Hacettepe University Graduate School of Social Sciences

Department of English Linguistics

PROCESSING OF PREVERBAL SCRAMBLING IN TURKISH

Engin Evrim ÖNEM

Ph. D. Dissertation

Ankara, 2022

PROCESSING OF PREVERBAL SCRAMBLING IN TURKISH

Engin Evrim ÖNEM

Hacettepe University Graduate School of Social Sciences

Department of English Linguistics

Ph. D. Dissertation

Ankara, 2022

KABUL VE ONAY

Engin Evrim ÖNEM tarafından hazırlanan “Türkçede Eylem Önü Çalkalamanın İşlenmesi” başlıklı bu çalışma, 23.05.2022 tarihinde yapılan savunma sınavı sonucunda başarılı bulunarak jürimiz tarafından Doktora Tezi olarak kabul edilmiştir.

Prof. Dr. Işıl ÖZYILDIRIM (Başkan)

Doç. Dr. Emine YARAR (Danışman)

Prof. Dr. Özgür AYDIN (Üye)

Prof. Dr. Bilal KIRKICI (Üye)

Dr. Öğr. Üyesi Zeynep DOYURAN (Üye)

Yukarıdaki imzaların adı geçen öğretim üyelerine ait olduğunu onaylarım.

Prof. Dr. Uğur ÖMÜRGÖNÜLŞEN

Enstitü Müdürü

YAYIMLAMA VE FİKRİ MÜLKİYET HAKLARI BEYANI

Enstitü tarafından onaylanan lisansüstü tezimin tamamını veya herhangi bir kısmını, basılı (kağıt) ve elektronik formatta arşivleme ve aşağıda verilen koşullarla kullanıma açma iznini Hacettepe Üniversitesine verdiğimi bildiririm. Bu izinle Üniversiteye verilen kullanım hakları dışındaki tüm fikri mülkiyet haklarım bende kalacak, tezimin tamamının ya da bir bölümünün gelecekteki çalışmalarda (makale, kitap, lisans ve patent vb.) kullanım hakları bana ait olacaktır.

Tezin kendi orijinal çalışmam olduğunu, başkalarının haklarını ihlal etmediğimi ve tezimin tek yetkili sahibi olduğumu beyan ve taahhüt ederim. Tezimde yer alan telif hakkı bulunan ve sahiplerinden yazılı izin alınarak kullanılması zorunlu metinleri yazılı izin alınarak kullandığımı ve istenildiğinde suretlerini Üniversiteye teslim etmeyi taahhüt ederim.

Yükseköğretim Kurulu tarafından yayınlanan ***"Lisansüstü Tezlerin Elektronik Ortamda Toplanması, Düzenlenmesi ve Erişime Açılmasına İlişkin Yönerge"*** kapsamında tezim aşağıda belirtilen koşullar haricince YÖK Ulusal Tez Merkezi / H.Ü. Kütüphaneleri Açık Erişim Sisteminde erişime açılır.

- ☐ Enstitü / Fakülte yönetim kurulu kararı ile tezimin erişime açılması mezuniyet tarihimden itibaren 2 yıl ertelenmiştir.
- ☐ Enstitü / Fakülte yönetim kurulunun gerekçeli kararı ile tezimin erişime açılması mezuniyet tarihimden itibaren ….. ay ertelenmiştir.
- ☐ Tezimle ilgili gizlilik kararı verilmiştir.

08.06.2022

Engin Evrim ÖNEM

ETİK BEYAN

Bu çalışmadaki bütün bilgi ve belgeleri akademik kurallar çerçevesinde elde ettiğimi, görsel, işitsel ve yazılı tüm bilgi ve sonuçları bilimsel ahlak kurallarına uygun olarak sunduğumu, kullandığım verilerde herhangi bir tahrifat yapmadığımı, yararlandığım kaynaklara bilimsel normlara uygun olarak atıfta bulunduğumu, tezimin kaynak gösterilen durumlar dışında özgün olduğunu, Doç. Dr. Emine YARAR danışmanlığında tarafımdan üretildiğini ve Hacettepe Üniversitesi Sosyal Bilimler Enstitüsü Tez Yazım Yönergesine göre yazıldığını beyan ederim.

08.06.2022

Engin Evrim ÖNEM

ACKNOWLEDGMENTS

First and foremost I am extremely grateful to my esteemed supervisor, Assoc. Professor Dr. Emine YARAR, who has been not only a knowledgeable supervisor but also a wise mentor. Without her expertise, this whole tiring process could not have been completed.

Secondly, I would like to express my sincere gratitude to Prof. Dr. Özgür AYDIN and Assist. Professor Dr. Zeynep DOYURAN for their assistance at every stage of this research to improve the quality of this study.

I would like to offer my special thanks to Prof. Dr. Işıl ÖZYILDIRIM and Prof. Dr. Bilal KIRKICI for taking the time to review my dissertation and for their invaluable contributions. I would also like to extend my sincere thanks to Assoc. Prof. Dr. Oktay BEKTAŞ for helping me with the statistical analyses and the students for participating in this study.

Finally, I would like to express my gratitude to my parents for their consistent support and belief in me. A big thank you also goes to my wife and my daughter. Without their consistent understanding and support, it would be impossible to complete this study. I owe them a lot.

ÖZET

ÖNEM, Engin Evrim. *Türkçede Eylem Önü Çalkalamanın İşlenmesi*, Doktora tezi, Ankara, 2022.

Bu ruhdilbilim çalışması, çalkalamanın Türkçede tümcelerin işlenmesine ve uyum algısına olan etkilerini ortaya çıkarmayı amaçlamaktadır. Bu amaç doğrultusunda bu çalışmanın bir diğer hedefi, Türkçe tümcelerde odaklanılan temel yüklem öğelerinin, soru-cevap tümceleri yöneliminin ve odaklanılan temel yüklem öğelerinin konumlarının çalkalanmasının işlemeyi ve uyum algısını etkileyip etkilemediğini ortaya çıkarmaktır. Bu nedenle, çalışmada 32 temel soru-cevap tümcesi yukarıda belirtilen üç faktöre göre çalkalanarak toplam 256 soru-cevap tümcesi çifti elde edilmiş, anadili Türkçe olan 50 kişiye kendi hızında okuma testi olarak uygulanmış ve katılımcılardan tümce çiftleri arasındaki uyum ilişkisini değerlendirmeleri istenmiştir. İnceleme verileri, cevap tümcelerinde bulunan her bir dil ögesi için geçen okuma süresinin, her bir soru-cevap tümcesi çift için uyum değerlendirmelerinin (algılanan uyum) ve uyum değerlendirmesi için geçen tepki süresinin (uyumluluk yanıt süresi) kaydedilmesi ile elde edilmiştir. Tüm bu verilerin ortalama puanları *Üç Faktör ANOVA* testi ile karşılaştırılarak incelenmiştir.

Yapılan veri analizleri, odaklanılan temel yüklem öğelerinin, soru-cevap tümceleri yöneliminin, odaklanılan temel yüklem öğelerinin konumlarının çalkalanmasının, işleme ve uyum algısında değişen derecelerde farklılıklara neden olduğunu ortaya koymuştur. Örneğin, odaklanılan temel yüklem öğelerinin çalkalanmasında içsel öğe (nesne) odaklı soru-cevap tümcesi çiftlerinin okuma sürelerinin dışsal öğelerin (özne) odaklı soru-cevap tümcesi çiftlerinin okuma sürelerinden daha kısa zamanda gerçekleştiği görülmüştür. Ayrıca, uyumlu soru-cevap tümcesi çiftlerinin uyumlu olmayan soru-cevap tümcesi çiftlerine göre daha az okuma süresi gerektirdiği ve odaklanılan temel yüklem öğelerinin konumlarının çalkalanmasında ise temel yüklem öğelerinin eylem önü konumda olduklarında tümcecik ilk konumda olmalarına göre daha hızlı okunduğu görülmüştür.

Çalkalamanın soru-cevap tümce çiftleri arasındaki uyum algısına olan etkisine ilişkin elde edilen bulgular ise uyumlu olan soru-cevap tümce çiftlerinin çalkalanmasının uyum algısına olumlu etki ettiği ve uyum algısının belirlenme süresinin içsel öğe (nesne) odaklı soru-cevap tümcesi çiftlerinde daha kısa sürede gerçekleştiği ortaya çıkmıştır. Çalışma sonucunda gerek odaklanılan temel yüklem öğesinin, gerek ilgili temel yüklem öğelerinin konumunun gerekse de soru-cevap tümcelerindeki soru sözcüğü ve odaklanılan sözcüğün çalkalanmasının Türkçede tümce işleme ve soru-cevap tümceleri uyumu algısında farklılıklara neden olacak kadar önemli bir role sahip olduğu görülmüştür.

Anahtar Sözcükler: Çalkalama, Tümce İşleme, Soru-Cevap Tümceleri Uyumu, Türkçe.

ABSTRACT

ÖNEM, Engin Evrim. *Processing of Preverbal Scrambling in Turkish*, Ph.D. Dissertation, Ankara, 2022.

This psycholinguistic study aims to find out the effects of scrambling in processing and perception of congruency in Turkish sentences. In line with this aim, another purpose of the present study is to find out whether scrambling focused arguments, question-answer orientation, and position of focused argument affect processing and perception of congruency in Turkish. The material used in the study is composed of 32 main question-answer pairs, which are scrambled according to the aforementioned three factors to make up 256 pairs, and are administered to 50 native Turkish speakers as a self-paced reading test and the participants are asked to evaluate the congruency relationship between each question-answer pair. The reading time for each linguistic element in the answers, as well as the judgment calls (perceived congruency) and the response time for each judgment call concerning question-answer pairs (congruency response time), are recorded and the mean scores of reading time, judgment calls, and the duration of judgment calls are compared via *three-factor ANOVA*.

Data analyses show that scrambling and scrambling focused arguments, question-answer orientation, and position of focused argument cause differences in sentence processing and the perception of congruency to varying degrees. To be more precise, it is found that object-focused pairs, congruent pairs and focused arguments in the immediate preverbal position require lower processing time than subject-focused sentences, incongruent sentences and focused arguments in the clause-initial position. In terms of the effects of scrambling on the perception of congruency, it is seen that question-answer orientation leads to a difference in the perception of congruency while the focused argument causes a difference in the duration of the grammatical judgment calls, similar to the results obtained concerning reading time data. In the end, it can be concluded that scrambling the focused arguments, the position of the focused arguments,

as well as the question word and the focused argument in question-answer pairs, have an important role to cause differences in sentence processing and the perception of congruency in Turkish.

Keywords: Scrambling, Sentence Processing, Question-Answer Congruency, Turkish.

GLOSSES

The glosses listed below have been chosen to reflect the semantic and syntactic functions of Turkish morphemes and are used widely in the literature. They do not reflect the general meanings or the focal uses of the morphemes they stand for. As a result, they might not match the actual uses of the morphemes appearing in the examples presented in the dissertation. If the glosses of Turkish examples given in the dissertation are taken from other sources, they are rearranged according to the list below. Yet, glosses of examples taken from other languages are presented in the same way as they are in the original documents.

List of abbreviations and symbols used

1st sg	First person singular	PF	Past form
1st pl	First person plural	S	Subject
3rd sg	Third person singular	V	Verb
3rd pl	Third person plural	O	Object
Acc	Accusative	Pre	Perverbal
Nom	Nominative	Cla.Int.	Clause Initial
Dat	Dative	Obj.	Object
Pres	Present tense	Subj.	Subject
Cont	Continuous	Cong.	Congruent
Loc	Locative	Incong.	Incongruent
Det	Determiner		

In the text and examples:

- : indicates a boundary of morphemic combination

In the metalanguage of anchoring categories:

[ ] : enclose the focus of a predicate

Typesetting

italics : Terms defined and/or introduced, NPs or verbs in Turkish (as examples), English translations of NPs, and verbs used (as examples).

LIST OF CONTENTS

KABUL VE ONAY ..... **i**

YAYIMLAMA VE FİKRİ MÜLKİYET HAKLARI BEYANI ..... **ii**

ETİK BEYAN ..... **iii**

ACKNOWLEDGMENTS ..... **iv**

ÖZET ..... **v**

ABSTRACT ..... **vii**

GLOSSES ..... **ix**

LIST OF CONTENTS ..... **xi**

LIST OF TABLES ..... **xiv**

LIST OF FIGURES ..... **xv**

INTRODUCTION **1**

CHAPTER 1 - BACKGROUND OF THE STUDY **3**

1.1. STATEMENT OF THE PROBLEM **3**

1.2. AIM OF THE STUDY **3**

1.3. RESEARCH QUESTIONS **4**

1.4. LIMITATIONS OF THE STUDY **4**

1.5. SIGNIFICANCE OF THE STUDY **5**

1.6. ORGANIZATION OF THE STUDY **6**

CHAPTER 2 - LITERATURE REVIEW **7**

2.1. LANGUAGE PROCESSING **7**

2.1.1. Factors Affecting Processing 9

2.1.2. Studies on Language Processing 13

2.1.2. Self-Paced Reading 15

2.2. SCRAMBLING 21

2.2.1. Word Order.....21

2.2.2. Experimental Studies on Scrambling, Word Order, and Sentence Processing.....30

2.2.3. Information Structure in Turkish 35

2.2.4. Congruence.....42

2.2.5. Implicit Prosody 45

CHAPTER 3 - METHODOLOGY 50

3.1. PILOT STUDY 50

3.2. PARTICIPANTS AND SETTING 52

3.3. MATERIAL 53

3.3.1. Design of the Self-Paced Reading Test.....55

3.4. DATA COLLECTION TOOL 60

3.5. DATA COLLECTION PROCEDURE.....61

3.6. DATA ANALYSIS.....63

CHAPTER 4 - FINDINGS AND DISCUSSION 65

4.1. FINDINGS AND DISCUSSION CONCERNING READING TIME DATA65

4.1.1. Findings Concerning Reading Time Data 66

4.1.2. Discussion of the Reading Time Data Findings.....87

4.2. FINDINGS AND DISCUSSION CONCERNING CONGRUENCY DATA95

4.2.1. Findings Concerning Congruency Data 95

4.2.2. Discussion of the Congruency Data Findings.....100

CONCLUSION.....106

REFERENCES 118

APPENDIX 1 - QUESTION-ANSWER PAIRS USED 143

APPENDIX 2 - ETHICS COMMITTEE APPROVAL FORM (HACETTEPE UNIVERSITY) 149

APPENDIX 3 - ETHICS COMMITTEE APPROVAL FORM (ERCİYES UNIVERSITY) 150

APPENDIX 4 - INFORMED CONSENT FORM 151

APPENDIX 5 - ORIGINALITY REPORT 152

LIST OF TABLES

Table 1 - Word order variations in Turkish 25
Table 2 - Case markers in Turkish 26
Table 3 - The list of adverbial phrases used 54
Table 4 - The list of modal adverbials used 54
Table 5 - Sample pairs for Sentence Type Factor 56
Table 6 - Sample pairs for Congruency Factor 57
Table 7 - Sample pairs for Focus Position Type Factor 58
Table 8 - Samples for the design of the pairs 59
Table 9 - Results of the *three-factor ANOVA* for R1 66
Table 10 - Post-hoc analysis for R1 67
Table 11 - Results of the *three-factor ANOVA* for R2/R3 69
Table 12 - Post-hoc analyses for R2/R3 70
Table 13 - Results of the *three-factor ANOVA* for R3/R2 73
Table 14 - Post-hoc analyses for R3/R2 74
Table 15 - Results of the *three-factor ANOVA* for R4 76
Table 16 - Results of the *three-factor ANOVA* for R5 77
Table 17 - Post-hoc analysis for R5 78
Table 18 - Results of the *three-factor ANOVA* for TRT 80
Table 19 - Post-hoc analyses for TRT 81
Table 20 - Results of the *three-factor ANOVA* for R2+R3+R4 84
Table 21 - Post-hoc analyses for R2+R3+R4 85
Table 22 - Results of the *three-factor ANOVA* for PCD 96
Table 23 - Post-hoc analysis for PCD 97
Table 24 - Results of the *three-factor ANOVA* for CRT 98
Table 25 - Post-hoc analysis for CRT 99

LIST OF FIGURES

Figure 1 - Sample flow chart for a loop of routines.....61

INTRODUCTION

Language involves many cognitive processes which are employed simultaneously. These cognitive processes require working memory to be active for language processing. As language is the ability of human beings to create unlimited utterances from the limited units via applying different and multi-leveled rules, analyzing cognitive processes in language processing is a widely accepted source of data for linguistic and cognitive studies.

Psycholinguistics is defined as “the interdisciplinary activity between psychology and linguistics” (Blumenthal, 1987: 313). In another way, it is “the study of the connections between language and mind” (Trask, 1999: 167) and it focuses on cognitive processes involving language and mind. Although it has its high and low moments for various reasons (see Reber, 1987 for a comprehensive review), psycholinguistic studies have a long history. Yet, according to Garnham et al. (2006), even though its starting point can be traced back to Plato, Wilhelm Wundt is considered to be the first one to coin the term psycholinguistics in the late 1800s. As Blumenthal (1987) summarizes, his idea of mental phenomena consists of a dual system of inner and outer events: the inner being related to cognitive processes such as attention and judgment while the outer being related to sensory-motor functions. Wundt realizes that the products of the cognitive system are different from the product of the external system (Blumenthal, 1987) and this difference depends on the individual phenomenon of consciousness or subjective feelings. Therefore, Wundt can be considered to be the first one to claim that linguistic processes may be explained by psychological principles by setting out to find the connections between mind and language (Blumenthal, 1987). Later, a behaviorist approach to experimental language research is seen in the studies of Bloomfield and Skinner, and later on, a strong influence of Chomsky on modern psycholinguistics is followed by the emphasis on meaning in the 1980s (Garnham et al., 2006). This led psycholinguistics to be considered as a distinct science for various language and mind-related fields such as neurolinguistics, cognitive linguistics, language acquisition, processing,

production and comprehension, and even artificial intelligence studies. Although previous psycholinguistic studies focus on language deficiencies, modern psycholinguistics utilizes different methods to simultaneously study cognition and language. Among such methods as fMRI, ERP, etc., behavioral techniques including reaction time and self-paced reading tests have been used widely in psycholinguistic studies.

Scrambling is a syntactic process of formulating sentences utilizing different word orders without any changes in meaning and is considered to be “an optional rule proposed to handle the way constituents permute in free word-order languages” (Crystal, 2008: 425). Considering the advances in psycholinguistic data collection tools, studying the effects of scrambling can shed light on the understanding of linguistic processes since scrambling requires a deeper consideration of inter-connected linguistic constituents. In other words, examining the effects of scrambling on linguistic processing and perception can act as a window to the bridge between mind and language.

CHAPTER 1 - BACKGROUND OF THE STUDY

1.1. STATEMENT OF THE PROBLEM

Linguistic processing is a widely studied phenomenon and there have been many studies focusing on the relationship between scrambling and language processing in different languages (e.g., Erdocia et al., 2009; Gibson, 1998; Gibson and Thomas, 1999; Hagiwara et al., 2007; King and Just, 1991; Stojanović, 1999). However, although scrambling is an important process in Turkish, in terms of studies on scrambling and processing in Turkish, most studies are rather theoretical (e.g., Güneş, 2013a, 2013b; Akan, 2009; Erguvanlı, 1984; Hoffman,1995; Çakır, 2020; Kural, 1993; Göksel and Özsoy, 2000; Özge and Bozşahin, 2010; İşsever, 2003, 2006; Erguvanlı, 1984; Kornfilt, 2003) and experimental studies focusing on the effects of scrambling on processing are rather scarce (e.g., Arık, 2016; Kahraman, 2013; Kahraman and Hirose, 2018; Özge et al, 2013; Uzun et al., 2020; Aydın and Cedden, 2010), which leads to the presence of a gap in the literature in terms of the experimental studies examining the effects of scrambling on processing and the perception of congruency.

Although the gap in the literature on scrambling is hard to fill, an experimental psycholinguistic study to analyze the effects of scrambling on processing various factors simultaneously is needed. In other words, since linguistic processes include multi-layered linguistic elements to be employed concurrently, an experimental study yielding empirical findings to reveal the effects of scrambling on sentence processing and the perception of congruency can be fruitful to understand the nature of scrambling in Turkish.

1.2. AIM OF THE STUDY

The present study mainly aims to investigate the effects of scrambling on processing simple sentences in Turkish. Within this broad scope, this study intends to narrow its scope to investigate the effects of scrambling on processing focused arguments, question-answer orientation, and the position of the focused argument simultaneously in Turkish sentences. In addition, the present study also

aims to find out whether scrambling affects the perception of congruence in Turkish sentences. In line with that, the purpose of the current study is also to reveal whether scrambling arguments, question-answer orientation, and position of the focused arguments affect the perception of congruence or not.

1.3. RESEARCH QUESTIONS

Corresponding to the aims of the study, this study attempts to answer the following main and related sub research questions:

1. Does scrambling affect the processing of sentences in Turkish?
    a. Does scrambling focused arguments cause any significant differences in processing?
    b. Does scrambling question-answer orientation cause any significant differences in processing?
    c. Does scrambling the position of focused arguments cause any significant differences in processing?
2. Does scrambling affect the perceived congruency of sentences in Turkish?
    a. Does scrambling focused arguments lead to any significant effect on perceived congruency?
    b. Does scrambling question-answer orientation lead to any significant effect on perceived congruency?
    c. Does scrambling the position of focused arguments lead to any significant effect on perceived congruency?

1.4. LIMITATIONS OF THE STUDY

First, although the study is based on written form and processing, prosody is still a very active process taking place during implicit (silent) reading (Fodor, 1998; Fodor, 2002a;b) and it has an important function in processing language (Breen, 2015; Fodor, 1998; Fodor, 2002a;b). As a result, the methodology of the study depends on an experimental design including a silent self-paced reading test. Secondly, as Sharvit and Kang (2016) mention, there is a difference between a

fully expressed reply and a fragment reply. Fully expressed answers refer to the complete replies to the question while fragmented answers refer to basic semantic replies. Although the answers used in the present study might not reflect answers in the real world, to reveal how they are processed, this study utilizes fully expressed answers rather than fragmented answers. In other words, for the sake of seeing the effects of scrambling, the questions and the answers are presented in isolation instead of a context. Third, there are some structural limitations to the materials used for the data collection procedure. For instance, all verbs used in the study are in present continuous tense, all NPs acting as the subject are animate nouns while all NPs acting as the direct object are inanimate common nouns. Also, while NPs acting as the direct objects are attached with an accusative case marker, NPs acting as the subjects are attached nominative case (details of the materials utilized in the study are given in the relevant section). In this sense, animacy and case markings of the NPs as arguments are limited. Besides, there are some limitations concerning the participants of the study. Since all of them are university students, age might be a factor affecting the results since the age of the participants are very similar. Therefore, processing and/or perception of congruency might be affected. In addition to that, the post-hoc analysis of reading speed reveals that there are fast-readers and slow-readers, and therefore, differences in their processing patterns are observed. As a result, it can be argued that individual differences might be at play in terms of processing. Besides, the number of participants may be inadequate to have a sound statistical testing.

1.5. SIGNIFICANCE OF THE STUDY

The present study aims to contribute to the field at different levels since it aims to investigate the possible effects of scrambling and scrambling focused arguments, question-answer orientation, and the position of focused arguments on processing and perception of congruence. First, in addition to the theoretical research on word order in Turkish, this experimental psycholinguistic study will provide data via studying reading and response time data to reveal the nature of the processing of scrambled sentences in Turkish. Therefore, the findings of the

study will shed light on the theoretical studies in the field. Secondly, by comparing the reading time for preverbally scrambled sentences in Turkish hosting various segments of information structure, this study will add up to the pile of knowledge on scrambling and information structure in Turkish as well. Third, this study will yield results on the perception of congruence, which will provide insights into how the mind works to make sense of sentences. Finally, the results of the study will help professionals teaching Turkish as a second or foreign language to see the effects of various factors affecting processing. Therefore, they can develop their curriculum accordingly.

1.6. ORGANIZATION OF THE STUDY

The present study includes five chapters. Following the introduction, in the first chapter, the statement of the problem, and the aim of the study are presented. Following these sections, research questions that the study aims to answer, the limitations of the study, and the significance and organization of the study are given. The second chapter introduces details and studies on linguistic processing and scrambling via presenting the relevant literature in the field. To be more specific, the second chapter focuses on language processing, factors affecting reaction and reading time, and studies about reaction and reading time as well as self-paced reading. In the second chapter, the relevant literature on scrambling, word order accompanying information structure, and the concept of implicit prosody can be found. The methodology of the study is presented in the third chapter. Along with the introduction of the pilot study, details concerning the methodology of the study, including the research material, data collection tool, data collection procedure, and data analysis methods are explained in the third chapter. The fourth chapter includes the findings and the discussion of the findings while conclusion of the study is reported at the end of the study.

CHAPTER 2 - LITERATURE REVIEW

Language is the ability of human beings to create unlimited utterances from a limited group of units via applying different and multi-leveled rules. As Fasold and Connor-Linton (2013:9) define, language is “a finite system of elements and principles that make it possible for speakers to construct sentences to do particular communicative jobs”. In this sense, it is obvious that language involves many cognitive processes.

Analyzing the processes taking place during language processing is a widely accepted source of knowledge for language and cognitive studies and the field of psycholinguistics has risen to study the connection between them. Psycholinguistics can be defined as “the study of the connections between language and mind” (Trask, 1999: 167) and “the interdisciplinary activity between psychology and linguistics” (Blumenthal, 1987: 313). In other words, psycholinguistics focuses on cognitive processes involving language and the mind. Although psycholinguistic studies have a long-reaching history that can be traced back to Plato, as a term, Wundt can be considered to be the first one to coin the term, psycholinguistics, in the late 1800s (Garnham et al., 2006). Psycholinguistics has its high and low moments for various reasons (see Reber, 1987 for a comprehensive review) and two major trends, the behaviorist approach to experimental language studies seen until the mid-1900s and even a stronger influence of Chomsky in the 1980s, emphasizing meaning, have a great impact on psycholinguistic studies in shaping modern psycholinguistics (Garnham et al., 2006). Today, psycholinguistics is considered a distinct science for various language and mind-related fields such as neurolinguistics, cognitive linguistics, language acquisition, processing, production and comprehension, and even artificial intelligence studies.

2.1. LANGUAGE PROCESSING

All cognitive processes require a mechanism in the mind to be governed and the theory of working memory (Baddeley and Hitch, 1974; Baddeley, 1986) stands

out to explain such processes, including language-related ones. Briefly, the multi-component model for memory proposed by Baddeley and Hitch (1974) and Baddeley (1986) suggests a central executive unit between short-term and long-term memories in the mind. In other words, “working memory refers to structures and processes used to temporarily store and manipulate information” (Turgeon and Macoir, 2008: 9). This central executive unit serves as the working memory and it includes two subsystems named the phonological loop and the visuospatial sketchpad. The phonological loop and the central executive are considered active participants in the language since they create bridges between long-term memory and production via computational processes (Baddeley and Hitch, 1974; Baddeley, 1986). Although it has been improved since it was first introduced, the idea of “working memory” still stands, especially when reflected in language-related processes.

Language processing and cognition are very closely related (Baayen and Milin, 2010; Woods et al., 2015) and working memory has executive functions for language. For example, as Collette et al. (2000:46) state, “working memory, especially the phonological loop and the central executive components, make significant contributions to some aspects of language processing, namely, sentence comprehension, speech production, vocabulary acquisition, and reading”. Likewise, according to Turgeon and Macoir (2008), executive functions of working memory are involved in “sentence and discourse production (e.g., planning how to express an idea), discourse comprehension (e.g., interpreting indirect acts of language), as well as in accessing semantic or lexical representations” (Turgeon and Macoir, 2008: 10). Therefore, working memory is an important factor for language production, processing, and comprehension, and a great body of studies shows a connection between language processing and working memory (e.g., King and Just, 1991; Gibson, 1998; Gibson and Thomas, 1999; Stojanović, 1999; Erdocia et al., 2009; Hagiwara et al., 2007). In fact, as Poirier and Shapiro (2012) state, language processing interacts with other cognitive functions, such as attention and memory and in this sense, the role of

working memory and the mind in language-related cognitive processes cannot be underestimated.

Different models have been put forward about how languages are processed. However, according to Poirier and Shapiro (2012), they can be grouped into three major categories: form-based models, constraint-based models, and resource-based models. Yet, regardless of their differences, language processing for simple sentences starts with perception (Poirier and Shapiro, 2012; Grosjean, 2012), which includes identifying sounds/letters and recognizing words embedded in the linguistic input and continues to “a retrieval point” (Poirier and Shapiro, 2012), which refers to matching the input with lexical representations that are stored in the mental lexicon. Such representations include syntactic, pragmatic, semantic, phonetic, lexical, and real-world associations. However, there are many factors to interact with the matching or retrieval process, such as “frequency, lexical similarity, word length, semantic priming and uniqueness point” (Poirier and Shapiro, 2012: 130) and the duration of the retrieval process can vary. After the retrieval process, the process of combining words begins (Poirier and Shapiro, 2012; Balota et al., 2006) and the comprehension system or the central executive (working memory) merges the words into larger chunks according to the appropriate phrasal rules and proposition of the sentence is reached via various but simultaneous linguistic processes (Balota et al., 2006). In this sense, it can be inferred that while language perception refers to receiving linguistic input, language comprehension refers to making meaning out of the linguistic input and it is quite logical to say that perception and comprehension are very closely related processes that take place during language processing.

2.1.1. Factors Affecting Processing

Age is one of the first factors that come to mind in terms of processing. For instance, studies focusing on the relationship between reaction time and age present that there is a negative correlation between age and reaction times (e.g., Era et al., 2011; Dykiert et al., 2012a, 2012b; Deary et al., 2010; MacDonald et

al., 2008; etc.). For example, Era et al. (2011) employ simple and multiple-choice tests on a sample of 30 years and over participants and find a decline in both decision time and movement time among age groups (30–39-year-olds to 80+ year-olds). In other words, they find that the younger participants are the fewer differences in reaction times are seen. Era et al. (2011) also report that such differences are more visible in the multiple-choice test than in the simple test, which signals that the more complicated processing becomes, the more age-related differences are found in terms of reaction times. In another study, Dykiert et al. (2012a) find nearly the same results. They conclude that older adults (60+ years) show longer reaction times than younger (20–39) and middle-aged (40–59) adults and the reaction time differences are high when younger and middle-aged adults are compared with younger and older adults. In the wide range study of Dykiert et al. (2012b), a sample of nearly two thousand participants is studied and it is reported that a pattern of decrease in reaction time in childhood and adolescence, but increase in adulthood and old age is found. In fact, after comparing reaction times between young (25-35 years old) with middle age (50-60 years old) participants in terms of in-depth processing, Willemien et al. (2009) conclude that age-related cognitive decrease already exists in middle age, let alone in older age. Nevertheless, according to Woods et al. (2015:1), such results might depend on the difference seen in older people in terms of detecting and producing a response towards the stimulus that has been presented, and therefore, age is one of the key factors in processing.

Gender is found to affect processing as well. Although studies are not as consistent as age and reaction times studies (Woods et al., 2015), men seem to have shorter reaction time towards stimuli than women (Adam et al., 1999; Era et al., 2011; Dykiert et al., 2012b; Jain et al., 2015). For example, in their study, Jain et al. (2015) focus on gender-related differences in auditory and visual reaction times and report male participants to have faster RTs as compared to female participants for both auditory and visual stimuli. In another study, Adam et al. (1999) use a choice reaction time task to see whether there is a gender-related difference present or not and the results show that such a difference exists to

affect the reaction times towards stimuli in favor of male participants. Dykiert et al. (2012b) also find that men have a faster simple reaction time than women across the lifespan. As Adam et al. (1999) suggest, the reason for such a difference can be attributed to different information processing strategies men and women employ for different tasks but more research is needed. As a result, a balanced sample group in terms of gender to study language processing can yield more fruitful outcomes.

Another factor thought to affect processing, rather controversial, is education. In a study, Krieg et al. (2001) compare such variables as age, gender, education, and family income levels to affect students' neurobehavioral test performance and report that "the average mean total latency increases as age increases, and decreases as education level and family income increase" (Krieg et al., 2001: 582). In another study, Anstey et al. (2005) compare various markers such as demographic, health, and bio to find the extent to which they can explain the age-related differences in reaction times and find education to be one of the most important factors important correlates of reaction time. On the other hand, Woods et al. (2015) report findings suggesting a neutral effect of education (gender as well) on reaction times. Likewise, at the end of their research, Willemien et al. (2009) report education to be a no-moderating factor. As a result, the effects of education on reaction times remain questionable. Nevertheless, an experiment group sharing a similar educational background can be promising in terms of findings to explain the effects of education on processing.

There are other factors to be considered when studying processing. For instance, according to Baayen and Milin (2010), changes during the experiment may need to be taken into account. Such changes include "the level of arousal or fatigue, the amount of previous practice, and so-called trial-by-trial sequential effects - the effect of a given sequence of experimental trials" (Baayen and Milin, 2010: 13). Among these factors, fatigue and the number of trials are important ones to affect reaction times. For instance, in their research, Rauch and Schmitt (2009) find that task fatigue has a negative effect on reaction time and cognitive control can

decrease in about 15 minutes. They also show that in line with the increase in the working memory load during 480 trials, reaction times increase as well. They conclude that continuous exposure to stimuli combined with a specific focus on reaction times can be overshadowed by the number of trials and task fatigue. Fard and Lavender (2019) also find that after a continuous 17 minutes block of a task, participants' performance on reaction time decreases because of mental fatigue. These findings might suggest that reaction times are vulnerable to mental fatigue and trials should be limited between 15 to 20 minutes.

The previous history of trials and motivation might also affect processing. For example, in a study, Wong et al. (2017) question whether habits or computations control reaction times. In other words, they hypothesize that as reaction times can change depending on the complexity of the task, this might reflect habits rather than computations. After training participants, they find that along with computation, habits formed as part of the experience can also be accounted for reaction times. In this sense, presenting stimuli to participants in a randomized sequence might be advisable for reaction times to minimize the retention effect. In another study, Lorist and Jolij (2012) focus on trial history and its effect on task performance in the Stroop task, where the participants are asked to react to color words in different colors (e.g., "blue" written in red). The participants' performance for the Stroop task is measured for two hours and Lorist and Jolij (2012) confirm that trial history has a strong effect on the reaction time. As for the effects of motivation, in one study, Möckel et al. (2015) use event-related potentials, ask participants to perform a task for more than three hours, and rate their mental fatigue level as well as their desire to continue the task in several intervals during the task. Möckel et al. (2015) find that as the participants' ability to respond to stimuli seems to deteriorate in time, so does their motivation. In other words, motivation, along with trial time and mental fatigue, might be another key factor to account for processing and performance.

2.1.2. Studies on Language Processing

Although many previous psycholinguistic studies involve focusing on language deficiencies, modern methods have also been used to analyze cognitive processes taking place during linguistic processing. As Ullman (2013) summarizes, to study language processing, researchers have utilized a vast variety of data collection tools and methods. Such data collection tools and methods range from medical imaging equipment such as Functional Magnetic Resonance Imaging (fMRI), Positron Emission Tomography (PET), or electrical measurement equipment like Electroencephalogram (EEG) or Event-Related Potentials (ERP) to written tests, questionnaires, judgment calls, recorded by pieces of equipment like eye-tracking devices or computers.

Among these methods, various research on language processing have utilized reaction time recording since the duration of language processing is prone to various factors such as memory load (Tun et al., 2010) or frequency and/or association of a linguistic item as well its length (Poirier and Shapiro, 2012). Therefore, focusing on the duration of processing the substructures of languages is accepted as “fruitful”. For example, Schoenherr and Logan (2014) conduct a study contrasting attentional and immediate memory capacity limitations in the acquisition of phonetic non-native linguistic contrasts via comparing response time. In other words, they study the reactions of native speakers towards audio linguistic contrasts that are not present in their language and find that listeners “use the acoustic properties of stimuli along a speech continuum to identify exemplars defined in terms of non-native linguistic contrasts” (Schoenherr and Logan, 2014: 2589). In another study, Whang et al. (2019) focus on the perception of Japanese vowel length by Australian English listeners, where they want to find out whether Australian English listeners rely on durational cues to categorize Japanese vowels, somehow similar to those in Australian English monophthongs. The design of the experiment depends on a forced-choice task where participants are asked to categorize the vowels they hear while their responses and their duration are being recorded. The differences in reaction time

show that Australian English listeners make use of durational cues, which contrasts with American English listeners. Studies focusing on second language acquisition from the response time point of view can also be seen in the literature. For instance, Altarriba and Knickerbocker (2011) study the effects of images and words on learning (acquiring) vocabulary first. After teaching new words in Spanish to English monolinguals and testing the level of learning via lexical decision task, they find response times to be faster in the word-word condition than in the image condition. In another study, Fitzpatrick and Izura (2011) study word association responses between Spanish and English, first and second language respectively, in terms of response latencies and associative responses. They report that translation cues (from L1 to L2) as well as associations between words created by form and meaning or meaning and collocation lead to faster response times, and are, indeed, more effective and faster. Hu and Jiang (2011) compare listening comprehension by second-language speakers and native speakers and ask the participants to perform a written lexical decision task where targets are presented in different contexts (either congruent, neutral, or incongruent). When the response time of the participants is compared, it is seen that native speakers respond to both congruent and neutral conditions faster than incongruent conditions. However, nonnative speakers show fast response time only for the congruent condition, which suggests that language learners “should have access to a high percentage of listening comprehension materials with high semantic predictability” (Hu and Jiang, 2011: 215). As a result, all these studies show that focusing on reaction time is a useful technique to study language processing.

2.1.2.1. Experimental Studies on Language Processing in Turkish

Likewise, some experimental studies on language processing in Turkish can also be found although they are limited in number. For instance, in one study, Arık (2016) focuses on basic word order in Turkish sentences with intransitive verbs where 528 Turkish native speakers are asked to evaluate the acceptability of sentences including transitive verbs that vary in the word order, namely, SV and

VS. The results show that sentences with SV order are accepted to be truer in respect to the sentences with VS order. Similarly, Kahraman (2013) studies the processing of ditransitive sentences in Turkish and concludes that “the word order preferences of ditransitives vary due to the thematic role of the dative noun in Turkish” (Kahraman, 2013: 179). Bayrak-Kurt (2020) focuses on ditransitives and how Turkish speakers of English process sentential stress and focus. As part of her study, she reports that in sentences with ditransitive verbs, the focus is attached to the immediately preverbal object in Turkish. In another study, Uzun et al. (2020) explore the processing of focused elements by using the eye-tracking method and find that speakers of Turkish expect the focus to be in the immediate preverbal position rather than the non-immediate position. As a result, Uzun et al. (2020) report a preference for the immediate preverbal region as the focus position instead of non-immediate preverbal regions. In a recent study, Uzun et al. (2021) focus on the effects of focus prosodic marking on processing via the Event-Related Potentials (ERP) technique and study the processes of focus by using prosodic and syntactic information in post-verbal positions. At the end of their experiment, Uzun et al. (2021) report an interaction between prosody and syntax in the sentence-final position. Yet, compared to the number of theoretical studies on processing, the number of experimental studies is rather low but when recent literature on language processing in Turkish is reviewed, it can be seen that there has been a growing tendency towards an experimental approach to language processing.

2.1.2. Self-Paced Reading

Reacting or responding to stimuli is closely related to processing the stimuli. As put forward by Lange et al. (2018), reaction time can be defined as “the time elapsed between the onset of the visual presentation of the target question and the onset of the response (articulation)” (473) and it has been used since Galton. In addition to that, reading time, defined as “the amount of time taken to read each word” (Smith and Levy, 2013: 302), has been analyzed to study language processing. As there is a close connection between reaction time and reading

time (Bonifacci and Snowling, 2008; Naples et al., 2012; Nicolson and Fawcett, 1994; Stringer and Stanovich, 2000) and along with significant advances in computers and mental chronometry, self-paced reading (SPR) method emerges in the 1970s (Jegerski, 2014). SPR is used as a tool to measure language comprehension processes in real-time and with "tasks that are as similar as possible to normal reading" (Mitchell & Green, 1978, p. 610, cited in Jegerski, 2014:1). As described by Marsden et al. (2018:861) "self-paced reading is an online computer-assisted research technique in which participants read sentences, broken into words or segments, at a pace they control by pressing a key". Then, "the time elapsed (reaction time[1]; RT-represented in milliseconds) between each keypress is recorded" (Marsden et al., 2018: 861). SPR is also defined as "a computerized method of recording a reading time for each designated segment (i.e., a word or a phrase) of a sentence or series of sentences that are presented as an experimental stimulus" (Jegerski, 2014:3). As a result, self-paced reading can be used as a valid and reliable way to analyze language processing.

According to Jegerski (2014), the rationale behind self-paced reading tests is simple: "the eyes can be a window on cognition" (4). Since participants have control over the rate of presentation of each segment, the reading time between segments provides information about the processing of each segment (Marinis, 2010). To be more specific, participants' reading time depends on their knowledge and/or sensitivity to the phenomenon under scrutiny (Marsden et al., 2018), which is highly connected with a load of working memory. Therefore, shorter reading times show easiness or familiarity while longer reading times may reflect processing difficulties for the given task. As a result, most SPR paradigms examine processing difficulties resulting from ambiguities, anomalies, or

[1] The term "reaction time" is used interchangeably for the term "reading time" in the literature (e.g. Jegerski, 2014; Marinis, 2010; Marsden et al., 2018). Therefore, same use is employed in this study.

dependencies that can be observed via the reading time of segments separately or cumulatively.

As one of the online or real-time data collection tools, the self-paced reading technique has some advantages over traditional offline psycholinguistic data collection techniques such as questionnaires or sentence completion tasks. First, online tasks are implicit. In other words, real-time or online data collection tools are immune to the metalinguistic abilities of the participants as they measure the participants' unconscious and automatic responses to the given task (Marinis, 2010; Jegerski, 2014). However, participants may exhibit controlled and conscious decisions by taking their time to think about an offline or non-real-time task at hand via their explicit knowledge of the language and their metalinguistic abilities (Marinis, 2010; Jegerski, 2014). The application of implicit grammar rules is limited in SPR (Jegerski, 2014) and therefore SPR reflects a better view of processing language. Secondly, SPR presents a more detailed measurement of the processing. According to Marinis (2010), like reading or reaction time for each word, phrase or clause can be measured separately, SPR provides information about processing difficulties or easiness in separate segments. Third, SPR is easy to administer and inexpensive. Unlike the fact that other methods require closer researcher supervision, as Jegerski (2014) summarizes, the fact that no in-depth training for the participants is required or no very close researcher supervision makes SPR convenient.

As for developing and presentation of stimuli, there are some points to be noted for self-paced reading. As mentioned above, participants are presented segments of linguistic stimuli (e.g., constituents of a sentence) one by one as they press a key on the computer at a pace they see fit for themselves and their reading time is obtained. In this sense, SPR can be administered in different formats. For instance, when every segment remains visible on the screen until the last segment, it is called *cumulative* and when only one segment is visible and other segments are masked, it is called *noncumulative* (Jegerski, 2014; Marinis, 2010). Since participants cannot go back and read parts of the sentence

again, the noncumulative presentation reflects a better and more accurate picture of processing than the cumulative (Marinis, 2010). There is also a distinction in the position of segments on the display. For example, as Jegerski (2014) points out, a segment can be either centered (presented in the center of the display masking previous segments) or linear (presented in linear order as normal reading without masking segments). According to Marinis (2010), when segments are presented in the center, the participants cannot guess the length of the sentence and this reflects a better view of the processing. However, according to Jegerski (2014), since the linear presentation is similar to actual sentence reading, it might be better to present stimuli. Another point is that, according to Marinis (2010), comprehension questions should be included either at the end of a segment of a sentence or the sentence. This way, the participants can be kept focused and automatic responses can be prevented. Also, SPR should be limited between 15-20 minutes to prevent participant fatigue, have at least one week between participants to take or retake another related SPR test to prevent memory retention and a trial session should be included to train the participants about the process (Marinis, 2010; Jegerski, 2014). Finally, since reading time for each segment is recorded, the sentences should have similar length and structure to avoid length and complexity-related differences (Marinis, 2010). Following these critical points in designing psycholinguistic experiments, SPR can be tailored to the needs of the researcher depending on the linguistic phenomenon being studied.

2.1.2.1. Studies Utilizing Self-Paced Reading

As it can be guessed, most reaction/response time studies can be considered to include the time spent by the participants to read the presented linguistic elements to study processing (Naples et al., 2012). For instance, there are studies in the literature to confirm the presence of the relationship between reaction time and reading performance. For example, Nicolson and Fawcett (1994) test five groups of children (including two groups of dyslexic children) on various reaction and lexical decision tasks and report that reading difficulty is

highly connected with reaction time. Also, Bonifacci and Snowling (2008) compare English and Italian dyslexic children with reading difficulties, which are associated with low IQ. They design four tests that include reading and reaction time tasks and find that children with low IQ have slower reaction time and lower scores than dyslexic children on all four tests. As a result, Bonifacci and Snowling (2008) conclude that processing speed or reaction time and reading performance are closely related. In another study, Stringer and Stanovich (2000) ask participants to complete two-choice reaction time (RT) tasks related to phonological awareness, general cognitive ability, and word recognition ability and find a significant correlation between RT and reading ability. Therefore, it can be accepted that there is a close connection between response time and reading time and they are valid and reasonable methods to study linguistic performance.

SPR is used widely to study sentence processing (e.g., Gibson and Pearlmutter, 1998), processing ambiguous sentences (e.g., Ferreira and Clifton, 1986; Felser et al., 2003), dependencies (e.g., Aoshima et al., 2004; Marinis et al., 2005) and so on (see Marinis, 2010 for a list of studies), where the participants are generally asked to read at their own pace, and their reading time are compared to see the effects of the linguistic phenomenon being studied. Moreover, many studies focusing on the relationship between processing and various aspects of language such as syntax and word order can be found. For instance, among studies focusing on the relationship between syntax and processing, in one study, Lange et al. (2018) examine grammatical determiners and lexical determiners in the production of adjective-noun phrases (NPs) in Danish. To be more exact, they want to test two features (effects of dependence and low prominence) concerning the usage-based linguistic theory of the grammar-lexicon distinction put forward in the literature previously. At the end of their research and after group-based analyses, Lange et al. (2018) report that those two features are only present for the group which has the fastest response time and suggest that they might have employed different strategies than the group with a slower response time. In another study, Sanghoun et al. (2014) compare judgment calls of native speakers in terms of grammaticality of sentences with linguists. At the beginning of their

paper, Sanghoun et al. (2014) explain that there are quite a few sentences that linguists report to be grammatical but non-linguists find ungrammatical. Therefore, they want to compare to what extent judgment calls of linguists and native speakers match and they ask 138 participants to make judgment calls about sentences taken from linguistic journals in Korean, which are already categorized as grammatical or ungrammatical beforehand by linguists. The results show that there is a statistically significant difference between the judgment calls of native speakers and linguists in terms of response time data which is obtained after the reading test. As part of an Event-Related Potentials experiment, Flecken et al. (2015) test native speakers of English and German on perception in static domains such as color and objects. They focus on "grammatical differences between languages relevant for the description of motion events and their impact on visual scene perception" (Flecken et al., 2015: 41) and report differences in terms of brain potential although no differences are found in reading time.

2.1.2.2. Experimental Studies Utilizing Self-Paced Reading in Turkish

As for reading time utilizing studies in Turkish, the literature is rather limited, yet promising. For instance, in a study, Aydın and Cedden (2010) focus on scrambled sentences and compare the processing time of Turkish canonical SOV sentences, the scrambled SVO sentences, and SVO *wh*-clauses. The results show that the participants score lower reading time and process sentences congruent with the basic word order faster. In another study similar to Aydın and Cedden (2010), Kahraman and Hirose (2018) investigate online comprehension of canonical and non-canonical sentences in Turkish via SPR and report that although non-canonical sentences are harder to process, the processing difference is overcome when a supporting context is introduced and claim that discourse has a facilitating effect on processing. Özge et al. (2013) study the processing differences between predicates' being in canonical or non-canonical position via a self-paced listening test and find that object-first orders do not cause processing difficulty. However, subject-first orders take more time to

process, which is unexpected according to the researchers. Regardless of the limited number of studies utilizing self-paced tests to study processing in Turkish, self-paced tests can be very useful to understand the nature of the processing as a psycholinguistic research tool.

2.2. SCRAMBLING

Scrambling is a term coined by Ross (1967) and briefly, it refers to a dynamic process resulting in a variety of orders of linguistic constituents in a sentence without causing a change in the basic meaning of the sentence (Ross, 1967). Crystal (2008: 425) defines scrambling as “an optional rule proposed to handle the way constituents permute in free word-order languages (e.g., Latin).” Likewise, according to McGinnis (1999), it is found especially in languages that exhibit extensive case marking, which enables any language to be flexible yet clear to analyze. In like manner, referring to its relationship to the word order of a language, Yamashita (2002) calls scrambling a mutation of canonical word order. More specifically, Carnie (2013) emphasizes the function of scrambling with respect to free word order and considers it as “a movement rule that positions DPs in the specifier of FocusP or TopicP” (Carnie, 2013: 506) and considers scrambling, therefore, as mainly a syntactic process.

Since scrambling is “an optional process” in free word order languages such as Japanese, Korean, Persian, and Turkish, some of the common features of those languages should be dealt with briefly to understand the processing and effects of scrambling.

2.2.1. Word Order

The term word order has been defined in similar terms in the literature. For instance, in its most basic definition, word order refers to “the linear relation of words and phrases within larger units” (Bussmann, 2006: 1290). In the same way, Crystal (2008: 524) states that word order is a term used in “grammatical analysis to refer to the sequential arrangement of words in larger linguistic units.” In this

sense, word order is the sequential order of linguistic elements in a sentence in a language and there are some concepts to consider when studying word order in languages. First, some languages have rigid or strict word order while some have free or flexible word order, depending on the relationship among the linguistic constituents in a sentence. For example, as Crystal (2008) explains, some languages “rely on word order as a means of expressing grammatical relationships within constructions while grammatical relations are signaled by inflections” (524), which leads to a difference between strict and free word order. According to Bussmann (2006), Akmajian et al. (2010), and Fromkin et al., (2011), the difference between rigid and flexible word order depends on the effect of the change in the order of elements to vary the syntactic function and/or the semantic interpretation of these elements. For instance, if there is no syntactic and/or semantic difference in sentences such as *X likes Y* and *Y likes X*, it means that there is flexible word order in that language allowing the linguistic elements to change their order in the language. However, if such a change leads to syntactic and/or semantic differences, then that language has a rigid or strict word order. In this sense, word order is closely connected with the syntactic rules of a language as well as a meaning related function (Akmajian et al. 2010; Fromkin et al., 2011), and while English has a strict word order, Japanese, Korean, Persian, and Turkish exhibit free word order. Yet, even though some languages have considerable freedom over word order, no human language exhibits completely random word order (Akmajian et al. 2010; Bussmann, 2006), which is highly related to permitted variations of the word order of the language.

Secondly, there are some major elements to consider for word order. As Trask (1999) and Carnie (2013) state, a commonly used way to characterize the word order of a language is in terms of three major elements: Subject (S), Object (O), and Verb (V). The history of defining constituents of clauses dates to Aristotle, who made the distinction between subject and predicate. In the modern sense, the subject of the sentence refers to “the agent instigating the action” (Trask, 1999: 214) or “the item expressing the person(s) or thing(s) that act as the verb” (Göksel and Kerslake, 2005: 477). In other words, the subject of a sentence is

the person or the thing that the proposition is about. On the other hand, there is a discrepancy in the definition of the object. While traditional grammarians consider the object as part of the predicate, modern grammarians (such as Tesniére) consider the object as a verb argument (Carnie, 2013). Yet, briefly, the object of a sentence refers to the part of the predicate undergoing the action expressed by the verb (Aarts, 2011). Objects can either be direct as *James* in *I saw James* or indirect as *Jane* in *I gave peanuts to Jane*. However, indirect objects are also called oblique objects, which "surface as the object of a preposition" (Trask, 1999: 75). In this sense, Göksel and Kerslake (2005) make a distinction by naming direct objects as the complement of a transitive verb and oblique objects as the complement of intransitive verbs. Finally, verbs are the words to have meanings related to states, events, or actions and they have different features.

Another concept to consider is the basic word order of a language, which is also known as the "unmarked", "preferred", "fixed" or "default" word order of a language. As Trask (1999:19) puts it,

> almost every language shows a strong preference to put the words of a sentence into a particular order; this preferred order may be virtually rigid—with almost no departures allowed—or it may be little more than a statistical preference. This preference is the basic word order of the language.

In addition to that, the basic word order of a language is found as the word order of the unmarked declarative sentence "that occurs in stylistically neutral, independent, indicative clauses" (Bussmann, 2006: 1290) and in this sense, basic word order can also be considered as "canonical construction" to be used as a standard for purposes of comparison (Crystal, 2008). Basic or canonical word order signals the most common word order for a particular language to produce meaningful and syntactically correct sentences while non-canonical word order refers to any deviations from the canonical word order. When all the three major elements are considered, there can be six variations of word order in languages as SVO, SOV, OSV, VSO, VOS, and OVS. While some languages with strict word order permit certain word order variations, free word order

languages such as Japanese, Korean, Persian, and Turkish can utilize all word orders.

Another important concept for word order is case marking. Case marking can be described as the “grammatical relationship of a noun in a sentence” (Fromkin et al., 2011: 53) or “grammatical category of inflected words which serves to indicate their syntactic function in a sentence and, depending on the function, involves government and agreement” (Bussmann, 2006: 155). Many languages (such as Russian, Turkish, Hungarian, etc.) use case-marking to differentiate words in a sentence for grammatical or semantic reasons (Trask, 1999). While some languages such as English use limited case marking, languages such as Basque or Finnish, utilize a wide variety of case markings for various syntactic and semantic purposes. Case marking enables a language to have a flexible word order since case-marked noun phrases can easily be recognized as subjects or objects according to the word order type of a language. “The function of case marking (or its absence) is to indicate the relationship between the noun phrase to which it is attached and other sentence constituents” (Göksel and Kerslake, 2005: 154). In this sense, it is quite clear that case marking has a prominent effect on word order and scrambling and therefore, language processing.

2.2.1.1. Word Order in Turkish

Most studies consider word order in Turkish as flexible (e.g., Çiçekli and Korkmaz, 1998; Erguvanlı, 1984, Göksel and Kerslake, 2005; etc.), if not, free (Bozşahin, 2000). Considering the three elements for word order, Turkish permits scrambling constituents in simple declarative sentences to take place in six possible permutations. For instance, permutations of the constituents in Turkish to form grammatical sentences are exemplified below in Table 1.

.

Table 1

Word order variations in Turkish

Sentence	Word Order Permutation
İnci ev-i sev-di *İnci house*-Acc *like*-PF	SOV
Ev-i İnci sev-di *house*-Acc *İnci like*-PF	OSV
İnci sev-di ev-i *İnci like*-PF *house*-Acc	SVO
Ev-i sev-di İnci *house*-Acc *İnci like*-PF	OVS
Sev-di İnci ev-i *like*-PF *İnci house*-Acc	VSO
Sev-di ev-i İnci *like*-PF *house*-Acc *İnci*	VOS

As it can be viewed in Table 1, *Inci* is the subject while *evi* (*house*-Acc) acts as the direct object, and *sevdi* (*like*-PF) is the verb. Yet, the unmarked word order of Turkish is SOV (Aydın and Cedden, 2010; Erguvanlı, 1984; Erkü, 1983; Göksel, 1993; Göksel and Kerslake, 2005; Hoffman, 1995; Kılıçaslan, 1994), where subject precedes object and object precedes the verb. To be more specific, the sentence-initial position is accepted as the unmarked position for subjects (Enç, 1991; Erguvanlı, 1984; Göksel and Kerslake, 2005; Özge, 2010, 2012) while the immediate preverbal position is held as the unmarked position for direct objects (von Heusinger and Kornfilt, 2005, 2017; Yarar, 2018; Aygen, 2007). On the other hand, as mentioned above and as can be seen in Table 1, Turkish enables all six-word order permutations and none of them is ungrammatical. Regardless of the variation, the main proposition of the sentences still stands as *İnci evi sevdi* (*İnci liked the house*) since, as emphasized by Erguvanlı (1984) and Hoffman (1995), Turkish takes advantage of case marking for its flexible word order via scrambling since there is a difference in case marking between object and subject of a sentence. In this sense, İşsever (2007:1) considers Turkish as a scrambling language that “allows morphologically case marked elements to occur freely in both preverbal and postverbal positions”, which is highly related to case marking, especially the accusative case, in Turkish.

2.2.1.2. Case Marking and Accusative Case in Turkish

The freedom for scrambling and word order is closely connected with case marking in Turkish. Göksel and Kerslake (2005: 67) classify five case suffixes Turkish utilizes and they are presented below in Table 2.

Table 2

Case markers in Turkish

-(y)I	marker of the **accusative** case: *sarayı* 'the palace (ACC)', *su**yu*** 'the water (ACC)', *küçüğ**ü*** 'the small one (ACC)'.
-(y)A	marker of the **dative** case: *Kars'**a*** 'to Kars', *dere**ye*** '(in)to the river', *masa**ya*** 'on (to) the table', size 'to you'.
-DA	marker of the **locative** case: *radyo**da*** 'on the radio', *ev**de*** 'at home', *sepet**te*** 'in the basket'.
-Dan	marker of the **ablative** case: *okul**dan*** 'from/of/out of (the) school', *sonuç**tan*** 'from/of the result', *sis**ten*** 'from/of the fog'.
-(n)In-Im	marker of the **genitive** case: *çocuğ**un*** 'the child's', *Fatma'**nın*** 'Fatma's', *bahçe**nin*** 'of the garden'. *-Im* attaches to 1st person pronouns: *benim* 'my', *bizim* 'our'.

As seen in Table 2, Turkish has a rich case-marking system. However, among these case markers, accusative case markers have only one function whereas other case markers may have different roles assigned to them. In other words, an NP marked with accusative case marking always functions as the direct object of the sentence but all other case markers are oblique and the same NP in other cases may function as an oblique object as well as the direct object (Erguvanlı, 1984; Göksel and Kerslake, 2005). For example, such differences between accusative case and dative case-marked NPs functioning as objects can be seen below in the examples.

(1)
Çocuk kedi-yi gör-ür
Kid-Nom *cat*-Acc *see*-Pres-3rd sg
Kid sees (the) cat

(2) Onlar okul-a gel-ir
They-Nom *school*-Dat *come*-Pres-3rd pl
They come (to) the school

(3) Ahmet Ali-ye sevin-di
Ahmet-Nom *Ali*-Dat *happy*-PF-3rd pl
Ahmet was happy for Ali

(4) Biz okul-a kadar yürür-üz
We-Nom *school*-Dat until *walk*-Pres-1st pl
We walk until (the) school

In (1), the NP is attached with the accusative case and it has the sole function to mark the NP as the direct object of the sentence. On the other hand, in 0, 0, and 0, the NPs acting as the objects are attached with the dative case but they all function differently. For instance, although *okula* (to the school) in 0 acts as the direct object, the object in 0 is an oblique object and dative case marked NP, *okula* in 0, acts as the complement of the postposition. Such differences can also be seen among other case markers of Turkish when compared with accusative case markers. Therefore, accusative case marking requires special attention in terms of scrambling, word order, and processing.

As mentioned above, case marking is important in Turkish and what is more, it is required in some cases to surpass word order. For instance, direct objects can be seen as "a bare noun (or noun phrase) without a case ending or as a noun (phrase) with the accusative case suffix *-(y)I*" (von Heusinger and Kornfilt, 2005: 4). The Functional Model of Differentiated Object Marking (DOM-Bossong, 1985 cited in von Heusinger and Kornfilt, 2005) aims to explain direct object marking in terms of three parameters (animacy, referential categories, information structure) along with its similarity to or difference from the subject (von Heusinger and Kornfilt, 2005; Yarar, 2018). Briefly, according to DOM, accusative case marking has the function of indicating a contrast to objects comparing subjects. In other words, if the object is similar to the subjects, a language with an active DOM marks the object overtly to eliminate ambiguity. In this sense, DOM in Turkish utilizes accusative case marking for marking the direct object. However, von Heusinger and Kornfilt (2005; 2017) state that accusative case marking serves more than just as the contrast-adding marker between the instances of

direct objects. Von Heusinger and Kornfilt (2005) explain that accusative case marking shows specificity as the referential property of the direct object. The difference led by accusative case marking for direct objects can be seen below:

(5)

Ben	dondurma-yı	sever-im
I-Nom	*ice cream*-Acc	*like*-Pres.1st sg
I	like (the) ice cream	

(6)

Ben	dondurma	sever-im
I-Nom	*ice cream*-Nom	*like*-Pres.1st sg
I	like ice cream	

As shown above, (5) and (6) differ accusative markings of the NPs functioning as direct objects and they do have different readings. As mentioned above, the accusative case marked direct object in (5) includes specificity while the nominative case marked direct object in (6) includes non-specificity. In other words, in (5), the accusative case marks the NP to refer to a certain *dondurma (ice cream)*, while in (6), the very same NP with nominative case marking has a reading that refers to the general concept rather than a specific one. Yet, as Göksel and Kerslake (2005: 156) highlight, “the sole function of the accusative case marker is to indicate the direct object of a transitive verb”. Turkish is not the only language with such case marking. As mentioned above, the effect of case marking in free word order languages and examples of case marking and specificity on direct objects can also be seen in Japanese (e.g. Miyagawa, 1997; Ahn and Cho, 2007; Law, 2010; Agbayani et al., 2015) or Korean (e.g. Ko, 2000; Ahn and Cho, 2007), even in Persian (Karimi, 2008; Jasbi, 2015). In summary, as explained above, specific direct objects are obligatorily accusative case marked in Turkish (Aygen, 2007; Yarar, 2018; Özge, 2010) and therefore, case marking is prominent in direct-object marking in many free word order languages including Turkish.

2.2.1.2. Studies on Scrambling and Free Word Order Languages

As mentioned, the effects of accusative case marking on scrambling direct objects can be seen in other “relatively” free word order languages such as Japanese, Korean and Persian. For instance, although Japanese is considered a free word order language, scrambling is not free but is restricted or allowed depending on the case (Miyagawa, 1997). Besides that, as Ahn and Cho (2007:117) mention, “scrambled phrases must be overtly case marked in Japanese”. For instance, according to Miyagawa (1997), the movement of phrases to clause-initial position depends on the license of certain cases under certain circumstances and accusative case marked phrases can undergo such movement easily. This is highly related to the case-scope relationship along with specificity features of the phrases that undergo scrambling. For example, during the scrambling process, *wh*-phrases and non-*wh*-phrases bearing accusative cases carry the fixed scope of the clause they scrambled from (Law, 2010). Therefore, according to Law (2010), *wh*-phrases and non-*wh*-phrases have similar syntactic distribution and can be scrambled to various positions such as clause-initial or immediate preverbal positions as long as they can be reconstructed in their original position at LF (Saito, 1989). In like manner, Agbayani et al. (2015) present examples of accusative case-marked objects in Japanese that go through long and short distance scrambling and show that they still carry the scope and the reading of the base from which they generated. A similar case related to the effects of case marking can also be seen in Korean. For example, according to Ko (2000), the level of shared knowledge between speakers can lead to bare nominal marking for elements while the difference between nominative and accusative cases acts as a focus marker in Korean, which reflects an unexpected event or attention to be paid. In the same way, according to Ahn and Cho (2007), overt case marking is seen in specific DPs with discourse-linked readings in Korean and the presence of accusative case marker is rather due to the necessity for specificity. In this sense, it can be said that the accusative case marker has a pragmatic function in Korean. In Persian, case marking has also a special function. According to Karimi (2008), accusative

marker *râ* is seen indefinite or nondefinite specific DPs only, and scrambled specific objects with accusative marker receive either a topic interpretation or a contrastive focus, which results in free scrambling (Karimi, 2008). Considering Persian as a language with differential object marking, Jasbi (2015) proposes accusative marker *râ* to have a semantic contribution to DPs as well. According to Jasbi (2015), while specifying the DPs, accusative marker *râ* adds an existential presupposition to the DPs it is attached to. This way, as part of differential object marking language, Persian allows accusative case-marked DPs to be scrambled easily as well.

As for the experimental studies in Turkish, Özge et al. (2009) study comprehension of subject and object relative clauses in monolingual Turkish children and find that subject relative clauses are processed slower than object relative clauses. Correspondingly, in another study, Özge et al. (2013) report that subject-first orders take more time to process than object-first orders. At the end of both pieces of research, it is suggested that object case marking, namely, accusative case marking, has a facilitating effect on processing since it acts as a cue to some extent for processing the meaning of the sentences. However, more research is needed on the further support of the facilitating effect of accusative case marking in Turkish.

2.2.2. Experimental Studies on Scrambling, Word Order, and Sentence Processing

There have been studies connecting sentence processing and the effects of word order utilizing response time or reading time. There seems to be a common view reported in such studies that sentences with non-canonical word order are more difficult to process than the ones with canonical word order. For instance, studies concerning European languages seem to share the same preference for processing canonical sentences faster than non-canonical sentences (see Devescovi et al., 1999 and Koizumi & Imamura, 2017 for an extensive review). As expected, other languages seem to have a similar tendency as well. For

instance, Tamaoka et al. (2011) conduct a study on Sinhalese, a language that is spoken by the people of Sri Lanka. As Tamaoka et al. (2011) mention, Sinhalese allows all six-word order variations (SOV, OSV, SVO, OVS, VSO, and VOS) for transitive sentences as can be seen below in (7), though SOV is accepted to be the unmarked word order (Tamaoka et al., 2011: 25).

(7)

SOV amara nimala-ta gehuwa.
Amara(φ)Nom Nimala-Dat hit-PF
Amara hit Nimala. (All orders carry the same meaning.)

OSV nimala-ta amara gehuwa.
Nimala-Dat Amara(φ)Nom hit- PF

SVO amara gehuwa nimala-ta.
Amara(φ)Nom hit- PF Nimala-Dat

OVS nimala-ta gehuwa amara.
Nimala-Dat hit- PF Amara(φ)Nom

VSO gehuwa amara nimala-ta.
hit- PF Amara(φ)Nom Nimala-Dat

VOS gehuwa nimala-ta amara.
hit- PF Nimala-Dat Amara(φ)Nom

In their research, Tamaoka et al. (2011) present 216 Sinhalesean sentences in total varying in word order on a computer and ask participants to decide the acceptability of the sentences by pressing “yes” or “no” on the keyboard. The results regarding reaction time show such a pattern: “SOV < SVO = OVS = OSV = VSO = VOS for the written form, and SOV < SVO = OVS < OSV = VSO = VOS for the spoken form” (Tamaoka et al., 2011: 27), proving SOV to be the truly unmarked word order for Sinhalese. In another research, Cheimariou and Loui (2013) study the role of spatial representations and word order on thematic role assignment in Greek. They present images of actions on computers randomly along with SVO/OSV sentences depicting the images in audio and request the participants to decide whether the sentences heard match the images. The

results show that reaction time is faster when the image matches SOV sentences. However, when the image matches with other variations, a slower reaction time is seen. Li et al. (1993) compare reaction time in Chinese in terms of the absence of morphological inflections but the presence of other types of cues such as the role of word order, noun animacy, the object marker, etc. They report that in terms of reaction time, word order is right in the middle of other types of cues, suggesting that aspects of processing are not insulated and word order is closely related to the processing of sentences. Tamaoka et al. (2005) investigate the effects of scrambling on the processing of Japanese sentences and compare reaction time for judgment calls on acceptability. Sample sentences from Tamaoka et al. (2005) can be seen in (8) below.

(8)

Canonical active sentence (SOV)
Otooto-ga keeki-otabe-ta.
Brother-Nom *a cake*-Acc *eat*-PF
My brother ate a cake.

Scrambled active sentence (OSV)
Keeki-o otooto-gatabe-ta.
A cake-Acc *brother*-Nom *eat*-PF
My brother ate a cake.

They see that processing sentences with SOV word order takes less time than processing sentences with OSV word order. In like manner, Koizumi and Imamura (2017) show that sentences with the canonical word order are processed significantly faster than the sentences with the scrambled word order in Japanese. On the other hand, Koizumi et al. (2014) compare VOS, VSO, and SVO word order processing in Kaqchikel Maya via a sentence-plausibility task. Samples from Koizumi et al. (2014:725) can be seen below in (9).

(9)

X-0-u-chôy ri châj ri ajanel. (VOS)
COMPL-B.3rd sg-A. 3rd sg-*cut* det *pine tree* det *carpenter*

X-0-u-chôy ri ajanel ri châj. (VSO)
COMPL-B. 3rd sg -A. 3rd sg-*cut* det *carpenter* det *pine tree*

The carpenter cut the pine tree

Ri ajanel x-0-u-chôy ri châj. (SVO)
det *carpenter* C0MPL-B. 3rd sg-A. 3rd sg-*cut* det *pine tree*
The carpenter cut the pine tree

Although SVO is pragmatically marked in Kaqchikel, VOS is "Kaqchikel's syntactically basic word order" (Koizumi et al., 2014: 726) and they see that VOS is the fastest processed word order when sentences are presented in isolation. However, when a context is provided, sentences with SVO are processed faster. Koizumi et al. (2014) conclude that this is mostly because of the syntactic nature of Kaqchikel, just like any other individual language, which affects word order preference instead of just accepting SO to be "universal" as previous studies do. The main reason for the ease of processing canonical sentences is suggested to be the memory load and processing cost differences between canonical and non-canonical sentences. Because non-canonical sentences are more costly to represent (Koizumi and Imamura, 2017), they require more memory load, and the processing is debilitated.

In line with all these findings, according to Fedzechkina et al. (2011), word order is more prominent than case marking in terms of mapping meaning and form. To test this, Fedzechkina et al. (2011) compare reading time for word order and case marking in an interesting experiment. In their experiment, the participants are asked to match the sentences in an artificial language created by the researchers and they are presented with videos depicting various actions. The results show that there is a tendency to rely on word order rather than case marking in terms of matching form and meaning. Also, the participants systematically make generalizations about SOV word order rather than other word orders. In another study regarding auditory sentence comprehension, Tun et al. (2010) compare response latencies of adults with good hearing with adults with mild to moderate hearing loss for auditory sentence comprehension. At the end of the experiment, they find that even though there is no difference in terms of comprehension accuracy between groups, complex sentences require longer reading time, especially for adults with higher hearing loss. In similar research, Carroll et al.

(2016) study sentence processing of people with hearing impairment and compare reaction time for sentences with canonical and non-canonical word order in German. There, they see that hearing impairment negatively affects sentence processing and the participants with higher hearing impairment perform more poorly for processing and reading sentences with non-canonical word order.

In addition to the studies mentioned above, for experimental psycholinguistic studies of word order and processing in Turkish, there is a limited number of experimental studies. For instance, Arık (2016) compares the acceptability of SV and VS sentences via grammaticality judgment calls of participants, and samples from Arık (2016:79) can be seen in (10) below.

(10)

Adam düş-tü-Ø.
Man *fall*-PF-3rd sg
(A/the) man fell

Düş-tü-Ø kadın
fall-PF-3rd sg *woman*
(A/the) woman fell

At the end of his study, Arık (2016) reports SV word order to be more acceptable than VS word order. In other words, although both word order variations can be considered valid since SV word order was more similar to the canonical word order of Turkish, it is considered more acceptable. In another study, Aydın and Cedden (2010) focus on SOV, SVO, and SVO *wh*-clauses and show that processing of the sentences in the canonical word order is the fastest. In another study, Kahraman and Hirose (2018) report that although non-canonical sentences (OSV) are harder to process than sentences with canonical word order, the introduction of a supporting context has a positive effect on processing. When all the studies are considered, as a result, it can be concluded that word order is an important factor for sentence comprehension and processing, regardless of the type of linguistic stimuli and it can be accepted that word order has a prominent effect on shaping the proposition of any sentence. Yet, more

research is needed to understand the nature of processing under the effects of scrambling in Turkish.

2.2.3. Information Structure in Turkish

Discourse pragmatic factors can be accepted as a driving force for scrambling (Toplar, 2019). In fact, as Hoffman (1995:14) mentions, “each word order conveys a different discourse meaning only appropriate to a specific discourse situation.” Language users might want to put forward or ignore a certain constituent to vary the presentation of information in a sentence or a proposition. For instance, although all variations of the same sentence have the same underlying proposition as shown up in Table 1, scrambling the constituents may be “stylistic in character” (Crystal, 2008: 425), referring to varieties in language and intended meaning considering different contexts. As put forward by Göksel and Kerslake (2005: 337) “changing the order of the constituents in a sentence is used as a means of distinguishing new information from background information and of making a certain constituent prominent in the discourse”. In other words, each scrambled variation of a sentence carries a meaning that can be interpreted differently in varying contexts, which signals processing differences in scrambling-related information structuring. As put forward by Dalrymple and Nikolaeva (2011: 45), “information structure is the level of sentence organization which represents how the speaker structures the utterance in a context to facilitate information exchange. Specifically, it indicates how the propositional content of an utterance fits the addressee's perceived state of knowledge at the time of utterance.” Dalrymple and Nikolaeva (2011) go on to explain that since new information is added to the existing pile of information during a conversation, there is a distinction between familiar knowledge and new information in the minds of both addressee and addresser. In this sense, information is structured (or packaged) in the mind of the speaker in respect of what is assumed as new or old information within the context of the addressee. Likewise, Vallduvi and Engdahl (1996: 460) explain that depending on the need to meet the communicative demands of a particular context or discourse, information

structure (packaging) indicates “how information conveyed by linguistic means fits into the (hearer's mental model of the) context or discourse” via syntactic, prosodic, or morphological means. Overall, information structure can be considered as the context-dependent aspect of meaning (Hoffman, 1995; Jimenez, 2010), which signals a dynamic and selective process in the mind to present or uphold information depending on the desire of the speaker.

Since Turkish can be considered as a pragmatic word order type language with variations serving pragmatic purposes such as “signaling topics or distinguishing between old or new information” (Erguvanlı, 1984: 5), structuring the information in a sentence plays an important role in Turkish. In terms of information structuring in Turkish, most studies in the literature analyze segments of information structuring put forward by Erguvanlı (1984), Vallduvi (1990), and Vallduvi and Engdahl (1996). All of these studies present a tripartite representation of information structure: focus, topic, and background.

One of the segments of information structure present in an utterance is the focus (Erguvanlı, 1984; Hoffman, 1994; 1995). As Trask (1999: 63) explains, focusing refers to the process of “singling out some particular element of a sentence or an utterance as representing the most important new information” and new information is the key to defining focus. Erguvanlı (1984) states that the constituent that is the most information-bearing element in that context is in focus. Additionally, Carnie (2013) shows that focus is “the new information in a sentence that hasn’t been expressed previously in the discourse” (497). As mentioned above, both Erguvanlı (1984) and Hoffman (1994;1995) point to the similarity between the term focus and rheme-a concept put forward by the Prague School of Linguistics in the sense that they both refer to the “highest in communicative dynamism” (Erguvanlı, 1984: 34). Emphasizing the communicative function of language, Crystal (2008), explains that focus is the information that is at the center of a speaker’s communicative interest. Overall, focus can be accepted as the new information structured in an utterance that the speaker wants to share or pass on to the hearer, and the position of the constituent with the new information

in the sentence is called the focus position (Erguvanlı, 1984; Hoffman, 1994, 1995). When a constituent is placed in the immediate preverbal position, it is in the focus position (Erguvanlı, 1984; Hoffman, 1994, 1995; Göksel and Kerslake, 2005). The pieces of information in the focus position are used "to highlight the information provided by the constituent in question" (Göksel and Kerslake, 2005: 344). To be more precise, an example of focus in a simple declarative sentence can be seen in (11) below.

(11)

Question:
Hasan ney-i sil-di?
Hasan what-Acc *wipe*-PF?
What did Hasan wipe?

Answer:
Hasan masa-yı sil-di.
Hasan-Nom *table*-Acc *wipe*-PF
Hasan wiped the table

As it can be seen in (11), focus in the answer represents the corresponding answer to the question utilized by the *wh*-question word, *neyi* (*what*-Acc). Therefore, since the new information in the answer is *masayı* (*the table*), it is considered to be the focus. As mentioned previously, phonology also affects the focus position in Turkish. Related to this, Erguvanlı (1984) cites Chomsky (1972) and presents the assumption that focus appears in the "phrase containing the intonation center" in the case of normal intonation. Besides, as Erguvanlı (1984: 34) mentions, "under normal intonation, the sentence stress occurs on the constituent just before the verb and thus marks the focus. We can, then, state that there is a full correlation in Turkish between the most information-bearing element and the 'intonation center' of the sentence." Furthermore, Göksel and Kerslake (2005) state that "focused constituents can occur in any position before the predicate, but their most typical position in verbal sentences is immediately in front of the verb" (344), supporting the idea put forward by Erguvanlı (1984). Yet, concerning the word order and phonology distinction, Hoffman (1994: 26) highlights the importance of word order in terms of information structure by saying

that “the information structure in Turkish is largely expressed through word order rather than prosody.” However, Göksel and Özsoy (2000) provide another suggestion on the focus position. Göksel and Özsoy (2000) accept that regardless of its grammatical function, any phrase in the immediate preverbal area may be focused. However, they propose that the immediate preverbal position is only one of the possibilities of positions for focusing on constituents. They make a distinction between *f-phrase* (focused phrase) and *wh*-phrase (both, indicators of non-recoverable information) and propose a term called *focus field* to denote “the area which hosts the elements denoting non-recoverable information, covers all preverbal positions (and the verbal complex)” (Göksel and Özsoy, 2000: 1). In other words, the focus field is an area “between the item that bears primary stress and the domain that includes the matrix verb” (Güneş, 2013b: 26). They state that word order in the focus field can be scrambled under certain conditions and “the surface syntax of Turkish does not have a designated focus position” (Göksel and Özsoy, 2000: 3). Furthermore, Göksel and Özsoy (2000) consider that the immediate preverbal position is the position for sentential stress, not for the focus position and any phrase in this focus field can be in the focus position when they are stressed phonologically. Examples in (12) are as follows:

(12)

Question:
Ali-yi okul-a kim götürdü?
Ali-Acc *okul*-Dat *who take*-PF?
Who took Ali to school?

Answer 1:
Ali-yi okul-a ANNE-Sİ götür-dü
Ali-Acc *school*-Dat *mother*-3rd sg *take*-PF
Ali’s mother took him to school

Answer 2:
Ali-yi ANNE-Sİ okul-a götür-dü.
Ali-Acc *mother*-3rd sg *school*-Dat *take*-PF
Ali’s mother took him to school

As presented in the examples in (12) above, regardless of the position of the focus *annesi* (mother-3sg), as long as it is in the preverbal area, Göksel and Özsoy (2000) consider it to be in focus. In this sense, they expand the focus position into a larger area, covering the topic position as well.

Another segment for structuring information put forward by Erguvanlı (1984) is the topic. The topic represents given information in the discourse, which is "the information that has already been discussed in the discourse somewhere" (Carnie, 2013: 498). The distinction between given and new information in a discourse is used most of the time to show the difference and the relationship between topic and focus. Since most utterances are produced in line with what has been said, known, or believed previously by the speaker and the listener in a discourse, "some part of an utterance serves only to tie it to this context, while another part introduces some kind of new information" (Trask, 1999: 70). In other words, the given part of an utterance represents the already familiar part and the new part is the main contribution of the utterance. In this sense, Erguvanlı (1984) points to the similarity between topic and theme-a concept put forward again by the Prague School of Linguistics as they both imply the "lowest amount of communicative dynamism" (Erguvanlı, 1984: 37). In the end, as a segment of information structure, the topic refers to the already known information in an utterance concerning the discourse. As for the position of the topic, Erguvanlı (1984), Hoffman (1994, 1995), and Göksel and Kerslake (2005) consider the sentence-initial position to be the topic position. The sentence-initial position is held for the purpose to indicate what the sentence is about (Göksel and Kerslake, 2005), and "Turkish speakers often place the topical information to link the sentence to the previous context at the start of the sentence" (Hoffman, 1995: 14). In addition to that, Göksel and Kerslake (2005) express that although subjects in unmarked sentences are present generally in topic positions, scrambling enables other constituents to become topicalized as well. In the same way, Erguvanlı (1984: 39) states that "any definite NP (other than the subject) can occur in the sentence-initial topic position, determining the framework within which the predication it to hold", referring to the given or old differentiation in a

sentence. The following example in (13) exhibits the topic in terms of structuring information:

(13)

Question:
Çocuklar okula ne zaman gitti?
Children school-Dat *when go*-PF
When did the children go to school?

Answer:
Okul-a dün git-ti-ler.
school-Dat *yesterday go*-PF-3rd pl
They went to school yesterday

As put forward by Göksel and Kerslake (2005: 347), “the initial position is often used to indicate what the sentence is ‘about’, in other words, its topic“. In this sense, as it can be seen in (13) above, *okul-a* (school-Dat) is the information in the discourse and it is topicalized while *dün* (yesterday) is the focus.

The final segment of information structure put forward by Erguvanlı (1984) is the background. Background refers to information that is “given information or discourse entities which the speaker assumes the hearer already knows or can infer” (Hoffman, 1995: 137). In other words, information already known in a discourse refers to the background (Erguvanlı, 1984) and in this sense, as Kuno (1978, cited in Erguvanlı, 1984) proposes, background information is discourse predictable or supplementary. Therefore, the background can be considered as the opposite of focus since backgrounding appears to be the mirror image of focusing (Erguvanlı, 1984). As for the background position for structuring information, Erguvanlı (1984), Hoffman (1995), and Göksel and Kerslake (2005) point to the area following the predicate in a sentence, the postverbal area. This area is assumed to contain “information which is assumed to be shared by the speaker and the hearer, or which has only just been mentioned in the discourse” (Göksel and Kerslake, 2005: 245). In other words, the postverbal area can be regarded to be a position to de-emphasize or de-focus a piece of information and it hosts constituents that are insignificant or can be deleted without leading to

major changes in the meaning of a sentence (Büring, 2007). The following example presented (14) shows backgrounded information in terms of structuring information:

(14)

Question:
Çiçek-ler-i ne zaman suladın?
Flower- pl-Acc when water-PF-2nd sg?
When did you water the flowers?

Answer:
Çiçek-ler-i dün sula-dı-m galiba
Flower- pl-Acc yesterday water-PF-1st sg *perhaps*
Perhaps I watered them yesterday

As shown in the example in (14), *galiba* (*perhaps*) is in the background since it can be considered as supplementary or extra information. In this sense, placing a constituent in the background can be regarded as a tool to hinder extra information while emphasizing the other constituents that are placed preverbally. Also, since a constituent placed postverbally is considered to be backgrounded information, relevant only as details, Erguvanlı (1984) considers it redundant. However, limited experimental studies in Turkish show that postverbal position indeed causes differences in processing. For instance, Aydın and Cedden (2010) report processing differences between sentences including direct objects in postverbal positions and preverbal positions. In another study, Uzun et al. (2021) study the effects of prosody and syntax on processing the focus in post-verbal positions and find an interaction between prosody and syntax in the sentence-final position in terms of processing, which signals a point to be noted in terms of post-verbal processing. However, more research is needed to understand the processing differences between preverbal and postverbal areas. Yet, as the postverbal area is beyond the scope of the study, it is left for future research.

2.2.4. Congruence

An important and relevant concept to information structuring is congruence. Although congruence refers to the property of language including constituents to come together in construction to create larger units (Matthews, 2007), it is also used to refer to question-answer compatibility or appropriateness (Büring, 2007). Along with segments of information structure, Büring (2007:448) considers the relationship between questions and answers in terms of focus interpretation as "the material in the answer that corresponds to the *wh*-constituent in the question". Likewise, as Ingo (2001:181) highlights, "there is a systematic correlation between the *wh*-question and the focus/background structure of its direct sentential answers". Ingo (2001) goes on to explain that a *wh*-question word in the question cannot only mark a single constituent but also a *wh*-phrase based on the relationship between the focus and background structure in the question and the answer. To present a better view of the concept, examples in (15) can be studied.

(15)

Question:
Duvar-ı kim boya-dı?
Wall-Acc *who paint*-PF?
Who painted the wall?

Answer 1:
Duvar-ı ben boya-dı-m
Wall-Acc *I paint*-PF-1st sg
I painted the wall

Answer 2:
Ben duvar-ı boya-dı-m
I wall-Acc *paint*-PF-1st sg
I painted the wall

Answer 3:
Ben duvar-ı gör-dü-m
I wall-Acc *see*-PF-1st sg
I saw the wall

When the examples in (15) are studied, it can be seen that there are different levels of congruency relationship between the question and the answers. For instance, both Answer 1 and Answer 2 can be regarded as congruent since they both hold the corresponding answer word, as Ingo (2001) puts forward. As Büring (2007) suggests, Answer 1 can be considered completely congruent as the corresponding answer word *ben* (*I*) in Answer 1 occupies the same position as the *wh*-question word in the question sentence. However, Answer 3 is not appropriate for the question and therefore can be regarded as incongruent. In the end, concerning the relationship between the question word and the answer word, Büring (2007) concludes that question-answer congruence predicts, guides, or marks the focus, and syntactic rules, information structure, and word order might have predictable effects on focus and processing. Therefore, it can be assumed that the congruence relationship between a question and an answer is actively involved in processing.

Experimental studies regarding congruency and processing in Turkish can be found in the literature. For instance, some studies focus on processing ambiguities (e.g., Başer and Hohenberger, 2020; Deniz and Fodor, 2020). For example, in part of their study, Başer and Hohenberger (2020) ask participants to resolve ambiguous sentences considering priming to be highly related to the congruency of the preceding prime sentence. To be more precise, examples from their study are given in (16).

(16)

Sentence:
Kafe-de otur-an kadın-ın arkadaş-ı konuşkan birisi
cafe-LOC *sit*-PART *woman*-GEN *friend*-POSS *a talkative person*
The friend of the woman that is sitting in the cafe is a talkative person

Question – Answer:
Kafede oturan kimdir?/‘Who is sitting at the cafe?’
a-) *kadın (woman)*
b-) *arkadaşı (friend)*

As presented in examples in (16), Başer and Hohenberger (2020) study the effects of congruency in terms of processing ambiguous sentences as part of their study and report that along with other factors, the congruency relationship between the priming sentence and the ambiguous sentence can affect processing. Some other studies compare processing Turkish and other languages based on semantic, sociolinguistic, or pragmatic congruency (e.g., Uzun, 2020; Indefrey et al., 2016; Cangır, 2018; Felser and Arslan, 2019). For instance, Felser and Arslan (2019) use a questionnaire and ask participants to decide whether the use of (in-)definites in both their native language (Turkish) or second language (German) can be acceptable or not and report that acquisition of language affects the perception of congruency. In fact, most of the studies compare differences based on the congruency relationship and/or ask the participants to make acceptability/judgment calls at the end of a task, test, or psycholinguistic experiment and they conclude that congruency has a positive effect on processing compared to incongruency. However, as it is widely seen, studies focusing on pragmatic and/or semantic differences between congruent and incongruent structures include congruency as a by-product of processing. In other words, a more direct measurement of the effect of congruency on processing is mostly left out and such studies are limited. For instance, as part of their eye-tracking experiment, which is one of those limited studies, Uzun et al. (2020) construct dialogs hosting focused elements in different positions and recorded the participants' reactions. Samples taken from Uzun et al. (2020) can be viewed in (17) below.

(17)

A: Dükkanda kim kadını gördü?
store-Loc *who woman*-Acc *see*-PF
Who saw the woman at the store?

B: Dükkanda ÇOCUK kadını gördü
store-Loc CHILD [FOC] *woman*-ACC *see*-PF
The child saw the woman at the store

A: Çocuk dükkanda kimi gördü?
child store-Loc *who*-Acc *see*-PF

Who did the child see at the store?

B: Çocuk dükkanda KADINI gördü
child store-Loc WOMAN-Acc [FOC] see-PF
The child saw the woman at the store

As given in the examples in (17), focus words *çocuk* (*child*) and *kadın-ı* (*woman*-Acc) are in scrambled positions in the study of Uzun et al. (2020) and participants are asked to evaluate the congruency of the answer while their eye movements are being recorded. At the end of the study Uzun et al. (2020) report that congruent sentences are processed with ease. Yet, as mentioned above, it can be said that most studies utilizing congruency relationship treats congruency rather indirectly and more research is needed to analyze the effects of question-answer congruency in processing.

2.2.5. Implicit Prosody

In one of her papers, Fodor (2002b) argues that previous sentence processing research including prosody ignores speech mostly because of the primitive technology to study. She continues to say that as a result, most sentence processing and parsing research prefer "relying on data which consists of responses to (or intuitions about) sentences which are presented in somewhat artificial circumstances, such as sentences presented in isolation, sentences presented visually, sentences which lack normal suprasegmental cues or punctuation" (Frazier, 1978 as cited in Fodor, 2002b: 83). However, with the advances in technology, linguistic studies have come to a point to include previously ignored aspects such as the effects of prosody on sentence processing and parsing.

Among newer theories of processing, according to Implicit Prosody Hypothesis (IPH), prosody is not limited to syntactic interpretation and in fact, it is a key in sentence processing and parsing especially when ambiguity is present. The idea of implicit reading (or prosody) claims that readers have an inner voice present in silent or implicit reading, which generates representations of prosodic features

such as sentence intonation, phrasing, stress, rhythm, etc. during reading to affect readers' interpretation of the text (Breen, 2015). This view is pioneered by Fodor (1998; 2002a,b), who claims that prosody is present even in silent reading and serves as a parsing factor “mentally projected by readers onto the written or printed word string” (Fodor, 2002b: 83). In other words, she proposes that via projecting prosodic structure onto what is read silently, prosodic assignment affects syntactic analysis and changes the interpretation of a sentence. Considering this point of view and the capacity of short-term memory, a parser tends to process a sentence with simpler structures rather than complex ones, and the sentence that complies with the most natural feel is processed faster (Fodor, 1998). Fodor (1998) suggests that in silent or implicit reading, sentences are parsed according to their prosodic breaks or boundaries and when the parser is free to choose between structures, the structure with the lowest attachment is preferred to minimize the effort to compute the meaning. Silent reading or implicit prosody is considered a very active process. For instance, “other things being equal, the parser favors the syntactic analysis associated with the most natural (default) prosodic contour for the construction” (Fodor, 2002b: 84), which means that “before syntactic parsing takes place, a prosodic packager shuttles through the sentence, dividing it up into phrases which will then be fed to the syntactic parser” (Breen, 2015: 179). For instance, it is proposed that parsers process ambiguous sentences implicitly with their inner voice first before syntactic analysis since prosody would lead them to choose the more natural-sounding interpretation of the ambiguity (Fodor, 1998; 2002a,b). Fodor (2002a: 111) also summarizes general structural trends for parsing under the heading *Minimal Everything*: “the parsing routines prefer a tree structure with the fewest nodes, the fewest chains, the least structural distance between adjacent words, and minimal revision in recovering from a garden path”, all of which are similar to IPH as a parsing device to help the capacity of the short-term memory not to be overflowed. In the end, “prosody is an important factor in parsing even when it is not really there” (Fodor, 2002a: 113) although many people seem to ignore the role of prosody in silent or implicit reading.

Parallel with the various studies complying with the idea of prosody and language processing, studies combine implicit reading and the effect of prosody and language processing via self-paced reading tests. Although at first glance, silent reading in self-paced reading tests seems to be passive, as mentioned, prosody is active during processing (Fodor, 1998; 2002a,b) and its effects on processing can be reflected clearly via self-paced reading tests. For instance, a study by Christianson et al. (2001) focuses on analyses of garden-path sentences via self-paced reading tests. A sample from Christianson et al. (2001:374) is given in (18).

(18)

Sentence 1 (plausible, short ambiguous region)
While Bill hunted the deer ran into the woods

Sentence 2 (plausible, long ambiguous region)
While Bill hunted the deer that was brown and graceful ran into the woods

Sentence 3 (implausible, short ambiguous region)
While Bill hunted the deer paced into the zoo

Sentence 4 (implausible, long ambiguous region)
While Bill hunted the deer that was brown and graceful paced into the zoo

Question:
Did Bill hunt the deer?
a-) yes
b-) no

As given in the samples in (18), after presenting sentences preceded by the question, Christianson et al. (2001) ask the participants to answer the question concerning the sentence they have been presented. At the end of the study, Christianson et al. (2001) find that there is a repair process to change initial incorrect syntactic representations towards a final interpretation, which is similar to the input string or that the parse fails (Christianson et al., 2001). In other words, they highlight that parsers do not always create an idealized structure, but a representation that is "good enough" to comply with an appropriate interpretation.

It can be concluded that this representation is created by an inner mechanism connected to implicit reading employing prosody. In another study, Swets et al. (2008) also use self-paced reading tests to focus on syntactic ambiguities and processing. They employ a 3 (sentence type) X 3 (question type) mixed design, utilize different types of questions, and record the answers of the participants. Samples from Swets et al. (2008: 204) can be seen in (19).

(19)

Sentence 1
The maid of the princess who scratched herself in public was terribly humiliated.

Sentence 2
The son of the princess who scratched himself in public was terribly humiliated.

Sentence 3
The son of the princess who scratched herself in public was terribly humiliated.

Question
Did the maid/princess/son scratch in public?
a-) yes
b-) no

At the end of the study, Swets et al. (2008) report that parsers create representations “good-enough” to disambiguate the sentences, which can be accepted as a reflection of prosody via implicit reading again. Further support for processing garden path sentences, especially ambiguous sentences, via employing inner voice or prosody through implicit reading can be seen in many other studies in a wide variety of languages (see Breen, 2014, 2015 for a comprehensive review).

Many studies in the literature show that implicit prosody and processing are considered highly related. This is possible, as Breen (2014) summarizes, since readers create representations of sentences via intonation, phrasing, stress, and

rhythm, it affects readers' interpretation of linguistic elements, and the presence of implicit prosody is put forward in different studies. For instance, Kentner and Vasishth (2016) study the effects of discourse context and rhythm in silent reading in German and reveal that even though processing a sentence depends on the identification of focus via accentuation, as it is absent during silent reading, parsers utilize discourse context and rhythm they create actively in their mind during silent reading to process and disambiguate sentences. In another study, Jun (2003) compares explicit prosody and implicit prosody-based interpretation of relative clauses across various languages and finds a strong relationship between the prosodic phrasing and the interpretation of relative clauses, which signals that implicit prosody is in effect processing language. In another study, Yu et al. (2019) compare the processing of semantically ambiguous sentences via manipulating the location of prosodic boundaries in an eye-movement experiment and show that prosodic boundary affects the processing of ambiguous sentences. As for Turkish, as Uzun et al. (2021: 331) explain, "Turkish uses both syntactic and prosodic information to mark the focus." Therefore, it can be said that experimental studies utilizing self-paced reading (e.g., Aydın and Cedden, 2010; Kahraman and Hirose, 2018) or self-paced listening (e.g., Özge et al., 2013) to study processing depend on the effect of implicit prosody on processing extensively. To summarize, implicit prosody serves as a guide to re-create focus when it is not there, which emphasizes that implicit prosody has an important role in sentence processing.

CHAPTER 3 - METHODOLOGY

The present study mainly aims at investigating the effects of scrambling on processing simple sentences in Turkish. Within this broad scope, investigating the effects of scrambling on processing focused arguments, question-answer orientation, and position of the focused argument simultaneously in Turkish sentences is another aim of the study. In addition, the present study also aims to reveal if scrambling affects the perception of congruence in Turkish sentences. Likewise, the purpose of the current study is also to investigate the effects of scrambling on processing focused arguments, question-answer orientation, and the position of the focused argument in terms of the perception of congruence. The organization of the methodology chapter is as followed: the pilot study is mentioned in the beginning and following it, participants and setting of the study, materials used and design of the pairs as well as data collection procedure are presented in this chapter. At the end of the methodology chapter, the data analysis procedure is explained.

3.1. PILOT STUDY

To test the comprehensibility of question-answer pairs and the actual data collection procedure, a pilot study was conducted. Due to the Covid-19 outbreak in early 2020, the convenience sampling method was employed. This sampling method included choosing a sample that was appropriate for the self-paced reading test as suggested in the literature. Therefore, 30 native speakers of Turkish (19 male, 11 female), studying English at the School of Foreign Languages, Erciyes University, participated in the pilot study. Their ages ranged between 18 and 24 (M = 20.13, SD = 1.33), and according to their account, all of them had either correct or corrected vision with no previous history of any neurological disorder. The pilot study took place in a well-lit and air-conditioned office at the School of Foreign Languages, Erciyes University in 2 separate sessions. Every aspect of the pilot study, including the participants, setting, etc. was the same except for the question-answer pairs presented in sessions to minimize the fatigue effect. At the beginning of January 2020, half of the question-

answer pairs (see *Material* in the upcoming subsection), the ones focusing on internal arguments, were administered in the first session and at the end of February 2020, the remaining question-answer pairs (focusing on external arguments) were administered in the second session.

In each session, the participants were trained at the beginning of the pilot study in terms of using the hardware and the software (see *Data Collection Tool* in the upcoming section) and then were presented with the question-answer pairs on a computer monitor. The questions in the pairs were presented at once on the monitor. However, the answers were divided into linguistic segments consisting of an adverbial phrase, a focused NP, a non-focused NP, a verb, and a modal adverbial and were presented in sequential order as the participants pressed any key on the keyboard. The participants were asked to read the questions and answers at their own pace and make judgment calls on the congruency of answers at the end of each pair. The time spent on reading each linguistic segment in answers as well as judgment calls on the congruency of answers were recorded. At the end of the pilot study, there was an interview about the positive or negative experiences of the participants about the procedure.

The pilot study revealed two major findings. First was the comprehensibility and ease of comprehensibility of the question and answer pairs. The participants did not report any unfamiliar, incomprehensible, or irrelevant questions and/or answers in any pairs. None of the sentences was ambiguous or had alternative readings and all were reported to be clear and understandable. Secondly, since question-answer pairs were presented in a random order, this minimized the familiarity and retention effect. Another relevant finding was about the data collection procedure. It was seen that training the participants beforehand helped them to get used to the procedure and no problems with using the hardware and the software were reported. Besides, the software used also proved useful to present stimuli and record responses. Every question-answer pair was presented in random order, without any delay or repetition and they were very clear to read on the screen and the prompts were easy to follow. As a result, the pilot study

can be considered to have confirmed the validity, reliability, and appropriateness of the methodology of the phenomenon under scrutiny in the present study.

3.2. PARTICIPANTS AND SETTING

Because of the Covid-19 outbreak that swept across the world as well as Turkey throughout 2020-2021, the same convenience sampling method as in the pilot was employed. Also, as mentioned in the literature in the previous chapter, to minimize the participant-based variations, the participants were of similar age and had a similar educational background and motivation to participate in the study. The participants of the study were 50 volunteer native speakers of Turkish (38 male, 12 female), whose ages ranged between 18 and 22 (M = 19.96, SD = .989). All of them were university students and they were informed about the aim of the study as well as the procedure before the study. According to their account, none of them had vision problems or previous history of any neurological disorder. Written consent from each one of them was taken before the study and their age, gender, as well as their responses in the study, were recorded anonymously. Also, given the unexpected circumstances caused by the outbreak, no priori power analysis was conducted. Yet, a sensitivity power analysis (G*Power 3.1.9.7; Faul et al., 2009) was conducted after admitting volunteers to the study and it was seen that 50 participants would yield an analysis sensitive enough to detect the differences in reading time, response time and judgment calls (α = .05, power = .08) with a medium effect size of (d = .6238724).

As for the setting of the data collection process, the comfort of the participants was prioritized since it was assumed that the more comfortable and relaxed the participants felt, the better and more reliable results would be achieved due to the unprecedented circumstances seen due to the Covid-19 outbreak. Therefore, unlike the controlled setting took place during the pilot study, the data collection process took place in various settings including libraries and various offices at Erciyes University as well as other convenient settings for the participants such as parks, coffee shops, and outside facilities. The researcher accompanied the participants during the whole data collection process, which took place in two

sessions that were held in early June and in late August 2021, and the same participants attended both sessions.

3.3. MATERIAL

Since they were thoroughly edited, reviewed, and as the pilot study proved them reliable, clear, and comprehensible, the very same question-answer pairs used in the pilot study were employed in the actual data collection process. The question-answer pairs used in the study consisted of simple Turkish questions and answers to each question. To standardize the pairs, every noun and verb in the question and answer pairs were selected primarily from Aksan et al. (2017) and other sources. Each pair consisted of a verb, a noun functioning as the internal argument (object), and another noun acting as the external argument (subject), all of which had two syllables. In each answer in each pair, only nominative marked animate and common nouns were employed as subjects and only inanimate and accusative case marked nouns were employed as objects. All verbs in the questions and the answers were transitive and were marked with the present continuous tense marker *-Iyor*. In the questions in each pair *wh*-question word *neyi* (what-Acc) and *wh*-question word *kim* (who-Nom) were used as primers to direct focus on either accusative case marked internal arguments (objects) or nominative case marked external arguments (subjects) in the answers. The remaining linguistic elements in the questions were the same as in the answer in each pair.

In addition to the arguments and verbs employed in the answers, to focus only on the elements to be scrambled by filtering out contamination in processing and emphasize an uncertainty, other linguistic elements were employed in the answers. One of these linguistic elements was adverbial phrases. The list of the adverbial phrases is given in Table 3 below.

Table 3

The list of adverbial phrases used

Adverbial phrases	
Bilmiyorum	*Bilmiyorum ki*
know not-Pres. Cont.-1st sg	*know not*-Pres. Cont.- 1st sg *that/if*
I don't know	I don't know that/if
Emin değilim	*Bilemiyorum ki*
sure not-Pres. Copula-1st sg	*know cannot*-Pres. Cont.- 1st sg *that/if*
I am not sure	I can't know if/that
Sanıyorum	*Sanıyorum ki*
suppose-Pres. Cont.- 1st sg	*suppose*-Pres. Cont.- 1st sg *that/if*
I suppose	I suppose that/if
Tahmin ediyorum	*Tahmin ediyorum ki*
guess-Pres. Cont.- 1st sg	*guess*-Pres. Cont.- 1st sg *that/if*
I guess	I guess that/if

As illustrated in Table 3, each adverbial phrase was in the first-person singular case and was marked with the present continuous tense marker *-Iyor* except for *emin değilim* (I am not sure) since it included copula. Each adverbial phrase was used to create a context of probability without affecting the meaning and comprehensibility of the sentences and they were added sentence initially in each answer in random order. Another linguistic element included in the answers was modal adverbials. Like the adverbial phrases included in the answers, modal adverbials were also employed to filter out contamination in processing and to support the uncertainty. The list of the modal adverbials presented in the answers is given in Table 4.

Table 4

The list of modal adverbials used

Modal Adverbials	
galiba	*herhalde*
perhaps	presumably
sanki	*muhtemelen*
seems like	probably

As seen in Table 4, all modal adverbials used in the answers signaled a probability. They were all used at the end of each answer and just like the adverbial phrases, they were assigned to each answer in random order. Although each answer in pairs contained randomly assigned adverbial phrases and modal adverbials, every scrambled variation of the same answer included the same adverbial phrase in sentence-initial position and the same modal adverbial at the end of the sentence. In the end, sentences used as answers included two sentences acting as clauses to create a complex sentence; one consisted of an adverbial phrase in the beginning and another one containing an answer word (focused argument), a non-focused word (non-focused argument), a verb and a modal adverbial.

3.3.1. Design of the Self-Paced Reading Test

In line with the research questions, the design of the self-paced reading test included question-answer pairs. Every question-answer pair in the study included separate factors simultaneously to study the effects of scrambling and scrambling on focused arguments, question-answer orientation, and the position of focused arguments. These factors were Sentence Type, Congruency, and Focus Position Type.

Pairs varying in Sentence Type Factor were related to the focused argument. The sentence Type factor was based on the focused argument in the pair and had two categories: either object focused or subject focused. As mentioned above, via *wh*-question word *neyi* (what-Acc) and *kim* (who-Nom), questions were used as primers in each pair to focus either on nominative case marked external arguments (subjects) or accusative case marked internal arguments (objects) in the answers. Examples of the pairs used in the study based on sentence type are given in Table 5.

Table 5

Sample pairs for the Sentence Type Factor

Question	**Answer**	**Sentence Type**
Kız neyi biliyor? *girl* what-Acc *know*-Pres.Cont.3rd sg What does the girl know?	Kız şarkıyı biliyor. *girl song*-Acc *know*-Pres.Cont.3rd sg The girl knows the song	Object
Kim şarkıyı biliyor? who-Nom *know*-Pres.Cont.3rd sg *song* Who knows the song?	Kız şarkıyı biliyor. *girl song*-Acc *know*-Pres.Cont.3rd sg The girl knows the song	Subject
Neyi kız biliyor? what-Acc *girl know*-Pres.Cont.3rd sg What does the girl know?	Kız şarkıyı biliyor. *girl song*-Acc *know*-Pres.Cont.3rd sg The girl knows the song	Object
Şarkıyı kim biliyor? *song know*-Pres.Cont.3rd sg who-Nom Who knows the song?	Şarkıyı kız biliyor. *song*-Acc *girl know*-Pres.Cont.3rd sg The girl knows the song	Subject

As seen in Table 5, in every pair, the *wh*-question word *neyi* (what-Acc) and *wh*-question word *kim* (who-Nom) were used in the questions to focus on a certain argument in the answer: either accusative case marked internal argument (object) or nominative case marked external argument (subject). When internal argument was focused, the Sentence Type Factor of the question-answer pair was considered as object focused while the Sentence Type Factor was called subject focused when external argument was focused via *wh*-question words in the questions.

Considering the question-answer orientation in the question-answer pairs, the second factor taken into consideration was Congruency Factor, which referred to the congruency relationship between the questions and answers in each pair. When both *wh*-question word *neyi* (what-Acc) or *kim* (who-Nom) in the question (either question initial or immediate preverbal) and nominative case marked subjects or accusative case marked objects in the answer (either clause-initial or immediate preverbal) were in the same position in the question and answer in the same pair, the relationship between them was considered as congruent.

Otherwise, they were considered incongruent. An example of congruency in a pair focusing on external argument (subject) can be seen in Table 6.

Table 6

Sample pairs for Congruency Factor

Question	**Answer**	**Congruency**
Kız neyi biliyor? *girl* what-Acc *know*-Pres.Cont.3rd sg What does the girl know?	Kız şarkıyı biliyor. *girl song*-Acc *know*-Pres.Cont.3rd sg The girl knows the song	Congruent
Kim şarkıyı biliyor? who-Nom *know*-Pres.Cont.3rd sg song Who knows the song?	Kız şarkıyı biliyor. *girl song*-Acc *know*-Pres.Cont.3rd sg The girl knows the song	Congruent
Neyi kız biliyor? what-Acc *girl know*-Pres.Cont.3rd sg What does the girl know?	Kız şarkıyı biliyor. *girl song*-Acc *know*-Pres.Cont.3rd sg The girl knows the song	Incongruent
Kim şarkıyı biliyor? who-Nom *know*-Pres.Cont.3rd sg song Who knows the song?	Şarkıyı kız biliyor. *song*-Acc *girl know*-Pres.Cont.3rd sg The girl knows the song	Incongruent

As seen in Table 6 above, the positions of *wh*-question word *neyi* (what-Acc) and *kim* (who-Nom) in the questions (in the question initial position or the immediate preverbal position) and accusative case marked object and nominative case marked subject in the answer (in the clause-initial position or the immediate preverbal position) were scrambled in each pair. When both *neyi* (what-Acc) and *kim* (who-Nom) in the questions and accusative case marked object and nominative case marked subject in the answer were placed in the question and clause-initial position or immediate preverbal position in the same pair, the grammatical relationship between them were considered as congruent. Otherwise, they were considered incongruent.

As for the position of focused arguments, the final factor was named as Focus Position Type Factor, which was relevant to the position of the focused argument in the answer. The Focus Position Type Factor in this study was related to the focus field, which included the preverbal area to host the focus (Göksel and Özsoy, 2000). In this sense, focused argument in each answer was positioned

either in clause-initial position or in immediate preverbal position. An example of pairs varying in focus position type could be seen in Table 7 below.

Table 7

Sample pairs for Focus Position Type Factor

Question	**Answer**	**Focus Position Type**
Kız neyi biliyor? *girl* what-Acc *know*-Pres.Cont.3rd sg What does the girl know?	Kız şarkıyı biliyor. *girl song*-Acc *know*-Pres.Cont.3rd sg The girl knows the song	Preverbal
Kim şarkıyı biliyor? who-Nom *know*-Pres.Cont.3rd sg song Who knows the song?	Kız şarkıyı biliyor. *girl song*-Acc *know*-Pres.Cont.3rd sg The girl knows the song	Clause Initial
Neyi kız biliyor? what-Acc *girl know*-Pres.Cont.3rd sg What does the girl know?	Şarkıyı kız biliyor. *song*-Acc *girl know*-Pres.Cont.3rd sg The girl knows the song	Clause Initial
Kim şarkıyı biliyor? who-Nom *know*-Pres.Cont.3rd sg song Who knows the song?	Şarkıyı kız biliyor. *song*-Acc *girl know*-Pres.Cont.3rd sg The girl knows the song	Preverbal

As shown in Table 7 above, focused arguments in the answers in the pairs varied according to their positions. As a result, clause-initial position and preverbal position were considered as the two categories of Focus Position Type, and pairs were categorized accordingly. For example, when focused arguments were in clause-initial position, they were categorized as clause-initial and when they were positioned in the immediate preverbal position, they were categorized as preverbal.

In the end, there were eight conditions in the question-answer pairs utilized in the study to study the effects of scrambling and scrambling focused arguments, question-answer orientation, and position of the focused argument on processing and congruency. An example of the pairs reflecting all three factors in the study can be seen in Table 8.

Table 8

Samples for the design of the pairs

Question	**Answer**	**Sent. Type***	**Congr. ****	**Foc. Pos. Type *****
Çocuk neyi alıyor? *What is the child taking?*	Çocuk arabayı alıyor. *The child is taking the car.*	obj.	cong.	pre.
Çocuk neyi alıyor? *What is the child taking?*	Arabayı çocuk alıyor. *The child is taking the car.*	obj.	incong.	cla.int.
Neyi çocuk alıyor? *What is the child taking?*	Çocuk arabayı alıyor. *The child is taking the car.*	obj.	incong.	pre.
Neyi çocuk alıyor? *What is the child taking?*	Arabayı çocuk alıyor. *The child is taking the car*	obj.	cong.	cla.int.
Kim kitabı okuyor? *Who is reading the book?*	Adam kitabı okuyor. *The man is reading the book.*	subj.	cong.	cla.int.
Kim kitabı okuyor? *Who is reading the book?*	Kitabı adam okuyor. *The man is reading the book.*	subj.	incong.	pre.
Kitabı kim okuyor? *Who is reading the book?*	Adam kitabı okuyor. *The man is reading the book.*	subj.	incong.	cla.int.
Kitabı kim okuyor? *Who is reading the book?*	Kitabı adam okuyor. *The man is reading the book.*	subj.	cong.	pre.

*Note: *Sent. Type* stands for sentence type, which includes *obj.* for object-focused pairs and *subj.* for subject-focused pairs.
***Congr.* stands for congruency, which includes *cong.* for congruent and *incong.* for incongruent.
****Foc. Pos. Type* stands for focus position type, which includes *pre.* for the immediate preverbal position, *cla.int.* for the clause-initial position.

As demonstrated in Table 8, each pair was labeled concerning the factors they included simultaneously. For example, the sentence type of a pair was accepted either as object-focused or as subject-focused. In like manner, depending on the question-answer orientation or the congruency relationship between questions and answers in the pairs, a pair was either considered congruent or incongruent. Finally, a pair hosting the focused argument in either clause-initial position or immediate preverbal position was considered as either clause-initial or preverbal. In the end, although there were 32 question-answer pairs, considering the factors affecting processing and congruency simultaneously, the pairs were designed in a 2 X 2 X 2 fashion. Therefore, the self-paced reading test in the study consisted of 256 question-answer pairs varying in the factors mentioned above. All the question-answer pairs used in the study can be found in Appendix 1.

3.4. DATA COLLECTION TOOL

Although there are other neurocognitive research tools for self-paced reading tests, a review of some of the studies utilizing *PscyhoPy* report many advantages of the software. First, many psycholinguistic studies employ *PscyhoPy* (see Peirce, 2007; 2009 for a review of these studies) and consider it a valid and reliable tool. Secondly, a recent study reports that it is very precise for measuring the reaction time. According to Bridges et al. (2020), a comparison among different experiment generators shows that *PscyhoPy* outperforms other software packages in both lab-based and online experiments with much higher precision. Third, its compatibility with most operating systems on computers as well as its requirement for simpler hardware that can be found on most computers was also noteworthy. Also, as Peirce (2007: 8) emphasizes, *PsychoPy* is “a new suite of software tools to make it easier to build simple visual and auditory stimuli for neuroscience experiments” and is designed “to handle stimulus display and timing” (Peirce, 2007: 9). In other words, as put forward by Peirce et al. (2019), via *PscyhoPy*, a researcher can present the desired type of stimulus via the monitor of the computer (and/or another monitor) or speakers and record reaction/reading time data and behavioral data via any peripheral that is connected to the computer (keyboard or mouse), both of which are important for the present study. For all these reasons, *PscyhoPy* was used in the study to find out the possible effects of scrambling on processing and perception of congruency in Turkish by administering the self-paced reading test consisting of the question-answer pairs and recording the participants’ responses.

Also, as pointed out by Woods et al. (2015), calibration of the hardware and software for reaction time studies is important. Therefore, measurement of the accuracy and calibration of the *Lenovo Ideapad* Z500 Intel Core i5 3230M 2.6 GHz 6GB 1TB 15.6" laptop to be used in the study were checked at ERKAM (Erciyes Üniversitesi Klinik Mühendisliği Araştırma ve Uygulama Merkezi - Erciyes University Research and Application Center for Clinical Engineering) before the data collection process.

3.5. DATA COLLECTION PROCEDURE

The study was designed as a self-paced reading test, which meant that the participants were able to proceed at their processing speed and the data collection procedure was designed concerning the suggestions in the relevant literature. Therefore, the question-answer pairs were presented in a noncumulative manner, they were centered on the monitor, and a comprehension question was administered at the end of each question-answer pair, as suggested by Marinis (2010) and Jegerki (2014). Also, both the questions and the answers in the pairs had a similar structure to avoid complexity and were presented randomly to minimize participant fatigue and retention effect. Finally, the data collection process also included a training session to allow the participants to get ample practice of the procedure regarding the software, hardware, and the pairs of sentences without changing the results (Racine, 2014). Participants sat at approximately 45-60 cm away from the laptop, where they could access the keyboard and monitor easily, and at the beginning of the training session, the participants were asked to read the brief information text on the monitor, which explained the data collection procedure in Turkish and type in their age and gender. The researcher also explained the process and answered their questions if they had any.

In the training session, as well as in the data collection process, a loop of routines was employed. The loop of routines involved the presentation of the question and answer in question-answer pairs mainly. A sample representing a loop of routines of the self-paced reading test procedure can be seen in Figure 1 below. Here, the represented loop of routine depicted the data collection procedure in a question-answer pair focusing on the subject via the *wh*-question word *kim* (who-Nom) as an example.

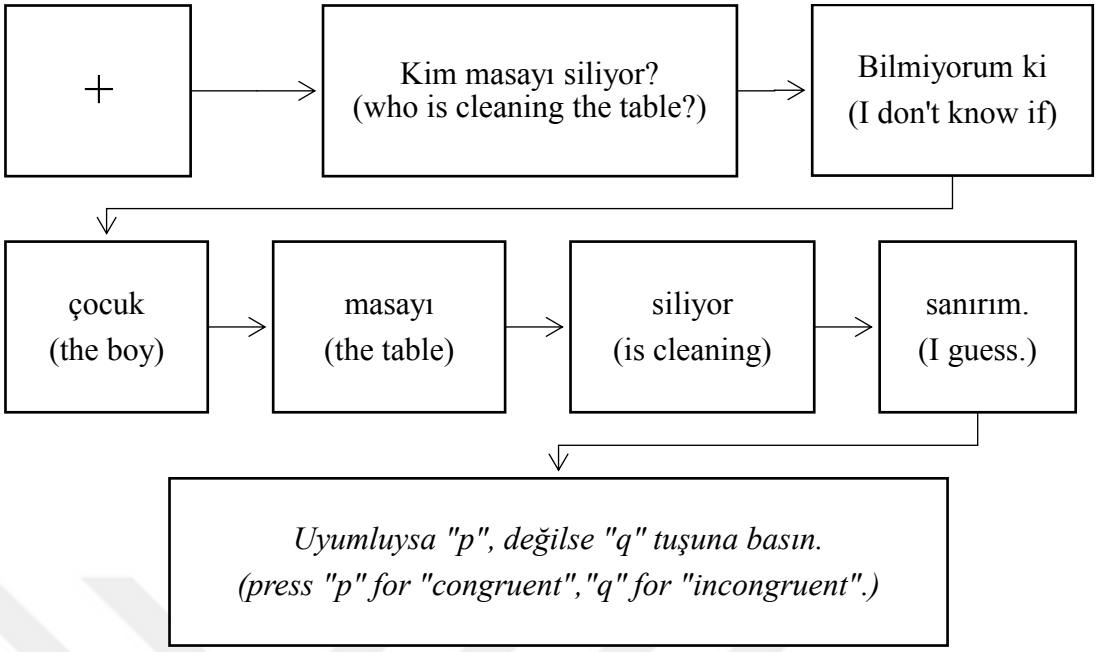


Figure 1. Sample flow chart for a loop of routines.

As shown in Figure 1, the participants were presented “+” as a sign of fixation. Then, the participants were shown a complete question upon pressing any key on the keyboard. As they pressed any key on the keyboard at their pace, segments of the answer appeared on the monitor one by one except for adverbial phrases (presented sentence initially in each answer) and modal adverbials (at the end of each answer), which were presented as a whole at once since they did not affect the meaning but functioned as context agents in the study. At the end of each pair, an imperative sentence in Turkish asking to make judgment calls on the congruency relationship between the answer and the question in the pairs was presented. Then, the participants made their choice by pressing either “p” or “q” on the keyboard. To create a visual reference for the participants, a green sticker was used to cover the “p” button on the keyboard and a red sticker was used to cover the “q” button on the keyboard since the participants were informed as green to stand for “congruent” while red for “incongruent”. After that, the whole process started over again for a new random pair until all the pairs of the training session were completed. The training session consisted of 32 pairs of sentences identical to those in the actual data collection process. At the end of

the training session, there was a short break and the researcher checked whether the participants had any problems.

The data collection process started when the participants told the researcher that they were ready after the training session. The same process in the training session was utilized in the data collection phase. Each pair was presented in a random order to prevent participant fatigue, habit formation, and remembering the structure. The loop continued until the end of the question-answer pairs. Also, as mentioned above, 256 question-answer pairs were administered in two separate sessions. In the first session that took place in early June 2020, only question-answer pairs focusing on objects were administered and in late August, question-answer pairs focusing on subjects were presented and the same participants attended both sessions. As suggested by Fard and Lavender (2019), data collection took between 15 and 20 minutes for each participant for a session although since it was a self-paced reading test, there was no upper- or lower-time limit.

3.6. DATA ANALYSIS

For studying the effects of scrambling on processing, reading time data was examined. Reading time data referred to the duration between the onset of the visual presentation of the answer and the onset of the response generated by the participant (represented in milliseconds). Therefore, to see whether scrambling as well as scrambling focused arguments, question-answer orientation, and the position of focused arguments (independent variables) caused differences in processing, reading time for each linguistic element in the answer (dependent variable) was analyzed separately.

Like reading time data for processing, for studying the effects of scrambling on perceived congruency, congruency response time data and perceived congruency data were examined. Congruency response time data included the time participants spent (represented in milliseconds) to decide (or to respond to) the congruency relationship between the questions and the answers in question-

answer pairs while perceived congruency data referred to the participants' judgment call for the congruency relationship between the questions and the answers in question-answer pairs. Therefore, to see the effects of scrambling and scrambling focused arguments, question-answer orientation, and the position of focused arguments (independent variables) on congruency, the congruency response time (dependent variable) as well as perceived congruency data (dependent variable) were analyzed.

Initial statistical analyzes showed that all the data in the study had a normal distribution. Therefore, the differences in participants' responses were within certain ranges and it could be accepted that the study had a homogenous population, which was expected. In line with the research questions, to see the effects of scrambling on processing and congruency, mean scores of reading/response time data, as well as perceived congruency data, were compared via parametric statistical tests because the data was normally distributed. As a result, to see the effects of scrambling focused arguments, question-answer orientation, and the position of focused arguments on processing and congruency, *three-factor ANOVA* was utilized to compare the mean scores of reading/response time data as well as perceived congruency data. This way, as Jegerski (2014) suggested, results concerning the interactional (three-way), two-way and main effects of each factor on dependent variables were seen. Yet, after utilizing *three-factor ANOVA*, post-hoc analyzes were conducted. As there were two categories in each factor, *Independent Samples t-tests* were utilized as post-hoc analyses to compare the mean scores of reading/response time data and congruency response data to see whether scrambling caused processing and perceived congruency differences in terms of the categories of each factor. All tests and statistical procedures were run on SPSS 22.

CHAPTER 4 - FINDINGS AND DISCUSSION

In this chapter, the results of the statistical analyses conveyed in line with the research questions mentioned in the previous chapter as well as the discussion of the findings are presented in detail. However, before presenting the findings of the statistical analyses, a brief note on the labeling convention should be made. As mentioned above, depending on the linguistic elements in the answers, regions of interest are determined and reading/response time for the specific linguistic element is labeled accordingly. Therefore, the reading time for adverbial phrases in region 1 is labeled as “Adverbial phrase (R1)” and modal adverbials are labeled as “Post-Verbal Element (R5)”. Since focused arguments are either in immediate preverbal position or clause-initial position, reading time for focused arguments is labeled as “Focused NP (R2/R3)”. Besides, as non-focused arguments occupy the remaining preverbal position left by the focused NP in the main clause, reading time for non-focused arguments is named “Non-Focused NP (R3/R2)”. Finally, reading time for verbs is accepted as “Verb (R4)”. Also, “Total Reading Time (TRT)” is calculated by adding up the reading/response time for all regions while reading time for regions including focused arguments, non-focused arguments, and verbs are added up to calculate the reading time for the clause hosting the focused NP as answers, which is considered as “R2+R3+R4”. Each reading time score is represented in milliseconds. In addition to the reading time for each region of interest, as for the congruency data, the participants’ judgment calls on the congruency of the relationship between the questions and the answers are referred to as Perceived Congruency Data (PCD) and Congruency Response Time (CRT) stands for the time the participants spend to decide the congruency and is also represented in milliseconds. Analyses, findings, and discussion of reading time data and congruency data are presented in separate sub-sections in this chapter.

4.1. FINDINGS AND DISCUSSION CONCERNING READING TIME DATA

In this section, findings and discussion concerning reading time data are presented in detail. First, the findings of the statistical analyses regarding reading

time data are presented and a discussion of the findings can be found later in this subsection.

4.1.1. Findings Concerning Reading Time Data

First, to see whether scrambling and scrambling focused arguments, question-answer orientation, and the position of focused arguments affected processing, the mean scores of the reading time for adverbial phrase (R1) are compared concerning the three factors by *three-factor ANOVA,* and the results are presented in Table 9.

Table 9

Results of the three-factor ANOVA for R1

Source	**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Sentence Type	3.490	1	3.490	14.222	.000
Congruency	.098	1	.098	.401	.526
Focus Position Type	.000	1	.000	.001	.973
Focus Position Type x Congruency	.873	1	.873	3.557	.059
Focus Position Type x Sentence Type	.325	1	.325	1.325	.250
Congruency x Sentence Type	.000	1	.000	.001	.975
Interaction of the Factors	.724	1	.724	2.949	.086
Error	3139.332	12792			

As it is presented in Table 9, there is a marginally significant difference in the three-way interaction among Sentence Type, Congruency and Focus Position Type on the reading time of adverbial phrases [F (1,12792) = 2.949, p = .086]. The two-way interaction between Focus Position Type and Congruency is also marginally significant [F (1,12792) = 3.557, p = .059]. On the other hand, the two-way interaction between Focus Position Type and Sentence Type is not statistically significant [F (1,12792) = 1.325, p = .250] and the two-way interaction between Congruency and Sentence Type is not statistically significant either [F (1,12792) = .001, p = .975]. Likewise, neither Congruency [F (1,12792) = .401, p = .526] nor Focus Position Type [F (1,12792) = .001, p = .973] do not lead to any

statistically significant difference in the reading time of adverbial phrases. On the other hand, in terms of the effects of Sentence Type on the reading time of adverbial phrases, a statistically significant effect is seen [*F* (1,12792) = 14.222, *p* < *.001*]. Therefore, to see the processing difference between categories of Sentence Type, *Independent Samples t-test* is run as a post-hoc test whose results are presented in Table 10.

Table 10

Post-hoc analysis for R1

Factor	Category	Mean	Std. Dev.	t	df	sig.	N
Sentence Type	Object Focused	.565	.510	3.771	12798	.000	6400
	Subject Focused	.598	.481				6400

Table 10 above indicates that there is a statistically significant difference in the reading time between object-focused answers (*M* = .565, *SD* = .510) and subject-focused answers (*M* = .598, *SD* = .481; *t* (12798) = 3.771, *p* < *.001*). To clarify the difference, question-answer pairs (20) and (21), given as samples below, should be observed.

(20)

Çocuk ney-i al-ıyor?
Child-Nom *what-Acc* *take*-Pres. Cont. 3rd sg
What is (the) child taking?

Sanı-yor-um çocuk araba-yı alıyor
suppose-Pres.Cont.-1st sg *child*-Nom *car*-Acc *take*-Pres.Cont.3rd sg
I suppose (the) child is taking (the) car.

(21)

Araba-yı kim al-ıyor?
car-Acc *who*-Nom *take*-Pres. Cont. 3rd sg
Who is taking (the) car?

Sanı-yor-um çocuk araba-yı alıyor
suppose-Pres. Cont.-1st sg *child*-Nom *car*-Acc *take*-Pres.Cont.3rd sg.
I suppose (the) child is taking (the) car.

As mentioned above, the results show that the reading time for adverbial phrase *sanıyorum* (*I suppose*) in a question-answer pair focusing on the object (20) is faster than in a question-answer pair focusing on the subject (21). This indicates that although there are not any statistically significant differences led by either Congruency or Focus Position Type, the adverbial phrases which are placed in object-focused answers are read significantly faster than the adverbial phrases which are placed in subject-focused answers in the study. Therefore, it could be said that adverbial phrases placed in answers with objects as the focused arguments are processed easier and, therefore, faster than answers hosting subjects as the focused arguments. In this sense, it can be said that the processing of adverbial phrases is affected by the focused arguments, in favor of accusative case-marked direct objects. More specifically, the participants seem to spend more time reading adverbial phrases in subject-focused sentences than in object-focused sentences.

Second, the effects of scrambling and scrambling focused arguments, question-answer orientation, and the position of focused arguments on processing focused NP (R2/R3) are examined via *Three-Way ANOVA* and the results are presented in Table 11.

Table 11

Results of the three-factor ANOVA for R2/R3

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Sentence Type	2.199	1	2.199	11.554	.001
Congruency	8.415	1	8.415	44.214	.000
Focus Position Type	8.984	1	8.984	47.205	.000
Focus Position Type x Congruency	2.368	1	2.368	12.444	.000
Focus Position Type x Sentence Type	.013	1	.013	.067	.796
Congruency x Sentence Type	.013	1	.013	.070	.792
Interaction of the Factors	.122	1	.122	.640	.424
Error	2434.615	12792			

As shown in Table 11 above, the three-factor interaction among Sentence Type, Congruency, and Focus Position Type factors on the reading time of focused NP (R2/R3) is not statistically significant [*F* (1,12792) = .640, *p* = .424]. This meant that the scrambled factors do not lead to a statistical difference in processing focused NPs in a combined or three-way interaction. On the other hand, the two-way interaction between Focus Position Type and Congruency is statistically significant [*F* (1,12792) = 12.444, *p* < *.001*]. Yet, neither the two-way interaction between Focus Position Type and Sentence Type [*F* (1,12792) = .067, *p* = .796] or the two-way interaction between Congruency and Sentence Type is statistically significant [*F* (1,12792) = .070, *p* = .792]. However, closer inspection of the results of the *three-factor ANOVA* also showed that every factor scrambled affects the processing and reading time of focused NP (R2/R3) separately. In other words, Sentence Type [*F* (1,12792) = 11.554, *p* = .001], Congruency [*F* (1,12792) = 44.214, *p* < *.001*], and Focus Position Type [*F* (1,12792) = 47.205, *p* < *.001*] has a statistically significant effect on the reading time of focused NP (R2/R3). To see the differences between categories of each factor, *Independent Samples t-test* is run and the results are presented in Table 12.

Table 12

Post-hoc analyses for R2/R3

Factor	Category	Mean	Std. Dev.	t	df	sig.	N
Sentence Type	Object Focused	.616	.378	3.386	12798	.001	6400
	Subject Focused	.642	.491				6400
Congruency	Congruent	.604	.412	6.632	12798	.000	6400
	Incongruent	.655	.461				6400
Focus Position Type	Preverbal	.602	.408	6.854	12798	.000	6400
	Clause Initial	.656	.465				6400

The results presented in in Table 12 clearly show that the reading time for focused NP (R2/R3) differs significantly between each category of each factor. For instance, in terms of the effects of Sentence Type, there is a statistically significant difference between subject focused answers (*M* = .642, *SD* = .491) and object focused answers (*M* = .616, *SD* = .378) and it is seen that object-focused answers are read significantly faster than subject-focused answers (*t* (12798) = 3.386, *p* = .001). For further clarification, examples (22) and (23) below can be examined.

(22)

Çocuk ney-i al-ıyor?
Child-Nom *what-Acc* *take*-Pres. Cont. 3rd sg
What is (the) child taking?

Çocuk araba-yı alıyor
child-Nom *car*-Acc *take*-Pres. Cont. 3rd sg
(The) child is taking (the) car.

(23)

Araba-yı kim al-ıyor?
car-Acc *who*-Nom *take*-Pres. Cont. 3rd sg
Who is taking (the) car?

çocuk araba-yı alıyor
child-Nom *car*-Acc *take*-Pres.Cont.3rd sg
(The) child is taking (the) car.

As it can be seen, while the focused NP in the first question-answer pair (22) is in an object-focused pair, the focused NP in the second question-answer pair (23) is in a subject-focused pair. The analyses show that focused NPs are processed faster when they are in object-focused question-answer pairs.

Additionally, another statistically significant difference is seen between congruent (*M* = .604, *SD* = .412) and incongruent answers (*M* = .655, *SD* = .461) in terms of the effects of Congruency. Here, it is seen that congruent answers are read significantly faster than incongruent answers (*t* (12798) = 6.632, *p* < *.001*). Sample congruent and incongruent question-answer pairs can be viewed in (24) and (25) below.

(24)
Çocuk ney-i al-ıyor?
Child-Nom *what-Acc* *take*-Pres. Cont. 3rd sg
What is (the) child taking?

Çocuk araba-yı alıyor
child-Nom *car*-Acc *take*-Pres.Cont.3rd sg
(The) child is taking (the) car.

(25)
Çocuk ney-i al-ıyor?
Child-Nom *what-Acc* *take*-Pres. Cont. 3rd sg
What is (the) child taking?

Araba-yı çocuk alıyor
car-Acc *child*-Nom *take*-Pres.Cont.3rdsg.
(The) child is taking (the) car.

The first question-answer pair (24) is congruent since the question word *neyi* (what-Acc) and the focused NP *araba-yı* (*car*-Acc) are both in the immediate

preverbal position unlike the second question-answer pair (25), which is incongruent as the question word *neyi* (what-Acc) and the focused NP *araba-yı* (*car*-Acc) are located in different positions in the question and answer. As a result, the reading time for the focused NPs in congruent question-answer pairs is lower than the reading time for the focused NPs in incongruent question-answer pairs.

Finally, in terms of the effects of Focus Position Type, another statistically significant difference is found between the reading time of focused NPs. When the focused NPs are in the immediate preverbal position (M = .602, SD = .408), they are read faster than they are in the clause-initial position (M = .656, SD = .465) and the difference between the focus positions are statistically significant (t (12798) = 6.854, $p < .001$). To be more precise, example question-answer pairs presented below in (26) and (27) should be examined.

(26)

Çocuk	ney-i	al-ıyor?
Child-Nom	*what-Acc*	*take*-Pres. Cont. 3rd sg
What is (the) child taking?		

Çocuk	araba-yı	alıyor
child-Nom	*car*-Acc	*take*-Pres.Cont.3rd sg
(The) child is taking (the) car.		

(27)

Çocuk	ney-i	al-ıyor?
Child-Nom	*what-Acc*	*take*-Pres. Cont. 3rd sg
What is (the) child taking?		

Araba-yı	çocuk	alıyor
car-Acc	*child*-Nom	*take*-Pres.Cont.3rdsg.
(The) child is taking (the) car.		

When the position of the focused NP in the question-answer pairs below is examined, it can be seen that while *araba-yı* (*car*-Acc) is in the immediate preverbal position in the answer in (26), the very same focused NP is hosted in clause initial position in (27). Therefore, these results reveal that the focused NPs being hosted in immediate preverbal positions are read faster and more easily.

Third, similar to other analyses, *three-factor ANOVA* is employed to see whether scrambling and scrambling focused arguments, question-answer orientation, and the position of focused arguments affect the processing of non-focused NP (R3/R2), and the results are shown in Table 13.

Table 13

Results of the three-factor ANOVA for R3/R2

Source	**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Sentence Type	1.888	1	1.888	24.103	.000
Congruency	.480	1	.480	6.128	.013
Focus Position Type	.132	1	.132	1.690	.194
Focus Position Type x Congruency	.285	1	.285	3.636	.057
Focus Position Type x Sentence Type	.262	1	.262	3.344	.067
Congruency x Sentence Type	.003	1	.003	.038	.846
Interaction of the Factors	.036	1	.036	.461	.497
Error	1002.119	12792			

As presented in Table 13 above, like previous analyses, the interaction among Sentence Type, Congruency and Focus Position Type do not yield a statistically significant effect on the reading time of non-focused NP (R3/R2) [*F* (1,12792) =.461, *p* = .497]. However, the two-way interaction between Focus Position Type and Congruency is marginally significant [*F* (1,12792) = 3.636, *p* = .057] and the two-way interaction between Focus Position Type and Sentence Type is also marginally significant [*F* (1,12792) = 3.344, *p* = .067]. Yet, the two-way interaction between Congruency and Sentence Type is not statistically significant [*F* (1,12792) = .038, *p* = .846]. However, although Focus Position Type did not influence the reading time examined [*F* (1,12792) = 1.690, *p* = .194], both Sentence Type Factor [*F* (1,12792) = 24.103, *p* < *.001*] and Congruency Factor [*F* (1,12792) = 6.128, *p* = .013] have varying effects on the reading time of non-focused NP (R3/R2). Therefore, an *Independent Samples t-test* is run to see the differences between categories of these two factors and the results can be examined below in Table 14.

Table 14

Post-hoc analyses for R3/R2

Factor	Category	Mean	Std. Dev.	t	df	sig.	N
Sentence Type	Object Focused	.394	.292	4.908	12798	.000	6400
	Subject Focused	.418	.268				6400
Congruency	Congruent	.400	.276	2.473	12798	.013	6400
	Incongruent	.412	.284				6400

As given in Table 14, there is a statistically significant difference between the categories of Sentence Type and Congruency factors in terms of the reading time of non-focused NP (R3/R2). For example, in terms of the effect of Sentence Type, there is a statistically significant difference between the reading time of non-focused NP (R3/R2) for object-focused answers (M = .394, SD = .292) and subject-focused answers (M = .418, SD = .268; t (12798) = 4.908, $p < .001$). In other words, Sentence Type does have an effect on the reading time of non-focused NP (R3/R2), which leads to non-focused NPs in object-focused answers being read faster than non-focused NPs in subject-focused answers. To clarify the results, the examples given in (28) and (29) below can be viewed.

(28)

Çocuk	ney-i	al-ıyor?
Child-Nom	*what-Acc*	*take*-Pres. Cont. 3rd sg

What is (the) child taking?

Çocuk	araba-yı	alıyor
child-Nom	*car*-Acc	*take*-Pres. Cont. 3rd sg

(The) child is taking (the) car.

(29)

Araba-yı	kim	al-ıyor?
car-Acc	*who*-Nom	*take*-Pres. Cont. 3rd sg

Who is taking (the) car?

çocuk araba-yı alıyor
child-Nom *car*-Acc *take*-Pres.Cont.3rd sg
(The) child is taking (the) car.

As it can be viewed, while the non-focused NP in (28) is hosted in an object-focused question-answer pair, the non-focused NP in (29) is hosted in a subject-focused question-answer pair. As the results suggest, non-focused NPs have a slower reading time when they are in subject-focused question-answer pairs.

Likewise, Congruency seems to have affected the reading time of non-focused NP (R3/R2). For instance, the difference between the reading time of non-focused NP (R3/R2) for congruency (*M* = .400, *SD* = .276) and incongruency (*M* = .412, *SD* = .284) is statistically significant (*t* (12798) = 2.473, *p* = .013). For further clarification, questions and answers in (30) and (31) below should be examined.

(30)
Çocuk ney-i al-ıyor?
Child-Nom *what-Acc* *take*-Pres. Cont. 3rd sg
What is (the) child taking?

Çocuk araba-yı alıyor
child-Nom *car*-Acc *take*-Pres.Cont.3rd sg
(The) child is taking (the) car.

(31)
Çocuk ney-i al-ıyor?
Child-Nom *what-Acc* *take*-Pres. Cont. 3rd sg
What is (the) child taking?

Araba-yı çocuk alıyor
car-Acc *child*-Nom *take*-Pres.Cont.3rdsg.
(The) child is taking (the) car.

As given above, the first question-answer pair (30) is congruent since the question word *neyi* (what-Acc) and the focused NP *araba-yı* (*car*-Acc) are in the

immediate preverbal position. On the other hand, the second question-answer pair (32) is incongruent since the question word *neyi* (what-Acc) and the focused NP *araba-yı* (*car*-Acc) are hosted in different positions in the question and answer. As a result, just like the reading time for focused NPs, it can be said that the reading time for the non-focused NPs in congruent question-answer pairs is faster than the reading time for the non-focused NPs in incongruent question-answer pairs.

Fourth, the mean score for the reading time for verbs (R4) is compared via *three-factor ANOVA* to see whether scrambling and scrambling focused arguments, question-answer orientation, and the position of focused arguments affect processing. The results can be seen in Table 15.

Table 15

Results of the three-factor ANOVA for R4

Source	**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Sentence Type	.234	1	.234	2.101	.147
Congruency	.416	1	.416	3.740	.053
Focus Position Type	.212	1	.212	1.904	.168
Focus Position Type x Congruency	.931	1	.931	8.365	.004
Focus Position Type x Sentence Type	.536	1	.536	4.815	.280
Congruency x Sentence Type	.210	1	.210	1.885	.170
Interaction of the Factors	.065	1	.065	.586	.444
Error	1424.134	12792			

As it can be viewed in Table 15, the interaction among Sentence Type, Congruency and Focus Position Type does not yield a statistically significant difference on the reading time of verb (R4) [F (1,12792) =.586, p = .444]. The two-way interaction between both Focus Position Type and Congruency [F (1,12792) = 8.365, p = .004] is statistically significant. However, the two-way interaction between Focus Position Type and Sentence Type [F (1,12792) = 4.815, p = .280] and the two-way interaction between Congruency and Sentence Type are not statistically significant [F (1,12792) = 1.885, p = .170]. Besides, while

Sentence Type does not lead to statistically significant differences [*F* (1,12792) =.2.101, *p* = .147], Congruency leads to a marginally significant difference in the reading time of verb (R4) [*F* (1,12792) = 3.740, *p* = .053]. Following them, Focus Position Type [*F* (1,12792) = 1.904, *p* = .168] does not result in differences in the reading time of verb. Since there are no statistically significant differences caused by the factors combined or separate, no *Independent Samples t-test* is employed.

Next, the mean score for the reading time for modal adverbials as a post-verbal element (R5) is compared via *three-factor ANOVA* to see whether scrambling and scrambling focused arguments, question-answer orientation, and the position of focused arguments affect processing post-verbal element (R5). The results are presented in Table 16.

Table 16

Results of the three-factor ANOVA for R5

Source	**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Sentence Type	71.813	1	71.813	168.83	.000
Congruency	.121	1	.121	.284	.594
Focus Position Type	.582	1	.582	1.369	.242
Focus Position Type x Congruency	1.876	1	1.876	4.410	.360
Focus Position Type x Sentence Type	1.034	1	1.034	2.432	.119
Congruency x Sentence Type	.152	1	.152	.358	.550
Interaction of the Factors	.465	1	.465	1.093	.296
Error	5441.245	12792			

As one can see in Table 16, the interaction of Sentence Type, Congruency, and Focus Position Type does not yield a statistically significant difference in terms of the reading time for modal adverbials (post-verbal element-R5) [*F* (1,12792) = 1.093, *p* = .296]. In addition to that, the two-way interaction between Focus Position Type and Congruency [*F* (1,12792) = 4.410, *p* = .360] is not statistically significant. The two-way interaction between Focus Position Type and Sentence Type is not statistically significant [*F* (1,12792) = 2.432, *p* = .119] and the two-

way interaction between Congruency and Sentence Type is not statistically significant either [*F* (1,12792) = .358, *p* = .550]. When the factors are analyzed separately, neither Congruency [*F* (1,12792) =.586, *p* = .444] nor Focus Position Type [*F* (1,12792) =.586, *p* = .444] result in statistically significant differences in the reading time of post-verbal element (R5). On the other hand, Sentence Type causes a statistically significant difference in the reading time of the post-verbal element (R5) between categories [*F* (1,12792) = 168.828, *p* < *.001*]. Therefore, an *Independent Samples t-test* is run to see the difference between the categories of Sentence Type factor as a post-hoc test and the results can be viewed in Table 17.

Table 17

Post-hoc analysis for R5

Factor	**Category**	**Mean**	**Std. Dev.**	**t**	**df**	**sig.**	**N**
Sentence Type	Object Focused	.489	.538	12.991	12798	.000	6400
	Subject Focused	.640	.750				6400

As given in Table 17, there is a statistically significant difference between object-focused sentences (*M* = .489, *SD* = .538) and subject-focused sentences (*M* = .640, *SD* = .750; *t* (12798) = 12.991, *p* < *.001*) in terms of the reading time for post-verbal elements. As a result, it is seen that post-verbal elements in object-focused answers are read significantly faster than the post-verbal elements in subject-focused answers. The following examples in (32) and (33) exhibit this finding much clearer:

(32)

Çocuk	ney-i	al-ıyor?
Child-Nom	*what-Acc*	*take*-Pres. Cont. 3rd sg

What is (the) child taking?

Çocuk araba-yı alıyor galiba
child-Nom *car*-Acc *take*-Pres. Cont. 3rd sg *perhaps*
Perhaps (the) child is taking (the) car.

(33)
Araba-yı kim al-ıyor?
car-Acc *who*-Nom *take*-Pres. Cont. 3rd sg
Who is taking (the) car?

çocuk araba-yı alıyor galiba
child-Nom *car*-Acc *take*-Pres.Cont.3rd sg
perhaps
Perhaps (the) child is taking (the) car.

As seen in (32), when modal adverbial *galiba* (*perhaps*) is at the end of the answer in a question-answer pair focusing on the object, the reading time for that modal adverbial is lower. However, the reading time for the same modal adverbial is higher when it is at the end of the answer in a question-answer pair focusing on the subject, as seen in (33). Therefore, it can be said that sentence type can even affect the processing of modal adverbial hosted at the end of an answer.

In addition to the analyses given before, cumulative reading time data are also examined. In this sense, as mentioned previously, Total Reading Time (TRT) includes the sum of reading time of R1 (adverbial phrase), R2/R3 (focused NP), R3/R2 (non-focused NP), R4 (verb), and R5 (post-verbal element/modal adverbial) while, as the name suggests, R2+R3+R4 excludes R1 and R5 data since they are included mostly for contextual purposes and to obtain a clearer view of the processing of the linguistic elements. Therefore, apart from the analyses of the linguistic elements occupying different regions, TRT and cumulative reading time for R2+R3+R4 are also analyzed via *Three-Way ANOVA* to see the effects of scrambling and scrambling focused arguments, question-answer orientation, and the position of focused arguments. Because both TRT and R2+R3+R4 include cumulative reading time data, they are discussed together. In this sense, first, the results concerning TRT are presented below in Table 18.

Table 18

Results of the three-factor ANOVA for TRT

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Sentence Type	114.863	1	114.86	51.643	.000
Congruency	12.800	1	12.800	5.755	.016
Focus Position Type	14.747	1	14.747	6.630	.010
Focus Position Type x Congruency	5.124	1	5.124	2.304	.129
Focus Position Type x Sentence Type	.053	1	.053	.024	.877
Congruency x Sentence Type	.013	1	.013	.006	.940
Interaction of the Factors	1.559	1	1.559	.701	.402
Error	28451.674	12792			

As presented in Table 18, although there is not a statistically significant difference caused by the interaction of the three factors [F (1,12792) = .701, p = .402], the three factors seem to affect the Total Reading Time (TRT). Also, the two-way interaction between neither Focus Position Type and Congruency [F (1,12792) = 5.124, p = .129], or between Focus Position Type and Sentence Type [F (1,12792) = .024, p = .877] or between Congruency and Sentence Type are statistically significant [F (1,12792) = .006, p = .940]. However, when analyzed separately, factors seem to have different effects. For example, there is a statistically significant difference caused by the Sentence Type [F (1,12792) = 51.643, $p < .001$], and another statistically significant difference is caused by Congruency [F (1,12792) = 5.755, p = .016]. Another statistically significant difference is also seemed to be present depending on the Focus Position Type [F (1,12792) = 6.630, p = .010]. Therefore, to see the differences between categories of each factor, the *Independent Samples t-test* is run as a post-hoc test and the results can be seen in Table 19.

.

Table 19

Post-hoc analyses for TRT

Factor	Category	Mean	Std. Dev.	t	df	sig.	N
Sentence Type	Object Focused	2.487	1.560	7.184	12798	.000	6400
	Subject Focused	2.676	1.420				6400
Congruency	Congruent	2.550	1.512	2.394	12798	.016	6400
	Incongruent	2.613	1.477				6400
Focus Position Type	Preverbal	2.547	1.465	2.569	12798	.010	6400
	Clause Initial	2.615	1.523				6400

As shown in Table 19, there is a statistically significant difference in Total Reading Time (TRT) between the categories of each factor. For instance, a statistically significant difference in Total Reading Time is seen between object-focused sentences (M = 2.487, SD = 1.560) and subject-focused sentences (M = 2.676, SD = 1.420; t (12798) = 7.184, $p < .001$). Example question-answer pairs for TRT are as follows:

(34)

Çocuk ney-i al-ıyor?
Child-Nom *what-Acc* *take*-Pres. Cont. 3rd sg
What is (the) child taking?

Sanıyorum çocuk araba-yı
suppose-Pres. Cont.-1sg *child*-Nom *car*-Acc
alıyor galiba.
take-Pres. Cont. 3rd sg perhaps
Perhaps I suppose (the) child is taking (the) car.[2]

[2] Although English translation of the sentence is ungrammatical, it is acceptable in Turkish.

(35)

Araba-yı	kim	al-ıyor?
car-Acc	*who*-Nom	*take*-Pres. Cont. 3rd sg

Who is taking (the) car?

Sanıyorum	çocuk	araba-yı
suppose-Pres. Cont.-1sg	*child*-Nom	*car*-Acc
alıyor	galiba.	
take-Pres. Cont. 3rd sg	perhaps	

Perhaps I suppose (the) child is taking (the) car.

As the examples above indicate, while the question-answer pair in (34) focuses on the object, the question-answer pair in (35) focuses on the subject. According to statistical analyses, the results mean that in terms of Total Reading Time, Sentence Type leads to differences between object-focused and subject-focused sentences, and object-focused sentences are read faster than subject-focused sentences.

Likewise, another statistically significant difference in TRT affected by Congruency is seen. The difference between congruent (M = 2.550, SD = 1.512) and incongruent (M = 2.613, SD = 1.477) question-answer pairs in TRT is statistically significant (t (12798) = 2.394, p = .016). The results show that in terms of TRT, congruent sentences are read faster than incongruent sentences and the difference is statistically significant. Example question-answer pairs can be viewed in (36) and (37) below.

(36)

Çocuk	ney-i	al-ıyor?
Child-Nom	*what-Acc*	*take*-Pres. Cont. 3rd sg

What is (the) child taking?

Sanıyorum	çocuk	araba-yı
suppose-Pres. Cont.-1sg	*child*-Nom	*car*-Acc
alıyor	galiba.	
take-Pres. Cont. 3rd sg	perhaps	

Perhaps I suppose (the) child is taking (the) car.

(37)

Çocuk ney-i al-ıyor?
Child-Nom *what-Acc* *take*-Pres. Cont. 3rd sg
What is (the) child taking?

Sanıyorum araba-yı çocuk
suppose-Pres. Cont.-1sg *car*-Acc *child*-Nom
alıyor galiba
take-Pres.Cont.3rdsg. *perhaps*
Perhaps I suppose (the) child is taking (the) car.

Examples given above show that while the example in (36) is congruent since the question word *neyi* (what-Acc) and focused NP *arabayı* (*car*-Acc) are in parallel positions, the example question-answer pair in (37) is incongruent due to the differences in the positions of the question word and the focused NP. As a result, it can be said that congruent question-answer pairs are processed faster than incongruent ones.

Finally, Focus Position Type also affects TRT. For example, the difference between focused argument's being in the immediate preverbal position (M = 2.547, SD = 1.465) and in the clause-initial position (M = 2.615, SD = 1.523) is statistically significant (t (12798) = 2.569, p = .010) in terms of TRT scores. In other words, when focused arguments are in the immediate preverbal position, sentences are read significantly faster than when they are positioned in the clause-initial position, which is exemplified in the following examples in (38) and (39):

(38)

Çocuk ney-i al-ıyor?
Child-Nom *what-Acc* *take*-Pres. Cont. 3rd sg
What is (the) child taking?

Sanıyorum çocuk araba-yı
suppose-Pres. Cont.-1sg *child*-Nom *car*-Acc
alıyor galiba.
take-Pres. Cont. 3rd sg perhaps
Perhaps I suppose (the) child is taking (the) car.

(39)

Çocuk	ney-i	al-ıyor?
Child-Nom	*what-Acc*	*take*-Pres. Cont. 3rd sg

What is (the) child taking?

Sanıyorum	araba-yı	çocuk
suppose-Pres. Cont.-1sg	*car*-Acc	*child*-Nom
alıyor	galiba	
take-Pres.Cont.3rdsg.	*perhaps*	

Perhaps I suppose (the) child is taking (the) car.

As it can be seen in the examples above, the focused NP in both question-answer pairs, *arabayı* (*car*-Acc), is in different positions. In (38), it appears in the immediate preverbal position while in (39), the clause-initial position is held for the focused NP. The analyses show that TRT scores are also affected by Focus Position Type and the position of the focus word causes a difference in terms of processing.

Secondly, to see whether scrambling and scrambling focused arguments, question-answer orientation, and the position of focused arguments lead to differences in the reading time for R2+R3+R4, *three-factor ANOVA* is run and the results are given below in Table 20.

Table 20

Results of the three-factor ANOVA for R2+R3+R4

Source	**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Sentence Type	.141	1	.141	.209	.647
Congruency	17.969	1	17.969	26.754	.000
Focus Position Type	9.573	1	9.573	14.253	.000
Focus Position Type x Congruency	.002	1	.002	.002	.961
Focus Position Type x Sentence Type	1.841	1	1.841	2.741	.098
Congruency x Sentence Type	.269	1	.269	.401	.527
Interaction of the Factors	.081	1	.081	.120	.729
Error	8591.576	12792			

As presented in Table 20, there is not a statistically significant difference caused by the interaction of the three factors [*F* (1,12792) = .120, *p* = .729] in terms of the reading time for R2+R3+R4. The two-way interaction between Focus Position Type and Congruency is not statistically significant [*F* (1,12792) = .002, *p* = .961]. On the other hand, the two-way interaction between Focus Position Type and Sentence Type is marginally significant [*F* (1,12792) = 2.741, *p* = .098] and the two-way interaction between Congruency and Sentence Type is not statistically significant [*F* (1,12792) = .401, *p* = .527]. Yet, both Congruency [*F* (1,12792) = 26.754, *p* < *.001*] and Focus Position Type [*F* (1,12792) = 14.253, *p* < *.001*] seem to have a statistically significant effect on the reading time of R2+R3+R4 while Sentence Type [*F* (1,12792) = .209, *p* = .647] does not lead to any statistically significant effect on the reading time of R2+R3+R4. Therefore, *Independent Samples t-test* is run to see the differences between the categories of Congruency and Focus Position Type and the results can be viewed in Table 21.

Table 21

Post-hoc analyses for R2+R3+R4

Factor	**Category**	**Mean**	**Std. Dev.**	**t**	**df**	**sig.**	**N**
Congruency	Congruent	1.398	.804	5.170	12798	.000	6400
	Incongruent	1.473	.835				6400
Focus Position Type	Preverbal	1.409	.783	3.772	12798	.000	6400
	Clause Initial	1.463	.856				6400

As given in Table 21, there is a statistically significant difference between congruent (*M* = 1.398, *SD* =.804) and incongruent sentences (*M* = 1.473, *SD* = .835; *t* (12798) = 4.170, *p* < *.001*) in terms of the reading time of R2+R3+R4. In other words, Congruency affects the reading time of the main clause (R2+R3+R4) and when the sentences are congruent, the participants read them faster than the incongruent sentences. Example question-answer pairs in (40) and (41) below can be viewed for a clearer reflection of the findings.

(40)

Çocuk	ney-i	al-ıyor?
Child-Nom	*what-Acc*	*take*-Pres. Cont. 3rd sg
What is (the) child taking?		
Çocuk	araba-yı	alıyor
child-Nom	*car*-Acc	*take*-Pres.Cont.3rd sg
(The) child is taking (the) car.		

(41)

Çocuk	ney-i	al-ıyor?
Child-Nom	*what-Acc*	*take*-Pres. Cont. 3rd sg
What is (the) child taking?		
Araba-yı	çocuk	alıyor
car-Acc	*child*-Nom	*take*-Pres.Cont.3rdsg.
(The) child is taking (the) car.		

As it is with the case of the reading time for focused NPs, the question-answer pair in (40) is congruent and is processed faster since both the question word and the focused NP were in parallel positions in the question and the answer unlike the ones in (41), where the question word and the focused NP were in different positions in the question and the answer. In the end, question-answer pairs in (40) have lower reading time scores in terms of R2+R3+R4 than question-answer pairs in (41).

Also, Focus Position Type seems to affect the reading time of the main clause (R2+R3+R4) and there is a statistically significant difference between focused argument in the immediate preverbal position (M = 1.409, SD =.783) and focused argument in the clause-initial position (M = 1.463, SD = .856; t (12798) = 3.772, $p < .001$). Examples are given below in (42) and (43).

(42)

Çocuk	ney-i	al-ıyor?
Child-Nom	*what-Acc*	*take*-Pres. Cont. 3rd sg
What is (the) child taking?		
Çocuk	araba-yı	alıyor
child-Nom	*car*-Acc	*take*-Pres.Cont.3rd sg

(The) child is taking (the) car.

(43)

Çocuk	ney-i	al-ıyor?
Child-Nom	*what-Acc*	*take*-Pres. Cont. 3rd sg

What is (the) child taking?

Araba-yı	çocuk	alıyor
car-Acc	*child*-Nom	*take*-Pres.Cont.3rdsg.

(The) child is taking (the) car.

Examples in (42) and (43) show that although the focused NP both in (42) and (43) are objects, the position varies. While the focused NP is in the immediate preverbal position in (42), the same focused NP is in clause-initial in (43). The analyses show that when the focused arguments are placed in the immediate preverbal position, they are read faster than the focused arguments which are placed in the clause-initial position. Therefore, question-answer pairs similar to the ones in (42) have faster reading time than question-answer pairs similar to the ones in (43).

4.1.2. Discussion of the Reading Time Data Findings

The reading time analyses for the adverbial phrases (R1) reveal interesting results. In self-paced reading tests, only a symbol is usually used to mark the beginning of a test or sentence. However, as explained previously, the major function of the inclusion of adverbial phrases is to act as a marker for the beginning of the answer in the self-paced reading test and to serve as discourse-based functioning elements. Therefore, none of the factors are expected to be effective in terms of the reading time of adverbial phrases. Yet, a reason for the Sentence Type factor to cause a difference can be related to parsing the rest of the sentence. Since object-focused sentences are easier to process due to the case marking which might have utilized a cue to process (Özge et al., 2009; Özge et al., 2013), the participants might have required more mental processing workload compared to the adverbial phrases presented in subject-focused sentences. Correspondingly, another reason for this result might be related to the

structural differences between the arguments of the predicate. As internal arguments are closely connected to the verb since they occur within the maximal projection of the predicate (Radford, 1997; Safir, 1987), they might have affected the processing of the adverbial phrases and cause them to be processed faster. External arguments (subjects) are processed slower, which can be accepted to prove this point since they are projected outside the projection (Radford, 1997; Safir, 1987). As a result, this can account for the present results. Also, according to the canonical word order of Turkish, subject NPs are placed in sentences initially (Göksel and Kerslake, 2005). As a result, the participants in the study might have expected an NP in a sentence-initial position, and the presence of adverbial phrases instead of NPs to act as subjects might have caused the processing difference. In addition to the parsing difficulties, the adverbial phrases might have added a parallel subjective level of uncertainty to processing subject-focused sentences. After reading the adverbial phrases including sentences such as *bilmiyorum* (*I don't know*), *emin değilim* (*I am not sure*), etc. (see Table 3 for the list of adverbial phrases used), the participants might have related the subjective opinion put forward by the adverbial phrases into the processing of the subject focused sentences. Research suggests that working memory capacity is highly related to readers' attention and text comprehension. For instance, according to Schurer et al. (2020), low coherence inhibits processing since it requires more working memory load, and in line with that prior knowledge is facilitative in terms of later text comprehension. Lemarié et al. (2012) review the literature and suggest that cognitive processing is very closely connected with the structure of texts and text processing depends on the previous and/or prior linguistic structures. In another study by Kendeou and Van Den Broek (2007), it is seen that readers adjust their processing under the prior knowledge and text structure. Therefore, it could be concurred that the participants in the study might have expected a cue or another relevant linguistic item to be present for parsing the sentence focusing on subjects and spent more time.

The findings concerning the analyses of the reading time data regarding focused NP (R2/R3) suggest that scrambling focused arguments, question-answer

orientation, and the position of focused arguments lead to differences in processing focused NP. For instance, when a focused argument is an object, it is processed faster than the subject. Also, when the relationship between the question-answer pair is congruent, processing takes a significantly shorter time. Finally, when the focused predicate is placed in the immediate preverbal position, processing requires a significantly shorter time. In this sense, it can be said that although there is no combined effect of the scrambling of factors on the processing of focused NP, each factor has varying effects on the reading time of the focused NP, which leads to differences in processing. Since the processing of the focused NP, which is, indeed, the argument focused, is affected by scrambling, it can be said that internal arguments are processed faster than external arguments. This might have been related to the presence of internal arguments in the maximal projection of the predicate (Radford, 1997; Safir, 1987), as mentioned before. As internal arguments occur within the projection of the predicate (Radford, 1997; Safir, 1987), they could have been processed faster. Another cause for that can be relevant to the case-marking difference between subjects and direct objects. As direct objects (internal arguments) are accusative case marked in the study, this case marking could have played a facilitating role in terms of processing. Since NPs acting as direct objects are always marked with accusative case (Aygen, 2007; Enç, 1991; Göksel and Kerslake, 2005; von Heusinger and Kornfilt, 2005; 2017, Özge et al., 2009; Yarar, 2018), accusative case marking might have acted as a cue, which enables the participants to process and identify them easily (Özge et al., 2009; Özge et al., 2013). On the other hand, focused NPs acting as subjects in the sentences do not have such cues. Besides, congruency reveals itself as a key factor in the processing of focused argument with the position of the *wh*-question word in question. It is widely suggested in the literature that since structures with congruency relationships require a lower working memory load, they are processed faster (Era et al., 2011; Baddeley, 1986; Baddeley and Hitch, 1974; Tamaoka et al., 2005). In this sense, the results of the effects of Congruency are not surprising at all. Finally, as Erguvanlı (1984) and Hoffman (1994; 1995) state, “immediate preverbal position is held for focused arguments” and the results seem to comply

with that as well since focused NPs in immediate preverbal position are read faster than the focused NPs in clause-initial position. When these points are taken into consideration, it could be said that although the findings seem to support *focus position* (Erguvanlı, 1984; Hoffman, 1994; 1995), due to the limited design of the present study, further studies are needed to support or contradict the acclaimed *focus position*. On the other hand, the study is designed to follow *focus field* (Göksel and Özsoy, 2000), covering the preverbal area (including sentence-initial and immediate preverbal positions) and the results could be interpreted that when a focused NP is positioned in the preverbal area, it can be focused, regardless of the limited findings of the study.

The results of the analyses concerning non-focused NPs (R3/R2) show that, except for Focus Position Type, Sentence Type and Congruency factors lead to differences in the reading time of non-focused NPs (R3/R2). In other words, scrambling the position of the focused argument does not lead to a statistically significant difference in the processing of non-focused NP, which could have been expected. As the name suggests, the non-focused NP is the remaining or unfocused argument in the answer. Therefore, it is not focused, and processing is not affected by scrambling. Yet, the unexpected result is the finding that non-focused NPs are, indeed, affected by Sentence Type and Congruency factors. In addition to the previous suggestions considering Sentence Type and Congruency factors and their effects on processing focused NPs, to process the proposition of a sentence, the participants need to parse each argument in the sentence. In other words, in a way, non-focused NPs are unconsciously focused and/or processed and as it is with the case of focused NPs, they seem to have been susceptible to the effects of Sentence Type and Congruency factors. In the end, processing is affected by scrambling the focused argument and question-answer orientation since they are also an indispensable part of the proposition of the answer.

Regarding the analyses of the reading time for verbs (R4), the findings suggest that the reading time for verbs (R4) is not affected by any of the factors. This

finding is expected somehow since there is nothing in the design of the study and/or pairs to effect verbs. For instance, considering their structure, they are the same all through the pairs and they do not go through tense or aspect changes. In addition, as part of the SOV and OVS word order of Turkish and the design of the study, they are placed in the end, right before the modal adverbial, and they are never scrambled. In other words, they remain in their position in all pairs. They are neither focused nor are the participants required to complete a specific task concerning them. As a result, they are left unaffected by the factors.

Considering the analyses of the reading time data for modal adverbials, the results suggest that Sentence Type is the only factor to affect modal adverbials (R5) while neither Congruency nor Focus Position Type factors affect the post-verbal element. As mentioned previously, modal adverbials are included at the end of the answers for discourse-based functions, just like the inclusion of adverbial phrases at the beginning of the answers. However, just like the findings of adverbial phrases (R1), similar and interesting results occur in the reading time of modal adverbials (R5). There might be two possible and interrelated explanations for this finding. First, in the literature, the post-verbal area is considered as an area for backgrounded information (Göksel, 2009; Göksel and Kerslake, 2005; Özge and Bozşahin, 2010) and therefore, redundant (Erguvanlı, 1984). Yet, since modal adverbials are linguistic elements through which users transfer their subjective thoughts, the results might suggest that modal verbs hosted in the post-verbal area might have been taken into processing for object-focused variations and are, indeed, not redundant in this case. Secondly, the position of modal adverbials is rather unexpected. In fact, according to Göksel and Kerslake (2005:338), “modal adverbials occur either at the very beginning of the sentence or after the subject”. However, in line with the goal and the design of the study, modal adverbials are placed at the very end of the sentence, right after the verb. In this sense, the unorthodox positioning and the proximity of the modal adverbials to the verb, which have a direct object as its argument, might have affected the reading time of modal adverbials (R5) in favor of object-focused sentences. As shown by Kahraman (2013), Kahraman and Hirose (2018), and

Uzun et al. (2021), processing the elements in the post-verbal area is also prone to scrambling and all in all, the findings suggest that the post-verbal area might not be that redundant.

Last but not the least, as expected, both findings concerning TRT and R2+R3+R4 show parallelism with each other and the results of the previous regions of interest in terms of the main and combined effects of the factors on reading time. For instance, the interactional effect of the three factors does not lead to any statistically significant difference in either TRT or R2+R3+R4. In other words, Sentence Type, Congruency, and Focus Position Type combined do not affect the processing of sentences including or excluding adverbial phrases (R1) and post-verbal elements (modal adverbial-R5). The reason for this might be related to the interrelatedness or co-existing of the three factors, as given before. As known, Sentence Type includes object-focused and subject-focused sentences and Focus Position Type includes immediate preverbal and clause-initial positions. According to the canonical word order of Turkish, the sentence-initial position is held for subjects but the immediate preverbal position is held for direct objects (Göksel and Kerslake, 2005; von Heusinger and Kornfilt, 2005; Kornfilt, 1997). Therefore, it could be argued that Sentence Type is closely connected with Focus Position in Turkish, which, in turn, is closely related to Congruency since it is also connected to marked and unmarked word order to an extent. This inter-related connection can be accounted for by the absence of the statistically significant difference caused by the combined effect of the three factors across each region of interest. For instance, when the effects of separate factors are examined, it is seen that there are similarities among categories of the factors across reading time scores. Namely, if a factor leads to a difference in the processing of a certain constituent, it is always the same category of the factor that caused the difference. For example, it is seen that when Sentence Type leads to a statistically significant difference in the mean scores of reading time for a region, object-focused sentences are read significantly faster than subject-focused sentences every time. In the cases when Congruency causes a statistically significant difference in the mean scores of reading time, it is seen

that congruent sentences are processed significantly faster than incongruent ones. Finally, a comparison of the mean scores of reading time depending on the effects of Focus Position Type always shows that in case of the presence of a statistically significant difference, focused arguments in the immediate preverbal position are processed faster than they are positioned in the clause-initial position. These patterns suggest the interrelatedness or co-existence of the factors in terms of the effects on processing.

Unlike the interactional effects of the factors, which do not result in any statistically significant differences in the regions, binary (two-factor) analyses show a statistically significant difference in only two regions, which is the interaction between Focus Position Type and Congruency and statistically significant differences are seen only in the reading time of focused NP (R2/R3) and verb (R4). This might mean that among the three factors, Focus Position Type and Congruency factors might have a slightly more facilitative effect on processing. As mentioned above, it can be assumed that all three factors are interrelated and they trigger each other in terms of processing. Considering the default position of direct objects as the immediate preverbal position (von Heusinger and Kornfilt, 2005), it is quite normal to find Sentence Type and Focus Position Type to be related, which could have affected the results. Also, it is widely accepted in the literature that Congruency has a facilitative effect on processing (Balota et al., 2006; Carroll et al., 2016; Hu and Jiang, 2011; Kutas et al., 2006; Morris, 2006; Koizumi and Imamura, 2017; Zawiszewski and Friederici, 2009). Yet, because of the inter-relatedness of the three factors, the difficulty to interpret the findings of the two-factor analyses under these circumstances, and limits concerning the design of the study, the main effects of the factors are more fruitful and are discussed after each finding above.

Similar to the previous findings, taken separately, the factors seem to have affected the processing of TRT and R2+R3+R4 and the level of effect occurred in line with the previous findings. For instance, in terms of the effect of Congruency on TRT and R2+R3+R4, it is seen that congruent sentences are

processed significantly faster than incongruent sentences, which is expected as it is widely reported in the literature (Hu and Jiang, 2011; Kutas et al., 2006; Morris, 2006; Balota et al., 2006; Zawiszewski and Friederici, 2009; Koizumi and Imamura, 2017; Carroll et al., 2016). For example, the sample from Zawiszewski and Friederici (2009) on processing sentences with different types of agreement while utilizing the same word order to be viewed below in (44) highlights the effect of congruency (also referred to as the agreement) on processing.

(44)

Zu-k ni betiko galdu na-u-zu again (SOV-Gram.)
*You*SG-Subj *I*-Obj *forever lose me-have-you perhaps*
Perhaps you lost me forever

Zu-k ni betiko galdu d-u-*zu again (SVO-UnGram.)
*You*SG-Subj *I*-Obj *forever lose it-have-*you perhaps*
*Perhaps you *lost me forever*

As seen above in (44), Zawiszewski and Friederici (2009) report that congruent sentences are processed with ease and without causing unexpected ERP patterns. In the same way, when the focus is positioned in the immediate preverbal position, there is a statistically significant difference in the processing of TRT and R2+R3+R4, which is also in line with literature (Erguvanlı, 1984; Göksel and Kerslake, 2005). For instance, as taken from Göksel and Kerslake (2005: 343), the position of the focused NP is immediate preverbal position as presented below in (45).

(45)

Ali ev-i sat-tı.
Ali house-Acc *sell*-PF
Ali sold the house.

Ali sat-tı ev-i.
Ali sell-PF *house*-Acc
Ali sold the house.

The results show that in similar cases with the examples in (45) above, processing of TRT and R2+R3+R4 hosting focused NPs in immediate preverbal

position is faster. On the other hand, the only difference between the findings of TRT and R2+R3+R4 is seen in Sentence Type. While Sentence Type affects the processing of TRT in favor of object-focused answers, which is also in the same line with the previous findings as object-focused answers focus on accusative case marked object and utilize a cue (Özge et al., 2009; Özge et al., 2013), no such difference is seen in R2+R3+R4, which is unexpected. However, this difference might have resulted from the number of regions included in TRT and R2+R3+R4. Since TRT includes all of the regions, as the name suggests, R2+R3+R4 consists of only three. Therefore, this could have affected the cumulative score.

4.2. FINDINGS AND DISCUSSION CONCERNING CONGRUENCY DATA

As the outline of the previous subsection, findings, and discussion concerning congruency data are presented in detail in this subsection. The findings of the statistical analyses concerning congruency data are presented first and the discussion of the findings can be found later in this subsection.

4.2.1. Findings Concerning Congruency Data

In addition to the reading time data, participants are also asked to determine whether the relationship between questions and answers can be considered congruent or incongruent to examine the effects of scrambling and scrambling focused arguments, question-answer orientation, and position of focused argument on congruency. Here, two types of data are obtained: judgment calls, which are considered Perceived Congruency Data (PCD), and the duration the participants spend to decide congruency, which is regarded as Congruency Response Time (CRT). Even though the findings of both PCD and CRT analyses are presented separately, since they are closely related, findings concerning PCD and CRT analyses are discussed together.

First, to find out whether scrambling and scrambling focused arguments, question-answer orientation, and position of focused argument cause differences

in the Perceived Congruency Data (PCD), a *three-factor ANOVA* is employed and the results can be seen in Table 22.

Table 22

Results of the three-factor ANOVA for PCD

Source	**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Sentence Type	.781	1	.781	3.796	.051
Congruency	409.695	1	409.70	1990.9	.000
Focus Position Type	.045	1	.045	.219	.640
Focus Position Type x Congruency	.633	1	.633	3.075	.080
Focus Position Type x Sentence Type	13.781	1	13.781	66.97	.000
Congruency x Sentence Type	20.963	1	20.963	101.87	.000
Interaction of the Factors	.053	1	.053	.257	.612
Error	2632.369	12792			

As shown in Table 22, no statistically significant difference is seen as the result of the interaction of the three factors [F (1,12792) = .257, p = .612] in terms of perceived congruency of the participants. The two-way interaction between Focus Position Type and Congruency is marginally significant [F (1,12792) = 3.075, p = .080] while the two-way interaction between Focus Position Type and Sentence Type and [F (1,12792) = 66.970, $p < .001$] and between Congruency and Sentence Type are statistically significant [F (1,12792) = 101.870, $p < .001$]. On the other hand, along with that, neither Sentence Type [F (1,12792) = 3.796, p = .051] nor Focus Position Type [F (1,12792) = .219, p = .640] seems to affect the perceived congruency of the participants in the study, although the effect of Sentence Type is nearly statistically significant. On the other hand, Congruency, as can be expected, affects the perceived congruency of the participants [F (1,12792) = 1990.915, $p < .001$]. Therefore, to see the difference between the categories of Congruency factor, the *Independent Samples t-test* is run as a post-hoc test and the results can be viewed in Table 23..

Table 23

Post-hoc analysis for PCD

Factor	Category	Mean	Std. Dev.	t	df	sig.	N
Congruency	Congruent	.78	.417	44.326	12798	.000	6400
	Incongruent	.42	.493				6400

As shown in Table 23, there is a statistically significant difference between congruent (*M* = .78, *SD* = .417) and incongruent pairs (*M* = .42, *SD* = .493; *t* (12798) = 44.326, *p* < *.001*) in terms of the Perceived Congruency Data obtained from the decisions of the participants in the study. In other words, the congruency of the pairs has an active role in the decisions of the participants. Examples of congruent and incongruent question-answer pairs can be seen below in (46) and (47).

(46)

Çocuk ney-i al-ıyor?
Child-Nom *what-Acc* *take*-Pres. Cont. 3rd sg
What is (the) child taking?

Çocuk araba-yı alıyor
child-Nom *car*-Acc *take*-Pres.Cont.3rd sg
(The) child is taking (the) car.

(47)

Çocuk ney-i al-ıyor?
Child-Nom *what-Acc* *take*-Pres. Cont. 3rd sg
What is (the) child taking?

Araba-yı çocuk alıyor
car-Acc *child*-Nom *take*-Pres.Cont.3rdsg.
(The) child is taking (the) car.

As it can be seen above, while the question-answer pair in (46) is congruent as both the question word in the question and the focused NP in the answer share

the same position respectively, such parallelism in terms of the positions of the question word and the focused NP cannot be seen in the question-answer pair in (47) and therefore, (47) is considered as incongruent. The analyses show that the perceived congruency of the participants is affected by the congruency relationship between the question and answer pairs and most of the question-answer pairs are considered to be congruent.

Secondly, to find out whether scrambling and scrambling focused arguments, question-answer orientation, and position of focused argument cause a difference in the response duration of the participants while deciding the congruency of the pairs, Congruency Response Time (CRT) is compared via *Three-Way ANOVA* and the results could be viewed in Table 24.

Table 24

Results of the three-factor ANOVA for CRT

Source	**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Sentence Type	240.963	1	240.96	384.93	.000
Congruency	1.185	1	1.185	1.892	.169
Focus Position Type	.201	1	.201	.321	.571
Focus Position Type x Congruency	5.665	1	5.665	9.050	.003
Focus Position Type x Sentence Type	.188	1	.188	.300	.584
Congruency x Sentence Type	2.944	1	2.944	4.703	.030
Interaction of the Factors	.508	1	.508	.812	.367
Error	8007.787	12792			

As given in Table 24, there is no statistically significant combined effect of the three factors on the response time for congruency [F (1,12792) = .812, p = .367]. The two-way interaction between Focus Position Type and Congruency is statistically significant [F (1,12792) = 9.050, p = .003] and the two-way interaction between Congruency and Sentence Type is also statistically significant [F (1,12792) = 4.703, p = .030]. On the other hand, the two-way interaction between Focus Position Type and Sentence Type is not statistically significant [F (1,12792) = .300, p = .584]. However, unlike the results seen for Perceived

Congruency Data (PCD) above, Congruency does not lead to a difference in the response time for congruency [*F* (1,12792) = 1.892, *p* = .169]. Furthermore, although Focus Position Type does not result in a statistically significant difference on Congruency Reading Time (CRT) [*F* (1,12792) = .321, *p* = .571], Sentence Type causes a statistically significant difference in CRT [*F* (1,12792) = 384.926, *p* < *.001*]. Therefore, to see the difference between the categories of Sentence Type, *Independent Samples t-test* is run and the results could be viewed in Table 25.

Table 25

Post-hoc analysis for CRT

Factor	Category	Mean	Std. Dev.	t	df	sig.	N
Sentence Type	Object Focused	.641	.684	19.611	12798	.000	6400
	Subject Focused	.916	.886				6400

As presented in Table 25, a statistically significant difference is found between the Congruency Response Time of object-focused pairs (*M* = .641, *SD* = .684) and subject-focused pairs (*M* = .916, *SD* = .886; *t* (12798) = 19.611, *p* < *.001*). In other words, the participants in the study decide the congruency of pairs faster when they are object-focused. However, in terms of congruency, subject-focused pairs are decided slower. The difference between question-answer pairs focusing on objects and subjects can be seen in (48) and (49) examples below.

(48)

Çocuk	ney-i	al-ıyor?
Child-Nom	*what-Acc*	*take*-Pres. Cont. 3rd sg
What is (the) child taking?		

Çocuk	araba-yı	alıyor
child-Nom	*car*-Acc	*take*-Pres. Cont. 3rd sg
(The) child is taking (the) car.		

(49)

Araba-yı	kim	al-ıyor?
car-Acc	*who*-Nom	*take*-Pres. Cont. 3rd sg

Who is taking (the) car?

çocuk	araba-yı	alıyor
child-Nom	*car*-Acc	*take*-Pres.Cont.3rd sg

(The) child is taking (the) car.

As mentioned previously, question-answer pairs are grouped according to the question word used in the question as primers. Since *neyi* (what-Acc) is used in the question-answer pair (48) to focus on the object and *kim* (who-Nom) is used in the question-answer pair (49) to focus on the subject, the first pair is accepted as object-focused and the analyses show that congruency of such pairs is decided faster than subject-focused pairs.

4.2.2. Discussion of the Congruency Data Findings

First, the findings show no statistically significant difference caused by the interactional effect of the three factors in either PCD or CRT scores. On the other hand, it is seen that Congruency is the only factor that leads to a statistically significant difference in PCD scores while Sentence Type is the only factor leading to a statistically significant difference in CRT scores. First, the combined interaction of the three factors does not cause a statistically significant difference in either Perceived Congruency Data (PCD) or Congruency Response Time (CRT). As is the case with the reading time data findings discussed earlier in this chapter, a possible reason for that might be related to the inter-relatedness or co-existence of these factors. For instance, considering the canonical word order of Turkish sentence-initial position is held for NPs acting as subjects, and immediate preverbal position is held for NPs acting as direct objects (Göksel and Kerslake, 2005; von Heusinger and Kornfilt, 2005; Kornfilt, 1997). To be more precise, sentences following the canonical word order structure of Turkish are congruent with their arguments in their unmarked order. In this sense, Congruency, Sentence Type, and Focus Position Type factors could be accepted as mutually

inclusive in terms of processing congruency of sentences just as they are in effect in reading time data as mentioned previously.

Secondly, PCD and CRT are affected by the two-way interaction of the varying factors. For instance, the two-way interaction between Congruency and Sentence Type Factors affects both PCD and CRT, signaling these two factors to be more prominent in terms of a combined effect on congruency-related data. A possible reason for that could be related to the previously mentioned co-existence of the factors. Since Sentence Type Factor includes different arguments, it might also include the effects of the positions of the arguments, sentence-initial or immediate preverbal position. Therefore, in a way, in terms of two-way interaction, it might have surfaced with a naturally occurring congruency relationship. In addition to this, there is also a similar effect of the two-way interaction among factors on PCD and CRT. For instance, while the interaction between Focus Position Type and Sentence Type causes a statistically significant difference in PCD scores, the same goes for the interaction between Focus Position Type and Congruency in CRT scores. In other words, Focus Position Type seems to be a constant factor in the remaining findings of the two-way interaction among the factors. This might mean that regardless of the type of congruency-related processing, the participants might have considered the position of the focused NPs primarily. Considering the findings of Focus Position Type, the canonical word order of Turkish and its effects on direct objects could also have led to this finding. In other words, the effects of canonical word order may have interfered with the position of the focused word. Also, it can be said that in terms of perceived congruency, the participants seem to have paid more attention to Focus Position Type and Sentence Type while in terms of reaction time, they pay more attention to Focus Position Type and Congruency Factors. In this sense, it can be inferred that while considering the effects of the Focus Position Type at hand, the participants might have considered other factors depending on the task. When the task requires making a general judgment call on the congruency of the answers, the participants utilize cues provided by the Sentence Type Factor along with Focus

Position Type, but in terms of the reaction time, the Congruency factor seems to have interacted with Focus Position Type.

The complexity of the effects of the two-way interaction of factors on PCD and CRT could be explained better when the main effects of the factors are analyzed separately. When discussing the findings for Perceived Congruency Data (PCD), two main points stand out. First, it could be said that the participants in the study consider Congruency as a sign when deciding the congruency of the pairs, as can be expected. Besides, it should be remembered that upon considering the previous findings regarding the processing time of regions, whenever the Congruency factor leads to a difference, it is always in favor of congruency rather than incongruency. This shows that, as corresponding with the literature (Hu and Jiang, 2011; Kutas et al., 2006; Morris, 2006; Balota et al., 2006; Zawiszewski and Friederici, 2009; Koizumi and Imamura, 2017; Carroll et al., 2016), congruency has a positive effect on processing. For instance, as Carroll et al. (2016: 392) report, “more frequent and congruent sentences are processed faster and easier than less frequent and incongruent sentences”, as presented in (50) below.

(50)

Der-Nom *Junge*-Nom *umarmt den*-Acc *Vater*-Acc (congruent)
The boy hugs the father.

Den-Acc *Vater*-Acc *umarmt der*-Nom *Junge*-Nom (incongruent)
It is the father who the boy hugs.

As mentioned above, the processing difference between the sentences in (41) depends on the memory load. As Baddeley (1986) and Baddeley and Hitch (1974) emphasize, since processing load would be less during processing familiar linguistic stimuli, it is quite natural to find Congruency to affect processing. Secondly, as the PCD findings suggest, the participants in the study consider more pairs as congruent even though half of them are incongruent. In other words, most of the pairs are considered congruent instead of an even distribution of congruent and incongruent. That might have emphasized that the participants

in the study exceed the literal congruency relationship level of the pairs. Even though more research is needed, the findings might have been regarded to support the *wh*-movement nature of Turkish (Akan, 2009; Didar, 1990; İşsever, 2006; Özsoy, 2009; Yarar, 2018) accompanied by the case marking features and requirements of Turkish. The findings indicate that the participants can identify the proposition of the sentence regardless of the scrambling process and thus consider most of the variations to be congruent. As differentiated by Sharvit and Kang (2016), considering the difference between a fully expressed reply and a fragment reply, although the answers are in fully expressed replies, the participants might have comprehended the fragment replies (focused NPs) and accepted most of the question-answer pairs as congruent. For instance, as exemplified in (51) by Sharvit and Kang (2016: 1099) below, the difference between the question-answer pairs might just be syntactic.

(51)

Which student turned in this paper? (full reply)
Marv turned in this paper.

Which student turned in this paper? (fragment reply)
Marv.

As seen in (51) above, both question-answer pairs share the same focused NP and have the same reply either in full form or fragment. On the other hand, since Turkish has a strong case-marking system, in a way, the participants might have surpassed the syntactic operations via case marking features of Turkish, which might have enabled them to overcome the congruency differences and to reach the focused NP as the answer and could have considered most of the pairs congruent.

On the other hand, findings concerning Congruency Response Time (CRT) analyses show that instead of the Congruency factor, Sentence Type causes a statistically significant difference and object-focused pairs have a faster response time in terms of congruency decision. The finding also seems to be similar to the literature considering case marking (accusative case marking in this case) to

have effects on processing (e.g., Miyagawa, 1997; Ahn and Cho, 2007; Law, 2010; Agbayani et al., 2015; Ko, 2000; Karimi, 2008; Jasbi, 2015; Kamide et al., 2003a; Kamide et al., 2003b; Chung and Lee, 2017; Özge et al., 2009; Özge et al., 2013). For instance, sentences in (52) taken from Kamide et al. (2003a: 41) exemplify case marking in German.

(52)

Der Hase frißt gleich den Kohl.
The hare-Nom *eats shortly the cabbage-Acc*
The hare will shortly eat the cabbage.

Den Hasen frißt gleich der Fuchs.
The hare-Acc *eats shortly the fox*-Nom
The fox will shortly eat the hare.

As given above in (52), Kamide et al. (2003a) report that case marking has an effect on processing sentences, and in their case, accusative case marked NPs yield processing ease over nominative case marked NPs. As it can be remembered, in every case Sentence Type leads to differences in reading time analyses of different regions, object-focused pairs have faster reading time. Therefore, a very similar situation seems to have arisen in the case of CRT. In fact, as an outcome of the natural word order of Turkish, the immediate preverbal position is accepted as the natural position of accusative case marked direct objects as well as focus (von Heusinger and Kornfilt, 2005; 2017; Yarar, 2018). It could also be argued that instead of only relying on the semantic relationship between pairs, syntactic positioning of the *wh*-question words in the question and the focused NPs including case marking might have affected the participants' response time for congruency. As mentioned above, Büring (2007) and Ingo (2001) highlight a systematic connection between question and answer. For instance, as given in (53) below, Büring (2007: 6) highlights the question-answer correspondence.

(53)

Who did Jones' father vote for? (felicitous)
He voted for Jones.

Who did Jones' father vote for? (infelicitous)
He voted for Jones' father.

As seen in (53), for the answer to be felicitous, the question word and the focused word should match with each other (Büring, 2007). Since the *wh*-question word *neyi* (what-Acc) in the questions signals the answer word bearing accusative case marking, which are direct objects in Turkish (von Heusinger and Kornfilt, 2005; Göksel and Kerslake, 2005), they might have been identified more easily (Özge et al., 2009; Özge et al., 2013) and this could have led to faster congruency response time in favor of object-focused pairs. Therefore, response time for congruency might have been affected unconsciously via the basic word order of Turkish.

However, an interesting point to be noted in the findings is the presence of an effect caused by either the Congruency factor or Sentence Type factor but the absence of such an effect caused by the Focus Position Type factor on PCD and CRT. This could be attributed to the effect of case marking and the syntactic relationship between *wh*-question words and corresponding answer words being more prominent in terms of processing rather than the semantic relationship. As mentioned before, since the participants in the study seem to have favored pairs focusing on accusative case-marked objects in terms of processing, the position of focused NP might have been considered secondary and did not lead to any statistically significant difference. However, more research is needed for such an effect of the position of focus word on processing congruency.

CONCLUSION

This study mainly aims at investigating the effects of scrambling on processing sentences and the perceived congruency of sentences in Turkish. Considering these aims, another aim of the study is to find out whether scrambling focused arguments, question-answer orientation, and the position of the focused arguments cause differences in processing and perceived congruency in Turkish.

To answer the research questions, a self-paced reading test containing 256 question-answer pairs including questions and answers varying in three factors (sentence type, congruency, and focus position type) is administered to 50 native speakers of Turkish utilizing *PsychoPy* on a computer. In terms of sentence processing, each linguistic element in the sentence is divided into regions of interest to have a better understanding of the phenomenon. These regions include an adverbial phrase (R1), focused NP (R2/R3), non-focused NP (R3/R2), verb (R4), and post-verbal element (modal adverbial-R5) as well as Total Reading Time and R2+R3+R4. The time participants spent reading linguistic elements in each region is recorded and compared. In addition to the reading time of the regions, the participants' perceived congruency relationship in the pairs, as well as the time spent to decide the congruency relationship are also recorded and analyzed. The findings of the analyses are presented in the previous chapter. In this chapter, research questions are reviewed, answered and suggestions for further studies are presented.

The main aim of the study is to answer the research question "does scrambling affect the processing of sentences in Turkish?" as well as "do scrambling focused arguments, question-answer orientation, and the position of focused arguments cause any significant differences in processing". As presented in the previous chapters, reading time is accepted as a valid means to study processing, and any differences caused by scrambling in terms of reading time are accepted as a sign of processing differences. Therefore, mean scores of reading time for separate regions of interest are compared.

At the end of the statistical analyses, similarities in reading time across different regions of interest are observed. For instance, when the interactional (three-way) effect of the three factors on reading time for different regions is analyzed, it is seen that the interaction among the factors under scrutiny does not lead to statistically significant differences in reading time of any region. In other words, when Sentence Type, Congruency, and Focus Position Type are combined, they do not have a statistically significant effect to lead to differences in processing adverbial phrase (R1), focused NP (R2/R3), non-focused NP (R3/R2), verb (R4), post-verbal element (modal adverbial-R5) and Total Reading Time and R2+R3+R4. This could mean that these factors might have triggered each other since they are interrelated and co-existed. Yet, while no combined effect of three factors on processing linguistic constituents is seen, the three factors seem to have affected processing on varying levels separately and cause differences in reading time.

These findings could be accepted to be in line with the literature from different perspectives. For example, in the case of the effect of the Sentence Type factor, it could be said that due to the nature of direct objects in Turkish, they are accusative marked NPs (Aygen, 2007; Enç, 1991; Göksel and Kerslake, 2005; von Heusinger and Kornfilt, 2005; 2017, Özge et al., 2009). As stated by Özge et al. (2009) and Özge et al. (2013), accusative case marked direct object in Turkish, which might have acted as a cue, which, in turn, leads to faster identification and processing of the direct object. Also, accusative case marking acts as a specificity marker (Yarar, 2018). Therefore, this might have also added up to the faster processing of accusative case-marked NPs acting as direct objects in the pairs since NPs bearing it could be unambiguously processed. The effect of accusative case marked direct objects are seen in other languages such as Korean, Japanese, and Persian, all of which utilized case marking for direct objects (Miyagawa, 1997; Ahn and Cho, 2007; Law, 2010; Agbayani et al., 2015; Ko, 2000; Karimi, 2008; Jasbi, 2015) and research show that in such languages, accusative case marked direct objects could be used as cues to process sentences (e.g., Kamide et al., 2003a; Kamide et al., 2003b; Chung and Lee,

2017; Jasbi, 2015). On the other hand, as nominative case marked NPs acting as subjects are not case marked, they do not have such cues and the participants of the study might have needed more time to process them according to their relevance with the other linguistic elements in the sentence to overcome the possible ambiguity. In other words, this might have caused them to be identified and processed more slowly. Another reason for that might be related to the roles assigned to different case markings. For instance, as mentioned at the beginning of the study, except for accusative case marking, other case markers in Turkish are oblique, meaning they might carry different roles when marking nouns. However, the sole role of the accusative markers in Turkish is marking the direct objects, as mentioned above. Therefore, it can be said that at the end of the present study, it is found that accusative case marking acts as a processing cue to facilitate sentence processing.

As for faster processing of congruent sentences, studies in the literature show that incongruent sentences are processed slower (e.g., Hu and Jiang, 2011; Tamaoka et al., 2005) and even cause responses that are not seen when processing congruent sentences (see Kutas et al., 2006; Morris, 2006; Balota et al., 2006 for a review of studies). The main reason for that, as the findings of studies focusing on processing suggest, is the load on working memory. As mentioned previously, familiarity and/or similarity of stimuli have an active role in memory load and processing (Era et al., 2011; Baddeley, 1986; Baddeley and Hitch, 1974). The memory load is accepted to be higher during processing unfamiliar stimuli, which leads to slower processing performance. On the other hand, faster processing could be expected when there is a match between new stimuli with previous experiences. The findings of the present study in terms of the faster processing of congruent sentences seem to comply with the literature in the sense that congruent structures have faster reading time than incongruent structures. As the congruency relationship between questions and answers is signaled by the position of *wh*-question words and focused NPs in the answers, this might have led the participants to process the congruent pairs much easier than incongruent pairs. Since congruency causes less memory load, it is quite

reasonable to assume that this results in faster reading time. However, another interesting point is seen in the findings of congruency. The statistically significant difference found between congruent and incongruent pairs might have also signaled the effect of parallel positioning of the *wh*-question word and the focused NPs on reading time. As stated earlier, when both *wh*-question words and focused NPs are positioned in question/sentence-initial position or immediate preverbal position in the same pairs, they are considered to be congruent. Otherwise, they are considered incongruent and they are categorized accordingly. The difference between the congruent and incongruent pairs that affect the processing of Congruency is the scrambling of *wh*-question words in the questions and focused NPs in the answers in the pairs. In other words, in terms of Congruency, there is a syntactic relationship between pairs. However, as the comparison of effects of semantics and syntax on congruency is beyond the scope of the present study, this is left for another study in the future.

As for the effects of Focus Position Type on processing, it is seen that focused NPs placed in the immediate preverbal position are processed faster than the same focused NPs placed in the sentence-initial position. In other words, when a focused NP is positioned in the immediate preverbal position, it has faster reading time while a focused NP in the sentence-initial position has slower reading time. This finding also seems to be compatible with the literature to a certain extent. As mentioned previously, Erguvanlı (1984) and Hoffman (1994; 1995) consider the immediate preverbal position to be the focus position in Turkish. Since the findings of the reading time in terms of the Focus Position Type data point to such a parallel result, it could be said that the results seem to have supported Erguvanlı (1984) and Hoffman (1994; 1995). However, an interesting point appeared considering this finding. As von Heusinger and Kornfilt (2005) highlight, accusative case marking is “a reliable indicator of specificity” (11), and *focus* is considered to be new information (Carnie, 2013; Erguvanlı, 1984; Göksel and Kerslake, 2005; Vallduvi, 1990; Vallduvi and Engdahl, 1996). Therefore, at first sight, due to the nature of accusative case-marked direct objects, the information they carry cannot be new and they cannot be the focus since they are specific.

However, Zimmermann (2008) and Lee (2003) make a distinction between information *focus* (the sense focus is used in the study as put forward by Valladuvi, 1990; Valladuvi and Engdahl, 1996) and *contrastive focus*. According to Zimmermann (2008), although these concepts are not truly different from each other regarding the underlying semantics, the difference depends on the calculations made by the listener based on the suppositions of the speaker. To be more precise, it could be said that if there is a discourse-linked presupposition at play during processing a sentence, the focus is contrastive but otherwise, it is information focus (Lee, 2003; Zimmermann, 2008). According to Lee (2003), the contrastive focus effect can be generated when the speaker utilizes a discourse-linked word and the listener processes the focus accordingly. In fact, in relatively free word order languages with case marking acting as a differentiating factor such as Korean, Japanese, and Persian, the presence of contrastive focus could also be seen (e.g., Vermeulen, 2010; Jasbi, 2015; Karimi, 2008; Ahn and Cho, 2007; Ko, 2000). For instance, as Vermeulen (2010) explains, contrastive focus in Japanese and Korean could go through scrambling as they provide discourse-linked additional contrastive requirements. Moreover, according to Karimi (2008), accusative case marking would enable specific DPs to be considered as a topic interpretation or a contrastive focus depending on the presupposition. It should be kept in mind that the focused NPs in the study are used as answers to the questions/primers and they carry the similar case marking as the *wh*-questions words. In other words, considering the systematic relationship between questions and answers in the study, it could be argued that the question word *neyi* (what-Acc), bearing accusative case marking, is used to focus on direct objects and might have had a discourse linked function, which, in turn, might have bypassed the specificity effect and enabled accusative case marked NPs to become the focus. Therefore, in the end, it could be argued that contrastive focus might also be present in Turkish. Yet, further studies are needed to fully comprehend the nature of contrastive focus in Turkish.

In the end, concerning processing, when all findings are considered, it could be stated that scrambling and scrambling focused arguments, question-answer

orientation, and the position of focused arguments cause a difference in processing sentences in Turkish. In this sense, processing in Turkish sentences is prone to case marking, the position of the focused word, and the congruency relationship between the question and the answer.

Another purpose of the present study is to answer the research questions “does scrambling affect the perceived congruency of sentences in Turkish?” and “do scrambling focused arguments, question-answer orientation and the position of focused arguments lead to any significant effect on perceived congruency?” To find the answer to these questions, the participants in the study are asked to decide whether answers to the questions are congruent or not. The judgment calls or congruency responses made by the participants in the study are called Perceived Congruency Data (PCD), the time spent to decide the congruency of the answers is labeled as Congruency Response Time (CRT), and mean scores for both are compared. At the end of the analyses, like the findings of reading time data analyses, no interactional effect of scrambling in terms of Sentence Type, Congruency, and Focus Position Type is seen. However, it is seen that the perceived congruency was affected by Congruency, and response time is affected by Sentence Type.

As would be expected, the effect of Congruency is similar to reading time data analyses. Namely, congruent pairs are processed faster. This suggests that congruency causes a difference in processing when a general evaluation of congruency is made and the findings are similar to the literature in terms of the effects of congruency on processing (Hu and Jiang, 2011; Kutas et al., 2006; Morris, 2006; Balota et al., 2006; Carroll et al., 2016; Imamura, 2017; Zawiszewski and Friederici, 2009; Tamaoka et al., 2005). In other words, when congruent and incongruent question-answer pairs are presented, congruent pairs have a more facilitating effect on the judgment calls of the participants. As stated above, the working memory model proposed by Baddeley (1986) and Baddeley and Hitch (1974) emphasizing a lower memory load in favor of processing familiar

structures seem to be in effect in the study. Therefore, it can be said that the congruency of the question-answer pairsacts as a key to affect judgment calls.

Similar to the previous findings, the same facilitating contribution of accusative case marking for direct objects once again seemed to be in effect in terms of the response time of congruency. In this sense, it is seen that object-focused question-answer pairs have a shorter response time of congruency and it is also seen in the literature (Miyagawa, 1997; Ahn and Cho, 2007; Law, 2010; Agbayani et al., 2015; Ko, 2000; Karimi, 2008; Jasbi, 2015; Kamide et al., 2003a; Kamide et al., 2003b; Chung and Lee, 2017; Özge et al., 2009; Özge et al., 2013). As suggested above, since it has the sole role of marking the direct object in Turkish (Aygen, 2007; Enç, 1991; Göksel and Kerslake, 2005; von Heusinger and Kornfilt, 2005; 2017, Özge et al., 2009), accusative case marking serves as a cue to speed up the judgment calls on the congruency of question-answer pairs when compared to subject-focused question-answer pairs. Again, considering the working memory model proposed by Baddeley (1986) and Baddeley and Hitch (1974), the assumption that memory load and processing speed depend on familiarity and/or similarity of new stimulus with previous experiences (Era et al., 2011), along with the concept of implicit reading, which suggests that prosodic assignment affects syntactic analysis and changes the interpretation of a sentence (Fodor, 1998), the duration of responding to the congruency of question-answer pairs is affected by scrambling. In the end, it could be said that while scrambling the position of question words in the questions and focused NPs in the answers affects the perceived congruency, scrambling the argument to be focused has an effect on the duration to decide congruency. Therefore, it can be said that the perception of congruency in Turkish is also affected by scrambling.

Considering the findings, it can be said that various and deeply interconnected factors are highly involved in sentence processing and it is seen that both sentence processing and the perception of congruency are affected by scrambling to varying degrees. In other words, scrambling focused arguments, question-answer orientation, and the position of focused arguments lead to

differences in processing and perceived congruency in Turkish. Yet, the data and claims included in this study should be taken with caution since the number of participants is not ideal for solid statistical testing. Also, as mentioned above, although processing differences between external and internal arguments are studied in the present research, their structural differences cannot be underestimated.

After all the statistical analyses, discussion, and presentation of the findings, there are some endpoints worth emphasizing as the contributions of the study. First, as discussed before, the main effects of the factors under scrutiny are closely related to each other and the parsers seemed to have taken advantage of them respectively. For instance, it is seen that unlike NPs bearing nominative case marking, NPs attached with accusative case marker resulted in faster processing. The difference in processing can be considered as the result of the inclusion of a possible cue provided by the accusative case marker. In this sense, it can be suggested that case marking acts as a processing facilitating cue over non or nominative case marking. In fact, it is quite normal to process NPs including cues faster than NPs with no cues since case marking provides extra information for the relevant linguistic element. Therefore, upon receiving linguistic stimuli such as an NP, a parser can easily identify, process, and tag it as a direct object given the case marking. In other words, due to the lack of extra information, parsers take more time to process linguistic elements which do not contain cues.

While considering the limitations of the present study, the effects of accusative case marking can be reflected in scrambling in a mutually exclusive way. Scrambling is seen in (relatively) free word order languages and such languages have clear-cut case-marking systems, and to the limited extent suggested by the findings, case marking in Turkish can be regarded to have an effect that can overshadow word order in terms of scrambling. For example, as mentioned previously, the sole role of accusative case marking in Turkish is to mark the direct object. Therefore, when an NP is attached with an accusative case marker, it is bound to be the direct object in simple declarative sentences. In this sense,

regardless of its position, parsers can easily differentiate, identify and/or assign roles to arguments as subjects or objects. As a result, it can be said that scrambling is only possible as long as a language exhibits case marking.

Considering the effect of scrambling and differences seen in processing, another endpoint risen is related to the optionality of scrambling. Although scrambling is considered an optional process (Crystal, 2008), the findings point to a different direction. If scrambling is optional, then it should not lead to a difference in the processing of different linguistic elements since regardless of their position, the main proposition of a sentence remains the same. However, the findings suggest that scrambling arguments causes differences in reading time. As presented, scrambling-related processing differences are seen in the reading time of the separate linguistic elements, the clause hosting the main proposition (R2+R3+R4), and the cumulative reading time (TRT). In this sense, it can be suggested that rather than just an optional process, scrambling is a required process. This requirement may stem from various needs such as structuring information or emphasizing a particular linguistic element or it can be the reflection of a general stylistic tendency and analysis of the needs for scrambling is beyond the scope of the study. However, as is seen in the present study, pre-verbal scrambling is much more than just an optional process.

On the other hand, it is also seen that differences in argument structures are also at play. According to *VP-Internal Hypothesis*, NPs acting as subjects are accepted to be projected outside the verb phrase, while NPs acting as objects are projected inside the verb phrase. The findings of the study also point to a similar outcome. For example, since the NPs acting as the objects are within the projection of the verb phrase, they are processed faster than the NPs acting as the subjects, which are external arguments, naturally. In fact, the effect of the verb-phrase projection can also account for the unexpected processing difference seen in modal adverbials taking place after verbs in the study. As presented before, the post-verbal area is accepted as redundant (Erguvanlı, 1984). However, it is seen that modal adverbials in the present study have

differences in processing, in favor of object-focused sentences over subject-focused sentences, which is unexpected. The proximity of the modal adverbials to the verb as well as the verb phrase might have caused an overflow in processing, which resulted in a difference in processing. In other words, as the modal adverbials placed in the post-verbal position modify the verb phrase, they might have been parsed as part of the verb phrase and affected by the processing of the verb phrase and this might have led to the unexpected outcome. However, this finding may be purely limited to the adverbial phrases. In other words, the question of whether the same processing difference would occur or not if it were for another linguistic element instead of modal adverbials still stands. Yet, as a result, it can be suggested that the redundancy of the post-verbal area might be limited to certain linguistic structures. A similar case is also seen in the processing difference seen in adverbial phrases presented at the beginning of every answer sentence. As mentioned previously, NPs acting as subjects take place in the sentence-initial position according to the canonical word order of Turkish (Göksel and Kerslake, 2005) and the participants in the study might have had a parallel expectation. However, when the answer sentences are presented in SPR, instead of NPs acting as subjects, adverbial phrases are presented first, which might have affected the processing. Yet, unlike NPs in nominative case marking, NPs attached with accusative case marking are easily identified and processed faster.

In addition to the aforementioned contributions, this dissertation also makes the following major contributions to the field. First, by studying reading and response time data concerning scrambling and its effects on processing and the perception of congruency in Turkish, this experimental psycholinguistic study provides insights derived from empirical data. In this way, the findings of the study can pave the way to appraise the theoretical studies in the field. The findings and the claims of the present study contribute to the discussion concerning scrambling and information structure in Turkish to boot. Also, the results of the study can assist the language teachers teaching Turkish as a second or foreign language

to pay attention to the effects of scrambling on word order and let them design their curriculum and teaching practice accordingly.

Even though the present study aims to contribute to the field as an experimental psycholinguistic study, as the gap in the literature on the effects of scrambling on processing in Turkish is wide, along with theoretical studies, more experimental studies are needed. In this sense, certain aspects of the present study can be improved and some relevant points left can be studied in further research in the future. For example, the present study utilizes a self-paced reading test in terms of data collection tool and to some extent, self-paced reading tests require conscious evaluation of the participants towards the stimuli presented. In a future study, researchers could design studies utilizing different types of data collection tools such as Event-Related Potentials or eye-tracking devices so that the data they obtained would be driven from unconscious processes. Correspondingly, although the study is based on written form, another study utilizing a (self-paced) listening test could be employed to see whether scrambling caused processing differences between visual and audio linguistic stimuli and shed more light on the effects of processing.

Another point that could be considered for further studies might include tense and case marking and the effects of scrambling on processing different tense and case marked verbs and NPs. For instance, all verbs used in the study are marked with Turkish present continuous tense marker *–Iyor* only. Therefore, the question of whether scrambling leads to differences in sentences with various or other tense markers remains unanswered. A future study could compare the effects of scrambling on processing considering different tense markers in Turkish. In line with that, only accusative case-marked direct objects are utilized in the study along with naturally nominative case-marked subjects since the sole function of accusative case marking is to mark the direct object. In a future study, the effects of scrambling on processing NPs with various case marking could be studied to see if case marking was susceptible to scrambling in terms of processing.

Another suggestion concerning scrambling for further studies includes studying the processing of linguistic elements in the post-verbal area and *contrastive focus*, a curious phenomenon concerning Turkish. Although this study focuses on the preverbal area, it is seen that linguistic elements in the post-verbal area are also susceptible to scrambling. Therefore, whether or not scrambling causes differences in the post-verbal area could be another topic for further studies. An interesting phenomenon in Turkish is the so-called *contrastive focus* seen in other free-word order languages such as Japanese and Korean. Specific information cannot be the focus naturally, and accusative case marks specificity but focus includes new information. This dilemma is overcome via the concept of *contrastive focus* in Japanese and Korean. In this sense, further studies are needed to fully comprehend the possible presence of *contrastive focus* in Turkish.

REFERENCES

Aarts, B. (2011). *Oxford Modern English Grammar.* New York: Oxford University Press.

Adam, J. J., Paas, F. G., Buekers, M. J., Wuyts, I. J., Spijkers, W. A., & Wallmeyer, P. (1999). Gender differences in choice reaction time: evidence for differential strategie. *Ergonomics, 42*(2), 327-325. doi:10.1080/001401399185685

Agbayani, B., Golston, C., & Ishii, T. (2015). Syntactic and prosodic scrambling in Japanese. *Natural Language & Linguistic Theory, 33*(47), 47-77.

Ahn, H.-D., & Cho, S. (2007). Non-Case-Marked Wh-Phrases and Left-Dislocation. In A. Omaki, I. Ortega-Santos, J. Sprouse, & M. Wagers (Ed.), *University of Maryland Working Papers in Linguistics 16* (pp. 111-141). College Park, MD,: UMWPiL.

Akan, T. (2009). On scrambling in Turkish. *Unpublished M.A. thesis*. Istanbul: Boğaziçi University.

Akar, D. (1990). Wh-questions in Turkish. *Unpublished M.A. Thesis*. İstanbul: Boğaziçi University.

Akmajian, A., Demers, R. A., Farmer, A. K., & Harnish, R. M. (2010). *Linguistics - An Introduction to Language and Communication.* (6th ed.). London, England: MIT Press.

Aksan, Y., Aksan, M., Mersinli, Ü., & Demirhan, U. U. (2017). *A Frequency Dictionary of Turkish.* Oxon: Routledge.

Altarriba, J., & Knickerbocker, H. (2011). Acquiring second language vocabulary through the use of images and words. In P. Trofimovich, & K. McDonough (Eds.), *Applying priming methods to L2 learning, teaching, and research* (pp. 21-48). Amsterdam, The Netherlands: Benjamins.

Anstey, K. J., Dear, K., Christensen, H., & Jorm, A. F. (2005). Biomarkers, health, lifestyle, and demographic variables as correlates of reaction time performance in early, middle, and late adulthood. *The Quarterly Journal of Experimental Psychology Section A - Human Experimental Psychology, 58A*(1), 5-21. doi:10.1080/02724980443000232

Aoshima, S., Phillips, C., & Weinberg, A. (2004). Processing Filler-Gap Dependencies in a Head-Final Language. *Journal of Memory & Language, 51*, 23-54.

Arık, E. (2016). An experimental approach to basic word order in Turkish intransitives. *Psychology of Language and Communication, 20*(1), 73-91.

Aydın, Ö., & Cedden, G. (2010). Sözdizim işlemlemesinde sağa taşıma etkisi. *Dilbilim Araştırmaları*(1), 1-13.

Aygen, G. (2007). Specificity and subject-object positions/scope interactions in Turkish. *Journal of Linguistics and Literature, 4*(2), 56-00. Retrieved Oct 7th, 2020, from http://ded.mersindilbilim.info/en/download/article-file/182616

Baayen, R. H., & Milin, P. (2010). Analyzing reaction times. *International Journal of Psychological Research, 3*(2), 12-28.

Baddeley, A. D. (1986). *Working Memory.* Oxford: Clarendon Press.

Baddeley, A. D., & Hitch, G. J. (1974). Working Memory. In G. Bower, *Recent advances in learning and motivation* (Vol. 8, pp. 47-90). New York: Academic Press.

Balakrishnan, G., Uppinakudru, G., Singh, G. G., Bangera, S., Raghavendra, A. D., & Thangavel, D. (2014). A comparative study on visual choice reaction time for different colors in females. *Neurology Research International, 2014*, 1-5. Retrieved October 19th, 2019, from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4280496/pdf/NRI2014-301473.pdf

Balota, D. A., Yap, M. J., & Cortese, M. J. (2006). Visual word recognition: The journey from features to meaning (a travel update). In M. J. Traxler, & M. A. Gernsbacher (Eds.), *Handbook of Psycholinguistics* (2nd ed., pp. 285-376). Oxford: Academic Press.

Başer, Z., & Hohenberger, A. (2020). Is there a particular RC attachment preference in Turkish? Negotiating the effects of semantic factors. *Journal of Psycholinguistic Research, 49*, 511-539. doi:https://doi.org/10.1007/s10936-020-09698-4

Bayrak-Kurt, D. (2020). Processing focus structures in L1 Turkish and L2 English. *Unpublished Master's Thesis*. Boğaziçi University, Department of Foreign Language Education.

Bekar, İ. P. (2013). Türkçede eylem-sonu konumunda bürün-sözdizim etkileşimi üzerine elektrofizyolojik bir inceleme. *Yayınlanmamış doktora tezi*. Ankara: Ankara Üniversitesi.

Biber, D., Johannsson, S., Leech, G., Conrad, S., & Finegan, E. (1999). *Longman grammar of spoken and written English.* Essex: Pearson Education.

Blumenthal, A. L. (1987). The emergence of psycholinguistics. *Synthese, 72*(3), 313-323.

Bonifacci, P., & Snowling, M. J. (2008). Speed of processing and reading disability: A cross-linguistic investigation of dyslexia and borderline intellectual functioning. *Cognition, 107*, 999-1017.

Bozşahin, C. (2000). Gapping and word order in Turkish. In A. S. Özsoy, D. Akar, M. Nakipoğlu-Demiralp, E. E. Erguvanlı-Taylan, & A. Aksu-Koç, *Studies of Turkish Linguistics: Proceedings of ICTL 10.* (pp. 95-104). İstanbul: Boğaziçi University Press. Retrieved Feb. 28th, 2018, from http://users.metu.edu.tr/bozsahin/gwot.pdf

Breen, M. (2014). Empirical investigations of the role of implicit prosody in sentence processing. *Language and Linguistics Compass, 8*(2), 37-50.

Breen, M. (2015). Empirical Investigations of Implicit Prosody. In L. Frazier, & E. Gibson (Eds.), *Explicit and Implicit Prosody in Sentence Processing: Studies in Honor of Janet Dean Fodor* (Vol. 46, pp. 177-192). Switzerland: Springer.

Bridges, D., Pitiot, A., MacAskill, M., & Peirce, J. (2020, January 20th). *The Timing Mega-study: Comparing a Range of Experiment Generators, Both Lab-based and Online.* Retrieved from PsyArXiv: https://psyarxiv.com/d6nu5/

Bussmann, H. (2006). *Routledge Dictionary of Language and Linguistics* (Taylor & Francis e-Library ed.). (G. Trauth, & K. Kazzazi, Trans.) New York: Routledge.

Büring, D. (2007). Semantics, intonation, and information structure. In G. Ramchand, & C. Reiss (Eds.), *The Oxford Handbook of Linguistic Interfaces* (pp. 445-474). Oxford, UK: Oxford University Press.

Cangır, H. (2018). Investigating the relationship between L1 and L2 collocational processing in the bilingual mental lexicon. *Unpublished Ph.D. Dissertation*. Ankara, Turkey: Ankara University.

Carnie, A. (2013). *Syntax - A Generative Introduction.* (3rd ed.). Chichester, West Sussex, UK: Blackwell Publishing.

Carroll, R., Uslar, V., Brand, T., & Ruigendijk, E. (2016). Processing mechanisms in hearing-impaired listeners: Evidence from reaction times and sentence interpretation. *Ear and Hearing, 37*(6), 391-401. doi:10.1097/AUD.0000000000000339

Cheimariou, S., & Loui, S. (2013). Space, agency and word order: Evidence from Greek. *Proceedings of the 35th annual meeting of the Cognitive Science Society* (pp. 2012-2016). Berlin, Germany: Cognitive Science Society.

Christianson, K., Hollingworth, A., Halliwell, J. F., & Ferreira, F. (2001). Thematic roles assigned along the garden path linger. *Cognitive Psychology, 42*, 368-407.

Chung, E. S., & Lee, E. K. (2017). Morpho-syntactic processing of Korean case-marking and case drop. *Linguistic Research, 34*(2), 191-204.

Collette, F., Van der Linden, M., & Poncelet, M. (2000). Working memory, long-term memory, and language processing: Issues and future directions. *Brain and Language, 71*, 46-51.

Crystal, D. (2008). *A Dictionary of Linguistics and Phonetics* (6th ed.). Oxford, UK: Blackwell Publishing.

Çakır, S. (2020). Long-distance scrambling and operator movement in Turkish. *Journal of Language and Linguistic Studies, 16*(1), 440-457.

Çiçekli, İ., & Korkmaz, T. (1998). Generation of Simple Turkish Sentences with Systemic-Functional Grammar. In D. Powers, *New Methods in Language Processing and Computational Natural Language Learning* (pp. 165-173). ACL.

Dalyrmple, M., & Nikolaeva, I. (2011). *Objects and Information Structure.* Cambridge, UK: Cambridge University Press.

Deary, I. J., Johnson, W., & Starr, J. M. (2010). Are processing speed tasks biomarkers of cognitive aging? *Psychology and Aging, 25*, 219-228.

Deniz, N. D., & Fodor, J. D. (2020). Timing of syntactic and rhythmic effects on ambiguity resolution in Turkish: A phoneme restoration study. *Language and Speech, 63*(4), 832-855.

Devescovi, A., D'Amico, S., & Gentile, P. (1999). The development of sentence comprehension in Italian: a reaction time study. *First Language, 19*, 129-163. doi:10.1177/014272379901905601

Dykiert, D., Der, G., Starr, J. M., & Deary, I. J. (2012a). Age differences in intra-individual variability in simple and choice reaction time: Systematic review and meta-analysis. *PLoS ONE 7*. doi:10.1371/journal.pone.0045759

Dykiert, D., Der, G., Starr, J. M., & Deary, I. J. (2012b). Sex differences in reaction time mean and intraindividual variability across the life span. *Developmental Psychology, 48*, 1262-1276. doi:10.1037/a0027550

Enç, M. (1991). The semantics of specificity. *Linguistics inquiry*(22), 1-25.

Enisa, M. (2011). The acquisition of word order (verb placement) in an adult Serbo-Croatian-Turkish bilingual. *Procedia Social and Behavioral Sciences, 15*, 134-137.

Era, P., Sainio, P., Koskinen, S., Ohlgren, J., Harkanen, T., & Aromaa, A. (2011). Psychomotor speed in a random sample of 7,979 subjects aged 30 years and over. *Aging Clinical and Experimental Research, 23*, 135-144. doi:10.1007/BF03351077

Erdocia, K., Laka, I., Mestres-Misse, A., & Rodriguez-Fornells, A. (2009). Syntactic complexity and ambiguity resolution in a free word order language: Behavioral and electrophysiological evidence from Basque. *Brain and Language, 109*(1), 1-17.

Erguvanlı, E. E. (1984). *The Function of Word Order in Turkish Grammar.* Berkeley: University of California Press.

Erkü, F. (1983). Discourse Pragmatics and Word Order in Turkish. Ph.D. Thesis, Univ. of Minnesota.

Evcen, E. (2019). Processing of conditional constructions in Turkish L2 speakers of English. *Unpublished MA Thesis*. Ankara: Middle East Technical University.

Fard, S. J., & Lavender, A. P. (2019). A comparison of task-based mental fatigue between healthy males and females. *Fatigue: Biomedicine, Health & Behavior, 7*(1), 1-11. doi:10.1080/21641846.2019.1562582

Fasold, R., & Connor-Linton, J. (2013). Introduction. In R. Fasold, & J. Connor-Linton (Eds.), *An Introduction to Language and Linguistics* (6th ed., pp. 1-12). Cambridge: Cambridge University Press.

Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods,* 41, 1149-1160.

Fedzechkina, M., Jaeger, T. F., & Newport, E. L. (2011). Functional biases in language learning: Evidence from word order and case-marking interaction. *Proceedings of the Annual Meeting of the Cognitive Science Society*, *33.* Retrieved Jan 2nd, 2020, from https://mfedzech.github.io/docs/FedzechkinaJaegerNewport_cogsci11.pdf

Felser, C., & Arslan, A. (2019). Inappropriate choice of definites in Turkish heritage speakers of German. *Heritage Language Journal, 16*(1), 22-43.

Felser, C., Marinis, T., & Clahsen, H. (2003). Children's processing of ambiguous sentences: A study of relative clause attachment. *Language Acquisition,, 11*(3), 127-163.

Ferreira, F., & Clifton, C. (1986). The independence of syntactic processing. *Journal of Memory and Language, 25*, 348-368.

Fitzpatrick, T., & Izura, C. (2011). Word association in L1 and L2: An exploratory study of response types, response times, and interlingual mediation.

Studies in Second Language Acquisition, 33(03), 373-398. doi:10.1017/S0272263111000027

Flecken, M., Athanasopoulos, P., Kuipers, J. R., & Thierry, G. (2015). On the road to somewhere: Brain potentials reflect language effects on motion event perception. *Cognition, 141*, 41-51.

Fodor, J. D. (1998). Learning to parse? *Journal of Psycholinguistic Research, 27*, 285-319.

Fodor, J. D. (2002a). Prosodic disambiguation in silent reading. In M. Hirotani (Ed.), *Proceedings of the thirty-second annual meeting of the North-Eastern linguistic society* (pp. 113-137). Amherst: University of Massachusetts.

Fodor, J. D. (2002b). Psycholinguistics cannot escape prosody. *Proceedings of the speech prosody 2002 conference*, (pp. 83-88). Aix-en-Provence.

Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (2012). *How to Design and Evaluate Research in Education* (8th ed.). New York: McGraw-Hill.

Fromkin, V., Rodman, R., & Hyams, N. (2011). *An Introduction to Language.* (9th ed.). Boston: Cengage Learning.

Galton, F. (1899). On instruments for (1) testing perception of differences of tint and for (2) determining reaction time. *Journal of the Anthropological Institute, 19*, 27-29.

Garnham, A., Garrod, S., & Sanford, A. (2006). Observations on the past and future of psycholinguistics. In M. J. Traxler, & M. A. Gernsbacher, *Handbook of Psycholinguistics* (2nd ed., pp. 1-19). London: Elsevier.

Gibson, E. (1998). Linguistic complexity: Locality of syntactic dependencies. *Cognition, 68*(1), 1-76.

Gibson, E., & Pearlmutter, N. (1998). Constraints on sentence comprehension. *Trends in Cognitive Science, 2*, 262-268.

Gibson, E., & Thomas, J. (1999). Memory Limitations and structural forgetting: The perception of complex ungrammatical sentences as grammatical. *Language and Cognitive Processes, 14*(3), 225-248.

Göksel, A. (1993). Levels of representation and argument structure in Turkish. *Unpublished Ph.D. dissertation*. London: University of London.

Göksel, A., & Kerslake, C. (2005). *Turkish: A Comprehensive Grammar.* NY: Routledge.

Göksel, A., & Özsoy, A. S. (2000). Is there a focus position in Turkish? In A. Göksel, & C. Kerlake, *Studies on Turkish and Turkic Languages* (pp. 219-228). Wiesbaden: Harrasowitz Verlag. Retrieved Feb. 28th, 2018, from https://linguistics.boun.edu.tr/sites/linguistics.boun.edu.tr/files/uploads/Go%CC%88ksel%26Ozsoy.2000.pdf

Grosjean, F. (2012). Speech perception and comprehension. In F. Grosjean, & P. Li (Eds.), *The psycholinguistics of bilingualism* (pp. 29-49). Hoboken, NJ: John Wiley & Sons.

Gündoğan, N. Ü., Yazıcı, A. C., & Şimşek, A. (2006). Üniversite öğrencileride el tercihinin cinsiyetle ilişkisinin incelenmesi (bir ön çalışma). *Türkiye Klinikleri Tıp Bilimleri Dergisi, 26*, 225-231.

Güneş, G. (2013a). On the role of prosodic constituency in Turkish. In U. Özge (Ed.), *The Proceedings of WAFL8 MIT Working Papers in Linguistics*, (pp. 115-128). Cambridge, MA.

Güneş, G. (2013b). Limits of prosody in Turkish. (E. Erguvanlı Taylan, Ed.) *Dilbilim Araştırmaları Dergisi*, 1-49. Retrieved August 21st, 2019, from https://gulizgunes.files.wordpress.com/2017/09/limits-of-prosody-in-turkish-gc3bcliz-published-version.pdf

Hagiwara, H., Soshi, T., Ishihara, M., & Imanaka, K. (2007). A topographical study on the event-related potential correlates of scrambled word order in Japanese complex sentences. *Journal of Cognitive Neuroscience, 19*(2), 175-193.

Hoffman, B. (1994). Generating context-appropriate word orders in Turkish. *Proceedings of Seventh International Workshop on Natural Language Generation*, (pp. 117-126). Kennebunkport, Maine.

Hoffman, B. (1995). The Computational Analysis of the Syntax and Interpretation of "Free" Word Order in Turkish. *Unpublished Ph.D. dissertation, University of Pennsylvania*.

Hu, J. J., & Jiang, J. (2011). Semantic integration in listening comprehension in a second language. In P. Trofimovich, & K. McDonough (Eds.), *Applying priming methods to L2 learning, teaching, and research* (pp. 199-218). Amsterdam, The Netherlands: Benjamins.

Indefrey, P., Şahin, H., & Gullberg, M. (2016). The expression of spatial relationships in Turkish/Dutch bilinguals. *Bilingualism: Language and Cognition, 20*(3), 473-493.

Ingo, R. (2001). Question/Answer congruence and the semantics of wh-phrases. *ZAS Papers in Linguistics 23*, (pp. 181-195). doi:https://doi.org/10.21248/zaspil.23.2001.121

İşsever, S. (2003). Information structure in Turkish: the word order-prosody interface. *Lingua, 113*, 1025-1053.

İşsever, S. (2006). Türkçede takısız nesne adöbekleri ve çalkalama. *Dil Dergisi*(131), 42-56.

İşsever, S. (2007). Towards a unified account of clause-initial scrambling in Turkish: A feature analysis. *Turkic Languages, 11*(1), 93-123. Retrieved June 20th, 2019, from https://selcukissever.files.wordpress.com/2010/04/issever2007_tl_master.pdf

İşsever, S. (2009). A syntactic account of wh-in-situ in Turkish. In S. Ay, Ö. Aydın, İ. Ergenç, S. Gökmen, S. İşsever, & D. Peçenek, *Essays on Turkish Linguistics: proceedings of the 14th international conference on Turkish linguistics* (pp. 103-112). Wiesbaden: Harrosowitz Verlag.

Jain, A., Bansal, R., Kumar, A., & Singh, K. D. (2015). A comparative study of visual and auditory reaction times based on gender and physical activity levels of medical first-year students. *International Journal of Applied and Basic Research, 5*(2), 124-127. doi:10.4103/2229-516X.157168

Jasbi, M. (2015). Semantics of Differential Object Marking in Persian. *89th meeting of the Linguistics Society of America.* Retrieved December 19th, 2020, from https://jasbi.github.io/research/persian_dom_semantics_draft.pdf

Jegerski, J. (2014). Self-paced reading. In J. Jegerski, & B. VanPatten (Eds.). New York: Routledge. Retrieved Feb 5th, 2021, from https://www.researchgate.net/profile/Jill_Jegerski/publication/260677259_Self-paced_reading/links/0c96053485ce946ffe000000/Self-paced-reading.pdf

Jimenez, A. (2010). Information structure and interfaces. *Iberia: An International Journal of Theoretical Linguistics, 2*(1), 1-11.

Jun, S.-A. (2003). Prosodic Phrasing and Attachment Preferences. *Journal of Psycholinguistic Research, 32*(2), 219-249.

Kahraman, B. (2013). Word order preferences of ditransitives in Turkish. *MIT Working Papers in Linguistics*, *67*, pp. 175-180.

Kahraman, B., & Hirose, Y. (2018). Online comprehension of SOV and OSV sentences in Turkish with a supporting context. In T. Levin, & R. Masuda (Eds.), *The Proceedings of 10th Workshop on Altaic Formal Linguistics. MIT Working Papers in Linguistics, 87.* Cambridge, MA.

Kamide, Y., Altmann, G. M., & Haywood, S. L. (2003b). The time-course of prediction in incremental sentence processing: Evidence from anticipatory eye movements. *Journal of Memory and Language, 49*, 133-156.

Kamide, Y., Scheepers, C., & Altmann, G. M. (2003a). Integration of syntactic and semantic information in predictive processing: Cross-linguistic Evidence from German and English. *Journal of Psycholinguistic Research, 32*(1), 37-55.

Karimi, S. (2008). On Object Positions, Specificity, and Scrambling in Persian. In S. Karimi, *Word Order and Scrambling* (Vol. 4, pp. 91-124). Wiley-Blackwell Publishing.

Kendeou, P., & Van Den Broek, P. (2007). The effects of prior knowledge and text structure on comprehension processes during the reading of scientific texts. *Memory & Cognition, 35*(7), 1567-1577.

Kennelly, S. D. (1999). The Syntax of the P-Focus Position in Turkish. In G. Rebuschi, & L. Tuller (Eds.), *The Grammar of Focus* (pp. 179-211). Amsterdam, The Netherlands: John Benjamins Publishing Co.

Kentner, G., & Vasishth, S. (2016). Prosodic focus marking in silent reading: Effects of discourse context and rhythm. *Frontiers in Psychology, 7*. doi:10.3389/fpsyg.2016.00319

Kılıçaslan, Y. (1994). Information Packaging in Turkish. MS Thesis, University of Edinburgh.

King, J., & Just, M. A. (1991). Individual differences in syntactic processing: The role of working memory. *Journal of Memory and Language, 30*(5), 580-602.

Ko, E.-S. (2000). A discourse analysis of the realization of objects in Korean. In M. Nakayama, & C. Quinn, *Japanese/Korean Linguistics, Vol 9* (pp. 195-208). Stanford: CSLI Publications.

Koizumi, M., & Imamura, S. (2017). Interaction between syntactic structure and information structure in the processing of a head-final language. *Journal of Psycholinguistic Research, 46*, 247-260.

Koizumi, M., Yasugi, Y., Tamaoka, K., Kiyama, S., Kim, J., Sian, J. A., & Matzar, L. O. (2014). On the (non) universality of the preference for subject-object word order in sentence comprehension: A sentence-processing study in Kaqchikel Maya. *Language, 90*(3), 722-736. doi:10.1353/lan.2014.0068

Kornfilt, J. (1997). *Turkish.* London and New York: Routledge.

Kornfilt, J. (2003). Scrambling, subscrambling and case in Turkish. In S. Karimi (Ed.), *Word Order and Scrambling* (pp. 125-155). Malden, MA: Blackwell.

Krieg, E. F., Chrislip, D. W., Letz, R. E., Otto, D. A., Crespo, C. J., & Brightwell, N. S. (2001). Neurobehavioral test performance in the Third National Health and Nutrition Examination Survey. *Neurotoxicology and Teratology, 23*(6), 569-589. DOI:DOI: 10.1016/S0892-0362(01)00177-5

Kural, M. (1993). Scrambling and Mixed Positions in Turkish. *The Proceedings of the North-east Linguistic Society 22* (pp. 259-272). University of Massachusetts, Amherst: GLSA Publications.

Kutas, M., Van Petten, C. K., & Kluender, R. (2006). Psycholinguistics Electrified II (1994–2005). In M. J. Traxler, & M. A. Gernsbacher (Eds.), *Handbook of Psycholinguistics* (2nd ed., pp. 659-724). Oxford: Academic Press.

Lange, V. M., Messerschmidt, M., & Boye, K. (2018). Contrasting grammatical and lexical determiners. *Journal of Psycholinguistic Research, 47*(3), 467-482.

Law, P. (2010). Scrambling of Wh-phrases in Japanese. *Proceedings of the 24th Pacific Asia Conference on Language, Information and Computation* (pp. 463-470). Tohoku University, Sendai, Japan: Institute of Digital Enhancement of Cognitive Processing, Waseda University.

Lee, C. (2003). Contrastive topic and/or contrastive focus. *Japanese/Korean Linguistics, 12*, 352-364.

Lemarié, J., Lorch Jr, R. F., & Péry-Woodley, M. P. (2012). Understanding how headings influence text processing. *Multidisciplinary Perspectives on Signalling Text, 10*. doi:https://doi.org/10.4000/discours.8600

Li, P., Bates, E., & Macwhinney, B. (1993). Processing a language without ınflections: A reaction time study of sentence interpretation in Chinese. *Journal of Memory and Language, 32*(2), 169-192.

Lord, S. R., Delbaere, K., & Sturnieks, D. L. (2018). Aging. In B. L. Day, & S. R. Lord (Eds.), *Handbook of Clinical Neurology* (Vol. 159, pp. 157-171).

Lorist, M. M., & Jolij, J. (2012). Trial history effects in Stroop task performance are ındependent of top-down control. *PLoS One, 7*(6), 1-13. doi:10.1371/journal.pone.0039802

MacDonald, S., Nyberg, L., Sandblom, J., Fischer, H., & Backman, L. (2008). Increased response-time variability is associated with reduced inferior parietal activation during episodic recognition in aging. *Journal of Cognitive Neuroscience, 20*(5), 779-787.

MacLeod, C. M. (1991). Half a century of research on the Stroop effect: An integrative review. *Psychological Bulletin, 109*(2), 163-203.

Marinis, T. (2010). Using On-Line Processing Methods in Language Acquisition Research. In S. Unsworth, & E. Blom (Eds.), *Experimental Methods in Language Acquisition Research* (pp. 139-162). John Benjamins Publishing Company.

Marinis, T., Roberts, L., Felser, C., & Clahsen, H. (2005). Gaps in Second Language Sentence Processing. *Studies in Second Language Acquisition, 27*, 53-78.

Marsden, E., Thompson, S., & Plonsky, L. (2018). A methodological synthesis of self-paced reading in second language research. *Applied Psycholinguistics, 39*(5), 861-904.

Matthews, P. H. (2007). *The Concise Oxford Dictionary of Linguistics* (3rd ed.). Oxford: OUP.

McGinnis, M. (1999). A-Scrambling exists! *University of Pennsylvania Working Papers in Linguistics, 6*(1), Article 20. Retrieved July 22nd, 2019, from https://repository.upenn.edu/cgi/viewcontent.cgi?article=1428&context=pwpl

Miyagawa, S. (1997). Against optional scrambling. *Linguistic Inquiry, 28*(1), 1-25.

Miyagawa, S. (2003). Wh-in-situ and scrambling in the context of comparative Altaic syntax. *Paper Presented at WAFL 1 (Workshop in Altaic Formal Linguistics).* Boston: MIT.

Morris, R. K. (2006). Lexical Processing and Sentence Context Effects. In M. J. Traxler, & M. A. Gernsbacher (Eds.), *Handbook of Psycholinguistics* (2nd ed., pp. 377-4702). Oxford: Academic Press.

Möckel, T., Beste, C., & Wascher, E. (2015). The effects of time on task in response selection - an ERP study of mental fatigue. *Scientific Reports, 5*(10113), 1-9. doi:10.1038/srep10113

Naples, A., Katz, L., & Grigorenko, E. L. (2012). Reading and a Diffusion Model Analysis of Reaction Time. *Developmental Neuropsychology, 37*(4), 299-316. doi:10.1080/87565641.2011.614979

Nicolson, R. I., & Fawcett, A. J. (1994). Reaction times and dyslexia. *Quarterly Journal of Experimental Psychology Section A: Human Experimental Psychology, 47*, 29-48.

Oflazer, K., & Saraçlar, M. (2018). Turkish and Its Challenges for Language and Speech Processing. In K. Oflazer, & M. Saraçlar (Eds.), *Turkish Natural Language Processing* (pp. 1-20). Cham: Springer.

Özge, D., Marinis, T., & Zeyrek Bozşahin, D. (2009). Comprehension of subject and object relative clauses in monolingual Turkish children. In S. Ay, Ö. Aydın, İ. Ergenç, S. Gökmen, S. İşsever, & S. Peçenek (Ed.), *Essays On Turkish Linguistics, Proceedings of the Fourteenth International Conference of Turkish Linguistics (ICTL).* Wiesbaden : Harrasowitz Verlag.

Özge, D., Marinis, T., Zeyrek, D., & Özge, U. (2013). Object-first orders in Turkish do not pose a challenge during processing. In U. Özge (Ed.), *Proceedings of the 8th Workshop on Altaic Formal Linguistics, MIT Working Papers in Linguistics (67)* (pp. 269-280). Cambridge, MA: MIT.

Özge, U. (2010). Grammar and information: A study of Turkish indefinites. *Unpublished PH.D. Dissertation*. Ankara: Middle East Technical Universıty.

Özge, U. (2012). Notes on focus projection in Turkish. *Studia Uralo-Altaica, 49*, 389-399. Retrieved August 20th, 2019, from https://ojs.bibl.u-szeged.hu/index.php/stualtaica/article/view/13690

Özge, U., & Bozşahin, C. (2010). Intonation in the grammar of Turkish. *Lingua, 120*, 132-175.

Özsoy, S. (2009). Turkish as a (non)-wh-movement language. In E. A. Csato, J. P. Ims, F. Thiesen, & E. Türker, *Turcological letters to Bernt Brendemoen* (pp. 221-232). Oslo: Novus Forlag.

Peirce, J. W. (2007). PsychoPy—Psychophysics software in Python. *Journal of Neuroscience Methods, 162*, 8-13.

Peirce, J. W. (2009). Generating stimuli for neuroscience using PsychoPy. *Frontiers in Neuroinformatics, 2*(10), 1-8. doi:10.3389/neuro.11.010.2008

Peirce, J. W., Gray, J. R., Simpson, S., MacAskill, M. R., Höchenberger, R., Sogo, H., . . . Lindeløv, J. (2019). PsychoPy2: Experiments in behavior made easy. *Behavior Research Methods, 51*, 195-203. doi:10.3758/s13428-018-01193-y

Poirier, J., & Shapiro, L. P. (2012). Linguistic and psycholinguistic foundations. In R. K. Peach, & L. P. Shapiro (Eds.), *Cognition and Acquired Language Disorders - An Information Processing Approach* (pp. 121-146). St. Louis, Missouri: Elsevier.

Racine, J. P. (2014). Reaction time methodologies and lexical access in applied linguistics. *Vocabulary Learning and Instruction, 3*(1), 66-70.

Radford, A. (1997). *Syntactic Theory and the Structure of English.* Cambridge: Cambridge University Press.

Rauch, W. A., & Schmitt, K. (2009). Fatigue of cognitive control in the Stroop task. In N. A. Taatgen, & H. van Rijn (Ed.), *Proceedings of the 31st Annual Conference of the Cognitive Science Society*, (pp. 750-755).

Reber, A. S. (1987). The rise and (surprisingly) rapid fall of psycholinguistics. *Synthese, 72*(3), 325-339.

Safir, K. (1987). The syntactic projection of lexical thematic structure. *Natural Language and Linguistic Theory, 5*(4), 561-601.

Saito, M. (1989). Scrambling as Semantically Vacuous A'-movement. In M. Baltin, & A. S. Kroch, *Alternative Conceptions of Phrase Structure* (pp. 182-200). Chicago, University: Chicago University Press.

Sanghoun, S., Jae-Woong, C., & Eunjeong, O. (2014). FAQ: Do non-linguists share the same intuition as linguists? *Language Research, 50*(2), 357-386.

Schmidtke, D., & Kuperman, V. (2019). Psycholinguistic Methods and Tasks in Morphology. In *Oxford Research Encyclopedia of Linguistics.* Oxford University Press. Retrieved Feb 5th, 2021, from https://www.researchgate.net/publication/334658222_Psycholinguistic_Methods_and_Tasks_in_Morphology

Schoenherr, J., & Logan, J. (2014). Attentional and Immediate Memory Capacity Limitations in the Acquisition of Non-Native Linguistic Contrasts. *Proceedings of the Annual Meeting of the Cognitive Science Society. 36*, pp. 2585-2590. University of California.

Schurer, T., Opitz, B., & Schubert, T. (2020). Working memory capacity but not prior knowledge impact on readers' attention and text comprehension.

Frontiers in Education, 5(26). doi:https://doi.org/10.3389/feduc.2020.00026

Sharvit, Y., & Kang, J. (2016). Fragment functional answers. In K. Blake, F. Davis, K. Lamp, & J. Rhyne (Ed.), *Proceedings of the 29th Semantics and Linguistic Theory Conference*, (pp. 1099-1118). Los Angeles.

Shin, K. S., Kim, Y. Y., Kim, M. S., & Kwon, J. S. (2005). Different word order evokes different syntactic processing in Korean language processing by ERP study. *Journal of Cognitive Science, 6*, 151-169.

Slevc, R. L., Reitman, J. G., & Okada, B. M. (2013). Syntax in music and language: The role of cognitive control. *Proceedings of the 35th Annual Conference of the Cognitive Science Society* (pp. 3414-3419). Austin, Texas: Cognitive Science Society.

Smith, N. J., & Levy, R. (2013). The effect of word predictability on reading time is logarithmic. *Cognition, 128*(3), 302-319.

Stojankovic, D. (1999). Parsing and acquisition: Evidence from Serbo-Croatian. Ph.D. Thesis, Ottowa University.

Stringer, R., & Stanovich, K. E. (2000). Che connection between reaction time and variation in reading ability: Unravelling covariance relationships with cognitive ability and phonological sensitivity. *SCIENTIFIC STUDIES OF READING, 4*(1), 41-53.

Stroop, J. R. (1935). Studies of interference in serial verbal reactions. *Journal of Experimental Psychology, 18*, 643-662.

Swales, J. M. (2004). *Research Genres: Exploration and applications.* Cambridge: Cambridge University Press.

Swets, B., Desmet, T., Clifton, C., & Ferreira, F. (2008). Underspecification of syntactic ambiguities: Evidence from self-paced reading. *Memory & Cognition, 36*(1), 201-216.

Tamaoka, K., Kanduboda, P. A., & Sakai, H. (2011). Effects of word order alternation on the sentence processing of Sinhalese written and spoken forms. *Open Journal of Modern Linguistics, 1*(2), 34-32.

Tamaoka, K., Sakai, H., KawaharaJ., Miyaoka, Y., Lim, H., & Koizumi, M. (2005). Priority information used for the processing of Japanese sentences: Thematic roles, case particles or grammatical functions? *Journal of Psycholinguistic Research, 34*(3), 281-332.

Toplar, K. (2019). Scrambling and Information Structure in Turkish. *Unpublished Master's Thesis*. USA: Syracuse University.

Trask, R. L. (1999). *Key Concepts in Language and Linguistics.* New York: Taylor and Francis.

Tun, P. A., Benichov, J., & Wingfield, A. (2010). Response latencies in auditory sentence comprehension: Effects of linguistic versus perceptual challenge. *Psychology and Aging, 25*(3), 730-735.

Turgeon, Y., & Macoir, J. (2008). Classical and Contemporary Assessment of Aphasia and Acquired Disorders of Language. In B. Stemmer, & H. A. Whitaker (Eds.), *Handbook of the Neuroscience of Language* (pp. 3-11). MA, USA: Academic Press.

Ullman, M. T. (2013). Language and the Brain. In R. Fasold, & J. Connor-Linton (Eds.), *An Introduction to Language and Linguistics* (6th ed., pp. 235-274). Cambridge: Cambridge University Press.

Uzun, İ. P., Arslan, S., & Aydın, Ö. (2020). What eye movements during silent reading can tell us about preverbal focus in Turkish? *Laboratory Phonology Conference (LabPhon17).* Vancouver, BC: University of British Columbia. doi:10.13140/RG.2.2.17986.40641

Uzun, İ. P., Aydın, Ö., Kalaycıoğlu, C., & Ergenç, İ. (2021). Prosodic Focus Marking in Turkish: An Electrophysiological Study. *Studies in Psychology, 41*(1), 331-364. doi:10.26650/SP2020-0065

Uzun, K. (2020). Tracing negative transfer in the lexical collocations used by Turkish learners of English in written texts. *Bolu Abant İzzet Baysal Üniversitesi Eğitim Fakültesi Dergisi, 20*(2), 1024-1037.

Vallduvi, E. (1990). The Informational Component. *Ph.D. Dissertation*. University of Pennsylvania.

Vallduvi, E., & Engdahl, E. (1996). The linguistic realization of information packaging. *Linguistics, 34*, 459-519.

Vermeulen, R. (2010). *The syntax of topic, contrast, and contrastive topic.* Retrieved 3 19th, 2021, from http://www.gist.ugent.be/file/55#:~:text=of%20relevant%20alternatives.,topic%20that%20is%20interpreted%20contrastively.

Vermeulen, R. (2010, 3 19th). *The syntax of topic, contrast, and contrastive topic.* Retrieved from

http://www.gist.ugent.be/file/55#:~:text=of%20relevant%20alternatives.,topic%20that%20is%20interpreted%20contrastively.

von Heusinger, K., & Kornfilt, J. (2005). The case of the direct object in Turkish: Semantics, syntax, and morphology. *Turkic Languages, 9*, 3-44.

von Heusinger, K., & Kornfilt, J. (2017). Partitivity and case marking in Turkish and related languages. *Glossa: a journal of general linguistics, 2*(1), 1-40.

Whang, J., Yazawa, K., & Escudero, P. (2019). Perceptıon of Japanese vowel length by Australian English listeners. In S. Calhoun, P. Escudero, M. Tabain, & P. Warren (Ed.), *Proceedings of the 19th International Congress of Phonetic Sciences, Melbourne, Australia* (pp. 2228-2232). Canberra, Australia: Australasian Speech Science and Technology Association Inc.

Willemien, A. M., Renate, H. M., Pascal, W. M., Martin, P. J., & Jolles, J. (2009). Level of processing and reaction time in young and middle-aged adults and the effect of education. *European Journal of Cognitive Psychology, 21*(2/3), 216-234. doi:10.1080/09541440802091780

Wong, A. L., Goldsmith, J., Forrence, A. D., Haith, A. M., & Krakauer, J. W. (2017). Reaction times can reflect habits rather than computations. *eLife, 6*, 1-18. Retrieved October 19th, 2019, from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5582865/pdf/elife-28075.pdf

Woodley of Meine, M. A., Nijenhuis, J. T., & Murphy, R. (2015). The Victorians were still faster than us. Commentary: Factors influencing the latency of simple reaction time. *Frontiers in Human Neuroscience, 9*, 1-2. Retrieved October 19, 2019, from

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4542533/pdf/fnhum-09-00452.pdf

Woods, D. L., Wyma, J. M., Yund, E. W., Herron, T. J., & Reed, B. (2015). Factors influencing the latency of simple reaction time. *Frontiers in human neuroscience, 9*. Retrieved October 19th, 2019, from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4374455/

Yamashita, H. (2002). Scrambled sentences in Japanese: Linguistic properties and motivations for production. *Text, 22*(4), 597-633.

Yarar, E. (2018). Differential case marking in Turkish wh-object phrases. *SOAS Working Papers in Linguistics, 19*, 29-46.

Yu, M., Sommers, B., Yin, Y., & Yan, G. (2019). Effects of implicit prosody and semantic bias on the resolution of ambiguous Chinese phrases. *Frontiers in Psychology, 10*. doi:doi.org/10.3389/fpsyg.2019.01308

Zawiszewski, A., & Friederici, A. (2009). Processing canonical and non-canonical sentences in Basque: the case of object-verb agreement as revealed by event-related brain potentials. *Brain Research, 1284*, 161-179.

Zimmermann, M. (2008). Contrastive focus and emphasis. *Acta Linguistica Hungarica, 55*(3), 347-360.

APPENDIX 1 - QUESTION-ANSWER PAIRS USED

SORU TÜMCELERİ (questions)	CEVAP TÜMCELERİ (answers)
Çocuk neyi seviyor?	Emin değilim çocuk oyunu seviyor herhalde.
Çocuk neyi seviyor?	Emin değilim oyunu çocuk seviyor herhalde.
Neyi çocuk seviyor?	Emin değilim çocuk oyunu seviyor herhalde.
Neyi çocuk seviyor?	Emin değilim oyunu çocuk seviyor herhalde.
Kim oyunu seviyor?	Emin değilim çocuk oyunu seviyor herhalde.
Kim oyunu seviyor?	Emin değilim oyunu çocuk seviyor herhalde.
Oyunu kim seviyor?	Emin değilim çocuk oyunu seviyor herhalde.
Oyunu kim seviyor?	Emin değilim oyunu çocuk seviyor herhalde.
Baba neyi dinliyor?	Bilmiyorum ki baba radyoyu dinliyor galiba.
Baba neyi dinliyor?	Bilmiyorum ki radyoyu baba dinliyor galiba.
Neyi baba dinliyor?	Bilmiyorum ki baba radyoyu dinliyor galiba.
Neyi baba dinliyor?	Bilmiyorum ki radyoyu baba dinliyor galiba.
Kim radyoyu dinliyor?	Bilmiyorum ki baba radyoyu dinliyor galiba.
Kim radyoyu dinliyor?	Bilmiyorum ki radyoyu baba dinliyor galiba.
Radyoyu kim dinliyor?	Bilmiyorum ki baba radyoyu dinliyor galiba.
Radyoyu kim dinliyor?	Bilmiyorum ki radyoyu baba dinliyor galiba.
Çiftçi neyi ekiyor?	Sanıyorum ki çiftçi tohumu ekiyor galiba.
Çiftçi neyi ekiyor?	Sanıyorum ki tohumu çiftçi ekiyor galiba.
Neyi çiftçi ekiyor?	Sanıyorum ki çiftçi tohumu ekiyor galiba.
Neyi çiftçi ekiyor?	Sanıyorum ki tohumu çiftçi ekiyor galiba.
Kim tohumu ekiyor?	Sanıyorum ki çiftçi tohumu ekiyor galiba.
Kim tohumu ekiyor?	Sanıyorum ki tohumu çiftçi ekiyor galiba.
Tohumu kim ekiyor?	Sanıyorum ki çiftçi tohumu ekiyor galiba.
Tohumu kim ekiyor?	Sanıyorum ki tohumu çiftçi ekiyor galiba.
Savcı neyi açıyor?	Bilemiyorum ki savcı davayı açıyor herhalde.
Savcı neyi açıyor?	Bilemiyorum ki davayı savcı açıyor herhalde.
Neyi savcı açıyor?	Bilemiyorum ki savcı davayı açıyor herhalde.
Neyi savcı açıyor?	Bilemiyorum ki davayı savcı açıyor herhalde.
Kim davayı açıyor?	Bilemiyorum ki savcı davayı açıyor herhalde.
Kim davayı açıyor?	Bilemiyorum ki davayı savcı açıyor herhalde.
Davayı kim açıyor?	Bilemiyorum ki savcı davayı açıyor herhalde.
Davayı kim açıyor?	Bilemiyorum ki davayı savcı açıyor herhalde.
Aşçı neyi tadıyor?	Bilmiyorum ki aşçı çorbayı tadıyor sanki.
Aşçı neyi tadıyor?	Bilmiyorum ki çorbayı aşçı tadıyor sanki.
Neyi aşçı tadıyor?	Bilmiyorum ki aşçı çorbayı tadıyor sanki.
Neyi aşçı tadıyor?	Bilmiyorum ki çorbayı aşçı tadıyor sanki.
Kim çorbayı tadıyor?	Bilmiyorum ki aşçı çorbayı tadıyor sanki.
Kim çorbayı tadıyor?	Bilmiyorum ki çorbayı aşçı tadıyor sanki.
Çorbayı kim tadıyor?	Bilmiyorum ki aşçı çorbayı tadıyor sanki.
Çorbayı kim tadıyor?	Bilmiyorum ki çorbayı aşçı tadıyor sanki.
Kadın neyi yakıyor?	Sanıyorum kadın sobayı yakıyor galiba.
Kadın neyi yakıyor?	Sanıyorum sobayı kadın yakıyor galiba.
Neyi kadın yakıyor?	Sanıyorum kadın sobayı yakıyor galiba.
Neyi kadın yakıyor?	Sanıyorum sobayı kadın yakıyor galiba.

Kim sobayı yakıyor? Sanıyorum kadın sobayı yakıyor galiba.
Kim sobayı yakıyor? Sanıyorum sobayı kadın yakıyor galiba.
Sobayı kim yakıyor? Sanıyorum kadın sobayı yakıyor galiba.
Sobayı kim yakıyor? Sanıyorum sobayı kadın yakıyor galiba.
Rehber neyi tanıyor? Tahmin ediyorum rehber çevreyi tanıyor muhtemelen.
Rehber neyi tanıyor? Tahmin ediyorum çevreyi rehber tanıyor muhtemelen.
Neyi rehber tanıyor? Tahmin ediyorum rehber çevreyi tanıyor muhtemelen.
Neyi rehber tanıyor? Tahmin ediyorum çevreyi rehber tanıyor muhtemelen.
Kim çevreyi tanıyor? Tahmin ediyorum rehber çevreyi tanıyor muhtemelen.
Kim çevreyi tanıyor? Tahmin ediyorum çevreyi rehber tanıyor muhtemelen.
Çevreyi kim tanıyor? Tahmin ediyorum rehber çevreyi tanıyor muhtemelen.
Çevreyi kim tanıyor? Tahmin ediyorum çevreyi rehber tanıyor muhtemelen.
Garson neyi siliyor? Tahmin ediyorum ki garson masayı siliyor herhalde.
Garson neyi siliyor? Tahmin ediyorum ki masayı garson siliyor herhalde.
Neyi garson siliyor? Tahmin ediyorum ki garson masayı siliyor herhalde.
Neyi garson siliyor? Tahmin ediyorum ki masayı garson siliyor herhalde.
Kim masayı siliyor? Tahmin ediyorum ki garson masayı siliyor herhalde.
Kim masayı siliyor? Tahmin ediyorum ki masayı garson siliyor herhalde.
Masayı kim siliyor? Tahmin ediyorum ki garson masayı siliyor herhalde.
Masayı kim siliyor? Tahmin ediyorum ki masayı garson siliyor herhalde.
Polis neyi arıyor? Bilemiyorum polis kanıtı arıyor herhalde.
Polis neyi arıyor? Bilemiyorum kanıtı polis arıyor herhalde.
Neyi polis arıyor? Bilemiyorum polis kanıtı arıyor herhalde.
Neyi polis arıyor? Bilemiyorum kanıtı polis arıyor herhalde.
Kim kanıtı arıyor? Bilemiyorum polis kanıtı arıyor herhalde.
Kim kanıtı arıyor? Bilemiyorum kanıtı polis arıyor herhalde.
Kanıtı kim arıyor? Bilemiyorum polis kanıtı arıyor herhalde.
Kanıtı kim arıyor? Bilemiyorum kanıtı polis arıyor herhalde.
Usta neyi boyuyor? Bilmiyorum ki usta duvarı boyuyor galiba.
Usta neyi boyuyor? Bilmiyorum ki duvarı usta boyuyor galiba.
Neyi usta boyuyor? Bilmiyorum ki usta duvarı boyuyor galiba.
Neyi usta boyuyor? Bilmiyorum ki duvarı usta boyuyor galiba.
Kim duvarı boyuyor? Bilmiyorum ki usta duvarı boyuyor galiba.
Kim duvarı boyuyor? Bilmiyorum ki duvarı usta boyuyor galiba.
Duvarı kim boyuyor? Bilmiyorum ki usta duvarı boyuyor galiba.
Duvarı kim boyuyor? Bilmiyorum ki duvarı usta boyuyor galiba.
Asker neyi asıyor? Sanıyorum ki asker bayrağı asıyor herhalde.
Asker neyi asıyor? Sanıyorum ki bayrağı asker asıyor herhalde.
Neyi asker asıyor? Sanıyorum ki asker bayrağı asıyor herhalde.
Neyi asker asıyor? Sanıyorum ki bayrağı asker asıyor herhalde.
Kim bayrağı asıyor? Sanıyorum ki asker bayrağı asıyor herhalde.
Kim bayrağı asıyor? Sanıyorum ki bayrağı asker asıyor herhalde.
Bayrağı kim asıyor? Sanıyorum ki asker bayrağı asıyor herhalde.
Bayrağı kim asıyor? Sanıyorum ki bayrağı asker asıyor herhalde.
Solist neyi söylüyor? Emin değilim solist şarkıyı söylüyor galiba.
Solist neyi söylüyor? Emin değilim şarkıyı solist söylüyor galiba.
Neyi solist söylüyor? Emin değilim solist şarkıyı söylüyor galiba.
Neyi solist söylüyor? Emin değilim şarkıyı solist söylüyor galiba.

Kim şarkıyı söylüyor?	Emin değilim solist şarkıyı söylüyor galiba.
Kim şarkıyı söylüyor?	Emin değilim şarkıyı solist söylüyor galiba.
Şarkıyı kim söylüyor?	Emin değilim solist şarkıyı söylüyor galiba.
Şarkıyı kim söylüyor?	Emin değilim şarkıyı solist söylüyor galiba.
Sarraf neyi satıyor?	Sanıyorum ki sarraf kolyeyi satıyor herhalde.
Sarraf neyi satıyor?	Sanıyorum ki kolyeyi sarraf satıyor herhalde.
Neyi sarraf satıyor?	Sanıyorum ki sarraf kolyeyi satıyor herhalde.
Neyi sarraf satıyor?	Sanıyorum ki kolyeyi sarraf satıyor herhalde.
Kim kolyeyi satıyor?	Sanıyorum ki sarraf kolyeyi satıyor herhalde.
Kim kolyeyi satıyor?	Sanıyorum ki kolyeyi sarraf satıyor herhalde.
Kolyeyi kim satıyor?	Sanıyorum ki sarraf kolyeyi satıyor herhalde.
Kolyeyi kim satıyor?	Sanıyorum ki kolyeyi sarraf satıyor herhalde.
Hakim neyi okuyor?	Bilemiyorum ki hakim dosyayı okuyor galiba.
Hakim neyi okuyor?	Bilemiyorum ki dosyayı hakim okuyor galiba.
Neyi hakim okuyor?	Bilemiyorum ki hakim dosyayı okuyor galiba.
Neyi hakim okuyor?	Bilemiyorum ki dosyayı hakim okuyor galiba.
Kim dosyayı okuyor?	Bilemiyorum ki hakim dosyayı okuyor galiba.
Kim dosyayı okuyor?	Bilemiyorum ki dosyayı hakim okuyor galiba.
Dosyayı kim okuyor?	Bilemiyorum ki hakim dosyayı okuyor galiba.
Dosyayı kim okuyor?	Bilemiyorum ki dosyayı hakim okuyor galiba.
Çocuk neyi alıyor?	Bilemiyorum çocuk ekmeği alıyor muhtemelen.
Çocuk neyi alıyor?	Bilemiyorum ekmeği çocuk alıyor muhtemelen.
Neyi çocuk alıyor?	Bilemiyorum çocuk ekmeği alıyor muhtemelen.
Neyi çocuk alıyor?	Bilemiyorum ekmeği çocuk alıyor muhtemelen.
Kim ekmeği alıyor?	Bilemiyorum çocuk ekmeği alıyor muhtemelen.
Kim ekmeği alıyor?	Bilemiyorum ekmeği çocuk alıyor muhtemelen.
Ekmeği kim alıyor?	Bilemiyorum çocuk ekmeği alıyor muhtemelen.
Ekmeği kim alıyor?	Bilemiyorum ekmeği çocuk alıyor muhtemelen.
Mimar neyi çiziyor?	Bilmiyorum mimar planı çiziyor herhalde.
Mimar neyi çiziyor?	Bilmiyorum planı mimar çiziyor herhalde.
Neyi mimar çiziyor?	Bilmiyorum mimar planı çiziyor herhalde.
Neyi mimar çiziyor?	Bilmiyorum planı mimar çiziyor herhalde.
Kim planı çiziyor?	Bilmiyorum mimar planı çiziyor herhalde.
Kim planı çiziyor?	Bilmiyorum planı mimar çiziyor herhalde.
Planı kim çiziyor?	Bilmiyorum mimar planı çiziyor herhalde.
Planı kim çiziyor?	Bilmiyorum planı mimar çiziyor herhalde.
Doktor neyi yazıyor?	Tahmin ediyorum ki doktor raporu yazıyor galiba.
Doktor neyi yazıyor?	Tahmin ediyorum ki raporu doktor yazıyor galiba.
Neyi doktor yazıyor?	Tahmin ediyorum ki doktor raporu yazıyor galiba.
Neyi doktor yazıyor?	Tahmin ediyorum ki raporu doktor yazıyor galiba.
Kim raporu yazıyor?	Tahmin ediyorum ki doktor raporu yazıyor galiba.
Kim raporu yazıyor?	Tahmin ediyorum ki raporu doktor yazıyor galiba.
Raporu kim yazıyor?	Tahmin ediyorum ki doktor raporu yazıyor galiba.
Raporu kim yazıyor?	Tahmin ediyorum ki raporu doktor yazıyor galiba.
Adam neyi anlıyor?	Emin değilim adam konuyu anlıyor sanki.
Adam neyi anlıyor?	Emin değilim konuyu adam anlıyor sanki.
Neyi adam anlıyor?	Emin değilim adam konuyu anlıyor sanki.
Neyi adam anlıyor?	Emin değilim konuyu adam anlıyor sanki.

Kim konuyu anlıyor?	Emin değilim adam konuyu anlıyor sanki.
Kim konuyu anlıyor?	Emin değilim konuyu adam anlıyor sanki.
Konuyu kim anlıyor?	Emin değilim adam konuyu anlıyor sanki.
Konuyu kim anlıyor?	Emin değilim konuyu adam anlıyor sanki.
Aday neyi bekliyor?	Sanıyorum ki aday sınavı bekliyor galiba.
Aday neyi bekliyor?	Sanıyorum ki sınavı aday bekliyor galiba.
Neyi aday bekliyor?	Sanıyorum ki aday sınavı bekliyor galiba.
Neyi aday bekliyor?	Sanıyorum ki sınavı aday bekliyor galiba.
Kim sınavı bekliyor?	Sanıyorum ki aday sınavı bekliyor galiba.
Kim sınavı bekliyor?	Sanıyorum ki sınavı aday bekliyor galiba.
Sınavı kim bekliyor?	Sanıyorum ki aday sınavı bekliyor galiba.
Sınavı kim bekliyor?	Sanıyorum ki sınavı aday bekliyor galiba.
İşçi neyi taşıyor?	Sanıyorum işçi çuvalı taşıyor herhalde.
İşçi neyi taşıyor?	Sanıyorum çuvalı işçi taşıyor herhalde.
Neyi işçi taşıyor?	Sanıyorum işçi çuvalı taşıyor herhalde.
Neyi işçi taşıyor?	Sanıyorum çuvalı işçi taşıyor herhalde.
Kim çuvalı taşıyor?	Sanıyorum işçi çuvalı taşıyor herhalde.
Kim çuvalı taşıyor?	Sanıyorum çuvalı işçi taşıyor herhalde.
Çuvalı kim taşıyor?	Sanıyorum işçi çuvalı taşıyor herhalde.
Çuvalı kim taşıyor?	Sanıyorum çuvalı işçi taşıyor herhalde.
Bekçi neyi bağlıyor?	Emin değilim bekçi köpeği bağlıyor muhtemelen.
Bekçi neyi bağlıyor?	Emin değilim köpeği bekçi bağlıyor muhtemelen.
Neyi bekçi bağlıyor?	Emin değilim bekçi köpeği bağlıyor muhtemelen.
Neyi bekçi bağlıyor?	Emin değilim köpeği bekçi bağlıyor muhtemelen.
Kim köpeği bağlıyor?	Emin değilim bekçi köpeği bağlıyor muhtemelen.
Kim köpeği bağlıyor?	Emin değilim köpeği bekçi bağlıyor muhtemelen.
Köpeği kim bağlıyor?	Emin değilim bekçi köpeği bağlıyor muhtemelen.
Köpeği kim bağlıyor?	Emin değilim köpeği bekçi bağlıyor muhtemelen.
Komşu neyi suluyor?	Bilemiyorum ki komşu çiçeği suluyor galiba.
Komşu neyi suluyor?	Bilemiyorum ki çiçeği komşu suluyor galiba.
Neyi komşu suluyor?	Bilemiyorum ki komşu çiçeği suluyor galiba.
Neyi komşu suluyor?	Bilemiyorum ki çiçeği komşu suluyor galiba.
Kim çiçeği suluyor?	Bilemiyorum ki komşu çiçeği suluyor galiba.
Kim çiçeği suluyor?	Bilemiyorum ki çiçeği komşu suluyor galiba.
Çiçeği kim suluyor?	Bilemiyorum ki komşu çiçeği suluyor galiba.
Çiçeği kim suluyor?	Bilemiyorum ki çiçeği komşu suluyor galiba.
Kasap neyi besliyor?	Sanıyorum ki kasap kediyi besliyor galiba.
Kasap neyi besliyor?	Sanıyorum ki kediyi kasap besliyor galiba.
Neyi kasap besliyor?	Sanıyorum ki kasap kediyi besliyor galiba.
Neyi kasap besliyor?	Sanıyorum ki kediyi kasap besliyor galiba.
Kim kediyi besliyor?	Sanıyorum ki kasap kediyi besliyor galiba.
Kim kediyi besliyor?	Sanıyorum ki kediyi kasap besliyor galiba.
Kediyi kim besliyor?	Sanıyorum ki kasap kediyi besliyor galiba.
Kediyi kim besliyor?	Sanıyorum ki kediyi kasap besliyor galiba.
Kadın neyi seçiyor?	Bilemiyorum ki kadın meyveyi seçiyor herhalde.
Kadın neyi seçiyor?	Bilemiyorum ki meyveyi kadın seçiyor herhalde.
Neyi kadın seçiyor?	Bilemiyorum ki kadın meyveyi seçiyor herhalde.
Neyi kadın seçiyor?	Bilemiyorum ki meyveyi kadın seçiyor herhalde.

Kim meyveyi seçiyor?	Bilemiyorum ki kadın meyveyi seçiyor herhalde.
Kim meyveyi seçiyor?	Bilemiyorum ki meyveyi kadın seçiyor herhalde.
Meyveyi kim seçiyor?	Bilemiyorum ki kadın meyveyi seçiyor herhalde.
Meyveyi kim seçiyor?	Bilemiyorum ki meyveyi kadın seçiyor herhalde.
Dişçi neyi söküyor?	Emin değilim dişçi dolguyu söküyor galiba.
Dişçi neyi söküyor?	Emin değilim dolguyu dişçi söküyor galiba.
Neyi dişçi söküyor?	Emin değilim dişçi dolguyu söküyor galiba.
Neyi dişçi söküyor?	Emin değilim dolguyu dişçi söküyor galiba.
Kim dolguyu söküyor?	Emin değilim dişçi dolguyu söküyor galiba.
Kim dolguyu söküyor?	Emin değilim dolguyu dişçi söküyor galiba.
Dolguyu kim söküyor?	Emin değilim dişçi dolguyu söküyor galiba.
Dolguyu kim söküyor?	Emin değilim dolguyu dişçi söküyor galiba.
Çırak neyi biliyor?	Sanıyorum ki çırak sorunu biliyor galiba.
Çırak neyi biliyor?	Sanıyorum ki sorunu çırak biliyor galiba.
Neyi çırak biliyor?	Sanıyorum ki çırak sorunu biliyor galiba.
Neyi çırak biliyor?	Sanıyorum ki sorunu çırak biliyor galiba.
Kim sorunu biliyor?	Sanıyorum ki çırak sorunu biliyor galiba.
Kim sorunu biliyor?	Sanıyorum ki sorunu çırak biliyor galiba.
Sorunu kim biliyor?	Sanıyorum ki çırak sorunu biliyor galiba.
Sorunu kim biliyor?	Sanıyorum ki sorunu çırak biliyor galiba.
Kurye neyi taşıyor?	Emin değilim kurye paketi taşıyor galiba.
Kurye neyi taşıyor?	Emin değilim paketi kurye taşıyor galiba.
Neyi kurye taşıyor?	Emin değilim kurye paketi taşıyor galiba.
Neyi kurye taşıyor?	Emin değilim paketi kurye taşıyor galiba.
Kim paketi taşıyor?	Emin değilim kurye paketi taşıyor galiba.
Kim paketi taşıyor?	Emin değilim paketi kurye taşıyor galiba.
Paketi kim taşıyor?	Emin değilim kurye paketi taşıyor galiba.
Paketi kim taşıyor?	Emin değilim paketi kurye taşıyor galiba.
Anne neyi yapıyor?	Bilemiyorum anne yemeği yapıyor herhalde.
Anne neyi yapıyor?	Bilemiyorum yemeği anne yapıyor herhalde.
Neyi anne yapıyor?	Bilemiyorum anne yemeği yapıyor herhalde.
Neyi anne yapıyor?	Bilemiyorum yemeği anne yapıyor herhalde.
Kim yemeği yapıyor?	Bilemiyorum anne yemeği yapıyor herhalde.
Kim yemeği yapıyor?	Bilemiyorum yemeği anne yapıyor herhalde.
Yemeği kim yapıyor?	Bilemiyorum anne yemeği yapıyor herhalde.
Yemeği kim yapıyor?	Bilemiyorum yemeği anne yapıyor herhalde.
Şoför neyi yıkıyor?	Sanıyorum şoför taksiyi yıkıyor muhtemelen.
Şoför neyi yıkıyor?	Sanıyorum taksiyi şoför yıkıyor muhtemelen.
Neyi şoför yıkıyor?	Sanıyorum şoför taksiyi yıkıyor muhtemelen.
Neyi şoför yıkıyor?	Sanıyorum taksiyi şoför yıkıyor muhtemelen.
Kim taksiyi yıkıyor?	Sanıyorum şoför taksiyi yıkıyor muhtemelen.
Kim taksiyi yıkıyor?	Sanıyorum taksiyi şoför yıkıyor muhtemelen.
Taksiyi kim yıkıyor?	Sanıyorum şoför taksiyi yıkıyor muhtemelen.
Taksiyi kim yıkıyor?	Sanıyorum taksiyi şoför yıkıyor muhtemelen.
Bebek neyi izliyor?	Tahmin ediyorum ki bebek reklamı izliyor galiba.
Bebek neyi izliyor?	Tahmin ediyorum ki reklamı bebek izliyor galiba.
Neyi bebek izliyor?	Tahmin ediyorum ki bebek reklamı izliyor galiba.
Neyi bebek izliyor?	Tahmin ediyorum ki reklamı bebek izliyor galiba.

Kim reklamı izliyor?	Tahmin ediyorum ki bebek reklamı izliyor galiba.
Kim reklamı izliyor?	Tahmin ediyorum ki reklamı bebek izliyor galiba.
Reklamı kim izliyor?	Tahmin ediyorum ki bebek reklamı izliyor galiba.
Reklamı kim izliyor?	Tahmin ediyorum ki reklamı bebek izliyor galiba.
Terzi neyi dikiyor?	Bilmiyorum ki terzi düğmeyi dikiyor muhtemelen.
Terzi neyi dikiyor?	Bilmiyorum ki düğmeyi terzi dikiyor muhtemelen.
Neyi terzi dikiyor?	Bilmiyorum ki terzi düğmeyi dikiyor muhtemelen.
Neyi terzi dikiyor?	Bilmiyorum ki düğmeyi terzi dikiyor muhtemelen.
Kim düğmeyi dikiyor?	Bilmiyorum ki terzi düğmeyi dikiyor muhtemelen.
Kim düğmeyi dikiyor?	Bilmiyorum ki düğmeyi terzi dikiyor muhtemelen.
Düğmeyi kim dikiyor?	Bilmiyorum ki terzi düğmeyi dikiyor muhtemelen.
Düğmeyi kim dikiyor?	Bilmiyorum ki düğmeyi terzi dikiyor muhtemelen.
Bebek neyi istiyor?	Emin değilim bebek emziği istiyor galiba.
Bebek neyi istiyor?	Emin değilim emziği bebek istiyor galiba.
Neyi bebek istiyor?	Emin değilim bebek emziği istiyor galiba.
Neyi bebek istiyor?	Emin değilim emziği bebek istiyor galiba.
Kim emziği istiyor?	Emin değilim bebek emziği istiyor galiba.
Kim emziği istiyor?	Emin değilim emziği bebek istiyor galiba.
Emziği kim istiyor?	Emin değilim bebek emziği istiyor galiba.
Emziği kim istiyor?	Emin değilim emziği bebek istiyor galiba.

APPENDIX 2 - ETHICS COMMITTEE APPROVAL FORM (HACETTEPE UNIVERSITY)

Tarih: 15/06/2020
Sayı: E-35853172-300-00001113488
0001113488

T.C.
HACETTEPE ÜNİVERSİTESİ
Rektörlük

Sayı : 35853172-300
Konu : Engin Evrim ÖNEM (Etik Komisyon İzni)

SOSYAL BİLİMLER ENSTİTÜSÜ MÜDÜRLÜĞÜNE

Enstitünüz İngiliz Dil Bilimi Anabilim Dalı Doktora programı öğrencilerinden **Engin Evrim ÖNEM**'in **Doç. Dr. Emine YARAR** danışmanlığında hazırladığı **"Türkçede Eylem Önü Çalkalamanın İşlenmesi"** başlıklı tez çalışması Üniversitemiz Senatosu Etik Komisyonunun **09 Haziran 2020** tarihinde yapmış olduğu toplantıda incelenmiş olup, etik açıdan uygun bulunmuştur.

Bilgilerinizi ve gereğini saygılarımla rica ederim.

e-imzalıdır
Prof. Dr. Rahime Meral NOHUTCU
Rektör Yardımcısı

Hacettepe Üniversitesi Rektörlük 06100 Sıhhiye-Ankara
Telefon:0 (312) 305 3001-3002 Faks:0 (312) 311 9992 E-posta:yazimd@hacettepe.edu.tr İnternet Adresi: www.hacettepe.edu.tr
Sevda TOPAL

APPENDIX 3 - ETHICS COMMITTEE APPROVAL FORM (ERCİYES UNIVERSITY)

BAŞVURU NO: 96

SOSYAL VE BEŞERİ BİLİMLER ETİK KURULU
PROJE ONAY FORMU

Projenin Adı	"Türkçe'de Sözcük Dizimi Üzerine Bir Olay İlişkili Potansiyeller İncelemesi"
Projenin Niteliği	Doktora Tezi
Proje Araştırmacıları	Öğr. Gör. Engin Evrim ÖNEM (Sorumlu Araştırmacı) Doç. Dr. Emine YARAR (Danışman)
Sorumlu Araştırmacının Haberleşme Bilgileri	Erciyes Üniversitesi 15 Temmuz Yerleşkesi Yabancı Diller Yüksekokulu 1. Bina Oda: B06 38280 Melikgazi/Kayseri E-posta adresi: eonem@erciyes.edu.tr

KARAR:

Etik Kurulumuza başvuran ***Engin Evrim ÖNEM'in "Türkçe'de Sözcük Dizimi Üzerine Bir Olay İlişkili Potansiyeller İncelemesi"*** adlı Çalışması değerlendirilerek aşağıdaki sonuca ulaşılmıştır.

Proje etik açıdan uygun bulunmuştur. ☑
Projenin etik açıdan geliştirilmesi gerekmektedir. ☐
Proje etik açıdan uygun bulunmamıştır. ☐

27/11/2018

ADI SOYADI	**İMZA**
Etik Kurul Başkanı (Raportör) — Prof. Dr. Mustafa ARGUNŞAH	
Etik Kurul Başkan Yrd. — Doç. Dr. Kasım KARAMAN	
Üye — Prof. Dr. Celal YILDIZ	
Üye — Prof. Dr. Mehmet AKKURT	
Üye — Prof. Dr. Mustafa BAKTIR	
Üye — Prof. Dr. Mustafa DEMİRCİ	
Üye — Prof. Dr. Mustafa AKDAĞ	
Üye — Doç. Dr. Handan ZİNCİR	
Üye — Doç. Dr. Burak ADIGÜZEL	

APPENDIX 4 - INFORMED CONSENT FORM

Sayın katılımcı,

Bu çalışma Hacettepe Üniversitesi İngiliz Dilbilimi öğretim üyesi Doç. Dr. Emine Yarar yönetiminde yürütülen ”Türkçede eylem önü çalkalamanın işlenmesi” adlı doktora tezi için yapılmaktadır. Sözcük dizimi, basit tümcelerde bulunan Özne-Nesne-Eylem sözcüklerinin tümce içindeki yerleri ile ilişkilidir. Her dil için farklı sözcük dizimi çeşitleri bulunmakta ve Türkçede de sözcük dizimi altı farklı şekilde gerçekleşebilmektedir. Bu çalışmada ana dili Türkçe olan katılımcıların farklı sözcük dizimi içeren tümcelere yönelik verecekleri tepkiler incelenmek istenmektedir. Bunun için de katılımcılara eylemlerin aynı olduğu ancak farklı sözcük dizimlerine sahip soru ve cevap tümceleri bir yazılım ile bilgisayar ekranında sunulacaktır. Kendilerinden cevapların sorulara uygun kabul edilebilir olup olmadığını klavyedeki belirli tuşlara basarak değerlendirmeleri istenecektir. Katılımcıların tümcelere verecekleri tepkiler aynı bilgisayar programı ile kaydedilecek ve çalışma sonunda toplanan veriler incelenerek Türkçedeki sözcük dizimi üzerine bulgulara ulaşılacaktır. Bu araştırma için Hacettepe ve Erciyes Üniversitesi’nden izin alınmıştır.

Çalışmaya katılmak için anadili olarak Türkçe konuşan ve daha önce herhangi bir nörolojik ve psikolojik rahatsızlık yaşamadığını ve tam veya düzeltilmiş görmeye sahip olduğunu beyan eden on sekiz yaş üstü ve gönüllü olmak gerekmektedir: ilgili şartları sağlıyorsanız katılıp katılmamak tamamen sizin elinizdedir. Ayrıca, katıldıktan sonra istediğiniz anda vaz geçebileceğinizi ve bundan dolayı da hiçbir sorumluluk almayacağınızı da belirtmek isteriz. Bilgisayar üzerinde testi doldurmak hiçbir zarar vermese de çalışma farklı zamanlarda yapılacak ve her biri yaklaşık on beş dakikan toplam yaklaşık otuz dakika sürecek iki bölümden oluşmaktadır. Rahatsızlık hissedildiğinde çalışmadan çekilebilirsiniz. Rahatsızlığınızın giderilmesi için gereken yardım da mutlaka sağlanacaktır.

Çalışmada hiç bir şekilde kimlik bilgileriniz toplanmayacak veya kaydedilmeyecektir. Sadece çalışmanın başında katılımcıların yaş ve cinsiyet bilgileri anonim olarak toplanacak ve sadece bu çalışmanın amacı kapsamında veya bilimsel çalışmalar amacıyla değerlendirilecektir.

Onay vermeden önce aklınıza gelen veya gelecek her türlü sorunuz varsa çekinmeden sorabilirsiniz. Çalışma bittikten sonra da bize aşağıdaki telefon ya da e-posta ile ulaşarak sorularınızı sorabileceğinizi ve sonuçlar hakkında bilgi isteyebileceğinizi unutmayın.

Tarih:

Katılımcı:
Adı, soyadı:
Adres:
Tel:
İmza:

Araştırmacı
Adı, Soyadı: Engin E. Önem
Adres:
Tel:
e-posta:
İmza:

APPENDIX 5 - ORIGINALITY REPORT

HACETTEPE UNIVERSITY
GRADUATE SCHOOL OF SOCIAL SCIENCES
Ph.D. DISSERTATION ORIGINALITY REPORT

HACETTEPE UNIVERSITY
GRADUATE SCHOOL OF SOCIAL SCIENCES
ENGLISH LINGUISTICS DEPARTMENT

Date: 08th June, 2022

Thesis Title : Processing of preverbal scrambling in Turkish

According to the originality report obtained by myself by using the Turnitin plagiarism detection software and by applying the filtering options checked below on 08th June, 2022 for the total of 173 pages including the a) Title Page, b) Introduction, c) Main Chapters, and d) Conclusion sections of my thesis entitled as above, the similarity index of my thesis is 15 %.

Filtering options applied:

1. ☒ Approval and Decleration sections excluded
2. ☒ Bibliography/Works Cited excluded
3. ☐ Quotes excluded
4. ☒ Quotes included
5. ☒ Match size up to 5 words excluded

I declare that I have carefully read Hacettepe University Graduate School of Social Sciences Guidelines for Obtaining and Using Thesis Originality Reports; that according to the maximum similarity index values specified in the Guidelines, my thesis does not include any form of plagiarism; that in any future detection of possible infringement of the regulations I accept all legal responsibility; and that all the information I have provided is correct to the best of my knowledge.

I respectfully submit this for approval.

08th June, 2022

Name Surname:	Engin Evrim ÖNEM
Student No:	N14246713
Department:	English Linguistics
Program:	Doctorate
Status:	☒ Ph.D. ☐ Combined MA/ Ph.D.

ADVISOR APPROVAL

APPROVED.

Associate Professor Dr. Emine YARAR