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THE USE OF LOGICAL CONNECTORS IN THE ACADEMIC WRITING OF MACEDONIAN LEARNERS OF ENGLISH

1   INTRODUCTION

This paper explores the use of English logical connectors in the academic writing of twenty-six Macedonian learners of English. Logical connectors are defined as types of cohesive devices "that may add little or no propositional content by themselves, but that serve to specify the relationships among sentences in oral and written discourse", and this description includes both subordinating conjunctions and conjunctive adverbials (Celce-Murcia and Larsen-Freeman, 1999: 519). The analysis of logical connectors in this paper primarily focuses on conjunctive adverbials, which indicate the logico-semantic relationships between independent clauses, sentences or longer stretches of text, such as paragraphs.

Conjunctive adverbials have been the subject of considerable interest in the past four decades, and are known under various names in the linguistic literature: cohesive conjunctions (Halliday and Matthiessen, 2014: 609), discourse markers (Fraser, 1999: 938), logical connectives (Jones, 2010: 200-201), linking adverbials (Biber et al. 1999: 875; Liu (2008: 491-492), conjunctive adjuncts or discourse adjuncts (Halliday and Hasan, 1976: 228) and conjuncts (Quirk et al., 1985: 631-636).

In their Academic Writing classes, second-year students of English Language and Literature, at the Faculty of Philology of Ss. Cyril and Methodius University in Skopje, Macedonia are taught, among other things, about the importance of using these cohesive devices in their essays and asked to demonstrate what they have learned in the essays they submit for their writing portfolios. These essays are then graded and contribute to a student's final grade in the courses of Modern English Language 3 and 4.

My personal teaching experience has shown that students often stack their essays with logical connectors when they know that their work will be graded, possibly thinking that this alone would impress the examiner. Precisely because of this, in the present study I aim to discover whether Macedonian students of English really tend to overuse logical connectors in their essays, and how their use of these compares to other non-native learners of English. I also analyse the most and least frequently used logical connectors and try to provide explanations for the students' selection of logical connectors in given contexts.

In addition, I also aim to explore the different types of problems students encounter when trying to select an acceptable logical connector in a given context, including the inability to correctly identify the logico-semantic relationship between two sections of the text, which results in supplying the wrong logical connectors in these contexts. Finally, this paper outlines the implications of this study for teaching Academic Writing in English to non-native students, and recommendations are given for the improvement of the students' performance in this respect.

2   LITERATURE REVIEW

While the use of logical connectors among non-native upper-intermediate to advanced learners of English has been extensively studied, the implications from these works do not point in one direction. The findings generally suggest the overuse of connectors by non-native speakers of English, though occasionally some authors report quite the opposite, i.e. underuse in comparison to the native norm (Altenberg and Tapper, 1998). Another possibility is that there is no significant difference in connector frequency between native and non-native writing, though the actual connectors used are different in the two groups (Granger and Tyson, 1996).

Based on the International Corpus of Learner English (ICLE), Louvain Corpus of Native English Essays (LOCNESS) and Freiburg-London-Oslo-Bergen (FLOB) Corpus, Leńko-Szymańska (2008) compared the use of logical connectors in the essays written by native speakers (students and professional writers) and advanced learners of English from a variety of linguistic backgrounds. In her study she found that Swedish, German, Spanish and Russian students tend to use logical connectors less than British students, and that the frequency of logical connectors used by French and Finnish students is roughly the same as that of British ones (Leńko-Szymańska, 2008). Polish students demonstrated overuse of logical connectors compared to the native norm. The results of her study also indicate that it is actually students (regardless of their mother tongue) rather than expert writers who tend to overuse logical connectors in their essays, which could be attributed to the instruction students are exposed to.

A study of essays written by Chinese learners of English (Liu Y., 2013) indicated that they use logical connectors much more frequently than native speakers of English. In fact, the study revealed that students in general tend to overuse logical connectors. This means that even native English students used logical connectors excessively, much like the Chinese learners of English. The average frequency of logical connectors was three per 100 words in papers written by both Chinese and English-native university students. In comparison, in the papers written by native-English journalists, logical connectors were used much less frequently, one per 100 words.

A study of the logical connectors used by Japanese students in their academic writing classes (McCulloch, 2009) indicated that the average frequency was 16 per 1,000

words of text. The study included both conjunctive adverbs, conjunctions and prepositional phrases. Connectors signalling a cause-and-effect relationship were found to be most problematic, accounting for 35.1% of the errors. Misuse was primarily related to more formal logical connectors, such as: *therefore, in addition, however*, etc., but the study also indicated that students often make mistakes even with basic informal logical connectors, like *so* or *also*. The research findings indicate that insufficient familiarity with a given logical connector, though relevant, is not the overriding cause of errors, which appears to be the lack of "knowledge transforming skills" (ability to read, synthesise and critique information and then organise this into a coherent argument).

The findings from this study are discussed in the context of the previously mentioned studies, aiming to identify the general tendencies in EFL academic writing, as well as country-specific traits.

3   STUDY DESIGN AND METHODOLOGY

The study corpus comprises essays written in class by 26 second year students at the Department of English Language and Literature, at the Faculty of Philology of Ss. Cyril and Methodius University in Skopje, Macedonia. These essays were part of the students' writing portfolios, and were written in their Academic Writing classes in the academic year 2015 / 2016. All students were native speakers of Macedonian, their age ranged from 19-22, and four of them reported that they had previously stayed in an English-speaking country. Among the respondents there were seven male and 19 female students, and at the time of the study they reported that they had been learning English for 9-14 years.

The titles of the essays were: *The problems faced by students pursuing their university studies in Skopje*, *The advantages of living in the city*, *The advantages of modern technology*, *The advantages of playing video games*, *The advantages of studying abroad*, *The qualities of a successful student*, *The cons of the animal testing, The adventures of traveling to Skopje every day*, and *Surviving a major disaster.*

The students' level of English was not formally established for this particular purpose. Considering these students' exam results in the university courses of Modern English Language 1 and 2, their level of English fell within the spectrum between levels B2 and C1 according to the Common European Framework of Reference.

The corpus comprising 14,509 words in total was first searched for individual logical connectors, and then all of these were classified into four categories: temporal, additive, adversative and causal. The erroneous uses of the logical connectors were identified, and the types of errors determined and classified based on McCulloch (2009) into the following three categories: linguistic form (non-standard form, faulty punctuation, faulty placement), inappropriate register, and meaning (redundancy, faulty logic, poor organisation of ideas). For each logical connector the error rate was determined so as to identify

the most problematic ones for Macedonian undergraduates and discuss the possible steps to remediate the situation. The results of the quantitative analysis are shown in Tables 1-3. These were then compared to the findings from similar studies carried out among non-native undergraduate learners of English, as explained below.

Some of the previous studies on logical connectors focused entirely on conjunctive adverbials, while others examined both conjunctive adverbials and subordinating conjunctions. In order to make my findings comparable to most of these earlier works, only conjunctive adverbials were extracted from the corpus and subjected to quantitative analysis.

4   RESULTS AND DISCUSSION

4.1   Findings from the Corpus of Macedonian Learners of English

The distribution of logical connectors across the four types (additive, adversative, causal and temporal) is shown in Table 1 below. The error rates for the four types of logical connectors are calculated and presented in Table 2.

Types of logical connectors	Number of occurrences	Share in the total number of connectors
Additive	130	45 %
Adversative	16	5%
Causal	60	21%
Temporal	85	29%
Total	291	100%

Table 1: The distribution of different types of logical connectors

Types of logical connectors	Correctly used	Incorrectly used	Correctly used in %	Incorrectly used in %
Additive	112	18	86.2	13.8
Adversative	10	6	62.5	37.5
Causal	41	19	68.3	31.7
Temporal	67	18	78.8	21.2

Table 2: Error rates for different types of logical connectors

In the following discussion the examples from the corpus are quoted precisely as they were written in the original student papers, including any mistakes students may have made in spelling, punctuation, grammar or vocabulary.

a) Additive logical connectors
Additive logical connectors appear to be the least problematic for learners, as the error rate for these is just 13.8%. However, the errors in this group were more varied than in the other groups and included redundant use of connectors, poor organisation of ideas, using non-standard forms, faulty punctuation and wrong position in the sentence. In the group of additive connectors, all the other connectors were clearly outnumbered by *also,* which had 75 occurrences in the corpus. In example (1) a causal connector, such as *consequently,* would be more appropriate than *furthermore,* as the information in the second sentence follows logically from the information in the preceding sentence, and is not merely an additional fact. As it is, there is no implication of any causal relationship between the two sentences. In other cases, as in example (2), the student has used both *in addition* and *also* to stress the relation of addition, making the use of one of these two logical connectors superfluous.

(1) For instance, when they are at university they always sit alone, didn't want to work in groups and find it difficult to build new contacts with other people. *Furthermore* they feel very lonely.
(2) But if you feel like you didn't have enough sleep you can always enjoy a nap or just relax with music. *In addition* you can also use the time to revise or catch up with some subject material.

b) Adversative logical connectors
The highest error rate (37.5%) was recorded in the group of adversative logical connectors. This figure should be handled with caution, since the total number of adversative connectors used in the essays was as low as 16. The high error rate in this group can be attributed to the frequent misuse of *however* in six out of 11 cases, while the low overall number of adversative logical connectors is at least partly due to the fact that the adversative relation in the essays was primarily realised by conjunctions, particularly *but* (51 occurrences). Oftentimes students use *however* where actually the paratactic conjunction *but* would be more appropriate, as in (3), because in this case the student is trying to conjoin two independent clauses. Alternatively, the sentence could have been divided into two separate sentences, and *however* could have been used in sentence-initial position in the second of these. There were no correct occurrences of *however* in medial or final sentence position in this corpus.

(3) In short these are difficulties that each and every one of these students living and studying in a different city go through, *however*, eventually they learn to overcome them.

In some instances the use of *however* was not legitimate, as in (4), since the word is normally used to introduce a contrast, which is clearly not the case here.

(4)   Nowadays, the number of students is increasing more and more. *However*, there are several qualities of being a successful student, such as: being hardworking, responsible and regularly attending the classes.

c) Causal logical connectors

The prevalence of errors of the faulty logic type in the group of causal connectors is hardly surprising. Understanding the causality of events requires profound logical reasoning, and sometimes, when the cause and effect are more abstract concepts or more complex ideas, some students struggle simply to understand the nature of the relationship between events, let alone formulate it by using appropriate logical connectors. Failing to grasp the logical relationship between ideas accounts for 47% of all errors in the use of the causal logical connectors, as in (5). In this example, finding a place to live does not logically follow from having to adapt to the new environment. On the contrary: having to adapt to the new environment logically follows from finding a place to live. Likewise, in (6) not having many friends is the cause of the students' loneliness, rather than its consequence There are were several cases of redundant use of causal connectors, as in (7), where there is stacking of two causal logical connectors: *so* and *for this reason*. One of these can obviously be left out without any consequences for the meaning of the sentence.

(5)   First of all, they have to adapt to the new environment and *therefore* find a place to live during the school year, as a start.

(6)   Secondly, coming into a new environment may cause them to feel isolated, lonely. *Therefore* they don't have many friends.

(7)   *So, for this reason*, students leave their home and move in Skopje.

d) Temporal logical connectors

In the corpus used for this study, the temporal conjunctive adverbials were primarily used for sequencing ideas for the purposes of text organisation, rather than for chronological ordering of events. Sequencing of ideas is taught as part of the curriculum. Hence, the mistakes in this category are more of a 'technical' kind and typically involve wrong punctuation (e.g. no comma following the logical connector) and only occasionally non-standard forms, but there seem to be no errors due to faulty logic or poor organisation of ideas. This is aided by the fact that Macedonian uses basically the same strategies for sequencing ideas in writing as English, which means that there was practically no negative transfer from L1 in this group of connectors.

4.2   Cross-linguistic comparison

One of the main aims of the current study was to compare the results from this work to those from similar studies conducted on non-native academic writing in English, so as to see whether the deviations from the native norm are similar in all learners, regardless of their mother tongue.

The quantitative analysis of the data reveals that those Macedonian students who participated in this study used 2.01 logical connectors per 100 words in their essays. Unlike Swedish, German, Spanish and Russian students, who have a tendency to use fewer logical connectors, or French and Finnish students, whose frequency of use of logical connectors is roughly the same as that seen with British students (Leńko-Szymańska, 2008), Macedonian students tend to overuse logical connectors, similar to Polish (Leńko-Szymańska, 2008), Japanese (McCulloch, 2009) and Chinese students (Liu Y., 2013).

Listed below are some of my findings arising from a comparison between the Macedonian list of the ten most frequently used logical connectors in this study, and the connector frequency lists compiled by Leńko-Szymańska (2008) based on corpora of essays written in English by Swedish, Polish and British students, as well as British professional writers. Table 3 summarises the most frequently used logical connectors in the essays of these native and non-native students and professional writers.

	Polish students	Swedish students	British students	British experts	Macedonian students
1.	also	also	also	also	also
2.	however	however	however	so	so
3.	therefore	so	so	however	for example
4.	for example	therefore	therefore	yet	first of all
5.	so	for example	for example	instead	in conclusion
6.	thus	thus	yet	therefore	however
7.	moreover	on the other hand	thus	thus	in addition
8.	on the other hand	instead	firstly	after all	furthermore
9.	consequently	furthermore	instead	first	secondly
10.	nevertheless	for instance	in conclusion	in the first place	to sum up

Table 3: The ten most frequently used logical connectors by Swedish, Polish and British students, as well as British professional writers (Leńko-Szymańska, 2008), along with the data from the Macedonian corpus

Of all causal connectors, the Macedonian learners in this study favour the use of *so* to such an extent that no other causal connector could make it to the top ten connector frequency list. Leńko-Szymańska's study (2008) similarly revealed that *so* was the preferred

causal connector in most of the analysed corpora (Polish and British students, British professional writers), though two other causal connectors (*thus* and *therefore)* were also featured high on the respective frequency lists. Interestingly, in the Macedonian corpus there were only three instances of *therefore* and 1 of *thus*, compared to 47 instances of *so*. This lack of variety can be attributed to the assumption that students prefer to use a connector they feel familiar with, rather than experiment with ones they feel less confident about.

Of the adversative connectors, *however* is the most commonly used among students and experts alike. Unlike *however*, the contrastive-concessive connector *yet* frequently appears only in the corpora for British students and experts. Macedonian upper-intermediate/advanced students of English, though probably having receptive knowledge of this use of *yet*, preferred to use other adversative connectors in their essays instead. It is quite possible that non-native students avoid using the contrastive connector *yet* as they are more familiar with the use of *yet* as an adverb of time, or for emphasis, as in (8). To convey their messages clearly students consistently opt for unambiguously contrastive connectors, like *however* or *on the other hand.*

(8) … finding a proper roommate is *yet* another problem.

Instead is another connector that is frequently used in native speakers' writing (both students' and experts') and is practically non-existent in the Macedonian corpus. This could be due to the fact that Macedonian lacks a single-word contrastive connector that would neatly correspond to this use of *instead*. The English connector can be used in either initial, medial or final sentence positions, which adds to the uncertainty of the Macedonian learners about the correct placement of *instead* in the sentence, which is why they prefer using other adversative connectors. All this results in pieces of writing that may be grammatically correct, but sound less native-like.

Also was the most frequently used logical connector across all the surveyed corpora, and actually the only additive connector that appeared on the list of ten most frequent connectors used by British professional writers. In the other corpora (native and non-native English students), *for example* appears frequently in the writing of student writers, regardless of their mother tongue.

This strong preference for English logical connectors that have direct translation equivalents in Macedonian is far from surprising. Learners naturally choose connectors they feel confident about. The absence of the connectors *yet* and *instead* in the Macedonian corpus is not wrong in itself, as Macedonian learners employ other lexical means to express those ideas where native speakers would prefer to use *yet* or *instead*, but the very fact that these logical connectors are featured high on the native-speakers' lists while being totally absent from the Macedonian corpus, suggests that Macedonian learners need to learn how to use these connectors properly so that their writing can become more native-like.

5   PEDAGOGICAL IMPLICATIONS

In the light of the findings from this study, teachers could try to adjust their way of teaching logical connectors by addressing several important aspects in that process. Firstly, the general overuse of logical connectors is largely due to the students' misconception that using a lot of connectors necessarily contributes to greater text coherence, and that their extensive use would ultimately earn them a higher grade. To rebuff this myth, teachers must first face students with the fact that relying heavily on connectors is not typical of native speakers' writing, and that it is an indication of poor style. Instead, efforts should be made to encourage students to employ other means for achieving text cohesion (reference, substitution, ellipsis, lexical cohesion), and not just to saturate the text with logical connectors. The reader should be able to infer the logical relationship between different stretches of text without having to rely on overt discourse markers.

Secondly, students seem to rely heavily on logical connectors they are familiar with, at the expense of some more appropriate alternatives in a given context. Thus, students should be encouraged to use more advanced logical connectors as well. Thirdly, students should be familiarised with the most frequently used logical connectors in English native academic writing, so as to try to mirror that model and achieve native-like proficiency in English.

These students have been taught academic writing skills in English, but not in their mother tongue, which means that they have never been taught the importance of logical connectors for achieving cohesion in their written discourse in Macedonian. Bearing this in mind, it would be interesting to note whether the same exaggerated use of logical connectors would be evident in their writing in Macedonian or not. However, this is beyond the scope of the present study.

6   CONCLUSION

The findings from this study indicate that the Macedonian upper-intermediate/advanced learners of English taking part in this study use considerably more logical connectors in their academic writing essays compared to British students and to British professional writers. This overuse of connectors is also typical of other EFL learners, such as Polish, Japanese or Chinese ones. The very fact that these languages are genetically unrelated, or only distantly genetically related (as is the case with Macedonian and Polish) implies that the problem of connector overuse is not inherently bound to a specific linguistic background. It would be safer to assume that the underlying cause of the exaggerated use of connectors lies in the process of instruction, as the teaching materials at upper-intermediate/advanced level place special emphasis on the importance of using logical connectors to achieve text cohesion.

Several important pedagogical implications arise from this study. To address the problem of logical connectors' overuse, language instructors, and particularly academic

writing instructors, should teach their students that the use of logical connectors (conjunctions) is only one of the possible ways to establish cohesive ties within a text, the others being lexical cohesion, substitution, reference and ellipsis (Halliday and Hasan, 1976: 6). Relying too heavily on logical connectors in essays actually defeats the purpose of their use, as what is supposed to contribute to the overall cohesion of the text in fact implicitly signals that the argumentation itself is not effective enough, and therefore overt markers are needed to help the reader interpret the logico-semantic relationships within the text. In addition, to help EFL learners achieve native-like, or near-native-like proficiency in writing, teachers should provide students with information on the most frequently used logical connectors in native speakers' writing and should teach students how to use these, however untypical they may seem for their mother tongue.

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POVZETEK

Uporaba logičnih konektorjev v akademskem pisanju makedonskih učencev angleščine

V besedilu raziskujemo, kako makedonski študenti angleščine v akademskem pisanju uporabljajo logične konektorje. Logični konektorji so v tem besedilu določeni kot vrsta kohezivnih sredstev "ki sami zelo malo prispevajo ali sploh ne prispevajo k propozicionalni vsebini, ampak pomagajo določiti odnose med stavki v ustnem in pisnem diskurzu" (Celce-Murcia & Larsen-Freeman, 1999: 519). V članku predstavljamo analizo besedil makedonskih študentov angleščine, ki v drugem letniku študija kot del študijskega programa obiskujejo predavanja iz akademskega pisanja. Osredotočamo se zlasti na naslednje tipe logičnih konektorjev: dodajalne, protivne, vzročne ter časovne. Namen študije je analiza pogostosti logičnih konektorjev, njihove razporeditve v omenjene štiri kategorije, pa tudi analiza ustreznosti njihove uporabe v določenem kontekstu. V članku analiziramo rezultate in skušamo predstaviti morebitne vzroke pogoste oziroma nepogoste rabe posameznih konektorjev. Rezultate primerjamo z rezultati podobnih študij, opravljenih na vzorcih akademskih pisnih izdelkov rojenih in tujih govorcev angleščine. V zadnjem delu predstavljamo tudi pedagoške implikacije študije.

Ključne besede: akademsko pisanje, kohezija, logični konektorji, analiza diskurza, korpusna študija

ABSTRACT

The Use of Logical Connectors in the Academic Writing of Macedonian Learners of English

This paper explores the use of English logical connectors in the academic writing of Macedonian learners of English. In this paper, logical connectors are defined as types of cohesive devices "that

may add little or no propositional content by themselves, but that serve to specify the relationships among sentences in oral and written discourse" (Celce-Murcia and Larsen-Freeman, 1999: 519). The paper is based on a study carried out among Macedonian second-year university students of English who attend Academic Writing classes as part of the curriculum. More specifically, the study focuses on the following subtypes of logical connectors: additive, adversative, causal and temporal. It aims to determine the frequency of logical connectors, their distribution across the four categories, as well as the appropriateness of their use in a given context. The paper discusses the research findings and investigates the possible reasons for the (in)frequent use of specific logical connectors. These results are then placed in the context of similar studies conducted on non-native and native academic writing in English and finally, the pedagogical implications of the study are discussed.

Key words: academic writing, cohesion, cohesive devices, logical connectors, discourse analysis, corpus study