phrases, conjoining sentences, or clauses to end up with longer stretches of text and talk. Similarly, discourse markers, as Redeker (1991) maintains, make meaningful connections between juxtaposed sentences and the current sentence with an immediate context. The literature embeds diverse terminologies for this group of words such as discourse operators (Redeker, 1991), discourse markers (Schiffrin, 1987; Fraser, 1990, 1996, 1999), discourse connectives (Blakemore, 2002), and cue phrases (Sanders and Noordman, 2000). However, a consensus exists towards the notion of ‘discourse markers’ as the underlying concept.

Previous research has investigated discourse markers in various contexts, including educational environment discourse (Nejadansari and Mohammadi, 2015; Moreno et al., 2006; Chapetón Castro, 2009), colloquial context (Boonsuk et al., 2019; Bolden, 2009), reading and comprehension (Khatib, 2011; Al-Surmi, 2011; Lahuerta Martínez, 2009; Abdullah Zadeh, 2006), presentations and lecture delivering setting (Eslami and Eslami-Rasekh, 2009; Rido, 2010; Tehrani and Dastjerdi, 2012), academic discourse (Abdi, 2002; Šimčikaitė, 2012; Ghanbari et al., 2016; Choemue and Bram, 2021; Fox Tree, 2015), learner-generated discourse (Jalilifar, 2009; Lahuerta Martínez, 2009; Andayani, 2014).

The primary objective of these studies has been to examine the frequency and patterns of using discourse mark-

ers through different genres and means. Accordingly, Nejadansari and Mohammadi (2015) study the frequencies of discourse markers employed by Iranian EFL university students. Likewise, Chapetón Castro (2009) examines the employment and function of interactive discourse markers in an EFL classroom environment.

Several studies have examined the utilization of discourse markers by native and non-native writers of English in their written work (Ghanbari et al., 2016; Choemue and Bram, 2021). In a comparative study, Connor (1984) investigated the differences in the use of discourse markers in academic essays written by native English speakers and ESL students. Moreover, in a rather different demographic environment, Field and Yip (1992) compared argumentative essays of Hong Kong and Australian students. Andayani (2014) studied argumentative essays by Indonesian and Thai EFL students. Concerned with a different genre, Lahuerta Martínez (2009) analyzed expository essays in the writing of Spanish university students. Jalilifar (2009) also examined Iranian English learners' use of discourse markers in English compositions. A group of these studies suggests that NNS typically possess a more limited range of lexical phrases and discourse markers. However, it is reported that they tend to overuse the discourse markers they are familiar with (Narita et al., 2004; Tapper, 2005). In this connection, conducting a frequency-count study on undergraduate Chinese learners, Liu and Braine (2005) found that these students often utilize more additive expressions, such as "and," "also," and "or," compared to different kinds of discourse markers in their writing. Results have shown that, unlike native English writers, non-native English students and writers often overuse conjunctions but employ only a limited number of discourse markers, and that is for the pragmatic effects of these items. Besides, Tapper (2005) indicated that Tapper (2005) demonstrated that Swedish learners tend to employ a greater variety of connectives.

However, research indicates that the nuances of language acquisition can cause discrepancies in writing styles, development of coherency and unity, and degree of fluency between native and non-native writers of English. Non-native writers may exhibit varying degrees of fluency and complexity in their writing, often influenced by their proficiency level and the degree of disposition to a target language (Grabe and Kaplan, 2014; Norment, 1994). These differences can also be rooted in foundational cultural communication patterns. Aljanabi et al. (2024), for instance, highlight that conversational strategies are shaped by whether a culture is high-context or low-context. They identify Iraqi Arabic as a high-context culture that values indirectness and politeness, whereas American English is characterized as a low-context culture that prioritizes clarity and efficiency. This cultural dimension helps explain why second-language writers may struggle with certain rhetorical conventions; for example, a study by Cumming (2001) found that second-language writers frequently struggle with integrating cohesive devices in English, which can lead to a fragmented writing style that contrasts sharply with native speakers' fluidity. On the other hand, a group of studies, however, revealed that there have been no meaningful and noticeable discrepancies

between native and ESL students in the overall number of cohesive ties (Connor, 1984; Johnson, 1992; Karasi, 1994). Analyzing the expository essays of Singaporean students alongside NS essays, Karasi (1994) reported that both native and non-native writers employed discourse markers quite the same way throughout their essays. Intaraprawat and Steffensen (1995), for instance, found differences in the frequency of items, T-units, and discourse marker distribution between high and low-rated essays.

Another body of research on discourse markers has concentrated on exploring the connection between discourse markers and the quality of writing. Zhang (2016) studied how Chinese undergraduates employed cohesive ties in their expository texts. Utilizing Halliday and Hasan (1976) classification of cohesive devices, he discovered that while a range of cohesive ties was present in the compositions, lexical devices, conjunctions, and reference devices were the most prevalent. Nevertheless, Zhang (2016) found no significant correlation between the quantity of cohesive ties used by the participants and the overall quality of their writing. He also noticed the instances of both outnumbered and erroneous employment of conjunctions, alongside the application of a short list of lexical cohesion in the students' work.

Method

Research design

The present study employs a comparative interlanguage corpus-assisted analysis approach to examine the dispersion of discourse markers in academic publications written by Iraqi English writers and native English writers. Using a corpus-based contrastive interlanguage analysis (CIA) method (Granger, 1993), the study investigates linguistic differences by analyzing 60 published academic articles—30 from Iraqi English writers and 30 from native English writers—selected randomly from accredited journals across various disciplines. We standardized both corpora in terms of total word count (318,050 for Iraqi writers and 318,100 for native English writers) and publication period (2015–2024) to ensure consistency. Theoretically concerned, the research is grounded upon Fraser's (1999) discourse marker taxonomy, classifying discourse markers into three primary categories: contrastive (e.g., but, however, whereas), elaborative (e.g., and, also, furthermore), and inferential (e.g., therefore, consequently, hence). We also employed AntConc software to conduct both quantitative and qualitative analyses, utilizing frequency analysis and Chi-square tests to examine statistical significance. Guided by three key research questions, the study explores (1) the quantitative and qualitative analyses of discourse markers in Iraqi English writers' academic publications compared to native English writers, (2) the most commonly used discourse markers among Iraqi writers and how they differ from those used by native writers, and (3) the key similarities and differences in discourse marker usage between the two groups. Through this systematic corpus-based investigation, the study aims to contribute to a deeper understanding of interlanguage differences in academic writing and the role of discourse markers in structuring scholarly discourse.

Corpus of the study

The present study is grounded upon the data from two corpora, comprising English-written academic papers published by Iraqi and native English writers across different journals in various areas of science, including humanities, basic science, and engineering. We selected the papers randomly and considered both standard American and British spellings in our sampling process to avoid any probable effects of the particular stylistic features of the writers.

The resulting two corpora were consistent in terms of the areas of science and the total number of words. We approached the papers published from 2015 to 2024 for the two corpora. Each corpus consists of 30 articles. The total number of words for the Iraqi English writers was 318050, and for the native English writers was 318100. Table 1 below summarises the general features of the two corpora employed in this study.

Model of the study

We employed Fraser's (1999) categorization of discourse markers, containing comprehensive lists of discourse markers widely employed in writer discourses. Fraser (1999) presents a triadic taxonomy of discourse markers, namely contrastive discourse markers, elaborative discourse markers, and inferential discourse markers.

We employed the grammatical-pragmatic framework developed by Fraser (2006) and his categorization of discourse markers (1999) as the theoretical frameworks of the present

study. In his grammatical-pragmatic perspective, Fraser (2006) provides a syntactic, semantic, and pragmatic framework for the properties of the discourse markers. We employed this framework in our qualitative analyses of data to be equipped with extensive analytical tools to scrutinize the particularities in the use of discourse markers in the two corpora. In the following, we shall provide Fraser's (1999) category of discourse markers.

Procedures

We employed a corpus-based contrastive Interlanguage analysis approach. We analyzed the discourse markers using automated analysis. We also used the corpus analysis software AntConc to conduct the corpus-based analysis and concord the discourse markers in both corpora. We used the 'keyword in context' facility of AntConc software to provide us with the distributional context of each discourse marker across the corpora. This provided us with the contexts wherein a specific discourse marker occurred. We used this affordance to qualitatively analyze the syntactic, semantic, and pragmatic particularities of the discourse markers in their distributions across the corpora.

Results

The quantitative and qualitative analyses of discourse markers across the two corpora

Related to the first research question, the overall results from the corpus-based analyses of the distribution and use

Table 1. The corpora description.

Corpus	Number of articles	Number of words
Iraqi English writers	30	318050
Native English writers	30	318100

Table 2. Taxonomy of discourse markers (Fraser, 1999).

Discourse markers	Definition	Examples
Contrastive discourse marker	Contrastive discourse markers signal that the explicit interpretation of S2 contrasts with an interpretation of S1.	(al)though, but, contrary, conversely, despite, in comparison, in contrast, in spite of, instead, nevertheless, nonetheless, rather than, still, though, although, whereas, yet.
Elaborative discourse markers	Elaborative discourse markers signal a quasi-parallel relationship between S2 and S1 so that S2 constitutes an elaboration of S1.	Above all, also, analogously, and, besides, better, yet, by the same token, correspondingly, equally, for another thing, further, in addition, in any event, in particular, I mean, likewise, more to the point, moreover, namely, on top of it all, otherwise, similarly.
Inferential discourse markers	Inferential discourse markers signal that S2 conveys a message that is, in some sense, consequential to some aspect of S1.	Accordingly, all things considered, as a consequence/conclusion, as a result, because of this/that, consequently, hence, in any case, in this/that case, it can be concluded that, of course, on that condition, so, them, therefore, thus.

of discourse markers across the corpora indicated that the native English writers/authors used significantly more discourse markers than their Iraqi counterparts. This holds true for all three types of discourse markers. According to Table 3, native English writers have used 13415 discourse markers. This is while the total number of discourse markers used by Iraqi English writers/authors is 9559, which shows a 28.7% lower use of the discourse markers.

In the corpus for the native English writers/authors, evaluative discourse markers comprise the topmost discourse markers, with 11012 tokens of the discourse marker “and” standing on the top of the list. Interestingly, “and” is the prevalent discourse marker amongst all the discourse marker items used in the native English writer’s corpus. From the same category of discourse markers, “also” is the second highest, and “particularly” is the third most frequently used discourse marker. Similarly, in the corpus of Iraqi English writers/authors, the evaluative taxonomy of discourse markers is used more than the other two groups of discourse markers. Among all types of discourse markers, the “and” is the most frequently used discourse marker with 8050 tokens in the corpus. Among other items of evaluative discourse markers, there are 386 tokens of “also” and 55 tokens of “particularly.”

Concerning the contrastive discourse markers, qualitative analysis indicates that Iraqi writers employed contrastive phrases more frequently than the respective discourse markers. In the following example, paragraph (1) overuses conservative contrastive phrases instead of using targeted markers to effectively channel the intended contrast. Phrases like “displayed a different pattern” and “in stark contrast with” redundantly signal differences, resulting in an overemphasis on the contrastive meaning. This redundancy not only dilutes the impact of the comparison but also creates an imbalance, as the Eastern district’s data is presented without similar markers. Additionally, the final sentence contrasts distinct trends—fluctuation versus decrease—in a way that muddles the intended comparison, rather than clearly delineating the differences.

1. The chart illustrates cultural production in two distinct districts of the country. In the Eastern District, production was relatively balanced: story books and novels for 35%, extracurricular programs for 30%, educational consultancy for 20%, and media programs for 15%. The Western district displayed a different pattern—media programs dominated at 45%, story books, and novels contributed 35%, extracurricular programs sharply dropped to 15%, and educational consultancy made up only 5%. These statistics are in stark contrast with the number of cultural productions in the Eastern district. Overall, although production in the Eastern

district fluctuated slightly, it decreased significantly in the Western district.

However, when it comes to native English writers, paragraph (2) effectively employs contrastive discourse markers to structure the argument and guide the reader through opposing viewpoints before reaching a reasoned conclusion.

2. Social sciences play a crucial role in understanding human behavior and societal structures; however, some critics argue that they lack the empirical rigor of natural sciences. On the one hand, disciplines like sociology and political science provide invaluable insights into social dynamics, enabling policymakers to address pressing issues such as inequality and governance. On the other hand, skeptics contend that the methodologies used in social sciences are often subjective and prone to bias, unlike the controlled experiments of physics or chemistry. Nevertheless, the complexity of human interactions necessitates qualitative and interpretive approaches that quantitative methods alone cannot capture. Therefore, rather than dismissing social sciences as unscientific, it is essential to recognize their unique methodologies as complementary to empirical research, contributing to a holistic understanding of human societies.

The same story repeats with regard to inferential discourse markers. In paragraph (3), the Iraqi English writer employs a mix of inferential discourse markers and inferential phrases, the frequency of the latter being higher. For instance, while markers like “In response” and “In addition” explicitly signal causal and additive relationships, the paragraph extensively employs inferential phrases like “It is plausible that” and the sentence “justifying the necessity for flexible workplaces” in order to draw deductive conclusions. Such sentences suggest causality and inference implicitly without overt obviousness in the form of ordinary discourse markers. The entire analysis, consequently, is that the author chooses subtle inferential phrases to put together the argument with fewer usual markers and more embedded inferential phrases connecting the ideas together.

3. Existing research indicates that distant workers have better job satisfaction. *It is plausible* that it makes them more productive. *In response*, this will motivate businesses are currently examining more adaptable working practices. *In addition*, findings indicate that improved work-life balance contributes to increased overall well-being, *justifying the necessity* for flexible workplaces. Such findings propose that flexible practice adoption can prove useful for firms as well as employees.

Table 3. Total number of discourse markers used in both corpora.

	Contrastive DMs	Evaluative DMs	Inferential DMs	Total number
Native English writers	1302	11873	240	13415
Iraqi English writers	834	8605	120	9559

However, the native writer in (4) employs several discourse inferential markers to guide the reader towards its reasonable explanation. “In fact” indicates an inference by highlighting the fact that there are more variables underlying the results, and “therefore” explicitly indicates that the implication that more research needs to be done is a rational corollary from the initial observation. In addition, “which suggests” serves as a marker to introduce an interim inference regarding the control group’s behavior, and “hence” in order to move to a conclusion regarding the necessity of further investigation. These markers collectively assist with the structure of the argument by linking evidence to its assumed consequences.

4. Although the initial findings were promising, they also raised several questions. In fact, the researchers concluded that there may have been other variables influencing the result; therefore, they recommended a more in-depth study. However, the control group had the opposite behavior, which suggests that the effects measured may have been weaker than initially presumed. Hence, more research would be essential to reconcile these contradictions.

With regard to evaluative discourse markers, the paragraph written by an Iraqi writer (5) employs explicit as well as implicit elaborative markers to enrich its report. “Moreover,” for example, is a clear formal elaborative discourse marker appearing prior to additional information on the expert tours detailing the cultural heritage of the pieces. The casual, informal, implicit elaborative cue “We can add that” in the second sentence illustrates how an informal, casual elaborative marker is used, adding more detail to the organizers’ interactive presentations. Moreover, although the final sentence is not a transitional marker in a classical sense, it does still have an elaborative role through its emphasis on how detailed guidebooks highlight individual themes and histories to enhance the visitor experience. These collectively represent a cohesive and integrated narrative that builds up step by step from the initial comment on the haphazardness of the art collection in the museum.

5. The museum’s new show was an eyes feast since it had an eclectic mix of contemporary art alongside great masterpieces. We can add that organizers provided interactive displays through which visitors could gain more insight into the story of each piece. Moreover, expert-led tours expatiated on the cultural background of the pieces to give more insight into the creators of the art forms. Comprehensive guidebooks highlighted particular themes and histories to improve the overall experience for all in attendance.

However, in (6), a native writer employs several elaborative discourse markers to add depth and structure to its analysis of the political scenario. For instance, “indeed” in the second sentence reinforces the previous claim by emphasizing that policy changes are a direct response to both internal and international pressures. More explicitly, “moreover” introduces additional evidence by citing political commentators who highlight the potential for increased

civic participation—a clear elaboration on the earlier point. Similarly, “further” is used at the beginning of the final sentence to introduce a new layer of argument, suggesting that continuing developments could transform the balance of power over time. Additionally, markers like “hence” and “thus” are employed to connect cause and effect, thereby reinforcing the inferential links between observations and conclusions while also contributing to the overall elaborative structure.

6. While the present political scenario seems to be moving towards greater transparency, closer examination uncovers underlying nuances. Indeed, the recent policy changes indicate that government leaders are reacting not just to internal pressures but also to international forces; hence, a guarded but hopeful strategy is prudent. Moreover, political commentators contend that these efforts could indirectly increase civic participation, thus leading to a more accountable system. Further, the new trends suggest that should these developments continue, they are likely to transform the balance of power in the long run and thus create an inclusive political future.

The use of different categories of discourse markers in the corpora

Concerning the second research question, the two corpora give higher values to similar categories of discourse markers; however, they differ in the total frequency of each category and also the discourse marker item within each category. As mentioned before, evaluative discourse markers were the number one most frequently used category of discourse markers. What’s more, for both Iraqi and native English writers/authors, inferential discourse markers appeared to be the least frequently used category of discourse markers, with 120 tokens for Iraqi English writers/authors and 240 tokens for native English writers/authors. Figure 1 indicates the frequency count of the discourse markers in both corpora. As for the contrastive discourse markers, Table 4 shows that, amongst the contrastive discourse markers, native English writers/authors have used 751 tokens of the discourse marker “but,” which is the most frequently used contrastive discourse marker.

Based on the overall frequency count of the three categories of discourse markers in the two corpora, we embarked upon undergoing a Chi-square test to see whether or not the frequencies were statistically significant. The results are presented in Table 4.

As Table 4 illustrates, there was a significant difference between native English writers and Iraqi English writers’ use of the four categories of DMs ($p < 0.05$). As evident in the table, native English writers used discourse markers significantly more than the Iraqi English writers. In Table 4, the statistical significance ($p < 0.05$) suggests that the differences in discourse markers are not due to random chance, indicating a genuine divergence in style or approach. For example, native English writers might employ a wider range of discourse markers, such as “however,” “moreover,” and “consequently,” to enhance coherence and persuasive power. In contrast, Iraqi English writers might favor sim-

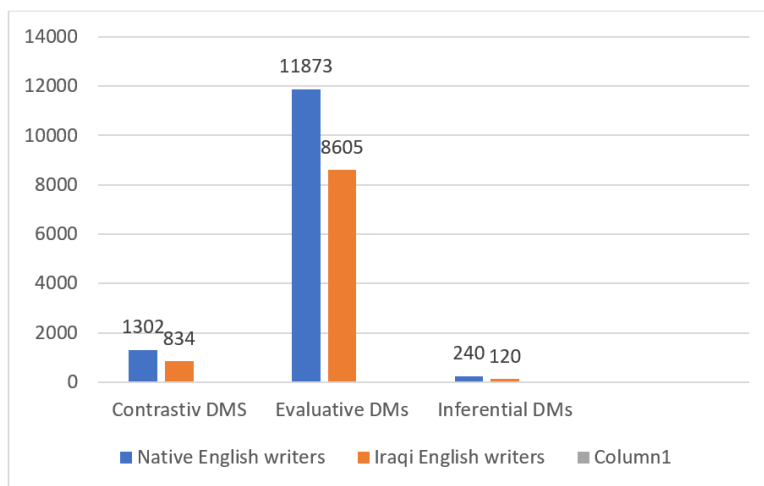


Figure 1. The frequency count of discourse markers across both corpora.

pler or more direct discourse markers, such as “first,” “next,” or “finally,” potentially reflecting differences in linguistic training or cultural approaches to writing. The table likely details the frequencies or types of discourse markers used, offering insights into how these scholars structure their arguments and connect ideas. This could imply that native English writers may benefit from targeted training in the use of discourse markers to align their academic writing more closely with international standards.

Contrastive discourse markers

According to Fraser (1999), the main function of contrastive discourse markers is to “impose a relationship between some aspects of the discourse segment they are a part of, call it S2, and some aspect of a prior discourse segment, call it S1” (p. 938). In this study, the two Tables (5 and 6) below provide a comparative analysis of the use of contrastive discourse markers (DMs) between Iraqi and native English writers. It is important to note that the tables only include

Table 4. Chi-square test.

	Value	Df	Sig.
Pearson Chi-square	335150	3	.00
Likelihood Ratio	345260	3	.00
Linear-by-linear Association	28546	1	.00
No. of Valid case	33342		

Table 5. Contrastive DMs in Iraqi English writers’ corpus.

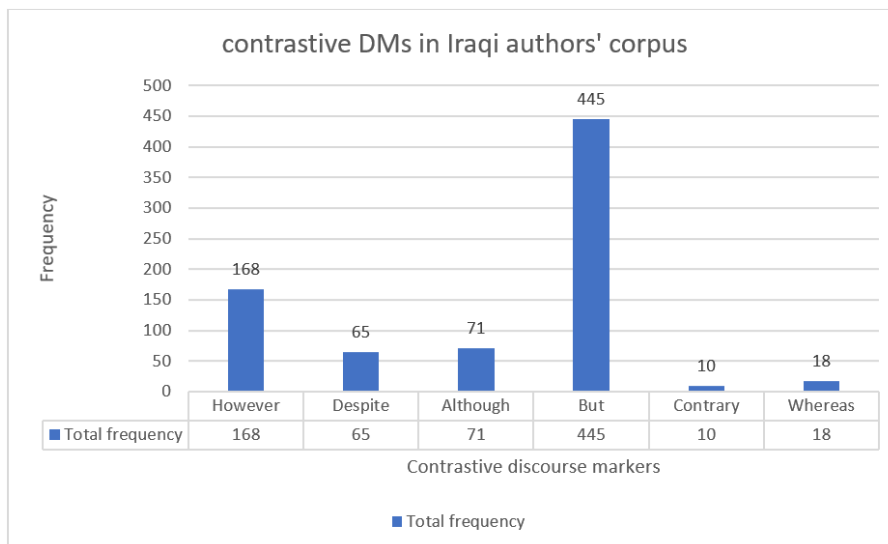
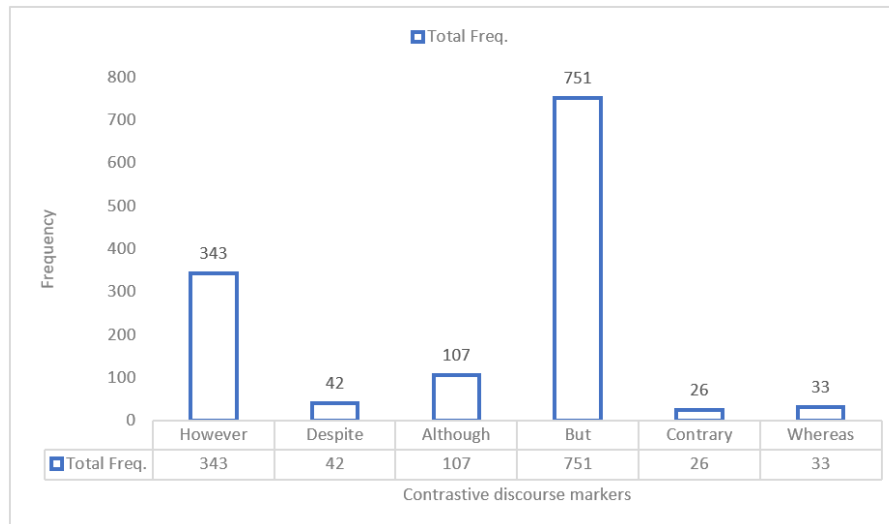


Table 6. Contrastive DMs in native English authors' corpus.

the five most frequently used contrastive discourse markers. Considering the discourse marker items in the tables, native English authors use contrastive discourse markers more frequently, with a total frequency of 1302 compared to 777 for Iraqi authors. Specifically, native English authors use “However” (343 vs. 168), “Although” (107 vs. 71), “But” (751 vs. 445), “Contrary” (26 vs. 10), and “Whereas” (33 vs. 18) more often than Iraqi authors. Conversely, Iraqi authors use “Despite” more frequently (65 vs. 42). These differences suggest variations in writing styles, academic conventions, or language preferences between the two groups, with native English authors showing a notable preference for certain discourse markers like “However” and “But.”

Evaluative discourse markers

Evaluative discourse markers, according to Fraser (1999), communicate “a quasi-parallel relationship between S2 and S1” (p. 948). Through the evaluative discourse markers, the S2 is either taken or adds more items to the list of conditions specified by a prior chunk of discourse or S1,

or the S2 provides the foremost exemplar of the concept represented by S1, or the content of S2 is similar to what S1 previously communicated (see, Fraser, 1999, p. 948). Tables 7 and 8 below compare the frequency of the 10 most frequently used evaluative discourse markers (DMs) used in published academic papers by Iraqi English writers and native English writers. Both groups predominantly use the discourse marker “And,” with Iraqi writers using 8050 tokens and native writers 11012 tokens. This indicates a strong preference for this connector in both groups. Other DMs such as “Also,” “Furthermore,” and “In addition” are used more frequently by native writers (688, 65, and 50 tokens, respectively) compared to Iraqi writers (386, 55, and 40 tokens, respectively). Conversely, Iraqi writers use “Particularly” slightly more often (11 times) than native writers (16 times). Both groups use “Above all” equally (3 times), while native writers use “Otherwise” (17 tokens) and “Besides” (11 tokens) more frequently than Iraqi writers (6 tokens each). Overall, native English writers tend to use a wider variety of evaluative discourse markers more

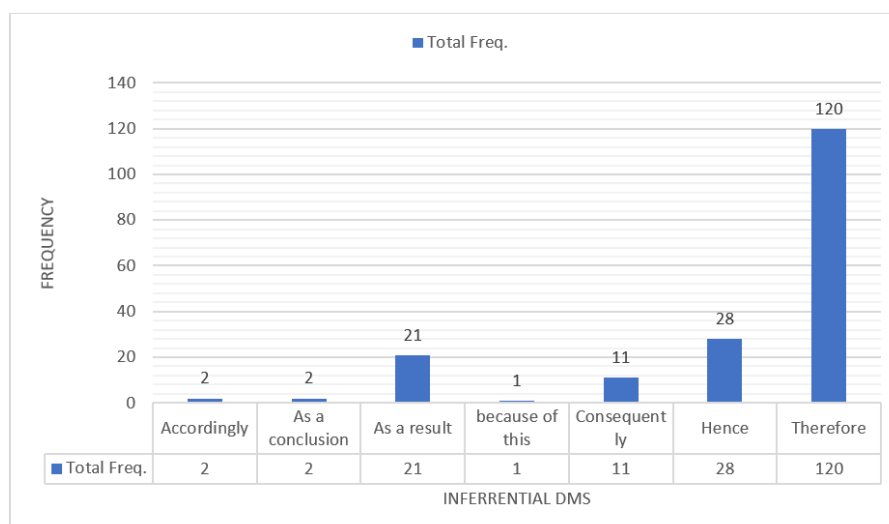
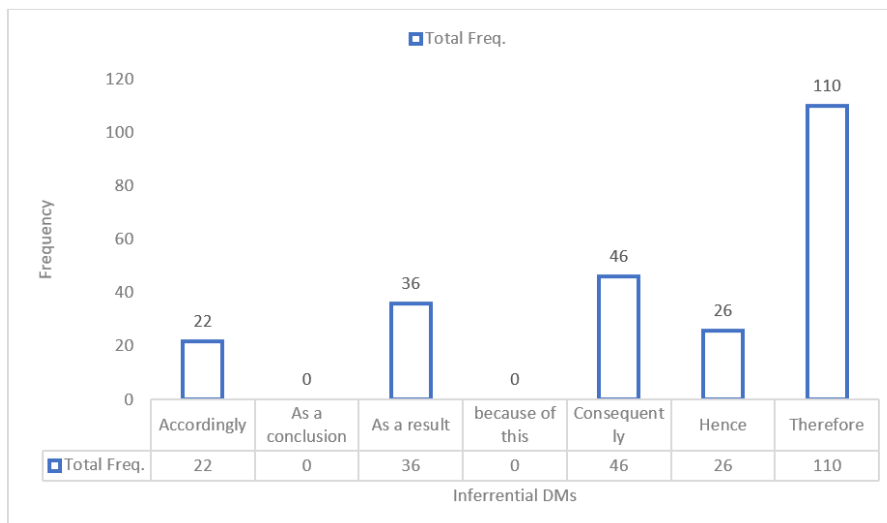
Table 7. Inferential DMs in Iraqi English authors' academic papers.

Table 8. Inferential DMs in native English authors' academic papers.

frequently than Iraqi English writers, suggesting a more diverse use of connectors in their academic writing.

Inferential discourse marker

Inferential discourse markers signal that S2 serves as the conclusion based on what S1 communicates (Fraser, 1999). The tables illustrate the frequency of the seven most frequently used inferential discourse markers used by Iraqi and native English authors in academic papers. Native English authors show a higher overall frequency (240 tokens) than Iraqi English authors (120 tokens). Specifically, Iraqi English authors predominantly use “Therefore” (120 tokens), followed by “Hence” (28 tokens) and “As a result” (21 tokens). In contrast, native English authors show a more balanced distribution, with “Consequently” (46 tokens) being the most frequent, followed by “As a result” (36 tokens) and “Therefore” (110 tokens). Notably, “Accordingly” is rarely used by Iraqi authors (2 tokens) but is more common among native authors (22 tokens). “As a conclusion” and “because of this” are minimally used or not used by both groups. Overall, Iraqi authors heavily rely on “Therefore,” while native authors distribute their usage more evenly across different DMs.

Similarities and differences in the use of discourse markers across the two corpora

Regarding the third research question in this study, the findings of the study reveal that both Iraqi English writers and native English writers predominantly use evaluative discourse markers. In both corpora, the discourse marker “and” is the most frequently used. Despite this shared feature, native English writers employed discourse markers significantly more frequently than their Iraqi counterparts, with a 28.7% higher overall usage. Besides, while both groups used contrastive and inferential discourse markers, native English writers demonstrated a broader and more varied distribution across different types, whereas Iraqi English writers tended to overuse a limited set of discourse markers. For example, “however” and “but” were more frequently used by native English writers, whereas Iraqi writers relied

more on “despite.” Likewise, while native English writers used a mix of inferential markers such as “consequently” and “as a result,” Iraqi writers showed a strong preference for “therefore.”

The observed differences in discourse marker usage can be attributed to linguistic, cultural, and educational factors. The Arabic language has distinct discourse structuring properties, which may make Iraqi writers draw more on implicit cohesion rather than explicit connectors. Additionally, cultural rhetorical styles in Arabic academic writing emphasize a fluid storytelling approach rather than the direct, structured transitions commonly found in English. Educational background and exposure to English writing conventions also play a role, as Iraqi writers may not have received extensive instruction on the nuanced use of discourse markers in academic writing. Moreover, the cognitive load related to writing in a second language may cause Iraqi English writers to put content and coherence first over varied discourse marker usage, resulting in a more limited recruitment of these linguistic elements.

Discussion and conclusion

This study attempted to compare the use of discourse markers in Iraqi and native English writers' published papers and articles. To this end, we examined 60 randomly chosen published papers from different areas of science. Then, we employed corpus linguistics software AntConc to extract the raw data and frequency of the occurrence of different categories of discourse markers in the corpora. The results indicated that native English writers ostensibly used more discourse markers than Iraqi English writers. The qualitative analyses indicated that the Iraqi English writers/authors have employed more expressions and elongated elaborations to signal different relations between statements instead of appropriately using respective discourse markers. This finding does not gain support from the literature since certain studies predominantly indicate that non-native English writers use discourse markers excessively due to their limited range of lexical phrases (Narita et al., 2004; Tapper,

2005; Liu and Braine, 2005).

Moreover, the study revealed that evaluative discourse markers were extensively used in both corpora, regardless of the differences in the frequency of use. At the same time, the analyses revealed that the least frequent category of discourse markers used by both Iraqi and native English writers was the inferential discourse marker. The vast recruitment of evaluative discourse markers might be due to the need of the authors to elaborate on the topic under discussion and provide further justifications and reasoning to support and prove their argument (Al-khazraji, 2019).

The argument regarding the reduced use of discourse markers by Iraqi English writers compared to their native English counterparts can be examined through the lens of cultural context. In Arabic discourse, communication often relies on a more implicit style, where the context and shared knowledge between speakers play crucial roles. This tendency may lead Iraqi writers to underutilize explicit discourse markers in their English writing, as their native language emphasizes connection through context rather than overt signaling. This observation is strongly supported by Aljanabi et al. (2024), who highlight the communicative differences between Iraqi Arabic and American English. They note that Iraqi Arabic functions as a high-context culture, prioritizing indirectness and politeness in communication, whereas American English operates as a low-context culture, emphasizing clarity and efficiency. This cultural preference for high-context, implicit communication could directly account for the lower frequency of explicit discourse markers in the Iraqi corpus, as these writers may be transferring rhetorical norms that do not require the same level of textual signposting expected in English academic prose. This finding is supported by the results of comparative research on the frequency of discourse markers in Arabic and English research articles (Alotaibi, 2016) that revealed insignificant use of metadiscourse in Arabic academic texts. According to Alotaibi (2016), this is mainly because the propositional content of Arabic academic texts may deliberately be kept free from the writer's interference to be perceived as an academic text.

Furthermore, the structural differences between Arabic and English writing significantly contribute to this phenomenon. Research indicates that Arabic narratives often give higher credence to a fluid storytelling approach, emphasizing cohesive ties within the text rather than explicit transitions (Mohamed and Omer, 2000; Bacha, 2002). This stylistic preference develops a natural narrative flow for Arabic speakers. However, this may appear deficient in the explicit discourse markers typically found in English texts (Hussein et al., 2018). Such a tendency underscores the need for targeted writing support that addresses these cross-linguistic differences (Esfandiari and Khatibi, 2022). Additionally, the language acquisition process plays a significant role in shaping writing styles. If Iraqi writers primarily learn English through formal education, they might be less familiar with the nuanced use of discourse markers that enhance coherence. This finding goes hand in hand with Kellogg (2008) study, revealing that the absence of comprehensive training may be the main cause of limited understanding of

the elements that contribute further to writing clarity and sophistication (Kellogg, 2008).

Moreover, the desire to maintain a distinct identity in their writing may influence Iraqi authors as well. They might intentionally choose to minimize discourse markers to create a voice that reflects their cultural background, valuing authenticity over adherence to native English norms. This choice can stem from a wish to present their thoughts to align with their cultural narrative practices, even at the expense of conventional English discourse. As noted in a study on language and identity in Iraqi Arabic, the choice of language can serve as a significant identity marker, highlighting how Iraqi authors use their writing to reflect their cultural heritage (Nasser Alsager et al., 2020). Furthermore, Iraqi writers have engaged in a cultural project to narrate their nation's recent history, revealing how narrative forms are critical for expressing the complexities of contemporary Iraqi society (Esfandiari and Khatibi, 2022).

Finally, the cognitive load associated with switching between languages and cultural frameworks may further complicate the use of discourse markers. Research indicates that bilingual individuals often automatize their choice of language for verbalizing discourse markers, which reduces the cognitive load during conversations (Maschler, 2015). When writing in English, Iraqi writers might focus heavily on accurately translating their thoughts rather than on the structural elements that enhance flow, leading to a significant cognitive effort. This focus can inadvertently cause them to neglect the markers that would otherwise improve coherence in their English texts. Studies on Iraqi EFL students reveal a relationship between cognitive load and reading comprehension, suggesting that similar cognitive challenges may affect their writing processes (Sabah and Kamil, 2023).

In summary, Iraqi English writers' reduced use of discourse markers likely arises from a combination of cultural, structural, educational, and cognitive factors. These influences create a unique linguistic identity that reflects their background while navigating the complexities of a second language.

Authors contributions

All authors have contributed equally to prepare the paper.

Availability of data and materials

The data that support the findings of this study are available from the corresponding author, upon reasonable request.

Conflict of interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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