

## 76. A systematic review: An investigation of studies on the use of discourse connectors in Turkish EFL learners' academic writing

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### Abstract

The goal of this study was to analyze a collection of studies on discourse connectors in EFL learners' writing in Turkey in terms of the distribution, purposes, corpora, findings, and pedagogical implications of certain studies between 2012-2022 in order to reveal research tendencies in this field. This review uses a systematic approach to identify and analyze studies on the use of discourse connectors in Turkish English as a Foreign Language (EFL) academic writing in Turkey. The data analysis procedure comprised a detailed evaluation and synthesis of the selected studies. The systematic review process involved deciding on the subject to be studied, doing a thorough assessment of the literature, selecting the studies that would be included in the study, collecting the data obtained from the investigation, analyzing the data, and reporting the findings. Out of 21 reviewed studies, 8 research papers, 9 M.A. theses, 2 Ph.D. dissertations, and 2 proceedings were reached. In light of the obtained results, it can be concluded that most of the studies were conducted to compare the discourse connectors in native and non-native academic writing such as argumentative essays, MA theses, or doctoral dissertations (Ph.D.), native and non-native corpora, or in written and spoken language respectively. In the last part of the research, practical implications and suggestions for further research were offered in detail.

**Keywords:** Discourse connectors, academic writing, a systematic review

## Sistematik bir inceleme: Yabancı Dil olarak İngilizce öğrenen Türk öğrencilerin akademik yazımlarında söylem bağlaçlarının kullanımına ilişkin çalışmaların incelenmesi

### Öz

Bu çalışmanın amacı, araştırma eğilimlerini ortaya çıkarmak için 2012-2022 yılları arasında Türkiye'de yabancı dil olarak öğrenenlerin akademik yazımlarındaki söylem bağlaçları üzerine yapılan bir araştırma koleksiyonunu dağılım, amaçlar, derlem, bulgular ve pedagojik çıkarımlar açısından analiz etmektir. Bu derleme, Yabancı Dil Olarak İngilizce (EFL) öğrenen Türk öğrencilerin akademik yazımında söylem bağlaçlarının kullanımına ilişkin çalışmaları belirlemek ve analiz etmek için sistematik bir yaklaşım kullanır. Veri analizi prosedürü, seçilen çalışmaların ayrıntılı bir değerlendirmesini ve sentezini içermektedir. Sistematik derleme süreci, çalışılacak konuya karar verilmesi, literatür taramasının yapılması, arařtırmaya dahil edilecek çalışmaların seçilmesi, arařtırmadan elde edilen verilerin toplanması, verilerin analiz edilmesi ve bulguların raporlanması

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ETİK: Yukarıda çalışmanın sistematik bir inceleme olması sebebiyle etik kurul izni gerektirmeyen çalışmalar arasında yer aldığını beyan ederim.

aşamalarından oluşmaktadır. İncelenen 21 çalışmadan 8 araştırma makalesi, 9 yüksek lisans tezi, 2 doktora tez ve 2 bildiriye ulaşılmıştır. Elde edilen sonuçlar ışığında, araştırmaların çoğu, sırasıyla tartışmacı denemeler, yüksek lisans tezleri veya doktora tezleri gibi yerel ve yerel olmayan akademik yazılarda veya yazılı ve sözlü dilde söylem bağlayıcıları karşılaştırmak için yapılmıştır. Araştırmanın son bölümünde ise pratik çıkarımlar ve daha sonraki araştırmalar için öneriler ayrıntılı olarak sunulmuştur.

**Anahtar kelimeler:** Söylem bağlayıcıları, akademik yazı, sistematik bir inceleme

## Introduction

Cohesion is frequently considered to be one of the key components of high-quality academic discourse (Appel & Szeib, 2018). The term cohesion, which was first revealed by Halliday & Hassan (1976), signifies relations of meaning that the text contains and that distinguish it as a text (Halliday & Hassan, 1976). With the aid of sentence-connecting cohesive devices, cohesion in a text is appropriately achieved (Field & Oi, 1992). One type of commonly-used cohesive device is discourse connectors (LAs, e.g. thus, however). The main function of connectors is “to state the speaker/writer’s perception of the relationship between two units of discourse” (Biber et. al, 1999) and “to make semantic connections between spans of the discourse of varying length” (Biber et. al, 1999). Discourse connectors are crucial cohesive devices in order to properly produce textual cohesion.

Discourse connectors have been referred to by several names among academics such as “logical connectors” (Quirk et. al., 1985; Celce-Murcia & Larsen-Freeman, 1999); “linking adverbial” (Biber et al., 1999); “cohesive conjunction” (Halliday & Hassan, 1976); “discourse connector” (Cowan, 2008); “connective” (Finch, 2000); “connective adjunct” (Huddleston & Pullum, 2002); “linking adjunct” (Carter & McCarthy, 2006) and “discourse connective” (Blakemore, 2002). A clear classification of discourse connectors is a difficult procedure because of the fact that different scholars classify them in different ways. Biber et. al. (1999) distinguish linking adverbials into six general semantic categories such as “enumeration” and “addition”, “summation”, “apposition”, “result/ inference”, “contrast/ concession”, and “transition”. On the other hand, Quirk et. al. (1985) classified them into “listing, summative, appositional, resultative, inferential, contrastive and transitional” semantic categories. However, the original categorization method developed by Halliday & Hasan in 1976 was simplified by Celce-Murcia & Larsen-Freeman in 1999 (Liu, 2008). This classification included four major sub-categories: “additive”, “adversative”, “causal”, and “sequential” categories.

The usage of discourse connectors in learner writing has aroused much interest in recent decades. There is a great amount of research on these adverbials utilized by ESL/EFL learners (Altenberg & Tapper, 1998; Bolton et al., 2002; Chen, 2006; Crewe, 1990; Field & Yip, 1992; Granger & Tyson, 1996; Milton & Tsang, 1993). The research on the utilization of discourse connectors in EFL student writing was made up of different non-native learner groups such as Chinese EFL students (Lei, 2012; Milton & Tsang, 1993; Yeung, 2009), French EFL students (Granger & Tyson, 1996), Swedish EFL students (Altenberg & Tapper, 1998; Heino, 2010) Brazilian EFL students (Matte, 2017), Iranian EFL students (Sabzevari, Haghverdi, & Bria, 2016), African EFL students (Kayonde, 2021) Taiwanese EFL students (Chen, 2006), Spanish EFL students (Castele & Collewaert, 2013), Japanese EFL students (Narita et al., 2004), and Turkish EFL students (Demirel, 2015; Uçar & Yükselir, 2017; Güneş 2017; Tazegül, 2015).

Milton and Tsang (1993) investigated how connectors were used in the writing of Hong Kong students in high school and higher education. A corpus of four million words written by EFL students makes up the learner corpus. The results revealed that 25 single-word adverbials such as *'moreover'*, *'nevertheless'*, and *'therefore'* were overused by the learners. Moreover, the study demonstrated that the causal linking adverbial *'therefore'* was misused in EFL learner writing. In their research, Granger and Tyson (1996) investigated how discourse connectors were utilized in native and non-native essay writing. The researchers compared the linking adverbials used in French learners' writings in the International Corpus of Learner English (ICLE) with the control corpus of English native speakers' writing. The results showed that French learners overused and underused some specific adverbials in their writing procedure. The eight commonly underused linking adverbials were found as *'however'*, *'instead'*, *'hence'*, *'therefore'*, *'then'*, *'thus'*, *'though'*, and *'yet'*. Another finding obtained from the study was the misuse of some adverbials because of a lack of understanding semantic or syntactic features of certain adverbials. As a pedagogical implication, the authors recommended teaching the linking adverbials in authentic contexts.

In their study, Altenberg & Tapper (1998) compared advanced Swedish students' EFL writing with native English students writing through the usage of connectors. Swedish students' underuse or avoidance of contrastive or causal adverbs, which are utilized in formal genres, was one troubling finding of the study. Overused adverbials in essays of Swedish students were *'for instance'*, *'still'*, *'furthermore'*, and *'of course'*. Underused connectors were *'hence'*, *'thus'*, *'therefore'*, *'however'*, and *'though'*. The authors then recommended that "Swedish EFL students need to be exposed to a greater range of registers and to more extensive training in expository writing" (p.892). In order to compare the academic writing of advanced Japanese undergraduate students to native English writing, Narita et al. (2004) undertook a quantitative study of 25 connecting adverbs. According to their study, several connectors were significantly overused by Japanese EFL students such as *'for example'*, *'first'*, and *'of course'* while they significantly underused such adverbials as *'yet'*, *'then'*, and *'instead'*.

Lei (2012) investigated the use of discourse connectors in the academic writing of Chinese doctoral students. 20 doctoral dissertations on applied linguistics were the learner corpus of the study. As the control corpus, the researcher collected 120 published articles from international journals on the same topic. The study's results showed that student writers used more connectors overall in their academic writing than professional writers. Another finding of the research showed that Ph.D. students overused 33 linking adverbials. Among the linking adverbials used by the EFL students, *'besides'* and *'actually'* were misused by Chinese EFL learners. The findings also showed that, in comparison to experienced writers, Ph.D students relied more on a small number of adverbs in their academic writings. The study also showed 25 linking adverbials, specifically adversative adverbials were underused by EFL learners. As Granger & Tyson (1996) suggest, The researcher proposed providing instruction to the students on how to employ connecting adverbs in real-world literature. Another suggestion was that instructors should emphasize underused adverbials (adversative ones) in the teaching process for Chinese EFL learners.

Using two of the author's corpora, Chen (2006) examined how connecting adverbs were used in the academic writing of advanced Taiwanese EFL students. 23 final papers from 10 MA TESOL students from Taiwan were included in the learner corpus. The control corpus, however, was made up of 10 published papers from two international TESOL publications. According to the results, several connectors were found to be slightly overused by student authors at the word level. Moreover, the qualitative analysis revealed that most of the students used *'besides'* as an additive linking adverbial

which was not appropriate for written communication. The researcher suggested instructors should explicitly mention that some connectors such as '*besides*', '*what's more*', or '*actually*' are not suitable for formal writing. Students also had difficulties utilizing causal connecting adverbs. According to the author, students frequently utilize causal LAs to explain a conclusion without offering sufficient information or persuasive evidence for the reader to understand the argument, which results in incoherence. The researcher suggests further research for the causes of these difficulties in using causal LAs. Sabzevari, Haghverdi, & Bria (2016) investigated the use of conjunctive adverbials (CAs) comparing the research articles of Iranian EFL writers with those written by native speakers. The authors compiled two corpora including thirty research articles written by non-native writers on applied linguistics and thirty articles written by native ones. Both quantitative and qualitative analyses were performed on the data. According to the results obtained from the study, learner and control groups had the tendency to make use of the same linking adverbials. Another finding was that EFL learners used more conjunctive adverbials than the control group at the word level. The qualitative results demonstrated that EFL learners misused some adverbials such as '*besides*' and '*therefore*'.

In Turkey, there are several studies on the usage of discourse connectors in Turkish EFL student writing in literature. (Aysu, 2017; Çam, 2019; Güneş, 2017; Tazegül, 2015; Yangın-Ersanlı, 2015). In one of these research, Tazegül (2015) investigated how the connecting adverb "on the other hand" was used in the academic writing of Turkish PhD candidates. The findings revealed that doctorate students used the connecting adverb "on the other hand" more often than experienced writers. Additionally, there was no misuse, overuse, or underuse of the linking adverbial in the writing of the students. Another research by Uçar & Yükselir (2017) examined the frequency, underuse, overuse, and semantic misuse of the causal linking adverb "thus" among Turkish advanced learners of English in comparison to native professional writers. 20 scientific articles written by native speakers and COCA served as the control corpora for the data collection, whereas 20 scientific articles written by Turkish language learners served as the learner corpus. The findings showed that Turkish students underutilized the connecting adverb "thus" in their academic prose and tended to employ it more frequently in resultative roles than in appositional or summative roles. Another study conducted by Güneş (2017) compared the use of linking adverbials in the Ph.D. dissertations of Turkish EFL learners with those of native speakers with respect to frequency differences, overuse, misuse, and underuse. The findings revealed that Turkish doctoral students overused the linking adverbials in their writing.

However, to the researcher's knowledge, there is no systematic review of these studies on evaluating the problematic issues (such as misuse, overuse, or underuse of discourse connectors) on students' knowledge and use of discourse markers in the field of EFL learner writing in Turkey and revealing research tendencies on discourse connectors in Turkish EFL academic writing in the last decade between 2012-2022 years and demonstrating Turkish students' capacity to control discourse markers in academic writing. In this regard, this research builds on this gap in the literature and aims to contribute to the field by conducting a systematic review of studies to reveal recent trends and illuminate the future directions of research on Turkish EFL learners' employment of discourse connectors in their academic writing. By reviewing the available literature, this research aims to contribute to the understanding of discourse connectors' usage patterns in Turkish EFL academic writing and to identify potential areas for further research and pedagogical implications. The results of the study might motivate additional investigation in the area. Additionally, this study offers helpful advice for researchers who seek to investigate the use of discourse connectors in EFL writing in order to better comprehend the concept's foundation and identify emerging trends in this field. Therefore, the study tries to respond to the following questions:

1. What was the distribution of the reviewed studies conducted on discourse connectors in Turkish EFL learners' writing through the years?
2. What were the research tendencies among the reviewed studies conducted on discourse connectors in EFL learners' writing in Turkey in the last decade?
3. What purposes were employed in the reviewed studies conducted between 2012-2022 years?
4. What corpora were employed in the reviewed studies conducted between 2012-2022 years?
5. What findings were obtained in the reviewed studies conducted between 2012-2022 years?
6. What were the pedagogical implications of the findings obtained in the reviewed studies conducted between 2012-2022 years?

## **Methodology**

### **Research design**

A systematic review was used in this work, which is a specific method for identifying prior research, choosing and evaluating contributions, analyzing and synthesizing data, and disseminating information in a way that offers relatively clear conclusions about what is known and what is unknown. (Denyer & Tranfield, 2009). According to Borrego et al. (2014), a systematic review is a study that identifies new research gaps and seeks to organize the research field by categorizing the papers that have been published on a certain topic. The following objectives for reviews were listed by Baumeister and Leary (1997): assessing the effectiveness of interventions, charting historical evolution, outlining the current level of knowledge or practice on a subject, generating or assessing theories, and spotting potential areas for future study and innovation. On the other hand, Petticrew and Roberts (2006) listed some circumstances that could call for or benefit greatly from systematic reviews:

- Where there is ambiguity—for instance, over the efficacy of a program or service—and there has already been some prior study on the subject.
- When a broad overview of the available data on a specific subject is required to guide further investigation.
- When promoting the creation of new techniques, an accurate understanding of prior research and methodological research is needed.

The selection criteria for the studies included in this review were established to ensure the relevance and quality of the literature reviewed. The following criteria were applied in the selection process:

1. studies focusing on the use of discourse conjunctions in EFL Turkish academic writing;
2. studies published in peer-reviewed journals, conference proceedings, master's theses, and doctoral theses;
3. studies conducted in the last decade (between 2012-2022 years) in order to ensure the inclusion of recent research.

By making use of these selection criteria, a collection of relevant studies was obtained for analysis.

### Data collection process

To find research that met the predetermined selection criteria, the data-gathering approach entailed a methodical search of many academic databases and archives. In order to find relevant information, keywords like “discourse connectors,” “linking devices,” “cohesion,” “cohesive devices”, “linking adverbials”, “logical connectors”, “discourse markers” and “Turkish EFL academic writing” were used to search electronic resources including ERIC, Scopus, Web of Science, and Google Scholar, Google Academic search engine, Tübitak Ulakbim DergiPark, National Dissertation Center of Board of Higher Education, and Springer databases. The initial search turned up a sizable number of possible publications, which were then filtered based on their titles and abstracts to determine how pertinent they were to the study's topic. Following that, the full-text versions of the chosen articles were retrieved for additional review.

### Data analysis process

The data analysis procedure comprised a detailed evaluation and synthesis of the selected studies. The systematic review process involved deciding on the subject to be studied, doing a thorough assessment of the literature, selecting the studies that would be included in the study, collecting the data obtained from the investigation, analyzing the data, and reporting the findings. Each of the studies was coded as A1, A2, or A3..... A20. The researcher's "publication classification form" was employed as a method for gathering data. The titles that were believed to be utilized in the publication classification form were chosen based on previous research (Goktaş et al., 2012). These headings include information on the articles, including their types, numbers, objectives, corpora, pedagogical ramifications, and suggestions. A thematic analysis was performed to identify recurring themes and sub-themes across the selected studies. The identified themes were then grouped, categorized, and synthesized to provide an overview of the current research landscape on the use of discourse connectors in Turkish EFL academic writing.

To ensure the reliability and validity of the analysis, the studies were evaluated by the researcher and the independent encoder. The coefficient of the agreement was determined to be over 0.90, and this value was judged to be at an acceptable level. The consistency across coders was calculated (Miles & Huberman, 1994) using the formula ( $\text{reliability} = \frac{\text{consensus}}{\text{consensus} + \text{disagreement}} \times 100$ ). The consensus was formed after the encoders gathered in cases when it was impossible to come to a decision about a coding analysis.

### Findings

Below is an analysis of the study's conclusions based on the research questions. Regarding the first research question, the distribution of the reviewed studies conducted on discourse connectors in Turkish EFL learners' writing through the years is presented in Table 1:

**Table 1.** Distribution of the reviewed studies throughout the years

Year	Type of Reviewed Studies	Number of Reviewed Studies	%
2012	1 Ph.D.	1	4.76

2015	3 Research papers, 1 M.A.	4	19.04
2016	1 Research paper, 1 M.A.	2	9.52
2017	2 Research papers, 1 M.A.	3	14.28
2018	1 Research paper, 1 M.A., 1 Ph.D., 1 Proceeding	4	19.04
2019	2 M.A., 1 Research paper, 1 Proceeding	4	19.04
2020	1 M.A.	1	4.76
2022	2 M.A.	2	9.52
<b>Total</b>		<b>21</b>	<b>100</b>

According to Table 1, out of 21 reviewed studies, 8 research papers, 9 M.A. theses, 2 Ph.D. dissertations, and 2 proceedings were reached. Table 1 illustrated that 2015, 2018, and 2019 were the years with the highest number of studies ( $f=4$ , 19.04%) conducted on discourse connectors in EFL writing. Regarding the distribution of the studies throughout the years between 2012-2022, the review included 1 (4.76%) publication in 2012, 4 (19.04%) publications in 2015, 2 (9.52%) publications in 2016, 3 (14.28%) publications in 2017, 4 (19.04%) publications in 2018, 4 (19.04%) publications in 2019, 1 (4.76%) publication in 2020, and 2 (9.52%) publications in 2022. It can be inferred from the descriptive statistics of the distribution of research on discourse connectors in EFL writing by years that there has been a gradual increase in the overall number of MA theses in this field.

As for the research tendencies among the reviewed studies conducted on discourse connectors in EFL learners' writing, the results related to the purposes of the reviewed studies were presented in Table 2.

**Table 2.** Data regarding purposes of the reviewed studies

Purposes	Genre	Author
Assessing how well EFL students are able to use discourse markers in their own writing and how much they are aware of them in the texts they are reading.	M.A. thesis	Abal, S. (2016)
Analyzing the usage of discourse connectors by Turkish EFL students in their academic writing including their frequency and function.	Research paper Proceeding	Aysu, S. (2016) Şimşek, M. (2018) Yangın-Ersanlı, C. (2015)
Examining the use of adverbial connectors in Turkish learners' written English to see whether there is any evidence of inter-language features or a transfer from their native tongue.	Ph.D. thesis	Babanoğlu, M. (2012)
Comparing Turkish EFL students' and native English speakers' usage of discourse markers (DMs) in argumentative essays in English (in terms of cohesion, and discourse structure based on specific parameters)	M.A. thesis	Çam, M. (2019), Koç, F. Ş. (2018) Özdamar, B. (2020)
Examining DM use in the MA theses or doctoral dissertations (Ph.D.) written by Turkish NNSs, and comparing them with the abstracts written by NSs.	M.A. thesis, Research paper	Çelik, C. (2022), Koroğlu, Z. (2019), Topal, E. (2019), Güneş, H. (2017)

Comparing the usage of adverbial connectors (ACs) in native and non-native corpora	Research paper Proceeding	Demirel, E. (2015) Özbay, A. Ş., Audemir, T., & Pektaş, A. Y. (2019)
Identifying the DMs used in EFL classes by Turkish and native teachers and contrasting these materials in terms of variety and frequency.	M.A. thesis	Özer, H. (2017)
Investigating the use of logical connectors such as “on the other hand”, “thus”, or contrastive DCs (but, although, and) in the academic writing of Turkish learners of English	Research paper Ph.D. thesis M.A. thesis	Tazegül, A. 2015 Uçar S. & Yükselir C. (2017) Özhan, D. (2012) Şimşek, T. (2015)
Revealing the DM use in written and spoken language and determining the uses of DMs (such as “however”)	M.A. thesis Research paper	Yıldırım, B. (2022) Orhon, Y., Kulac-Purenver, D., & Guzel, E. (2018)

As seen in Table 2, it has been concluded that most of the studies were conducted for the purpose of comparing the discourse connectors in native and non-native academic writing in English argumentative essays (Çam, 2019; Koç, 2018; Özdamar, 2020); in the MA theses or doctoral dissertations (Ph.D.) (Çelik, 2022; Güneş, 2017; Köroğlu, 2019; Topal, 2019); in native and non-native corpora (Demirel, 2015; Özbay, et al., 2019), or in written and spoken language (Orhon, et al., 2018; Yıldırım, 2022). Another purpose of the reviewed studies was to investigate the use of specific logical connectors such as “however”, “thus”, and “on the other hand” or contrastive discourse connectors in the academic writing of Turkish learners of English (Ozhan, 2012; Şimşek, 2015; Tazegül, 2015; Uçar & Yükselir, 2017).

As for the research tendencies among the reviewed studies conducted on discourse connectors in EFL learners' writing, the results related to the corpora of the reviewed studies were presented in Table 3.

**Table 3.** Data regarding the corpora/study group of the reviewed studies

Corpus	Author
ELT prospective teachers' or prep class argumentative essays	Abal, S. (2016); Aysu, S. (2016); Koç, F. Ş. (2018), Şimşek, M. (2018); Yangın-Ersanlı, C. (2015)
Learner corpora of Turkish (TICLE), Spanish (SPICLE) and Japanese (JPICLE), TUC (native Turkish), and LOCNESS (native English)	Babanoğlu, M. (2012)
Turkish university students, whose papers made up the learner corpus, and Native American university students, whose writings made up a sub-corpus of LOCNESS.	Çam, M. (2019)
MA theses authored in English by native speakers (NSs) and Turkish speakers (TSs)	Çelik, C. (2022) Köroğlu, Z. (2019)
The NES scholar corpus including journal articles written by English native speakers (AAC), and The NNEs scholar corpus including journal articles of Turkish NNEs scholars (TAC)	Demirel, E. (2015)
Turkish and English-speaking native speakers' doctoral dissertations	Güneş, H. (2017) Topal, E. (2019)

Analysis of British Academic Written English (BAWE) and British Academic Spoken English (BASE) or BAWE and a KTUCALE (Karadeniz Technical University Corpus of Academic Learner English) corpora	Orhon, et al., (2018); Özbay, et al., (2019)
Argumentative essays written in Turkish and English by EFL students as well as argumentative essays written in Turkish by TLT students	Özdamar, B. (2020)
Two distinct corpora constructed from transcriptions of lectures given by two Turkish and two native EFL teachers	Özer, H. (2017)
TICLE (Turkish of International Corpus of Learner English) and essays from (A)LOCNESS (American of the Louvain Corpus of Native English Essays)	Özhan, D. (2012) Şimşek, T. (2015)
Turkish applied and theoretical linguistics doctoral dissertations and a corpus of academic essays of professional native writers and non-native writers and The Corpus of Contemporary American English (COCA)	Tazegül, A. 2015 Uçar S. & Yükselir C. (2017)
The written and oral descriptions of the participants	Yıldırım, B. (2022)

According to Table 3, the most frequently used corpora for the reviewed studies were argumentative essays of EFL learners (Abal, 2016; Aysu, 2016; Koç, 2018; Özdamar, 2020; Şimşek, 2018; Yangın-Ersanlı, 2015), MA theses (Çelik, 2022; Köroğlu, 2019), Ph.D. dissertations (Güneş, 2017; Tazegül, 2015; Topal, 2019), journal articles (Demirel, 2015; Uçar & Yükselir, 2017) or learner corpora such as TICLE, SPICLE, JPICLE, TUC (Babanoğlu, 2012) and native corpora such as LOCNESS, BAWE or COCA (Çam, 2019; Orhon, et al., 2018; Özbay, et al., 2019; Uçar & Yükselir, 2017).

The data regarding the findings of the reviewed studies were offered in Table 4.

**Table 4.** Data regarding the findings of the reviewed studies

Findings	Author
Some improper uses in both the grammatical and the lexical categories.	Abal, S. (2016)
The usage of discourse connectors differs noticeably between native speakers and non-native speakers, with notable variants.	Babanoğlu, M. (2012), Çam, M. (2019) Çelik, C. (2022), Aysu, S. (2016) Şimşek, T. (2015)
There are several characteristics in the way Turkish EFL learners employ adverbial connectors with regard to L1 transfer.	Babanoğlu, M. (2012)
The findings showed that Turkish NNES academics / EFL students overused and underused particular classes of discourse connectors, and there were notable disparities in how discourse connectors were used by NNES and NES scholars.	Demirel, E. (2015), Topal, E. (2019) Özbay, et al., (2019)
The findings showed that Turkish doctorate students significantly overused connecting adverbs in their Ph.D. dissertations.	Güneş, H. (2017)
The usage of coherent devices and thematic organization were more varied in articles written by native speakers.	Koç, F. Ş. (2018)
In the introduction, findings and discussion, and conclusion parts of the MA theses written by the TSs and NSs, additive transitions outnumbered adversative, sequential, and causal transitions.	Köroğlu, Z. (2019)
The discourse marker, however, was ten times more prevalent in British Academic Written English than in British Academic Spoken English. Additionally, the most common position for however is initial.	Orhon, et al. (2018)
“And”, which falls within the additive DM group, was the most often used DM in the English essays.	Özdamar, B. (2020)

In comparison to native instructors, Turkish teachers in EFL courses underused the majority of discourse markers.	Özer, H. (2017)
No significant difference in the use of the three connectives (but, however, although), either structurally or semantically.	Özhan, D. (2012)
Turkish EFL learners avoided using more sophisticated cohesive resources ((e.g. since, even though, so that, provided that, etc.) and were instead forced to adhere to a small selection of previously taught discourse connectors	Şimşek, M. (2018)
Compared to professional writers, Turkish writers overused the connector "on the other hand", but in a native-speaker-like manner. Turkish authors frequently utilize substantially shorter sentences, and their use of cohesive devices is conspicuously excessive in academic writing.	Tazegül, A. (2015) Yangın-Ersanlı, C. (2015)
In comparison to native speakers, Turkish English learners underused the connector "thus" in their academic writings, but no improper use of the connector "thus."	Uçar S. & Yükselir C. (2017)
Students uttered more discourse markers in the spoken database than in the written database.	Yıldırım, B. (2022)

According to Table 4, the findings showed that reviewed studies revealed different results related to the usage of discourse connectors in Turkish EFL writing. While some researchers (Aysu, 2016; Babanoğlu, 2012; Çam, 2019; Çelik, 2022; Şimşek, 2015) revealed the usage of discourse connectors in academic writing differs significantly across native and non-native speakers, other researchers (Özhan, 2012) revealed no significant differences in the use of some connectors such as but, although or however. Additionally, the findings showed that Turkish non-native students overused some discourse connectors (Güneş, 2017; Tazegül, 2015; Yangın-Ersanlı, 2015) or underused the particular discourse markers (Özer, 2017; Uçar & Yükselir, 2017) or they both overused and underused particular classes of discourse connectors (Demirel, 2015; Özbay, et al., 2019; Topal, 2019).

As for the last research question, the data regarding the pedagogical implications of the reviewed studies were presented in Table 5.

**Table 5.** Data regarding the pedagogical implications of the reviewed studies

<b>Pedagogical Implications and Suggestions</b>	<b>Author</b>
Different discourse markers should be taught to students, and they should be asked to write in a variety of genres on themes that are appropriate for their level.	Aysu, S. (2016)
Comparatively examining the connection systems of Turkish and English and increasing Turkish learners' understanding of these systems will help them use connectors more effectively. Teachers need to understand both the benefits and drawbacks of L1 on L2 and L2 on L1..	Babanoğlu, M. (2012) Özdamar, B. (2020)
Corpus-based exercises can assist EFL teachers in creating instructional materials using real-world examples of DMs. To help their students write essays with greater authority, teachers must have a solid understanding of meta-discourse and how to employ it in a second language. Additionally, teachers must give constructive criticism on texts to give students direction and awareness.	Çam, M. (2019) Çelik, C. (2022) Güneş, H. (2017)
Turkish prospective researchers should be provided with graduate-level courses that focus on the current and recognized conventions in academic writing in order to assist them meet the required requirements. Candidate researchers may be better able to comprehend the meanings of connectives in genuine L1 texts by shifting the emphasis from writing activities to reading activities.	Demirel, E. (2015)
Instead of using separate vocabulary list formats, vocabulary should be integrated into writing courses in meaningful situations. Reading exercises should be used	Koç, F. Ş. (2018)

into writing classes since they help students recognize coherence and the characteristics of a coherent work.	Özbay, A. Ş., Audemir, T., & Pektaş, A. Y. (2019)
	Köroğlu, Z. (2019)
	Orhon, Y., Kulac-Puren, D., & Guzel, E. (2018)
	Özer, H. (2017)
Discourse connector types from corpus may be explicitly taught to students in order to help them become more adept in academic writing. Especially for ESL/EFL students, corpus studies should be taken into account when building curricula and resources.	Özhan, D. (2012)
	Şimşek, T. (2015)
	Şimşek, M. (2018)
	Topal, E. (2019)
	Uçar S. & Yükselir C. (2017)
	Yangın-Ersanlı, C. (2015)
	Yıldırım, B. (2022)

As seen in Table 5, the majority of the reviewed studies concluded that explicit teaching of discourse connectors including corpus-based activities could be an effective method to make Turkish EFL learners more proficient in academic writing (Köroğlu, 2019; Orhon, et al., 2018; Özer, 2017; Özhan, 2012; Şimşek, 2015; Şimşek, 2018; Topal, 2019; Uçar & Yükselir, 2017; Yangın-Ersanlı, 2015; Yıldırım, 2022). Another implication was that instead of using separate vocabulary list formats, vocabulary should be integrated into writing courses in meaningful situations. Reading activities could be integrated into writing courses (Koç, 2018; Özbay, et al., 2019). Additionally, according to some of the studies (Babanoğlu, 2012; Özdamar, 2020), comparatively examining the connection systems of Turkish and English and increasing Turkish learners' understanding of these systems will help them use connectors more effectively. Instructors should be aware of the positive and negative impacts of L1 on L2 and L2 on L1.

## Discussion and conclusion

The goal of this study was to analyze a collection of studies on discourse connectors in EFL learners' writing in Turkey in terms of the distribution, purposes, corpora, findings, and pedagogical implications of certain studies between 2012-2022 in order to reveal research tendencies in this field. This review uses a systematic approach to identify and analyze studies on the use of discourse connectors in Turkish English as a Foreign Language (EFL) academic writing. Regarding the first research question, the distribution of the reviewed studies demonstrated that 2015, 2018, and 2019 were the years with the highest number of studies conducted on discourse connectors in EFL writing.

As for the purposes employed in the reviewed studies conducted between 2012-2022 years, it has been concluded that most of the studies were conducted to compare the discourse connectors in native and non-native academic writing such as argumentative essays, MA theses, or doctoral dissertations (Ph.D.), native and non-native corpora or in written and spoken language respectively. Another purpose of the reviewed studies was to investigate the use of specific causal/contrastive logical connectors such as “however”, “thus”, and “on the other hand” in the academic writing of Turkish learners of English. The reviewed studies aimed to compare these items in terms of variety, frequencies, or functions in native and non-native academic writing. Another finding was that the most frequently used corpora for the reviewed studies were argumentative essays of EFL learners, MA theses, Ph.D. dissertations, journal articles, or learner corpora such as TICLE (Turkish of International Corpus of Learner English), SPICLE,

JPICLE, TUC, and native corpora such as LOCNESS (American of the Louvain Corpus of Native English), BAWE (British Academic Written English) or COCA (Corpus of Contemporary American English).

Another finding showed that reviewed studies showed a variety of outcomes in relation to the use of discourse connectors in Turkish EFL writing. According to certain studies, the usage of discourse connectors in academic writing differs significantly between native and non-native speakers (Aysu, 2016; Babanoğlu, 2012; Çam, 2019; Çelik, 2022; Şimşek, 2015). Turkish non-native students more frequently used certain discourse markers in their essays than American students did. Other researchers revealed no significant difference in the use of the three connectives (but, however, although), either structurally or semantically (Özhan, 2012). Additionally, the findings showed that Turkish doctorate students significantly overused connecting adverbs in their Ph.D. dissertations (Güneş, 2017). The connector "on the other hand" was overused by Turkish authors in comparison to professional writers, but they did it in a native-speaker-like manner (Tazegül, 2015). Turkish authors frequently utilize substantially shorter sentences, and their use of cohesive devices is conspicuously excessive in academic writing (Yangın-Ersanlı, 2015). According to some reviewed studies, some discourse markers were underutilized (Özer, 2017; Uçar & Yükselir, 2017). Özer (2017) stated that compared to native instructors, Turkish teachers in EFL courses underused the majority of discourse markers. Turkish English learners used the connective "thus" less frequently in their academic writing than native speakers, although they never misused it (Uçar & Yükselir, 2017). In some reviewed studies (Demirel, 2015; Özbay, et al., 2019; Topal, 2019), non-native students both overused and underused particular classes of discourse connectors.

As for the implications of the reviewed studies, the majority of the reviewed studies came to the conclusion that explicit teaching of discourse connectors, along with corpus-based activities, could be a useful strategy for improving Turkish EFL learners' academic writing skills (Koroğlu, 2019; Orhon, et al., 2018; Özer, 2017; Özhan, 2012; Şimşek, 2015; Şimşek, 2018; Topal, 2019; Uçar & Yükselir, 2017; Yangın-Ersanlı, 2015; Yıldırım, 2022). The use of vocabulary should be included in writing courses in appropriate contexts rather than utilizing separate vocabulary list formats. Writing classes could incorporate reading exercises (Koç, 2018; Özbay, et al., 2019). It is important for instructors to understand both the advantages and disadvantages of L1 on L2 and L2 on L1 (Babanoğlu, 2012).

#### Suggestions for Further Research

Regarding the results of this study, the following suggestions can be summarized:

- As a result of the reviewed studies, most of the studies were corpus-based studies comparing native and non-native learners' employment of discourse markers in academic writing. Therefore, more experimental studies could be conducted in further research in order to eliminate problematic issues such as overuse, underuse, or misuse of certain discourse connectors in Turkish EFL writing. Writing instructors could take note of the significance of the use of discourse connectors in academic writing skills and give explicit instruction more attention in order to develop students' academic writing abilities receptively and productively. To do this, they can incorporate a variety of activities that appeal to the three psychological processes identified by Nation (2001): noticing, retrieval, and generative use.
- Most of the studies focused on specific causal/contrastive logical connectors such as "however", "thus", and "on the other hand" in Turkish EFL academic writing. Other types of discourse

connectors such as summative (in conclusion, to sum up), appositional (in other words, specifically), or listing (finally, lastly, furthermore) connectors could be subject of the further research.

- The most frequently used corpora for the reviewed studies were argumentative essays of EFL learners. Therefore, other types of corpora such as journal articles written by Turkish scholars could be used more for further research. Additionally, only one study focused on learner corpora including different subject groups (Spanish (SPICLE) and Japanese (JPICLE) (Babanoğlu, 2012) in order to find out the effect of L1 on L2. More research could be carried out to find out any evidence of inter-language features or a transfer from their native tongue.
- Explicit instruction along with the corpus-based activities was the favorable implication for most of the reviewed studies. Therefore, for further research, to help students successfully learn and retain these language items, researchers could design quasi-experimental methods involving a variety of corpus-based activities in the classroom, such as rephrasing (Peters & Pauwels, 2015), fill-in-the-blank exercises (Neely & Cortes, 2009), concordancing tasks (Neely & Cortes, 2009; Salazar, 2014), writing exercises (Nation, 2001), or substitution tasks (Salazar, 2014).

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## Appendix

### Reviewed Studies

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