

**MULTI-WORD UNITS IN TURKISH SCIENTIFIC TEXTS:
A CORPUS-BASED GENRE ANALYSIS**

DOKTORA TEZİ

İPEK YILDIZ

**MERSİN ÜNİVERSİTESİ
SOSYAL BİLİMLER ENSTİTÜSÜ**

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ANA BİLİM DALI**

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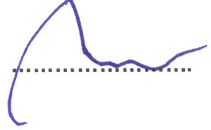

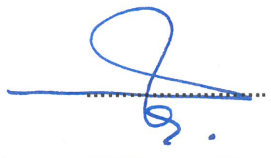
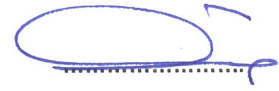

**İNGİLİZ DİLİ VE EDEBİYATI
ANA BİLİM DALI**

**Danışman
Prof. Dr. Mustafa Ş. AKSAN**

**MERSİN
KASIM - 2016**

ONAY

İpek YILDIZ tarafından Prof.Dr. Mustafa Ş. AKSAN danışmanlığında hazırlanan "Multi-Word Units in Turkish Scientific Texts: A Corpus-Based Genre Analysis" başlıklı bu çalışma, aşağıda imzaları bulunan jüri üyeleri tarafından oy birliği ile Doktora tezi olarak kabul edilmiştir.

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ÖZET

Bu tezin temel savı çok-sözcüklü birimlerin bilimsel metin yazım sürecinde etkili bir role sahip olduğu ve bu sürece önemli katkısının olduğudur. Çünkü çok-sözcüklü birimler hem sözlü hem de yazılı söylemdeki, özellikle akademik metinlerdeki önemli yapı taşlarıdır ve metin içinde yinelenen bu tür biçimbirim bileşimleri etkin bir dil kullanımının göstergesidir. Çalışmadaki bir diğer bağlantılı tartışma ise Türkçedeki ek dizilerinin çeşitli işlevler üstlenerek bilimsel metinlerde çok-sözcüklü birim oluşturduğudur.

Bu bakış açısıyla ilişkili olarak, insan bilimleri ve doğa bilimleri alanlarında hakemli dergilerde yayımlanmış Türkçe bilimsel metinlerin giriş ve sonuç bölümlerinde sıklıkla kullanılan çok-sözcüklü birimler ve ek dizileri derlem dilbilim, söylem ve tür çözümlemesi yöntemleri kullanılarak incelenmiştir. Çok-sözcüklü birimlerin dilbilgisel, sözdizimsel ve söylem işlevsel sınıflamaları araştırılmış, benzerlikler ve farklılıklar yorumlanmıştır. Çok-sözcüklü birimlerin ve ek örüntülerinin alana göre sıklık bilgileri karşılaştırılmıştır. İncelenen yapıların metinlerde yer alan örnek kullanımları derlem-içi bağımlı dizin örüntüleriyle gösterilmiştir.

Sonuç olarak, çok-sözcüklü birimlerin bazı benzerliklerin yanı sıra makale bölümlerine ve alana özgü olarak çoğunlukla farklılık gösterdiği; bu tarz birimlerin doğru bir şekilde ve yeterli ölçüde kullanılmasının metnin düzeni, etkili bir dil üretimi ve söylemin net bir biçimde oluşturulması açısından yararlı olduğu; bilimsel metinlerde belirli ek bileşimlerinin diğerlerine oranla sıklıkla tercih edildiği; ve örüntüsel çoklu ek dizilerinin metin içinde çok-sözcüklü birim işlevleri taşıdığı saptanmıştır.

Anahtar Kelimeler: Akademik Yazı, Türkçe Bilimsel Metinler, Çok-Sözcüklü Birimler, Derlem

Danışman: Prof.Dr. Mustafa Ş. AKSAN, Mersin Üniversitesi, İngiliz Dili ve Edebiyatı Anabilim Dalı, Mersin

ABSTRACT

The main argument of this thesis is that multi-word units have a significant role in scientific text writing process and they contribute to this process importantly because multi-word units are important building blocks both in spoken and written discourse, especially in academic texts; and these kinds of recurrent textual morpheme sequences are indications of effective language use. Another relevant argument that is handled in this study is that Turkish multi-morpheme units form multi-word units in scientific texts by having various functions.

In relation to this point of view, the frequently used Turkish multi-word units and multi-morpheme units that are seen in the introduction and conclusion parts of the published scientific articles belonging to the humanities and fundamental sciences domains have been examined by using corpus linguistics, discourse and genre analyses methods. The grammatical, syntactic, and discourse functional categories of the multi-word units have been analyzed; the similarities and differences have been evaluated. The frequency information of the multi-word units and multi-morpheme units by fields have been compared and contrasted. The intertextual concordance lines of the structures that are studied have been exemplified via corpus data.

As a result, it has been confirmed that the article sections and academic domains differ mostly in terms of the multi-word unit usage although there are some similar usages; these kinds of units are useful for the organization of the text, an efficient language production, and clarity in discourse when they are used correctly and sufficiently; certain multi-morpheme units are preferred more frequently than the others in the scientific text writing and those kinds of multi-morpheme combinations have the function of forming multi-word units in academic texts.

Key Words: Akademic Writing, Turkish Scientific Texts, Multi-Word Units, Corpus

Advisor: Prof.Dr. Mustafa Ş. AKSAN, Mersin University, Department of English Language and Literature, Mersin

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CONTENTS

	Page
İÇ KAPAK	i
ONAY	ii
ETİK BEYAN	iii
ÖZET	iv
ABSTRACT	v
ACKNOWLEDGMENTS	vi
CONTENTS	vii
LIST OF TABLES	ix
LIST OF FIGURES	x
ABBREVIATIONS	xi
1. INTRODUCTION	1
1.1. Purpose of the Study and Research Questions	3
1.2. Importance of the Study	4
1.3. Restrictions and the Focus of the Study	6
1.4. Conclusion	6
2. LITERATURE REVIEW AND THEORETICAL FRAMEWORK	8
2.1. Discourse as a Text and Text as a Genre	8
2.2. Corpus-Based Multi-Word Unit Studies	10
2.3. Conclusion	13
3. METHODOLOGY	15
3.1. Database Construction: Corpus and Data	15
3.2. Tools for the Extraction of the Multi-Word Units	16
3.3. Classification of the Multi-Word Units	19
3.4. Terms That Are Used Throughout the Study	21
3.4.1. Grammatical and Syntactic Categories	21
3.4.2. Discourse Functional Categories	21
3.4.2.1. Research-Oriented Multi-Word Units	21
3.4.2.2. Text-Oriented Multi-Word Units	22
3.4.2.3. Participant-Oriented Multi-Word Units	22
3.4.3. Multi-Morpheme Units	23
3.5. Inter-Rater Reliability	23
3.6. Sample	24
3.7. Conclusion	25
4. THE STUDY AND FINDINGS	28
4.1. The Multi-Word Units in Turkish Scientific Articles Published in the Humanities and Fundamental Sciences	28
4.2. The Frequency Differences of the Multi-word Units in the Humanities and Fundamental Sciences	61
4.3. The Frequencies of the Multi-Morpheme Units in Turkish Scientific Texts	77
4.4. Conclusion	90
5. ANALYSIS AND DISCUSSION	91
5.1. Analyzing the Grammatical and Syntactic Categories of the Multi-Word Units	91
5.2. Analyzing the Discourse Functional Categories of the Multi-Word Units	108
5.3. Understanding Whether the Multi-Word Units Have Influence on Forming Genre-Specific Texts	120
6. CONCLUSION	140
6.1. Summary of the Study	140
6.2. Limitations	140

6.3. Theoretical Implications	141
BIBLIOGRAPHY	154
ÖZGEÇMİŞ	164



LIST OF TABLES

	Page
Table 1. Structures of multi-word units	12
Table 2. Functions of multi-word units - Biber et al., 1999	13
Table 3. Functions of multi-word units - Hyland, 2008	13
Table 4. Word counts in the SAC - Introductions and Conclusions	16
Table 5. The multi-word units obtained from the SAC	16
Table 6. The first obtained list belonging to the conclusions of the fundamental sciences	17
Table 7. The multi-word unit examples in the SAC	23
Table 8. Article numbers of the subdisciplines in the SAC by year	24
Table 9. Article numbers of the subdisciplines for the sample	24
Table 10. The most frequently used 50 multi-word units in Turkish scientific texts	32
Table 11. Related multi-word units that include <i>olarak</i> 'as' (H-I)	39
Table 12. Similar usages of <i>bir başka deyişle</i> 'in other words' (H-I)	42
Table 13. Similar usages of <i>önemli bir yer</i> 'an important place' (H-I)	44
Table 14. Similar usages of <i>anlamli bir ilişki</i> 'a meaningful relation' (H-C)	45
Table 15. Similar usages of <i>elde edilen bulgular</i> 'obtained findings' (H-C)	46
Table 16. Similar usages of <i>başka bir deyişle</i> 'in other words' (H-C)	47
Table 17. Related usages of <i>olarak karşımıza çıkmaktadır</i> 'it turns out to be' (H-C)	48
Table 18. Similar usages of <i>olmak üzere iki</i> 'particularly [these] two' (FS-I)	50
Table 19. Similar usages of <i>elde edilen sonuçlar</i> 'obtained results' (FS-I)	51
Table 20. Similar usages of <i>yaygın olarak kullanılan</i> 'commonly used' (FS-I)	52
Table 21. Similar usages of <i>[...]de görüldüğü gibi</i> 'as it is seen in [...]' (FS-C)	53
Table 22. Similar usages of <i>Tablo [...]de verilmiştir</i> 'it has been given in Table [...]' (FS-C)	55
Table 23. Similar usages of <i>buna bağlı olarak</i> 'because of this' (FS-C)	57
Table 24. Information of the article parts and academic domains of the most used 50 multi-word units in the SAC	64
Table 25. The most used 20 inflectional structures in the humanities	78
Table 26. The most used 20 inflectional structures in the fundamental sciences	79
Table 27. The most used 20 inflectional structures in the TNC (Aksan et al., 2012)	80
Table 28. The discourse functional categories of the most used 50 multi-word units in the SAC	109
Table 29. The discourse functional frequencies of the most used 50 multi-word units	116
Table 30. The frequencies of the morphological forms in the SAC and TNC	125
Table 31. The most used multi-morpheme units in the humanities	128
Table 32. The most used multi-morpheme units in the fundamental sciences	128
Table 33. The most used multi-morpheme units in the TNC	129
Table 34. The frequencies of the structural information of the 50 multi-word units	132

LIST OF FIGURES

	Page
Figure 1. The articles in the SAC	15
Figure 2. The content of a published article in the SAC	15
Figure 3. NooJ-Query	18
Figure 4. NooJ-Query result	18
Figure 5. AntConc-Query and result	19
Figure 6. AntConc-The intertextual appearance of the concordance line	19
Figure 7. The method of the study	26



ABBREVIATIONS

Abbreviation/Symbol	Definition
-(y)lA _{COM}	Comitative -(y)lA(/ile)
-(y)lA _{INST}	Instrumental -(y)lA(/ile)
1PLU	First person plural
2PLU	Second person plural
3PLU	Third person plural
3SG	Third person singular
ABL	Ablative
ACC	Accusative
ADJ.CO	Adjectival constructions
Adj	Adjective
Adj _{COMP}	Comparative adjective
Adj _{SUP}	Superlative adjective
ADV.CO	Adverbial constructions
Adv	Adverb
Adv _{DEG}	Degree adverb
Adv _{FRE}	Frequency adverb
Adv _{MOD}	Modal adverb
Adv _{TEMP}	Temporal adverbial
AOR	Aorist
Bio	Biology
CAUS	Causative
Che	Chemistry
COND	Conditional
CONNEC	Discourse connectives/conjunctions
COP	Copular marker
CVB	Converbial
da _{CONJ}	Conjunctive focus da
da _{CONT}	Contrastive focus da
da _{INT}	Intensifier da
DAT	Dative
Def.Art	Definite article
Dem	Demonstrative
DEP.CL	Dependent clauses
Desc	Description
DISC. FUNC.	Discourse functions
e.g.	Example
Eco	Economics
Enga	Engagement
EXIS	Existential
fig.	Figure
Fram	Framing
FRE/Freq	Frequency
FS-C	Conclusions of the fundamental sciences
FS-I&C & H-C	Introductions and conclusions of the fundamental sciences and conclusions of the humanities
FS-I&C & H-I	Introductions and conclusions of the fundamental sciences and introductions of the humanities
FS-I&C	Introductions and conclusions of the fundamental sciences
FS-I	Introductions of the fundamental sciences

FUT	Future
Gen. Total	General total
GEN	Genitive
GRAM&SYNT	Grammatical and syntactic
H&FS-C	Conclusions of the humanities and fundamental sciences
H&FS-I	Introductions of the humanities and fundamental sciences
H-C&FS-I	Conclusions of the humanities and introductions of the fundamental sciences
H-C	Conclusions of the humanities
H-I&C & F-C	Introductions and conclusions of the humanities and conclusions of the fundamental sciences
H-I&C & F-I	Introductions and conclusions of the humanities and introductions of the fundamental sciences
H-I&C & FS-I&C	Introductions and conclusions of the humanities and the introductions and conclusions of the fundamental sciences
H-I&C	Introductions and conclusions of the humanities
H-I&FS-C	Introductions of the humanities and conclusions of the fundamental sciences
H-I	Introductions of the humanities
His	History
HUM & FUN	Humanities and fundamental sciences
IMP	Imperative
IMPRF	Imperfective
Indef.Art	Indefinite article
INDEP.CL	Independent clauses
INT	Interrogative
Lin	Linguistics
Lit	Literal meaning
LOC	Locative
Loca	Location
Mat	Mathematics
MOD _{PSB}	Possibility modal
MWU	Multi-word unit
N/F	Number-Frequency
Nm/Fr	Number-Frequency
N	Noun
Nb-Fr	Number-Frequency
NEC	Necessity
NEG	Negative
ne _{WH}	Wh question <i>ne</i> 'what'
NOM	Nominative
NP	Noun phrase
Num	Numeral
NUM-FRE	Number-Frequency
Num _{ORD}	Ordinal numeral
OPT	Optative
P	Postposition
Part	Participle
Particip	Participiant
PASS	Passive
PER.SUF	Personal suffix
PERF	Perfective
Phi	Philosophy

Phy	Physics
PLU	Plural
POSS	Possessive
POST.CO	Postpositional constructions
PRO	Pronoun
Proc	Procedure
PSB	Possibility
Psy	Psychology
PTCL	Particle
P _{TEMP}	Temporal postposition
Quan	Quantification
Quan	Quantifier
Resu	Resultative
SAC	Scientific Article Corpus
Soc	Sociology
Sta	Statistics
Stan	Stance
Stru	Structure
Sub. Cla	Subordinating clause
SUB	Subordinator
Tot	Total
Tou	Tourism
Tran	Transition
V	Verb
V _{INF}	Verbal infinitive
VP	Verb phrase
V-PASS _{REL}	Passive relativized verb
V _{REL}	Relativized verb
Wh-	Wh question

1. INTRODUCTION

This study focuses on *multi-word units* that are used in scientific texts. Texts, spoken or written, exist within discourse analysis. “We can define text, in the simplest way perhaps by saying that it is language that is functional.” say Halliday and Hasan (1985: 10). They continue: “By functional, we simply mean language that is doing some job in some context as opposed to isolated words or sentences.” From this point of view, texts are closely related to the nature of discourse studies. In other words, discourse field analyzes language by looking at texts (Hyland & Paltridge, 2011: 174).

By definition, discourse deals with particular issues such as the relationship between language and context, culture-specific ways of speaking and writing, and the ways of organizing texts in social and cultural situations by looking at patterns of language across texts (Paltridge, 2006: 1-3). It concerns the ways that language works in our engagements with the world and our interactions with each other, so creating and shaping the social, political and cultural formations of our societies (Hyland & Paltridge, 2011: 1). Discourse analysis focuses on language characteristics that extend across clause boundaries. It also centers upon what a speaker intends to tell rather than what s/he says; as a result the use of many lexical and grammatical aspects can be fully understood through analysis of their functions in larger discourse contexts (Biber et al., 1998: 106).

Dating back to the 1960s, the idea that language can also be analyzed on the level of the text has moved to more of a focus on ‘language in use’ (Bhatia, Flowerdew & Jones, 2008: 1). Within the scope of discourse analysis, written discourse forms a basis to this research. In this sense, the study basically centers on the usage of multi-word units in scientific articles within the frame of written discourse.

A multi-word unit is a sequence of word forms that functions as a single grammatical unit; the sequence has become lexicalized (Biber et al., 1999: 58). A word sequence must occur frequently across numerous texts in order to be a multi-word unit (Biber et al., 1999, 2004; Biber & Barbieri, 2007; O’Keeffe, McCarty & Carter, 2007; Hyland 2008a; Liu 2012). Multi-word units are the most frequently recurring lexical sequences in a register (Biber, Conrad & Cortes, 2004) and they are non-compositional and non-modifiable word sequences (Manning & Schütze, 1999). Usually, a multi-word unit is part of a well-defined grammatical phrase or a clause where some constituent of the phrase or clause is missing (Aksan, Mersinli & Altunay, 2015). It is argued that less than five percent of the multi-word units in academic writing represent complete structural units (see Biber et al. 1999: 993-1000).

According to Sinclair (1991: 108), most everyday words do not have an independent meaning but are components of multi-word patterns that make up a text. These kind of frequent

fixed phrases play an important role in linguistic production. Multi-word units were first defined by Biber et al. in *Longman Grammar of Spoken and Written English* (1999) who referred to them as lexical bundles. Since then it has been studied under the names of *lexical phrase*, *formula*, *routine*, *fixed expression*, *prefabricated pattern*, *n-gram*, *chunk*, *chain*, *formulaic expression*, *idiomatic expression*, *lexical cluster*, *multi-word expression* and *multi-word construction*. The term 'multi-word unit' was created to designate the most frequent recurrent lexical sequences in a register to show a tendency of co-occurrence. Numerous researchers have looked into multi-word units (Biber et al., 1999; Wray, 2000; Biber, Conrad & Cortes, 2004; Biber, 2006, 2009; Cortes, 2002, 2004; Biber & Barbieri, 2007; Cortes & Csomay, 2007; Hyland, 2008a, 2008b; Biber & Gray, 2010; Simpson-Vlach & Ellis, 2010; Vincent, 2013; Durrant, 2013; Aksan & Aksan, 2013). Hyland (2008b: 42) asserts that lexical bundles help identify a text as belonging to an academic register and that the absence of such clusters might reveal the lack of fluency. In the same vein, Biber and Barbieri (2010: 265) say: "It's not the case that there is a single pool of lexical bundles that speakers and writers draw from for these discourse functions. Rather, each register employs a distinct set of lexical bundles associated with the typical communicative purposes of that register." Simpson-Vlach and Ellis (2010: 487) state that multi-word units are functionally significant and crucial for fluent processing; they are significantly more common in academic discourse than in non-academic discourse. Starting from this point of view, the subject of this study is discourse as a text and text as a genre, by examining multi-word units in scientific texts. As it is seen, texts, discourse and genre are complementary concepts.

Genre analysis has been a dominant paradigm for academic discourse studies. It is a specific form of discourse analysis that focuses on elements of recurrent language use including grammar and lexis, so genre analysis sees texts as representative rhetorical practices and has the potential to offer descriptions and explanations of texts (Hyland & Paltridge, 2011: 174). At this point, one of the significant developments for the written discourse is genre analysis represented by the studies of Miller (1984); Bazerman (1994); Berkenkotter and Huckin (1995); Martin, Christy, and Rothery (1987); Swales (1981, 1990); and Bhatia (1993). Genre is a distinctive category of discourse of any type, spoken or written (Swales, 1990: 33). It affects the overall text from macro-organization to word choice (Miller, 1997: i). Flowerdew (2002: 23) defines genres as the reflections of disciplinary cultures and in that sense those of the realities of the world of discourse. He adds that genres are recognizable communicative events, characterized by a set of communicative purpose(s) identified and mutually understood by members of the professional or academic community in which they regularly occur (2002: 23).

One type of genre, academic writing, has certain rules in terms of structure and content. It has a tradition that contains fixed norms. It is a process that requires a significant amount of

time. The academic writing genre, with its prototypical and cultural features, is one of the mostly emphasized text genres in text type studies both for comparison across languages and the manifestation of the textual patterns (Uzun & Huber, 2002: ii). Uzun and Huber (2002: ii) also say: "This text type, by nature contains a convenient configuration of questioning various categories." One of these diverse categories is multi-word units, which have been discussed frequently in recent years.

This chapter begins with the purpose of the study and research questions. After some brief information on the goals of the study and examination of the questions related to the aim in 1.1, 1.2 introduces the importance of the study. Section 1.3 describes the focus of the study in terms of restrictions. The summary of the chapter and a roadmap for the following chapter, which are seen in 1.4, conclude the chapter.

1.1. Purpose of the Study and Research Questions

The first purpose of this study is to identify the most frequently used multi-word units in the introductions and conclusions of Turkish scientific articles that are published in the humanities and fundamental sciences. The study also aims to observe the frequencies of the multi-word units in order to understand if there is a difference between two academic domains, humanities and fundamental sciences. As Cortes (2013: 34) notes: "Frequency is the ultimate characteristic that defines lexical bundles." Another goal is to analyze the structures and functions of these multi-word units used in Turkish scientific articles and compare and contrast the grammatical, syntactic, and discourse functional categories of the multi-word units. After these procedures, the effects of multi-word units on composing genre are sought. Last, the inflectional suffix strings, i.e. multi-morphemes, such as *gör-ül-mekte-dir* 'it is seen' and subordinating structures, such as *-mAsInA rağmen* 'although' that subcategorize for aspectual phrases are examined with the aim of relating these structures to the nature of multi-word units. In this regard, this study seeks answers for the questions below:

1. What are the most frequently used 50 multi-word units in the introduction and conclusion sections of Turkish scientific articles written in the humanities and fundamental sciences?
2. What is the frequency information of the multi-word units that are used in the introductions and conclusions of the humanities and fundamental sciences?
3. What are the similarities and differences between the humanities and fundamental sciences in terms of the frequencies of the multi-word units?
4. What is the frequency information of the multi-morpheme units that are used in the introductions and conclusions of the humanities and fundamental sciences?
5. What are the similarities and differences between the humanities and fundamental sciences in terms of the frequencies of the multi-morpheme units?

6. What are the grammatical and syntactic properties of the multi-word units that are used in the scientific articles?
7. What are the similarities and differences between the humanities and fundamental sciences in terms of the grammatical and syntactic properties of the multi-word units?
8. What are the discourse functions of the multi-word units that are used in the scientific articles?
9. What are the similarities and differences between the humanities and fundamental sciences in terms of the discourse functions of the multi-word units?
10. Do the multi-word units have influence on forming genre-specific text by having specific structures and functions?
11. Do the inflectional multi-morpheme units form multi-word units in Turkish scientific texts?

These questions have not been a subject of inquiry in scientific texts. A unique aspect of this study is that it examines the introductions and conclusions separately. These sections both have their own distinctive properties that are important in the process of creating a scientific text. In this sense, a comparison of introductions and conclusions will provide insight into the nature of the scientific text writing process.

As stated above, the basis of this study is multi-word units and scientific texts as a genre in the frame of academic discourse. There are numerous studies on scientific texts in Turkish that are also discussed in Chapter 2, the Literature Review and Theoretical Framework; however, they generally do not focus on multi-word units but on other linguistic concepts. Few studies in Turkish (Aksan & Aksan, 2012, 2013; Durrant 2013) deal with multi-word units with a different starting point, such as examining fiction and informative texts or newspaper reports. The material of this study is scientific articles that have a direct relationship with academic discourse. The quantity and diversity of this material also differ from other research. A special corpus that has over 1,000,000 words has been prepared for this purpose. The corpus includes 12 subdisciplines belonging to the humanities and fundamental sciences, which is discussed in Chapter 3 in more detail.

1.2. Importance of the Study

Determining basic vocabulary, word units and lexical appearances of academic Turkish is important to compile a catalog. These determinations can be used as educational materials to teach of scientific expression.

Wray (2002) states that formulaic sequences allow the users to express identity and the use of these expressions diminishes reading effort. Cortes (2004: 397) affirms that frequent fixed phrases that perform particular discourse functions play an important role in fluent linguistic production (Pawley & Syder, 1983); that is, the use of these expressions signals

competent language use. The presence of unfamiliar words and expressions is a serious obstacle to clarity and organization of the text (Hyland & Tse, 2009: 111). On the other hand, the presence of multi-word units is the indication of effective language usage. This usage also applies for creating scientific texts (Bamberg, 1983; McCulley, 1985). Academic writing is fundamentally different from conversation. Scientific text writing procedure has a crucial role in the academic world because these texts are the concrete versions of observations and research that are long lasting. In this respect, using multi-word units in scientific texts in an effective way is significant for fluent processing. By indicating domain-specific multi-word units, analyzing the most frequent ones and finding out the similarities and differences between domains, this study makes a contribution to the literature of scientific articles.

Multi-word units are necessary in order to form discourses properly. They help identify a text that belongs to a register, whether it is an academic text or a legal one; for instance, the presence of extended collocations like *as a result of*, *it should be noted that*, and *as can be seen* shows that it may be an academic register, while *with regard to*, *in pursuance of*, and *in accordance with* are likely to mark a legal text (Hyland, 2008a: 5). These units provide the writer with communicative competence to use these structures in a study. Nattinger and Decarrico (1992) assert that multi-word units make it possible for the readers to understand the text; hence, it assists communication. This study is necessary in order to grasp the nature of these important building units in academic written discourse.

Another important aspect of the present study is that it sets out to systematically investigate the representation of the multi-word units in (i) Turkish (ii) academic texts that have been written by (iii) native Turkish writers. Unlike other studies that have generally focused on English multi-word units, this study focuses on Turkish. Additionally, many studies have focused on more general topics so far, such as quotation in scientific texts, topic continuation, argument structure, information flow, and metadiscourse (Keçik, 2002; Ruhi, 2002; Turan & Bican, 2002; İşsever, 2002; Zeyrek, 2002; Fidan & Cem-Değer, 2007; Yağız, 2009; Kan, 2014). Going beyond previous research, this study observes Turkish scientific texts and multi-word units that contribute to scientific text formation. No full scale study has reported on this aspect before. Furthermore, where other studies have looked at the multi-word units of native or non-native English speakers (Nesi & Baştürkmen, 2006; Bal, 2010; Öztürk, 2013; Karabacak & Qin, 2013), this study focuses on the writings of native Turkish speakers. Finally, the present study has the potential to enhance the understanding of the aspects of different multi-word units in a wide range of sub-disciplines that belong to Turkish scientific articles. The study extends research into 12 subdisciplines, different from other works, to understand the nature of multi-word unit usages better.

An important distinction between other studies and the current study is that, by investigating the introductions and conclusions separately, it examines section specific multi-word units that are frequently used in Turkish scientific texts. It also analyzes the structures and functions of these patterns, so it would make a significant contribution with its descriptions and findings. In contrast to most previous studies, the present study has an extensive multi-word unit list with its results for a glossary preparation.

In brief, a depiction of multi-word unit roles in scientific texts will provide unity for the picture of these usages in preferred organizational patterns in order to build discourse by speech communities.

1.3. Restrictions and the Focus of the Study

As the theoretical framework is based on written academic discourse, the data of this research involve written materials, i.e. published articles in peer-reviewed journals. Books, reports, spoken data, etc. are excluded from the study. The domains of these scientific articles are the humanities and fundamental sciences. Texts that belong to political sciences, health sciences, or applied sciences are not included in the corpus. The articles that constitute the corpus are scientific texts that have been written between 2005 and 2009. The Scientific Article Corpus (SAC) is not extended beyond these years because the specific and fixed rules of scientific writing do not change in a short period of time.

The multi-word units that have three morphemes are studied only via the corpus constructed for this aim. The study is restricted to trigrams, such as *bir başka deyişle* 'in other words'. Bigrams, fourgrams, or usages that contain more words are not examined in the study.

1.4. Conclusion

This research is a *multi-word unit* study that focuses on the Turkish scientific articles that have been published in refereed journals between 2005 and 2009. The domains of the scientific texts are the humanities and fundamental sciences. These domains have 12 subdisciplines, such as linguistics, psychology, and biology. Therefore, the study is conducted in the frame of corpus linguistics, discourse, and genre analyses. The main aim is to analyze the multi-word units quantitatively, structurally, and functionally with the intention of contributing to the literature, which has not had this kind of a specific study yet.

The second part of the study, Chapter 2, consists of the literature review and the theoretical framework. Studies on discourse analysis within the frame of academic discourse, genre analysis, corpus linguistics, and multi-word units are discussed in detail in this chapter. Chapter 3 focuses on the methodology. Information, such as data and corpus construction, tools that are needed for the study, and the terms that are important regarding the conduct of the

study are explained. Chapter 4 is the study and findings. First output, such as the most frequently used multi-word units and the frequency differences between the domains, is observed. Then the structures and functions of these multi-word units and suffixes that are attached to specific word combinations are analyzed in Chapter 5. Afterwards, the question of whether the multi-word units have influence on forming genre-specific texts is answered. Also, the multi-morpheme units in the SAC are observed and discussed in order to answer whether they have multi-word unit functions. Lastly, Chapter 6 concludes the dissertation, states its limitations as well as the theoretical implications of it, and proposes topics for further study.



2. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

In this chapter, the general framework of the study is described along with the studies in the literature that are related to this research. The theoretical framework of the study is discourse analysis; specifically, academic discourse is analyzed using genre analysis. This framework is explained in section 2.1, and corpora and multi-word units are discussed in 2.2. There is a summary of the chapter in 2.3.

2.1. Discourse as a Text and Text as a Genre

The main framework adopted in this study is written discourse pursuant to discourse analysis. In other words, written materials are used to analyze the findings. Stubbs (1983: 1) defines discourse as either language above the sentence or above the clause. Brown and Yule (1983: 1) state that discourse cannot be restricted to the description of linguistic forms independent of the purposes or functions of the discourse itself. The first studies on discourse analysis are Firth's (1951), Harris' (1952) and Mitchell's (1957) studies. (Coulthard, 1977: 3). The term 'discourse' is examined in light of the fact that language has different aspects. For instance, Widdowson (1973) has mostly focused on the rhetorical structures of scientific discourse. Van Dijk (1988a, 1988b) has used schematic structures in order to analyze news reports. Coulthard (1977), van Dijk (1977) and Hoey (1983) have studied more universal patterns that can be superimposed on several discourse types (Bhatia, 2004: 9). Political discourse (Chilton, 2004; Baker & McEnery, 2005), media discourse (Fairclough, 1995), colonial discourse (Williams & Chrisman, 1993), environmental discourse (Hajer, 1997), law discourse (Gusstaffsson, 1975; Cotteril, 2001), business discourse (Nelson, 2005; Alexander, 2007), newspaper discourse (Mautner, 2008) can be cited as examples of discourse studies (see also Barber, 1962; Halliday, McIntosh & Strevens, 1964). As stated at the beginning of 2.1, written texts are the focus of this study under the head of discourse; for this, the scientific writing, which is the branch of the academic genre, is studied.

Genre studies have become increasingly popular in several fields, such as literature, music, history, and linguistic studies. Ben-Amos (1976: 228) considers genre as a research tool for categorizing and filing individual texts; Todorov (1976) argues that a genre is a codification for discursive properties (Deng, Chen & Zhang, 2014: 3). More broadly, Swales (1990: 58) defines genre as it comprises a class of communicative events, the members of which share a set of communicative purposes that are recognized by the members of that discourse community. In this field, Swales' (1981) work on research articles is a leading study. According to Swales (1990: 33), a genre is a distinctive category of discourse of any type, spoken or written, with or without literary aspirations. Dudley-Evans and St. John (1998: 87) say: "When the focus of text

analysis is on the regularities of structures that distinguish one type of text from another, this is genre analysis and the results focus on the differences between text types or genres.” Genre analysis is seen as an extension of linguistic analysis to study functional variation in academic contexts (Bhatia, Flowerdew & Jones, 2008: 10). Bhatia (2008: 166) expresses that genre theory indicates a strong shift of emphasis from text to context. Genre analysis is the study of situated linguistic behavior in institutionalized academic or professional settings.

Dudley-Evans (1998: 10) states that academic texts have regular repeatable patterns of organization and language. Academic writing as a genre is an irreplaceable notion of discourse analysis. In other words, academic text is an important genre. As cited, regularities and patterns that are specific to a certain text type is the key point for academic genre analysis.

Hyland (2009: 1, 3, 67) asserts that academic genre lies in the fact that complex social activities like educating students, demonstrating learning, disseminating ideas and constructing knowledge, rely on language to accomplish. Research into academic discourse has grown massively and academic writing has recently begun to receive considerable research attention. Since then, studies of academic discourse have expanded to include student and instructional discourses as well as research papers, to embrace academic speech as well as writing, to address rhetorical purposes as well as syntactic forms, and to incorporate ever larger samples of texts. Despite competition from electronic publishing alternatives, such as e-journals and personal websites, scientific article is still the pre-eminent genre of the academy.

(Yıldız & Aksan, 2014: 247)

All academic texts are designed to persuade readers of something: of the knowledge claim at the heart of a research article, of an evaluation of others’ work in a review, or of one’s understanding and intellectual autonomy in an essay (Hyland & Paltridge, 2011: 177).

Scientific texts form the basis of quite a few genre studies in Turkish, as well as English research, such as topic continuation (Oktar, 2002; Keçik, 2002; Yağcıoğlu, 2002); academic metadiscourse (Uzun, 2002; Zeyrek, 2002; Fidan, 2005); argument structure (Ruhi, 2002); sentence structure (İşsever, 2002); comparison of text types (Oktar & Yağcıoğlu, 1996); information flow (Turan and Bican, 2002); observation and evaluation of articles and student writings (Huber & Uzun, 2000; Uzun & Huber, 2001); rhetorical structures and reasoning (Uzun, 2007); citation patterns and stance (Fidan & Cem-Değer, 2007); and discourse features of scientific texts (Özyıldırım, 2010).

Most of these studies use more limited data, such as psychology texts or sociology texts, only. Also, few of them have looked at one section of the articles, such as the introductions, only. Apart from these studies, the current study focuses on both introductions and conclusions of the

scientific articles that have been published in the humanities and fundamental sciences, including wider subcategories, such as linguistics, history, tourism, statistics, etc.

2.2. Corpus-Based Multi-Word Unit Studies

Recently, corpora are used by researchers in the field of linguistics, such as dictionary writing and developing course material, as well as language studies, such as grammar structures, meaning variation, and language change (Granger, 1998; Hunston, 2002; Biber et al., 1998). Stubbs (2002) states that a corpus is a collection of texts that are arranged with the intention of explaining various sides of language. Moreover, Baker (2006: 2) explicates that corpora are generally large, representative samples of a particular type of naturally occurring language; thus, they can be used as a standard reference, with which arguments of language can be measured. The usage of corpora dates back to the 1940s. Mair (2006: 355-356) addresses two traditions in corpus studies. One is constructing corpora by considering the points, such as genre distribution, balance, and representativeness, as seen in the Brown Corpus (Francis & Kucera, 1967), the British National Corpus (BNC) (Leech et al., 1994) and the Turkish National Corpus (TNC) (Aksan et al., 2012); the other is adding material continuously to a corpus in order to have a larger and more dispersed corpus, such as the 650,000,000 word Bank of English (Sinclair, 1990). The Longman Grammar of Spoken and Written English (Biber, et al., 1999) and the Cambridge Grammar of English (Carter & McCarty, 2006) are examples of significant reference guides that are constructed as corpus-based. Research using a corpus has the advantages of presenting of naturally occurring data, providing the opportunity of quick use, obtaining quantitative results and frequency information, and allowing complicated analyses by examining large amounts of texts (Sinclair, 1996; McEnery et al., 2006; Biber, et al., 1998; Baker, 2006). By means of corpora, researchers are able to systematically study the variation in a large collection of texts that is produced by far more speakers and writers, and covers a far greater number of words, than could be analyzed by hand (Conrad, 2010: 228).

Recently, quite a few studies have used the corpus method to analyze multi-word units. Cortes (2002: 398) says: "The study of frequently used word combinations has attracted the attention of researchers and instructors in the linguistics field since the beginning of the last century." She adds that the origins of the word 'collocation' seem to go back to the nineteenth century, when the Oxford English Dictionary (Simpson & Weiner, 1989) reported that all languages use a wider variety of collocations in poetry than they do in prose (2002: 398). She continues that Jespersen (1917, 1924) studied collocations and fixed expressions; Palmer (1933) classified word combinations in English; in the 1950s, Firth (1951) used the terms 'collocation' and 'collocability' to describe the habitual occurrence of a word with another word or words (2002: 398). Firth (1951) has popularized the term 'collocation' by saying: "You shall

judge a word by the company it keeps.” In the 1970s and 1980s, studies of word combinations made use of certain research techniques, such as ethnography (Hakuta, 1974; Fillmore, 1979; Peters, 1983), conversational analysis (Manes & Wolfson, 1981; Tannen, 1987), and quantitative research on multi-word expressions (Sinclair, 1991; Kjellmer, 1991; Altenberg, 1993). Biber et al. (2004: 373) point out that Altenberg (1998; Altenberg & Eeg-Olofsson, 1990) was the first researcher to study recurrent word sequences in English based on the London-Lund Corpus, while Butler (1997) adopted a similar approach for his analysis of recurrent word sequences in a Spanish corpus. Sinclair (1990) has proposed an ‘idiom principle’ that forms the origin and the basis of multi-word unit studies. According to Sinclair (1990), quite a few structures are idiomatic. In other words, language users do not pick words separately one by one. On the contrary, these units exist in our minds as phrases and they are extracted from mental lexicons in groups, not separately.

In the literature, there are numerous multi-word studies that are corpus-based. These studies look at multi-word units in spoken and written language in universities, such as university lectures, student writing, course books, (Biber, Conrad & Cortes, 2004; Cortes, 2004; Biber, 2006; Biber & Barbieri, 2007), MA and PhD theses (Hyland, 2008a); published scientific articles (Cortes, 2004, 2013; Hyland, 2008b; Simpson-Vlach and Ellis, 2010); fiction and informative texts (Aksan & Aksan, 2012, 2013); academic law articles, case law, legislation and legal documents (Breeze, 2013); and newspapers (Durrant, 2013). The corpora that are used for their research include roughly 350,000-3,500,000 words. All of these studies argue different aspects of multi-word units and have various conclusions as a result of their individual data sets. For instance, multi-word units are used more often in spoken data (Biber, Conrad and Cortes, 2004; Biber and Barbieri, 2007); multi-word units are used in published articles more than the ones that are used in student writings but those that are seen in student writings are not used in research articles (Hyland, 2008b); multi-word expressions in published history articles are hardly ever used by students, and the most frequently used multi-word unit is time adverbials (Cortes, 2004). Further, Turkish has fewer multi-word units in proportion to English because of the morphological structure of Turkish (Aksan & Aksan, 2012); multi-word units are usually noun phrases and prepositional phrases (Breeze, 2013); multi-word units may be reconsidered as affixes and affix combinations in agglutinative languages (Aksan, Alici & Demirhan, 2015); suffixes in Turkish can function as multi-word units because of the morphological structure of Turkish (Durrant, 2013). Durrant (2013: 22) exemplifies the units that have three or four suffixes and argues that these suffixes reflect multi-word unit structure as seen in the example below.

mümkün	ol- ma-dıĝ-in-ı (4)	söyle-yerek
possible	be-NEG-SUB-POS.3-ACC	say-CVB

saying that it was not possible

As may be observed in the example above, most of the words in Turkish are polysyllabic. Combinations of suffixes create long words (Aksan, Alici & Demirhan, 2015). This aspect of Turkish is a characteristic feature that differentiates it from many languages. In this context, one could argue that multi-morphemes in Turkish are potent in the sense of forming multi-word units.

Almost all studies in the literature have used Biber et al. (1999) (fiction, newspapers, speech, academic prose -classroom management, lectures- texts) and Hyland's (2008a) classifications about scientific texts (articles, masters and doctoral theses). Biber et al. (2004: 381, 385-88) sum up the structures and functions of multi-word units in English as follows.

Table 1. Structures of multi-word units

1. Verb phrase fragments

- (connector +) 1st/2nd person pronoun + VP fragment

You don't have to

- WH-question fragments

What do you think

2. Lexical bundles that incorporate dependent clause fragment

- If-clause fragments

If you want to

- That-clause fragment

That I want to

3. Lexical bundles that incorporate noun phrase and prepositional phrase fragments

- Prepositional phrase expressions

At the same time

- Comparative expressions

Greater than or equal

Table 2. Functions of multi-word units - Biber et al., 1999

1. Stance Expressions
A. Epistemic Stance
B. Attitudinal/modality Stance
<i>Oh I don't know / it is important to</i>
2. Discourse Organizers
A. Topic Introduction/focus
B. Topic Elaboration/clarification
<i>If you look at / on the other hand</i>
3. Referential expressions
A. Identification/focus
B. Imprecision
C. Specification of Attributes
D. Time/place/text Reference
<i>And this is the / and stuff like that / in terms of the / in the United States</i>
4. Special conversational functions
A. Politeness
B. Simple Inquiry
C. Reporting
<i>Thank you very much / what are you doing? / I said to him</i>

Biber et al.'s study (2004) emerges from a broader corpus of spoken and written registers, which include conversation, text book, service encounters, institutional texts, etc. Hyland (2008a) adapts this classification in a different way that is more appropriate for academic prose. He groups multi-word units for scientific texts as seen in Table 3 (Hyland, 2008a: 13-14).

Table 3. Functions of multi-word units - Hyland, 2008a

Research oriented	Location	<i>at the same time</i>
	Procedure	<i>the purpose of the</i>
	Quantification	<i>a wide range of</i>
	Description	<i>the structure of</i>
	Topic	<i>in the Hong Kong</i>
Text oriented	Transition signals	<i>on the other hand</i>
	Resultative signals	<i>as a result of</i>
	Structuring signals	<i>as shown in the figure</i>
	Framing signals	<i>with respect to the</i>
Participant oriented	Stance features	<i>it is possible that</i>
	Engagement features	<i>as can be seen</i>

2.3. Conclusion

As discussed above, most of the studies have used the corpus method to study texts. Most of them used English data; Durrant (2013) has used Turkish texts for his study, the material of which is online newspapers. His study does not draw on large-scale corpora of

Turkish (2013: 8). The corpus of his study covers a period of six months and it involves 374,590 words. In this sense, the present study has more comprehensive data, i.e., 1,000,196 words and a diverse set of subdisciplines of scientific texts. Therefore, this study can expand the results and show a larger picture in terms of the multi-word units and multi-morpheme units.

This research adopts discourse analysis, genre analysis and corpus linguistics as its theoretical framework. Additionally, the specific focus of this study is multi-word research, corpus and academic writing studies.

Chapter 3 presents the methodology adopted for this research. It includes: Database construction, the tools for extracting multi-word units from the corpus, technical terms that are specific to this study, statistical information in order for the results to be accurate, and a sample that is extracted from the 1,000,196 word corpus (Scientific Article Corpus) to examine the units manually and in detail.



3. METHODOLOGY

3.1. Database Construction: Corpus and Data

The present study utilizes the corpus method to identify multi-word units. Corpora are typically used in language studies. They are total texts that can be digitally processed and are sampled to represent a specific language or language variation. They are comprised of authentic texts and they provide a diverse range of data, including recurrent items. Corpus linguistics verifies the nature of these recursive elements (Hunston & Francis, 1996; McEnery & Wilson, 1996; Biber et al., 1998).

A 1,000,196 word Scientific Article Corpus (SAC) was formed to conduct this study. All articles in the SAC are from peer-reviewed academic periodicals. These scientific articles were published between 2005 and 2009 in the humanities and fundamental sciences. All the subdisciplines that build up the data set of this study are as follows:

Humanities: Linguistics, philosophy, economics, psychology, sociology, history, and tourism

Fundamental sciences: Biology, physics, statistics, chemistry, and mathematics

These subdisciplines were chosen because they reflect academic practice, and they were selected because they show the profiles of these practices. The population of the SAC is 1,218 articles, all of which are individually saved as introductions and conclusions, as seen in Figure 1. An example content of an article with its code information is seen in Figure 2.

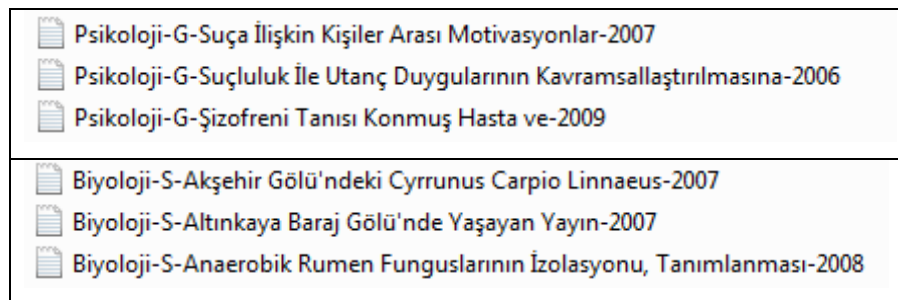


Figure 1. The articles in the SAC

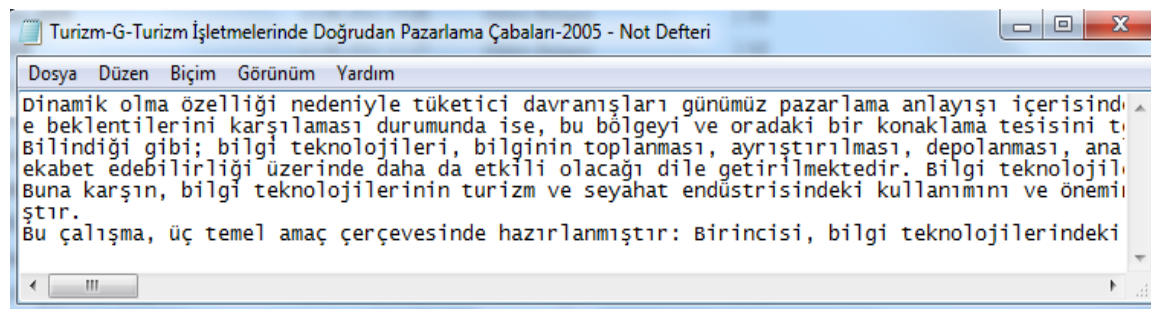


Figure 2. The content of a published article in the SAC

The number of words and frequencies by fields are seen in Table 4.

Table 4. Word counts in the SAC - Introductions and Conclusions

Introduction Parts			Conclusion Parts		
Category	Word-Count	Frequency (%)	Category	Word-Count	Frequency (%)
Linguistics	37,804	7	Linguistics	30,283	6
Philosophy	23,239	5	Philosophy	21,197	4
Economics	36,713	7	Economics	42,608	9
Psychology	37,987	7	Psychology	34,747	7
Sociology	51,566	10	Sociology	58,544	12
History	38,119	8	History	31,059	6
Tourism	33,891	7	Tourism	43,984	9
Biology	46,882	9	Biology	64,562	13
Physics	55,955	11	Physics	39,302	8
Statistics	45,998	9	Statistics	36,152	7
Chemistry	54,710	11	Chemistry	53,342	11
Mathematics	44,376	9	Mathematics	37,176	8
Total	507,240	100	Total	492,956	100

3.2. Tools for the Extraction of the Multi-Word Units

In order to obtain trigram lists in the SAC, this study utilizes Text-NSP (Banerjee & Pedersen, 2003). With this tool, multi-word unit lists are sorted by various collocation measurements. The Perl package Text-NSP was used to rank multi-word units according to their observed frequency (count.pl) and to compute associative measures (statistic.pl), some of which are *Log-likelihood ratio*, *Mutual information*, and *Poisson Stirling measure*. As a result, the list of multi-word units that consists of three morphemes was obtained. The Count.pl program calculates the raw frequencies of multi-word units and inscribes these calculations into an output file. Additionally, the statistic.pl program takes raw frequencies into account and reorders them with an appropriate statistics formula for the study frame. After these processes, the data in Table 5 demonstrates the possible multi-word units with their frequencies.

Table 5. The multi-word units obtained from the SAC

	Multi-Word Unit	Fre.
1	<i>her ne kadar</i> 'even though'	119
2	<i>buna bağlı olarak</i> 'because of this'	82
3	<i>bu çalışmanın amacı</i> 'the purpose of this study'	68
4	<i>her geçen gün</i> 'each passing day'	57
5	<i>önemli bir yer</i> 'an important place'	45

The frequency cut-off is five times per million words in this study. In other words, the multi-word unit lists consist of the usages that are seen at least five times in the SAC. Cut-off points are determined according to the nature of each study. For instance, some researchers have chosen 20 (Hyland, 2008a); some have selected 40 units (Biber & Barbieri, 2007) for their studies. The decision is driven by the size of the corpus being utilized, especially when researchers want to analyze larger multi-word units (Greaves & Warren, 2010: 213), which the

present study also intends. Instead of adding every multi-word unit to the analysis no matter how they are similar or the same, the preference of the current study is to group them under certain conditions, which is discussed in 3.3. In this way, the study includes other multi-word units as well that are seen down the lists and that are used five or ten times.

Another important feature for the units to be counted as multi-word units is the distribution; that is, they must be seen in different texts. According to Biber, Conrad and Cortes (2004: 376), a sequence must be used in at least five different texts to be counted as a multi-word unit. For this study, though, the cut-off point is established as three registers, i.e., 1/4 of the corpus, because a large amount of multi-word unit list is meant to analyze in this study. If the first obtained multi-word unit list were regarded without any limitations, then the first 50 units would be seen in five registers at least in the SAC. For instance, the first five multi-word units in the list that were firstly obtained in the conclusions of the fundamental sciences are illustrated below.

Table 6. The first obtained list belonging to the conclusions of the fundamental sciences

Multi-Word Unit	Fre.
1 <i>elde edilen sonuçlar</i> 'obtained results'	66
2 <i>çalışmada elde edilen</i> 'obtained [...] in the study'	50
3 <i>ile elde edilen</i> 'that is obtained with'	47
4 <i>bu çalışmada elde</i> 'obtained [...] in this study'	44
5 <i>belirlenen amonyum azotu</i> 'the ammonium nitrogen that is designated'	38

As seen in Table 6, the frequencies of the units that belong to the very first obtained list are quite high. If a raw list like the one seen in Table 6 were studied, then it would be quite possible to observe the multi-word units more than five registers, such as linguistics, statistics, physics, mathematics, chemistry, tourism, etc. However, certain criteria are applied for this study, which is explained in 3.3 in detail. For example, the first four units seem very similar in terms of their sentence structure. The first, second, and fourth units can be *bu çalışmada elde edilen sonuçlar* 'the obtained results in this study' or the first and third can be used together in a sentence, such as *...ile elde edilen sonuçlar...* 'results that are obtained with'. It has been decided that these kind of units would not be analyzed separately in this study in order to observe more different kinds of multi-word units. Thus, the frequency of the multi-word units in the list decreases gradually. For example, *ne yazık ki* 'unfortunately' in the introductions of the humanities is seen seven times in the whole corpus. Similarly, *yapılan hesaplamalar sonucunda* 'as a result of the calculations that are made' in the conclusions of the fundamental sciences appears six times in the SAC. Moreover, it has been decided that topic-specific units like *belirlenen amonyum azotu* 'the ammonium nitrogen that is designated' would not be considered in the frame of the study. Instead, the multi-word units that are more general are observed and analyzed rather than the specific ones that are directly relevant to a certain subject, such as

algılayıcının çıkış voltajı ‘the output voltage of the detector’. Regarding this, expecting each multi-word unit to be seen in five registers would be too demanding. As a result, the multi-word units that are extracted from the corpus are observed in at least three different subdisciplines in the SAC, which is 25% of the corpus.

In an attempt to view and analyze the structures and contexts of multi-word units, concordance programs called NooJ (Silberztein, 2003) and AntConc (Anthony, 2012) were used. Examples that were obtained via NooJ and AntConc are seen below.

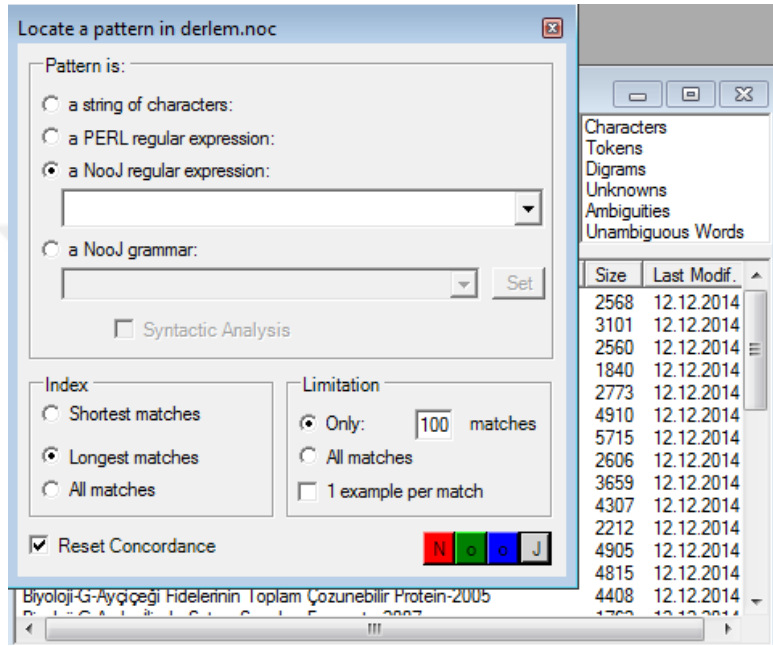


Figure 3. NooJ-Query

Text	Before	Seq.	After
Biyoloji-G-Akşehir Gölü'ndeki Cymunus Carpio Linnaeus-2007.not	yönelik herhangi bir araştırmaya rastlanılmamıştır.	Bu çalışmanın amacı	, Akşehir Gölü'ndeki Cypinus carpio
Biyoloji-G-Atıncaya Baraj Gölü'nde Yaşayan Yayın-2007.not	belirleme için otolitleri (apilüster) kullanmıştır.	Bu çalışmanın amacı	, Atıncaya Baraj Gölü'nde yaşayan
Biyoloji-G-Arenuridae Üzerine Araştırmalar VI. Arenurus-2006.not	Rhinophoracarus Viets, 1916 alt cinslerine aittir.	Bu çalışmanın amacı	ülkemizden tespit edilen Arenurus türlerinin
Biyoloji-G-Bazı Bitki Büyüme Düzenleyicilerinin Tuzlu-2008.not	hakkında sınırlı sayıda çalışma mevcuttur.	Bu çalışmanın amacı	, tuz (NaCl) stresinin apa tohumlarının

Figure 4. NooJ-Query result

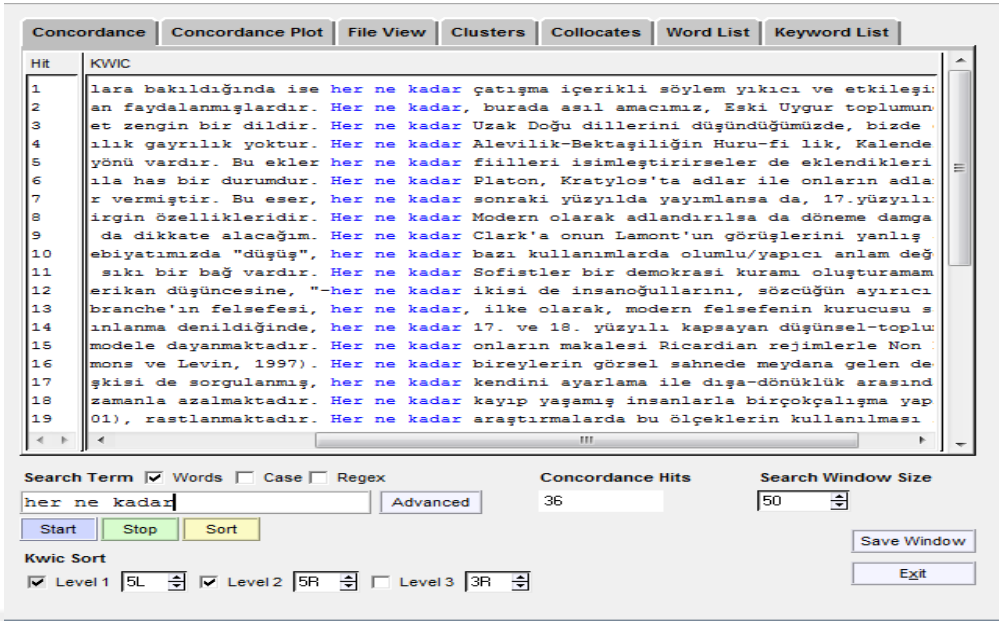


Figure 5. AntConc-Query and result

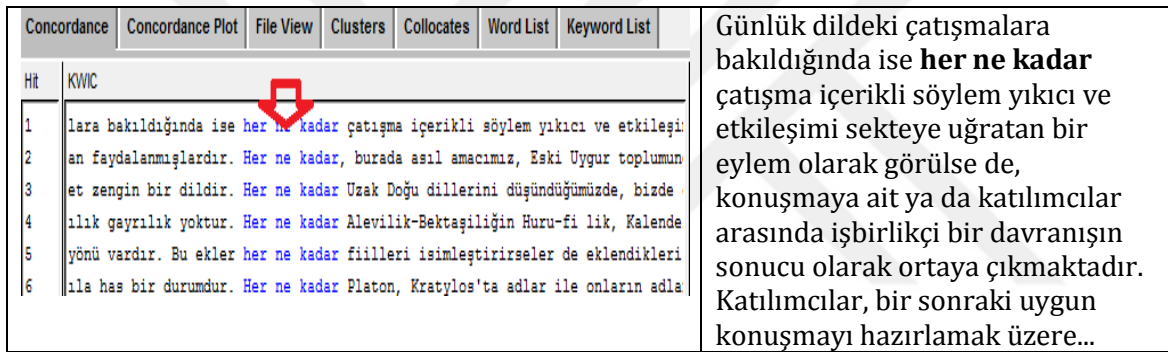


Figure 6. AntConc-The intertextual appearance of the concordance line

With the features these tools have, corpus processing applications that are seen in Figures 3, 4, 5, and 6 enable user queries, part of speech tagging, morphological decomposition, and generating dictionaries specific to the uploaded texts. These pieces of software help the user to see the contexts of multi-word units; thus, it is possible to identify the genre features of the text.

3.3. Classification of the Multi-Word Units

A certain criterion is used to examine the multi-word units that are obtained from the corpus (SAC) and extracted via the tools Nooj and AntConc. With this kind of determinations, the study focuses on the multi-unit word *types* rather than *tokens*. First, topic-specific multi-word units, such as *eşler arası çatışma* 'conflict between spouses' or *beş yıldızlı otel* 'a five-star hotel' were excluded from this study.

Second, coordinating conjunctions were excluded from the research because they are seen between any phrase and clause. In other words, a coordinating conjunction is a short cut in

order not to repeat some word groups. For instance, when one says: *Chloe and Gus ran*, the conjunction *and* prevents one from repeating *Chloe ran, Gus ran*. Coordinating conjunctions are repeated in multi-word units both with grammatical and semantic motivations. However, conjunctions are only structural units. So, they might reveal extensive usage beyond the scope of this study.

The units that look the same except for the suffixes they have are also grouped together. Only one of these multi-word units, such as *elde edilen bulgular* ‘obtained findings’, was included in the list. The others, such as *elde edilen bulgularda* ‘obtained findingsLOC’, were observed together, not separately.

The multi-word units that can hold the other multi-word units in their structures are examined together as well. Structures such as *göre daha yüksek* ‘higher than’ and *daha yüksek olduğu* ‘that it is higher than’ are two possible multi-word units of the same combination. These possible combinations are classified and observed together.

The multi-word units that involve similar words or the same words with a different syntactic order, such as *bir başka deyişle* ‘in other words’, *başka bir deyişle* ‘in other words’, or *başka bir ifadeyle* ‘in other saying’, are not analyzed individually. They are considered as one multi-word unit in this study. Consequently, lemmas can be obtained and these multi-word lemmas can be analyzed because the same or very similar types of multi-word units are grouped together.

As told in the beginning of 3.3, the main focus is on the multi-word units that are not topic-specific, such as *her ne kadar* ‘even though’ and *bu çalışmanın amacı* ‘the purpose of this study.’ In this sense, the first 50 multi-word units of the introductions and conclusions of each domain are examined in this research. In total, 200 multi-word units are observed with the purpose of finding their structural, functional, and genre features within the scientific texts.

All studies on multi-word units in the literature use the terms *structural category* and *functional category* for the classifications of multi-word units. In this study, *grammatical and syntactic categories* will be used instead of *structural* because the decision process of the multi-word unit structure is actually a determination of grammatical category and syntactic category. For instance, tagging *I want you to* as ‘1st/2nd person pronoun + dependent clause fragment’, or tagging *something like that* as a ‘Noun Phrase expression’ (Biber & Conrad, 2004: 381) is exactly a grammatical and syntactic process. So, naming this process *grammatical and syntactic categories* would be more explicit. Additionally, the word *discourse* is added to *functional categories* for this study. The term *discourse* is mentioned in some of the studies in the literature while describing the nature of the category, but it is not used in the title, i.e., the title has been called *functional categories/classification* only. In this study, the word ‘discourse’ is added to the title as well because the word *functional* is used in many different studies that are

different from multi-word units and linguistics; so, just *functional* itself would be vague. As a result, the category names that are used throughout this study are *grammatical and syntactic categories* and *discourse functional categories*¹.

3.4. Terms That Are Used Throughout the Study

3.4.1. Grammatical and Syntactic Categories

After obtaining concordance lines of the multi-word units, grammatical and syntactic analyses are carried out in this study. Grammatical and syntactic categories contain parts of speech, such as nouns, verbs, adverbs, etc., and suffixes, such as those that mark tense and number.

3.4.2. Discourse Functional Categories

Subsequent to the description of grammatical and syntactic categories of multi-word units, the data of this study are classified by contextualized discourse functions according to Hyland's (2008a) model. Discourse functions are the meanings and purposes of those multi-word units that belong to a specific register. A discourse functional category is the classification that collects multi-word units into some specific foci of research, text, and participants; it introduces subcategories, which specifically reflect the concerns of research writing (Hyland, 2008a: 13). Discourse functions provide texture and organize the discourse according to situations (Kress, 1976). A discourse functional category of a multi-word unit is determined according to its meaning in the text. In other words, the discourse function of that multi-word unit becomes evident due to its context. There are three discourse functional categories that are loosely based on Halliday's (1994) linguistic macro-functions: Research-oriented units serve an ideational function; text-oriented units are combinations concerned with textual functions; participant-oriented units express interpersonal meanings (Hyland, 2008b: 49). In the present study, some of the terms are defined additionally except for the ones that are seen in Hyland's (2008a) study; and some of the definitions of the discourse functional categories are adapted.

3.4.2.1. Research-Oriented Multi-Word Units

Research-oriented multi-word units allow writers to identify an entity or a particular attribute of an entity as especially important. They help structure the experience and determine the way researchers look at the multi-word units (Cortes, 2004: 401). They organize the activities that the research includes. So, they are units focusing on the study that is conducted. In brief, research-oriented multi-word units enable authors to give information about the

¹ For the naming process of the categories, Prof. Aygen's comments were adopted.

research itself, such as the location or amount of items. These multi-word units contain (Hyland, 2008a: 13):

- **Location** - indicates time or place (e.g. *at the beginning of* ‘-(n)ın başında’, *in this study* ‘bu çalışmada’)
- **Procedure** - frames the boundaries of the study (e.g. *the role of the* ‘-(n)ın rolü’)
- **Quantification** - shows the amount of the units, things, and entities related to the research (e.g. *a wide range of* ‘çok sayıda’)
- **Description** - portrays the overall frame of the study (e.g. *the structure of the* ‘-(n)ın yapısı’)

The other research-oriented unit type, *topic*, is not included within the frame of the study, because it has been decided that topic-specific units, such as *eksenel yük seviyesi* ‘axial load level’ would not be studied in this research, the reason of which was discussed in 3.1.

3.4.2.2. Text-Oriented Multi-Word Units

The word text in linguistics is used to refer any passage, written or spoken, of whatever length, that forms a unified whole (Halliday & Hasan, 1976: 1). A text is a unit of language in use; it is not a grammatical unit, like a clause; and it is not defined by its size (Halliday & Hasan, 1976: 1). Text-oriented multi-word units are relevant for organizing the text and its meaning as a message or argument. They reflect the relationships between previous and following discourse. Text-oriented multi-word units include:

- **Transition signals** - establish additive or contrastive links between elements (e.g. *in addition to this* ‘buna ek olarak’)
- **Resultative signals** - mark inferential or causative relations between elements (e.g. *as a result of this* ‘bunun sonucu olarak’)
- **Structuring signals** - include text-reflexive markers that organize stretches of discourse or direct the reader elsewhere in the text (e.g. *as seen in figure* ‘şekilde görüldüğü gibi’)
- **Framing signals** - situate arguments by specifying limiting conditions (e.g. *with respect to this* ‘buna ilişkin olarak’)

These signals are used by authors in order to achieve coherence and cohesion in text. Briefly, text-oriented multi-word units are different from structure, such as grammatical categories. They are certain signs that provide unity in texts.

3.4.2.3. Participant-Oriented Multi-Word Units

Participant-oriented multi-word units directly focus on the writer or reader of the text. They reflect either the responsibilities of authors, as in *...might be the reason*, or the

comprehension of audience, as seen in *as can be understood*. The classification of participant-oriented multi-word units is as follows.

- **Stance features** - convey the writer's attitudes and evaluations (e.g. *it is possible that* '-dığı mümkündür')
- **Engagement features** - address readers directly (e.g. *as can be seen* 'görülebileceği gibi')

3.4.3. Multi-Morpheme Units

In linguistics, a morpheme is the smallest meaningful unit of a language carrying information. Morphemes are minimal distinctive units of grammar and the central concern of morphology (Crystal, 2008: 313).

In this study, the strings of morphemes that are attached to the n-grams used in the scientific texts belonging to the humanities and fundamental sciences are named as *multi-morpheme units*, i.e., morphemes that follow each other are considered as the multi-morphemes and these sequences that are obtained from the scientific texts are discussed in this study in order to see the recurrent patterns to find out the reflections in scientific writing. In this way, a template that belongs to scientific articles and that is specific to the academic domains can be found out.

The tools for the extraction of the multi-morpheme units are TNC Tagger (Aksan et al., 2012), AntConc (3.4.4) (Anthony, 2012), Text-NSP (Banerjee & Pedersen, 2003), and WordSmith Tools (Scott, 2008).

3.5. Inter-Rater Reliability

After the grammatical, syntactic, and discourse functional aspects of the multi-word units are designated, two experts check the obtained results to provide at least 70% agreement. In this way, reliability of the results is ensured. After these processes, a probable example set of the multi-word units that are extracted from the SAC is seen in Table 7.

Table 7. The multi-word unit examples in the SAC

GRAM&SYNT	Noun phrase	<i>daha büyük bir</i> 'a bigger'	Adv _{DEG} +Adj _{COMP} +Indef.Art+[N]
	Adverbial construction	<i>kimi zaman da</i> 'and sometimes'	Adv _{FRE} +N+da _{CONT}
	Clause	<i>büyük önem taşımaktadır</i> 'has significance'	[NP]+Adj+N+V-IMPRF-COP+3SG
DISC. FUNC.	Research-oriented	<i>göre daha az</i> 'less than'	Description
	Text-oriented	<i>bunun sonucu olarak</i> 'as a result'	Resultative
	Participant-oriented	<i>şekilde görülebileceği gibi</i> 'as can be seen in the figure'	Engagement

The grammatical and syntactic analyses are discussed more in detail and the expression of the codes, such as degree ($_{DEG}$) and frequency adverb ($_{AdvFRE}$) are enlarged and analyzed in an expanded way in Chapter 5.

3.6. Sample

After the grammatical, syntactic, and discourse functional aspects of the multi-word units that are obtained by corpus processing tools were identified according to the inter-rater reliability results, quantitative distributions were determined. Then, a sample was extracted from the SAC with a statistical technique to analyze the contexts of the multi-morphemes and to detect genre-specific usages to understand if multi-word units have an impact on forming genre-specific texts. One can scale sample selection 1% in large populations and 10-15% in small populations (Işık, 2006: 324). According to this information:

Size of the population N = 1,218
 Size of the sample n = 183

Therefore, 183 articles were selected from the 1,218 article SAC with a percentage of 15%. This study utilizes the stratified random sampling in order to determine the articles that were chosen for the sample. One can use this technique when the population of his or her study is limited and if data has substratum or subsidiary groups (Yıldırım & Şimşek, 2008: 105). The article numbers of all the subdisciplines in the SAC are seen in Table 8; the breakdown of the sample for manual observation is seen in Table 9. This observation enables to find whether the multi-morphemes in Turkish grammatical structure have a role in constituting multi-word units.

Table 8. Article numbers of the subdisciplines in the SAC by year

Year	Lin.	Phi.	Eco.	Psy.	Soc.	His.	Tou.	Bio.	Phy.	Sta.	Che.	Mat.	Tot.
2005	13	5	19	15	19	21	16	24	27	29	38	19	245
2006	21	10	22	11	26	16	11	18	28	19	23	26	231
2007	18	14	22	8	24	21	19	25	30	26	26	22	255
2008	13	7	18	11	24	17	22	26	35	28	26	24	251
2009	13	13	14	12	19	16	19	36	26	21	24	23	236
Tot.	78	49	95	57	112	91	87	129	146	123	137	114	1218

Table 9. Article numbers of the subdisciplines for the sample

Year	Lin.	Phi.	Eco.	Psy.	Soc.	His.	Tou.	Bio.	Phy.	Sta.	Che.	Mat.	Tot.
2005	2	1	3	2	3	3	2	4	4	4	6	3	37
2006	3	2	3	2	4	2	2	3	4	3	3	4	35
2007	3	2	3	1	4	3	3	4	4	4	4	3	38
2008	2	1	3	2	4	3	3	4	4	4	4	4	38
2009	2	2	2	2	3	2	3	5	4	3	4	3	35
Tot.	12	8	14	9	18	13	13	20	20	18	21	17	183

As stated above, the numbers of articles that are seen in Table 9 were chosen with the stratified random sampling for manual observation (Yıldırım & Şimşek, 2008: 102). According to this method, all articles in the SAC were put into different folders regarding their year information. Afterwards, all the articles in the folders belonging to that specific year were enumerated randomly. Last, article selection was made by using the information in Table 9 as a base. For instance, there are 13 linguistics articles that are seen in 2005. All of the articles in the 2005 folder were randomly enumerated, and then two articles were selected out of 13 based on the information in the 2005-linguistics line, which is located in Table 8. This process was repeated for all the other subdisciplines and years.

3.7. Conclusion

In summary, the methods, techniques, and procedures for the study are illustrated in Figure 7.

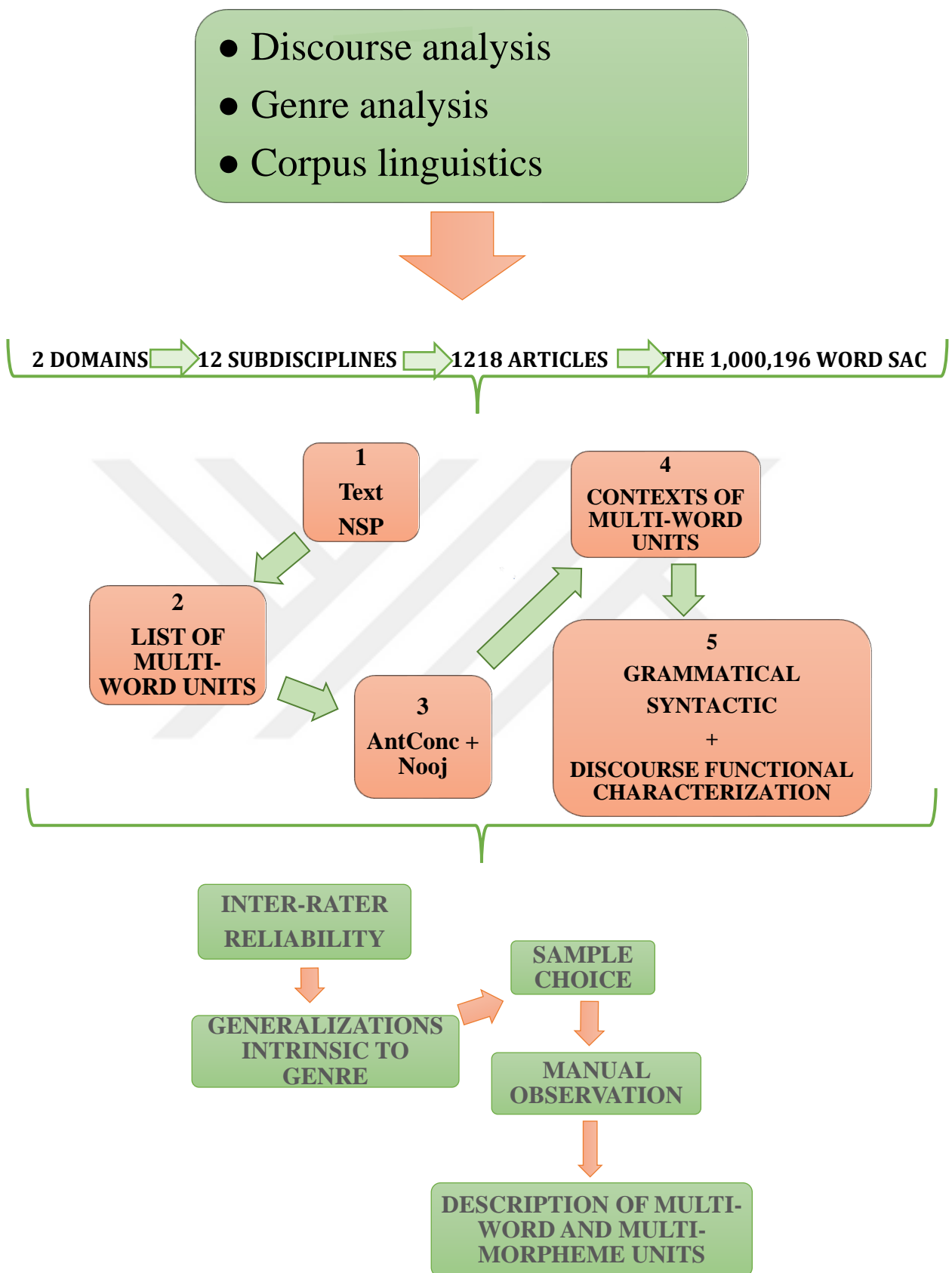


Figure 7. The method of the study

In this chapter, database construction, such as corpus and tools that are utilized were described. The study also explained how to classify the multi-word units. Terms that are used and the preferred terms in the study were discussed. The chapter expressed the details on the inter-rater reliability and the sample that is used to observe the multi-morpheme units manually.

The following chapter, Chapter 4, begins with the first findings and introduces the most frequently used multi-word units in the humanities and fundamental sciences. It also discusses the multi-word frequencies of both domains. The main point here is to find out the similarities and differences in the use of the multi-word units between two domains. In this sense, genre-based features of scientific texts would be understood clearly. The chapter briefly includes the frequencies of the multi-morpheme units as well, the analysis of which is discussed in Chapter 5.



4. THE STUDY AND FINDINGS

In this chapter, the most frequently used multi-word units in Turkish scientific texts are given first, which refers to the first research question of the study. As it has been noted in section 3.3, the most frequently used multi-word unit list does not include the units that are topic-specific, such as *ve süt ürünleri* 'and dairy products'. Coordinating conjunctions, such as *ya da bir* 'or one' and *olumlu ve olumsuz* 'positive and negative', are also excluded from the study because they have an extensive usage in the lists, which might change the nature of the multi-word units that are chosen for observation.

While arranging the frequency lists, the units that have the same words but different suffixes have been grouped together. For example, *önemli bir yer* 'an important placeNOM', *önemli bir yere* 'an important placeDAT' and *önemli bir yeri* 'an important placeACC' are not analyzed separately but together, assuming that they have different suffixes on the same lexeme.

Another classification is grouping the multi-word units that bridge two clauses. That is, most multi-word units bridge two structural units: They begin at a clause or phrase boundary, but the last words of the multi-word unit are the first elements of a second structural unit, so they might hold the other multi-word units in their structures (Biber, Conrad & Cortes, 2004; Cortes, 2004; Hyland, 2008a). For instance, *bir sorun olarak* 'as a problem' and *olarak ortaya çıkmaktadır* 'emerge as' seem to serve the same discourse purpose and may be classified under the same category semantically or discourse-wise. In order to understand if these units belong to the same structure, contexts of these usages were observed in the corpus data. Thus, they have been analyzed in groups.

Last, the multi-word units that consist of the same words, yet in a different word order, such as *bir başka deyişle* 'in other words' and *başka bir deyişle* 'in other words', have not been analyzed separately.

In the second part of this chapter, the frequencies of the multi-word units in the humanities and fundamental sciences have been observed and comparisons have been made (the second & third research questions). The usefulness of frequency data is that it identifies patterns of use that otherwise often go unnoticed by researchers (Biber, Conrad & Cortes, 2004: 376).

4.1. The Multi-Word Units in Turkish Scientific Articles Published in the Humanities and Fundamental Sciences

The article below is a conclusion part of a scientific text that belongs to the fundamental sciences. The multi-word units per one article are seen in this text. This scientific text is shown

in order to illustrate the frequent usage of multi-word units in a larger context. Preferred units in the article are marked bold.

Bu çalışmada incelenen (that is examined in this study) O. vulgare subsp. gracile alttürüne ait uçucu yağ analiz sonuçları **Tablo 1’de verilmiştir (it has been given in Table [...]).** 100 gr bitkinin distilasyona tabi tutulması sonucu çiçeksiz örnekten 1 ml, çiçekli örnekten 0.90 ml, tohumlu örneğinden ise 1,2 ml uçucu yağ elde edilmiştir. **Bu sonuçlara göre (according to these results)** bitkinin yağ veriminin en yüksek tohumlu dönemde olduğunu söylenebilir. Bu çalışmada bu bitkilere ait uçucu yağların, çiçeksiz, çiçekli ve tohumlu örneklerde sırasıyla %89,75-%98,45-%94,20’i tanımlanmıştır...

...p-simen, her üç döneme ait uçucu yağ örneği için major (%6.82-8.38-16.8) bileşenlerden olup, **en yüksek oranda (at the highest proportion)** tohumlu örnekte görülmüştür. cisosimen çiçeksiz dönemin major bileşenlerindedir ve tohuma doğru azalma göstermiştir. γ-terpinen her üç örnek için major bileşenlerden olup, **en yüksek oranda (at the highest proportion)** tohumlu örnekte görülmüştür (Tablo 1). α-terpinolen her üç örnek için önemli bileşenlerden olup, çiçekli örnekte **en yüksek oranda (at the highest proportion)** bulunmuştur. Yine timol-metil eter her üç örnek için major bileşenlerden olup, **en yüksek oranda (at the highest proportion)** tohumlu örnekte görülüp, çiçekli dönemde azalma göstermiştir...

...Karvakrol **en yüksek oranda (at the highest proportion)** çiçeklenme döneminde görülürken, tohumlu dönemde azalmıştır.

Karvakrol her üç dönemde, karvakrol metil eter ise çiçekli ve çiçeksiz dönemde major bileşenler **olarak ortaya çıkmışlardır (they have emerged as)**. Karvakrol oranı ile ilgili bulunan sonuçlar bitkinin diğer türleri ile ilgili Başer ve arkadaşları (1991) tarafından yapılan çalışmalardan **elde edilen sonuçlar (obtained results)** ile uyumludur. Başer ve arkadaşları O. vulgare subsp. hirtum’un değişik 19 örneği üzerinde yaptıkları çalışmada; karvakrol oranını birçok örnekte birbirine yakın ve yüksek oranda bulunmuşlardır. İncelediğimiz türde de bu bileşen her üç dönemde de major bileşen **olarak tespit edilmiştir (it has been confirmed as)**.

Schwob ve arkadaşlarının yaptıkları çalışmada, Hypericum perforatum bitkisinin uçucu yağı, bitkinin değişik fenolojik dönemlerinde (çiçeksiz,

çiçekli, tohumlu) kalitatif ve kantitatif anlamda değişiklik gösterdiğini tespit etmişlerdir. Aynı şekilde, *Hypericum scabrum* ve *H. scabroides* uçucu yağları da değişik fenolojik dönemlerde kantitatif ve kalitatif anlamda farklılıklar göstermiştir. Benzer sonuçlar **bu çalışmada da (and in this study)** görülmüş ve Tablo 1’de sergilenmiştir.

Başer ve arkadaşları, *Origanum sipyleum*’un bitki çayı olarak kullanılabileceğini ve türün yağ bakımından oldukça zengin olduğunu belirtmişlerdir. Yağda yüksek oranda γ -terpinen ve p-simen **olduğunu tespit etmişlerdir (they have confirmed that)**. İncelediğimiz türde ise γ -terpinen ve p-simen major bileşenler olarak bulunmuştur.

Melagari ve arkadaşları (1995), *Origanum vulgare* subsp. *hirtum* üzerinde yaptıkları çalışmada timol ve karvakrol’ü bu bitkinin kemotipi **olarak tespit etmişlerdir (they have confirmed as)**. **Bu çalışmada da (and in this study)** timol ve karvakrol major bileşenler arasında yer almıştır.

...Elazığ ilinin de içinde yer aldığı Doğu Anadolu bölgesinde **yaygın olarak yetişen (commonly grown)** bu ve diğer alttürlerle ilgili geniş zirai ağırlıklı çalışmalar yapılması ve bölge halkının yararına sunulması önemli faydalar sağlayacaktır...

Yapılan analiz sonuçlarından (from the analyses results that are done); bu bitkinin uçucu yağ miktarı ve kimyasal içeriği bakımından oldukça zengin olduğu anlaşılmaktadır. **Bu çalışma ile (with this study)** bu bitki türünün toprak üstü kısımlarının uçucu yağ verim ve kompozisyonu belirlenmiş, bitkinin değişik vejetasyon dönemlerinde uçucu yağının gösterdiği değişimi ortaya konarak bu bitkinin çok amaçlı kullanılması **yönünde önemli sonuçlar (important results in terms of)** ortaya konmuştur.

As it is seen, only one section of a scientific article can involve many multi-word units. Actually, there are other usages that can be marked as multi-word units, such as *anlamda farklılıklar göstermiştir* ‘it differs from [...] in the sense of’, but the units that are analyzed in this study -the most used 50 multi-word units- are shown in this passage only.

Table 10 shows the first 50 most frequently used multi-word units in the introductions and conclusions of the published articles that belong to the humanities and fundamental sciences. Table 10 also has the frequency information -the count of the multi-word unit per subdiscipline- of these multi-word units. This section of the chapter answers the first two research questions of the study, which are what the most used 50 multi-word units in the

introductions and conclusions of the humanities and fundamental sciences are and what the frequency information of the multi-word units is. In 4.2, there is a detailed observation of the frequencies of the multi-word units, which is the discussion of the third question of this research that examines the similarities and differences between the humanities and fundamental sciences in terms of the frequencies.



Table 10. The most frequently used 50 multi-word units in Turkish scientific texts

	Humanities				Fundamental Sciences			
	Introduction	N/F	Conclusion	N/F	Introduction	N/F	Conclusion	N/F
1	<i>her ne kadar</i> 'even though'	36 6%	<i>her ne kadar</i> 'even though'	58 8%	<i>bu çalışmanın amacı</i> 'the purpose of this study'	39 6%	<i>elde edilen sonuçlar</i> 'obtained results'	66 10%
2	<i>buna bağlı olarak</i> 'because of this'	30 5%	<i>anlamli bir ilişki</i> 'a meaningful relation'	32 5%	<i>[...] olmak üzere iki [...]</i> 'particularly [these] two [...]	34 5%	<i>[...]’de görüldüğü gibi</i> 'as it is seen in [...]	37 5%
3	<i>bu çalışmanın amacı</i> 'the purpose of this study'	29 5%	<i>elde edilen bulgular</i> 'obtained findings'	31 4%	<i>elde edilen sonuçlar</i> 'obtained results'	31 5%	<i>[...] Tablo [...]'de verilmiştir</i> 'it has been given in Table [...]	36 5%
4	<i>bir başka deyişle</i> 'in other words'	25 4%	<i>başka bir deyişle</i> 'in other words'	24 3%	<i>yaygın olarak kullanılan [...]</i> '[...] commonly used'	24 4%	<i>[...] sonuçlar elde edilmiştir</i> '[...] results have been obtained'	32 5%
5	<i>önemli bir yer</i> 'an important place'	25 4%	<i>[...] olarak karşımıza çıkmaktadır</i> 'it turns out to be [...]	23 3%	<i>[...] elde etmek için</i> 'in order to obtain [...]	23 3%	<i>buna bağlı olarak</i> 'because of this'	30 4%
6	<i>her geçen gün</i> 'each passing day'	21 4%	<i>bu çalışmada da</i> 'and in this study'	23 3%	<i>buna bağlı olarak</i> 'because of this'	22 3%	<i>[...] yönde önemli ilişkiler</i> 'important relations in [...] direction'	28 4%
7	<i>konu ile ilgili [...]</i> 'relevant to the topic'	19 3%	<i>söz konusu bu [...]</i> 'the relevant [issue] at hand/under discussion'	21 3%	<i>bu çalışmada ise</i> 'whereas in this study'	21 3%	<i>[...] olduğu tespit edilmiştir</i> 'it has been confirmed that [...]	28 4%
8	<i>bu nedenle de</i> 'and for this reason'	16 3%	<i>[...] göre daha yüksek</i> 'higher than [...]	21 3%	<i>[...] için gerekli olan [...]</i> '[...] that is essential to [...]	21 3%	<i>bu çalışmada da</i> 'and in this study'	26 4%
9	<i>[...] içinde yer alan [...]</i>	16	<i>her şeyden önce</i>	20	<i>önemli bir yer</i>	20	<i>bu çalışma ile</i>	26

10	'[...] that is included' <i>başta olmak üzere</i> 'primarily'	3% 15 3%	'first and foremost' <i>bunun yanı sıra</i> 'in addition to this'	3% 19 3%	'an important place' <i>gibi pek çok [...]</i> 'a lot of [...] such as'	3% 19 3%	'with this study' <i>[...] göz önüne alındığında</i> 'when [...] is taken into consideration'	4% 23 3%
11	<i>[...] önem arz etmektedir</i> '[...] is important'	15 3%	<i>[...] son derece önemli [...]</i> '[...] extremely important [...]	18 3%	<i>her geçen gün</i> 'each passing day'	19 3%	<i>[...] olacak şekilde bir [...]</i> 'in a way that will become [...]	19 3%
12	<i>[...] ile ilgili yapılan [...]</i> 'that is done related to [...]	14 2%	<i>araştırma sonuçlarına göre</i> 'according to the research results'	17 2%	<i>yaygın bir şekilde</i> 'commonly'	17 3%	<i>bu sonuçlara göre</i> 'according to these results'	19 3%
13	<i>[...] göz önüne alındığında</i> 'when [...] is taken into consideration'	14 2%	<i>başta olmak üzere</i> 'primarily'	17 2%	<i>[...] büyük önem taşımaktadır</i> '[...] has significance'	17 3%	<i>[...] göre daha yüksek</i> 'higher than [...]	17 3%
14	<i>etkin bir şekilde</i> 'effectively'	14 2%	<i>[...] büyük önem taşımaktadır</i> '[...] has significance'	17 2%	<i>[...] içinde yer alan [...]</i> '[...] that is included'	16 2%	<i>hızlı bir şekilde</i> 'quickly'	15 2%
15	<i>[...] sonucu ortaya çıkan [...]</i> 'that end(s) up'	14 2%	<i>[...] göz önüne alındığında</i> 'when [...] is taken into consideration'	16 2%	<i>her ne kadar</i> 'even though'	15 2%	<i>bu çalışmada kullanılan [...]</i> '[...] that is used in this study'	14 2%
16	<i>söz konusu bu [...]</i> 'the relevant [issue] at hand/under discussion'	12 2%	<i>[...] içerisinde yer alan [...]</i> 'that is included'	14 2%	<i>pek çok çalışma</i> 'many studies'	14 2%	<i>yapılan bir çalışmada</i> 'in a conducted study'	12 2%
17	<i>bu çalışmada da</i> 'and in this study'	11 2%	<i>daha iyi bir [...]</i> 'a better [...]	14 2%	<i>daha sonra bu [...]</i> 'later on this [...]	13 2%	<i>[...] için önemli bir [...]</i> 'an important [...] for [...]	10 1%
18	<i>[...] büyük önem taşımaktadır</i> '[...] has significance'	11 2%	<i>[...] genel olarak değerlendirildiğinde</i> 'all in all'	14 2%	<i>çok araştırmacı tarafından</i> 'by many researchers'	12 2%	<i>[...] iyi sonuç verdiği</i> 'that [...] results well'	10 1%
19	<i>bunun yanı sıra</i>	11	<i>[...] olduğunu</i>	13	<i>[...] ile ilgili çalışmalar</i>	12	<i>yaygın olarak</i>	10

	'in addition to this'	2%	<i>ortaya koymuştur</i> '[...] has revealed that [...]	2%	'studies that are related to [...]	2%	<i>kullanılan [...]</i> '[...] commonly used'	1%
20	<i>ne var ki</i> 'however'	10 2%	<i>[...] önem arz etmektedir</i> '[...] is important'	13 2%	<i>için uygun bir [...]</i> 'an appropriate [...] for'	12 2%	<i>en yüksek oranda</i> 'at the highest proportion'	10 1%
21	<i>bu açıdan bakıldığında</i> 'when viewed from this aspect'	10 2%	<i>etkin bir şekilde</i> 'effectively'	13 2%	<i>yapılan bir çalışmada</i> 'in a conducted study'	12 2%	<i>her ne kadar</i> 'even though'	10 1%
22	<i>bir bakış açısı</i> 'a point of view'	10 2%	<i>[...] önemli bir kısmının</i> 'of an important part [of it]'	12 2%	<i>göz önüne alınarak</i> 'being taken into consideration'	12 2%	<i>[...] ile ilgili olarak</i> 'related to [...]	9 1%
23	<i>ne olursa olsun</i> 'no matter what happens/in any case'	10 2%	<i>[...] şu şekilde özetlenebilir</i> 'can be summarized as [...]	12 2%	<i>[...] olarak kabul edilmektedir</i> '[...] is accepted as [...]	11 2%	<i>[...] elde etmek için</i> 'in order to obtain [...]	9 1%
24	<i>[...] ön plana çıkmıştır</i> '[...] have come into prominence'	9 2%	<i>bir bakış açısı</i> 'a point of view'	11 2%	<i>[...] olduğu tespit edilmiştir</i> 'it has been confirmed that [...]	11 2%	<i>bu nedenle bu [...]</i> 'for this reason, this [...]	8 1%
25	<i>her şeyden önce</i> 'first and foremost'	9 2%	<i>her geçen gün</i> 'each passing day'	11 2%	<i>[...] son derece önemlidir</i> '[...] is extremely important'	11 2%	<i>[...] olmak üzere iki [...]</i> 'particularly [these] two [...]	8 1%
26	<i>[...] bir ilişki vardır</i> 'there is a [...] relation'	8 1%	<i>[...] için gerekli olan [...]</i> '[...] that is essential to [...]	11 2%	<i>çok geniş bir [...]</i> 'a very wide [...]	11 2%	<i>[...] olması için gerek</i> 'be essential to [...]	8 1%
27	<i>son yıllarda yapılan [...]</i> '[...] that has been done in recent years'	8 1%	<i>[...]da belirtildiği gibi</i> 'as it is presented in [...]	10 1%	<i>[...] olarak da bilinen</i> 'also known as [...]	10 2%	<i>bir kez daha</i> 'once more'	8 1%
28	<i>yaygın olarak kullanılan [...]</i> '[...] commonly used'	8 1%	<i>[...] göz önünde bulundurulması</i> 'its being taken into	10 1%	<i>bu çalışma ile</i> 'with this study'	10 2%	<i>[...] ile uyum içindedir</i> '[...] is in accordance with [...]	8 1%

29	<i>çok sayıda araştırma</i> 'a lot of research'	8 1%	consideration' <i>bir etkiye sahip</i> 'has an effect'	10 1%	<i>[...] örnek olarak</i> <i>verilebilir</i> '[...] can be given as an example'	10 2%	<i>herhangi bir nedenle</i> 'for any reason'	8 1%
30	<i>[...] için gerekli olan [...]</i> '[...] that is essential to [...]	8 1%	<i>bulgular elde edilmiştir</i> 'findings have been obtained'	10 1%	<i>hemen hemen tüm [...]</i> 'nearly/almost all [...]	9 1%	<i>literatürde yer alan [...]</i> '[...] that takes part in the literature'	7 1%
31	<i>en hızlı gelişen [...]</i> 'the most developing [...]	8 1%	<i>daha önce de</i> 'also previously before/ previously before as well'	10 1%	<i>son yıllarda yapılan [...]</i> '[...] that has been done in recent years'	9 1%	<i>[...] tercih edilmesi gerektiği</i> '[...] that must be preferred'	7 1%
32	<i>[...] açısından önem</i> <i>taşımaktadır</i> '[...] is significant from the point of view of [...]	8 1%	<i>bir kez daha</i> 'once more'	10 1%	<i>[...] Şekil [...]'de verilmiştir</i> 'it has been given in Figure [...]	9 1%	<i>diğer bir deyişle</i> 'in other words'	7 1%
33	<i>özellikle gelişmekte</i> <i>olan [...]</i> 'especially the developing [...]	8 1%	<i>ne olursa olsun</i> 'no matter what happens/in any case'	9 1%	<i>bir başka deyişle</i> 'in other words'	9 1%	<i>[...] en önemli nedeni</i> 'the most important reason of [...]	7 1%
34	<i>[...] ayrılmaz bir parçası</i> 'an inseparable part of [...]	7 1%	<i>yapılan bir çalışmada</i> 'in a conducted study'	9 1%	<i>daha iyi sonuçlar</i> 'better results'	9 1%	<i>[...] beklenen bir durumdur</i> '[...] is an expected situation'	7 1%
35	<i>daha büyük bir [...]</i> 'a bigger [...]	7 1%	<i>[...] olmak üzere iki [...]</i> 'particularly [these] two [...]	9 1%	<i>[...] en önemli özelliği</i> 'the most important feature of [...]	9 1%	<i>oldukça iyi bir [...]</i> 'quite a good [...]	7 1%
36	<i>ne yazık ki</i> 'unfortunately'	7 1%	<i>aynı zamanda da</i> 'and at the same time'	9 1%	<i>bunun yanı sıra</i> 'in addition to this'	9 1%	<i>[...] önem arz etmektedir</i> '[...] it is important'	7 1%
37	<i>[...] arasında yer alan [...]</i>	7	<i>bir göstergesi olarak</i>	9	<i>bu nedenle de</i>	8	<i>[...] aşağıdaki gibi</i>	7

	'that is among [...]'	1%	'as an indication of/indicating status'	1%	'and for this reason'	1%	özetlenebilir '[...] can be summarized as follows'	1%
38	[...] bir şey değildir 'it is not a thing'	7 1%	bir diğer önemli [...] 'another important [...]'	8 1%	bir çalışmaya rastlanmamıştır 'a study has not been seen'	8 1%	[...] için ayrı ayrı 'separately for [...]'	7 1%
39	bir yandan da 'on the other hand'	7 1%	kısmen de olsa 'even if [it is] partially'	8 1%	çalışmanın ikinci bölümünde 'in the second chapter of the study'	8 1%	yukarıda sözü edilen [...] 'above mentioned [...]'	7 1%
40	daha fazla önem 'more importance'	7 1%	bunun en önemli [...] 'the most important [...] of this'	8 1%	[...] ile ifade edilir 'it is stated as [...]'	7 1%	farklı değişkenlerin sayısı 'the number of different variables'	7 1%
41	belki de en 'maybe the most'	7 1%	vermiş olduğu cevaplarda 'in the answers s/he has given'	8 1%	kısmen de olsa 'even if [it is] partially'	7 1%	bunun yanı sıra 'in addition to this'	7 1%
42	başka bir şey 'another thing'	7 1%	verilen cevaplar incelendiğinde 'when the answers given are observed'	8 1%	bu güne kadar 'until today'	7	yapılan hesaplamalar sonucunda 'as a result of the calculations that are made'	6 1%
43	çalışmanın temel amacı 'the main purpose of the study'	7 1%	gibi görünse de 'even if it seems like'	8 1%	[...] göre daha az 'less than [...]'	7	[...] neden olan etkenlerin 'the factors that cause [...]'	6 1%
44	kimi zaman da 'and sometimes'	6 1%	bu çalışma kapsamında 'within the domain of this study'	8 1%	bu çalışmanın temel [...] 'the main [...] of this study'	7	etkiye sahip olan [...] 'has effect on [...]'	6 1%
45	gittikçe artan bir [...]	6	[...] ile karşı karşıya	7	bir yöntem olan [...]	7	[...] sırada yer almaktadır	6

	'a more increasing [...]'	1%	'subject to [...]'	1%	'[...] that is a method'		'fall(s) into [...] rank'	1%
46	<i>bu alanda yapılan [...]</i> '[...] that is done in this field'	6 1%	<i>[...] olduğu dikkate alındığında</i> 'when [the fact that...] is taken into consideration'	7 1%	<i>[...] sahip olmasına rağmen</i> 'although it possesses [...]'	7	<i>[...] benzer biçimde gösterilebilir</i> '[...] can be shown in a similar way'	6 1%
47	<i>etki eden faktörler</i> 'the factors that affect'	6 1%	<i>üzerinde durulması gereken [...]</i> '[...] that is worth stressing'	7 1%	<i>[...] ile ortaya çıkan</i> 'that emerges with [...]'	7	<i>her geçen gün</i> 'each passing day'	6 1%
48	<i>[...] büyük bir bölümü</i> 'a big part of [...]'	6 1%	<i>diğer yandan da</i> 'and on the other hand'	6 1%	<i>uzun yıllardan beri</i> 'for many years'	7	<i>[...] olduğuna işaret etmektedir</i> '[...] indicates that [it is]'	6 1%
49	<i>bir süre sonra</i> 'after a while'	6 1%	<i>belki de bu [...]</i> 'maybe this [...]'	6 1%	<i>[...]’de görüldüğü gibi</i> 'as it is seen in [...]'	6	<i>[...] meydana geldiği görülmetedir</i> '[it] is seen that [...] happens/emerges'	5 1%
50	<i>aynı zamanda bir</i> 'also a(n)'	6 1%	<i>bundan sonraki çalışmalarda</i> 'in the studies after this'	6 1%	<i>kendine özgü bazı [...]</i> 'some idiosyncratic [...]'	6	<i>[...] etkili olduğu görümüştür</i> '[...] has been seen that [it is] effective'	5 1%

The most commonly used 50 multi-word units in the introductions and conclusions of the two academic domains are illustrated in Table 10. Below is the information of the most used multi-word units that rank 1st in the introductions and the conclusions of the humanities and fundamental sciences.

In humanities, *her ne kadar* 'even though' is the most frequently used multi-word unit both in the introductions and conclusions. There are 36 concordance lines in the introductions and 58 concordance lines in the conclusions. Some of the usages of *her ne kadar* 'even though' are seen in the examples below.

(1) **Her ne kadar** *Uzak Doğu dillerini düşündüğümüzde, bizde oluşan ilk çağrışım o dillerin karmaşık yazı karakterleri olsa da, bu dillerin Türkçeye benzeyen birçok morfolojik veya semantik yönü bulunmaktadır. (Humanities-Introduction)*

Even though our first evocation is the complicated typeface of those languages when we consider the Far East languages, there are a lot of morphological or semantic features of these languages that are similar to Turkish.

(2) *Alışveriş merkezlerinde her ne kadar kentsel kamusal mekân nitelikleri taklit edilse de bu mekânlar gerçek işlevlerine hizmet etmemektedir. (Humanities-Conclusion)*

Even though urban-public place qualifications are imitated in shopping malls, these places have not been serving the purpose of their real functions.

In the fundamental sciences, on the other hand, the most frequently used multi-word unit in the introductions is *bu çalışmanın amacı* 'the purpose of this study' with 39 concordance lines in the SAC. In the conclusions, *elde edilen sonuçlar* 'obtained results' is the most frequent multi-word unit and it has 66 concordance lines. Some of the examples of the most used multi-word units in the introductions and conclusions of the fundamental sciences are seen as follows:

(3) **Bu çalışmanın amacı**, *7 coğrafi bölgeden birisi olan Ege Bölgesi illerini çok Boyutlu Ölçekleme Analizi ve kümeleme analizleri ile çevre ve doğal kaynak özellikleri açısından benzer alt gruplara ayırmaktır. (Fundamental Sciences-Introduction)*

The purpose of this study is to similarly subclassify the cities of the Aegean Region, which is one of the 7 geographical regions, with Multidimensional Scaling and cluster analyses in the sense of their environmental and natural source properties.

(4) *Bu çalışmada elde edilen sonuçlar diğer araştırmacıların elde ettikleri sonuçlar ile paralellik göstermektedir. (Fundamental Sciences-Conclusion)*

The obtained results in this study show parallelism with the results that the other researchers obtained.

The discussions on the most frequently used multi-word units that are ranked from the second to the fifth in the introduction and conclusion lists of the humanities and fundamental sciences are seen in the following.

The second most frequently used multi-word unit in the introductions of the humanities is *buna bağlı olarak* 'because of this'. As discussed at the beginning of this chapter and in section 3.3, similar structures are grouped and observed together to analyze a larger group of multi-word units. The classification for the second most frequently used multi-word unit has *olarak* 'as' as a common usage. In other words, there are three related groups about this multi-word unit, which are seen in Table 11 that includes the frequency information as well.

Table 11. Related multi-word units that include *olarak* 'as' (H-I)

MWU	Nb-Fr	MWU	Nb-Fr	MWU	Nb-Fr
<i>buna bağlı olarak</i> 'because of this'	30 5%	<i>olarak karşımıza çıkmaktadır</i> 'it turns out to be'	14 2%	<i>bir olgu olarak</i> 'as a fact'	12 2%
<i>ve buna bağlı</i> 'and because of this'	18 3%	<i>olarak kabul edilmektedir</i> 'it is accepted as'	14 2%	<i>bir varlık olarak</i> 'as an entity/being'	11 2%
		<i>olarak kabul edilen</i> 'that is accepted as'	12 2%	<i>bir kavram olarak</i> 'as a concept'	11 2%
		<i>olarak ortaya çıkan</i> 'that emerges as'	9 2%	<i>bir sorun olarak</i> 'as a problem'	10 2%
		<i>olarak ortaya çıkmaktadır</i> 'it emerges as'	9 2%	<i>bir süreç olarak</i> 'as a process'	8 1%
		<i>olarak ele alınmaktadır</i> 'it is discussed as'	7 1%	<i>bir bütün olarak</i> 'as a whole'	8 1%
		<i>olarak ifade edilmektedir</i> 'it is stated as'	7 1%	<i>bir araç olarak</i> 'as a tool'	7 1%

There are many usages of *olarak* 'as' in the introductions of the humanities, as seen in Table 11. Some of the percentages do not seem high; the reason is that all the similar multi-word units were grouped for the analysis in the first hand. In other words, lemmas were

prepared for the study. As a result, more multi-word units that have lower frequencies remain in the lists, but these units are different in the sense of their structural and semantic features. Therefore, it is more possible to observe different kinds of multi-word units in the study. The usages of *olarak* 'as' in the first group are usually seen together in the SAC, examples of which are seen as the following:

(5) *Aktif iş hayatında çalışan nüfusun sürekli artması ve **buna bağlı olarak** insanların boş zamanının azalması veya olmaması nedeniyle ve diğer taraftan evinden dışarı pek çıkmayan hasta ve yaşlı nüfusun artması, insanların alışveriş şeklini değiştirmektedir.*

The continuous rise of the population in active business life and **because of this**, due to the decrease or absence of people's free time and on the other hand, the increase of the ill and old people who do not go out generally have been changing the shopping style of people.

(6) *Tanzimat Dönemi'nde yaşanan, ekonomik sorunlar ve sosyal başarısızlıklar ve **buna bağlı olarak** oluşan siyasal istikrarsızlıklar, dış baskılar ve 1870'lerden itibaren oluşan baskıcı yönetim, anayasacı bir akımın doğuşunu da beraberinde getirmiştir.*

The economic problems and social failures that were experienced in Tanzimat Reform Era **and because of this**, the political instabilities, external pressures and the oppressive administration since 1870s have brought the origin of a constitutional movement with it as well.

As seen in the examples above, the authors express the situation that they are dealing with and they explain the outcome related to the first situation by using *buna bağlı olarak* 'because of this'. The first situations are usually negative. It seems that *buna bağlı olarak* 'because of this' in the SAC displays a negative reason and result relationship, such as *etkin bir tarımsal yayım politikasının olmaması ve **buna bağlı olarak** da yayımda organizasyon bozukluklarının olması...* 'the fact that there is no effective agricultural extension policy **and because of this**, the existence of organizational failures in extension...' and *Su kirliliği arttıkça, kullanılabilen su miktarı azalmakta, **buna bağlı olarak** su maliyeti artmakta ve de kişi başına düşen su miktarı azalmaktadır* 'As water contamination increases the amount of water that is used decreases, **because of this**, water cost increases and the amount of water per person decreases'.

The second group involves *olarak* 'as' at the beginning of the construction, as in *...söylem topluluğu açısından betimlenmesi gereken bir sözel söylem türü **olarak karşımıza çıkmaktadır*** '...it turns out to be an oral discourse type that has to be described by discourse community'; or *...turizmden elde edilen kazançların ekonomik etkileri teorik **olarak ele alınmaktadır*** '...the

economic effects of the earnings that are obtained from tourism **are discussed** theoretically'. This kind of usages are preferred by the authors when conveying an outcome and describing a situation or a process. In the third group that is seen in Table 11, *olarak* 'as' is seen at the end of the multi-word unit construction and it is used for describing a concept by using the names *olgu* 'fact', *varlık* 'being', *kavram* 'concept', etc. Some of the examples from this group are seen below.

(7) ...*Machiavelli'nin başlattığı akım ile birlikte, Ortaçağ'ın tanrı merkezci düşünüş biçiminin aksine, artık doğal hukuk ve sonrasında siyasal iktidar tanrısal bir kökenden değil, insanın ya da bireyin üzerinden temellenen yapılar haline gelmekteydi. Bu durum, kilisenin siyaset üzerindeki otoritesini askıya alan **bir olgu olarak** ileride laik modern devletin ilk işaretlerini vermektedir.*

...with the movement that Machiavelli started, contrary to the God-centered thinking of the middle ages, natural law and then political power had been becoming specific structures based on human or individual, no longer a divine origin. This situation prognosticates a secular modern government in future **as a fact** suspending the authority of the church over politics.

(8) *Üretim potansiyelleriyle ve istihdam olanaklarıyla öne çıkan KOBİ'lerin, kalıcı olmalarını ve etkin yönetilebilmelerini sağlamak, pek çok ülke ekonomilerinin çözüm aradığı **bir sorun olarak** karşımıza çıkmaktadır.*

To provide the SMES, who are prominent in the sense of their production potentials and employment opportunities, with being permanent and managed effectively constitute a problem (**as a problem**) that many national economies search a solution for.

(9) *Göç olgusu, kırsal ve kentsel kesimde her yönde yapısal değişimleri de beraberinde getiren ikili **bir süreç olarak** ortaya çıkarmıştır.*

Immigration phenomenon emerges **as a dual process** that brings structural changes with it too in every respect in rural and urban districts.

As seen in the above examples, these types of multi-word units cover the meaning of the preceding sentence in its structure. The situation can be negative or positive; in a sense, the multi-word unit summarizes the whole meaning of the sentence.

The third most used multi-word unit in the introductions of the humanities is *bu çalışmanın amacı* 'the purpose of this study' with 29 concordance lines. Another similar usage in

the SAC is *bu araştırmanın amacı* 'the purpose of this research', which is lower in the list (175th) with a frequency of six. The concordance examples of these multi-word units are seen below.

(10) **Bu çalışmanın amacı**, Erzurum ili tarım işletmelerinde patates üretim faaliyetinde fiziki girdi kullanım durumunu ve birim üretim maliyetlerini tespit etmektir.

The purpose of this study is to determine the use case of physical input and fair value of potato production activities in Erzurum agricultural enterprises.

(11) **Bu araştırmanın amacı**, Türkiye'nin ekolojik karakteri ve biyolojik çeşitlilik bakımından en zengin sulak alanlarından biri olan Manyas Gölü'nün çevresel tehditlerini ortaya koyarak göl ve kullanıcı ilişkileri çerçevesinde ekonomik değerini koşullu değerlendirme yöntemiyle tahmin etmektir.

The purpose of this study is to guess the economic value of Lake Manyas, which is one of the richest wetland areas in Turkey with its ecological character and biological diversity, with the conditional evaluation method by showing its environmental threats in the frame of the lake and user relations.

These multi-word units above are used at the beginning of the sentence in all of the examples in the SAC, which is also the nature of this type of construction. The purpose of the study is generally expressed in the introduction parts of the articles. Authors use this pattern in order to frame their research and give information to the reader about the continuation of the study.

Bir başka deyişle 'in other words' is the fourth most frequently used multi-word unit in the introductions of the humanities. It is seen 25 times in the SAC. *Bir başka deyişle* 'in other words' has similar usages as well, which are seen in Table 12.

Table 12. Similar usages of *bir başka deyişle* 'in other words' (H-I)

MWU	RANK	NUM-FRE
<i>başka bir deyişle</i> 'in other words'	7	19 - 3%
<i>bir başka ifadeyle</i> 'in other saying'	38	12 - 2%
<i>diğer bir deyişle</i> 'in other words'	69	9 - 2%
<i>başka bir ifadeyle</i> 'in other saying'	104	8 - 1%

The most frequent usages in the group that are seen in Table 12 are *bir başka deyişle* 'in other words' and *başka bir deyişle* 'in other words'. These multi-word units are the same except for their different syntactic orders. It is also seen that *bir başka ifadeyle* 'in other saying' and *başka bir ifadeyle* 'in other saying' are used by the authors. These usages have the same meaning

as well as *bir başka deyişle* 'in other words' and *başka bir deyişle* 'in other words'; the only difference is the word choice, *ifadeyle* 'with a statement'. Their concordance lines are seen in the below examples.

(12) *Annenin, bebeğin doğumundan sonra bebeğe kimin nerede bakacağıyla ilgili seçimi onun inanç ve tutumları ile kontrolündeki çevresel sınırlandırıcılar üzerinde etkilidir. **Bir başka deyişle** annenin inanç ve tutumları, yaptığı seçime bağlı olarak doğumdan önceki görüşmeden doğumdan sonraki görüşmeye değişebilir.*

After the birth of a child, mother's baby care choice by whom and where, has an effect on her beliefs, manners, and environmental limits that are in her care. **In other words**, beliefs and manners of mother may change from the prenatal meeting to the postnatal meeting based on the choice that she made.

(13) *Bu tanımdan hareketle, kendini öldürmenin içinde bir direniş duygusunu da barındırdığı ve bireyin yaşamının boşluğuna karşı anlamlı bir alternatif olduğu da ileri sürülebilir. **Başka bir ifadeyle**, anlamlı bir hayatı yaşamak istencinin radikal bir göstergesi olarak intihar, ölüme dönük değil, daha çok yaşama dönük varoluşsal bir istence sahiptir.*

With reference to this definition, it can be asserted that committing suicide contains a resistance feeling with itself as well and it is a meaningful alternative for the emptiness of the individual's life. **In other saying**, suicide as a radical indication of a desire to live meaningfully has an existential volition more toward life, not death.

These kinds of multi-word units transmit extra information about the study. In addition, the author usually makes an observation about the subject s/he deals with and expresses the same observation in a different way with different words to give more detailed information.

In the SAC, *önemli bir yer* 'an important place' is the fifth most frequent multi-word unit in the introductions of the humanities. It has 25 concordance lines as well as *bir başka deyişle* 'in other words'. This multi-word unit has a classification that is seen in the following:

Table 13. Similar usages of *önemli bir yer* ‘an important place’ (H-I)

MWU	RANK	NUM-FRE
<i>önemli bir yere</i> ‘to an important place’	12	18 - 3%
<i>çok önemli bir</i> ‘a very important’	32	12 - 2%
<i>için önemli bir</i> ‘an important [...] for’	34	12 - 2%
<i>oldukça önemli bir</i> ‘quite an important’	42	11 - 2%
<i>önemli bir yeri</i> ‘an important placeACC’	61	10 - 2%
<i>önemli bir rol</i> ‘an important role’	64	10 - 2%
<i>[...]de önemli bir</i> ‘an important [...] in [the]’	70	9 - 2%
<i>açısından önemli bir</i> ‘an important [...] in terms of’	148	7 - 1%

Due to the various suffixes that are attached to it, *önemli bir yer* ‘an important place’ differs from the previous three multi-word units that have groupings, different word orders, and word choices. For instance, *önemli bir yere* ‘to an important place’ has the dative suffix on *yer* ‘place’; and *önemli bir yeri* ‘an important place’ has the accusative case. *Önemli bir yer* ‘an important place’ also has different word choices, such as *çok* ‘very’, *oldukça* ‘quite’, *rol* ‘role’, and *açısından* ‘in terms of’. Some of the examples that are seen in the SAC are below.

(14) *Ayrıca gazeteciler tarafından neyin, ne kadar, hangi mekanizmalar ve söylem biçimleri dolayısıyla aktarıldığı da bu süreçte **çok önemli bir rol** oynamaktadır.*

Also, that by the journalists, what is conveyed how much with which mechanisms and manner of discourse plays **a very important** role in this process too.

(15) *Bu defterde, mahalle ve köylerde oturanların adları fert fert gösterildiği için, hangi köylerin Müslim ve hangilerinin de gayr-i Müslim olduklarının tespiti hususunda **oldukça önemli bir** kaynaktır.*

Because the names of the people residing in neighborhood and country side are shown on an individual basis in this notebook, it is **quite an important** source with regard to understand which villages are Muslim and which villages are non-Muslim.

(16) *Halkbilimin önemli araştırma konularından olan türbeler etrafında görülen geleneksel uygulamalar, temel olarak halk inanışları başlığı altında incelenmektedir. İslamiyet'te türbelerin **önemli bir yeri** vardır.*

The traditional practices that are seen around shrines that are one of the important research objects of folklore are examined basically under the title of folk belief. Shrines have **an important place** in Islam.

As seen in the examples above, writers prefer to use this type of multi-word units to put stress on a subject or a situation that is observed in their research. The word *önemli* ‘important’ is used to emphasize the relevant topic that is discussed.

In the conclusions of the humanities, *anlamlı bir ilişki* 'a meaningful relation' is used as the second most frequent multi-word unit. This multi-word unit also has many similar patterns, as seen in Table 14.

Table 14. Similar usages of *anlamlı bir ilişki* 'a meaningful relation' (H-C)

MWU	RANK	NUM-FRE
<i>anlamlı bir farklılık</i> 'a meaningful difference'	7	25 - 4%
<i>arasında anlamlı bir</i> 'a meaningful [...] between'	8	24 - 3%
<i>istatistiksel olarak anlamlı</i> 'statistically meaningful'	37	14 - 2%
<i>anlamlı farklılıklar bulunmuştur</i> 'meaningful differences have been found'	60	12 - 2%
<i>cevaplarda anlamlı farklılıklar</i> 'meaningful differences in the answers'	64	12 - 2%
<i>olarak anlamlı bir</i> 'a meaningful [...] as'	84	11 - 2%
<i>yönde anlamlı bir</i> 'a meaningful [...] in terms of'	127	9 - 1%
<i>bir ilişki vardır</i> 'there is a relation'	153	8 - 1%
<i>bir ilişki olduğunu</i> 'that there is a relation'	158	8 - 1%

In Table 14, it is seen that nearly all the multi-word units have the word *anlamlı* 'meaningful' in common. In the conclusion parts of the humanities articles, there are a lot of sentences that contain multi-word units including the word *anlamlı* 'meaningful', some of which are as follows:

(17) *...arazi büyüklüğü ile etkinlik değeri arasında ise istatistiksel olarak anlamlı bir ilişki bulunduğu sonucu t testi kullanılarak belirlenmiştir.*

...the result that there is a statistically **meaningful relation** between acreage and efficiency level has been determined by using the t test.

(18) *...ortalama işletme arazisi açısından istatistiksel olarak anlamlı bir farkın olmadığı saptanmıştır.*

...it has been found out that there is no **statistically meaningful** difference in terms of average operating land.

(19) *...cinsiyet değişkeni yönünden verilen cevaplarda anlamlı farklılıklar ortaya çıkmıştır.*

...**meaningful differences** have emerged **in the answers** given from the point of gender variable.

(20) *Bu araştırma sonucunda problem odaklı başa çıkma ile benlik saygısı arasında pozitif yönde anlamlı bir ilişkinin olduğu, problem odaklı başa çıkma ile akılcı olmayan inançlar arasında ise negatif yönde anlamlı bir ilişkinin olduğu bulunmuştur.*

At the end of this research, it has been found that there is a **meaningful** relation **in terms of** positive (lit. there is a positively meaningful

relation between...) between problem-focused coping and self-respect; and there is a **meaningful** relation **in terms of** negative (lit. there is a negatively meaningful relation between...) between problem-focused coping and beliefs that are not rationalist.

As seen in the examples above, authors use this kind of patterns when they inform the readers about the results of their research questions. It should be noted that these multi-word units are mostly used when the data of the study has statistical information; that is, the multi-word units, such as [*yönde*] *anlamli bir iliski [vardir]* '[there is] a meaningful relation [in terms of]' and *istatistiksel olarak anlamli* 'statistically meaningful' are preferred either in the statistics articles or in the articles of other subdisciplines, the authors of which use statistical techniques in their research. Another observation is that all the concordance lines in the SAC that involve *yönde anlamli bir* 'a meaningful [...] in terms of' contain either *pozitif* 'positive' or *negatif* 'negative' before the main multi-word unit.

The third most frequently used multi-word unit in the conclusions of the humanities is *elde edilen bulgular* 'obtained findings'. This multi-word unit has its grouping that includes numerous similar patterns, as well. This categorization is seen in Table 15.

Table 15. Similar usages of *elde edilen bulgular* 'obtained findings' (H-C)

MWU	RANK	NUM-FRE
<i>elde edilen sonuçlar</i> 'obtained results'	5	30 - 4%
<i>elde edilen bu</i> 'this [...] that is obtained'	15	21 - 3%
<i>araştırmadan elde edilen</i> 'obtained [...] from the research'	26	17 - 2%
<i>elde edilen veriler</i> 'obtained data'	30	16 - 2%
<i>çalışmadan elde edilen</i> 'obtained [...] from the study'	57	13 - 2%
<i>bu çalışmadan elde</i> 'obtained [...] from this study'	78	11 - 2%
<i>çalışmada elde edilen</i> 'obtained [...] in the study'	92	10 - 1%
<i>bu çalışmada elde</i> 'obtained [...] in this study'	152	8 - 1%

Table 15 shows that there is a frequent usage of these types of multi-word units in the conclusions of the humanities. It turns out that the authors choose these multi-word units in the conclusions of their articles, so it is a frequently used multi-word unit when representing the findings or discussions, and concluding the paper. The concordance lines of this usage are seen below.

(21) *Araştırma sonucunda **elde edilen bulgular**, diğer kültürler üzerinde yapılan bazı araştırmalarla uyumluluk göstermektedir.*

The **obtained findings** at the end of the research are accordant with some research that was done about other cultures.

(22) *Bu **araştırmadan elde edilen** sonuçlar doğrultusunda; hastaların hastalıkları ve yapılacak girişimlerle ilgili bilgilendirilerek...*

In the direction of the **obtained** results **from this (the) research**, patients' being informed about their illnesses and the attempts that will be made...

(23) *Bu çalışmadan elde edilen sonuçlar, zihin bulanıklığının beyin hasarı ile ilgili olduğu bilgisini daha çok desteklemektedir.*

The **obtained** results **from this study** support the information that mental dimness is related to brain damage more.

(24) *Bu çalışmada elde edilen bulgular da, bu modeli destekler şekilde, anıların kalıcılığının kişisel önemle belirlendiğini göstermektedir.*

The **obtained** findings in **this (the)** study as well, in a way that supports this model, show that permanence of memories are determined by personal importance.

The concordance lines of *elde edilen bulgular/sonuçlar* 'obtained findings/results' appear to be used with *bu* 'this' in most of the sentences in the conclusions of the humanities. *Başka bir deyişle* 'in other words' is the fourth most used multi-word unit in the conclusions of the humanities. This unit is also seen in the same rank in the introductions of the humanities. The only difference is the syntactic order; while the most frequent usage is *bir başka deyişle* 'in other words' in the introductions, it is *başka bir deyişle* 'in other words' in the conclusions. Apparently, it is not a multi-word unit that is specific to either introductions or conclusions. It has a more general purpose in scientific text writing. The groupings and some of the examples of this multi-word unit are seen below.

Table 16. Similar usages of *başka bir deyişle* 'in other words' (H-C)

MWU	RANK	NUM-FRE
<i>bir başka deyişle</i> 'in other words'	40	14 - 2%
<i>diğer bir deyişle</i> 'in other words'	90	10 - 1%
<i>bir ifade ile</i> 'in a statement'	129	9 - 1%
<i>diğer bir ifadeyle</i> 'in other saying'	133	9 - 1%

(25) *Ancak +A ekli zarfların yapısal olarak serbest bir görünümde olduklarını, başka bir deyişle yapısal olarak bildik gramer işleyişinden farklı özellikler gösteren, aldıkları eklerin temel işlevlerinden tamamen uzaklaştığı kalıp yapılar olduklarını belirtmek gerekmektedir.*

It must be stated that only +A suffixed adverbs are structurally seen free, **in other words**, that they have structurally more different features than familiar grammar functioning; that they are idiomatic structures, the affixes of which move away completely from their basic functions.

(26) *Bu çalışmanın sorgulanabilecek bir diğer noktası da rekabetin ve toplumsallaşabilmenin ön şart olduğu böyle bir programda, şartlar dedikoduya yönelik olarak hazırlanmış görünmektedir. Bir başka deyişle, yarışmanın bir gereği de dedikodu yapmaktır.*

Another point of this study that can be questioned too is that conditions seem to be prepared so as to gossip in such a show that competition and socialization are preconditions. **In other words**, a necessity of the contest is to gossip.

(27) *...Wittgenstein'in dile dönüşü ile birleştirmeye çabalar. Diğer bir ifade ile Gadamer "varlığın unutulmuşluğu" düşüncesini "dilin unutulmuşluğuna" indirgeyerek okur.*

...tries to unite with Wittgenstein's facing language. **In other saying**, Gadamer reads the thought of forgottenness of existence by degrading it into forgottenness of language.

The examples above reflect that the authors use these multi-word units to summarize the related topics in their studies. The fifth most frequently used multi-word unit in the conclusions of the humanities is *olarak karşımıza çıkmaktadır* 'it turns out to be'. This multi-word unit is grouped in a similar way that is seen in the examples of *buna bağlı olarak* 'because of this' in Table 11. The classifications and the frequency information of *olarak karşımıza çıkmaktadır* 'it turns out to be' are seen in Table 17.

Table 17. Related usages of *olarak karşımıza çıkmaktadır* 'it turns out to be' (H-C)

MWU	Nb-Fr	MWU	Nb-Fr	MWU	Nb-Fr
<i>buna bağlı olarak</i> 'because of this'	23 3%	<i>olarak karşımıza çıkmaktadır</i> 'it turns out to be'	23 3%	<i>bir sonucu olarak</i> 'as a result of'	19 3%
<i>ve buna bağlı</i> 'and because of this'	16 2%	<i>olarak kabul edilen</i> 'that is accepted as'	11 2%	<i>bir bütün olarak</i> 'as a whole'	13 2%
<i>buna paralel olarak</i> 'in parallel with this'	9 1%	<i>olarak tespit edilmiştir</i> 'it is determined as'	9 1%	<i>bir sonuç olarak</i> 'as a result'	11 2%
<i>bağlı olarak da</i> 'and because of'	8 1%				

As observed in Table 11, as well, the categorization of this multi-word unit has *olarak* 'as' as a common usage. Similar to the expressions in the introductions, there are numerous usages of *olarak* 'as' in the conclusions of the humanities.

(28) *Bunun nedeni konaklama işletmelerinde performans değerlendirme çalışmalarının öneminin anlaşılabilmesi ve buna bağlı olarak da*

performans değerlendirme çalışmalarının işletmelerce benimsenmeyip, bir külfet olarak görülmesidir.

The reason of this is that the importance of performance valuation in accommodation cannot be understood **and because of this**, operations of performance valuation are not adopted by business; are regarded as inconvenience.

(29) *Genel olarak ifade edersek, Van halkı turizmin olası olumsuz etkilerine rağmen, bölgede olumlu şeyler yaratacağına inanmakta **ve buna bağlı** olarak da turistlere karşı iyi niyet ve iyi ilişkiler kuracaklarını ifade etmektedirler.*

All in all, in spite of possible negative influences of tourism, Van public believes that it will create positive things in the region **and because of this**, states that they will be nice to tourists and build good relations with them.

As it is also seen in the introductions, the usages in the first group are also seen together in the SAC. On the other hand, there are more concordance lines of this multi-word unit that have positive connotation, which is different from the ones in the introductions, as seen in *Hanelerde çalışan sayısı arttıkça **buna bağlı olarak** aylık gelir de artmaktadır ve ödeme istekliliği de **buna paralel olarak** artış göstermektedir* 'As the number of employees in families increases, the amount of monthly income increases **because of this** too and willingness to pay shows increase **in parallel with this**'.

Similar to the introductions of the humanities, the multi-word units in the second category have *olarak* 'as' at the beginning of the patterns as seen in *...bedensel engelli tüketicilerin gereksinimlerinin karşılanması için gerekli altyapı vb. örnek projeler **olarak karşımıza çıkmaktadır*** '...in order to meet the requirements of physically handicapped consumers, **we confront** stuff like necessary substructure etc. **as** pilot projects'; and *Ortalama işletmecisi yaşı 48.7 **olarak tespit edilmiştir*** 'Average manager age **has been determined as** 48,7'. These multi-word units are selected by the authors to write statements that comprise more general discussions on their studies. The third group, *olarak* 'as' is used at the end of the multi-word units, similar to the introductions of the humanities. However, the word choice does not vary; it focuses on the results with the usages of the words *sonuç* 'result' and *sonucu* 'the resultACC'.

(30) *Doğaya ve hayata bağlılık alt ölçeğinden ise gençlerin, 41-65 yaş arasındaki bireylerden daha düşük puanlar almış olmaları ilginç **bir sonuç olarak** karşımıza çıkmaktadır.*

In the subscale of attachment for nature and life, though, that the young ones have gotten lower points than the individuals between 41-65 ages **emerges as an interesting result.**

(31) *Kırsal alanda örgütlenme, feodal düzenin **bir sonucu olarak** kadınların henüz gereksinim duymadığı ancak, günümüzde çok önemli bir konudur.*

Organization in rural areas **as a result of** feudal system is not a matter that women are in need of yet, however it is a weighty matter nowadays.

These multi-word units summarize the situation that is under discussion. A similar observation is seen in the *olarak* 'as' constructions in the introductions. This multi-word unit is also a more general one, as seen in *bir başka deyişle* 'in other words'. In this sense, it has a more general purpose while conveying information.

In the introductions of the fundamental sciences, the second most frequently used multi-word unit is *olmak üzere iki* 'particularly [these] two'. It seems that it is a more specific usage that is intrinsic to fundamental sciences because the same multi-word unit is ranked 35th in the conclusions of the humanities.

Table 18. Similar usages of *olmak üzere iki* 'particularly [these] two' (FS-I)

MWU	RANK	NUM-FRE
<i>olmak üzere üç</i> 'particularly [these] three'	52	12 - 2%
<i>üzerine iki farklı</i> '[...] two different'	118	8 - 1%

At first view, the reason might be the subdisciplines that belong to the fundamental sciences deal with numerous concepts related to their results more than the articles written in the humanities.

(32) *Günümüzde doğrusal ve dairesel **olmak üzere iki** çeşit hızlandırıcı kullanılmaktadır.*

Nowadays, **particularly two** kinds of accelerator called linear and circular are used.

(33) *Santrifüj kavramalar sürtünen parçalarının şekillerine göre; santrifüj parçalı ve dolgu malzemeli **olmak üzere iki** gruba ayrılır.*

According to the shapes of their pieces that rub, centrifugal clutch splits into **particularly two** groups called the ones with centrifuge part and packing material.

(34) *Bu lifler kütikula ve korteks **olmak üzere iki** tabakadan oluşmakta...*

These fibers are composed of **particularly [these] two** layers called cuticula and cortex.

(35) *Dinamik problem düz dinamik ve ters dinamik **olmak üzere ikiye** ayrılmaktadır.*

Dynamic problem splits into **particularly these two** that are called forward dynamics and inverse dynamics.

When the concordance lines are observed, it is seen that the usage of numbers are not related to mathematical numerals, but they are about concepts related to groups and classifications, as in *ikiye ayrılmaktadır* or *iki gruba ayrılır* '[...] splits into two / [...] separated into two groups'.

The third most used multi-word unit in the introductions of the fundamental sciences is *elde edilen sonuçlar* 'obtained results', which is a very common usage, especially in the fundamental sciences. This multi-word unit is seen in the conclusions as well, more of which is discussed in the conclusion parts of the fundamental sciences. *Elde edilen sonuçlar* 'obtained results' has similar usages in the SAC that are seen in Table 19.

Table 19. Similar usages of *elde edilen sonuçlar* 'obtained results' (FS-I)

MWU	RANK	NUM-FRE
<i>ile elde edilen</i> 'that is obtained with'	12	19 - 3%
<i>elde edilen sonuçların</i> 'obtained resultsGEN'	121	8 - 1%
<i>sonucunda elde edilen</i> 'that is obtained as a result of'	134	8 - 1%

(36) ***Elde edilen sonuçlar** sunulmuş ve önerilen sistem başarımı tartışılmıştır.*

The **obtained results** have been presented and the recommended system performance has been discussed.

(37) *...sonuçlar Lineer Olmayan Dinamik Analiz (LODA) ve FEMA 356'da önerilen LOSA yaklaşımlarından **elde edilen sonuçlarla** çeşitli parametreler için karşılaştırılarak değerlendirilmiştir.*

...the results have been evaluated for various parameters by comparing the **obtained results** from Nonlinear Dynamic Analysis and LOSA approaches recommended at FEMA 356.

(38) *Öncelikle, depo ortasına yerleştirilmiş model için çözümler yapılmış, **elde edilen sonuçlar** literatürdeki deneysel çalışmanın sonuçlarıyla karşılaştırmıştır.*

First of all, analyses have been made for the model that has been replaced in the middle of the warehouse; the **obtained results** have been compared to the results of the empirical research in the literature.

(39) ...akım veri setine uygulanarak **elde edilen sonuçların** kıyaslanması amaçlanmaktadır.

...comparison of the **obtained results** by practicing the current data set has been aimed.

At first glance, this multi-word unit shows that the results about the study are going to be mentioned. However, it is used in a different way by the authors in the introductions of the fundamental sciences. The actual results are not announced in this part of the article by using this multi-word unit. Instead, the authors let the audience know that they are going to state the results of their research with the usage of *edilen sonuçlar* 'obtained results' beforehand.

The fourth most used multi-word unit in the introductions of the fundamental sciences is *yaygın olarak kullanılan* 'commonly used'. This multi-word unit also has similar usages that are observed in the SAC. These usages are seen in Table 20.

Table 20. Similar usages of *yaygın olarak kullanılan* 'commonly used' (FS-I)

MWU	RANK	NUM-FRE
<i>en çok kullanılan</i> 'the most used'	16	19 - 3%
<i>yaygın olarak kullanılmaktadır</i> 'is used commonly'	31	15 - 2%
<i>en yaygın olarak</i> 'as the most common'	57	11 - 2%

(40) BAA tarım ve orman sektörlerine bağlı çeşitli alanlarda **yaygın olarak kullanılan** kimyasallardan birisidir.

BAA is one of the **commonly used** chemicals that are used in various fields based on agricultural and forestry industries.

(41) Kristal büyütme tekniklerini temel alan konfigürasyonlar arasında **en yaygın olarak kullanılanlar**; yüzen bölge, silindirik, dikdörtgen ve kare kaplar içeren konfigürasyonlardır.

The configurations used **as the most common** ones among the configurations that ground on crystal growth techniques are the ones that involve floating zone, cylindrical, rectangle, and square containers.

(42) Büyüklük-deprem sayısı ilişkisi olarak da bilinen bu bağlantı, depremsellik çalışmalarında **yaygın olarak kullanılmaktadır**.

This connection, which is also known as the magnitude-earthquake count relation, **is used commonly** in seismicity studies.

Yaygın olarak kullanılan 'commonly used' is used by the authors to describe the objects or the materials belonging to their studies. In the SAC, it is not seen in the formulaic sections of the research; rather, it is used as a descriptive way of stating the details about their studies.

The fifth most used multi-word unit in the introductions of the fundamental sciences is *elde etmek için* ‘in order to obtain’, which is close to *elde edilen sonuçlar* ‘obtained results’ ranking the third in the introductions of the fundamental sciences. These units are not included in the same group in this study because their meanings are different from each other, although they have a word in common. *Elde etmek için* ‘in order to obtain’ does not have a categorization that consists of similar usages. The concordance lines of this multi-word unit are seen as follows:

(43) ...nükleer fisyon tesir kesitlerini **elde etmek için** güvenilir modellere ihtiyaç duyulur.

...**in order to obtain** nuclear fission impact sections, reliable models are needed.

(44) Deneysel olarak hassas sonuçlar **elde etmek için** hassas deneysel ortamlara ihtiyaç duyulmaktadır.

In order to obtain precise results experimentally, precise experimental environments are needed.

(45) ...anahtarlama açılarını **elde etmek için** doğrusal olmayan denklem takımlarının çözümünde hesaplamalar oldukça fazladır...

(46) ...**in order to obtain** switching angles, the calculations for solving equation sets that are not linear are quite a few.

In these concordance lines, it is observed that processes about the research are expressed with *elde etmek için* ‘in order to obtain’. These kinds of features of the multi-word units are discussed in detail in Chapter 5, Analysis and Discussion, while observing and analyzing the discourse functional categories of the multi-word units.

In the conclusions of the fundamental sciences, the second most used multi-word unit is *[...]’de görüldüğü gibi* ‘as it is seen in [...]’. In the SAC, there are some usages that are similar to this multi-word unit, which are seen in Table 21.

Table 21. Similar usages of *[...]’de görüldüğü gibi* ‘as it is seen in [...]’ (FS-C)

MWU	RANK	NUM-FRE
<i>[...]’da görüldüğü gibi</i> ‘as it is seen in’	41	17 - 3%
<i>[...]’den görüldüğü gibi</i> ‘as it is seen from’	92	11 - 2%
<i>[...]’de görüldüğü üzere</i> ‘as it is seen in’	126	10 - 1%
<i>[...]’den de görüldüğü</i> ‘as it is also seen from’	171	9 - 1%
<i>[...]’da belirttiği gibi</i> ‘as [...] states in the’	238	7 - 1%

As it is seen in Table 21, these multi-word units are quite similar to each other. The choice of one different word, such as *üzere* ‘as (lit.) about to’ or *gibi* ‘as/like/such as’, and

belirttiği 'that [...] states' or *görüldüğü* 'that is seen', differs the multi-word units from each other, the concordance lines of which are seen as follows:

(47) *Çizelge 3'de görüldüğü gibi en yüksek genetik benzerlikler kültür ebeveyn genotiplerini kapsamaktadır.*

As it is seen in Chart 3, the highest genetic resemblances contain cultural parent genotypes.

(48) *Çünkü araştırma sonuçlarından da görüldüğü gibi, yağmurlarla birlikte pek çok tarım ilacı ve erozyon materyali göle akmakta, sedimentasyonu arttırarak ötrofikasyona yardımcı olmaktadır.*

Because **as it is seen in** the research results as well, a lot of pesticides and erosion materials leak the lake with rains; cause eutrofication by raising sedimentation.

(49) *Şekil 7'de görüldüğü üzere cam kalınlığı arttıkça ısıtma zamanının artmakta iken camın soğutma zamanının düşmekte olduğu görülmektedir.*

As it is seen in Figure 7, (it is seen that) the more substance increases, cooling time decreases while heating time increases.

(50) *İncelenen metallerin Tablo 1 ve Şekil 3'den de görüldüğü üzere önemli bir yüzdesi PM2 5 formundaki partiküllerde bulunmaktadır.*

An important percentage of the metals examined, **as it is also seen in (from)** Table 1 and Figure 3, is situated in the particulates in PM2 5 form.

As seen above, authors mostly refer to tables, figures or other illustrations by using these multi-word units. In this multi-word unit usage, allomorphs, such as *de* and *da* are noticeable too, which is a familiar feature of Turkish. It is also seen that this kind of multi-word units can be used to refer to the processes or the results of the authors' research, as seen in *Yaptığımız çimlenme deneylerinde görüldüğü gibi 'as it is seen in* the germination experiments that we have done' or *Araştırma sonuçlarından da görüldüğü gibi 'As it is also seen from* the research results'.

The third most used multi-word unit in the conclusions of the fundamental sciences is *Tablo [...]de verilmiştir* 'it has been given in Table [...]'. Other similar usages of this multi-word unit are seen in Table 22.

Table 22. Similar usages of *Tablo [...]’de verilmiştir* ‘it has been given in Table [...]’ (FS-C)

MWU	RANK	NUM-FRE
<i>Şekil [...]’de verilmiştir</i> ‘it has been given in Figure [...]’	10	30 - 4%
<i>Çizelge [...]’de verilmiştir</i> ‘it has been given in Chart [...]’	55	15 - 2%
<i>Şekil [...]’de gösterilmiştir</i> ‘it has been shown in Figure [...]’	76	13 - 2%
<i>Şekil [...]’de görülmektedir</i> ‘it is seen in Figure [...]’	116	10 - 1%
<i>Tablo [...]’de verilen</i> ‘that is given in Table [...]’	143	9 - 1%
<i>sonuçlar Tablo [...]’de</i> ‘the results are [...] in Table [...]’	173	8 - 1%

The usages in Table 22 generally focus on the words of *şekil* ‘figure’, *tablo* ‘table’, and *çizelge* ‘chart’, which are also used to refer to the illustrations of the study as seen in the concordance lines of *[...]’de görüldüğü gibi* ‘as it is seen in [...]’. Some of the examples of the concordance lines are seen in the following:

(51) *Metanol ekstraktlarının disk difüzyon yöntemi ile denenen antifungal aktiviteleri ile ilgili bulgular **Tablo 1’de verilmiştir.***

The findings about the antifungal activities of the methanol extracts that were tested with the disc diffusion method **have been given in Table 1.**

(52) *...ve % 95 güven aralıkları **Şekil 2’de verilmiştir.***

...and 95% of confidence intervals **have been given in Figure 2.**

(53) *Sentezlenen bileşiklerin FT-IR değerleri **Çizelge 2’de verilmiştir.***

FT-IR values of the synthesized compounds **have been given in Chart 2.**

(54) *...gövde ve yapraklarındaki absisik asit miktarları **Şekil 3’de gösterilmiştir.***

...the amounts of the abscisic acid in its stem and leaves **have been shown in Figure 3.**

(55) *Mısır fidelerine kökten dört gün süreyle ASA uygulamasının pigment miktarı üzerindeki etkilerine ait **sonuçlar Tablo 2’de verildi.***

The results belonging to the effects of the ASA practices on the pigment amount that have been applied to the roots of the corn seedlings for four days were given **in Table 2.**

The examples above are standardized usages. As seen in the concordance lines, authors use words, such as *table* and *figure* quite frequently. They express the findings, examples or results of their research by using these words. The verb *ver-* ‘give’ is the most used one in this grouping. It is used in passive voice, i.e., *veril-* ‘be given’. Then, the verb *gör-* ‘see’ has a frequent usage with the multi-words that are seen in Table 22. The other conceptions, which are *duymak* ‘hear’, *hissetmek* ‘feel’, and *tatmak* ‘taste’ are not preferred in scientific articles obviously. The

verb *gör-* 'see' refers to the most fundamental human conception; thus, in most cases *görmek* 'to see' is the only option in academic writing (Yıldız, 2012: 78). As UNDERSTANDING IS SEEING (Lakoff & Johnson, 2003: 48) and Knowing Is Seeing (Johnson, 1999) metaphors also conceptualize, the abstract domain is conveyed via the field of vision, which is concrete (Yıldız & Aksan, 2014: 249). In other words, people speak of seeing one domain through the lens of another, which is itself an extension of Kant's (1933) category metaphor, who described our innate categories as the conceptual spectacles through which we rationalize the world (Veale, O'Donoghue & Keane, 1999: 130).

The fourth frequent multi-word unit in the conclusions of the fundamental sciences is *sonuçlar elde edilmiştir* 'results have been obtained'. This multi-word unit does not have a grouping that is composed of similar usages. The concordance lines of *sonuçlar elde edilmiştir* 'results have been obtained' are seen below.

(56) *Daha önce yapılan bir çok araştırmada da benzer sonuçlar elde edilmiştir.*

Similar **results**, as well, **have been obtained** in much research done before.

(57) *Diğer bir çok araştırmada da benzer sonuçlar elde edilmiştir.*

In a lot of other research, as well, similar **results have been obtained**.

(58) *Mevcut olan üç teknolojinin birbirini tamamlayıcı etkisiyle ve sentezlerinden ortaya çıkan sinerjiyle başarılı sonuçlar elde edilmiştir.*

Successful **results have been obtained** with the subsidiary effects of the available three technologies and with the synergy arising out of their syntheses.

(59) *7 bileşiğine ait UV-Vis spektrumunda ilginç sonuçlar elde edilmiştir.*

Interesting **results have been obtained** in the UV-Vis spectrum that belongs to the 7 compound.

(60) *Yapılan çalışma sonucunda aşağıdaki sonuçlar elde edilmiştir.*

The **results** below **have been obtained** in consequence of the study that was done.

The concordance lines above show that authors either explain the results of their studies by writing *aşağıdaki sonuçlar elde edilmiştir* 'the results below have been obtained', or they summarize that the results of their research are similar to the other research in the literature, as seen in *Literatürde kaolinitin flokülant olarak kullanıldığı çalışmalarda da benzer sonuçlar elde edilmiştir* 'In literature, **similar results have been obtained** too in the studies that kaolinite was used as flocculent'. In some of the sentences, authors prefer to use subjective terms to

describe the results of their studies, such as *ilginç sonuçlar elde edilmiştir* 'interesting results have been obtained' or *beklentiyi karşılayan sonuçlar elde edilmiştir* 'the results that meet the expectation have been obtained'.

It is worth stressing that the first four most used multi-word units in the conclusions of the fundamental sciences are somehow parallel although they are not grouped together because of different word choices or they have different meanings as a multi-word unit. *Elde edilen sonuçlar* 'obtained results' (1st rank) and *sonuçlar elde edilmiştir* 'results have been obtained' (4th rank) on one hand, and *[...]de görüldüğü gibi* 'as it is seen in [...]' (2nd rank) and *Tablo [...]de verilmiştir* 'it has been given in Table [...]' (3rd rank) on the other hand show that authors of the fundamental sciences highly prefer to use these kinds of multi-word units in their research, especially in the conclusion parts of their articles.

The fifth most used multi-word unit in the conclusions of the fundamental sciences is *buna bağlı olarak* 'because of this'. This multi-word unit has three similar usages as seen in Table 23.

Table 23. Similar usages of *buna bağlı olarak* 'because of this' (FS-C)

MWU	RANK	NUM-FRE
<i>bunun sonucu olarak</i> 'as a result of this'	151	9 - 1%
<i>artışına bağlı olarak</i> 'because of the rise of'	168	9 - 1%
<i>bağlı olarak değişmektedir</i> 'it changes because of the'	481	5 - 1%

(61) *Son yıllarda bölge insanların bu konudaki duyarlılığı artmış olsa bile balık avcılığı kaçak olarak devam etmektedir. **Buna bağlı olarak** bölge balık verimliliği gittikçe düşmekte...*

Although the sensitiveness of the people in the region about this matter has increased in recent years, fishing has been going on by violating the law. **Because of this**, fish productivity in the region has been decreasing gradually...

(62) *...uygulanan dozun **artışına bağlı olarak** genetik hasarlara neden olduğunu açıkça ortaya koymuştur.*

...it has revealed clearly that it causes genetic damage **because of the rise of** the applied dose.

(63) *Deaktivasyon hızı, yüksek molekül ağırlığına sahip moleküllerin oluşumuna **bağlı olarak** değişmektedir.*

Deactivation speed **changes because of** (lit. based on) **the** formation of the molecules that have high molecular weight.

The examples above indicate that authors express the reasons of the subjects or matters that they deal with in their research with the use of this multi-word unit. As seen in the

examples **Bunun sonucu olarak** *artan tasarruf ve yatırımlar, ekonomik büyümeyi olumlu şekilde etkilemektedir* 'As a result of this, increasing saving and investment affect economic growth positively' or *Kimyasal parametrelerin artışına bağlı olarak omurgasız çeşitliliği azalmaktadır* 'Because of the rise of chemical parameters, diversity of invertebrate animals has been decreasing', those reasons can be positive or negative, which is similar to the usage of the same multi-word unit in the conclusions of the humanities. The other multi-word units that have groups are given in the following.

Humanities-Introductions

- *konu ile ilgili* 'relevant to the topic', *ile ilgili olarak* 'related to'
- *bu nedenle de* 'and for this reason', *ve bu nedenle* 'and for this reason'
- *ile ilgili yapılan* 'that is done related to', *yapılan bir çalışmada* 'in a conducted study', *yapılan bir araştırmada* 'in a conducted research'
- *göz önüne alındığında* 'when [...] is taken into consideration', *göz önüne alınarak* 'being taken into consideration'
- *etkin bir şekilde* 'effectively', *en iyi şekilde* 'ideally', *yoğun bir şekilde* 'intensely', *doğru bir şekilde* 'properly'
- *söz konusu bu* 'the relevant [issue] at hand/under discussion', *söz konusu olduğu* 'that it is the issue at hand'

Humanities-Conclusions

- *göre daha yüksek* 'higher than', *daha yüksek olduğu* 'that it is higher', *olduğu tespit edilmiştir* 'it has been confirmed that', *bir ilişki olduğu* 'that there is a relation', *göre daha fazla* 'more than', *daha fazla önem* 'more importance', *için daha fazla* 'more for', *daha yüksek bulunmuştur* 'it has been found that it is higher'
- *son derece önemli* 'extremely important', *çok önemli bir* 'a very important', *önemli bir yere* 'to an important place', *önemli bir yer* 'an important place', *de önemli bir* 'an important [...] in/at', *açısından oldukça önemlidir* 'is very important in terms of', *açısından önemlidir* 'is important in terms of', *derece önemli bir* 'an [extremely] important', *için önemlidir* 'is important for', *bir yere sahiptir* 'it has a [...] place', *önemli bir sorun* 'an important problem'
- *içerisinde yer alan* 'that is included', *içinde yer alan* 'that is included', *grubunda yer alan* 'that is included in the [...] group'
- *daha iyi bir* 'a better', *daha açık bir* 'a more explicit', *daha geniş bir* 'a larger', *daha büyük bir* 'a bigger'
- *etkin bir şekilde* 'effectively', *iyi bir şekilde* 'in a good way'

- *önemli bir kısmının* 'of an important part [of it]', *büyük bir kısmı* 'a big part of', *büyük bir kısmının* 'a big part [of it]'
- *[...]da belirtildiği gibi*, 'as it is presented in', *[...]da belirttiği gibi* 'as s/he presents in'

Fundamental Sciences-Introductions

- *buna bağlı olarak* 'because of this', *ile ilgili olarak* 'related to', *konu ile ilgili* 'relevant to the topic', *ile ilgili bir* 'a [...] relevant to', *bir sonucu olarak* 'as a result of', *özellikleri ile ilgili* 'relevant to the features of', *olarak karşımıza çıkmaktadır* 'it turns out to be', *ilgili çok sayıda* 'a lot of [...], *bir sistem olarak* 'as a system'
- *bu çalışmada ise* 'whereas in this study', *nedenle bu çalışmada* '[...] reason, in this study', *bu çalışmada da* 'and in this study'
- *önemli bir yer* 'an important place', *çok önemli bir* 'a very important', *önemli bir yere* 'to an important place', *bir yer tutmaktadır* 'it has a place', *önemli bir rol* 'an important role', *bir yere sahiptir* 'it has a [...] place', *oldukça önemli bir* 'quite an important, *önemli rol oynar* 'plays important role', *bir yapıya sahip* 'has a structure', *bir yere sahip* 'has a place', *önemli bir etken* 'an important factor'
- *gibi pek çok* 'a lot of [...] such as' *gibi bir çok* 'a lot of [...] such as'
- *yaygın bir şekilde* 'commonly', *hızlı bir şekilde* 'quickly', *yoğun bir şekilde* 'intensely'
- *büyük önem taşımaktadır* 'has significance', *önem arz etmektedir* 'is important'
- *pek çok çalışma* 'a lot of studies', *çok sayıda çalışma* 'a lot of studies', *çok çalışma yapılmıştır* 'a lot of studies have been conducted'
- *çok araştırmacı tarafından* 'by many researchers', *bir çok araştırmacı* 'many researchers', *pek çok araştırmacı* 'many researchers' *araştırmacı tarafından incelenmiştir* 'has been examined by [...] researchers'
- *için uygun bir* 'an appropriate [...] for', *için yeni bir* 'a new [...] for'
- *yapılan bir çalışmada* 'in a conducted study', *yapmış olduğu çalışmada* 'in the study that s/he has conducted', *tarafından yapılan çalışmada* 'in the study that has been conducted by', *bu alanda yapılan* 'that is done in this field'
- *göz önüne alınarak* 'being taken into consideration', *göz önüne alındığında* 'when [...] is taken into consideration', *göz önünde bulundurularak* 'as it is taken into consideration', *göz önünde bulunduran* 'that takes into consideration', *göz önüne alınmıştır* 'has been taken into consideration'
- *olduğu tespit edilmiştir* 'it has been confirmed that', *olduğunu tespit etmişlerdir* 'they have confirmed that'
- *son yıllarda yapılan* 'that has been done in recent years', *özellikle son yıllarda* 'especially in recent years'

- *çalışmanın ikinci bölümünde* ‘in the second chapter of the study’, *son bölümde ise* ‘and in the last chapter’
- *bir yöntem olan* ‘that is a method’, *yeni bir yöntem* ‘a new method’

Fundamental Sciences-Conclusions

- *yönde önemli ilişkiler* ‘important relations in [...] direction’, *önemli ilişkiler saptanmıştır* ‘important relations have been found’, *önemli ilişkiler belirlenmiştir* ‘important relations have been designated’, *pozitif yönde önemli* ‘important in a positive way’, *arasında pozitif yönde* ‘between [...] in a positive way’, *miktarları arasında pozitif* ‘positive between the amounts of’, *arasında negatif yönde* ‘between [...] in a negative way’, *negatif yönde önemli* ‘important in a negative way’
- *olduğu tespit edilmiştir* ‘it has been confirmed that’, *olarak tespit edilmiştir* ‘it has been confirmed as’, *olduğu tespit edildi* ‘it was confirmed that’, *olduğu ortaya konmuştur* ‘it has been revealed that’
- *bu çalışmada da* ‘and in this study’, *bu çalışmada ise* ‘whereas in this study’, *yapılan bu çalışmada* ‘in this study that is conducted’, *ile bu çalışmada* ‘with [...] in this study’
- *göz önüne alındığında* ‘when [...] is taken into consideration’, *göz önüne alınarak* ‘being taken into consideration’, *göz önüne alınır* ‘if it is taken into consideration’, *göz önünde bulundurulur* ‘as it is taken into consideration’
- *bu sonuçlara göre* ‘according to these results’, *analiz sonuçlarına göre* ‘according to the analysis results’, *bu sonuca göre* ‘according to this result’
- *göre daha yüksek* ‘higher than’, *göre daha fazla* ‘more than’, *daha yüksek olduğu* ‘that it is higher’, *daha iyi sonuç* ‘a better result’, *daha fazla olduğu* ‘that it is more’, *daha iyi sonuçlar* ‘better results’, *daha düşük olduğu* ‘that it is less’, *göre daha iyi* ‘better than’
- *hızlı bir şekilde* ‘quickly’, *başarılı bir şekilde* ‘in a successful way’, *etkin bir şekilde* ‘effectively’, *belirgin bir şekilde* ‘in a clear way’
- *bu çalışmada kullanılan* ‘that is used in this study’, *bu deneysel çalışmada* ‘in this experimental study’, *bu çalışmada geliştirilen* ‘that is developed in this study’, *bu çalışma kapsamında* ‘within the domain of this study’, *bu çalışmada bulunan* ‘that is found in this study’, *bu çalışmada incelenen* ‘that is examined in this study’, *bu çalışmada önerilen* ‘that is suggested in this study’
- *yapılan bir çalışmada* ‘in a conducted study’, *yaptıkları bir çalışmada* ‘in a study that they conducted’, *daha önce yapılan* ‘that was done before’
- *için önemli bir* ‘an important [...] for’, *için yeni bir* ‘a new [...] for’
- *iyi sonuç verdiği* ‘that [...] results well’, *iyi sonuçlar verdiği* ‘that it gives good results’
- *literatürde yer alan* ‘that takes part in the literature’, *içerisinde yer alan* ‘that is included’
- *diğer bir deyişle* ‘in other words’, *bir başka deyişle* ‘in other words’

- *beklenen bir durumdur* 'is an expected situation', *beklenen bir sonuçtur* 'is an expected result'
- *yapılan hesaplamalar sonucunda* 'as a result of the calculations that are made', *yapılan analizler sonucunda* 'as a result of the analyses that are made'

In this study, the cut-off point is specified 1000 in order to find the related multi-word units. In other words, multi-word units that rank after 1000th were not viewed. This means that if another set ranking from 1000th to 2000th is observed, some other related multi-word units can be found. However, these multi-word units would not have an intensive frequency information, i.e., they might have been used only three times per million. For example, *açık bir biçimde* 'clearly', which is ranked 1569th in the introductions of the humanities, is used three times in the SAC.

As observed in the above set of related multi-word unit groups, these units are used quite frequently in scientific texts. Multi-word units are preferred because they are considered as building blocks to be used in the construction of discourse (Cortes, 2013: 35; Biber et al., 1999: 991; Biber & Barbieri, 2007: 270). It is also worth stressing that many multi-word units include other multi-word units in their structures, such as *konu ile ilgili* 'relevant to the topic' and *ile ilgili olarak* 'related to' or *pek çok çalışma* 'many studies' and *çok çalışma yapılmıştır* 'many studies have been done'. Because of this feature of the multi-word units, the lists have been observed thoroughly in order to designate 50 different multi-word units with the purpose of examining the introductions and conclusions of the humanities and fundamental sciences. For instance, 50th multi-word unit in the conclusions of the humanities, *bundan sonraki çalışmalarda* 'in the studies after this', is actually ranked 325th in the list, while 48th multi-word unit in the conclusions of the fundamental sciences, *olduğuna işaret etmektedir* '[...] indicates that [it is]', is ranked 456th in the raw list.

4.2. The Frequency Differences of the Multi-word Units in the Humanities and Fundamental Sciences

Discussions above are the most frequently used 50 multi-word units in the introductions and conclusions of the two academic domains, which refer to the first two research questions of this study. This section refers to the third question of this study; that is if there is a difference between the humanities and fundamental sciences in terms of the frequencies of the multi-word units.

In the sense of the frequencies of the units, it is observed that 582 (46%) multi-word units in total are used in the introductions of the humanities. In the introductions of the fundamental sciences, there are 661 (49%) multi-word units totally. In the conclusion parts, there are 695 (54%) multi-word units in the humanities and 680 (51%) multi-word units in the fundamental sciences. In total, the usage of the multi-word units is more frequent in the

fundamental sciences with a frequency of 1341 (51%), while the frequency of the humanities is 1277 (49%). Actually, the percentages of both domains are close to each other; 51% in the fundamental sciences and 49% in the humanities show that the amount of the multi-word units in the humanities and fundamental sciences are similar, yet still it is true that the percentage of the fundamental sciences is more than the humanities in terms of the multi-word unit usage in the scientific texts belonging to these domains. As might be expected, the multi-word units in the conclusions of both domains, the humanities and fundamental sciences, are used more frequently than the introductions of both academic domains. The multi-word units in the introduction parts of all the articles have a frequency of 1243 (47%); all the conclusions of the scientific texts in the SAC have 1375 times (53%) of multi-word unit usages.

In the sense of comparing the article parts, the multi-word unit usage in the conclusions of the humanities (695 - 51%) is more frequent than the fundamental sciences (680 - 49%), whereas the frequency of the multi-word units in the introductions of the fundamental sciences (661 - 53%) is more than the humanities (582 - 47%). Although their frequency information are the same or similar, the concordance numbers of the first few multi-word units in the introductions and conclusions of the fundamental sciences are more than the humanities. For instance, the first most used multi-word unit in the introductions of the humanities, *her ne kadar* 'even though' is seen 36 times (6%) in the SAC, while the first most used multi-word unit in the introductions of the fundamental sciences, *bu çalışmanın amacı* 'the purpose of this study', is seen 39 times (6%). Similarly, the first most frequent multi-word unit in the conclusions of the humanities, *her ne kadar* 'even though' is seen 58 times (8%); and the first most frequent multi-word unit in the conclusions of the fundamental sciences, *elde edilen sonuçlar* 'obtained results', is used 66 times (10%) in the scientific texts. The same situation is observed in the second, third, fourth, fifth etc. ranks in the introductions and conclusions of the humanities and fundamental sciences. It is remarkable that the frequencies of the multi-word units in the fundamental sciences are generally more than the humanities although the length and word counts of the articles in the fundamental sciences are usually less than the humanities articles.

Thus far, the most frequently used 50 multi-word units in the introductions and conclusions of the humanities and fundamental sciences and their frequencies have been observed. The following section introduces more detailed discussion on the multi-word units. For example, which multi-word unit is seen only in the introductions or conclusions of one domain; or if a multi-word unit is used in both introductions and conclusions of two domains; or which multi-word units are seen in the humanities and fundamental sciences at the same time, are discussed in the following.

In this research, the most used 50 multi-word units in each academic domain and both sections of the articles are examined, which means 200 multi-word units are observed. 152

(76%) different multi-word units are used in this set, in which some of the multi-word units are used more than once. 28 (14%) different multi-word units are used in the introductions of the humanities only; in the conclusions of the humanities, there are 30 (15%) multi-word units. Six (3%) multi-word units are seen in both parts of the humanities articles, i.e., the introductions and conclusions. In the introductions of the fundamental sciences, 28 (14%) multi-word units are observed; 33 (17%) multi-word units are used in the conclusions of the fundamental sciences only. There are also five (3%) multi-word units that are preferred in both introductions and conclusions of the fundamental sciences. Moreover, it is observed that some multi-word units are used both in the humanities and fundamental sciences; six (3%) of them are seen in the introductions of the humanities and fundamental sciences and two (1%) of the multi-word units are seen in the conclusions of the humanities and fundamental sciences. The authors of the scientific texts prefer to use two (1%) common multi-word units in the introductions of the fundamental sciences and conclusions of the humanities. However, there are not any multi-word unit usage in common in the introductions of the humanities and the conclusions of the fundamental sciences. Some of the multi-word units that are used in the scientific texts in the SAC are observed in more than one domain and two sections. For instance, three (2%) multi-word units are seen in the introductions and conclusions of the humanities and also in the conclusions of the fundamental sciences. Similarly, two (1%) multi-word units are observed in the introductions and conclusions of the humanities and also in the introductions of the fundamental sciences. There are two (1%) multi-word units that are used in the introductions and conclusions of the fundamental sciences and also in the introductions of the humanities. In a similar way, there are two (1%) multi-word units that are observed in the introductions and conclusions of the fundamental sciences and in the conclusions of the humanities. Lastly, there are three (2%) multi-word units that are used in four of them. In other words, these units are seen in the introductions and conclusions of the humanities and the fundamental sciences. It is clear while the multi-word units specific to one domain are frequent, the units that are seen in more than one domain are less. For example, there are 30 (15%) multi-word units that are used in the conclusions of the humanities only. Similarly, 28 (14%) multi-word units, which are used in the introductions of the fundamental sciences only, are not observed in the other parts of the scientific texts, such as the introductions or conclusions of the humanities. However, the amount of the common usages is lower. For instance, there are only two (1%) multi-word units that are observed in the introductions of the fundamental sciences and conclusions of the humanities; or there are two (1%) multi-word units only that are used in the introductions and conclusions of the humanities and in the introductions of the fundamental sciences. All these multi-word units are illustrated in Table 24.

Table 24. Information of the article parts and academic domains of the most used 50 multi-word units in the SAC

	H-I	H-C	H-I&C	FS-I	FS-C	FS-I&C	
	<i>konu ile ilgili</i> 'relevant to the topic'	<i>anlamlı bir ilişki</i> 'a meaningful relation'	<i>başta olmak üzere</i> 'primarily'	<i>bu çalışmada ise</i> 'whereas in this study'	<i>Tablo [...]de verilmiştir</i> 'it has been given in Table [...]'	<i>elde edilen sonuçlar</i> 'obtained results'	
	<i>ile ilgili yapılan</i> 'that is done related to'	<i>elde edilen bulgular</i> 'obtained findings'	<i>etkin bir şekilde</i> 'effectively'	<i>gibi pek çok</i> 'a lot of [...] such as'	<i>sonuçlar elde edilmiştir</i> 'results have been obtained'	<i>elde etmek için</i> 'in order to obtain'	
	<i>sonucu ortaya çıkan</i> 'that end(s) up'	<i>başka bir deyişle</i> 'in other words'	<i>söz konusu bu</i> 'the relevant [issue] at hand/under discussion'	<i>yaygın bir şekilde</i> 'commonly'	<i>yönde önemli ilişkiler</i> 'important relations in [...] direction'	<i>olduğu tespit edilmiştir</i> 'it has been confirmed that'	
HUMANITIES	<i>ne var ki</i> 'however'	<i>olarak karşımıza çıkmaktadır</i> 'it turns out to be'	<i>bir bakış açısı</i> 'a point of view'	FUNDAMENTAL SCIENCES	<i>pek çok çalışma</i> 'many studies'	<i>olacak şekilde bir</i> 'in a way that will become'	<i>bu çalışma ile</i> 'with this study'
	<i>bu açıdan bakıldığında</i> 'when viewed from this aspect'	<i>araştırma sonuçlarına göre</i> 'according to the research results'	<i>ne olursa olsun</i> 'no matter what happens/ in any case'	<i>daha sonra bu</i> 'later on this'	<i>bu sonuçlara göre</i> 'according to these results'	<i>[...]de görüldüğü gibi</i> 'as it is seen in [...]'	
	<i>ön plana çıkmıştır</i> 'have come into prominence'	<i>içerisinde yer alan</i> 'that is included'	<i>her şeyden önce</i> 'first and foremost'	<i>çok araştırmacı tarafından</i> 'by many researchers'	<i>hızlı bir şekilde</i> 'quickly'		
	<i>bir ilişki vardır</i> 'there is a relation'	<i>daha iyi bir</i> 'a better [...]'		<i>ile ilgili çalışmalar</i> 'studies that are related to'	<i>bu çalışmada kullanılan</i> 'that is used in this study'		
	<i>çok sayıda araştırma</i> 'a lot of research'	<i>genel olarak değerlendirildiğinde</i> 'all in all'		<i>için uygun bir</i> 'an appropriate [...] for'	<i>için önemli bir</i> 'an important [...] for'		

en hızlı gelişen
'the most
developing'

*olduğunu ortaya
koymuştur*
'it has revealed that'

göz önüne alınarak
'being taken into
consideration'

iyi sonuç verdiği
'that [...] results well'

*açısından önem
taşımaktadır*
'is significant from
the point of view
of'

önemli bir kısmının
'of an important
part [of it]'

*olarak kabul
edilmektedir*
'is accepted as'

en yüksek oranda
'at the highest
proportion'

*özellikle
gelişmekte olan*
'especially the
developing'

şu şekilde özetlenebilir
'can be summarized
as'

çok geniş bir
'a very wide'

ile ilgili olarak
'related to'

*ayrılmaz bir
parçası*
'an inseparable
part of'

[...]da belirtildiği gibi
'as it is
presented in'

olarak da bilinen
'also known as'

bu nedenle bu
'for this reason, this'

daha büyük bir
'a bigger'

*göz önünde
bulundurulması*
'its being taken into
consideration'

örnek olarak verilebilir
'can be given as an
example'

olması için gerek
'be essential to'

ne yazık ki
'unfortunately'

bir etkiye sahip
'has an effect'

hemen hemen tüm
'nearly/almost all'

ile uyum içindedir
'is in accordance with'

arasında yer alan
'that is among'

*bulgular elde
edilmiştir*
'findings have been
obtained'

Şekil [...]’de verilmiştir
'it has been given in
Figure [...]

herhangi bir nedenle
'for any reason'

bir şey değildir
'it is not a thing'

daha önce de
'also previously
before/ previously
before as well'

daha iyi sonuçlar
'better results'

literatürde yer alan
'that takes part in the
literature'

bir yandan da
'on the other hand'

aynı zamanda da
'and at the same time'

en önemli özelliği
'the most important
feature of'

tercih edilmesi gerektiği
'that must be preferred'

daha fazla önem
'more importance'

bir göstergesi olarak
'as an indication
of/indicating status'

bir çalışmaya
rastlanmamıştır
'a study has not
been seen'

diğer bir deyişle
'in other words'

belki de en
'maybe the most'

bir diğer önemli
'another important'

çalışmanın ikinci
bölümünde
'in the second
chapter of the study'

en önemli nedeni
'the most important
reason of'

başka bir şey
'another thing'

bunun en önemli
'the most important
[...] of'

ile ifade edilir
'it is stated as'

beklenen bir durumdur
'is an expected
situation'

çalışmanın temel
amacı
'the main purpose
of the study'

vermiş olduğu
cevaplarda
'in the answers
s/he has given'

bu güne kadar
'until today'

oldukça iyi bir
'quite a good'

kimi zaman da
'and sometimes'

verilen cevaplar
incelendiğinde
'when the answers
given are observed'

göre daha az
'less than'

aşağıdaki gibi
özetlenebilir
can be summarized
as follows'

gittikçe artan bir
'a more increasing'

gibi görünse de
'even if it seems like'

bu çalışmanın temel
'the main [...] of
this study'

için ayrı ayrı
'separately for'

bu alanda yapılan
'that is done
in this field'

bu çalışma
kapsamında
'within the domain of
this study'

bir yöntem olan
that is a method'

yukarıda sözü edilen
'above mentioned'

etki eden faktörler
'the factors
that affect'

ile karşı karşıya
'subject to'

sahip olmasına
rağmen
'although it possesses'

farklı değişkenlerin
sayısı
'the number of
different variables'

büyük bir bölümü
'a big part of'

olduğu dikkate
alındığında
'When [the fact that...]
is taken into
consideration'

ile ortaya çıkan
'that emerges with'

yapılan hesaplamalar
sonucunda
'as a result of the
calculations that
are made'

bir süre sonra
'after a while'

üzerinde durulması
gereken
'that is worth
stressing'

uzun yıllardan beri
'for many years'

neden olan etkenlerin
'the factors that cause'

aynı zamanda bir
'also a(n)'

diğer yandan da
'and on the other
hand'

kendine özgü bazı
'some idiosyncratic'

etkiye sahip olan
'has effect on'

belki de bu
'maybe this'

sırada yer almaktadır
'fall(s) into [...] rank'

bundan sonraki
çalışmalarda
'in the studies after
this'

benzer biçimde
gösterilebilir
'can be shown
in a similar way'



*olduđuna işaret
etmektedir*
'indicates that [it is]'

*meydana geldiđi
görülmektedir*
'[it] is seen that [...]
happens/emerges'

*etkili olduđu
görülmüştür*
'has been seen that
[it is] effective'

	H&FS-I	H&FS-C	H-I&FS-C	H-C&FS-I	H-I&C & F-I	H-I&C & F-C	FS-I&C & H-I	FS-I&C & H-C	H-I&C & FS-I&C
	<i>bu çalışmanın amacı</i> 'the purpose of this study'	<i>göre daha yüksek</i> 'higher than'	—	<i>son derece önemli(dir)</i> 'is extremely important'	<i>büyük önem taşımaktadır</i> 'has significance'	<i>önem arz etmektedir</i> 'is important'	<i>yaygın olarak kullanılan</i> 'commonly used'	<i>yapılan bir çalışmada</i> 'in a conducted study'	<i>her ne kadar</i> 'even though'
HUM & FUN.	<i>bir başka deyişle</i> 'in other words'	<i>bir kez daha</i> 'once more'		<i>kısmen de olsa</i> 'even if [it is] partially'	<i>için gerekli olan</i> 'that is essential to'	<i>göz önüne alındığında</i> 'when [...] is taken into consideration'	<i>buna bağlı olarak</i> 'because of this'	<i>olmak üzere iki</i> 'particularly [these] two'	<i>her geçen gün</i> 'each passing day'
	<i>önemli bir yer</i> 'an important place'					<i>bu çalışmada da</i> 'and in this study'			<i>bunun yanı sıra</i> 'in addition to this'
	<i>bu nedenle de</i> 'and for this reason'								

içinde yer alan
'that is
included'

son yıllarda
yapılan
'that has been
done in recent
years'

The structural information in square brackets, [...], as a continuation of the multi-word units, is not written in Table 24 because this information was given in Table 10 in detail, as well as it is discussed in Chapter 5 thoroughly. Square brackets are only used in Table 24 when there is an obligation for the translation, such as *için önemli bir* 'an important [...] for'.

As it is seen in Table 24, there are 28 multi-word units that are used in the introductions of the humanities, only. These units are *konu ile ilgili* 'relevant to the topic', *ile ilgili yapılan* 'that is done related to', *sonucu ortaya çıkan*, 'that end(s) up', *ne var ki* 'however', *bu açıdan bakıldığında* 'when viewed from this aspect', *ön plana çıkmıştır* 'have come into prominence', *bir ilişki vardır* 'there is a relation', *çok sayıda araştırma* 'a lot of research', *en hızlı gelişen* 'the most developing', *açısından önem taşımaktadır* 'is significant from the point of view of', *özellikle gelişmekte olan* 'especially the developing', *ayrılmaz bir parçası* 'an inseparable part of', *daha büyük bir* 'a bigger', *ne yazık ki* 'unfortunately', *arasında yer alan* 'that is among', *bir şey değildir* 'it is not a thing', *bir yandan da* 'on the other hand', *daha fazla önem* 'more importance', *belki de en* 'maybe the most', *başka bir şey* 'another thing', *çalışmanın temel amacı* 'the main purpose of the study', *kimi zaman da* 'and sometimes', *gittikçe artan bir* 'a more increasing', *bu alanda yapılan* 'that is done in this field', *etki eden faktörler* 'the factors that affect', *büyük bir bölümü* 'a big part of', *bir süre sonra* 'after a while', and *aynı zamanda bir* 'also a(n)'.

Most of the multi-word units that are seen only in the introductions of the humanities are used in order to depict related topics or make an explanation about the subject that the writers handle, such as *konu ile ilgili* 'relevant to the topic', *daha büyük bir* 'a bigger', *özellikle gelişmekte olan* 'especially the developing', *en hızlı gelişen* 'the most developing', *başka bir şey* 'another thing', *çok sayıda araştırma* 'a lot of research', *bu alanda yapılan* 'that is done in this field', *arasında yer alan* 'that is among', *etki eden faktörler* 'the factors that affect', *büyük bir bölümü* 'a big part of', *ile ilgili yapılan* 'that is done related to', *aynı zamanda bir* 'also a(n)', *sonucu ortaya çıkan* 'that end(s) up', and *bu açıdan bakıldığında* 'when viewed from this aspect'. These multi-word units are used by the scientific text authors to characterize and picturize important elements for their research. Relatedly, there are multi-word units that are used in the introductions of the humanities only and that reflect the purpose and importance of the matter, such as *çalışmanın temel amacı* 'the main purpose of the study', *daha fazla önem* 'more importance', *açısından önem taşımaktadır* 'is significant from the point of view of', *ayrılmaz bir parçası* 'an inseparable part of', *gittikçe artan bir* 'a more increasing', and *belki de en* 'maybe the most'. Some multi-word units that represent temporal information, such as *kimi zaman da* 'and sometimes' and *bir süre sonra* 'after a while' are also used only in the introductions of the humanities. Moreover, *ne var ki* 'however', *bir yandan da* 'on the other hand' and *ne yazık ki* 'unfortunately' are kind of connectives that the authors prefer to use in this section. These multi-word units, which are discussed thoroughly in Chapter 4 and 5 in the sense of

grammatical, syntactic, and discourse functional features, are used when there is a link between propositions. Last, the introductions of the humanities have the multi-word units in propositional structure that imply the findings or first conclusions that are mentioned in this part of the articles, such as *ön plana çıkmıştır* 'have come into prominence', *bir ilişki vardır* 'there is a relation', *bir şey değildir* 'it is not a thing' and *açısından önem taşımaktadır* 'is significant from the point of view of', which is also discussed together with the multi-word units that reflect the importance and purpose of the study. These propositions also describe the materials in the study but they are in the form of statements, i.e., independent clauses.

In the conclusions of the humanities, 30 multi-word units are used different from the other sections, such as the introductions of the humanities or the conclusions of the fundamental sciences. As seen in Table 24, these multi-word units are *anlamlı bir ilişki* 'a meaningful relation', *elde edilen bulgular* 'obtained findings', *başka bir deyişle* 'in other words', *olarak karşımıza çıkmaktadır* 'it turns out to be', *araştırma sonuçlarına göre* 'according to the research results', *içerisinde yer alan* 'that is included', *daha iyi bir* 'a better', *genel olarak değerlendirildiğinde* 'all in all', *olduğunu ortaya koymuştur* 'has revealed that', *önemli bir kısmının* 'of an important part [of it]', *şu şekilde özetlenebilir* 'can be summarized as', *[...]da belirtildiği gibi* 'as it is presented in', *göz önünde bulundurulması* 'its being taken into consideration', *bir etkiye sahip* 'has an effect', *bulgular elde edilmiştir* 'findings have been obtained', *daha önce de* 'also previously before/ previously before as well', *aynı zamanda da* 'and at the same time', *bir göstergesi olarak* 'as an indication of/indicating status', *bir diğer önemli* 'another important', *bunun en önemli* 'the most important [...] of', *vermiş olduğu cevaplarda* 'in the answers s/he has given', *verilen cevaplar incelendiğinde* 'when the answers given are observed', *gibi görünse de* 'even if it seems like', *bu çalışma kapsamında* 'within the domain of this study', *ile karşı karşıya* 'subject to', *olduğu dikkate alındığında* 'when [the fact that...] is taken into consideration', *üzerinde durulması gereken* 'that is worth stressing', *diğer yandan da* 'and on the other hand', *belki de bu* 'maybe this', and *bundan sonraki çalışmalarda* 'in the studies after this'.

In the conclusions of the humanities as well, the concept of depiction to describe related topics about the study are used frequently. These kinds of multi-word units are *bu çalışma kapsamında* 'within the domain of this study', *belki de bu* 'maybe this', *bundan sonraki çalışmalarda* 'in the studies after this', *içerisinde yer alan* 'that is included', *daha iyi bir* 'a better', *anlamlı bir ilişki* 'a meaningful relation', *bir göstergesi olarak* 'as an indication of/indicating status', *[...]da belirtildiği gibi* 'as it is presented in', *gibi görünse de* 'even if it seems like', *bir etkiye sahip* 'has an effect' and *göz önünde bulundurulması* 'its being taken into consideration'. As also seen in the introductions of the humanities, the multi-word units explaining the purpose and importance of the concepts in the study are seen in the conclusions of the humanities. These multi-word units are *bir diğer önemli* 'another important', *bunun en önemli* 'the most important

[...] of this', *üzerinde durulması gereken* 'that is worth stressing' and *önemli bir kısmının* 'of an important part [of it]'. It is natural that the authors of the scientific texts tend to use such kind of multi-word units because one of the most important goals in the academic writing is to show the significance of the subject that is chosen for the study. Other multi-word unit usages in the conclusions of the humanities that are similar to the introductions of the humanities are the units that bound ideas, such as *diğer yandan da* 'and on the other hand', *başka bir deyişle* 'in other words', and *aynı zamanda da* 'and at the same time'; and units that are time expressions, such as *daha önce de* 'also previously before / previously before as well'. However, the difference between the introductions and conclusions is that there are many multi-word units in the conclusions of the humanities that announce the results and summarize the main findings of the study. These multi-word units are *araştırma sonuçlarına göre* 'according to the research results', *vermiş olduğu cevaplarda* 'in the answers s/he has given', *verilen cevaplar incelendiğinde* 'when the answers given are observed', *olduğu dikkate alındığında* 'when [the fact that...] is taken into consideration', *genel olarak değerlendirildiğinde* 'all in all', *şu şekilde özetlenebilir* 'can be summarized as', *elde edilen bulgular* 'obtained findings', *ile karşı karşıya* 'subject to', *olarak karşımıza çıkmaktadır* 'it turns out to be', *olduğunu ortaya koymuştur* 'has revealed that' and *bulgular elde edilmiştir* 'findings have been obtained'. It is an expected situation that the conclusion parts of the scientific texts have these kind of multi-word units because it is a fixed rule that a conclusion part of an article is supposed to give the most striking findings and conclusions in a summarized way.

There are six multi-word units that are seen in both the introductions and conclusions of the humanities. These multi-word units are *başta olmak üzere* 'primarily', *etkin bir şekilde* 'effectively', *söz konusu bu* 'the relevant [issue] at hand/under discussion', *bir bakış açısı* 'a point of view', *ne olursa olsun* 'no matter what happens / in any case', and *her şeyden önce* 'first and foremost'. Most of these multi-word units seem to imply significance of the study, such as *başta olmak üzere* 'primarily', *etkin bir şekilde* 'effectively', *ne olursa olsun* 'no matter what happens / in any case', and *her şeyden önce* 'first and foremost'. As it is also stated above, these multi-word units are used frequently in order to express the concept that is identified has importance, as seen in *Ayrıca, eğitim ortamlarında, istenen davranışların kazandırılmasında rol değişiminin uygulandığı durumlarda, bireylerin edilgen öğrenme yerine etkin bir şekilde öğrenmeleri mümkün olacaktır* 'Also, when role reversal is performed for the acquisition of required behaviors in educational environments, it will be possible that the individuals learn **effectively** (in an active way) rather than a passive way'.

In the introductions of the fundamental sciences, there are 28 different multi-word units that are not seen in the conclusions of the same domain or in the humanities. These multi-word units are *bu çalışmada ise* 'whereas in this study', *gibi pek çok* 'a lot of [...] such as', *yaygın bir*

şekilde ‘commonly’, *pek çok çalışma* ‘many studies’, *daha sonra bu* ‘later on this’, *çok araştırmacı tarafından* ‘by many researchers’, *ile ilgili çalışmalar* ‘studies that are related to’ *için uygun bir* ‘an appropriate [...] for’, *göz önüne alınarak* ‘being taken into consideration’, *olarak kabul edilmektedir* ‘is accepted as’, *çok geniş bir* ‘a very wide’, *olarak da bilinen* ‘also known as’, *örnek olarak verilebilir* ‘can be given as an example’, *hemen hemen tüm* ‘nearly/almost all’, *Şekil [...]’de verilmiştir* ‘it has been given in Figure [...]', *daha iyi sonuçlar* ‘better results’, *en önemli özelliği* ‘the most important feature of’, *bir çalışmaya rastlanmamıştır* ‘a study has not been seen’, *çalışmanın ikinci bölümünde* ‘in the second chapter of the study’, *ile ifade edilir* ‘is stated as’, *bu güne kadar* ‘until today’, *göre daha az* ‘less than’, *bu çalışmanın temel* ‘the main [...] of this study’, *bir yöntem olan* ‘that is a method’, *sahip olmasına rağmen* ‘although it possesses’, *ile ortaya çıkan* ‘that emerges with’ *uzun yıllardan beri* ‘for many years’, and *kendine özgü bazı* ‘some idiosyncratic’.

One of the intriguing multi-word unit usage in the introductions of the fundamental sciences is that the units that include the word *çalışma* ‘study’. These multi-word units are *pek çok çalışma* ‘many studies’, *bu çalışmada ise* ‘whereas in this study’, *ile ilgili çalışmalar* ‘studies that are related to’ *bu çalışmanın temel* ‘the main [...] of this study’, *bir çalışmaya rastlanmamıştır* ‘a study has not been seen’, and *çalışmanın ikinci bölümünde* ‘in the second chapter of the study’. These multi-word units either show the structural pattern of the author’s own study, as in *bu çalışmada ise* ‘whereas in this study’, *bu çalışmanın temel* ‘the main [...] of this study’, and *çalışmanın ikinci bölümünde* ‘in the second chapter of the study’, or they refer to other studies that are related to the framework of their research, such as *pek çok çalışma* ‘many studies’, *ile ilgili çalışmalar* ‘studies that are related to’, and *bir çalışmaya rastlanmamıştır* ‘a study has not been seen’.

Other multi-word units that are used in the introductions of the fundamental sciences are similar to the style in the humanities to some extent. For example, *göz önüne alınarak* ‘being taken into consideration’, *ile ortaya çıkan* ‘that emerges with’, *olarak kabul edilmektedir* ‘is accepted as’, *daha iyi sonuçlar* ‘better results’, *Şekil [...]’de verilmiştir* ‘it has been given in Figure [...]', *kendine özgü bazı* ‘some idiosyncratic’, *bir yöntem olan* ‘that is a method’ *sahip olmasına rağmen* ‘although it possesses’, *olarak da bilinen* ‘also known as’, *ile ifade edilir* ‘is stated as’, *için uygun bir* ‘an appropriate [...] for’, *örnek olarak verilebilir* ‘can be given as an example’, and *en önemli özelliği* ‘the most important feature of’, which also describes the significance, are the multi-word units that are used in the sense of depicting related topic, elements or examples. Additionally, *daha sonra bu* ‘later on this’, *uzun yıllardan beri* ‘for many years’, and *bu güne kadar* ‘until today’ are the multi-word units that express time. On the other hand, the most striking multi-word unit usage different from the humanities is the units that indicate quantity, as in *hemen hemen tüm* ‘nearly/almost all’, *çok geniş bir* ‘a very wide’, *çok araştırmacı tarafından*

'by many researchers', *göre daha az* 'less than', *gibi pek çok* 'a lot of [...] such as', and *yaygın bir şekilde* 'commonly'. Although *geniş bir* 'a very wide' and *yaygın bir şekilde* 'commonly' do not seem that they reflect an exact quantity information at first, they are observed in this way because of their concordance lines in the SAC as seen below.

(64) **Çok geniş bir** asma çeşit ve tip zenginliğine sahip olan ülkemizde...

In our country which has a **very wide** range of grapevine kind and type richness...

(65) ...kristaller aynı zamanda **çok geniş bir** yelpazede fiziksel özellikler sergileyen malzeme sınıfındadır.

...crystals belong to the material tools, which at the same time, display a **wide range of** physical features.

(66) ...boya sanayisinde **çok geniş bir** kullanımı...

...has a **wide range of** usage in dyeing industry...

(67) Ağır metallerin çevrede **yaygın bir şekilde** birikmesi...

Accumulation of the heavy metals in the environment **commonly**...

(68) ...**yaygın bir şekilde** göz mutasyonlarının meydana gelmesi...

...occurrence of the eye mutations **commonly**...

These concordance lines show that the subject that is mentioned has a big amount of an entity, such as *asma* 'grape leaf', *fiziksel özellikler* 'physical characteristics', or *ağır metaller* 'heavy metals'. It turns out that in the SAC, the multi-word units that reflect an entity amount are specific to the fundamental sciences.

In the conclusions of the fundamental sciences, there are 33 different multi-word units that are not observed in the introductions of the fundamental sciences or humanities. These multi-word units are *Tablo [...]de verilmiştir* 'has been given in Table [...]', *sonuçlar elde edilmiştir* 'results have been obtained', *yönde önemli ilişkiler* 'important relations in [...] direction', *olacak şekilde bir* 'in a way that will become', *bu sonuçlara göre* 'according to these results', *hızlı bir şekilde* 'quickly', *bu çalışmada kullanılan* 'that is used in this study', *için önemli bir* 'an important [...] for', *iyi sonuç verdiği* 'that [...] results well', *en yüksek oranda* 'at the highest proportion', *ile ilgili olarak* 'related to', *bu nedenle bu* 'for this reason this', *olması için gerek* 'be essential to', *ile uyum içindedir* 'is in accordance with', *herhangi bir nedenle* 'for any reason', *literatürde yer alan* 'that takes part in the literature', *tercih edilmesi gerektiği* 'that must be preferred', *diğer bir deyişle* 'in other words', *en önemli nedeni* 'the most important reason of', *beklenen bir durumdur* 'is an expected situation', *oldukça iyi bir* 'quite a good', *şağıdaki gibi özetlenebilir* 'can be summarized as follows', *için ayrı ayrı* 'separately for', *yukarıda sözü edilen* 'above mentioned', *farklı değişkenlerin sayısı* 'the number of different variables', *yapılan hesaplamalar sonucunda* 'as a result of the calculations that are made', *neden olan etkenlerin* 'the

factors that cause', *etkiye sahip olan* 'that has effect', *sırada yer almaktadır* 'fall(s) into [...] rank', *benzer biçimde gösterilebilir* 'can be shown in a similar way', *olduğuna işaret etmektedir* 'indicates that [it is]', *meydana geldiği görülmektedir* '[it] is seen that [...] happens/emerges', *etkili olduğu görülmüştür* 'has been seen that [it is] effective'.

The conclusions of the fundamental sciences in the SAC have the multi-word units that represent depiction, importance, connection, and result. These kind of multi-word units are seen in the following:

- Depiction: *en yüksek oranda* 'at the highest proportion', *benzer biçimde gösterilebilir* 'can be shown in a similar way', *oldukça iyi bir* 'quite a good', *için ayrı ayrı* 'separately for', *literatürde yer alan* 'that takes part in the literature', *bu çalışmada kullanılan* 'that is used in this study', *olacak şekilde bir* 'in a way that will become', *hızlı bir şekilde* 'quickly', *ile ilgili olarak* 'related to', *etkiye sahip olan* 'that has effect', *yukarıda sözü edilen* 'above mentioned', *farklı değişkenlerin sayısı* 'the number of different variables', *herhangi bir nedenle* 'for any reason'
- Importance: *tercih edilmesi gerektiği* 'that must be preferred', *olması için gerek* 'be essential to', *yönde önemli ilişkiler* important relations in [...] direction', *için önemli bir* 'an important [...] for', *en önemli nedeni* 'the most important reason of'
- Connection: *diğer bir deyişle* 'in other words'
- Result: *sırada yer almaktadır* 'fall(s) into [...] rank', *Tablo [...]de verilmiştir* 'has been given in Table [...]', *sonuçlar elde edilmiştir* 'results have been obtained', *beklenen bir durumdur* 'is an expected situation', *ile uyum içindedir* 'is in accordance with', *etkili olduğu görülmüştür* 'has been seen that [it is] effective', *aşağıdaki gibi özetlenebilir* 'can be summarized as follows', *olduğuna işaret etmektedir* 'indicates that [it is]', *meydana geldiği görülmektedir* '[it] is seen that [...] happens/emerges', *yapılan hesaplamalar sonucunda* 'as a result of the calculations that are made', *neden olan etkenlerin* 'the factors that cause', *iyi sonuç verdiği* 'that [...] results well', *bu sonuçlara göre* 'according to these results', *bu nedenle bu* 'for this reason this'

Similar multi-word unit usages are seen in the conclusions of the fundamental sciences. Among all the multi-word units that are used in the conclusions of this academic domain, the units that show significance and explain the results and concluding remarks of the study are used more frequently.

Five multi-word units are used in both the introductions and conclusions of the fundamental sciences. These units are *elde edilen sonuçlar* 'obtained results', *elde etmek için* 'in order to obtain', *olduğu tespit edilmiştir* 'has been confirmed that' *bu çalışma ile* 'with this study' and *[...]de görüldüğü gibi* 'as it is seen in'. In these multi-word units, the verb *elde et-* 'to obtain' attracts attention. The others are the multi-word units that show the findings, results, and the structure of the study.

The other 22 multi-word units are used in both the humanities and fundamental sciences. Six multi-word units are seen in the introductions of the humanities and fundamental sciences, which are *bu çalışmanın amacı* 'the purpose of this study', *bir başka deyişle* 'in other words', *önemli bir yer* 'an important place', *bu nedenle de* 'and for this reason', *içinde yer alan* 'that is included', and *son yıllarda yapılan* 'that has been done in recent years'. In the conclusions of the humanities and fundamental sciences, there are two common multi-word units only, which are *göre daha yüksek* 'higher than' and *bir kez daha* 'once more'. While there are not any common multi-word units that are used in the introductions of the humanities and the conclusions of the fundamental sciences, there are two multi-word units, which are *son derece önemli(dir)* 'is extremely important' and *kısmen de olsa* 'even if [it is] partially', that are seen in the conclusions of the humanities and the introductions of the fundamental sciences. Some of the multi-word units are observed in the introductions and conclusions of the humanities and the introductions of the fundamental sciences. These are *büyük önem taşımaktadır* 'has significance' and *için gerekli olan* 'that is essential to. Moreover, *önem arz etmektedir* 'is important', *göz önüne alındığında* 'when [...] is taken into consideration', *bu çalışmada da* 'and in this study' are preferred in the introductions and conclusions of the humanities and the conclusions of the fundamental sciences. In addition, there are two multi-word units that are observed in the introductions and conclusions of the fundamental sciences and the introductions of the humanities, which are *yaygın olarak kullanılan* 'commonly used' and *buna bağlı olarak* 'because of this'. Also, two other multi-word units, *yapılan bir çalışmada* 'in a conducted study' and *olmak üzere iki* 'particularly [these] two', are the units that are seen in the introductions and conclusions of the fundamental sciences and the conclusions of the humanities. Last, there are only three multi-word units that are used in all the parts of the scientific articles that are written in both academic domains. *Her ne kadar* 'even though', *her geçen gün* 'each passing day', and *bunun yanı sıra* 'in addition to this' are observed in the introductions and conclusions of the humanities and fundamental sciences.

The detailed analyses of the features of these multi-word units are discussed in Chapter 5; however it is worthy of note that the small amount of multi-word units that are seen in the humanities and fundamental sciences together draws attention. For instance, 14% of the multi-word units (28 MWUs) are seen in the introductions of the humanities only; and 15% of the multi-word units are observed only in the conclusions of the humanities. None of these multi-word units is used in the fundamental sciences. Similarly, 14% of the multi-word units (28 MWUs) in the introductions and 17% of the units (33 MWUs) among 200 in the conclusions of the fundamental sciences are not observed in the humanities at all. On the other hand, the amount of the multi-word units that are used in both academic domains is much lower. For example, only 1% of the multi-word units (two MWUs) are observed in common in the conclusions of the

humanities and fundamental sciences. Furthermore, there is not a common usage in the introductions of the humanities and the conclusions of the fundamental sciences only. The multi-word unit usage even seems to be specific to article parts, such as the introductions of the humanities and the conclusions of it. These consequences show that the usage of the multi-word units is intrinsic to each academic domain. In other words, every scientific field has its own set of rules and the authors of these fields tend to choose certain domain-specific multi-word units while conducting their research.

4.3. The Frequencies of the Multi-Morpheme Units in Turkish Scientific Texts

Especially in agglutinating languages, inflectional morphology cannot be ignored. In this section, the frequencies of the inflectional suffixes of the multi-word units that are used in the scientific texts belonging to the SAC are observed; so, this section is the discussion for the fourth and fifth questions of the study, which are:

- What is the frequency information of the multi-morpheme units that are used in the introductions and conclusions of the humanities and fundamental sciences?
- What are the similarities and differences between the humanities and fundamental sciences in terms of the frequencies of the multi-morpheme units?

The first 20 most used morphological structures that belong to the TNC (Aksan et al., 2012) are shown to compare the usages of the scientific texts and Turkish National Corpus so that specific usages belonging to the academic writing can be seen. In this way, unique usages that are specific to contemporary Turkish and scientific texts are seen.

The most used inflectional structures in the scientific texts belonging to the humanities and fundamental sciences and the structures belonging to the TNC are shown in the tables below with their frequencies. The discussion utilizes from the corpora as it is stated above. Frequency information between entities is seen by looking at the corpus-based morphological structures. Moreover, qualitative evaluation can be carried out after obtaining quantitative data.

In the tables below, suffixes that have ambiguity are disregarded in case that they might be mislabeled. In most languages, words are often ambiguous in terms of their morphological structures or their parts of speech. Turkish, as well, has these kinds of ambiguities. For instance, although *sonucu* ‘the result’ can be tagged as the accusative case, it may be the possessive suffix as seen in *bu çalışmanın sonucu* ‘the result of this study’. So, these types of structures are excluded from the frequency lists that are seen in the Tables 25, 26, and 27.

Table 25. The most used 20 inflectional structures in the humanities

Humanities				
	Number	Freq (%)	Suffixes	Example
1	141,122	30,34	BARE	<i>önemli</i> 'important'
2	84,766	18,87	NOM/NOUN	<i>insan</i> 'human'
3	11,768	2,53	POSS _{3SG} +LOC	<i>döneminde</i> 'in the period of/in its period'
4	11,439	2,46	GEN	<i>dilin</i> 'of (the) language'
5	10,139	2,18	DAT	<i>konuya</i> 'to the subject'
6	9,839	2,12	LOC	<i>şehirde</i> 'in (the) city'
7	9,018	1,94	PLU	<i>sonuçlar</i> 'the results'
8	8,341	1,79	REL	<i>etkileyen</i> 'that effect(s)'
9	8,194	1,76	PLU+GEN	<i>bireylerin</i> 'of (the) individuals'
10	7,402	1,59	POSS _{3PLU}	<i>özellikleri</i> 'the features of/their features'
11	6,367	1,37	CVB	<i>kullanarak</i> 'by using'
12	5,504	1,18	POSS _{3SG}	<i>etkisi</i> 'the effect of/his/her/its effect'
13	4,723	1,02	PASS+REL	<i>yapılan</i> 'that is done'
14	4,500	0,97	SUB+POSS _{3SG}	<i>sergilediği</i> 'that he/she/it displays/displayed'
15	4,048	0,87	AOR+3SG	<i>alır</i> 'takes'
16	4,029	0,87	POSS _{3SG} +DAT	<i>kavramına</i> 'to the concept of/to his/her/its concept'
17	3,912	0,84	POSS _{3PLU} +GEN	<i>yöneticilerinin</i> 'of their manager(s)'
18	3,718	0,80	ABL	<i>devletten</i> 'from the government'
19	3,593	0,77	POSS _{3SG} +GEN	<i>modelinin</i> 'of his/her/its model'
20	3,476	0,75	IMPRF+COP+3SG	<i>göstermektedir</i> 'show(s) (lit. he/she/it is/has been showing'

Table 26. The most used 20 inflectional structures in the fundamental sciences

Fundamental Sciences				
	Number	Freq (%)	Suffixes	Example
1	120,936	30,13	BARE	<i>yüksek</i> 'high'
2	76,620	19,09	NOM/NOUN	<i>analiz</i> 'analysis'
3	10,207	2,54	POSS _{3SG} +LOC	<i>eşitliğinde</i> 'in the equation of/in its equation'
4	9,322	2,32	LOC	<i>şekilde</i> 'in (the) figure'
5	8,085	2,01	PLU	<i>sonuçlar</i> 'results'
6	7,809	1,95	POSS _{3PLU}	<i>değerleri</i> 'the values of/their values'
7	7,196	1,79	GEN	<i>yapının</i> 'of (the) structure'
8	7,003	1,74	PASS+REL	<i>uygulanan</i> 'that is applied'
9	6,713	1,67	PLU+GEN	<i>yapıların</i> 'of (the) structures'
10	6,701	1,67	DAT	<i>modele</i> 'to the model'
11	5,762	1,44	REL	<i>gösteren</i> 'that show(s)'
12	5,574	1,39	CVB	<i>yararlanarak</i> 'by utilizing'
13	4,673	1,16	PASS+PERF+COP+3SG	<i>görölmüştür</i> 'it has been seen'
14	4,571	1,14	POSS _{3SG}	<i>sayısı</i> 'the number of/its number'
15	4,371	1,09	POSS _{3PLU} +GEN	<i>değerlerinin</i> 'of their values'
16	4,039	1,01	POSS _{3SG} +GEN	<i>oranının</i> 'of its ratio'
17	3,555	0,89	SUB+POSS _{3SG}	<i>gösterdiği</i> 'that he/she/it shows/showed'
18	3,441	0,86	AOR+3SG	<i>içerir</i> 'includes'
19	3,385	0,84	POSS _{3SG} +DAT	<i>özelliğine</i> 'to the feature of/to his/her/its feature'
20	3,024	0,75	PLU+LOC	<i>deneylerde</i> 'in (the) experiments'

Table 27. The most used 20 inflectional structures in the TNC (Aksan et al., 2012)

TNC				
	Number	Freq (%)	Suffixes	Example
1	13,306,983	30,30	BARE	<i>bir</i> 'a/an'
2	8,282,759	18,86	NOM/NOUN	<i>kağıt</i> 'paper'
3	1,652,940	3,76	POSS _{3SG}	<i>konusu</i> 'the subject of/its subject'
4	1,107,401	2,52	DAT	<i>okula</i> 'to school'
5	1,101,909	2,51	GEN	<i>bilgisayarın</i> 'of (the) computer'
6	905,858	2,06	LOC	<i>evde</i> 'at home'
7	893,004	2,03	PLU	<i>bunlar</i> 'these'
8	710,152	1,62	REL	<i>başlayan</i> 'that start(s)'
9	539,287	1,23	PERF+3SG	<i>dedi</i> 's/he said'
10	517,672	1,18	POSS _{3SG} +DAT	<i>kitabına</i> 'to the book of/to his/her book'
11	496,101	1,13	POSS _{3SG} +ACC	<i>arabasını</i> 'his/her carACC'
12	495,640	1,13	AOR+3SG	<i>uyur</i> 's/he sleeps'
13	483,179	1,10	ABL	<i>konudan</i> 'from the subject'
14	371,105	0,85	CVB	<i>olarak</i> 'as'
15	340,702	0,78	INST	<i>tahtayla</i> 'with the wood'
16	340,469	0,78	POSS _{3SG} +GEN	<i>ihtimalinin</i> 'of its possibility'
17	334,795	0,77	IMP	<i>git</i> 'go!'
18	322,340	0,74	SUB+POSS _{3SG}	<i>gördüğü</i> 'that s/he sees/saw'
19	309,342	0,70	V _{INF}	<i>uyumak</i> 'to sleep'
20	301,109	0,69	IMPRF+3SG	<i>diyor</i> 's/he says (lit. s/he is saying)'

The first three ranks in the humanities and fundamental sciences are the same: bare entities, which are units, such as adjectives and adverbs, i.e., the ones that do not have inflectional suffixes; nominals, such as *zaman* 'time' and *bilgi* 'information'; and POSS_{3SG}+LOC combinations. Regarding multi-morpheme constructions, POSS_{3SG}+LOC chain, such as *konusunda* 'with respect to' and *neticesinde* 'in consequence of', is seen as the most frequent usage in the scientific texts, the concordance line examples of which are seen in the following.

(69) *Bu çalışma kapsamında yapılan regresyon analiz sonuçları da göstermektedir ki yeniliklerin benimsenmesinde yapılan çiftçi eğitimi çalışmasının etkisi önemlidir. (Humanities-Conclusion)*

The results of the regression analysis **within the** domain of this study also show that the effect of the study of farmer education is important in the sense of adopting innovations.

(70) ...*Gen Mühendisliği Laboratuvarı bünyesinde anaerobik fungus kültür koleksiyonu oluşturma çalışmaları başlatılmıştır. (Fundamental Sciences-Introduction)*

The formation of anaerobic fungus culture collection studies have been started **within the** scope of genetic engineering laboratory.

The order in the lists that belongs to the humanities and fundamental sciences changes rank four. While the most used suffix type is GEN (*çalışmanın* 'of (the) study') in the humanities, it is LOC (*şekilde* 'in (the) figure') in the fundamental sciences. The order in both academic domains is different from each other until rank nine, which is PLU+GEN (*değişkenlerin* 'of (the) variables'). Until the ninth degree, the order in the humanities is DAT (*çalışmaya* 'to the study'), LOC (*çalışmada* 'in the study'), PLU (*etkenler* 'the factors'), and REL (*etkileyen* 'that effect(s)'); the order in the fundamental sciences is PLU (*çalışmalar* 'the studies'), POSS_{3PLU} (*değerleri* 'their values'), GEN (*etkinin* 'of (the) effect'), and PASS+REL (*uygulanan* 'that is applied'). The most frequent suffix (rank ten) is POSS_{3PLU} (*düzeyleri* 'their levels') in the humanities and DAT (*konuya* 'to the subject') in the fundamental sciences texts.

So far, it is seen that the first ten most frequent suffix types are not usually in a chain form except for POSS_{3SG}+LOC (*ilişkisinde* 'in the relation of / in his/her/its relation'), and PLU+GEN (*insanların* 'of (the) people') in the humanities (third and ninth) and POSS_{3SG}+LOC (*deneyinde* 'in the experiment of / in his/her/its experiment'), PASS+REL, (*bilinen* 'that is known'), and PLU+GEN (*öğrencilerin* 'of (the) students') in the fundamental sciences (third, eighth, and ninth). Those types of multi-morphemes are observed in the lower ranks of the lists, such as 13th or 19th. In other words, the more multi-morpheme chains the roots have, the less frequencies they have. The reason is that there are more entities in such a process; that is, there are more grammatical operations.

When the rest of the ranks are observed, it is seen that more morpheme stacks are used in the multi-word units that are preferred in the scientific texts belonging to both academic domains. For example, multi-morphemes that include possessive suffix are common in both domains; SUB+POSS_{3SG} (*bıraktığı* 'that he/she/it leaves/left'), POSS_{3SG}+DAT (*amacına* 'to the purpose of / to his/her/its purpose'), POSS_{3SG}+GEN (*modelinin* 'of his/her/its model'), or POSS_{3PLU}+GEN (*modellerinin* 'of their models') constructions in the humanities articles; POSS_{3PLU}+GEN (*amaçlarının* 'of their purposes'), POSS_{3SG}+GEN (*amacının* 'of his/her/its purpose'), SUB+POSS_{3SG} (*kazandığı* 'that he/she/it gains/gained'), and POSS_{3SG}+DAT (*dünyasına* 'to the world of / to his/her/its world') combinations in the fundamental sciences texts are used frequently. In these examples, especially the multi-morpheme units that are marked with the 3rd person singular possessive suffix, *{-(s)I}*, which is also a common type of compounding in Turkish, are seen quite frequently. Other than these kinds of multi-morpheme units, combinations such as

PASS+REL (*yapılan* ‘that is done’), and IMPRF+COP+3SG (*göstermektedir* ‘show(s) (lit. he/she/it is/has been showing’) in the humanities; PASS+PERF+COP+3SG (*görölmüştür* ‘it has been seen’) and PLU+LOC units (*deneylerde* ‘in (the) experiments’) in the fundamental sciences are also used often by the scientific text authors.

Nearly all the 20 structural patterns in both domains are the same. In other words, the patterns, such as POSS_{3SG}+LOC (*döneminde* ‘in the period of / in its period’), PLU+GEN (*markaların* ‘of (the) trademarks’), PASS+REL (*düşünülen* ‘that is thought’), POSS_{3SG}+GEN (*endüstrisinin* ‘of its industry’), etc. are seen in the scientific texts belonging to the humanities and fundamental sciences, both. The structures that are seen only in one domain and not seen in the other are ABL (*yapıdan* ‘from (the) structure’), IMPRF+COP+3SG (*izlemektedir* ‘follow(s) (lit. he/she/it is/has been following’), PASS+PERF+COP+3SG (*verilmiştir* ‘it has been given’), and PLU+LOC (*mesleklerde* ‘in (the) occupations’) units. The first two are seen in the humanities texts only; the last two structures are used in the fundamental sciences, not in the humanities. IMPRF+COP+3SG multi-morpheme units in the humanities, such as *taşımaktadır* ‘carry(ies) (lit. it he/she/it is/has been carrying)’ are similar to the other multi-morpheme unit that is observed in the fundamental sciences, which is PASS+PERF+COP+3SG (*sağlanmıştır* ‘in has been provided’); both have the copular marker {-Dir}, which is the generalizing modality marker and which is used in the scientific texts very frequently. The difference between these two multi-morpheme units is that before the copular marker {-Dir}, the humanities articles have the present tense (imperfective) {-mAktA}, which refers to non-past events; the fundamental sciences texts have the perfective suffix {-mİş}, which expresses completion. Also, the events in the fundamental sciences are expressed in the passive voice, {-Il/(I)n}, such as *hesaplanmıştır* ‘it has been calculated’. The other different multi-morpheme unit in the fundamental sciences, PLU+LOC (*deneylerde* ‘in (the) experiments’), is observed in the humanities in a singular version, such as *dünyada* ‘in the world’, but not in the same plural form as in the fundamental sciences. As it is written in the beginning of the paragraph, the only other different structure except for the ones that are discussed already is the ablative form {-DAn}, which is seen in the first 20 structures belonging to the humanities.

In terms of the frequencies of these morphological structures, it is seen that the frequencies can differ in terms of the humanities and fundamental sciences even if the same multi-morpheme unit falls into the same rank. For instance, POSS_{3SG}+LOC (*sonucunda* ‘in the result of / in its result’) is rank three in both domains, however it has 11,768 (2,54%) usages in the humanities out of 465,122 structures (100%) while it is used 10,207 times (2,53%) in the fundamental sciences among 401,360 structures (100%). Regarding this issue, the bare forms in the humanities texts (1st rank), such as adjectives and adverbs, i.e., the ones other than nouns and verbs, have the frequency of 141,122 (30,34%); whereas the same structure that falls into

the same rank has 120,936 (30,13%) frequencies in the fundamental sciences. Although the percentages are close to each other -because the corpus (SAC) has a small population- it still means that there are differences between two domains in terms of the frequencies. These differences show that the articles belonging to the humanities use adjectival or adverbial expressions more than the fundamental sciences. Contrarily, nominal forms, such as *dönem* 'period', *bağlaç* 'conjunction', or *orman* 'forest' in the humanities (84,766 - 18,87%) are less frequent than the fundamental sciences (76,620 - 19,09%) although the raw frequencies of the nouns in the humanities are more than the fundamental sciences. This implication indicates that the scientific texts that belong to the fundamental sciences choose nominals more than the articles in the humanities. The third rank in both domains, which is POSS_{3SG}+LOC multi-morpheme units (*tanımında* 'in the definition of / in its definition'), has a frequency of 11,768 (2,53%) in the humanities while it has 10,207 (2,54%) usages in the fundamental sciences. The rest of the humanities and fundamental sciences lists though, continue in a similar way in the sense of the frequencies, which are between the range of 11,000-3,000 times (between 2,50 - 0,75%).

This representation of the frequencies evokes Zipf's Law (Zipf, 1949), which is the concern of many linguistic studies and which is about the empirical distributions of words following a pattern, i.e., some words are used very frequently while most of the other words occur rarely. In other saying, the frequency of a word tends to be proportional to its ranks in the frequency list. The law also says that the most frequent word occurs approximately twice as often as the second most used word in a corpus; three times as often as the third most frequent word, etc. For example, in the Brown Corpus (Kucera & Francis, 1967), the most frequent word *the* has the frequency of 70,000 approximately; the word falling into rank two, which is *of*, has the frequency about 36,000, which exactly demonstrates Zipf's Law (Zipf, 1949). For the data of this study, although there is not an exact double frequency difference between the first and the second ranks of the morphological structures in the humanities and fundamental sciences texts, the difference is still similar in terms of Zipf's Law (Zipf, 1949). That is, the most frequent structures (ranks one and two) in the humanities have 140,000 (30%) and 84,000 usages (18%) although the second rank is supposed to be 70,000 (15%) according to the law; the most frequent structures (ranks one and two) in the fundamental sciences have the frequency of 120,000 (30%) and 76,000 (19%) although the second rank is supposed to be 60,000 (15%). Nevertheless, they still seem to be close in the sense of the rule of the law. The rest of the ranks in the lists though, do not fit to the law in neither domains. For instance, the most frequent usage is not three times as often as the third most frequent combination; or the most used unit is not five times more than the fifth structure in the lists of both domains. However, the rule that says: "While some words are used very frequently, the others are used rarely" accords with the data of this study. That is, the structures belonging to the humanities articles have the

frequencies of 10,000, 9,000, 8,000, 7,000, ..., 3,000 from rank five to rank 20 (between 2% - 0,75%). In the same way, the structures that belong to the fundamental sciences texts have the frequencies of 8,000, 7,000, 6,000, ..., 3,000 from rank five to 20 (between 2% - 0,75%). This situation displays that while the first few ranks in the lists have much more frequencies, such as 140,000, 120,000, or 84,000 (30%, 18%), the rest of the lists have quite less frequencies, such as 7,000, 6,000, 5,000, and 3,000 (2%, 0,75%).

As a general comparison, fundamental sciences articles on the first 20 ranks have more multi-morpheme units than the humanities. The morpheme stacks that are used in the fundamental sciences texts are: POSS_{3SG}+LOC (*eşitliğinde* 'in the equation of / in its equation'), PASS+REL (*uygulanan* 'that is applied'), PLU+GEN (*yapıların* 'of (the) structures'), PASS+PERF+COP+3SG (*görölmüştür* 'it has been seen'), POSS_{3PLU}+GEN (*değerlerinin* 'of their values'), POSS_{3SG}+GEN (*oranının* 'of its ratio'), SUB+POSS_{3SG} (*gösterdiği* 'that he/she/it shows/showed'), AOR+3SG (*içerir* 'includes'), POSS_{3SG}+DAT (*özelliğine* 'to the feature of / to his/her/its feature'), and PLU+LOC (*deneylerde* 'in (the) experiments') combinations.

The multi-morpheme units that are seen in the scientific texts of the humanities are: POSS_{3SG}+LOC (*döneminde* 'in the period of/in its period'), PLU+GEN (*bireylerin* 'of (the) individuals'), PASS+REL (*yapılan* 'that is done'), SUB+POSS_{3SG} (*sergilediği* 'that he/she/it displays/displayed'), AOR+3SG (*alır* 'takes'), POSS_{3SG}+DAT (*kavramına* 'to the concept of / to his/her/its concept'), POSS_{3PLU}+GEN (*yöneticilerinin* 'of their manager(s)'), POSS_{3SG}+GEN (*modelinin* 'of his/her/its model'), and IMPRF+COP+3SG (*göstermektedir* 'show(s) (lit. he/she/it is/has been showing)'). The humanities have nine multi-morpheme units and the fundamental science has ten multi-morpheme units in the first 20 ranks. Although the numbers are similar, the frequencies are different: the humanities list has a frequency of 48,243 multi-morpheme units in the first 20 ranks and the list of the fundamental sciences has a frequency of 50,411 multi-morpheme units. In terms of statistical information, humanities have 10,38% of multi-morpheme unit usages, whereas the fundamental sciences have 12,55% of these structural patterns. So, the difference between these two domains within the usage of the multi-morpheme units is 2,17%.

In order to find out unique usages of the scientific articles, the data of two domains are compared to the structural patterns of the TNC (Aksan et. al., 2012). TNC is a 50,000,000-word corpus. For the observation process of the morphological structures, some multi-morpheme units that are tagged ambiguously were excluded from the TNC list as the same process was done for the SAC. So, the percentages of the structures belonging to the TNC are calculated out of 43,913,673 words.

First of all, it is seen that the first two ranks belonging to the three tables have the same structure with very similar percentages; those are bare forms that do not have any suffixes as nouns and verbs have, which have 30,34% in the humanities, 30,13% in the fundamental

sciences, and 30,30% in the TNC; and nominals, i.e., noun forms, which have 18,87% in the humanities, 19,09% in the fundamental sciences, and 18,86 in the TNC. The very similar percentages belonging to these forms in the scientific texts and contemporary Turkish display a general property of Turkish language that is a natural feature that the language has. Turkish has a lot of units in nominals and bare forms. Although the focus of the study is suffix combinations, these types of structures have been kept in the lists too in order to see the nature of the discussed fields at first.

The third ranks in the humanities and fundamental sciences are POSS_{3SG}+LOC multi-morpheme units (*ölçeğinde* ‘in the scale of / in its scale’); whereas, it is only POSS_{3SG} in the TNC (*konusu* ‘the subject of / its subject’). LOC suffix (*sinemada* ‘in the movie theatre’) is rank six in the TNC and the corpus does not have any combinations that are formed with the locative suffix {-DA}. However, both humanities and fundamental sciences have this kind of multi-morpheme units in the SAC, such as POSS_{3SG}+LOC (*döneminde* ‘in the period of / in its period’) and PLU+LOC (*deneylerde* ‘in (the) experiments’).

The ranks between four and eight are usually similar in the SAC and TNC, which are GEN (*dünyanın* ‘of the world’), DAT (*kurultaya* ‘to the congress’), LOC (*evde* ‘at home’), PLU (*özetler* ‘abstracts’), and REL (*başlayan* ‘that start(s)’). Only in the fundamental sciences, there is a small difference: it is POSS_{3PLU} (rank six), such as *değerleri* ‘their values’ and the passive form of the relative construction (rank eight), such as *uygulanan* ‘that is applied’.

Rank nine in the TNC, which is PERF+3SG, is not observed in the SAC, neither in the humanities nor in the fundamental sciences. PERF+3SG structures include examples like *anlattı* ‘s/he told’ and *aldı* ‘s/he took’. It is noticeable that the general Turkish has these kinds of usages but it is not seen in the scientific text writing at all.

Rank 11 in the TNC has POSS_{3SG}+ACC multi-morpheme units, such as *arabasını* ‘his/her carACC’ and *adını* ‘his/her nameACC’. On the other hand, structures in the SAC do not have such a multi-morpheme unit like POSS_{3SG}+ACC; the morphological structures that have POSS_{3SG} construction include LOC, GEN, DAT suffixes, not the accusative case marker {-(y)I}.

TNC also has instrumental marker {- (y)IA/ile}, as seen in the example *kağıtla* ‘with the paper’ but the humanities or fundamental sciences do not have this structure in the first 20 usages. This result does not mean that the scientific articles do not use the instrumental marker {- (y)IA/ile}, which is also observed in the SAC and analyzed in Chapter 5; it means that the upper ranks in the SAC have more different structures and multi-morpheme units, the frequencies of which are more than the instrumental marker {- (y)IA/ile}. This situation also reflects the specific usages of the academic writing with the information that is seen in the first 20 ranks.

In the TNC, the imperative form (rank 17), such as *git* ‘go’ and *oku* ‘read’; V_{INF} (rank 19), such as *yazmak* ‘to write’ and *içmek* ‘to drink’; and the IMPRF+3SG (rank 20), such as *söylüyor*

's/he says (lit. s/he is saying)' and *gülüyor* 's/he laughs (lit. s/he is laughing)' are not observed in the humanities or fundamental sciences, which illustrates the difference between the general Turkish and scientific text writing.

The information in the last four paragraphs above shows the units that are specific to the TNC. In other words, these usages are not observed in the first 20 structures belonging to the SAC. In terms of the units that are seen in the SAC only, it is observed that POSS_{3SG}+LOC multi-morpheme unit is not seen in the TNC, which is stated above. Also, PLU+GEN, such as *bireylerin* 'of individuals', POSS_{PLU}+GEN, such as *değerlerinin* 'of their values', PASS+REL, such as *uygulanan* 'that is applied', PASS+PERF+COP+3SG, such as *görölmüştür* 'it has been seen', IMPRF+COP+3SG, such as *söylemektedir* 'say(s) (lit. s/he is/has been saying)', and PLU+LOC multi-morpheme units, such as *boyutlarda* 'in (the) dimensions' are used in the scientific texts while they are not observed in the TNC. The analyses of these occurrences in both corpora are discussed in Chapter 5 including the reasons of the preferences that are specific to the general Turkish and academic writing. Below are the rest of the suffix combinations up to rank 100 belonging to the humanities and fundamental sciences. Some of the Turkish examples are translated into English by using a word-for-word translation to be able to reflect the structures belonging to Turkish better. That is, direct translation is preferred in some of the examples although there are more general expressions for them in daily English.

The rest of the multi-morpheme patterns from rank 20 to rank 100 that belong to the humanities is: POSS_{3SG}+ACC (*varlığını* 'his/her/its existenceACC'), NEG+COP+3SG (*değildir* 'he/she/it is not'), PLU+POSS_{3SG}+ACC (*davranışlarını* 'his/her/its behaviorsACC'), PLU+LOC (*yıllarda* 'in [...] years'), NOM+POSS_{3SG} (*olması* 'the fact that / its being'), PASS+NOM+POSS_{3SG} (*verilmesi* '(the fact) that its being given'), PASS+PERF+COP+3SG (*saptanmıştır* 'it has been determined that'), PERF+COP+3SG (*olmuştur* 'it has happened'), POSS_{3PLU}+DAT (*sonuçlarına* 'to the results of / to their results'), POSS_{3SG}+INST (*vasıtasıyla* 'by means of (lit. with its tool)'), POSS_{3SG}+ABL (*açısından* 'with regard to (lit. from its aspect)'), PASS+IMPRF+COP+3SG (*görölmektedir* 'it is (being) seen (that)'), POSS_{3PLU}+LOC (*ilişkilerinde* 'in their relations'), PLU+ABL (*yapılardan* 'from (the) structures'), POSS_{3SG}+DAT (*kendisine* 'to himself/herself/itself'), SUB+POSS_{3PLU} (*aradıkları* 'the ones that they look(ed) for'), POSS_{3SG}+LOC+ki (*arasındaki* 'between/among'), NOM+DAT (*harcamaya* 'to the spending/expense'), PLU+INST (*araçlarla* 'with the tools'), SUB+POSS_{3SG}+ACC (*gönderdiğini* 'that s/he sends/sentACC'), LOC+ki (*yukarıdaki* '(in the) above'), POSS_{3PLU}+ABL (*özelliklerinden* 'from their features'), PASS+SUB+POSS_{3SG} (*bulunduğu* 'that it is found'), NOM+LOC (*yapmada* 'in doing (it)'), NOM+GEN (*yapmanın* 'of doing (it)'), PASS+MOD_{PSB}+AOR+3SG (*söylenabilir* 'it can be said (that)'), NOM+PLU (*görüşmeler* 'the meetings'), NOM+POSS_{3PLU} (*olmaları* 'that their being'), CAUS+REL (*oluşturan* 'that creates'), CAUS+PASS+NOM+POSS_{3SG} (*geliştirilmesi* '(the fact) that its being developed'), POSS_{3SG}+COP+3SG (*konusudur* 'it is the subject of / it is its subject'), PASS+CVB_{(y)ArAk}

(*alınarak* 'by being taken'), NOM+POSS_{3SG}+DAT (*okumasına* 'to his/her reading'), POSS_{3PLU}+INST (*hatlarıyla* 'with their links'), PASS+SUB+POSS_{3SG}+LOC (*bakıldığında* 'when (it is) examined'), CAUS+PASS+REL (*geliştirilen* 'that is developed'), IMPRF+3SG (*gelişmekte* 'it is/has been developing'), CAUS+AOR+3SG (*oluşturur* 'he/she/it forms'), CAUS+IMPRF+COP+3SG (*oluşturmaktadır* 'form(s) / he/she/it is/has been forming'), PASS+AOR3SG (*yazılır* 'it is written (that)'), FUT+COP+3SG (*bulacaktır* 's/he will find (that)'), NEG+REL (*almayan* 'that does not take'), PERF+3PLU+COP (*yazmışlardır* 'they have written (that)'), MOD_{PSB}+AOR+3SG (*anlayabilir* 's/he can understand'), PERF+3SG (*yaptı* 's/he did'), REL+PLU+GEN (*çalışanların* 'of the workers/employees'), NOM+ACC (*okumayı* 'the readingACC'), 1PLU+LOC (*günümüzde* 'nowadays (lit. in our day)'), AOR+CVB-(y)ken (*çizerken* 'while drawing'), CAUS+SUB+POSS_{3SG} (*oluşturduğu* 'that he/she/it forms/formed'), NOM+POSS_{3SG}+ACC (*çalışmasını* 'his/her studyACC'), NOM+PLU+GEN (*uygulamaların* 'of the practices'), NEG+SUB+POSS_{3SG} (*gitmediği* 'that s/he does/did not go'), SUB+POSS_{3SG} (*söyleyeceği* 'that s/he will say'), PASS+NOM+DAT (*kapatılmaya* 'to being closed'), IMPRF+COP+3PLU (*görmektedirler* 'they see /are seeing / have been seeing'), REL+PLU (*çalışanlar* 'the employees/the ones who work'), PASS+NEC+COP+3SG (*seçilmelidir* 'he/she/it must be chosen'), PASS+NOM+POSS_{3SG}+DAT (*edilmesine* 'to (the fact that) its being done'), CAUS+PASS+PERF+COP+3SG (*bildirilmiştir* 'it has been announced (that)'), POSS_{3PLU}+LOC+ki (*aralarındaki* 'between their'), NOM+POSS_{3SG}+LOC (*uygulamasında* 'in the practice of / in its practice'), PLU+LOC+ki (*ülkelerdeki* 'in the countries'), PASS+NOM+POSS_{3SG}+LOC (*belirlenmesinde* 'in (the fact that) its being designated'), AOR+3PLU (*alırlar* 'they take'), PLU+COP (*dosyalardır* 'they are the files'), 1PLU+DAT (*şehirimize* 'to our city'), SUB+1PLU (*gördüğümüz* 'that we see'), CAUS+NOM+POSS_{3PLU} (*bildirmeleri* 'the fact that they announce'), NOM+POSS_{3SG}+GEN (*olmasının* 'the fact that its occurrenceGEN'), NOM+PLU+LOC (*uygulamalarda* 'in (the) practices of'), CAUS+PERF+COP+3SG (*belirtmiştir* 's/he has indicated (that)'), CAUS+NOM+DAT (*değerlendirmeye* 'to the evaluation'), SUB+POSS_{3PLU}+ACC (*yazdıklarını* 'the onesACC that they write/wrote'), CAUS+NOM+POSS_{3SG} (*göstermesi* 'the fact that s/he shows'), PASS+NOM+POSS_{3SG}+ACC (*gösterilmesini* '(the fact that) its being shownACC'), NOM+POSS_{3PLU}+GEN (*uygulamalarının* 'of their applications'), PASS+FUT+COP+3SG (*çalışılacaktır* 'is/are going to be studied'), NOM+PLU+DAT (*açıklamalara* 'to the explanations'), NOM+POSS_{3SG}+COP+3SG (*yansımalarıdır* 'it is the reflection of / it is its reflection').

Among the other 80 multi-morpheme combinations belonging to the humanities articles, 34 usages (42,5%) have two suffixes, such as PLU+LOC strings as seen in *şehirlerde* 'in (the) cities'. 32 usages (40%) in the scientific texts that belong to the humanities have three suffix combinations as in the CAUS+PASS+REL stack with the example *okutulan* 'the one that is read (by someone at the request of someone)'. 13 multi-morpheme unit combinations (16,25%) have four suffixes, which is seen in PASS+NOM+POSS_{3SG}+LOC (*hazırlanmasında* 'in (the fact that) its

being prepared'). Lastly, one multi-word unit (1,25%) in 80 usages have five suffix sequences, which is CAUS+PASS+PERF+COP+3SG (*adlandırılmıştır* 'it has been named (as)').

The rest of the multi-morpheme patterns from rank 20 to rank 100 that belong to the fundamental sciences is: IMPRF+COP+3SG (*göstermektedir* 'he/she/it shows / he/she/it is/has been showing (that)'), COP+3SG (*sahiptir* 'he/she/it has'), PASS+NOM+POSS_{3SG} (*ölçülmesi* '(the fact) that its being calculated'), PASS+IMPRF+COP+3SG (*görülmetedir* 'it is (being) seen (that)'), POSS_{3SG}+ACC (*değerini* 'his/her/its valueACC'), NOM+POSS_{3SG} (*olması* 'the fact that/its being'), PLU+DAT (*sonuçlara* 'to the results'), POSS_{3PLU}+LOC (*gruplarında* 'in their groups/in the groups of'), POSS_{3SG}+ABL (*grupundan* 'from its group/from the [...] group'), NOM+LOC (*etmede* 'in doing (it)'), POSS_{3SG}+INST (*yoluyla* 'via (lit. with its way)'), PERF+COP+3SG (*olmuştur* 'it has happened'), POSS_{3PLU}+ACC (*özelliklerini* 'their featuresACC'), POSS_{3PLU}+DAT (*değerlerine* 'to the values of / to their values'), PASS+PERF+3SG (*ölçülmüş* 'it has been calculated'), PASS+CVB-(y)ArAk (*kullanılarak* 'by being used'), PLU+ABL (*yazılardan* 'from (the) writings'), LOC+ki (*aşağıdaki* '(in the) below'), PASS+AOR+3SG (*çözülür* 'it is solved'), POSS_{3SG}+LOC+ki (*arasındaki* 'between/among'), PASS+MOD_{PSB}+AOR+3SG (*edilebilir* 'it can be done'), POSS_{3SG}+DAT (*yapısına* 'to the structure of / to its structure'), PASS+SUB+POSS_{3SG} (*görüldüğü* 'that it is seen'), SUB+POSS_{3SG}+ACC (*sorduğunu* 'that s/he asks/askedACC'), PLU+INST (*yöntemlerle* 'with the methods'), POSS_{3PLU}+ABL (*özelliklerinden* 'from their features'), NOM+PLU (*gelişmeler* 'the developments'), POSS_{3SG}+ACC (*etkisini* 'his/her/its effectACC'), CAUS+PASS+REL (*yaptırılan* 'that is made (by someone at the request of someone)'), CAUS+PASS+NOM+POSS_{3SG} (*değerlendirilmesi* '(the fact) that its being evaluated'), PERF+3PLU+COP (*ölçmüşlerdir* 'they have calculated (that)'), CAUS+PASS+PERF+COP+3SG (*bildirilmiştir* 'it has been announced (that)'), POSS_{3SG}+COP (*konusudur* 'it is the subject of / it is its subject'), NOM+POSS_{3SG}+DAT (*okumasına* 'to his/her reading'), SUB+POSS_{3PLU} (*inceledikleri* 'the ones that they examine(d)'), PASS+SUB+POSS_{3SG}+LOC (*incelendiğinde* 'when (it is) analyzed'), NEG+REL (*bitmeyen* 'that does not finish'), NOM+GEN (*gelmenin* 'of coming'), CAUS+AOR+3SG (*oluşturur* 'he/she/it forms'), NOM+PLU+LOC (*çalışmalarda* 'in (the) studies'), 1PLU+LOC (*ülkümüzde* 'in our country'), NOM+DAT (*çalışmaya* 'to the study'), PASS+PERF+3SG (*yazıldı* 'it was written'), PLU+LOC+ki (*bölgelerdeki* 'in the regions'), CAUS+PASS+PERF+3SG (*geliştirilmiş* 'it has been developed'), IMPRF+3SG (*gelişmekte* 'it is/has been developing'), CAUS+IMPRF+COP+3SG (*oluşturmaktadır* 'he/she/it form(s) / he/she/it is/has been forming'), NOM+POSS_{3PLU} (*uygulamaları* 'their practices'), PASS+NOM+POSS_{3SG}+LOC (*belirlenmesinde* 'in (the fact that) its being designated'), CAUS+REL (*oluşturan* 'that creates'), SUB+POSS_{3SG}+ABL (*bittiğinden* 'because of ending'), POSS_{3PLU}+LOC+ki (*aralarındaki* 'between their'), PLU+COP (*kağıtlardır* 'they are the papers'), MOD_{PSB}+AOR+3SG (*bulabilir* 's/he can find'), POSS_{3PLU}+INST (*yöntemleriyle* 'with their methods'), CAUS+V_{INF} (*azaltmak* 'to reduce'), NEG+SUB+POSS_{3SG} (*olmadığı* 'that it does/did not happen'), PASS+NOM+POSS_{3SG}+DAT (*edilmesine* 'to (the fact that) its being done'), CAUS+SUB+POSS_{3SG}

(*oluşturduğu* ‘that he/she/it forms/formed’), FUT+COP+3SG (*bulacaktır* ‘s/he will find (that)’), NOM+POSS_{3PLU}+LOC (*çalışmalarında* ‘in their studies’), NOM+PLU+GEN (*çalışmaların* ‘of the studies’), CAUS+PASS+IMPRF+COP+3SG (*belirtilmektedir* ‘it is (being) indicated (that)’), AOR+3PLU (*gösterirler* ‘they show’), CAUS+PERF+3PLU+COP (*bildirmişlerdir* ‘they have announced (that)’), CAUS+PERF+COP+3SG (*belirtmiştir* ‘s/he has indicated (that)’), AOR+CVB_{-(y)ken} (*çalışırken* ‘while studying’), SUB+POSS_{3SG} (*konusacağı* ‘that s/he will talk’), PASS+NEC+COP+3SG (*alınmalıdır* ‘it must be taken/obtained’), PASS+NOM+POSS_{3SG}+GEN (*kullanılmasının* ‘(the fact) that its being used_{GEN}’), PASS+AOR+CVB_{-(y)ken} (*gösterilirken* ‘as it is/was shown’), PASS+MOD_{PSB}+NOM+POSS_{3SG} (*içilebilmesi* ‘the possibility that is being drunk’), NOM+POSS_{3SG}+LOC (*çalışmasında* ‘in the study of / in his/her study’), NOM+POSS_{3SG}+ACC (*çalışmasını* ‘his/her study_{ACC}’), PASS+NOM+DAT (*sağlanmaya* ‘to being provided’), CAUS+PASS+CVB_{-(y)ArAk} (*bulundurulularak* ‘by being kept’), MOD_{PSB}+IMPRF+COP+3SG (*üretebilmektedir* ‘he/she/it can produce’), NOM+POSS_{3SG}+GEN ‘*düzenlemesinin* ‘the fact that its being arranged_{GEN}’), REC+CAUS+PASS+PERF+COP+3PLU (*görüşürülmüştür* ‘have been put into touch with’), and NOM+ACC (*büyümeyi* ‘the growth_{ACC}’).

Among the rest of the multi-morpheme sequences that belong to the fundamental sciences texts, 33 usages (41,25%) have two suffixes, such as PLU+INST strings as seen in *verilerle* ‘with the data’. 30 usages (37,5%) have three suffixed structures as in the SUB+POSS_{3SG}+ACC strings, such as *başladığını* ‘that he/she/it starts/started_{ACC}’. 14 multi-morpheme units (17,5%) have four suffixes, which is seen in PASS+SUB+POSS_{3SG}+LOC (*tanımlandığında* ‘when (it) identified’). Two multi-word units (2,5%) out of 80 examples have five suffix sequences, as seen in the construction CAUS+PASS+PERF+COP+3SG (*yerleştirilmiştir* ‘it has been placed’). Lastly, one multi-morpheme unit (1,25%) has six suffixes in the scientific texts belonging to the fundamental sciences, which is REC+CAUS+PASS+PERF+COP+3PLU as seen in the above example, *görüşürülmüştür* ‘have been put into touch with’.

As it is seen in the above multi-morpheme units, there are many possible combinations in Turkish; this data set that belongs to the scientific articles is a small part of that pattern set, only. According to the morpheme combinations above, the frequencies of the multi-morpheme sequences in both domains are similar. While the humanities articles involve 34 multi-morpheme units (42,5%) that have two suffixes, the texts belonging to the fundamental sciences include 33 multi-morpheme units (41,25%) that have two suffixes. Similarly, the number of the multi-morpheme units having three suffixes on the roots is 32 (40%) in the humanities and it is 30 (37,5%) in the fundamental sciences. Although the frequencies belonging to the two academic domains are quite close, the humanities texts contain more multi-morpheme units that have two and three suffix strings on the root; the fundamental sciences articles contain more multi-morpheme units that have four and five suffixes. Another difference is that there is one multi-morpheme type, which has six inflectional suffixes, in the fundamental sciences.

4.4. Conclusion

In this chapter, the most frequently used 50 multi-word units in the introductions and conclusions of the humanities and fundamental sciences have been discussed. The frequencies of the two academic domains have been compared. The first five most used units in each part of the two domains have been analyzed in detail and exemplified with the concordance lines that are extracted from the SAC.

Additionally, the similar usages of the main multi-word units have been shown via tables. Then, the information that if the multi-word units are seen only in the introductions or conclusions of one domain; or if a multi-word unit is used in both introductions and conclusions of the two domains, etc. has been discussed.

Lastly, the morphological form including bare forms and the multi-morpheme stacks that belong to the humanities, fundamental sciences, and contemporary Turkish have been observed. The main concern was to identify and analyze the multi-morpheme units that are unique to the academic writing. For this purpose, the frequencies of the most used 20 morphological structures in the SAC and TNC have been compared and contrasted; also, the rest of the multi-morpheme units that reach up to 100 in the lists belonging to the humanities and fundamental sciences have been sorted.

In the following chapter, Chapter 5-Analysis and Discussion, the study includes an analysis of the grammatical, syntactic and discourse functional categories of the multi-word units that are seen in the scientific texts. Furthermore, the multi-word units that are used in the humanities and fundamental sciences are compared and contrasted in the sense of their grammatical, syntactic and discourse functional features. Additionally, the multi-word units related to genre features of the texts are argued. Lastly, the multi-morpheme units in the scientific articles are discussed in detail in the next chapter within the frame of multi-word units. Based on the multi-morpheme units that are observed in Chapter 4, the combinations are analyzed in a more detailed way in Chapter 5 involving the reasons of the usages that belong to the scientific texts.

5. ANALYSIS AND DISCUSSION

5.1. Analyzing the Grammatical and Syntactic Categories of the Multi-Word Units

In this chapter, the grammatical and syntactic properties of the 50 most used multi-word units of each discipline and subdiscipline are discussed, which refer to the sixth research question of the study. There is a brief overview in every heading that includes the definitions and describes the structural features of the related units. After these explanations, the grammatical and syntactic categories of each multi-word unit in the lists are analyzed.

The information in square brackets shows the possible structures that belong to that multi-word unit. In other words, some multi-word units are the fragments of a structure, such as a noun phrase, which is shown in the square brackets. This is a frequent phenomenon due to the structural feature of Turkish. For these possible structures, the SAC was checked; these structures were extracted from the SAC for precise information.

After the observations that are explained above, similarities and differences of the grammatical and syntactic categories of the multi-word units belonging to the scientific articles are examined. This section is the discussion of the seventh question of this research.

Humanities - Introductions

• *Discourse Connectives/Conjunctions*

Discourse connectives can be phrases, subordinate clauses or sentences; in this study though, they are phrases because of the nature of the multi-word units. Discourse connectives are used in texts to unite ideas. These are often lexicalized forms with discourse functions and serve as idiomatic expressions. These connectives develop previous statements by expanding on them, such as *bir başka deyişle* 'in other words' and *üstelik* 'on top of it'. They form a cohesive link between the sentences. They can be conjunctive adverbs, such as *bir başka deyişle* 'in other words' and *bunun yanı sıra* 'in addition to this'; or they can have {DA} structure to add contrastive focus to the meaning of the sentence *bir yandan da* 'on the other hand' or discourse-oriented conjunctive usage, such as *bu nedenle de* 'and for this reason'. Also, multi-word units formed with {-(y)lA/ile}, such as *bir başka deyişle* 'in other words' and *bu nedenle de* 'and for this reason' are observed frequently in this section. The suffix {-(y)lA/ile} signals an addition, however this addition does not change the direction of the discourse. Below, there is a multi-word unit list that consists of the units that are named as discourse connectives/conjunctions in this study.

buna bağlı olarak 'because of this' **Dem-DAT+Adj+V_{CVB}**

bir başka deyişle 'in other words' **Indef.Art+Adj+N--(y)lA_{COM}**

bunun yanı sıra ‘in addition to this’ **Dem-GEN+N-POSS_{3SG}+N**

bu nedenle de ‘and for this reason’ **Dem+N--(y)I_{COM}+da_{CONJ}**

bir yandan da ‘on the other hand’ **Indef.Art+N-ABL+da_{CONT}**

aynı zamanda bir [NP] ‘also a(n) [NP]’ **Adj+N-LOC+Indef.Art+[NP]**

Aynı zamanda bir ‘also a(n)’ can actually be classified as a noun phrase structure because a noun follows the indefinite article *bir* ‘a(n)’, however this multi-word unit is named as discourse connective because *aynı zamanda* ‘also’ acts like a fixed expression. In other words, it is a lexicalized expression that is thought as one lexical form.

◦ ‘What-Ne’ Subordinating Patterns

These multi-word units also function as discourse connectives/conjunctions; they have *ne* ‘what’ in their structure. Those kinds of multi-word units are close to idiomatic expressions, as well. These subordinating patterns introduce either completed or incompleting events. For example, in the sentence *Çalışılan okulun organizasyonu ya da düzeyi ne olursa olsun büyük gruplara rehberliğin etkili bir danışma biçimi olduğu görülebilir* ‘Regardless of the organization or the level of the school that is studied, it can be seen that counseling is an efficient consultation form for large groups’, *ne olursa olsun* ‘no matter what happens / in any case’ represents something that has already happened or finished. In this example, one can think that there is an organizational system or a level that the school has and these concepts have already settled once. In other words, the school has these concepts and features that have been arranged before.

These multi-word units can also have *ki*, which adds a negative meaning to the sentence. *Ki*, different from the {-ki(n)}, has several features, such as functioning as an exclamation as in *O kadar güzel bir şehir ki [...]* ‘It is such a beautiful city that [...]’; as a complementizer as in *Toplantıya katılırsa, ki katılacağını düşünmüyorum, [...]* ‘If she attends the meeting, which I don’t think she will, [...]’; or as a subordinator as in *Bu noktada görüyoruz ki...* ‘At this point, we see that...’. In the SAC, the multi-word units have *ki* in their structures with a negative connotation challenging the preceding statement. While these multi-word units, as well, involve *ki* as a clitic similar to the examples above, they function as discourse connectives, those which act like fixed expressions, such as *ne var ki* ‘however’ and *ne yazık ki* ‘unfortunately’. There is a list of the multi-word units below that are constructed with ‘what-ne’ subordinating patterns.

her ne kadar ‘even though’ **Quan+ne+N**

ne var ki ‘however’ **ne+V_{EXIS}+ki**

ne olursa olsun ‘no matter what happens/in any case’ **ne+V_{COND}+ol_{OPT}**

ne yazık ki ‘unfortunately’ **ne+Adj+ki**

• Noun Phrases

Noun phrases are the word chains that can function as the subject or the complement of the verb as well as complements of verbs. They can be single words, such as a common noun as *ev* 'house' or a proper name, such as *Ginny*; compounds, such as *Türk kahvesi* 'Turkish coffee'; or pronouns, such as *o* 's/he/it'. In the SAC, on the other hand, the noun phrases do not consist of a simple head noun; the head nouns are modified by articles, such as *bir* 'a(n)' or the modifiers to constitute the multi-word structures under study, which are seen as follows:

bu çalışmanın amacı 'the purpose of this study' **Dem+N-GEN+N-POSS_{3SG}**

her geçen gün 'each passing day' **Quan+V_{REL}+N**

önemli bir yer 'an important place' **Adj+Indef.Art+N**

bir bakış açısı 'a point of view' **Indef.Art+N+N-POSS_{3SG}**

çok sayıda araştırma 'a lot of research' **Quan+N-LOC+N**

[N-GEN] ayrılmaz bir parçası 'an inseparable part of [N]' **[N-GEN]+Adj+Indef.Art+N-POSS_{3SG}+ [N]**

daha büyük bir [N] 'a bigger [N]' **Adv_{DEG}+Adj_{COMP}²+Indef.Art+ [N]**

başka bir şey 'another thing' **Quan+Indef.Art+N**

etki eden faktörler 'the factors that affect' **N+V_{REL}+N-PLU**

[NP-GEN] büyük bir bölümü 'a big part of [NP]' **[NP-GEN]+Adj+Indef.Art+N-POSS_{3SG}**

daha fazla önem 'more importance' **Adv_{DEG}+Adj_{COMP}+N**

çalışmanın temel amacı 'the main purpose of the study' **N-GEN+Adj+N-POSS_{3SG}**

söz konusu bu [N] 'the relevant [issue] at hand/under discussion' **N+N-POSS_{3SG}+Dem+ [N]**

konu ile ilgili [N] 'relevant to the topic' **N+- (y)IA_{COM}+Adj+ [N]**

konu ile ilgili [olarak] '[being] relevant to the topic' **N+- (y)IA_{COM}+Adj+ [V_{CVB}]**

The last multi-word unit in this section, *konu ile ilgili* 'relevant to the topic' has two structural features due to the usages in the SAC. If there is a noun after *konu ile ilgili* 'relevant to the topic', it is labelled as a noun phrase. When this multi-word unit is used with *olarak* 'as', then it is an adverb construction. Both options are explained in this section in order to show the distinction between the two usages.

◦ Subject Relatives with Relativized Verb {-(y)An}

Subject relatives with the relativized verb {-(y)An} may be categorized as participles but they are actually relativized verbs. The multi-word units that have the suffix {-(y)An} function as subject relative clauses, which are reduced clauses in Turkish (Aygen, 2004, 2007). In other words, the verb is relativized with {-(y)An} and the clauses that are relativized with this suffix

² Adjectives modified by the degree adverb *daha* 'more' are coded as comparative adjectives throughout the chapter, such as *daha yüksek* Adv_{DEG}+Adj_{COMP} because of the effect of the preceding adverbial.

are always subject clauses. These kinds of structures can modify a following determiner phrase. This type of multi-word units, the type of which is non-finite relatives, is frequently used in the SAC, as seen below.

- [NP] *ile ilgili yapılan* [N] ‘that is done with reference to [N]’ **-(y)IA_{COM}+Adj+V-PASS_{REL}+ [N]**
 [V-NOM-POSS_{3SG}] *sonucu ortaya çıkan* [N] ‘that end(s) up’ **[V-NOM-POSS_{3SG}]+N-POSS_{3SG}+N-DAT+V_{REL}+ [N]**
son yıllarda yapılan [N] ‘[N] that has been done in recent years’ **Adj+N-PLU-LOC+V-PASS_{REL}+ [N]**
yaygın olarak kullanılan [N] ‘[N] commonly used’ **Adj+V_{CVB}+V-PASS_{REL}+ [N]**
en hızlı gelişen [N] ‘the most developing [N]’ **Adv_{DEG}+Adj_{SUP}³+V_{REL}+ [N]**
özellikle gelişmekte olan [N] ‘especially the developing [N]’ **Adv+V-IMPRF+V_{REL}+ [N]**
 [N-GEN] *arasında yer alan* [N] ‘[N] that is among [N]’ **[N-GEN]+P+N+V_{REL}+ [N]**
gittikçe artan bir [N] ‘a more increasing [N]’ **Adv+V_{REL}+Indef.Art+ [N]**
bu alanda yapılan [N] ‘[N] that is done in this field’ **Dem+N-LOC+V-PASS_{REL}+ [N]**
 [NP]/[V-NOM-POSS_{3SG}]/[V-INF] *için gerekli olan* [N] ‘[NP] that is essential to [N]’ **[NP]/[V-NOM-POSS_{3SG}]/[V-INF]+P+Adj+V_{REL}+ [N]**
 [NP] *içinde yer alan* [N] ‘[N] that is included [NP]’ (Lit. that takes place in) **[NP]+P+N+V_{REL}+ [N]**

• Adverbial Constructions

Adverbial constructions are broader than adverbs and they cover the entire structure performing as an adverb. Adverbials modify verbs, adjectives, other adverbs, prepositions, or whole sentences, and they have various structures, such as the ones that have one morpheme, such as *yarın* ‘tomorrow’; adjectives used as adverbs by modifying a locative-marked noun phrase, as in *etkin bir şekilde* ‘effectively’; contrastive focus element, such as *kimi zaman da* ‘and sometimes’; particularizing adverbial, like *başta olmak üzere* ‘primarily’; or with *olarak* which is discussed in the Humanities-Conclusions section.

- etkin bir şekilde* ‘effectively’ **Adj+Indef.Art+N-LOC**
belki de en ‘maybe the most’ **Adv_{MOD}+da_{CONT}+Adv_{DEG}**
kimi zaman da ‘and sometimes’ **Adv_{FRE}+N+da_{CONT}**
başta olmak üzere ‘primarily’ **N-LOC+V_{INF}+Adv**

• Postpositional Constructions

Postpositional constructions contain postpositions attached to noun phrases. For instance, *her şeyden önce* ‘first and foremost’ has a noun phrase *her şey* ‘everything’ with an

³ Adjectives modified by the degree adverb *en* ‘most’ are coded as superlative adjectives throughout the chapter, such as *en hızlı* **Adv_{DEG}+Adj_{SUP}** because of the effect of the preceding adverbial. Superlative forms define the particular entity as the highest degree within a large set.

ablative case {-DAn} and a postposition *önce* 'before'. Turkish postpositions can be bare, such as *gibi* 'like/as/such as'; or take dative, ablative, locative, and possessive-marked complements. They can comprise suffixes that carry 'too/also' meaning, such as {-DA}.

her şeyden önce 'first and foremost' **Quan+N-ABL+P**

bir süre sonra 'after a while' **Indef.Art+N+P_{TEMP}**

bu çalışmada da 'and in this study' **Dem+N-LOC+da_{INT}**

• **Clauses**

As seen below, the SAC has the multi-word units that have clausal structure, which can be independent or dependent.

◦ **Independent Clauses**

These types of clauses in the scientific texts are usually formed with the epistemic copular marker {-Dir} because assertion of truth matters. {-Dir} expresses certainty (Tura, 1986) and marks the epistemic commitment of the writer to the truth of his/her statement. As it is seen, these structures are used in the academic writing frequently because they imply formalism; that is, authors can ascribe a formal meaning to their texts with this usage. Existential expressions, such as *var* 'existent / there is [...]' or *yok* 'non-existent / there is not [...]' can be used with the copular marker too, as in *bir ilişki vardır* 'there is a [...] relation'.

[NP] *büyük önem taşımaktadır* '[NP] has significance' (Lit: carries major significance)

[NP]+Adj+N+V-IMPRF-COP+3SG

[NP] *ön plana çıkmıştır* '[NP] have become prominent' **[NP]+Adj+N-DAT+V-PERF-COP+3SG**

[Wh-]/[Adj] *bir ilişki vardır* 'there is a [Adj] relation' **[Wh-]/[Adj]+Indef.Art+N+V_{EXIS}-COP+3SG**

[NP-NOM] [V-NOM-POSS_{3SG}]/[V-INF] *açısından önem taşımaktadır* '[NP] is significant from the point of view of [NP]' **[NP-NOM] [V-NOM-POSS_{3SG}]/[V-INF]+P-POSS_{3SG}-ABL+N+V-IMPRF-COP+3SG**

[Adj] *bir şey değildir* 'it is not a thing' **[Adj]+Indef.Art+N+V_{NEG}-COP+3SG**

[NP] *önem arz etmektedir* '[NP] is important' (Lit: represents significance) **[NP]+N+N+V-IMPRF-COP+3SG**

◦ **Dependent Clauses**

In the SAC, the sentences that include these multi-word units have subordinating clause structure. In Turkish, subordinate clauses can be formed with {-DIK}, which refers to past or ongoing events, and with {(y)AcAk}, such as *alışverişe gittiğinde eski bir arkadaşıyla karşılaştı* 'when he went shopping, he came across with an old friend' and *katılacağımız toplantı oldukça*

gereksiz ‘the meeting that we are going to attend is quite insignificant’. The concordance lines in the SAC are formed with {-DİK} only, as seen below.

[NP] *göz önüne alındığında* ‘when [NP] is taken into consideration’ [NP]+N+N-POSS_{3SG}-DAT+V-PASS-SUB-POSS_{3SG}-LOC

bu açıdan bakıldığında ‘when viewed from this aspect’ Dem+N-ABL+V-PASS-SUB-POSS_{3SG}-LOC

In the introductions of the humanities, it is observed that noun phrases are the most frequently used structural patterns. There are 25 multi-word units, including the relativized subjects that are formed with NP patterns. This means that 50% of the multi-word units in the introductions of the humanities are constituted via noun phrases. Then, discourse connectives fall into rank two with ten multi-word unit usages (20%). Next comes, independent clauses with six multi-word units (12%). Then, adverbial constructions (four MWUs - 8%), postpositional constructions (three MWUs - 6%) and dependent clauses (two MWUs - 4%) appear in the list, all of which have the least frequency in the sense of the grammatical and syntactic categories of the multi-word units.

Humanities - Conclusions

• Discourse Connectives/Conjunctions

The information that includes the grammatical and syntactic categories of the following six multi-word units functioning as connectives was given in the introductions of the humanities.

başka bir deyişle ‘in other words’ Adj+Indef.Art+N--(y)I_{COM}

bunun yanı sıra ‘in addition to this’ Dem-GEN+N-POSS_{3SG}+N

aynı zamanda da ‘and at the same time’ Adj+N-LOC+da_{CONJ}

bu çalışma kapsamında ‘within the domain of this study’ Dem+N+N-POSS_{3SG}-LOC

diğer yandan da ‘and on the other hand’ Adj+N-ABL+da_{CONT}

kısmen de olsa ‘even if [it is] partially’ Adv+da_{CONT}+V_{COND}

◦ ‘What-Ne’ Subordinating Patterns

As seen in the following multi-word unit list, *her ne kadar* ‘even though’ asserts the truth of the clause that follows, and serves sort of an epistemic modal function asserting certainty similar to the overt epistemic copula {-Dir}. *Ne olursa olsun* ‘no matter what happens / in any case’, on the other hand, implies ‘regardless of the condition’.

her ne kadar ‘even though’ Quan+ne+N

ne olursa olsun ‘no matter what happens/in any case’ ne+V_{COND}+ol_{OPT}

• Noun Phrases

As discussed in the Humanities-Introductions, the usages that have {-sI} compound marker are seen frequently both in the SAC and in Turkish in general. When there is not a genitive suffix {-(n)In} on the noun that marks possession, the N-N compound structure is marked with the possessive morpheme which serves as the noun compound, such as *bakış açısı* ‘viewpoint’.

anamlı bir ilişki ‘a meaningful relation’ **Adj+Indef.Art+N**

daha iyi bir [NP] ‘a better [NP]’ **Adv_{DEG}+Adj_{COMP}+Indef.Art+[NP]**

[NP-GEN] önemli bir kısmının ‘of an important part [of it]’ **[NP-GEN]+Adj+Indef.Art+N-POSS_{3SG}-GEN**

bir bakış açısı ‘a point of view’ **Indef.Art+N+N-POSS_{3SG}**

her geçen gün ‘each passing day’ **Quan+V_{REL}+N**

bir diğer önemli [N] ‘another important [N]’ **Indef.Art+Adj+Adj+[N]**

bunun en önemli [N] ‘the most important [N] of this’ **Dem-GEN+Adv_{DEG}+Adj_{SUP}+ [N]**

söz konusu bu [N] ‘the relevant [issue] at hand/under discussion’ **N+N-POSS_{3SG}+Dem+[N]**

bundan sonraki çalışmalarda ‘in the studies after this’ **Dem-ABL+Adv+N-PLU-LOC**

As observed in the examples above, *bir* ‘a(n)’ is frequently seen in the multi-word units as noun phrases, such as *anamlı bir ilişki* ‘a meaningful relation’, *daha iyi bir* ‘a better’, *bir bakış açısı* ‘a point of view’, and *bir diğer önemli* ‘another important’, which is (*bir diğer* ‘another’) a marker of identity.

◦ Subject Relatives with Relativized Verb {- (y)An}

The following five multi-word units functioning as subject relatives with the relativized verb {- (y)An} were identified in the introductions of the humanities.

elde edilen bulgular ‘obtained findings’ **N-LOC+V-PASS_{REL}+N-PLU**

[NP] içerisinde yer alan [N] ‘[NP] that is included’ **[NP]+P+N+V_{REL}+ [N]**

yapılan bir çalışmada ‘in a conducted study’ **V-PASS_{REL}+Indef.Art+N-LOC**

üzerinde durulması gereken [N] ‘[NP] that is worth stressing’ **P+V-PASS_{REL}-NOM-POSS_{3SG}-V_{REL}+ [N]**

[NP]/[V-NOM-POSS_{3SG}]/[V-INF] için gerekli olan [N] ‘[NP] that is essential to [N]’ **[NP]/[V-NOM-POSS_{3SG}]/[V-INF]+P+Adj+V_{REL}+ [N]**

◦ Object Relatives with Relativized Verb {-DIK}

Different from the subject relatives, the clauses that are relativized with this suffix are object clauses. This usage is not seen in the Humanities-Introductions, all of which are subject relatives with the relativized verb {- (y)An}. However, it is observed in the conclusions of the articles in the SAC.

vermiş olduğu cevaplarda ‘in the answers s/he has given’ **V-PERF+V-SUB-POSS_{3SG}+N-PLU-DAT**

• **Adjectival Constructions**

Adjectival constructions modify noun phrases. They can be modified by adverbials, such as *son derece* ‘extremely’. An adjectival construction can be a single word form, such as *önemli* ‘important’; or it may consist of more than one word, such as *uzun boylu kız* ‘the tall girl / the girl who is tall’.

The postposition *göre* ‘as to / according to’ has a comparative structure when it has the dative complement, *-e göre* ‘with respect to / compared to’. This is an alternative structure of *daha+Adj*, as in *X Y’den daha yüksek* ‘X is higher than Y’. Both *daha+Adj_{COMP}* and *göre daha+Adj_{COMP}* structures are comparatives and they are both seen in the SAC, but *göre daha+Adj_{COMP}* structure is more frequently seen in the data. In total, it has 45 concordance lines, whereas *daha+Adj*-type sentences are used 37 times in the scientific articles.

[NP] *son derece önemli* [Indef.Art]/[N] ‘[NP] extremely important [NP]’ **[NP]+N+N (Adv_{DEG})+Adj+[Indef.Art]/[N]**

[NP-DAT] *göre daha yüksek* ‘higher than [NP]’ **[NP-DAT]+P+Adv_{DEG}+Adj_{COMP}**

• **Adverbial Constructions**

As stated in the Humanities-Introductions, adverbials modify verbs, adjectives, adverbs or sentences; they are also observed in the SAC. Other than the usages that are discussed in the Humanities-Introductions, converbial *ol-* ‘be’ is observed in the Humanities-Conclusions, as seen in *olmak üzere* ‘particularly’. This construction produces adverbials that indicate a quantitative or proportional set. There is also another usage of *ol-* ‘be’ formed with *{-(y)ArAk}* that is lexicalized as a marker of a status, such as *bir göstergesi olarak* ‘as an indication of/indicating status’. *{DA}* structure is discussed in the adverbial constructions and the postpositional constructions in the Humanities-Introductions. There are three meanings of this morpheme that are observed in the SAC. One of them is the contrastive focus, such as *belki de* ‘maybe’; the other one means ‘too/also’; the last one is the locative suffix. The first two constructions are free morphemes, whereas the locative *{-DA}* is a bound morpheme.

etkin bir şekilde ‘effectively’ **Adj+InDef.Art+N-LOC**

daha önce de ‘also previously before/previous before as well’ **Adv_{DEG}+P_{TEMP}+da_{CONJ}**

bir kez daha ‘once more’ **Indef.Art+Adv_{FRE}+Adv_{DEG}**

[NP] *olmak üzere iki* [NP] ‘particularly [these] two [NP]’ **[NP]+V_{INF}+Adv+Num+[NP]**

başta olmak üzere ‘primarily’ **N-LOC+V_{INF}+Adv**

bir göstergesi olarak ‘as an indication of/indicating status’ **Indef.Art+N-POSS_{3SG}+V_{CVB}**

belki de bu [N] ‘maybe this [N]’ **Adv_{MOD}+da_{CONT}+Dem+[N]**

• Postpositional Constructions

As explained above, {DA} construction that is used here is a free morpheme and it means ‘too/also’. Other multi-word units that are seen in this section are formed with bare postpositions, such as *göre* ‘as to/according to’ and *gibi* ‘like/as/such as’.

bu çalışmada da ‘and in this study’ **Dem+N-LOC+da_{INT}**

her şeyden önce ‘first and foremost’ **Quan+N-ABL+P**

araştırma sonuçlarına göre ‘according to the research results’ **N+N-POSS_{3PLU}-DAT+P**

[NP]da belirtildiği gibi ‘as it is presented in [NP]’ **N-LOC+V-PASS-SUB-POSS_{3SG}+P**

[N] ile karşı karşıya ‘subject to [N]’ **[N]+-(y)IA_{COM}+P+P**

• Clauses

◦ Independent Clauses

As discussed in the Humanities-Introductions, nearly all the multi-word units in the SAC that are in the form of clausal structure are constructed with the copular marker {-Dir}, which is used for certainty and formality. In contrast, the suffix {-(y)Abil}, which marks possibility, is observed in the Humanities-Conclusions, as seen in *şu şekilde özetlenebilir* ‘can be summarized as’. This usage has an aorist structure, which has an epistemic function (Aygen, 1998).

[NP] olarak karşımıza çıkmaktadır ‘it turns out to be [NP]’ **[NP]+V_{CVB}+P+V-IMPRF+COP-3SG**

[NP] büyük önem taşımaktadır ‘[NP] has significance’ (Lit: carries major significance)

[NP]+Adj+N+V-IMPRF-COP+3SG

[NP] olduğunu ortaya koymuştur ‘[NP] has revealed that’ **[NP]+V-SUB-POSS_{3SG}-ACC+N-DAT+V-PERF-COP+3SG**

[NP] önem arz etmektedir ‘[NP] is important’ (Lit: represents significance) **[NP]+N+N+V-IMPRF-COP+3SG**

[NP] şu şekilde özetlenebilir ‘[NP] can be summarized as’ **[NP]+Dem+N-LOC+V-PASS-MOD_{PSB}-AOR+3SG**

bulgular elde edilmiştir ‘findings have been obtained’ **N-PLU+N-LOC+V-PASS-PERF-COP+3SG**

[Adj] bir etkiye sahip **[V-SUB-POSS_{3SG}]/[V_{REL}]** ‘has an effect’ **[Adj]+Indef.Art+N-DAT+N+[V-SUB-POSS_{3SG}/V_{REL}]**

◦ Dependent Clauses

{-mA} suffix is observed in the conclusions of the humanities, which is different from the multi-word units that are seen in the Humanities-Introductions. {-mA} is a nominative verbal, which is similar to the infinitive verbal marker {-mA_k}. {-mA} is usually followed by a possessive marker, as in *göz önünde bulundurulması* ‘its being taken into consideration’. On the other hand,

{-mAk} cannot be followed by a possessive marker (*bulundurulmaksı). {-mA}, {-mAk}, and {-DIK}, which is ({-DIK}) explained under the dependent clauses heading in the Humanities-Introductions and object relatives heading in the Humanities-Conclusions, are subordinating suffixes. In this study, {-DIK} is coded as SUB, {-mA} is tagged as NOM, and {-mAk} is labelled as V_{INF}.

[NP] göz önüne alındığında ‘when [NP] is taken into consideration’ [NP]+N+POSS_{3SG}-DAT+V-PASS-SUB-POSS_{3SG}-LOC

[NP] genel olarak değerlendirildiğinde ‘all in all’ (Lit: when NP is evaluated in general) Adj+V_{CVB}+V-CAU-PASS-SUB-POSS_{3SG}-LOC

verilen cevaplar incelendiğinde ‘when the answers given are observed’ V-PASS_{REL}+N-PLU+V-PASS-SUB-POSS_{3SG}-LOC

[NP]/[Adj] olduğu dikkate alındığında ‘when [the fact that...] is taken into consideration’ [NP]/[Adj]+V-SUB-POSS_{3SG}+N-DAT+V-PASS-SUB-POSS_{3SG}-LOC

gibi görünse de ‘even if it seems like’ P+V-PASS-COND+da_{CONT}

[NP] göz önünde bulundurulması ‘its being taken into consideration’ [NP]+N+N-POSS_{3SG}-LOC+V-PASS-CAU-PASS-NOM-POSS_{3SG}

In the conclusions of the humanities, the most used patterns are noun phrases similar to the introductions of the humanities. There are 15 multi-word units that are formed with NP structures (30%). Clausal structure, on the other hand, is more different from the introductions of the humanities. While the frequencies of dependent and independent clauses in the conclusions are close to each other, there is a higher contrast in the introductions. There are six independent and two dependent multi-word unit structures in the introductions of the humanities, whereas there are seven independent (14%) and six dependent (12%) multi-word units in the conclusions of the humanities. Apart from that, eight multi-word units are used as discourse connectives (16%); seven of them are adverbial constructions (14%); five multi-word units are in the form of postpositional constructions (10%). Lastly, there are two adjectival constructions in the conclusions of the humanities (4%).

Fundamental Sciences-Introductions

As expressed in the methodology chapter, the grammatical and syntactic categories of the 50 most used multi-word units in the introductions and conclusions of the fundamental sciences are analyzed in the following section. The grammatical and syntactic features of the multi-word units that are explained in the Humanities-Introductions and Humanities-Conclusions are not repeated in this section.

• **Discourse Connectives/Conjunctions**

The following five multi-word units functioning as connectives were identified in the introductions and conclusions of the humanities.

buna bağlı olarak ‘because of this’ **Dem-DAT+Adj+V_{CVB}**

bir başka deyişle ‘in other words’ **Indef.Art+Adj+N--(y)IA_{COM}**

bunun yanı sıra ‘in addition to this’ **Dem-GEN+N-POSS_{3SG}+N**

bu nedenle de ‘and for this reason’ **Dem+N--(y)IA_{COM}+da_{CONJ}**

kısmen de olsa ‘even if [it is] partially’ **Adv+da_{CONT}+V_{COND}**

◦ **‘What-Ne’ Subordinating Patterns**

The information about the following multi-word unit functioning as a Wh-subordinating pattern was given in the Humanities-Introductions and Humanities-Conclusions sections.

her ne kadar ‘even though’ **Quan+ne+N**

• **Noun Phrases**

The multi-word units that function as noun phrases were explained in the introductions and conclusions of the humanities. The frequent usage of the quantifier *çok* ‘a lot of/many/very’ in the multi-word units that are seen in the introductions of the fundamental sciences attracts attention. Other than this section, *çok* ‘a lot of/many/very’ is observed in the introductions of the humanities in one multi-word unit, only (*çok sayıda araştırma* ‘a lot of research’). The relevant usages that belong to the fundamental sciences are seen below.

bu çalışmanın amacı ‘the purpose of this study’ **Dem+N-GEN+N-POSS_{3SG}**

önemli bir yer ‘an important place’ **Adj+Indef.Art+N**

her geçen gün ‘each passing day’ **Quan+V_{REL}+N**

pek çok çalışma ‘many studies’ **Adv_{DEG}+Quan+N**

[NP] ile ilgili çalışmalar ‘studies that are related to [N]’ **[NP]+-(y)IA_{COM}+Adj+N-PLU**

için uygun bir [N] ‘an appropriate [N] for’ **P+Adj+Indef.Art+[N]**

çok geniş bir [N] ‘a very wide [N]’ **Quan+Adj+Indef.Art+[N]**

gibi pek çok [N] ‘a lot of [N] such as’ **P+Adv_{DEG}+Quan+[N]**

daha iyi sonuçlar ‘better results’ **Adv_{DEG}+Adj_{COMP}+N-PLU**

[N-GEN] en önemli özelliği ‘the most important feature of [N]’ **[N-GEN]+Adv_{DEG}+Adj_{SUP}+N-POSS_{3SG}**

bu çalışmanın temel [N] ‘the main [N] of this study’ **Dem+N-GEN+Adj+[N]**

kendine özgü bazı [N] ‘some idiosyncratic [N]’ **PRO-DAT+Adj+Quan**

hemen hemen tüm [N] ‘nearly/almost all [N]’ **Adv+Adv (Adv_{TEMP})+Quan+[N]**

yapılan bir çalışmada ‘in a conducted study’ **V-PASS_{REL}+Indef.Art+N-LOC**

◦ **Subject Relatives with Relativized Verb $\{-(y)An\}$**

The discussion on the following multi-word group functioning as subject relatives with the relativized verb $\{-(y)An\}$ was made in the introductions of the humanities. There are five multi-word units in the conclusions of the humanities, which function as the same category. The multi-word units below are the usages that function as subject relatives with the relativized verb $\{-(y)An\}$, which are used in the introductions of the fundamental sciences.

elde edilen sonuçlar ‘obtained results’ ***N-LOC+V-PASS_{REL}+N-PLU***

yaygın olarak kullanılan [N] ‘[N] commonly used’ ***Adj+V_{CVB}+V-PASS_{REL}+ [N]***

[NP] *içinde yer alan* [N] ‘[N] that is included [NP]’ (Lit. that takes place in) ***[NP]+P+N+V_{REL}+ [N]***

[NP] *olarak da bilinen* ‘also known as [NP]’ ***[NP]+Adv+da_{CONJ}+V-PASS_{REL}***

son yıllarda yapılan [N] ‘[N] that has been done in recent years’ ***Adj+N-PLU-LOC+V-PASS_{REL}+ [N]***

bir yöntem olan [NP] ‘[NP] that is a method’ ***Indef.Art+N+V_{REL}***

[NP] *ile ortaya çıkan* [N] ‘that emerges with [N]’ ***[NP]+-(y)IA_{COM}+N-DAT+V_{REL}+ [N]***

[NP]/[V-NOM-POSS_{3SG}]/[V-INF] *için gerekli olan* [N] ‘[NP] that is essential to [N]’ ***[NP]/[V-NOM-POSS_{3SG}]/[V-INF]+P+Adj+V_{REL}+ [N]***

● **Adjectival Constructions**

Adjectival constructions were identified in the conclusion sections of the humanities. In the following, the grammatical and syntactic category of the multi-word unit functioning as an adjectival construction that is seen in the introductions of the fundamental sciences is observed.

[NP-DAT] *göre daha az* ‘less than [NP]’ ***[NP-DAT]+P+Adv_{DEG}+Adj_{COMP}***

● **Adverbial Constructions**

The discussion on the adverbial constructions is seen in the introductions and the conclusions of the humanities. The following four multi-word units that are observed in the Fundamental Sciences-Introductions function as adverbial constructions.

yaygın bir şekilde ‘commonly’ ***Adj+InDef.Art+N-LOC***

[NP] *olmak üzere iki* [NP] ‘particularly [these] two [NP]’ ***[NP]+V_{INF}+Adv+Num+[NP]***

daha sonra bu [NP] ‘later on this [NP]’ ***Adv_{DEG}+P_{TEMP}+Dem+[NP]***

göz önüne alınarak ‘being taken into consideration’ ***N+N-POSS_{3SG}-DAT+V-PASS-CVB***

● **Postpositional Constructions**

Postpositional constructions were discussed in the introductions and conclusions of the humanities. The usage of an agent in a passive sentence by *tarafından* ‘by’ attracts attention different from the other sections in this chapter. Passivization is made by a change in the

positions of agent and patient as in *Babam arabayı yıkadı* ‘My dad washed the car’ (active) and *Araba (babam tarafından) yıkandı* ‘The car was washed (by my dad)’ (passive). The reason for passive usage is to suppress the agent in active form, which is frequently seen in scientific texts. In such kind of sentences, the agent is expressed by *tarafından* ‘by’, the agent of which acts as the complement of the postposition.

Moreover, *kadar* ‘until’ in the example *bu güne kadar* ‘until today’ seems different from the other usages in the scientific article parts, especially from the usages that are seen in the humanities. It has a temporal meaning in this section. In other words, it denotes time involving a terminal point. This kind of usage is different from *her ne kadar* ‘even though’, which is used in the humanities and fundamental sciences. *Kadar* ‘until’ in *her ne kadar* ‘even though’ does not contain the meaning of *until*. It is a different kind of usage that acts like a fixed expression. So, *her ne kadar* ‘even though’ is named as a ‘what-ne’ subordinating pattern, which also functions as discourse connectives/conjunctions. Nine multi-word units below are the usages that function as postpositional constructions, which are used in the Fundamental Sciences-Introductions.

[NP] *elde etmek için* ‘in order to obtain [NP]’ (Lit. in order to take in hand) [NP]+N-LOC+V_{INF}+P

bu çalışmada ise ‘whereas in this study’ **Dem+N-LOC+COP-(y)SA**

çok araştırmacı tarafından ‘by many researchers’ **Quan+N+P**

bu çalışma ile ‘with this study’ **Dem+N+-(y)IA_{INST}**

çalışmanın ikinci bölümünde ‘in the second chapter of the study’ **N-GEN+Num_{ORD}+N-POSS_{3SG}-LOC**

bu güne kadar ‘until today’ (Lit. until this day) **Adv+N-DAT+P**

[NP] *sahip olmasına rağmen* ‘although it possesses [NP]’ [NP]+N+V-NOM-POSS_{3SG}-DAT+P

uzun yıllardan beri ‘for many years’ **Adj+N-PLU-ABL+P**

[NP]’*de görüldüğü gibi* ‘as it is seen in [N]’ [NP]-LOC+V-PASS-SUB-POSS_{3SG}+P

• **Clauses**

The features of the clauses, which can be dependent or independent, were discussed in the introductions and conclusions of the humanities. These eight multi-word units that are observed in the following function as independent clause structure in the introductions of the fundamental sciences. On the other hand, there are not any multi-word units that are in the form of dependent clause in this section of the scientific texts.

◦ **Independent Clauses**

[NP] *büyük önem taşımaktadır* ‘[NP] has significance’ (Lit: carries major significance)

[NP]+Adj+N+V-IMPRF-COP+3SG

[NP] *olarak kabul edilmektedir* ‘is accepted as [NP]’ [NP]+V_{CVB}+N+V-PASS-IMPRF-COP+3SG

[NP] olduğu tespit edilmiştir 'it has been confirmed that [NP]' **[NP]+V-SUB-POSS_{3SG}+N+V-PASS-PERF-COP+3SG**

[NP] son derece önemlidir '[NP] is extremely important' **[NP]+N+N (Adv_{DEG})+Adj-COP+3SG**

[NP] örnek olarak verilebilir '[NP] can be given as an example' **[NP]+N+V_{CVB}+V-PASS-MOD_{PSB}-AOR+3SG**

[NP] şekil [NP]'de verilmiştir 'it has been given in Figure [NP]' **[NP]+N+[NP]-LOC+V-PASS-PERF-COP+3SG**

bir çalışmaya rastlanmamıştır 'a study has not been seen' **Indef.Det+N-DAT+V-PASS-NEG-PERF-COP+3SG**

[N] ile ifade edilir 'is stated as [N]' **[N]+-(y)IA_{INST}+N+V-PASS-AOR+3SG**

In the introductions of the fundamental sciences, there are 22 noun phrases (44%); nine postpositional structures (18%); and eight independent clauses (16%). The striking observation is that there are not any dependent clause structures in the usages of the multi-word units. Other than that, six discourse connectives (12%), four adverbial constructions (8%), and one adjectival construction (2%) are observed in the introductions of the fundamental sciences.

Fundamental Sciences - Conclusions

• Discourse Connectives/Conjunctions

The discourse connectives/conjunctions were defined in the introductions of the humanities. In the conclusions of the humanities and the introductions of the fundamental sciences, the multi-word units functioning as connectives were discussed. As seen in the following, four multi-word units in the conclusions of the fundamental sciences function as discourse connectives in the scientific articles.

buna bağlı olarak 'because of this' **Dem-DAT+Adj+V_{CVB}**

herhangi bir nedenle 'for any reason' **Quan+Indef.Det+N--(y)IA_{COM}**

diğer bir deyişle 'in other words' **Adj+Indef.Art+N--(y)IA_{COM}**

bunun yanı sıra 'in addition to this' **Dem-GEN+N-POSS_{3SG}+N**

◦ 'What-Ne' Subordinating Patterns

As stated above, the multi-word units that function as wh-subordinating patterns were discussed in the introductions and conclusions of the humanities. Also, these kinds of usages that are observed in the SAC were shown in the Fundamental Sciences-Introductions. Below, it is observed that there is one multi-word unit in the conclusions of the fundamental sciences that function as a wh-subordinating pattern.

her ne kadar 'even though' **Quan+ne+N**

• Noun Phrases

Noun phrases were presented in the introductions and conclusions of the humanities. There are also multi-word units in the form of noun phrases belonging to the introductions of the fundamental sciences. In the usages below, these kind of multi-word units that are used in the conclusions of the fundamental sciences are seen.

[Adj] yönde önemli ilişkiler ‘important relations in [Adj] direction’ **[Adj]+N-LOC+Adj+N-PLU**

[NP] için önemli bir [N] ‘an important [N] for [NP]’ **[NP]+P+Adj+Indef.Art+[N]**

[N-GEN] en önemli nedeni ‘the most important reason of [N]’ **[N-GEN]+Adv_{DEG}+Adj_{SUP}+N-POSS_{3SG}**

oldukça iyi bir [N] ‘quite a good [N]’ **Adv+Adj+Indef.Art+[N]**

farklı değişkenlerin sayısı ‘the number of different variables’ **Adj+N-PLU-GEN+N-POSS_{3SG}**

[NP-DAT] neden olan etkenlerin ‘the factors that cause [NP]’ **[NP-DAT]+N+V_{REL}+N-PLU-GEN**

her geçen gün ‘each passing day’ **Quan+V_{REL}+N**

bu nedenle bu [N] ‘for this reason this [N]’ **Dem+N--(y)I_{COM}+Dem+[N]**

yapılan bir çalışmada ‘in a conducted study’ **V-PASS_{REL}+Indef.Art+N-LOC**

en yüksek oranda ‘at the highest proportion’ **Adv_{DEG}+Adj_{SUP}+N-LOC**

◦ Subject Relatives with Relativized Verb $\{-(y)An\}$

Subject relatives with the relativized verb $\{-(y)An\}$ were expressed in the introductions of the humanities. Also, the multi-word units functioning as this kind of pattern were discussed in the Humanities-Conclusions and Fundamental Sciences-Introductions. Below, the multi-word units that function as subject relatives with the relativized verb $\{-(y)An\}$ in the conclusions of the fundamental sciences articles are shown.

elde edilen sonuçlar ‘obtained results’ **N-LOC+V-PASS_{REL}+N-PLU**

bu çalışmada kullanılan [NP] ‘[NP] that is used in this study’ **Dem+N-LOC+V-PASS_{REL}+ [NP]**

yaygın olarak kullanılan [N] ‘[N] commonly used’ **Adj+V_{CVB}+V-PASS_{REL}+ [N]**

literatürde yer alan [NP] ‘[NP] that takes part in the literature’ **N-LOC+N+V_{REL}+ [NP]**

yukarıda sözü edilen [NP] ‘above mentioned [NP]’ **Adv-LOC+N-ACC+V-PASS_{REL}+ [NP]**

etkiye sahip olan [NP] ‘[NP] that has effect’ **N-DAT+N+V_{REL}+ [NP]**

◦ Subject Relatives with $\{-(y)AcAk\}$

Relative clauses modify noun phrases. As observed in the introductions and conclusions of both humanities and fundamental sciences, relative clauses can contain the participle suffix $\{-(y)An\}$. As it is seen in the conclusions of the humanities, some clauses are relativized with the suffix $\{-DIK\}$, such as *vermiş olduğu cevaplarda* ‘in the answers s/he has given’. Another relative

construction is the one with $\{- (y)AcAK\}$ suffix, the example of which is seen below. This type of usage is observed in the conclusions of the fundamental sciences only.

$[NP]$ olacak şekilde bir $[NP]$ 'in a way that will become $[NP]$ ' $[NP]+V_{CVB}+N-LOC+Indef.Art+[NP]$

• Adjectival Constructions

As mentioned above, adjectival constructions were explained in the conclusions of the humanities and the usage functioning as an adjectival construction was shown in the introductions of the fundamental sciences. The two multi-word units in the following are the usages belonging to this category that are seen in the conclusions of the fundamental sciences.

$[NP-DAT]$ göre daha yüksek 'higher than $[NP]$ ' $[NP-DAT]+P+Adv_{DEG}+Adj_{COMP}$

$[NP]$ olması için gerek 'be essential to $[NP]$ ' $[NP]+V-NOM-POSS_{3SG}+P+Adj$

• Adverbial Constructions

Adverbial constructions were discussed in detail in the introductions and conclusions of the humanities. The multi-word units functioning as adverbial constructions were illustrated in the introductions of the fundamental sciences. Five multi-word units in the following function as adverbial constructions, which are observed in the conclusions of the fundamental sciences.

hızlı bir şekilde 'quickly' (Lit. in a quick manner) $Adj+Indef.Art+N-LOC$

bir kez daha 'once more' $Indef.Art+Adv_{FRE}+Adv_{DEG}$

$[NP]$ olmak üzere iki $[NP]$ 'particularly [these] two $[NP]$ ' $[NP]+V_{INF}+Adv+Num+[NP]$

$[N]$ ile ilgili olarak 'related to $[N]$ ' $[N]+-(y)IA_{COM}+Adj+V_{CVB}$

$[N]$ için ayrı ayrı 'separately for $[N]$ ' $[N]+P+Adj+Adj (Adv)$

• Postpositional Constructions

Postpositional constructions were explained in the Humanities-Introductions and Humanities-Conclusions. The multi-word units functioning as postpositional constructions were shown in the introductions of the fundamental sciences. Six multi-word in the Fundamental Sciences-Conclusions that belong to the same category are seen below.

$[NP]$ 'de görüldüğü gibi 'as it is seen in $[N]$ ' $[NP]-LOC+V-PASS-SUB-POSS_{3SG}+P$

bu çalışmada da 'and in this study' $Dem+N-LOC+da_{INT}$

bu çalışma ile 'with this study' $Dem+N+-(y)IA_{INST}$

bu sonuçlara göre 'according to these results' $Dem+N-PLU-DAT+P$

$[NP]$ elde etmek için 'in order to obtain $[NP]$ ' (Lit. in order to take in hand) $[NP]+N-LOC+V_{INF}+P$

yapılan hesaplamalar sonucunda 'as a result of the calculations that are made' $V-PASS_{REL}+N-PLU+N-POSS_{3SG}-LOC$

• **Clauses**

Clause structure of the multi-word units that are observed in the scientific texts were discussed in the introductions and conclusions of the humanities including dependent and independent clausal structures. In the introductions of the fundamental sciences, the multi-word units that function as independent clauses were observed only. In the following, the multi-word units in the conclusions of the fundamental sciences that function as independent and dependent clauses are observed.

◦ **Independent Clauses**

[NP] Tablo [NP]'de verilmiştir '[NP] has been given in Table [NP]' **[NP]+N+N-LOC+V-PASS-PERF-COP+3SG**

[Adj]/[Dem] sonuçlar elde edilmiştir '[Adj]/[Dem] results have been obtained' **[Adj]/[Dem]+N-PLU+N-LOC+V-PASS-PERF-COP+3SG**

[NP] olduğu tespit edilmiştir 'it has been confirmed that [NP]' **[NP]+V-SUB-POSS_{3SG}+N+V-PASS-PERF-COP+3SG**

[NP] ile uyum içindedir '[NP] is in accordance with [N]' **[NP]+-(y)IA_{COM}+N+P-COP+3SG**

[NP] beklenen bir durumdur '[NP] is an expected situation' **[NP]+V-PASS_{REL}+Indef.Art+N-COP+3SG**

[NP] önem arz etmektedir '[NP] is important' (Lit: represents significance) **[NP]+N+N+V-IMPRF-COP+3SG**

[NP] aşağıdaki gibi özetlenebilir '[NP] can be summarized as follows' **[NP]+Adj-LOC-ki+P+V-PASS-MOD_{PSB}-AOR+3SG**

[Num_{ORD}] sırada yer almaktadır 'fall(s) into [Num_{ORD}] rank' **[Num_{ORD}]+N-LOC+N+V-IMPRF-COP+3SG**

[NP] benzer biçimde gösterilebilir '[NP] can be shown in a similar way' **[NP]+Adj+Adv+V-PASS-MOD_{PSB}-AOR+3SG**

[NP] olduğuna işaret etmektedir '[NP] indicates that [it is]' **[NP]+V-SUB-POSS_{3SG}-DAT+N+V-IMPRF-COP+3SG**

[NP-GEN] meydana geldiği görülmektedir '[it] is seen that [...] happens/emerges' **[NP-GEN]+N-DAT+V-SUB-POSS_{3SG}+V-PASS-IMPRF-COP+3SG**

[NP] etkili olduğu görülmüştür '[NP] has been seen that [it is] effective' **[NP]+Adj+V-SUB-POSS_{3SG}+V-PASS-PERF-COP+3SG**

◦ **Dependent Clauses**

[NP] göz önüne alındığında 'when [NP] is taken into consideration' **[NP]+N+N-POSS_{3SG}-DAT+V-PASS-SUB-POSS_{3SG}-LOC**

[NP-GEN] iyi sonuç verdiği 'that [NP] results well' **[NP-GEN]+Adj+N+V-SUB-POSS_{3SG}**

[NP-GEN] tercih edilmesi gerektiği '[NP] that must be preferred' *[NP-GEN]+N+V-PASS-NOM-POSS_{3SG}+Adj-SUB-POSS_{3SG}*

In the conclusions of the fundamental sciences, there are 17 multi-word units in the form of noun phrases (34%), the situation of which is similar regarding the second domain and other parts of the scientific articles. Second, independent clauses are observed as the most frequently used pattern with 12 multi-word units (24%). Dependent clauses are less than the independent clauses in the conclusions of the fundamental sciences; there are three dependent clauses (6%). Apart from these structures, six postpositional constructions (12%), five adverbial constructions (10%), five discourse connectives (10%), and two adjectival constructions (4%) are observed. In the next section, a brief list about the functional categories of the 50 most used multi-word units in the SAC is illustrated.

5.2. Analyzing the Discourse Functional Categories of the Multi-Word Units

In this chapter, the discourse functional categories of the 50 most used multi-word units in the SAC are discussed. This section belongs to the eighth research question of the study. After observing the discourse functional features, similarities and differences between the discourse functions are discussed. This part of the study answers the ninth question of the research, which is what the similarities and differences between the humanities and fundamental sciences are in terms of the discourse functions of the multi-word units.

Data of this study are classified by the contextualized discourse functions according to Hyland's (2008a) model. Discourse functions are the meanings and purposes of those multi-word units that belong to a specific register. A discourse functional category is the classification that collects multi-word units into some specific foci of research, text, and participants; it introduces subcategories, which specifically reflect the concerns of research writing (Hyland, 2008a: 13). Discourse functions provide texture and organize discourse according to situations (Kress, 1976). A discourse functional category of a multi-word unit is determined according to its meaning in the text. In other words, the discourse function of that multi-word unit becomes evident due to its context.

There are three discourse functional categories, which were explained in detail in Chapter 3, that are loosely based on Halliday's (1994) linguistic macro-functions: Research-oriented multi-word units serve an ideational function; text-oriented units are combinations concerned with textual functions; participant-oriented units express interpersonal meanings (Hyland, 2008b: 49). In Table 28, the discourse functional categories of the 50 most used multi-word units that are used in the scientific texts belonging to the humanities and fundamental sciences are observed.

Table 28. The discourse functional categories of the most used 50 multi-word units in the SAC

Humanities				Fundamental Sciences			
Introduction	Discourse Function	Conclusion	Discourse Function	Introduction	Discourse Function	Introduction	Discourse Function
<i>her ne kadar</i> 'even though'	transition	<i>her ne kadar</i> 'even though'	transition	<i>bu çalışmanın amacı</i> 'the purpose of this study'	structuring	<i>elde edilen sonuçlar</i> 'obtained results'	resultative
<i>buna bağlı olarak</i> 'because of this'	resultative	<i>anlamlı bir ilişki</i> 'a meaningful relation'	description	<i>[...] olmak üzere iki [...]</i> 'particularly [these] two'	quantification	<i>[...]’de görüldüğü gibi</i> 'as it is seen in [...]	engagement
<i>bu çalışmanın amacı</i> 'the purpose of this study'	structuring	<i>elde edilen bulgular</i> 'obtained findings'	resultative	<i>elde edilen sonuçlar</i> 'obtained results'	resultative	<i>[...] Tablo [...]'de verilmiştir</i> 'it has been given in Table [...]	structuring
<i>bir başka deyişle</i> 'in other words'	transition	<i>başka bir deyişle</i> 'in other words'	transition	<i>yaygın olarak kullanılan [...]</i> '[...] commonly used'	quantification	<i>[...] sonuçlar elde edilmiştir</i> '[...] results have been obtained'	resultative
<i>önemli bir yer</i> 'an important place'	stance	<i>[...] olarak karşımıza çıkmaktadır</i> 'it turns out to be [...]	resultative	<i>[...] elde etmek için</i> 'in order to obtain [...]	procedure	<i>buna bağlı olarak</i> 'because of this'	resultative
<i>her geçen gün</i> 'each passing day'	location	<i>bu çalışmada da</i> 'and in this study'	structuring	<i>buna bağlı olarak</i> 'because of this'	resultative	<i>[...] yönde önemli ilişkiler</i> 'important relations in [...] direction'	stance
<i>konu ile ilgili [...]</i> 'relevant to the topic'	framing	<i>söz konusu bu [...]</i> 'the relevant [issue] at hand/under discussion'	framing	<i>bu çalışmada ise</i> 'whereas in this study'	structuring	<i>[...] olduğu tespit edilmiştir</i> 'it has been confirmed that [...]	resultative

<i>bu nedenle de</i> 'and for this reason'	resultative	<i>[...] göre daha yüksek</i> 'higher than [...]	description	<i>[...] için gerekli olan [...]</i> '[...] that is essential to [...]	stance	<i>bu çalışmada da</i> 'and in this study'	structuring
<i>[...] içinde yer alan [...]</i> '[...] that is included'	location	<i>her şeyden önce</i> 'first and foremost'	framing	<i>önemli bir yer</i> 'an important place'	stance	<i>bu çalışma ile</i> 'with this study'	structuring
<i>başta olmak üzere</i> 'primarily'	framing	<i>bunun yanı sıra</i> 'in addition to this'	transition	<i>gibi pek çok [...]</i> 'a lot of [...] such as'	quantification	<i>[...] göz önüne alındığında</i> 'when [...] is taken into consideration'	procedure
<i>[...] önem arz etmektedir</i> '[...] is important'	stance	<i>[...] son derece önemli [...]</i> '[...] is extremely important'	stance	<i>her geçen gün</i> 'each passing day'	location	<i>[...] olacak şekilde bir [...]</i> 'in a way that will become [...]	framing
<i>[...] ile ilgili yapılan [...]</i> 'that is done related to [...]	description	<i>araştırma sonuçlarına göre</i> 'according to the research results'	resultative	<i>yaygın bir şekilde</i> 'commonly'	quantification	<i>bu sonuçlara göre</i> 'according to these results'	resultative
<i>[...] göz önüne alındığında</i> 'when [...] is taken into consideration'	procedure	<i>başta olmak üzere</i> 'primarily'	framing	<i>[...] büyük önem taşımaktadır</i> '[...] has significance'	stance	<i>[...] göre daha yüksek</i> 'higher than [...]	description
<i>etkin bir şekilde</i> 'effectively'	stance	<i>[...] büyük önem taşımaktadır</i> '[...] has significance'	stance	<i>[...] içinde yer alan [...]</i> '[...] that is included'	location	<i>hızlı bir şekilde</i> 'quickly'	stance
<i>[...] sonucu ortaya çıkan [...]</i> 'that end(s) up'	resultative	<i>[...] göz önüne alındığında</i> 'when [...] is taken into consideration'	procedure	<i>her ne kadar</i> 'even though'	transition	<i>bu çalışmada kullanılan [...]</i> '[...] that is used in this study'	structuring

<i>söz konusu bu [...]</i> 'the relevant [issue] at hand/under discussion'	framing	<i>[...] içerisinde yer alan [...]</i> 'that is included'	location	<i>pek çok çalışma</i> 'many studies'	quantification	<i>yapılan bir çalışmada</i> 'in a conducted study'	description
<i>bu çalışmada da</i> 'and in this study'	structuring	<i>daha iyi bir [...]</i> 'a better [...]	stance	<i>daha sonra bu [...]</i> 'later on this [...]	location	<i>[...] için önemli bir [...]</i> 'an important [...] for [...]	stance
<i>[...] büyük önem taşımaktadır</i> '[...] has significance'	stance	<i>[...] genel olarak değerlendirildiğinde</i> 'all in all'	procedure	<i>çok araştırmacı tarafından</i> 'by many researchers'	quantification	<i>[...] iyi sonuç verdiği</i> 'that [...] results well'	resultative
<i>bunun yanı sıra</i> 'in addition to this'	transition	<i>[...] olduğunu ortaya koymuştur</i> '[...] has revealed that [...]	resultative	<i>[...] ile ilgili çalışmalar</i> 'studies that are related to [...]	framing	<i>yaygın olarak kullanılan [...]</i> '[...] commonly used'	quantification
<i>ne var ki</i> 'however'	transition	<i>[...] önem arz etmektedir</i> '[...] is important'	stance	<i>için uygun bir [...]</i> 'an appropriate [...] for'	description	<i>en yüksek oranda</i> 'at the highest proportion'	quantification
<i>bu açıdan bakıldığında</i> 'when viewed from this aspect'	procedure	<i>etkin bir şekilde</i> 'effectively'	stance	<i>yapılan bir çalışmada</i> 'in a conducted study'	description	<i>her ne kadar</i> 'even though'	transition
<i>bir bakış açısı</i> 'a point of view'	framing	<i>[...] önemli bir kısmının</i> 'of an important part [of it]'	stance	<i>göz önüne alınarak</i> 'being taken into consideration'	procedure	<i>[...] ile ilgili olarak</i> 'related to [...]	framing
<i>ne olursa olsun</i> 'no matter what happens/in any case'	transition	<i>[...] şu şekilde özetlenebilir</i> 'can be summarized as [...]	stance	<i>[...] olarak kabul edilmektedir</i> '[...] is accepted as [...]	resultative	<i>[...] elde etmek için</i> 'in order to obtain [...]	procedure
<i>[...] ön plana çıkmıştır</i>	resultative	<i>bir bakış açısı</i>	framing	<i>[...] olduğu</i>	resultative	<i>bu nedenle bu [...]</i>	resultative

'[...] have come into prominence'		'a point of view'		<i>tespit edilmiştir</i> 'it has been confirmed that [...]		'for this reason, this [...]	
<i>her şeyden önce</i> 'first and foremost'	framing	<i>her geçen gün</i> 'each passing day'	location	<i>[...] son derece önemlidir</i> '[...] is extremely important'	stance	<i>[...] olmak üzere iki [...]</i> 'particularly [these] two'	quantification
<i>[...] bir ilişki vardır</i> 'there is a [...] relation'	resultative	<i>[...] için gerekli olan [...]</i> '[...] that is essential to [...]	stance	<i>çok geniş bir [...]</i> 'a very wide [...]	quantification	<i>[...] olması için gerek</i> 'be essential to [...]	stance
<i>son yıllarda yapılan [...]</i> '[...] that has been done in recent years'	location	<i>[...]da belirtildiği gibi</i> 'as it is presented in [...]	stance	<i>[...] olarak da bilinen</i> 'also known as [...]	description	<i>bir kez daha</i> 'once more'	quantification
<i>yaygın olarak kullanılan [...]</i> '[...] commonly used'	quantification	<i>[...] göz önünde bulundurulması</i> 'its being taken into consideration'	procedure	<i>bu çalışma ile</i> 'with this study'	structuring	<i>[...] ile uyum içindedir</i> '[...] is in accordance with [...]	resultative
<i>çok sayıda araştırma</i> 'a lot of research'	quantification	<i>[...] bir etkiye sahip [...]</i> 'has an effect'	description	<i>[...] örnek olarak verilebilir</i> '[...] can be given as an example'	stance	<i>herhangi bir nedenle</i> 'for any reason'	resultative
<i>[...] için gerekli olan [...]</i> '[...] that is essential to [...]	stance	<i>bulgular elde edilmiştir</i> 'findings have been obtained'	resultative	<i>hemen hemen tüm [...]</i> 'nearly/almost all [...]	quantification	<i>literatürde yer alan [...]</i> '[...] that takes part in the literature'	location
<i>en hızlı gelişen [...]</i> 'the most'	stance	<i>daha önce de</i> 'also previously'	location	<i>son yıllarda yapılan [...]</i>	location	<i>[...] tercih edilmesi gerektiği</i>	stance

developing [...]		before/previously before as well'		'[...] that is done in recent years'		'[...] that must be preferred'	
<i>[...] açısından önem taşımaktadır</i> '[...] is significant from the point of view of [...]	stance	<i>bir kez daha</i> 'once more'	quantification	<i>[...] Şekil [...]'de verilmiştir</i> 'it has been given in Figure [...]	structuring	<i>diğer bir deyişle</i> 'in other words'	transition
<i>özellikle gelişmekte olan [...]</i> 'especially the developing [...]	description	<i>ne olursa olsun</i> 'no matter what happens/in any case'	transition	<i>bir başka deyişle</i> 'in other words'	transition	<i>[...] en önemli nedeni</i> 'the most important reason of [...]	stance
<i>[...] ayrılmaz bir parçası</i> 'an inseparable part of [...]	stance	<i>yapılan bir çalışmada</i> 'in a conducted study'	description	<i>daha iyi sonuçlar</i> 'better results'	resultative	<i>[...] beklenen bir durumdur</i> '[...] is an expected situation'	stance
<i>daha büyük bir [...]</i> 'a bigger [...]	description	<i>[...] olmak üzere iki [...]</i> 'particularly [these] two [...]	quantification	<i>[...] en önemli özelliği</i> 'the most important feature of [...]	stance	<i>oldukça iyi bir [...]</i> 'quite a good [...]	stance
<i>ne yazık ki</i> 'unfortunately'	transition	<i>aynı zamanda da</i> 'and at the same time'	transition	<i>bunun yanı sıra</i> 'in addition to this'	transition	<i>[...] önem arz etmektedir</i> '[...] it is important'	stance
<i>[...] arasında yer alan [...]</i> 'that is among [...]	location	<i>bir göstergesi olarak</i> 'as an indication of/indicating status'	description	<i>bu nedenle de</i> 'and for this reason'	resultative	<i>[...] aşağıdaki gibi özetlenebilir</i> '[...] can be summarized as follows'	stance
<i>[...] bir şey değildir</i> 'it is not a thing'	stance	<i>bir diğer önemli [...]</i> 'another important [...]	stance	<i>bir çalışmaya rastlanmamıştır</i> 'a study has not	resultative	<i>[...] için ayrı ayrı</i> 'separately for [...]	quantification

<i>bir yandan da</i> 'on the other hand'	transition	<i>kısmen de olsa</i> 'even if [it is] partially'	transition	been seen' <i>çalışmanın ikinci bölümünde</i> 'in the second chapter of the study'	structuring	<i>yukarıda sözü edilen [...]</i> 'above mentioned [...]	structuring
<i>daha fazla önem</i> 'more importance'	stance	<i>bunun en önemli [...]</i> 'the most important [...] of this'	stance	<i>[...] ile ifade edilir</i> 'it is stated as [...]	description	<i>farklı değişkenlerin sayısı</i> 'the number of different variables'	quantification
<i>belki de en</i> 'maybe the most'	stance	<i>vermiş olduğu cevaplarda</i> 'in the answers s/he has given'	description	<i>kısmen de olsa</i> 'even if [it is] partially'	transition	<i>bunun yanı sıra</i> 'in addition to this'	transition
<i>başka bir şey</i> 'another thing'	description	<i>verilen cevaplar incelendiğinde</i> 'when the answers given are observed'	procedure	<i>bu güne kadar</i> 'until today'	location	<i>yapılan hesaplamalar sonucunda</i> 'as a result of the calculations that are made'	resultative
<i>çalışmanın temel amacı</i> 'the main purpose of the study'	structuring	<i>gibi görünse de</i> 'even if it seems like'	stance	<i>[...] göre daha az</i> 'less than [...]	description	<i>[...] neden olan etkenlerin</i> 'the factors that cause [...]	resultative
<i>kimi zaman da</i> 'and sometimes'	location	<i>bu çalışma kapsamında</i> 'within the domain of this study'	framing	<i>bu çalışmanın temel [...]</i> 'the main [...] of this study'	structuring	<i>etkiye sahip olan [...]</i> 'has effect on [...]	description
<i>gittikçe artan bir [...]</i> 'a more	quantification	<i>[...] ile karşı karşıya</i> 'subject to [...]	stance	<i>bir yöntem olan [...]</i> '[...] that is a method'	description	<i>sırada yer almaktadır</i> 'fall(s) into [...] rank'	quantification

increasing [...]'							
<i>bu alanda yapılan [...]</i> '[...] that is done in this field'	framing	<i>[...] olduğu dikkate alındığında</i> 'when [the fact that...] is taken into consideration'	procedure	<i>[...] sahip olmasına rağmen</i> 'although it possesses [...]	transition	<i>[...] benzer biçimde gösterilebilir</i> '[...] can be shown in a similar way'	stance
<i>etki eden faktörler</i> 'the factors that affect'	description	<i>üzerinde durulması gereken [...]</i> '[...] that is worth stressing'	engagement	<i>[...] ile ortaya çıkan</i> 'that emerges with [...]	resultative	<i>her geçen gün</i> 'each passing day'	location
<i>[...] büyük bir bölümü</i> 'a big part of [...]	quantification	<i>diğer yandan da</i> 'and on the other hand'	transition	<i>uzun yıllardan beri</i> 'for many years'	location	<i>[...] olduğuna işaret etmektedir</i> '[...] indicates that [it is]'	resultative
<i>bir süre sonra</i> 'after a while'	location	<i>belki de bu [...]</i> 'maybe this [...]	stance	<i>[...]’de görüldüğü gibi</i> 'as it is seen in [...]	engagement	<i>[...] meydana geldiği görülmektedir</i> '[it] is seen that [...] happens/emerges'	resultative
<i>aynı zamanda bir</i> 'also a(n)'	transition	<i>bundan sonraki çalışmalarda</i> 'in the studies after this'	location	<i>kendine özgü bazı [...]</i> 'some idiosyncratic [...]	stance	<i>[...] etkili olduğu görülmüştür</i> '[...] has been seen that [it is] effective'	resultative

Based on the information seen in Table 28, the frequencies of the functional categories are shown in Table 29:

Table 29. The discourse functional frequencies of the most used 50 multi-word units

	<i>Loca</i>	<i>Freq</i>	<i>Proc</i>	<i>Freq</i>	<i>Quan</i>	<i>Freq</i>	<i>Desc</i>	<i>Freq</i>	<i>Tot</i>	<i>Freq</i>	
<i>H-I</i>	6	12	2	4	4	8	5	10	17	34	RESEARCH
<i>H-C</i>	4	8	5	10	2	4	6	12	17	34	
<i>FS-I</i>	6	12	2	4	8	16	6	12	22	44	
<i>FS-C</i>	2	4	2	4	7	14	3	6	14	28	
	<i>Tran</i>	<i>Freq</i>	<i>Resu</i>	<i>Freq</i>	<i>Stru</i>	<i>Freq</i>	<i>Fram</i>	<i>Freq</i>	<i>Tot</i>	<i>Freq</i>	
<i>H-I</i>	8	16	5	10	3	6	6	12	22	44	TEXT
<i>H-C</i>	7	14	5	10	1	2	5	10	18	36	
<i>FS-I</i>	5	10	8	16	6	12	1	2	20	40	
<i>FS-C</i>	3	6	14	28	5	10	2	4	24	48	
	<i>Stan</i>	<i>Freq</i>	<i>Enga</i>	<i>Freq</i>					<i>Tot</i>	<i>Freq</i>	
<i>H-I</i>	11	22	0	0					11	22	PARTICIP
<i>H-C</i>	14	28	1	2					15	30	
<i>FS-I</i>	7	14	1	2					8	16	
<i>FS-C</i>	11	22	1	2					12	24	

As seen in Table 29, in the introductions of the humanities, the multi-word units that signal *location* function are the most frequent units (12%) in terms of research-oriented multi-word units; in the conclusions, *description* units are the most used ones (12%). In the fundamental sciences, on the other hand, both introductions (16%) and conclusions (14%) have the *quantification* multi-word units mostly. In the sense of text-oriented multi-word units, *transition signals* are the most frequently used multi-word units in the introductions (16%) and conclusions (14%) of the humanities. Whereas, it is *resultative* signals in both parts of the fundamental sciences (16% in the introductions & 28% in the conclusions). Last, both humanities (22% in the introductions & 28% in the conclusions) and fundamental sciences (14% in the introductions & 22% in the conclusions) have numerous *stance markers* belonging to the participant-oriented multi-word units. But they do not have many have multi-word units that mark *engagement* features. Except for the introductions of the humanities, which do not have any *engagement* units, the conclusions of the humanities and the introductions and conclusions of the fundamental sciences have one *engagement* multi-word unit only for each (2%).

It is seen that the humanities articles have the multi-word units functioning as *location* (10 - 10%) and *description* (11 - 11%) most frequently within the category of research-oriented multi-word units. *Location* units include both locations in a specific place and time. Some of the examples include *arasında yer alan* 'that is among' and *bir süre sonra* 'after a while'. *Description* units are the ones that picture the situation, depict the entities relevant to the study, and describe the discussion at hand, such as *anlamli bir ilişki* 'a meaningful relation' and *göre daha*

yüksek 'higher than'. These kinds of locative and descriptive usages mark that the scientific texts belonging to the humanities emphasize time, place, and depiction of the situations related to the subject of the article more frequently than presenting the procedure of the study and the quantification of the entities that are discussed throughout the research. In order to emphasize physical location, the verb *yer al-* 'take part' is preferred in the SAC. *Yer al-* 'take part' is used with postpositions, such as *arasında* 'between', *içinde* 'in', and *içerisinde* 'in' to form multi-word units in the humanities, which reminds the discussion of Biber et al. (1999: 954) about existential clauses and locative inversion. In terms of temporal location belonging to the humanities articles, the SAC consists of many different multi-word units, such as *her geçen gün* 'each passing day', *son yıllarda yapılan* 'that has been done in recent years', *kimi zaman da* 'and sometimes', *bir süre sonra* 'after a while', and *daha önce de* 'also previously before'. In the sense of description units, the humanities texts have quite a few examples that involve *bir* 'a/an', such as *anlamlı bir ilişki* 'a meaningful relation', *bir etkiye sahip* 'has an effect', *daha büyük bir* 'a bigger', *bir göstergesi olarak* 'as an indication of/indicating status', and *başka bir şey* 'another thing'. As also explained in 5.2, under the headings of Noun Phrases in sections Humanities-Introductions and Humanities-Conclusions, the indefinite article *bir* 'a/an' has a lot of functions in Turkish. For instance, it shows number or acts as a modifier in noun phrases, such as *küçük bir çocuk* 'a little kid'; it can be used as a partitive construction, such as *çocuklardan bir tanesi* 'one of the children'; it can be seen in adverbial constructions, such as *etkin bir şekilde* 'effectively', or postpositional constructions as in *bir süre sonra* 'after a while'. The fact that *bir* 'a/an' is a very common usage in terms of describing many situations in the language correlates with the frequent usage of such constructions in the SAC, such as *önemli bir yer* 'an important place', *bir başka deyişle* 'in other words', *yaygın bir şekilde* 'commonly', *daha iyi bir* 'a better', *bir kez daha* 'once more', *herhangi bir nedenle* 'for any reason', *olacak şekilde bir* 'in a way that will become', and *beklenen bir durumdur* 'is an expected situation'.

(71) *Erkeklerde görülme sıklığı kadınlara göre üç kat daha fazla olan ve DSM-IV sınıflama grubuna göre B kümesi kişilik bozuklukları **arasında yer alan** antisosyal kişilik bozukluğunda; kavgacılık, sahtecilik, hırsızlık, kumar tutkusu, aile yaşamında ve toplumsal yaşamda sorumsuzluk, sık sık suç işleme ve psikoaktif madde kullanma gibi belirtiler yaygın olarak gözlemlenmektedir. (Humanities-Location)*

In the antisocial personality disorder **that is among** B-set personality disorders that are seen among males three times more frequent than among females and that are upon DSM-IV classification group; symptoms such as pugnacity, forgery, theft, gambling addiction,

irresponsibility in domesticity and social life, constant perpetration, and psychoactive substance-use are observed commonly.

(72) ...döviz kurunda % 1 oranındaki artışlar, fiyatlar üzerinde sırasıyla yaklaşık %4.3, %0.57 ve %0.78 oranında **bir etkiye sahiptir**.

(Humanities-Description)

...1% of raise in the exchange rate **has an effect** on prices approximately in the ratio of 4.3%, 0.57%, and 0.78% respectively.

The fundamental sciences articles have *quantification* multi-word units mostly (15 - 15%). That the introductions and conclusions both have *quantification* units most is a striking outcome that summarizes the template of the scientific articles written in the fundamental sciences; nearly all of these scientific texts are formed with a lot of formulas including numbers, equations, and statistical ratios. So, the multi-word units in the scientific texts belonging to the fundamental sciences are more research-oriented because these kinds of articles are more formulaic.

(73) Büyüklüğü s olan bir ifadedeki değişken imlerinin sayısı ve dolayısı ile **farklı değişkenlerin sayısı en fazla $s/2$ olur. 0 halde fonksiyon, en çok $2 s/2$ kere hesaplanır.** (Fundamental Sciences-Quantification)

The number of variable signs in a statement, the size of which is s and hence **the number of different variables** would be $s/2$ at the utmost.

In that case, the function is calculated $2 s/2$ times at most.

In sense of text-oriented multi-word units, *transition* signals are the most frequently used units in the scientific texts in the humanities (15 - 15%). This is another point attracting notice which shows that humanities articles involve a great many signals, such as *bunun yanı sıra* 'in addition to this', *bir başka deyişle* 'in other words', and *her ne kadar* 'even though' that combine several ideas and describe the relevant situation in detail. A striking difference in the fundamental sciences is that the *resultative* signals are used most frequently in this domain within the text-oriented multi-word units (22 - 22%). This finding indicates that the scientific texts belonging to the fundamental sciences are result-oriented; the authors usually prefer to write the results of the study after a short introduction while the humanities articles have longer introductions and more details. These details are often given under the headings, those of which are more in terms of the number of sub sections when compared to the headings belonging to the fundamental sciences. Generally, the scientific texts that belong to the humanities do not use the resultative signals in a striking way as the fundamental sciences texts do. It is observed that the scientific texts written in the fundamental sciences have much shorter statements in the beginning with the intention of focusing the results of the study. Humanities texts on the other hand, involve longer sentences that are usually combined with transitions.

Multi-word units, such as *sonuçlar elde edilmiştir* 'results have been obtained', *olduğu tespit edilmiştir* 'it has been confirmed that', and *bu sonuçlara göre* 'according to these results' are the indicative of a result-oriented construction that is seen in the scientific texts written in the fundamental sciences.

(74) *Her yazı, türü **ne olursa olsun**, büyük ölçüde dile dayanır.*
(Humanities-Transition)

Each writing, **regardless of** the type (lit. no matter what happens), is based on language largely.

(75) *Kığı ve Bingöl Merkezden alınan bal örneklerinin oldukça güçlü antimikrobiyal etkilerinin **olduğu tespit edilmiştir.*** (Fundamental Sciences-Resultative)

It has been confirmed that honey samples that were taken from Kığı and Bingöl centers have quite strong antimicrobial effects.

In terms of participant-oriented multi-word units, both domains act similar in the sense of stance; almost all participant-oriented multi-word units that are used in the humanities and fundamental sciences are the ones that have *stance* features (25% in the humanities & 18% in the fundamental sciences). These kinds of multi-word units reflect the way that writers express their thoughts. Hunston and Thompson (1999) propose the term 'evaluation' for the viewpoints and ideas of the authors. Others describe this situation as *attitude* (Halliday, 1994), *evidentiality* (Chafe, 1986), *epistemic modality* (Hyland, 1998), *intensity* (Labov, 1984), *metadiscourse* (Hyland, 2005), and *stance* (Biber & Finegan, 1989; Paxton et al., 2008). As explained in the methodology chapter (3.4.2.3), while stance features involve writers' evaluations, *engagement* features focus on the readers. Hyland (2005: 176) defines *stance* as a textual voice and the way that writers intrude to stamp their personal authority onto their arguments or disguise their involvement. Additionally, he defines *engagement* as a way of recognizing the presence of authors' readers, pulling them along with argument, focusing their attention, and including them as discourse participants (2005: 176).

As discussed above, nearly all the multi-word units that are coded as participant-oriented units are *stance* features, such as *önem arz etmektedir* 'is important', *son derece önemli* 'extremely important', *büyük önem taşımaktadır* 'has significance', *daha iyi bir* 'a better', and *şu şekilde özetlenebilir* 'can be summarized as [...]'.

(76) *Bu dönemler içerisinde Beylikler devri ayrı bir **önem arz etmektedir.*** (Humanities-Stance)

Among these periods, the Period of Beyliks **has** a particular **importance**.

(77) *Bu durumda insan ve hayvan sađlığı için gerekli olan mineral ve vitaminleri dışardan yani çeşitli takviyeler ile karşılamamız gerekmektedir. (Fundamental Sciences-Stance)*

In the circumstances, we must obtain the minerals and vitamins **that are essential to** human health and animal welfare outwardly that is by various reinforcing.

In terms of the *engagement* features, *üzerinde durulması gereken [...]* '[...] that is worth stressing', which is observed in the conclusions of the humanities (1%) and *[...]de görüldüğü gibi* 'as it is seen in [...]', which is observed in the introductions and conclusions of the fundamental sciences (2%), are the only multi-word units which have *engagement* features. It is seen that the writers of the scientific texts in the SAC do not prefer to engage the reader frequently, by using the units, such as *şekilde görülebileceği gibi* 'as can be seen in the figure'; they rather use *stance* features to express their ideas, indicate the accuracy and the importance of what they have found. Similar findings have been seen in other research too. For example, Hyland informs that stance markers are about five times more common than engagement features (2005: 186) although he believes that stance and engagement are two sides of the same coin because they both contribute to discourse (2005: 176). The only contrast in the usage of the participant-oriented multi-word units in this study is that *stance* features are used more frequently in the conclusions of the humanities (28%) and fundamental sciences (22%) than the introductions of these domains (22% in the humanities & 14% in the fundamental sciences). It is because conclusion parts are more suitable for conveying thoughts to convince the readers than introduction parts. In the next section, the multi-word units that are used in the scientific texts are discussed in the frame of genre relations.

5.3. Understanding Whether the Multi-Word Units Have Influence on Forming Genre-Specific Texts

This section refers to the tenth question of the study, which is seen in Chapter 1. The referred question is if the multi-word units have influence on forming genre because of their specific structures and functions. The introductory discussion on genres was made in Chapter 2 section 2.1 including the popularity of genre studies for a long while and its definitions by different researchers, such as Swales (1990) and Bhatia (2008).

As Swales (1990: 58) explains:

A genre comprises a class of communicative events, the members of which share some set of communicative purposes. These purposes are recognized by the expert members of the parent discourse community, and thereby constitute the rationale for the genre. This rationale shapes the schematic

structure of the discourse, influences and constrains choice of content and style.

There is a substantial research on the study of academic genre, such as dissertations (Hyland, 2008a), textbooks (Butler, 1990), research articles as a whole (Biber & Gray, 2010), sections of articles, such as abstracts (Gledhill, 1996), spoken registers, such as office hours, class management talk, and course syllabi (Biber & Barbieri, 2007), etc. Among various academic genre studies, it is the research article, i.e. scientific text that has received the most attention by the studies focusing its overall structure (Holmes, 1997: 322). Research article itself has been analyzed by many scholars in terms of its abstract, introduction, method, conclusion, or discussion sections. They have also been studied in the sense of their domains, such as social sciences, natural sciences, or applied sciences.

There are numerous scientific article studies containing analyses on collocational patterns, parts of speech units, citation, stance, and engagement features. Apart from these, there is a large amount of scientific text research that contains multi-word unit analyses. Multi-word units are word combinations that follow each other more frequently than expected, as also discussed and analyzed in depth throughout this study. These recurrent patterns help to shape text meaning and contribute to the sense of distinctiveness (Hyland, 2008a: 5). Many scholars agree that gaining control of a register requires a preference for such kind of word sequences. Relatedly, the usage of multi-word units creates systematic differences between genres. Ergo, the multi-word unit usage in academic texts contributes to the formation of the genre. As an example of this situation, *'de görülebileceği gibi* 'as can be seen' is a very frequent multi-word unit in scientific texts. However, *görebileceğiniz gibi* 'as you can see' may be less frequent in a published article. There are a lot of examples in this research that verify this case too, such as *her ne kadar* 'even though' and *buna bağlı olarak* 'because of this' in the introductions of the humanities, *elde edilen bulgular* 'obtained findings' and *başka bir deyişle* 'in other words' in the conclusions of the humanities, *bu çalışmanın amacı* 'the purpose of this study' in the introductions and conclusions of the fundamental sciences, and *elde edilen sonuçlar* 'obtained results' both in the introductions and conclusions of the fundamental sciences. These multi-word units are seen quite frequently in the scientific articles; there are similar usages in the frequency list, however some of them are more preferable. For instance, while *önemli bir yer* 'an important place' is the fifth rank in the introductions of the humanities, *önemli bir rol* 'an important role' is rank 64th. Similarly, *yaygın bir şekilde* 'commonly' is 12th rank in the introductions of the fundamental sciences but *yoğun bir şekilde* 'intensely' is 204th rank in the raw frequency list. These examples display that each register prefers particular usages more than the others. In other words, it is usual that the academic genre necessitates the usage of

specific multi-word units according to the rules of the scientific text writing. So, it is comprehensible that multi-word units contribute to the genre formation process.

It is also important to note that these specifically preferred multi-word units are mostly used differently too with regard to the academic domains that are the humanities and fundamental sciences. As also examined in Table 24 in 4.2, many multi-word units are used in one domain, such as humanities only. For instance, the humanities articles have 58 multi-word units in total that are not seen in the fundamental sciences. Similarly, the fundamental sciences texts have 61 units that are only used in this section. It means that 119 (59,5%) units among 200 multi-word patterns are not seen in the other academic domain. Only a small set of units are observed in two academic domains. In brief, it is concluded that multi-word unit usage is specific to each domain according to the data of this study. Thus, multi-word units are effective in genre-specific texts because each domain has its own preference except for few instances in the sense of multi-word unit usage.

As a result, the observations belonging to the previous and current research signal that scientific texts include many multi-word units specific to the academic writing, only. These units are not used in other fields, such as law. For example, *as a result of* is likely to be used in the academic register while *in pursuance of* is seen in the legal register more (Hyland, 2008a) as also exemplified in Chapter 1. These phenomena indicate that multi-word unit usage is specific to domains and those specific multi-word units have the effect of forming the genre itself.

5.4. A Hypothesis: Multi-Morpheme Units and Their Roles in Turkish Scientific Texts

the purpose of this study
- **amaç nın bu çalışma**
'bu çalışmanın amacı'

This section seeks an answer for the 11th research question of the study, which is seen in the introduction chapter. The mentioned question is if the inflectional multi-morphemes form multi-word units in Turkish scientific texts. Multi-word units are expected to be morphologically complex. Because of this reason, the suffix combinations that belong to the scientific texts are observed after the multi-word units in the SAC were discussed. In this way, which structures are simple or which usages are complex and what this information show in the academic writing can be found out.

First of all, the morphological features of Turkish are discussed briefly in this section before arguing about the multi-morpheme units that are observed in the data of this study. Turkish belonging to the Ural-Altaic language family is an agglutinative language and has a rich morphology including derivational and especially productive inflectional processes. It also has

vowel harmony, which is a phonological process that makes the vowels that belong to suffixes agree with the preceding vowels depending on backness or roundness. These processes can be exemplified with a sentence that is seen below.

(78) Çekoslavyakya- lı- laş- tır- a- ma- dık- lar- ımız- dan mı- sınız?

Root- PER.SUF- REC- CAU- PSB- NEG- SUB- PLU- POSS_{1PLU}- ABL- INT- 2PLU

Are you the one of those whom we are not able to turn into Czechoslovakians?

The first suffix $\{-lI\}$ attaches to nouns to make personal pronouns to indicate where a person is from. It can become $\{-li\}$, $\{-lu\}$, or $\{-lü\}$ according to the vowel harmony rule. The next suffix $\{-lAş\}$ forms intransitive verbs form adjectives; it may appear as $\{-leş\}$ if there is a front vowel in the preceding suffix. The other one is $\{-Dİr\}$ which is the causative suffix. Causativization is also formed with the suffixes $\{-t\}$, $\{-It\}$, $\{-Ir\}$, $\{-Ar\}$, $\{-Art\}$, or $\{-lAt\}$. Then, $\{-y)AmA\}$ is seen; here $\{-y)A\}$, which shows possibility, incorporates the negative suffix $\{-mA\}$. After these suffixes, the subordinator $\{-DİK\}$, which is explained at the beginning of this chapter, is used in the above example. The next affix is the plural suffix $\{-lAr\}$, which can also be in the form of $\{-ler\}$ and which indicates plurality. $\{-l)mlz\}$ is the first person plural possessive suffix. $\{-DAn\}$ is the ablative case marker. It has departure, separation, source, cause, comparison, and partitive usages (Lewis, 1967: 37, 38). $\{-ml\}$ is the interrogative particle; questions are formed with this marker. Lastly, $\{-sInlz\}$ is the second person plural suffix. This suffix is also used for the second person singular but it has a formal meaning in such kind of usages.

Related to the vowel harmony, allomorphs are predictable because of the harmony rule. In the above example, the last suffix is $\{-sınız\}$; however, in another word for instance, it may be $\{-sunuz\}$, as seen in the example below.

(79) Oku- muş- sunuz- dur

Root- PERF- 2PLU- COP

As it is seen in both examples above, majority of the cases in Turkish are monosyllabic; both roots and the suffixes are monosyllabic, mostly. In Chapter 4, the inflectional suffixes of the multi-word units have been discussed. Derivational morphology is relevant to individual words; the focus of this study is on the multi-word units, which have more than one word. So, inflectional suffixes are observed to see the specific usages belonging to the scientific texts.

It is understood that there are a lot of possible suffix combinations in Turkish that are created with derivational or inflectional affixes, which can be productive or unproductive. There are no prefixes or infixes in Turkish. Instead, there are a large number of suffixes, as also seen in the above example, which shows that Turkish case system is quite productive. Hankamer (1989) argues that the possible number of morpheme stacks on a root form can be in the millions and also, the ratio in each sentence is 3,4. Although a stretch of suffixes on a root can even contain nine suffixes, morpheme boundaries in Turkish are clear-cut different from Latin.

When it is compared to the multi-word units, the multi-morpheme units do not show unique differences dependent on the two academic domains, i.e., humanities and fundamental sciences articles have more differences in terms of the multi-word unit usages but the multi-morpheme unit properties, especially the ones belonging to the first 20 ranks, are usually similar in both domains. In other words, they have minor differences when compared to each other. On the other hand, when the SAC as a whole is compared to the TNC (Aksan, et al., 2012), it is seen that there are more specific differences, that is the varieties become evident.

For instance, nominative inflection is quite frequent in the SAC. Among the most used 20 structures belonging to the SAC, only 30% (six usages) is the verbal usages. In both domains, 14 structures (70%) are constructed via nouns, adjectives, or adverbs. Whereas, the frequency of the verbal structures is more in the TNC (nominals: 40% - verbals: 60%). This observation shows that scientific texts use structures, such as nouns and adjectives in order to use a more descriptive way of expression. For example, there is only one verbal expression in the fundamental sciences (Table 26) until the tenth rank and it is a relativized verb, which is rank eight (*uygulanan* 'that is applied'). Relevantly, the TNC has a verbal variety more, as seen in the roots that have suffixes that mark tense, such as *diyor* 's/he says (lit. s/he is saying)' and *git!* 'go!'. Although the general Turkish has more verbal constructions, the scientific texts have less structures that have verbals and the SAC has more nominal constructions. This finding indicates that there are more usages in the scientific texts that describe entities.

The numbers of the structures that have more than one frequency belonging to the SAC and TNC reveal a distinctive finding too. Out of 15 different structures that belong to the humanities (Table 25) and except for the structures that are seen once only, there are seven possessive (25%), four genitive (14,3%), two dative (7,1%), two locative (7,1%), two relative (7,1%), and two plural constructions (7,1%). Out of 14 different structures that belong to the fundamental sciences (Table 26) and except for the structures that are seen once only, there are seven possessive (23,3%), four genitive (13,3%), three locative (10%), three plural (10%), two dative (6,7%), two passive (6,7%), and two relative constructions (6,7%).

As it is seen, there is a diversity of morphological forms belonging to the humanities and fundamental sciences. When these two domains are observed together in order to compare with the usages that are seen in the TNC, the findings below are obtained based on the information in Tables 25, 26, and 27 that illustrate the most used 20 structures.

Table 30. The frequencies of the morphological forms in the SAC and TNC

SAC	Number	Freq (%)	TNC	Number	Freq (%)
POSS	14	24,1	POSS	5	20,8
GEN	8	13,8	DAT	2	8,3
LOC	5	8,6	GEN	2	8,3
PLU	5	8,6	Total	9	37,5
DAT	4	6,9	Others*	15	62,6
REL	4	6,9	Gen. Total	24	100
PASS	2	3,4			
Total	42	72,4			
Others*	16	27,6			
Gen. Total	58	100			

Others*: The structures that have only one frequency, such as the aorist marker $\{-(A/I)r\}$

As it is seen in Table 30, the scientific texts have quite a few morphological structures that are used more than once. The TNC has less inflectional suffixes belonging to the list of the most used 20 structures. The most frequent structure in the SAC is the possessive suffix $\{-(s)I\}$. The second most used structure is the genitive case $\{-(n)In\}$. The reason that these two suffixes are seen frequently in scientific texts is that nominals are used in scientific writing to a large extent. Hence, the genitive and possessive suffixes are used with nominals. A large number of multi-word units are formed by using these two structures together as a genitive-possessive construction, which refers to a noun phrase consisting of two noun phrases, the examples of which are in the following.

(80) *Çalışmanın temel amacı, teori ve uygulamalar ışığında yerel ekonomik kalkınma yaklaşımını değerlendirmektir. (Humanities-Introduction)*

The main purpose of the study is to evaluate the local economic development approach in the light of the theories and applications.

(81) *Bu çalışmanın amacı, Gölçük Gölü'nün zooplanktonunu, kalitatif ve kantitatif olarak belirlemek ve değişimleri saptamaktır. (Fundamental Sciences-Introduction)*

The purpose of this study is to specify the zooplankton of Lake Gölçük qualitatively and quantitatively and determine the differences.

The other frequent usage in the scientific texts is the locative suffix $\{-DA\}$, which expresses physical or abstract location. This case marker has a broad usage in the scientific texts too because authors need to structure their research to clarify and frame the study more by using specific suffixes, one of which is the locative case, such as *bu çalışma kapsamında* 'within the domain of this study' and *çalışmanın ikinci bölümünde* 'in the second chapter of the study'. Some of the other similar examples are seen in the below concordance lines.

(82) *Bu çalışmada da temiz yüzeylerde etkin olduğu saptanan çamaşır suyunun kirli yüzeylerde bazı mikroorganizmalara karşı etkisiz olduğu gözlenmiştir. (Fundamental Sciences-Conclusion)*

And in this study, bleach that was confirmed that it is effective on clean surfaces as well, is ineffective for some microorganisms on dirty surfaces.

(83) *...özellikle cinsiyetle ve çalışılan departmanla ilgili daha önceki çalışmalarda da vurgulanan farklılaşmalar bu çalışmada da ortaya çıkmıştır. (Humanities-Conclusion)*

Especially the differences about gender and the place in which it is worked that are emphasized in the previous studies as well, have emerged **in this study, too**.

Plural suffix {-lar} is the only suffix that marks number in nominals and it has a frequent usage in the scientific articles, which is also parallel to the frequent usage of nominals in academic prose. This suffix can also be attached to some proper names, certain time and place expressions. There is the use of {-lar} as well, to express time, such as *sabahları* ‘in the mornings’. In this study, the pluralized forms that are found in the scientific texts have two usages. One is preferred to describe the entities, such as *makaleler* ‘articles’ and *gözlemler* ‘observations’. The other is the words that are marked by 3rd person plural possessive, such as *çalışmaları* ‘the studies of / their studies’ and *sonuçları* ‘the results of / their results’ different from the expression of time. The relevant examples that are seen in the SAC are listed below.

(84) *Elde edilen sonuçlar, diğer araştırmacıların bulguları ile uyumludur. (Fundamental Sciences-Conclusion)*

The **obtained results** are accordant with the other researchers’ findings.

(85) *Araştırma sonuçlarına göre üniversite öğrencilerinin karar vermede özsaygı düzeyleri üniversitenin ilk yıllarında daha düşüktür. (Humanities-Conclusion)*

According to the research results, the collage students’ self-esteem levels in terms of making decisions are lower in the first years of college education.

The next frequent suffix in the scientific texts is the dative case marker {-(y)A}. The dative suffix in Turkish can be seen in an oblique object (*öğrencinin isteğine+V* ‘V+to the student’s wish’), a postpositional construction (*7’ye doğru* ‘towards 7 pm’), or a noun phrase construction (*modele* ‘to the model’). In the scientific articles in this study, the dative case marker is usually attached to nouns, such as *konuya* ‘to the subject’ and *araştırmaya* ‘to the

research' referring to the subjects that are discussed, but it is also seen in different constructions, such as discourse connectives (*buna bağlı olarak* 'because of this'), relativized constructions (*sonucu ortaya çıkan* 'that end(s) up'), and postpositional constructions (*bu sonuçlara göre* 'according to these results'). The reason that these constructions have the dative suffix is that grammar dictates such kind of usages, as seen in *buna bağlı olarak* 'because of this'.

Relativized and passive forms are also used quite frequently in scientific articles. Relative constructions modify noun phrases, as also discussed in the 'Subject Relatives with Relativized Verb $\{-(y)An\}$ ' section under the head of noun phrases. When the passive suffix is added to the stem, it turns the transitive verb into an intransitive verb, such as *kitabı okumak* 'to read the book' => *kitabı* okunan* 'that is read the book*'. Most of the time, relativized forms and passive voice are used together in the academic writing, such as *yapılan bir çalışmada* 'in a conducted study' and *elde edilen bulgular* 'obtained findings'. These usages are often chosen in order to describe the subjects and steps that are handled in the study. Relatedly, the usage of the relativized and passive forms draws the attention of readers to the object and it foregrounds the task itself by hiding the agent.

As it is observed above, the inflectional usages in the scientific texts are diverse. There is a variety of suffixes that are used in the academic writing, which is seen in Table 30. The inflectional suffixes belonging to the most used 20 structures in the TNC are less than the SAC. The former has three suffixes that have more than one frequency out of 18 different suffix types. Those are the possessive $\{-(s)I\}$, dative $\{-(y)A\}$, and genitive $\{-(n)In\}$ suffixes.

Above, is the analysis of the most used 20 structures including the ones that are bare, nominal, or suffix combinations belonging to the SAC and TNC. Tables 31, 32, and 33 below show the most used multi-morpheme units that are seen in the humanities, fundamental sciences and TNC out of the Tables 25, 26, and 27 in Chapter 4, which include the 20 structures, with their root information different from Tables 25, 26, and 27.

Table 31. The most used multi-morpheme units in the humanities

Humanities			
Number	Freq (%)	Suffixes	Example
11,768	2,53	N+POSS _{3SG} +LOC	<i>döneminde</i> 'in the period of/in its period'
8,194	1,76	N+PLU+GEN	<i>bireylerin</i> 'of (the) individuals'
4,723	1,02	V+PASS+REL	<i>yapılan</i> 'that is done'
4,500	0,97	V+SUB+POSS _{3SG}	<i>sergilediği</i> 'that s/he/it displays/displayed'
4,048	0,87	V+AOR+3SG	<i>alır</i> 'takes'
4,029	0,87	N+POSS _{3SG} +DAT	<i>kavramına</i> 'to the concept of/to his/her/its concept'
3,912	0,84	N+POSS _{3PLU} +GEN	<i>yöneticilerinin</i> 'of their manager(s)'
3,593	0,77	N+POSS _{3SG} +GEN	<i>modelinin</i> 'of his/her/its model'
3,476	0,75	V+IMPRF+COP+3SG	<i>göstermektedir</i> 'show(s) (lit. s/he/it is/has been showing)'

Table 32. The most used multi-morpheme units in the fundamental sciences

Fundamental Sciences			
Number	Freq (%)	Suffixes	Example
10,207	2,54	N+POSS _{3SG} +LOC	<i>eşitliğinde</i> 'in the equation of/in its equation'
7,003	1,74	V+PASS+REL	<i>uygulanan</i> 'that is applied'
6,713	1,67	N+PLU+GEN	<i>yapıların</i> 'of (the) structures'
4,673	1,16	V+PASS+PERF+COP+3SG	<i>görölmüştür</i> 'it has been seen'
4,371	1,09	N+POSS _{3PLU} +GEN	<i>değerlerinin</i> 'of their values'
4,039	1,01	N+POSS _{3SG} +GEN	<i>oranının</i> 'of its ratio'
3,555	0,89	V+SUB+POSS _{3SG}	<i>gösterdiği</i> 'that s/he/it shows/showed'
3,441	0,86	V+AOR+3SG	<i>içerir</i> 'includes'
3,385	0,84	N+POSS _{3SG} +DAT	<i>özelliğine</i> 'to the feature of/to his/her/its feature'
3,024	0,75	N+PLU+LOC	<i>deneylerde</i> 'in (the) experiments'

Table 33. The most used multi-morpheme units in the TNC

TNC			
Number	Freq (%)	Suffixes	Example
539,287	1,23	V+PERF+3SG	<i>dedi</i> 's/he said'
517,672	1,18	N+POSS _{3SG} +DAT	<i>kitabına</i> 'to the book of/to his/her book'
496,101	1,13	N+POSS _{3SG} +ACC	<i>arabasını</i> 'his/her carACC'
495,640	1,13	AOR+3SG	<i>uyur</i> 's/he sleeps'
340,469	0,78	N+POSS _{3SG} +GEN	<i>ihtimalinin</i> 'of its possibility'
322,340	0,74	V+SUB+POSS _{3SG}	<i>gördüğü</i> 'that s/he sees/saw'
301,109	0,69	V+IMPRF+3SG	<i>diyor</i> 's/he says (lit. s/he is saying)'

Tables 31, 32, and 33 involve the multi-morpheme combinations that belong to the most used 20 structures in the humanities, fundamental sciences and TNC. As it is written above, the root information of the most used multi-morpheme patterns in the SAC and TNC is included, which is seen in Tables 31, 32, and 33. While writing the roots, information that is relevant to derivation was not given. For instance, *sergilediği* 'that s/he/it displays/displayed' in Table 31 has a nominal root, *sergi* 'exhibition' and it becomes a verb by taking the suffix {-LA}. However, 'v' is written in the root section to show that the morpheme that is discussed is *sergile-* 'to display'. {-LA} is a derivational suffix that changes the root into a verb, such as from nouns (*sergi* 'exhibition' - *sergile-* 'to display'), adjectives (*kuru* 'dry' - *kurula-* 'to dry'), onomatopoeic stems (*hav* 'woof' - *havla-* 'to bark'), and interjections (*of* 'ugh' - *ofla-* 'to grunt'). Similarly, *yöneticilerinin* 'of their manager(s)' in Table 31 has a verbal root, *yönet-* 'to manage' but it is thought as a noun by discussing the word *yönetici* 'the manager' because the focus in this study is on the inflectional suffixes that the morphemes have.

The most noticeable observation related to the Tables 31, 32, and 33 is that the scientific articles have a large quantity of nominal constructions. Table 31 that belongs to the usages in the humanities involve six nominal constructions (66,7%) while it has three verbal structures (33,3%) only. The suffixes that are attached to verbs are SUB+POSS_{3SG} as seen in *sergilediği* 'that s/he/it displays/displayed', AOR+3SG as seen in *alır* 'takes' and IMPRF+COP+3SG as seen in *göstermektedir* 'show(s) (lit. s/he/it is/has been showing)'. The rest of the usages in Table 31 are constructed by nominal structure, such as N+POSS_{3SG}+LOC (*döneminde* 'in the period of/in its period') and N+PLU+GEN (*bireylerin* 'of (the) individuals'). The usages in the fundamental sciences that are seen in Table 32 are mostly nominal, as well as the usages in the humanities. There are four verbal constructions (40%), such as V+PASS+REL (*uygulanan* 'that is applied') and V+PASS+PERF+COP+3SG (*görölmüştür* 'it has been seen') while there are six nominal constructions (60%), such as N+POSS_{3SG}+LOC (*eşitliğinde* 'in the equation of/in its equation') and N+PLU+GEN

(*yapıların* 'of (the) structures'). On the contrary, the TNC has a lot more verbal frequency. The usages belonging to the general Turkish, which is seen in Table 33, consist of 57,1% of verbal constructions, such as V+PERF+3SG (*dedi* 's/he said') and V+IMPRF+3SG (*diyor* 's/he says (lit. s/he is saying)'). It has a lower frequency of multi-morpheme units (42,9%) that are attached to nominals, such as N+POSS_{3SG}+DAT (*kitabına* 'to the book of / to his/her book').

In terms of the multi-morpheme combinations, it is seen that the humanities texts have the multi-morpheme units that are formed by possessive and genitive suffixes mostly. There are 27,802 multi-morpheme sequences (30,1%) including the possessive suffix $\{-s\}I\}$ and 15,699 multi-morpheme stacks (17%) that include the genitive case $\{-(n)In\}$. The locative $\{-DA\}$ (11,768 - 12,7%) and plural suffix $\{-lAr\}$ (8,194 - 8,9%) are also the frequently used suffixes. The other multi-morpheme combinations consist of the passive voice (4,723 - 5,1%), relative constructions (4,723 - 5,1%), subordinating suffixes (4,500 - 4,9%), aorist marker (4,048 - 4,4%), dative case (4,029 - 4,4%), copular marker (3,476 - 3,8%), and imperfective (3,476 - 3,8%) structures.

The multi-morpheme units that are most frequently used in the fundamental sciences are possessive (25,557 - 25%), genitive (15,123 - 14,8%), and locative (13,231 - 13%) suffixes as well as the humanities texts. The passive voice (11,676 - 11,4%) and plural suffix (9,737 - 9,5%) are also common among the multi-morpheme units belonging to the fundamental sciences texts. The other multi-morpheme combinations are relative constructions (7,003 - 6,9%), copular marker (4,673 - 4,6%), perfective (4,673 - 4,6%), subordinating patterns (3,555 - 3,5%), aorist marker (3,441 - 3,4%), and dative case (3,385 - 3,3%).

The TNC has possessive constructions (2,172,222 - 46,3%) more frequently. The other patterns are similar in terms of the frequency information. The constructions have perfective (539,287 - 11,5%), dative suffix (517,672 - 11%), accusative case (496,101 - 10,6%), genitive marker (340,469 - 7,3%), subordinating patterns (322,340 - 6,9%), and imperfective (301,109 - 6,4%) structures.

It is observed that the possessive suffix $\{-s\}I\}$ is common in the SAC and TNC but the genitive case $\{-(n)In\}$ is more frequent in the scientific texts. It shows that these two structures are generally used together in the academic writing, as seen in the examples *çalışmanın temel amacı* 'the main purpose of the study' and *çalışmanın ikinci bölümünde* 'in the second chapter of the study'. Other frequent usages in the SAC are the locative case $\{-DA\}$ and plural suffix $\{-lAr\}$. These affixes are not observed in the most frequent suffixes that are seen in the TNC. The reason that these case markers are frequent in the scientific texts is that the authors explain the concepts in their studies and the details of their research by using concrete or abstract locations, such as *arasında yer alan* 'that is among', *son yıllarda yapılan* 'that has been done in recent years', and *bu çalışmada ise* 'whereas in this study' or they examine the process, discuss

the quantitative findings of the study, and give the results, such as *verilen cevaplar incelendiğinde* 'when the answers given are observed', *elde edilen sonuçlar* 'obtained results', and *bu sonuçlara göre* 'according to these results'. Moreover, the passive voice *{-Il/(I)n}* is also very common in the SAC although it is not seen in the TNC. This finding affirms that the passive usage is intrinsic to the academic genre. Although their frequencies are not high, the relative construction, the pattern of which is *{-(y)An}*, and copular marker *{-Dir}* are seen in the SAC only. As a result, these structures are also unique to scientific writing.

The only structure that is seen more frequently in the TNC is the ones that are related to tense, such as perfective (11,5%) and imperfective (6,4%). Such kinds of multi-morpheme units are also seen in the examples belonging to the SAC, however they are not as frequent as the ones that are used in the TNC (humanities: imperfective - 3,8% fundamental sciences: perfective - 4,6%). This finding also indicates the expressions that have tense markers are seen in the general Turkish (TNC) more and the scientific texts do not have verbal constructions more frequently; they consist of nominal constructions more.

As it is seen, Turkish scientific texts use various multi-morpheme units in an effective way. The expressions that are used for constructing ideas in academic texts including the multi-word units involve many multi-morpheme units. These multi-morpheme sequences have their own role to identify the purpose, content, process, etc. of the text. Regarding two academic domains, the multi-word unit usage differs mostly; however, the multi-morpheme units are often similar in the humanities and fundamental sciences articles. Therefore, these certain multi-morpheme units themselves have the influence on forming multi-word units while conveying information and forming ideas via scientific texts. The examples above are illustrations for this observation. For instance, *the purpose of this study* has five different morphemes. *Of ... study* is expressed by *çalışmanın* in Turkish and for *the purpose of*, *amacı* is used. In both expressions, specific suffixes have influence on creating thoughts in Turkish. Similarly, the word *uygulanan*, which is formed by a relative construction, is formed with three separate words in English: *that is applied*. As it is also shown above, there are many other examples similar to these units, *the purpose of this study* 'bu çalışmanın amacı' and *uygulanan* 'that is applied'.

Turkish has a rich affix system. This richness is apparent in the scientific texts too. The inflectional suffixes such as dative, locative, ablative, genitive, possessive, person, and number are observed in a lot of constructions that are seen in the scientific articles. An example sentence to demonstrate the discussed situation is given in the following.

(86) Çalışmanın sonucunda saptanan bulgular önceki bulgulardan farklıdır.

GEN POSS LOC REL PLU PTCL ABL COP

The findings that are obtained as a result of the study are different from the previous findings.

The English translation of the sentence has some suffixes, such as the plural form {-s} but those which are inflected for such kind of affixes are few. On the contrary, the same sentence has eight different suffixes when it is written in Turkish. There are other possible combinations related to this sentence too, such as *...önceki bulgulara göre...* that has a dative suffix or *...önceki bulgularla...* that has the comitative *-(y)lA(/ile)*. Such kind of possible usages can also be observed in the other constituents of the sentence, such as *çalışmada incelenen* 'that is examined in the study', which can be used at the beginning of a sentence. These kinds of wide-ranging examples reveal that the effect of suffixes in the writing process cannot be disregarded. They indicate that the multi-morpheme units have an important role in the academic writing process for pointing out ideas, stating findings, discussing results, etc. The specific effects of the multi-morpheme units and their functional relations are discussed more in Chapter 6.

5.5. Conclusion

In this chapter, the grammatical and syntactic categories of the 50 most frequently used multi-word units in the SAC were discussed first. An overview for every structure, such as noun phrases and independent clauses, was included. Then, the multi-word units were analyzed by the article parts of each discipline. The frequencies of all the structural information belonging to the multi-word units that are used in the introductions and conclusions of the humanities and fundamental sciences are seen in Table 34.

Table 34. The frequencies of the structural information of the 50 multi-word units

H-I	NM	FR	H-S	NM	FR	FS-I	NM	FR	FS-C	NM	FR
NP	25	50	NP	15	30	NP	22	44	NP	17	34
CONNEC	10	20	CONNEC	8	16	POST.CO	9	18	INDEP.CL	12	24
INDEP.CL	6	12	INDEP.CL	7	14	INDEP.CL	8	16	POST.CO	6	12
ADV.CO	4	8	ADV.CO	7	14	CONNEC	6	12	ADV.CO	5	10
POST.CO	3	6	DEP.CL	6	12	ADV.CO	4	8	CONNEC	5	10
DEP.CL	2	4	POST.CO	5	10	ADJ.CO	1	2	DEP.CL	3	6
ADJ.CO	0	0	ADJ.CO	2	4	DEP.CL	0	0	ADJ.CL	2	4
TOTAL	50	100		50	100		50	100		50	100

As seen in Table 34, all the multi-word units that are used in the scientific texts have noun phrase, dependent and independent clause structures; multi-word units are also seen in the form of connectives, adverbial, postpositional, and adjectival constructions. This means that scientific texts written in Turkish have a wide range of structures belonging to the article sentences. Nonetheless, some structures in Turkish are hardly ever observed in the scientific

texts. For instance, the negative marker *-mA* is only seen in *bir çalışmaya rastlanmamıştır* ‘a study has not been seen’. There is one more multi-word unit that is used in the SAC, which does not have a negative suffix but has a negation marker: *bir şey değildir* ‘it is not a thing’. It is also observed that there are some multi-word units that have negative connotations although they do not have the negative suffix *-mA*, such as *her ne kadar* ‘even though’, *ne var ki* ‘however’, and *ne yazık ki* ‘unfortunately’. Nevertheless, these usages are quite less than the other kinds of multi-word units. The reason that these kinds of usages are not seen in the scientific texts frequently is the conducted studies usually support the previous research that was done in literature. In other words, the authors generally do not object to the research that was discussed before. They usually search similar subjects or draw similar conclusions, which can be seen in the examples below.

(87) *Önceki iki çalışmada olduğu gibi bu çalışmada da yarışma havasında olup olmamanın adalet algısı üzerindeki etkisine bakılmıştır.*
(Humanities-Introduction)

And in this study, as in the other two studies, the effect of whether being in the mood of competition on the sense of justice has been searched.

Another construction is reduplication, which is observed in the SAC once only, although it is seen in Turkish very often. Turkish reduplications have been used commonly in every dialect and in every historic period (Aksan, 2000: 81; see also Hatiboğlu, 1981; Tuna, 1986; Demircan, 1996). Turkish has an expressional power with different kinds of reduplications, such as, noun reduplication (*ev ev* ‘house house’), adjective reduplication (*sıcak sıcak* ‘hot hot’), adverb reduplication (*hızlı hızlı* ‘fast fast’), verb reduplication (*içti içti* ‘s/he drank drank’), exclamation reduplication (*vay! vay!* ‘oh! oh!’), synonym reduplication (*doğru dürüst* ‘right honest’), and antonym reduplication (*sabah akşam* ‘morning evening’) (Aksan, 2000: 83). Unlike this feature of Turkish, only one multi-word unit, *için ayrı ayrı* ‘separately for’, is used in the conclusions of the fundamental sciences; it is the 38th rank in the list and it is seen seven times in the SAC.

Moreover, the personal pronoun, which has a special area of use in Turkish, is not seen in the SAC, either. This observation has two reasons. First one is Turkish has a property that does not necessitate personal pronoun usage, because it is a null subject language, so sentences can be constructed easily without a personal pronoun, i.e., by omitting the subject. For instance, instead of saying *Ben kağıtları okudum* ‘I read the papers’, it is quite possible and usually preferable to say *Kağıtları okudum* ‘I read the papers’. Yet, pronouns in Turkish are often used when the subject is especially required to be highlighted, as seen in *Sen söz dinlemedin* ‘You didn’t obey’ (Aksan, 2000: 100). The other reason that the SAC does not have any multi-word

units including personal pronouns is because of the nature of scientific texts. In scientific writing, personal pronouns are used very rarely. This situation is related to the stance features, which is discussed in the 14th paragraph of this chapter. Writers generally do not use personal pronouns in order not to show their attitudes directly. Instead, they state the judgement indirectly, as seen in *olduğu tespit edilmiştir* 'it has been confirmed that' and *etkili olduğu görülmüştür* 'has been seen that [it is] effective'. These examples also remind that the usage of passive voice is very frequent in scientific texts. Passive voice is one of the distinctive features of scientific texts since it is the grammaticalization of expressing an objective point of view in discourse; hence, authors use a lot of passive clauses to avoid a subjective point of view (Emeksiz, 2015: 1027). In this way, authors hide their identity as agents and make the reader focus on the subject matter (Emeksiz, 2015: 1027).

As for Table 34, it is seen that the first three ranks in the introductions and conclusions of the humanities are the same. The most frequent multi-word unit structures are noun phrases (25 - 50%), discourse connectives/conjunctions (10 - 20%), and independent clauses (6 - 12%). Different from the humanities-introductions, the conclusions of the humanities have adjectival constructions (7 - 14%). This phenomenon shows that the humanities articles prefer to describe the issue under discussion in the conclusion parts more. Both article parts of the fundamental sciences have the multi-word units in the noun phrase (22 - 44% in the introductions & 17 - 34% in the conclusions), postpositional construction (9 - 18% in the introductions & 6 - 12% in the conclusions), dependent (3 - 6% in the conclusions), and independent clause structures (8 - 16% in the introductions & 6 - 12% in the conclusions). Different from the conclusions of the fundamental sciences, there are not any dependent clause structures in the introductions of the fundamental sciences. Furthermore, the dependent clause structure in the conclusions of the fundamental sciences is one of the least frequent ones. The most frequent dependent clause structure is in the conclusions of the humanities (6 - 12%). This situation in both disciplines reflects that subordinate clauses are more preferable in the humanities, i.e., the authors of the humanities articles choose sentences that have subordinating suffixes, such as *{-DIK}*. This is also an indication of longer sentences with complex structures that are used in the humanities scientific texts. Fundamental sciences articles, on the other hand, have shorter phrase structures. In general, text length of the articles in the fundamental sciences is less than the articles that are written in the humanities. The authors of the fundamental sciences prefer to use shorter clause structures pointing out the results in a brief way. Both sentence structures that are generally preferred in the two disciplines are seen in the following.

(88) *Öğretici ve eğitici olma kaygısının taşındığı bu eserler, Oğuz Türkçesinin o yüzyıldaki şeklinin ve yazı dili hâline geçişinin önemli tanıklarındır. (Humanities-Conclusion)*

These works that have didactic and educational concerns are important witnesses of the shape of Oghuz Turkish in that century and its transition to written language.

(89) *Bu değerler istatistik açıdan önemli bulundu (p<0,01). (Fundamental Sciences-Conclusion)*

These values were considered significant statistically (p<0,01).

(90) *Yapılan bu çalışmada ise, dermatofitoz en fazla ilkbaharda görüldü. (Fundamental Sciences-Conclusion)*

Whereas in this study, dermatophytoses was seen in spring at most.

It is seen that the scientific texts that belong to the fundamental sciences usually reflect basic findings with numbers and ratios. From this standpoint, the scientific texts in the humanities are usually formed with more representations that are descriptive.

In both domains, the multi-word units in the noun phrase structure (79 - 39,5% in total) are the most frequent units, which is a natural outcome of Turkish language. Basic Turkish vocabulary has many nouns, which are the names of body parts, food and beverage, which are the vital needs of human beings, tools, animals, plants, numbers, kinship terms, etc. (Aksan, 2000: 115).

(91) *Eski Uygur Türkçesinin Türk dili tarihinde **önemli bir yeri** vardır. (Humanities)*

Old Uighur Turkish has **an important place** in the history of Turkish language.

(92) *Bu husus tohum bahçelerinin kullanılması ve tohum kaynağı olarak kullanılmaya başlamasından itibaren önem kazanmış ve bu konuda **pek çok çalışma** yapılmıştır. (Fundamental Sciences)*

This matter has gained importance and **many studies** have been done on this subject since seed orchards were used and they came into use as seed sources.

The term 'noun' has been used for designating living or non-living entities, thoughts, emotions, events, and situations; and for the units that name these concepts (Aksan, 2009: 85). Relevant to this issue, Turkish has a rich phrase structure; one of the most commonly used structures in Turkish is noun phrases. Thus, it is natural that the multi-word units in noun phrase forms are seen frequently in the scientific texts, as well.

In the humanities, discourse connectives/conjunctions, such as *buna bağlı olarak* 'because of this' and *bunun yanı sıra* 'in addition to this' are more frequent (18 - 18%) than the fundamental sciences (11 - 11%); in the fundamental sciences, postpositional constructions, such as *çok araştırmacı tarafından* 'by many researchers' (15 - 15%) and independent clause

structures, such as *örnek olarak verilebilir* 'can be given as an example' (20 - 20%) are more frequent than the humanities (POST.CO. 8 - 8%, INDEP.CL. 13 - 13%). In both domains, the multi-word units that have adverbial constructions, such as *etkin bir şekilde* 'effectively' (H: 11 - 11%, FS: 9 - 9% in total) and adjectival constructions, such as *göre daha az* 'less than' (H: 2 - 2%, FS: 3 - 3% in total) have less frequencies.

(93) *Medya ve özellikle televizyon aracılığıyla bireylerin gerçeğe dair algısı, gerçek hakkında mesaj alış verişi ya da gerçeğe dair 'konuşma'sının rasyonelliği potansiyel olarak önemli bir aşınma içerisindedir. **Bir başka deyişle**, medya ile yönlendirilen bireyler 'gerçek' ve 'kurgusal-sanal' olan arasındaki ayrımı fark edememektedir. (Humanities-Discourse Connectives)*

Individuals' perception in regard to truth, exchange of messages, or rationality of their speech with respect to reality is in a serious corruption potentially via media and especially television. **In other words**, the individuals who are manipulated by media cannot understand the difference between the reality and imaginary fiction.

(94) ***Bu sonuçlara göre** sentezlenen boyarmadde ticari boyanın özelliklerine oldukça yakın değerler vermiştir. (Fundamental Sciences-Postpositional Constructions)*

According to these results, the values of the dyestuff that was synthesized and features of the commercial dye have ended up quite similar.

(95) *Verilen sonuçların seçilen örnek ile sınırlı olduğu düşünülebilir. Ancak, 25 katlı bir betonarme çerçeve için yapılan çözümler sonucunda da benzer **sonuçlar elde edilmiştir**. (Fundamental Sciences-Independent Clauses)*

It can be thought that the given results are limited to the selected example. However, in consequence of the solutions for a reinforced concrete frame that has 25 floors, similar results have been obtained.

Connectives combine words, phrases, or sentences as discussed in the beginning of this chapter. The use of connectives has a versatile quality; they have addition, reason-result, contradiction, negative, and positive meanings, etc. (Aksan, 2005: 69-71). The discourse connectives/conjunctions in the SAC are seen in the humanities mostly. This observation is related to the longer descriptions that are preferred in the scientific texts that belong to the humanities. Authors of the humanities scientific texts use various kinds of discourse connectives/conjunctions, such as *bunun yanı sıra* 'in addition to this' and *kısmen de olsa* 'even if

[it is] partially' to unite their ideas and illustrate the situation that they handle in a more detailed way.

There are no prepositions in Turkish. Instead, there is a large number of postpositions. The multi-word units in the SAC that have this type of structure are used in the fundamental sciences more. Some of the multi-word units belonging to this classification in the fundamental sciences are *bu çalışmada ise* 'whereas in this study', *bu çalışma ile* 'with this study', and *çalışmanın ikinci bölümünde* 'in the second chapter of the study'. In the scientific texts belonging to the fundamental sciences, the structure of the study is clarified with these multi-word units in the form of postpositional constructions with a purpose of providing unity and coherence.

Independent clause structure is also observed frequently in the fundamental sciences articles. While it is less frequent in the scientific texts that are written in the humanities, the frequent usage of it in the fundamental sciences is a sign of conveying the main judgement. In other saying, the preference of more complex structures, such as the multi-word units in the form of dependent clauses is seen less in the scientific texts that are written in the fundamental sciences.

After the grammatical and syntactic categories of the 50 most frequently used multi-word units in the SAC were discussed, the discourse functions of these multi-word units were analyzed in this chapter. While it is useful to consider the lexical composition of formulaic strings, understanding their functional distributions is a key way in comprehending the text (Hyland & Tse, 2009: 122); thus, grasping the functional categories is significant in order to comprehend the formation process of the scientific text and its rules. It is observed that the text-oriented multi-word units are the most used ones in the introductions (22 - 44%) and conclusions (18 - 36%) of the humanities (40 - 40% in total). Generally, text-oriented multi-word units help authors provide an understandable frame in text and present the argument in a coherent way. Multi-word units, such as *konu ile ilgili* 'relevant to the topic' and *başta olmak üzere* 'primarily' provide integrity and contribute to the unity that is formed in the audience's mind. Hyland (2008b: 56) comments that the frequent usage of text-oriented multi-word units is to represent a sophisticated approach to language and craft more academic reader-friendly prose. Relevantly, topics that belong to the humanities are open to evaluation and interpretation more.

While research-oriented multi-word units are the most used units in the introductions of the fundamental sciences (22 - 44%), in the conclusions, text-oriented multi-word units are used most frequently (24 - 48%). Research-oriented multi-word units like *çok araştırmacı tarafından* 'by many researchers' and *pek çok çalışma* 'many studies' enable to represent the content and explain the research object in detail because the studies that belong to the fundamental sciences are largely conducted in laboratories. This reason necessitates the usage

of research-oriented multi-word units to clarify the subject, procedure, and concepts of the study. In the conclusions of the fundamental sciences, the frequency of the research-oriented multi-word units is less than the introductions. Instead, text-oriented multi-word units in the conclusions are more frequent. The reason that the research-oriented multi-word units are used less in the conclusions is that the authors usually express the procedure of the study and describe the situation that is handled in the introduction part of the article. In other words, these kinds of information have already been given and the conclusion part of the study is ready for declaration of the findings by using, for instance, *sonuçlar elde edilmiştir* 'results have been obtained' and *olduğu tespit edilmiştir* 'it has been confirmed that'. The increase of the text-oriented multi-word units in the conclusions of the fundamental sciences can be explained as the author guarantees his/her findings by using *resultative* and *structuring* signals, for instance, as seen in *yukarıda sözü edilen* 'above mentioned'.

When compared to the research-oriented and text-oriented multi-word units, participant-oriented ones are the least used multi-word units in both domains. The reason of this situation is that the authors' reluctance to show their posture overmuch because it is usually thought that speaking clearly or directly is risky in case that the proposition may be wrong. Hyland (2008b: 57) finds out that participant-oriented multi-word units are used frequently in research articles. Willingness to spread the statement of findings, display the results to other researchers, and continue the existence in the field causes this phenomenon. However, the findings are not parallel to this situation in the data of this study. As expressed above, participant-oriented multi-word units are the least used ones in the introductions and conclusions of the humanities and fundamental sciences. More strikingly, there are only three *engagement* features, two of which are the same, that are observed in the SAC. The data of this study consisting of written materials can be a reason for this consequence. In other words, it is more probable that spoken data includes such kind of usages. For instance, *öyle değil mi?* 'isn't it so?' would not be odd in a classroom lecture but it would not be preferred in the scientific texts because of the specific characteristic of the academic writing.

After analyzing the discourse functional categories of the multi-word units, the influence of the multi-word units on forming genre was discussed. The multi-word units in the scientific texts denote that these usages enable to mark the boundaries of the text. When the relevant units are used during the writing process, the purpose of the text and its properties become more evident. Typically, the multi-word unit usage varies by fields. While some units are not preferred by the authors, some of them are used frequently. In a similar way, some multi-word units are chosen often by the scientific text authors, however some of them are barely used. Consequently, multi-word unit usage in academic texts has a part in forming genre-specific texts.

Lastly, the relationship between the multi-morpheme units and the scientific texts were handled and it was hypothesized that the multi-morpheme units have a significant influence on forming multi-word units that are frequently used in scientific text writing because the use of them is an important part of the academic writing, more discussion about which is seen in Chapter 6.



6. CONCLUSION

6.1. Summary of the Study

Turkish multi-word units that have three morphemes and that are used in the introductions and conclusions of the published scientific texts belonging to the humanities and fundamental sciences domains have been discussed in this study within the frame of genre and discourse analyses by using Hyland's (2008) model and corpus linguistics method. The grammatical, syntactic, and discourse functional categories of the most used multi-word units and their relations with genre features have been analyzed, compared and contrasted within the academic domains. In addition, lists of similar multi-word usages have been organized.

Relevantly, the multi-morpheme sequences that are used in the scientific texts, their frequencies, and their comparison to the ones belonging to the TNC (Aksan et al., 2012) have been examined with the thought that inflectional suffix strings are significant in language process and they have the effect of acting as multi-word units in academic texts.

6.2. Limitations

The results of this study consist of 12 academic disciplines. It cannot be generalized to other disciplines, such as medicine or engineering. In other words, the findings of this research are unique to this data set.

The grammatical, syntactic, and discourse functional properties of the multi-word units were analyzed manually. Although they were checked by two experts for interrater reliability, there might be some possible inconsistencies, the responsibility of which is the author's.

Some of the multi-morpheme units were translated into English in a more different way to show the structure of the morpheme better. However, the translations of those structures might change when they are used in a sentence. For instance, the translation of the POSS_{3PLU}+GEN example was written as *of their values*. *Their* was used to show the nature of the plural possessive suffix but in a sentence such as, *gelişmiş ülkelerin değerlerinin...*, the English version would be *...of the values of developed countries* although it has a meaning like *of their (developed countries') values*.

While analyzing the nature of the multi-morpheme units, the observed suffixes in the population were described. Some structures have turned out to be more frequent than the others are. For some of the examples, the relevant suffix may have not been found although the structure may exist in other sentences belonging to the scientific article corpus. For instance, as it is also explained in 6.3-Theoretical Implications, the reflexive suffix *{-(I)n}* is not used frequently by the authors but another construction, such as *kendini* 'himself/herself' might have been preferred as a reflexive usage. Similarly, the reciprocal suffix *{-(I)ş}* is not seen in the

usages belonging to the SAC but sentences involving *birbirlerini* 'each other' are possible examples. However, these kinds of structures were not included because they are not in the scope of the analysis of the inflectional suffixes.

6.3. Theoretical Implications

The academic text writing necessitates multi-word unit usage for an efficient construction. When multi-word units are used properly in scientific texts, a more comprehensible structure can be formed.

After the lists were sorted out in order to obtain the proper 50 most used multi-word units in each article part of each domain, the observations were made on the usages of two academic disciplines. The most used multi-word unit is *her ne kadar* 'even though' in the introductions and conclusions of the humanities. In the fundamental sciences, *bu çalışmanın amacı* 'the purpose of this study' is the most used one in the introductions while it is *elde edilen sonuçlar* 'obtained results' in the conclusions. The relationship between the verb *elde et-* 'to obtain' and scientific texts is discussed below.

Certain criteria were designated in order to examine more different kinds of multi-word units but the quantity of those similar usages cannot be underestimated, such as *olarak karşımıza çıkmaktadır* 'it turns out to be', *olarak kabul edilmektedir* 'it is accepted as' on one hand and *bu çalışmanın amacı* 'the purpose of this study', *bu araştırmanın amacı* 'the purpose of this research' on the other hand.

In the sense of the frequencies, it is observed that the fundamental sciences articles have more multi-word units in total. Relatedly, the introductions of the humanities have more multi-word units than the fundamental sciences while the conclusions of the fundamental sciences include more units than the humanities. It is striking that the texts belonging to the fundamental sciences contain more multi-word units because the lengths of all articles nearly are shorter than the humanities texts, which was noticed in the corpus construction process. At this point, it is understood that the length of a text is not in direct proportion to the frequency of multi-word units. The reason might be the relationship between the number of words in a text and the preference of fixed expressions like patterns. Fundamental sciences seem to use those expressions more than the humanities, which are also relevant to the fixed moves and steps (Swales, 1990) in article structures in the fundamental sciences. It can be a reason for the frequent usage of multi-word units belonging to the fundamental sciences texts. However, it must be tested for certain results, that is, this situation can be searched in future studies.

It is seen that the domain-specific multi-word unit usage is more frequent. For example, 28 (14%) different multi-word units are used in the introductions of the humanities, such as *ne var ki* 'however' and *bu açıdan bakıldığında* 'when viewed from this aspect'. Similarly, in the

conclusions of the humanities, there are 30 (15%) multi-word units, such as *elde edilen bulgular* ‘obtained findings’ that are not used in the fundamental sciences at all. In the introductions of the fundamental sciences, there are 28 (14%) multi-word units that are not used in the other sections, such as *bu çalışmada ise* ‘whereas in this study’ and *yaygın bir şekilde* ‘commonly’; 33 (17%) multi-word units are only used in the conclusions of the fundamental sciences, such as *sonuçlar elde edilmiştir* ‘results have been obtained’. However, a small amount of multi-word units is used both in the humanities and fundamental sciences. For example, six (3%) units are seen in the introductions of the humanities and fundamental sciences (*bu çalışmanın amacı* ‘the purpose of this study’) and two (1%) of them are seen in the conclusions of the humanities and fundamental sciences (*son derece önemli(dir)* ‘is extremely important’). As it is observed, although the multi-word unit usage is frequent in scientific texts, these units are chosen according to the academic discipline. In other words, each field has a specific usage of multi-word units, which are not preferred by other fields most of the time.

When the grammatical and syntactic categories are thought, it has been confirmed that the multi-word units in the noun phrase structure in both domains are the most frequent units, which is a natural outcome of Turkish language. Other than this feature, the most frequent usage in the humanities is discourse connectives and it is postpositional constructions in the fundamental sciences. The humanities articles include longer descriptions with transitions, for example, (*bunun yanı sıra* ‘in addition to this’ and *buna bağlı olarak* ‘because of this’) to unite propositions. The authors of the fundamental sciences prefer to use postpositional constructions more frequently with a purpose of unity and coherence in the text.

In the sense of the discourse functional categories, it is noticed that the humanities texts choose the text-oriented multi-word units more in the introduction and conclusion parts of the articles. The articles that belong to the fundamental sciences have more research-oriented multi-word units in the introductions but differently, they have more text-oriented units in the conclusions. It has been discussed that the information about processes of the study, etc., which is provided by research-oriented units, has been given in the introduction parts. The interesting thing at this point is that if that is the case, the humanities texts do not have research-oriented multi-word units in the introductions more. Apparently, it is thought that the requirement of the text-oriented multi-word units in the humanities is more. As might be expected, the frequencies of the text-oriented units are more as seen below. There are also concordance line examples belonging to the frequent functions that are seen in the humanities and fundamental sciences, next.

Research-oriented units:	H: 34%	FS: 36%
Text-oriented units:	H: 40%	FS: 44%
Participant-oriented units:	H: 26%	FS: 20%

(96) **Her ne kadar** bu çalışma ile ispat edilememiş olsa da, çalışma ortamında duygusal zekânın işgörenlerin performanslarına dolaylı ve dolaysız etkileri olduğu yönünde bir çok araştırma bulunmaktadır. (Humanities-Text-Oriented-Transition)

Even though it has not been proved in this study, there are a lot of studies that the emotional intelligence has influences directly and indirectly on performances of workers in work environment.

(97) **Her şeyden önce** güncel bir sosyal adalet politikası oluşturmak için temel kriter ihtiyacıdır. (Humanities-Text-Oriented-Framing)

First and foremost, the basic criterion is requirement in order to create an updated social justice policy.

(98) Ancak iklim, toprak, ürünün ham ya da olgun oluşu, ürün toplama yöntemleri, taşıma ve depolama **gibi pek çok** faktör mineral ve vitamin alımını engellemektedir. (Fundamental Sciences-Research-Oriented-Quantification)

However, **a lot of** factors, **such as** climate, soil, whether the product is raw or ripe, harvesting methods, handling and storage prevent vitamin receiving.

(99) Frekans cevaplarının incelenmesiyle süspansiyon sapmasına odaklı kontrolcüdense, ivme odaklı kontrolcü yol tutuş performansı açısından daha **iyi sonuç verdiği** görülmektedir. (Fundamental Sciences-Text-Oriented-Resultative)

By examining the frequency answers, it is seen that acceleration-oriented controller **gives better results** in the sense of handling performance instead of a controller that focuses on suspension deviation.

Apart from this information, scientific texts include many multi-word units specific to the academic writing, only. These units are not preferred in other fields. So, it is concluded that multi-word unit usage is particular to domains and those special usages of multi-word units have the effect of forming the genre.

There are many different multi-morpheme stacks that are used in the scientific articles, as well as multi-word units. Broadly, the study has two macro sections: multi-words and multi-morphemes. These subjects are connected to each other and they have various roles in scientific text process. As discussed in Chapter 5, some of the multi-morpheme units have more frequencies while the others have fewer frequencies. For instance, the scientific texts belonging to the fundamental sciences contain more multi-morpheme stacks than the ones in the

humanities articles. Broadly, though, the SAC has more multi-morpheme units when it is compared to the ones in the TNC (Aksan et al., 2012). In this study, it is found out that the scientific articles use more multi-morpheme combinations than the general Turkish does. As the number of combinations increases, the frequencies decrease in parallel. The reason is that the process becomes more complex morphologically. For instance, the frequencies of the suffix sequences in the humanities are below:

2 multi-morpheme units: 34 (42,5%)

3 multi-morpheme units: 32 (40%)

4 multi-morpheme units: 13 (16,25%)

5 multi-morpheme units: 1 (1,25%)

The most frequent multi-morpheme combination both in the humanities and fundamental sciences is N+POSS_{3SG}+LOC, such as *döneminde* ‘in the period of / in its period’ and *eşitliğinde* ‘in the equation of / in its equation’. Possessive suffix *{-(s)I}* indicates the possessor in a noun phrase. With the use of the possessive case, an entity such as an object is denoted, as seen in *kütüphanesi* ‘the library of / his/her/its library’ and *teorisi* ‘the theory of / his/her/its theory’. Possessive suffixes are also added to the subordinating suffixes *{-DIK}*, *{-(y)AcAK}*, *{-mA}*, and *{-(y)Iş}* to mark the subject of the subordinate clause: *ilgilendiğimiziz (konular)* ‘(the topics) that we are interested in’, *gidecekleri (ülke)* ‘(the country) that they will go to’, and *(kitabı) okuyuşu* ‘his/her reading the book’ (Göksel & Keslake, 2005: 66). Apart from these, the possessive suffix marks some other structures, such as partitive constructions and verbal nouns. When it is used with the locative suffix *{-DA}*, they denote spatial or temporal location together, i.e., they mark time or place. In the SAC, they usually collocate with the structures below. (The concordance line examples between (100) and (126) include other kinds of words belonging to the SAC as well as the words that belong to the most frequent multi-word units that are discussed in order to show various usages in academic writing).

(100) *Bu doğrultuda, psikolojik sorunu olmayan, 14-17 yaşları arasında yer alan, 153 lise öğrencisi ergenin... (Humanities-Introduction)*

Accordingly, 153 high school teenagers **between** the ages of 14-17 who do not have psychological problems...

(101) *Ayrıca akarsu yatağında yapılan fiziksel değişiklikler canlı çeşitliliğini etkileyen faktörler arasında yer almaktadır. (Fundamental Sciences-Introduction)*

Moreover, the physical differences that are made **in the streambed** are among the factors that affect the variety of the living being.

The usages including POSS_{3SG}+LOC combinations mostly indicate spatial location; end with a verb that has aorist marker $\{- (A/I)r\}$ and a verb that is marked by the present tense $\{-mAktA\}$ and copular marker $\{-Dir\}$, as seen in the following.

(102) *Genellikle kadınlar arasında yaygın olan kahve falına bakılırken, kahve fincanının dibindeki telvenin ve kenarlarındaki telve kalıntılarının ortaya koyduğu şekillere bakılarak kahveyi içen kişinin geleceği yorumlanır. (Humanities-Introduction)*

Usually while women tell fortune **between** each other, the future of the person who drinks the coffee **is interpreted** by looking at the shapes that are formed by the ground at the bottom of the coffee cup and the remains on the upper edge of it.

(103) *Bisikletli bağlantı ağının; kentsel ulaşım ağı, alan kullanımları, eylemli ve diğer yeşil alanlar ve diğer kentsel donatı alanları ile olan ilişki ve işlevleri kapsamında çözümlenmesi önem taşımaktadır. (Fundamental Sciences-Conclusion)*

The analysis of the network for bicycles **is important within the scope of** the relations and functions of urban transportation network, usage of the networks, active and other green areas and other urban outfit fields.

As observed in the above examples, POSS_{3SG}+LOC sequences generally mark noun phrases and in terms of spatial location to describe entities and situations that are discussed during the research. These examples indicate that the possessive and locative suffixes are related to the *location* and *description* functions belonging to the research-oriented units.

Other similar multi-morpheme combinations in the humanities and fundamental sciences are V+SUB+POSS_{3SG} (*sergilediği* ‘that s/he/it displays/displayed’), N+POSS_{3SG}+DAT (*kavramına* ‘to the concept of / to his/her/its concept’), N+POSS_{3SG}+GEN (*modelinin* ‘of his/her/its model’), and N+POSS_{3PLU}+GEN (*yöneticilerinin* ‘of their manager(s)’) sequences. These multi-morpheme stacks include the possessive suffix. The other inflectional suffixes that they have are the dative, genitive, and subordinating suffixes. The dative case $\{- (y)A\}$ marks noun phrases, too. It shows movement to a target, such as place or time. In the SAC, it is used with the possessive suffix frequently, the concordance examples of which are in the following.

(104) *Araştırma sonucuna göre ilde süt tüketimi ile ilgili en önemli sorunun açık süt olduğu belirlenmiştir. (Humanities-Conclusion)*

According **to the** research **result**, it has been determined that the most important problem about milk consumption in the city is unpacked milk.

(105) *Taşıtın hız, ağırlık, süspansiyon elemanlarıyla ilgili değerleri göz önüne alınarak simülasyonlar gerçekleştirilmiştir. (Fundamental Sciences-Introduction)*

Simulations have been made by the speed, weight, and the values about damping elements of the car being taken **into consideration**.

In the humanities, the possessive and dative suffixes are usually seen with {-mİştIr} at the end of the sentence, that is PERF+COP+3SG structure. The same combination is observed in the fundamental sciences, as well; the fundamental sciences texts have aorist case and {-mAktADır} sequence with the possessive suffix, as well as {-mİştIr} combination. Only in the conclusions of the fundamental sciences, the aorist marking is less than {-mİştIr}.

(106) *Yazı hayatına küçük yaşlarda başlamış, birçok eseri Türkçeye çevirmiştir. (Humanities-Introduction)*

He has begun **(to) his writing life** at young ages; he **has translated** many works into Turkish.

(107) *Yaşadığımız bilgi çağında bilimsel gelişmeler, her geçen gün hızına erişilmez bir hâl almıştır. (Humanities-Introduction)*

The developments in the information age that we have been experiencing **have become beyond reach** day by day in the sense of its speed. (lit. impossible to reach its speed)

(108) *...familyalarına ait örnekler incelenerek Türkiye harpaktikoid faunasına katkı sağlanmaya çalışılmıştır. (Fundamental Sciences-Introduction)*

It **has been tried** to contribute **to** Turkey **harpacticoids fauna** by examining the examples belonging to the ... families.

(109) *...öğrencilerin farklı fen kavramlarıyla ilgili çok sayıda kavram yanlışlığına sahip olduklarını göstermektedir. (Fundamental Sciences-Introduction)*

...**shows** that the students have many **misconceptions** about different science concepts. (lit. to concept mistakes)

(110) *Bu da yapay sinir ağının süreç elemanı sayısının artması anlamına gelir. (Fundamental Sciences-Conclusion)*

This **means that** the process element number of the artificial neural network increases. (lit. to the meaning of)

The concordance lines that are formed with {-mİştIr} seem to contain process, which can be thought as the *procedure* function. The other multi-morpheme units do not reflect a certain function. It can have a resultative meaning as seen in *öğrencilerin farklı fen kavramlarıyla ilgili*

çok sayıda kavram yanlışlığına sahip olduklarını göstermektedir 'it shows that the students have many misconceptions about different science concepts' or a description as seen in *bu da yapay sinir ağının süreç elemanı sayısının artması anlamına gelir* 'and this means that the process element number of the artificial neural network increases'.

The genitive suffix *{-(n)In}* marks the possessor of an entity that is expressed by an another entity. When it is used with the possessive suffix in the scientific texts, the noun phrase become composite.

(111) *Bu durum, ülkemizdeki gebeliklerin önemli bir kısmının planlamadan ve istenmeden meydana geldiğini göstermektedir. (Humanities-Conclusion)*

...This situation shows that an important **part of the** pregnancies in our country happens accidentally or without planning.

(112) *...prosesinin verimini düşürmektedir. (Fundamental Sciences-Introduction)*

...it decreases the productivity **of (its) process**.

In the SAC, N+POSS_{3SG}+GEN strings are usually seen with various suffixes that are attached to verbs. The examples are in the following.

(113) *...bu ilişkinin doğasının henüz net olarak açıklanmadığını ifade etmektedir. (Humanities-Introduction)*

...(s/he/it) **expresses** that **the nature of** this relation has not been clarified yet.

(114) *...tedavi sürecinin değerlendirilmesinde yararlı olacağı düşünülmüştür. (Humanities-Introduction)*

...it **has been thought** that it would be useful in the evaluation of the **(his/her) treatment process**.

(115) *...ciddi bir şekilde takip edilmesi üretime hazırlık sürecinin kısaltılması için çok önemlidir. (Fundamental Sciences-Conclusion)*

...following it seriously **is** very **important** in order to shorten **the process of** production preparation.

(116) *Bulanık mantık hata teşhis sisteminin testinde, toplam 50 adet veri kullanılarak sistem test edilmiştir. (Fundamental Sciences-Conclusion)*

In the test of fuzzy logic-error identification **system**, the system **has been tested** by using 50 data in total.

These concordance lines above make explanations and express procedures with the help of POSS_{3SG}+GEN multi-morphemes. The other frequent suffix type in the SAC that is used with the possessive suffix is the subordinating suffixes, such as *{-DIK}*, as seen in *sergilediği* 'that s/he/it

displays/displayed' and *gösterdiği* 'that s/he/it shows/showed'. The subordinating suffixes are nominalizing suffixes (also discussed in Chapter 5). The subordinators in the SAC that are used with the possessive case are seen in below concordance lines.

(117) *Ayrıca, oy vermede seçmenlerin davranışını etkileyen en önemli unsurlardan birinin "güven" olduğu dikkate alındığında; adayın "dürüstlüğü, yolsuzluklara karşı hassasiyeti, çalışkan olması..." gibi işlevsel açıdan üstleneceği sorumluluğu yerine getirip getiremeyeceğine dair özellikleri, seçmenin zihnindeki imajını belirleyecek değişkenler olarak görülmektedir. (Humanities-Conclusion)*

Also in voting, when **the fact that** one of the most important factors is "trust" that influences the behaviors of voters is taken into consideration, it is seen that the candidate's features regarding s/he discharges the responsibility or not that s/he will take functionally, such as his/her "honesty, sensitivity to corruption, his/her being hardworking..." are the variables that designate the idea in voter's mind.

(118) *Yüzey eklenmesi ile oluşturulan modellerin daha iyi sonuç verdiği gözlemlenmektedir. (Fundamental Sciences-Conclusion)*

It is observed **that** the models that are formed by surface addition **give** better results.

As the similar usages seen above, the subordinating suffixes in the scientific texts are usually seen with the verbs that are formed with {-mAktADır} structure, which is a progressive aspect. Another shared feature in these usages is the passive voice, as seen in the examples *yorumlanır* 'it is interpreted (that), *çalışılmıştır* '(it) has been studied', *düşünülmüştür* '(it) has been thought', and *görülmetedir* 'it is seen that'. The sentences that are formed with the subordinators usually show the results of the studies. So, they include *resultative* functions.

The 3rd person plural possessive suffix is also seen in the scientific articles as well as the 3rd person singular possessive suffix. POSS_{3PLU} is rank seven in the humanities and it is rank five in the fundamental sciences as seen in Tables 31 and 32 in Chapter 5. This suffix forms a multi-morpheme unit by using the genitive case, such as *yöneticilerinin* 'of their manager(s)' and *değerlerinin* 'of their values'.

(119) *Bugün batı dillerinin hemen hemen hepsinde metindilbilim terimini karşılamak üzere aralarında bazı küçük farklılıklar bulunan pek çok kelime üretilmiştir. (Humanities-Introduction)*

...Today, in almost all Western **languages**, a lot of words have been produced that have some little differences in an attempt to provide the textlinguistics term.

(120) *Bunların bazı**larının** etkinlikleri fazla, bazılarının ise azdır.*
(Fundamental Sciences-Introduction)

Some of the activities **of these** are more; some of them are few.

Both in the humanities and fundamental sciences, N+POSS₃PLU+GEN multi-morpheme units are completed with several suffix combinations that are attached to verbs, such as {-mAktADır}, {-mİstIr}, and {-(A/I)r}. These kinds of sentences with the discussed suffixes are often used to describe concepts, which refer to the *description* function. Another similar multi-morpheme unit in the humanities and fundamental sciences is N+PLU+GEN, such as *bireylerin* 'of (the) individuals' and *yapıların* 'of (the) structures'.

(121) *Bu çalışma, banka çalışanlarının iş tatminini etkileyen faktörleri belirlemek ve bu faktör**lerin** önem derecelerini belirlemek amacıyla hazırlanmıştır.* (Humanities-Introduction)

This study has been prepared to find out the factors that affect the bank employees' job satisfaction and designate the importance levels **of these factors**.

(122) *Bunların sayısı da farklı deęişken**lerin** sayısı ile doğru orantılıdır.*
(Fundamental Sciences-Conclusion)

The number of these, as well, is directly proportionate to the number **of** different **variables**.

Other than the multi-morpheme units that are used with the possessive suffix, AOR+3SG and PASS+REL suffix chains, both of which are formed with verbs, are frequently seen in the humanities and fundamental sciences. The aorist marker {- (I/A)r} is a common structure that are used in the scientific articles, too. It makes generalizations (*Güneş doğudan doğar* 'the sun rises in the east), expresses habits (*hafta sonları geç uyanır* 'she wakes up late at the weekends'), and assumptions (*herhalde yurtdışına gider* 'probably, she goes abroad'). The aorist suffix cannot contain the copular marker {-Dir} (*yap-ar-dır) because {-Dir} itself is a generalizing modality marker; in Turkish these two suffixes are not used in a row. In the scientific articles, the aorist marker is used positively, the negative aorist {-mAz} is seen barely.

(123) *Dünyaya gelen ışınların ancak %24lük bir bölümü yeryüzüne ulaş**ır***
*ve gezegenimizi ısıt**ır**.* (Fundamental Sciences-Introduction)

Only 24% of the light that come to the world **arrives** the earth and **heats** our planet.

(124) *Literatürde yer alan araştırmalar da bu sonucu destek**ler**.*
(Humanities-Conclusion)

The research in the literature also **supports** this result.

In the scientific articles, as well, the aorist case is usually opted for generalizations, explaining the processes, and giving the results. As it is stated above, the passive voice is also very frequent in scientific articles. Generally, $\{-Il/(I)n\}$ is attached to verbs in the scientific texts, such as *çalışılmıştır* 'it has been studied' or it is used in a relativized construction, such as *çalışılan konu* 'the subject that is/was/has been studied'. In the humanities and fundamental sciences, the most frequent passive construction is the second one, PASS+REL sequences.

(125) *...yapılan bir çalışmada, aynı süre 5.88 yıl olarak bulunmuştur.*
(Humanities-Conclusion)

...in a **conducted** study, the same period has been found as 5,88 years.

(126) *Bu sonuca göre $p=0.026 < \alpha=0.05$ olduğundan bu ifadeye verilen cevaplarda da anlamlı farklılıklar bulunmuştur.* (Fundamental Sciences-Introduction)

Because it is $p=0.026 < \alpha=0.05$ according to this result, meaningful differences have been found in the answers **that were given** for this statement too.

These kinds of sentences that are constructed by PASS+REL combinations have diverse verb roots. Some of them are seen in the following examples.

Humanities:

VERİLEN cevaplar, bilgi 'the information/answers that are/were/have been given'

YAPILAN çalışmalar, araştırmalar, yanlışlar 'the studies/research/mistakes that are/were/have been done'

(elde, işaret, tespit, tekrar, ifade) EDİLEN işlevler, sonuçlar, bulgular 'the functions/results/findings that are/were/have been obtained/signaled/determined/repeated/stated'

BELİRTİLEN, GÖSTERİLEN bağlam, durumlar 'the context that is/was/has been / the situations are/were/have been indicated/shown'

KULLANILAN bağlaçlar, terimler, stratejiler 'the conjunctions/terms/strategies that are/were/have been used'

Fundamental Sciences:

BELİRTİLEN yükümlülükler 'the obligations that are/were/have been indicated'

GELİŞTİRİLEN ortamlar 'the environments that are/were/have been developed'

(elde, izole, inkübe, sözü) EDİLEN bitki örtüsü, bilgiler, kimyasallar 'the flora/information that is/was/has been obtained / the chemicals that are/were/have been obtained'

(üzerinde) DURULAN bakteri grupları 'the bacteria groups that are/were/have been emphasized'

(*tarafından*) *OLUŞTURULAN septisemik karakterli hastalık, sıcak su, soğuk su, bakteriler* ‘the septicaemic featured disease/hot water/cold water that is/was/has been formed / the bacteria that are/were/have been formed’

BOZULAN gıdalar ‘the food that is/was/has been spoiled’

As seen above, the usages are quite diversified. It is remarkable that most of the usages have plural suffix {-LAR} as in *çalışmalar* ‘the studies’, *araştırmalar* ‘the research’, *yükümlülükler* ‘the obligations’, and *ortamlar* ‘the environments’, which is also related to PLU+LOC combinations that are frequently seen in the fundamental sciences. In addition to these examples, the frequent usages of *düşünülen* ‘that is/was/has been thought’, *yürütülen* ‘that is/was/has been conducted’, and *görülen* ‘that is/was/has been seen’ in both academic disciplines attract attention. The first two usages are seen with the words *çalışma* ‘the study’, *yapı* ‘the structure’, and *araştırma* ‘the research’ for the most part. The last one, *görülen* ‘that is/was/has been seen’, has different usages in two domains. In the humanities, it is often seen with *özellikler* ‘the features’, *dil* ‘language’, and *gelişme* ‘the development’; in the fundamental sciences, it is frequently used by more scientific terms, such as (*Cestoidea sınıfına ait*) *parazitler* ‘the parasites (belonging to the cestodean class)’, (*başlıca avcı coccinellid*) *türleri* ‘the types (of the main coccinellid hunters)’, *klorofil miktarı* ‘the amount of chlorophyll’, (*Pseudomonas ve Aeromonas*) *enfeksiyonlar* ‘the (pseudomonas and aeromonas) infections’, *salgınlar* ‘the epidemics’, *hastalıklar* ‘the diseases’, etc.

Among all these passive and relative constructions, the verbs *elde et-* ‘to obtain’ and *gör-* ‘to see’ are very common by having different usages, such as *elde edilen* ‘that is/was/has been/are/were/have been obtained’, *elde edilmiştir* ‘it has/they have been obtained’, *görülen* ‘that is/was/has been/are/were/have been seen’, and *görülmetedir* ‘it is (being) seen (that)’. In some of the expressions, such as *görülmetedir* ‘it is (being) seen (that)’, there is a semantic bleaching to some extent. There is not a direct seeing in this verb; the lexical content of the word is lost in a way, so it has another meaning in itself.

It emerges that the passive voice and relative constructions including *elde et-* ‘to obtain’ and *gör-* ‘to see’ verbs are intrinsic to the scientific writing. These common passive and relative constructions have a large amount of functions together: they include explanations, descriptions, and identification of items; they involve findings, examples, illustrations, and depictions in themselves. So, they have multi-functions, such as *procedure*, *description*, *structuring*, *resultative* and *stance* signals.

The last frequent multi-morpheme units in the SAC are IMPRF+COP+3SG in the humanities (*göstermektedir* ‘show(s) (lit. s/he/it is/has been showing’) and PASS+PERF+COP+3SG combinations in the fundamental sciences (*görülmiştir* ‘it has been seen’), the examples of

which are seen in above, including the discussions of *{-mlştIr}* and *{-mAktADIr}* suffix combinations, the copular marker *{-DIr}*, and passive voice.

Depending on the discussions above, it can be concluded that suffix combinations are used frequently in the scientific texts to explain a wide range of situations. While *{-mAktADIr}*, *{-mlştIr}* and the aorist *{-(A/I)r}* are more frequent, the non-past *{-(y)AcAk}* and *{-(I)yor}* and past *{-DI}* are seen rarely. The usages of *{-mAktADIr}*, *{-mlştIr}* and *{-(A/I)r}* usually represent certainty in the scientific texts, as seen in *...şu sonucu göstermektedir* 'show(s) this result (lit. s/he/it is/has been showing this result', *bu tarz bulgular elde edilmiştir* 'these kinds of findings have been obtained', and *...olması ...nı gösterir* 'it shows [this]...'. Relatedly, the copular marker *{-DIr}* is very frequent but the negative marker *{-mA}* is less common in the scientific texts. While the possibility modal *{-(y)Abil}* is seen more, the marker of necessity, *{-mAlI}*, is used less in the scientific texts. In terms of voice, the causative suffix *{-DIr}* and passive suffix *{-Il/(I)n}*, which are morphological structures, are used frequently in the academic writing (especially the passive voice). However, the syntactic structures, the reflexive suffix *{-(I)n}*, such as *yıkan-* 'to wash oneself (lit. have a bath)' and *örtün-* 'to cover oneself', and the reciprocal *{-(I)ş}*, such as *araş-* 'to ring each other', are not seen in the scientific texts. As it is explained, the most used construction in the scientific articles is the passive voice. In such kind of constructions, agent is pushed back; author becomes free for not taking responsibility of the identified issue, that is s/he refrains from responsibility. Therefore, the passive structure increases referentiality, which seems to be used quite much by the Turkish scientific text authors.

These frequently used suffixes hold various functions, such as *location*, *procedure*, *description*, *resultative*, and *structuring*. Although whole discourse functions are not observed in this data, the multi-morphemes that are used in the academic texts have a significant amount of discourse functional features to describe ideas, announce the findings and results, transfer information, and maintain the scientific writing rules.

6.4. Further Study

Multi-word units consisting of four words can be examined for a further study because it was noticed in this research that the collocations of the multi-word units that have three lexemes sometimes have intriguing information within the context. Correlatively, the size of corpus can be enlarged. Academic texts can be compared and contrasted with different text types to obtain original findings. Furthermore, Turkish suffixes can be compared to the affixes of other languages to find out which possibilities language users prefer more.

The findings of this study can be used for educational materials in teaching academic writing because the research has a large list of multi-word units including their grammatical and syntactic coding, such as part of speech information. The units that were discussed also

have discourse functional information, which could help out the learners in writing process. Relatedly, these units can be taught as a pattern in order for an easier learning. Moreover, the results of this study can contribute to program development studies for graduate education in terms of arranging the contents of the curriculum. The source of this data can also be tagged by machine for pattern recognition. In this way, text recognition procedure would be useful in natural language processing.

In addition, a glossary of terms can be prepared from the data of this study, which can help researchers while conducting their studies because academic writing process can be problematic and complicated. Therefore, a source like an academic dictionary would be beneficial to enhance writing strategies because if it is more clear which unit has which structural and functional information and which units can be used for which purpose, it would be easier to organize the text.



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