Hacettepe University Graduate School of Social Sciences

Department of English Linguistics

ANIMACY EFFECT ON TURKISH OBJECT RELATIVE CLAUSE PRODUCTION AMONG YOUNG ADULT NATIVE SPEAKERS OF TURKISH

Aybüke UZUNCA

Master's Thesis

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ÖZET

UZUNCA, Aybüke. *Ana Dili Türkçe Olan Genç Yetişkinler Arasında Kullanılan Nesne İlgi Tümceciklerinde Görülen Canlılık Etkisi*, Yüksek Lisans Tezi, Ankara, 2021.

Çalışmanın amacı, Türkçe nesne ilgi tümcecikleri üzerindeki canlı isimlerin etkisini ve bu etkinin sürekliliğini test etmektir. Böylelikle ilgi tümceciklerinin üretiminde sürece karışabilecek bazı anlamsal (sıklık vb.) veya yapısal (yapısal zorluk vb.) değişkenler de incelenmiştir. Bu nedenle anadili Türkçe, genç yetişkinlerden oluşan iki farklı gruba (n_{G1}=46, n_{G2}=58) Resim Betimleme ve Üstdil Farkındalığı Testleri uygulanmıştır. İki grup verisi birleştirildikten sonra toplam veri üzerinde görülen canlılık etkisi Ki-Kare testi ile ölçülmüş ve her iki veri toplama aracından elde edilen katılımcıların ilgi tümlecikleri tercihleri, Kappa testi ile kıyaslanarak görülen canlı ad etkisinin sürekliliğine bakılmıştır. Son olarak, ODTÜ Türkçe Derleminden çekilen 105 ilgi tümceciği ve 657 basit cümle yapısı da çalışmaya dahil edilerek, bu yapıların kullanımları katılımcıların kullandığı ilgi tümcecikleri ile iki boyutlu z-testi kullanırak olası bir sıklık veya yapısal benzerlik/kolaylık faktörünün etkisini test etmek amacıyla kıyaslanmıştır.

Sonuçta her iki veri toplama aracında da kurulan ilgi tümcelerinde istatistiksel anlamda belirgin bir canlılık etkisi görülmüştür; ancak Kappa sonuçları bu iki çalışmanın verileri arasında istatistiksel bir uyuşma belirtmemiştir. Bu uyuşmazlığın ise iki araç arasındaki görsel belirginlik veya zorluk derecesi farkından kaynaklanabileceği kanaatine varılmıştır. Buna ek olarak derlemde kullanılan ilgi tümcecikleri de belirgin oranda canlılık etkisi göstermişlerdir ve bu sonucun başta Uyumlama Hipotezi doğrultusunda bir sonuç olabileceği düşünülse de iki boyutlu z-test sonuçları, Türkçe ilgi tümcecikleri üzerinde Uyumlama Hipotezinin öngördüğü faktörlerden başka anlamsal (somutluk), söylemsel (konulaştırım) veya türsel (planlı) faktörlerin de etkisinin olabileceğini göstermiştir. İlgi tümceciklerinin aksine derlemdeki basit tümceler, canlılık değişkeninden etkilenmemiş; ancak ilginç bir şekilde katılımcıların tümceciği tercihleri ile bazı oransal benzerlikler göstermişlerdir. Bu benzerliğin arkasında katılımcıların her iki araçta da basit tümce

yapılarına benzer olarak yoğun oranda etken yapıda nesne ilgi tümceleri tercih etmelerinin olduğu düşünülmüş ve basit cümleler, etken ilgi tümcecikleriyle sözcük dizilişi ve temel üye yapısı bakımından pasif ilgi tümceciklerine oranla daha çok benzerlik gösterdiğinden dolayı katılımcıların böyle bir eğilime gittiği sonucuna varılmıştır.

Anahtar sözcükler: Canlı Ad etkisi, Türkçe, Nesne İlgi Tümcecikleri, Edilgen İlgi Tümcecikleri, Psikodilbilim, İlgi Tümceciği Üretimi

ABSTRACT

UZUNCA, Aybüke. *Animacy Effect on Turkish Object Relative Clause Production among Young Adult Native Speakers of Turkish*, Master's Thesis, Ankara, 2021.

This study investigates animacy influence on Turkish RC formation and its consistency in different tasks/contexts. Meanwhile, the interference of semantic (e.g. frequency) and syntactic variables (e.g. structural difficulty) in RC formation is also analysed. Therefore, a Picture Description and Metalinguistic Awareness Task were applied to two participant groups composed of young adult Turkish native speakers (n_{G1}=46, n_{G2}=58). After combining the data of groups, animacy effect on RC passivization in each task was tested by Chi-square test and their RC outcomes were compared by Kappa to check the consistency of the animacy influence. Finally, RC and statements in METU Turkish Corpus were analysed and outcomes of 105 RCs and 657 statements data were compared with participant RC use outcomes by using Two-Proportions Analysis to check a possible frequency or structural simplicity effect on RC formation.

In the end, a significant effect of animacy was observed in both tasks; however, the comparison outcomes attested no agreement between the tasks in terms of RC preferences. Thus, two factors were assumed to have interfered in RC production process in either task: visual salience and task difficulty. Corpus RCs also demonstrated a significant animacy influence, which was initially associated with the fine-grain version of Tuning Hypothesis; however, the two-proportions test results indicated some other factors that could have influenced the RC preferences in corpus like genre or some other semantic (e.g. concreteness) or discourse (e.g. topicalization) factors. Meanwhile, corpus statements did not demonstrate any reactions to animacy, yet they were concluded to share more similarities with Object RCs than passive RCs in terms of argument structure and word order, which were presumed to be the reasons for high rate of active ORC preference in participant data and for the statistical similarities between participant RC and corpus statement preferences as shown by two-proportions test.

Keywords

Animacy Effect, Turkish, Object Relative Clauses, Passive Relative Clauses, Psycholinguistics, Relative Clause Production

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LIST OF ABBREVIATIONS

1PL	First Person Plural	NOM	Nominative Case
1SG	First Person Singular	NORM	Normality
3SG	Third Person Singular	NP	Noun Phrase
ABL	Ablative Case	NPAH	Noun Phrase Accessibility Hierarchy
ACC	Accusative Case	OBL	Oblique marker
ACT	Active	OBL V S	Oblique (by phrase)-Verb-Subject
AN-AN	Animate-Animate Condition	OB.REL	Object Relative Clause Marker
AN-IN	Animate-Inanimate Condition	ORC	Object Relative Clause
COM	Commutative/Instrumental Case	PART	Participle
DAT	Dative Case	PASS	Passive
DLT	Dependency Locality Theory	PAST	Past Tense
DOM	Differential Object Marking	PL	Plural
FUT	Future Tense	POSS	Possessive
G1	Participant Group 1	PROG	Progressive Tense
G2	Participant Group 2	RC	Relative Clause
GEN	Genitive Case	SDH	Structural Distance Hypothesis
IO	Indirect Object	SOV	Subject-Object-Verb
L1	First / Native Language	SRC	Subject Relative Clause
L2	Second / Foreign Language	SUB.REL	Subject Relative Clause Marker

L3	Third Language	S-V Agreement	Subject-Verb Agreement
LDH	Linear Distance Hypothesis	SVO	Subject-Verb-Object
LOC	Locative Case	VAR	Variable
MTC	METU Turkish Corpus	WDH	Word Order Canonicity Hypothesis
NEG	Negative		

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INTRODUCTION

Relative clause processing and conceptual accessibility issues have been discussed a lot in many cross linguistic studies in the field of psycholinguistics. Within the frame of conceptual accessibility, animacy has been one of the most prominent and controversial semantic feature that has been discussed by means of various studies on different languages. There have been some studies proving that animacy increases the rate of passivization in RCs (Vonk & Schriefers, 2002; Gennari & MacDonald, 2008; Hsiao & MacDonald, 2015; Montag & MacDonald, 2009; Wu, Kaiser & Andersen, 2012) whereas there have been some others claiming that there is no such an effect of animacy (Gennari & Loui, 2008). Though the semantic feature of animacy has been the main objective of most research on the RCs in different languages, most Turkish studies considered the animacy influence as only one of the variants that could have interfered the study outcome and the feature of animacy has not been identified as the main objective of the study (Kırkıcı, 2004; Özçelik, 2004; Marinis & Zeyrek, 2015; Başer, 2018; Boran, 2018, Turan, 2018). Therefore, there is a need for such studies with a more systematic approach in order to shed a light for future research concerning the conceptual accessibility and language production relation issue. Reckoning that need, the current research is going to check how Turkish native speakers react to the animacy influence when they are expected to form Turkish RCs in two different contexts, and subsequently it is also going to check how the animacy feature interacts with other factors like frequency or structural difficulty. By considering those objectives and scope, the following chapter of the study is going to supply a brief introduction and background information related to the scope of the study. Besides, the aims of study will be explained in a more detailed way together with the research questions and possible research limitations. And finally, the chapter is going to end with an overview of the whole thesis.

CHAPTER 1:

BACKGROUND TO THE STUDY

Psycholinguistics is a field of study that has tried to analyze and understand language processing procedures and principles from different perspectives such as language comprehension and production, vocabulary storage and access, brain activities during a linguistic task, first language acquisition or linguistic impairments together with their reasons. On account of both their practicality of application and cross linguistically controversial outcomes, language production and the factors affecting language production have taken up a considerable amount of space within the literature of previous psycholinguistic studies (Dewart, 1979; Bock & Warren, 1985; Bock, Loebell & Morey 1992; Ferreira 1994; Feleki & Branigan, 1997; Gennari & MacDonald, 2008; Montag & MacDonald, 2009; Hsiao & Mac Donald, 2015; Bulut, Yarar & Wu, 2019; etc.)

The language production system can be called a compilation of subsystems starting with the conceptualizer and ending with the articulator. Being the highest subsystem, the conceptualizer is assumed to have a connection with a more general cognitive level. The bits of information that come from that cognitive level is passed from conceptualizer to the formulator, and finally to the articulator (Levelt, Roelofs & Meyer, 1999). The sentence production is assumed to proceed incrementally, which means that each bit of information is received from a higher level and it is transferred to the next lower level after the processing is completed. Meanwhile, the processor does not need a complete message. Therefore, incremental processing in both comprehension and production continues in two ways:

- The processor processes the current information.
- It tries to guess the upcoming information and creates expectations about the rest of the sentence without waiting for the other bits of information.

Within such an incremental processing model in language production, the information flow is manifested in a unidirectional way, and no interaction takes place between levels (cf. Levelt 1989; Kempen & Hoenkamp, 1987). Therefore, language processing holds only from the point that information is selected from a model onward.

In mental model building for comprehension, the flow of information changes its direction (from the language system towards mental model), but the incrementality of processing remains the same (Garnham 1997, 2001). Another claim related to the interface between production and comprehension is that the order in which information is added to a speaker's mental model may determine the order in which the information is chosen for the utterance-to-be. However, this might not be the case all the time. Thus, the question of 'how the information is chosen by the language processor' shows up. To explain this phenomenon, linguistic analyses organized so far have come up with some various precedence factors that are basically called hierarchies (for a discussion of hierarchies, cf. Allan 1983; Siewierska, 1988). These precedence factors may be referent oriented (as in animate < inanimate) or event / discourse oriented (as in agent < patient; topic < focus; given< new, etc.), and these factors may put an effect on the word order selections depending on the cumulative sum of the rankings in each language (Allan, 1983).

Similarly, Prat-Sala and Branigan (2000) brought a new term called 'accessibility' to describe these precedence factors, which means the relative ease in which concepts may be retrieved from memory.

At this point, Bock and Warren (1985) attracts attention to the point that conceptual accessibility should not be confused with lexical accessibility since those two are two different processing procedures taking place two different levels of language production. Lexical accessibility is related to how easy to retrieve the representations of word forms (written/phonological) from memory. On the hand, the other one is all about recovering the concepts from the memory. For example, a person can visualize an object or a person but

cannot remember the name, which means that they can access the concept but cannot access the lexical representation of that. At the end of their study on English declaratives, datives and phrasal conjuncts, Bock and Warren (1985) found an evidence for the fact that conceptual accessibility is closely linked to the hierarchy of grammatical relations, which means that the more accessible concepts such as animates were more likely to appear in higher grammatical positions such as Subject position in declaratives while they appear in Indirect Object position in dative constructions according to their observations.

Similar to the findings of Bock and Warren (1985), most sentence production models examine the mapping of conceptually accessible elements to their grammatical roles and the determination of linear word order procedures in two different levels of language production process. Garret (1975, 1980) names those two different levels respectively functional and positional levels. Depending on the theory, functional level is mainly responsible for recovering the semantic representation of a word from the lexicon and assigning them to a particular relational roles within a structure. Meanwhile, positional level is in the authority of serial-ordering process of those functional representations of the chosen concepts, and they are also responsible for retrieving and matching the phonological representations of those concepts during the process. This means that serial word order is affected by conceptual accessibility influence indirectly. Nevertheless, Bock and Warren (1985) claims that those two processes might sometimes find a common ground in which more accessible elements are represented by more accessible words thanks to their frequent use even though they are different processes dealing with lexical and conceptual accessibility separately.

Though Garret (1975,1980) suggested the change in linear word order is only a sub-result of the grammatical function assignment of conceptually more accessible elements, some flexible word order languages proved the opposite for their declarative sentences (Prat Sala, Shillcock and Sorace, 2000; Feleki, 1996; Prat Sala & Branigan, 2000; Solak, 2007). Those studies proved that animate concepts are only placed in sentence initial positions by

protecting their grammatical functions thanks to the rich morphological nature of the language they belong to.

In spite of the controversial results gained at the end of the cross linguistic studies regarding declaratives, studies on RC data bore results that were more in line with the assertions put forward by Bock and Warren regarding grammatical function assignment issue (Vonk & Schriefers, 2002; Gennari & MacDonald, 2008; Hsiao & MacDonald, 2015; Montag & MacDonald, 2009; Wu, Kaiser & Andersen, 2012) even though there were still some exceptions (Gennari & Loui, 2008). The main reason for that outcome could be related to the relatively fixed nature of RCs compared to their non-relativized versions as in the case of Turkish RCs and statements and their more complex nature and variations depending on the language (such as head-initial or head-final) make them more attractive topics to examine when working on conceptual accessibility and sentence production relation.

As stated above, Turkish RCs has a more fixed word order compared to the statements, and this raises the question whether Turkish RCs can also demonstrate the conceptual accessibility influence as in the form of grammatical function assignment as was suggested by Bock and Warren (1985), or it is not going to be affected at all as in the case of Greek RCs (Gennari & Loui, 2008) and Turkish statements having a relatively flexible-word order (Solak, 2007). Although Turkish RCs have been studied by many researchers before in order to understand sentence processing in Turkish (Kırkıcı, 2004; Özçelik, 2004; Marinis & Zeyrek, 2015; Başer, 2018; Boran, 2018, Turan, 2018), none of them checked the influence of conceptual accessibility as the main objective of the research. Therefore, more systematic and additional studies are required in Turkish literature to check the conceptual accessibility influence on RC production as the main objective and to include in and to contribute to the cross linguistic studies concerning the topic.

1.1. STATEMENT OF THE PROBLEM

As it was stated in the previous section, the starting point of the thesis was the lack of systematic research in Turkish RCs concerning the direct animacy influence on their formation. Previous research on the topic was mainly composed of comprehension or production studies regarding the Subject-Object RC asymmetry based on Keenan and Comrie's Accessibility Hierarchy or on RC attachment preferences of Turkish native speakers (Kırkıcı, 2004; Özçelik, 2004; Özge et al. 2009; Özge, et.al., 2010; Özge et.al., 2015; Başer, 2018; Boran, 2018, Turan, 2018). Apart from the similarity among their research interests, the results of most of those studies belong to only one data resource: participant outcomes. The number of research evaluating RC processing in terms of distribution effect by utilizing also corpus data is quite low in Turkish (Bulut, Yarar & Wu, 2019).

Even though animacy influence of animacy has not primarily been studied on Turkish RCs yet, it has been examined on other structures such as statements in Turkish (Solak, 2007) before. However, the results of the study conflicted with what most sentence production theories suggested related to conceptual accessibility effect on structures (Bock & Warren, 1985; Garret, 1975, 1980) as it was summarized in the previous section. Therefore, this might raise the claim that the shape of conceptual accessibility influence may change depending on the flexibility rate of the default word order of clauses within a language and Turkish RCs provide a perfect basis with its fixed worder to cross check the animacy influence on both RCs and statements in Turkish. Since the Turkish RCs have not been analyzed in detail in terms of either animacy or conceptual accessibility influence before, this also causes a gap in the literature that needs to be filled.

1.2. AIM OF THE STUDY

Considering all the gaps mentioned in the previous section, the main objective of the current study to utilize the semantic feature ‘animacy’ to test whether conceptual accessibility can have an influence on RC formation process during the sentence production procedure of Turkish native speakers.

Besides checking a possible animacy influence on the RC production of Turkish native speakers, the study also aims to figure out how consistent the animacy influence will be in different conditions by making use of a data triangulation in its methodological approach when collecting the data.

Another aim of the study was to figure out whether the animacy influence is a feature that has been learnt by the native speakers of Turkish by means of high amounts of exposure in time. To be able to make some comments on that hypothesis, RC use in Turkish corpus is also going to be crosschecked with participant data.

Next, the RC outcomes will be compared with the statements data to be able to check whether animacy influence on Turkish RCs as a fixed word order clause shares any similar features with the one on Turkish statements as a flexible word order clause.

The final and the most general aim that is intended to be achieved within the scope of the current study is to ratiocinate about the possible processing mechanisms behind sentence/clause production process in Turkish by making use of animacy effect on RC production. Based on that aim, the outcomes of different data collected from both participants and Turkish corpus are going to analyzed and evaluated within the light of different theoretical approaches to RC processing.

In the following section, the research questions of the current study are going to be presented.

1.3. RESEARCH QUESTIONS

Within the light of all the aims provided in the previous section, the research questions in the following are aimed to be answered at the end of the current thesis:

1. Does animacy affect the relative clause production in Turkish?

    1.a. If animacy affects relative clause production, does the consistency of animacy influence change depending on the nature of the task or context?

    1.b. If no effect of animacy is observed, do structural factors outweigh the effect of animacy in relative clause production?

2. Is there a relationship between animacy and the frequency of the way Turkish RCs utilized within context?

    2.a. If frequency effect is observed, how does it affect the Turkish native speakers' relative clause productions?

    2.b. Do other structural formations like statements affect Turkish native speakers' relative clause productions?

1.4. OVERVIEW OF THE SECTIONS

The current thesis comprises five chapters in total and brief information regarding each chapter will be provided in the following of this section of the study.

The first chapter serves as an introduction to the thesis by providing a background information related to the topic of the thesis which is animacy influence on RC production in Turkish. In the statement of the problem part, possible gaps in all the studies concerning Turkish RCs are defined and how those gaps can be closed is explained in the aims of the study part in the following. Then, the research questions of the current study are provided within the light of those aims presented in the aims of the study part and an outline of all the sections are included in the final section of the chapter one.

The second chapter provides a comprehensive literature review related to conceptual accessibility hierarchy and its relations to sentence formation. Meanwhile, it also provides some previous work concerning animacy influence on word order and sentence formation together with some other alternative explanations to the relationship between animacy and grammatical function assignment. In addition to the detailed explanation of conceptual accessibility and how it works in sentence production process in different languages, the typological features of Turkish RCs are introduced in the following section of the chapter. Within that section Turkish RC formation is demonstrated from all aspects including their word order, morphological characteristics and passivization. Then, different theoretical frameworks regarding RC formation are shared under three main headlines: memory-based accounts, syntax-based accounts and discourse-based accounts. In the final section of the chapter, the previous cross linguistic studies concerning the animacy and RC formation relation are shared.

In the third chapter, the methodology of the thesis is demonstrated. The first section of the third chapter consists of the details related to pilot study whereas the second section gives the details regarding the main study part of the thesis. In both sections, the details of participant profile, data collection tools, procedures, data analyses together with their rationales and the results are presented in detail.

The fourth chapter contains a discussion of the outcomes of the study within the light of theoretical framework and the studies focusing on RCs and animacy relation provided in the literature review section. Meanwhile, unexpected research results are supported by additional theories and studies, and the connection between animacy and other factors such as frequency or structural difficulty is evaluated by making use of the statistical outcomes shared in the previous chapter.

The fifth and the final chapter of the thesis includes the conclusion of the thesis. In this chapter, the research questions asked in the introduction chapter are answered. Furthermore, it also supplies some recommendations for future research after discussing the limitations of the current thesis.

CHAPTER 2:

REVIEW OF LITERATURE

In the present chapter, firstly, animacy feature and the hypotheses concerning its influence on sentence processing will be explained in detail. Then, typological features of Turkish relative clauses will be introduced. After that, a theoretical framework including accounts that try to explain relative clause processing from memory-based, syntactic and discourse-based perspectives will be covered. And finally, some cross linguistic studies related to animacy effect on relative clause processing including Turkish will be shared.

2.1. CONCEPTUAL ACCESSIBILITY HYPOTHESIS AND ANIMACY

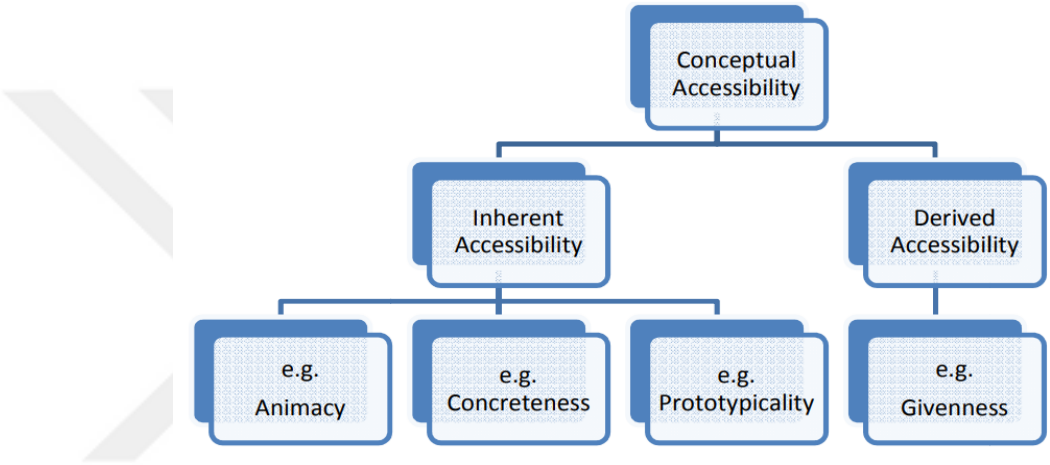
As it was stated above, the term accessibility stands for the ease with which the mental representation of some potential referents can be activated in, or retrieved from memory (Bock & Warren, 1985). Being in connection with incremental language processing account, Bock and Warren (1985) put forward that easily recalled items are included in the processing procedure first in language production, whereas less easily recalled ones are included later.

When determining the conceptual accessibility value of an entity, mainly two sources play the major role: inherent accessibility and derived accessibility. Inherent accessibility is related to intrinsic semantic features of the entities like ‘animacy’, ‘concreteness’ and ‘prototypicality’, and they do not have a tendency to show alterations based the context. In contrast, derived accessibility is prone to change with respect to either linguistic or non-linguistic contexts. For instance, ‘givenness’ feature as an indicator of discourse salience could be included in this category (Prat-Sala & Branigan, 2000, p. 169). Assembling the accessibility factors will naturally strengthen the probability of a concept to be chosen first by the processor according to the ‘conceptual accessibility account’ of Prat-Sala and

Branigan (2000). An overall demonstration of all these accessibility factors discussed above are provided in Figure 1 below:

Figure 1

Demonstration of Accessibility Factors



Note. Reprinted from ‘’Animacy effect on sentence structure choice: A study on Turkish learners of L2 English,’’ by H.G. Solak, 2007, Master’s thesis, p. 15. Retrieved from https://etd.lib.metu.edu.tr/upload/12608908/index.pdf

Within the demonstration of conceptual accessibility factors above, the current study aims to concentrate especially on the ‘animacy’ factor under the category of inherent accessibility.

2.1.1. What is Animacy?

Although animacy can simply be defined as the state of being alive (‘Animacy,’ n.d.), its meaning in accessibility account is indeed much more different than the biological one since it is language-dependent and the boundaries of animacy can show some alterations

depending on language. To illustrate, German people cannot ‘futtern' (feed)’ normal green plants in a way English people do since animates in German language include humans, animals and immortal/imaginary beings that are human-like or animal-like. So, the concept of animacy is indeed a learned category by the native speakers of different language groups though it has a biological basis (Ferreira, 1994).

In addition to the example in German, the semantic feature ‘animacy’ has always been observed and examined in various languages on syntactic and morphological basis. To exemplify, animacy has proven to play a significant role in determining grammaticality both in syntactic and morphological conditions like case marking, voice selection or agreement systems. Related to the topic, Rosenbach (2008) worked on genitive constructions in English such as postnominal of and prenominal ‘s to show how the animacy feature of a noun would influence the choice between these two genitive constructions. On the other hand, Folli and Harley (2008) tried to figure out whether animacy plays a role in selecting external arguments and came up with the idea that there is a syntactic reflex deciding on the nature of the complement of verb depending on the animacy of nominals. Additionally, they put forward that the source of animacy that causes such kind of animacy effect was the ’teleological capability’ of referent of a noun. What was meant by ‘teleological capability’ was ‘the inherent qualities and abilities of an entity to participate in the eventuality denoted by the ‘predicate’. As for the studies in Turkish, Sezer (1980) was the first researcher who concentrated on animacy effects on Turkish grammar by emphasizing the animacy influence on the morphosyntax of verbal agreement marking. Sezer (1980) claimed that the overt marking of third person plural agreement depends on the [±animate] feature of the subject phrases by adding the [+animate] subjects allow for overt third person plural marking in Turkish whereas [-animate] subjects do not license that and only allow for abstract marking. In another study held by Nakipoğlu-Demiralp (2003), a close relationship between the tense/aspect marker of a verb and the referentiality of its implicit subject was discovered. It is further explained that if a verb is marked by an aorist marker, the implicit subject of the impersonal passive structure obtains an indefinite interpretation. Moreover, Bamyacı, et.al. (2014) has a study with a main

focus on the relationship between animacy and Subject-Verb agreement in Turkish. In the study, they empirically tested the hypothesis "Verb can be either in singular or plural form in case of an animate plural subject whereas the verb can only be used in singular form in case of an inanimate plural subject in Turkish." In the study, a magnitude estimation method was utilized to be able to check the well-formedness of sentences including a subject and a verb in plural form according to two different age groups ($Mean_{G1}$: 28, $Mean_{G2}$:43). The results of research demonstrated that plural agreement in Turkish is sensitive to animacy and even its fine-grain distinctions. They figured out the that singular marking decreased in number when the subject was inanimate with a teleological capacity or it was a body part. Besides, the marking preferences were proved to attest some differences based on the age of their participant groups. Older group of participants was observed to prefer singular marking much less than younger group for all conditions and the singular marking was almost absent for especially sentences with an animate subject in their preferences. Additionally, the older group seemed to be more susceptible to finer-grain distinctions of animacy. The final study proving how deeply animacy is entrenched in Turkish grammar belonged to Krause and Heusinger (2019), and the focus of their study was differential object marking (a.k.a. DOM which means optional marking of the DO within a language) and its relation with animacy. The starting point of the study was the grouping of DOM languages based on definiteness and animacy, and Turkish was placed under languages making DOM based on definiteness. However, Acceptibility Judgement Test results of Turkish speakers demonstrated that animacy also had a significant influence on DOM in Turkish. Similar to the gradient effect observed on S-V agreement in Bamyacı et.al.'s (2014) study, DOM in Turkish also proved to be susceptible to the gradient effect of animacy.

2.1.2. Animacy Effect on Word Order

As for the effects of animacy as a semantic feature in language production, its most commonly known influence is so-called 'animacy first' tendency in referent processing,

and consequently in word order. There are current discussions on how animacy feature can be influential in determining the word order or the structure of sentences. The studies that have been conducted in various languages by now have led to three main approaches to animacy effect on structure / word order choices: thematic role assignment (Ferreira 1994), grammatical function assignment (e.g. Bock, Loebell & Morey, 1992), and the effects independent of both role and function assignment (e.g. Feleki & Branigan, 1997).

To start with the first approach, Ferreira (1994) claimed that the distribution of active passive sentences in production depends on the relative accessibility of the verb's thematic roles. In the study conducted by her, the participants were given two nouns and one verb, and they were expected to form sentences by using these items. As a result, the participants were observed to produce passive constructions more when they met a theme-experiencer verb than when they met an agent-theme or experiencer-theme verbs. Theme-experiencer verbs that are included in the study were the types of verbs that denote an action where something/someone causes a change in the psychological condition of a human animate participant (aka experiencer). Some examples for these verbs are *surprise, please*, or *annoy*, etc. (Belletti & Rizzi, 1988; Grimshaw, 1990; Levin & Rappaport, 1986; Cupples, 2002). The main point that Ferreira (1994) made about thematic role and animacy relation was that experiencer role assigned to a noun (e.g., to the *mother* in "The child/gift pleased the mother") is more significant than theme or cause role (e.g., *the child* or *gift*). Therefore, in theme-experiencer conditions passivization is done so as to place a conceptually more significant concept (experiencer) before a component that is conceptually less significant (theme). Naturally, she claims that conceptually the most important component is usually used in subject position (e.g. The mother was pleased by the child/gift.) with the help of passivization. On the other hand, the weakness of this approach is that it does not comply with agent-theme verb types since agent always takes the sentence initial position and leads to active sentence formation all the time. However, there were studies (Bock, Loebell & Morey, 1992; Teufel, Branigan, & Feleki, 1996; Prat Sala, 1997) proving that animacy effects motivate the formation of passive structure occurrences in which patient comes

before agent, and show that animacy effects cannot be reduced to only thematic role influence.

Similarly, the second approach also stems from the tendency of retrieving the animate concepts first and placing them in sentence initial position (Clark 1965; Bates & MacWhinney, 1982; Bock, 1982; Bock, 1987; Bock, Loebell, & Morey, 1992). Branigan, et.al (2008) has established that there is a direct link between animacy, grammatical function assignment and word order. Especially in English, the animate first approach was regarded as subject hood and the tendency becomes more vivid when the structure has one animate patient and one inanimate agent / causer. To bring the animate entity to the sentence initial position, the animate patient is moved to the subject position with the help of passivization in English (*The boy was hit by the truck* is preferred over *The truck hit the boy*). This passivization example also shows that there is another mechanism or rule other than thematic roles (agent or patient property) that moves the animate nouns to sentence initial position (McDonald et al., 1993). This view is also quite compatible with the incremental nature of language processor since the earliest planned and accessed structure occupies the earliest position within a sentence (De Smedt & Kempen, 1987; Kempen & Hoenkamp, 1987; Levelt, 1989). Nevertheless, studies similar to the one conducted by Prat Sala (1997) on Spanish and Catalan speakers, demonstrated that in languages that allow both scrambling and passivization, animate objects do not have to move to the subject position of the new passive sentence. Instead, they could only be scrambled to the beginning of the sentence by protecting their object function without needing passivization. This means that animate-first tendency cannot be directly related to grammatical function assignment.

Finally, the studies towards the third approach, as suggested above, supported that animacy- first effects are concerned about neither thematic nor grammatical function assignment. To start with the first one, animate noun priority cannot be directly linked to thematic role function assignment because languages like English allow patients to come

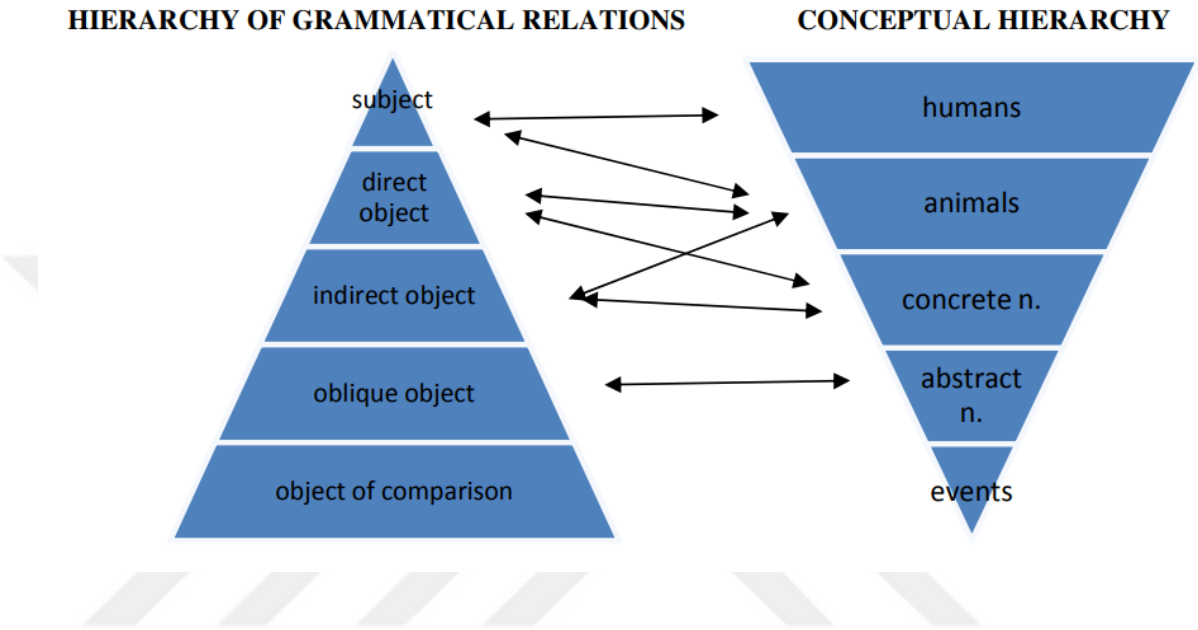
in sentence initial positions if the patient of the sentence is animate, which shows that agents are not necessarily preferred in sentence initial positions. They do not all the time have to refer to an animate noun, either. As for the relationship between animacy and grammatical function assignment, it may be erroneous as there are some languages like Turkish that have a flexible word order and they can allow the objects of sentences to come in sentence initial position in case of need (Solak, 2007). This also proves that subjects are not necessarily used in sentence initial position and they do not have to be animate nouns, in which we cannot confirm either of these two approaches explaining the relationship between animacy and word order. So, this situation requires more research to be done through different structures in various languages regarding the link between animacy and word order to be able to come up with a more valid explanation.

2.1.3. Animacy-Based Accessibility and Animacy Hierarchy

As it has been stated in the previous section, all the animacy effects converge on one point: animate referent is chosen first in sentence formation. Based on this assumption stemming from conceptual accessibility, Feleki (1996) takes the connection between grammatical function assignment and animacy further and tries to clarify this relation by linking Keenan and Comrie's (1977) hierarchy of grammatical functions and Keil's (1979) conceptual hierarchy. A summary of this relationship is provided in Figure 2 below:

Figure 2

The relationship between hierarchy of grammatical functions and conceptual hierarchy



Adapted From ‘’The effects of conceptual accessibility on language production: Experimental evidence from modern Greek,’’ by E. Feleki, 1996, p. 26,. University of Edinburgh, Scotland: Centre for Cognitive Science.

To begin with explaining the grammatical relations hierarchy above which was offered by Keenan and Comrie (1977), the most common and the easiest type of relativization is subject relative clauses and the list is followed by direct object, indirect object, oblique object and genitive. Another fact about this hierarchy is that once a grammatical function down the hierarchy in a language allows relativization, it will allow the relativization of other grammatical functions above that as well (Keenan & Comrie, 1977). For instance, if a language allows the relativization of oblique object, it must also allow for the relativization of indirect, direct objects and subject according to this hierarchy.

On the other hand, the focus of Keil’s conceptual hierarchy (1979) is on ontological categories starting from humans and ending with events by ascending in order. Based on

this hierarchy, Keil (1979) asserts that humans have more information about animate referents than inanimate ones. Consequently, people most probably have a richer amount of knowledge about the lower levels of the hierarchy, which makes the entities with lower level semantic information more accessible. To clarify, animate and concrete referents are more accessible and easier to recall than inanimate and abstract referents.

When we look at the relation between these two separate hierarchies in Figure 2 established by Bock and Warren (1985), it is possible to say that lower and more accessible elements in the conceptual hierarchy of Keil (1979) are possible to be observed more in high level grammatical functions in the hierarchy of Keenan and Comrie (1977).

As a result of the hierarchical information above, Bock and Warren (1985) came up with the following categorization patterns:

- Humans and animals are natural agents and are readily expressed as subjects.
- Plants, artifacts, and natural inanimates are usually recipients or results of human action and are generally expressed as direct objects.
- Abstract nouns (e.g. love, fear) are mostly suitable for oblique object (e.g. in love, out of fear, for pleasure)
- Events are the highest concepts in the hierarchy, and are expressed as verbs.

In the light of the assumptions above, Bock and Warren (1985) designed research based on conceptual accessibility account. To test these assumptions, three sets of sentences were prepared:

a. Simple transitive declaratives and passivization:

i. the doctor administered the shock.

ii. the shock was administered by the doctor.

b. Double dative constructions:

i. the hermit left the property to the university.

ii. the hermit left the university the property.

c. Phrasal conjuncts:

i. The lost hiker fought time and winter.

ii. The lost hiker fought winter and time.

As can be understood from the sentences, one highly imaginable and one less imaginable noun are used in different syntactic positions in each sentence of each set. The first two sets were used to test imageability effect on grammatical function assignment and the final group was utilized to see the same accessibility effect on word order. Participants were given the sentences and asked to recall these sentences later. The sentence structure choices of the participants showed alterations in the first two sets, yet in the last set only a change in serial ordering of the nouns was observed. At the end of the study, the participants seemed to produce more inversions in the first group and used more imaginable nouns before the less imaginable ones, which was a result quite compatible with the hierarchy of grammatical relations and conceptual accessibility. On the other hand, they could not observe a similar result for the third group. Therefore, Bock and Warren (1985) suggested that conceptual accessibility only affects the word order in an indirect way. As a result, the scope of conceptual accessibility remained within the borders of functional level in their study.

2.1.4. Sources of Animacy Effects in Turkish

As it was stated before, animacy feature is a learned semantic property and it could be up to change depending on the language. Folli and Harley (2008) suggested that the animacy effect of a nominal could stem from its 'teleological capability', which means 'the referent noun's inherent qualities and abilities of an entity to participate in the eventuality denoted by the predicate' and which is again up to vary based on the intrinsic features of the language.

Based on the suggestion of Folli and Harley (2008) on teleological capability of nominals, Özsoy (2009) came up with a three-way distinction between the sources of animacy effects on language production in Turkish: (i) inherent, (ii) inherited (iii) teleological capability that the nominal carries. She tried to explain the differences between their effects by means of the interpretation of impersonal passive constructions with an implicit subject (pp.2-3).

To show the distinction between inherent and inherited animacy, Özsoy (2009) recruited sense predicates such as *titre-* (shiver), *terle-* (sweat) or *üşü-* (be cold), which are unergative verbs at the same time and which require an agentive subject with [+animate] semantic feature. However, the examples provided below by Özsoy (2009) included subjects with different properties (p.7):

(1)

a. Herkes soğuk-ta üşü-yor-du. / titr-iyor-du.
everyone cold-LOC be.cold-PROG-PAST / shiver-PROG-PAST
'Everyone was feeling cold / shivering in the cold.

b. *Masa soğuk-ta üşü-yor-du. / titr-iyor-du.
table cold-LOC be.cold-PROG-PAST / shiver-PROG-PAST
*'*The table was feeling cold / shivering in the cold.*

(2)
a. Herkes sıcak-ta terl-iyor-du.
everyone heat-LOC sweat-PROG-PAST
'Everyone was sweating in the heat.'

b. *Araba sıcak-ta terl-iyor-du.
car heat-LOC sweat-PROG-PAST
*'*The car was sweating in the heat.'*

(3)
a. İnce, uzun parmaklı el-ler-i titr-iyor-du.
thin, long fingered hand-PL-3POSS shiver-PROG-PAST
'His thin and long fingered hands were shivering.'

b. Ayak-lar-ım üşü-dü.
foot-PL-1POSS be.cold-PAST
'My feet are cold.'

c. Yüz-ün terl-iyor.
face-2POSS sweat-PROG
'Your face is sweating.'

In the first two examples (1b and 2b) provided by Özsoy (2009, p.7), we can observe that [-animate] nouns cannot be used as the subjects of sense and unergative predicates. However, when we move to the 3rd set of examples, we see that body parts such as *el* (hand) or *ayak* (foot) can be the subjects of those sense predicates although the nominals used as subjects are not teleologically capable on their own as suggested by Folli and Harley (2008). The only explanation for the grammaticality difference between the examples (1b and 2b) and (3b, c) is the body parts inherit their [+animacy] feature from another entity (human or animal) that they are attached to by means of whole-part relationship. In this way, they are not perceived as ungrammatical although they become the subject of an unergative verb that requires an [+animate] agent even though they are not teleologically capable of being the subject of such kind of sense verbs (Özsoy, 2009, p.8).

According to the corpus-based study of Özsoy (2009), there is another source of animacy in Turkish independent of the previous sources that have been referred to above. This group is also composed of unergative verbs with [-inanimate] subjects as in the case of inherited [+animacy]; however, the verbs included in this category have a different type of animacy source as shown in the example (4) below (p.9):

(4)
Uçak uç-uyor.
plane fly-PROG
'The plane is flying.'

As can be seen in the example (4) above, *uçak* (plane) can be the subject of the unergative manner verb *uç-* (fly) here. The example (4) above is one of the examples of teleological capability that Folli and Harley (2008) put forward because *uçak* (plane) is designed especially for flying though the verb itself is an unergative verb which requires an agent argument and the nominal *uçak* (plane) here is not inherently or inheritedly animate. On the other hand, in case of an impersonal passivization with an implicit subject, the verb *uç-* (fly) only licenses [+animate] subject interpretation (Özsoy, 2009, p.10):

(5)
Tokyo-ya uç-ul-du.
Tokyo-DAT fly-PASS-PAST
'Tokyo was flown to.'

In the example (5) above, the agent of the flying act can only be humans or [+animate] entities, and it is impossible to interpret this sentence as '*Tokyo was flown to by plane'* (Özsoy, 2009, p.10).

To sum up, such kind of unergative verb categories (sense or manner verbs) prove that only inherently animate entities can be interpreted as the subjects/agents of impersonally passivized forms of these verbs, and sense and manner verbs differ in terms of the sources of animacy which they allow in their subjects by serving as good examples to prove the

existence of the three main sources of animacy in Turkish which are inherent, inherited and teleological capability features.

Based on the fact put forward by Özsoy (2009) in her study, the current research is only going to deal with transitive verbs in Turkish to avoid possible confusions and it is not going to include any items with inherited animacy or teleological capability to come up with standardized test questions. Additionally, only inherently [±animate] entities as a source of animacy will be inherited.

2.1.5. Previous Studies on Animacy and Word Order

The influence of animacy on word order has been tested in many different languages which can be subdivided into two main categories depending on how much scrambling is allowed in their word order: the languages with flexible word order allowing both scrambling and passivization and the languages with fixed word order allowing only passivization in case of a need for movement. Out of these studies, it was observed that a different arrangement takes place both in word order and sentence structure in those languages based on their scrambling features and the animacy feature of entities that are included in actions. In the following, some example studies for the language categories referred to above will be shared.

To start with the research conducted on animacy effects on languages with flexible word order, most research was done with languages such as Greek, Japanese, Catalan or Spanish, etc. For instance, Feleki (1996) designed a sentence recall task in Greek, which was composed of thirty-two sentences based on four different conditions. The participants had to remember eight sentences for each condition. The main focus of Feleki (1996) was SVO and OVS sentences in the study. It was assumed that participants would probably recall sentences by using animate entity before inanimate entity. The data collected at the end of the study confirmed the expectations. Consequently, the participants appeared to

alter the word order depending on the animacy feature of the entities in each sentence when they were pronouncing the sentence again. To clarify, SVO sentences were recalled as OVS when the object was animate. On the contrary, OVS sentences were recalled as SVO when the subject was animate. As a result, Feleki (1996) proposed that animate referents are preferred in sentence initial positions independent of their grammatical functions.

A similar study was designed by Prat Sala, Shillcock and Sorace (2000), which also concluded that animacy had an influence on word order in a direct way. Their research was mainly related to observing the effects of animacy on various sentence structure and word order choices of Catalan native speakers based on age factor. Eighty children, who were native speakers of Catalan, took part in the study. They were asked to describe thirty test pictures that were depicting a transitive action including an inanimate agent and either animate or inanimate patient (only the semantic features of patients were changed). The data were collected under four different categories for analysis: actives, object-dislocated structures, passives and others. It was observed that there was a tendency among participants to utilize object-dislocated structures more when the patient was animate than it was inanimate. Passives were preferred few in number by the Catalan speaking children. Being incompatible with Feleki (1996), the results of the study showed that animates were more accessible than inanimates and they had a tendency to appear in earlier positions in sentences irrespective of grammatical function assignment by scrambling the object to sentence-initial position.

Prat Sala and Branigan (2000) also worked on conceptual accessibility cross linguistically by considering two different sources of animacy effect in English and Spanish: inherent and derived accessibility features of entities. According to their presuppositions (Prat Sala & Branigan, 2000), both inherent and derived accessibility features would most probably help about recalling referents independent of the language. In the study, a story telling setting was prepared. Participants were shown a picture and listened to two short

descriptions related to the picture. In one recording, agent was salient whereas in the other one patient was salient. Afterwards, the participants were asked to retell what was happening in the picture. An example of the picture description recording set based on agent/patient salience was shared below:

(6)

a. Agent salient

There was this old rusty swing standing in a playground near a scooter, swaying and creaking in the wind. What happened?

b. Patient salient

There was this old red scooter standing in a playground near a swing, with rust wheels and scratched paint. What happened?

The results of the study showed that there was a change in the grammatical function (more passivization) when the patient was salient in English. Nevertheless, Spanish speakers preferred to make alterations only in the word order (more dislocated sentences) under similar circumstances. Consequently, the results demonstrated that both inherent and derived accessibility have an influence on the word order in English and Spanish. However, different typological features of the languages are concluded to allow different types of animacy influence on word order such as changing the grammatical function of animate objects into a subject in English sentences, but encouraging the scrambling of animate entities to a sentence-initial position in Spanish sentences without any attempt to change their grammatical functions (Prat Sala & Branigan, 2000).

Tanaka, Branigan and Pickering (2005, as cited in Branigan, et al., 2007, pp.11-12) embraced a bit more different approach and assumed that animacy might have an influence both on grammatical function assignment and word order. In two phases and two separate studies, they worked on Japanese sentences which allow scrambling of objects to the

sentence-initial position without a change in the meaning, and which also allow passivization. For the first phase of the study, the sentences were arranged in a way that animates entity appearing in either subject (7 a and b) or object position (7 c and d) of SOV and OSV type sentences. An example set for the target items in experiment one are presented below:

(7)

a. ryokousha-ga takushii-o tukamaeta.
traveller-NOM taxi-ACC pick up-PAST
'A traveller picked up a taxi.'

b. takushii-o ryokousha-ga tukamaeta.
taxi-ACC traveller-NOM pick up-PAST
'A traveller picked up a taxi.'

c. takushii-ga ryokousha-o tukamaeta.
taxi-NOM traveller-ACC pick up-PAST
'A taxi picked up a traveller.'

d. ryokousha-o takushii-ga tukamaeta.
traveller-ACC taxi-NOM pick up-PAST
'A taxi picked up a traveller.'

During the experiment, participants were asked to recall orally such kind of 28 sentences that were read to them. At the end of the study, the participants were observed to have remembered OSV sentences (a marked sentence type in Japanese) as SOV sentences (in canonical word order) when the subject of the sentence was animate. This experiment was mainly designed to test the animacy influence on word order. On the other hand, the second experiment was aiming to test animacy effect on grammatical function assignment. The experiment included both active (as in the example 7 above) and passive structures (as in the example 8 below) with an animate entity in either their subject ([7a, b] and [8a, b]) or object positions ([7c, d] and [8c, d]).

(8)

a. ryokousha-ga takushii-niyotte tukamae-rare-ta.
traveller-NOM taxi-OBL pick up-PASSIVE-PAST
'A traveller was picked up by a taxi.'

b. takushii-niyotte ryokousha-ga tukamae-rare-ta.
taxi-OBL traveller-NOM pick up-PASSIVE-PAST
'A traveller was picked up by a taxi.'

c. takushii-ga ryokousha-niyotte tukamae rare-ta.
taxi-NOM traveller-OBL pick up-PASSIVE-PAST
'A taxi was picked up by a traveller.'

d. ryokousha- niyotte takushii-ga tukamae rare-ta.
traveller-OBL taxi-NOM pick up-PASSIVE-PAST
'A taxi was picked up by a traveller.'

By using sets composed of eight target items this time, the same recalling task was applied in a randomized order. Based on the methodology the researchers followed (Branigan, et al., 2005, as cited in Branigan, et al., 2007), the main hypotheses were that if animacy affected only word order, the participants would have tendency to change OSV sentences into SOV sentences in case of appearance of an animate subject and they would not bother to turn passive sentences into active ones to carry the animate subject to a sentence-initial position. If animacy affected both word order and grammatical function assignment, the participants would manipulate the word order in active and passive sentences by changing the voice of sentences in order to carry the animate entities to a sentence-initial position. Finally, the findings of the research overlapped with the second hypothesis and the participants were observed to change passive structures into active ones or did visa versa depending on the grammatical positions of the animate entities that were included in target structures (pp.11-12). Therefore, this study can serve as a good example that proved the influence of animacy on both grammatical function assignment and word order.

Animacy influence was studied on rare languages as well such as Yucatec Maya. Similar to English, Yucatec Maya also includes active and passive voices; however, the language

does not require a change in the word order as English does when passivization takes place. In the research design of Butler et al. (2010), native Yucatec speakers were requested to watch and describe the short video clips including transitive actions. The actions included one agent and one patient, which were either the same (human agent/human patient or non-human agent/non-human patient) or different in terms of their animacy features (human agent/ non-human patient or non-human agent/ human patient). After the study was conducted, it was observed in the answers of the participants that animate entities are inclined to come before inanimate non-human entities. Moreover, a relationship between word order and voice was discovered for Yucatec Maya: in passivization interestingly patients are replaced before agents though there was no need to change the places of the nouns composing the sentences. And this case was observed especially when the patient was a human entity, which leads us to the conclusion that human subjects are inclined to be used in sentence initial position (Butler et.al., 2010 as cited in Bergen, 2011, p.19).

Final study to be discussed related to the animacy effect seen in flexible word order languages was supervised in Turkish sentences by Solak (2007). Although the main concern of the mentioned study was to look at whether the language proficiency level in English has an impact on the animacy interference in the word order in English simplex sentences, she also included a study among Turkish native speakers as well in order to see whether the first language would have an influence on the animacy effect that would be seen in the sentences formed in second language, and whether the results gained from English native speakers will comply with the ones collected from Turkish native speakers or not. Five different participant groups were arranged to join the test: Turkish and English native speakers, and three different levels of English language learners. Similar to the previous studies, a picture description task consisting of one animate and one inanimate element was applied. While specifying conditions (animate or inanimate) for the experiment, object or patient roles were taken into consideration. For example, an inanimate agent and an animate patient stood for animate condition, and an inanimate agent and an inanimate patient stood for inanimate condition. At the end of the study, it

was proven that animacy interference has a connection with the proficiency level in a second language because only the highest level and native English language speakers showed a reaction to different animacy conditions by passivizing the sentences with an animate patient and turning them into an animate subject to carry the animate entity into a sentence initial position. On the other hand, Turkish native speakers did not choose passivization. Instead, they made use of scrambling to bring animate patients to the beginning of sentences without a need to change the grammatical function of them.

To continue with the studies conducted on fixed-word-order languages like English, a different outcome was observed in the ones that have been applied on flexible word order languages. The first example for animacy effect in such kind of languages was from Dewart's study (1979) that was trying to clarify the motive for passive voice preference in language production. As suggested by Dewart (1979), the voice of a verb could be based on either the semantic features of the nouns composing the sentence or the information about whether the actor of the verb is unknown or not (p.136). As for how the semantic features of nouns could have an effect on word order, Dewart (1979) proposes that the animate noun usually has a tendency to come before the inanimate noun in a sentence in case the sentence is formed with an animate and an inanimate component. This means that animate entities have a priority of coming first (9b) in case the sentence is composed of animate and inanimate entities at the same time as in the example below (9):

(9)

a. The alarm clock awakened the boy.
b. The boy was awakened by the alarm clock.

Relevant to the hypothesis exemplified above, Dewart (1979) arranged an experiment on children between six and eight years concerning active / passive sentence use and animacy relation, he gave children a sentence recall task requiring remembering the sentence sets as given in (10):

(10)

a. The gardener mows the grass.
b. The blanket covers the baby.

Children first saw a situation and heard a sentence describing the picture. Then, they were shown only the picture of actor or acted upon. According to the results of the study, the children showed tendency to remember active sentences in passive form when they saw the pictures of an animate acted upon element and an inanimate actor component. In contrast, children preferred to utilize active form more when the actor was an animate entity and the acted upon was an inanimate entity in the sentence (Dewart, 1979). To summarize all the findings of Dewart (1979), the animacy of subject and object nouns influences the choice of voice instead of theme or saliency.

Compared to English, German language could be regarded as a bit more flexible, but it still has a strict word order. Van Nice and Dietrich (2003) organized three picture description experiments, which included one written (describing pictures from memory) and two oral tasks (one related to describing the pictures by looking at them and the other describing them from memory). Although the overall use of sentences demonstrated a higher amount of use of active structures, it was also concluded that passivization rate increased when the patient was animate while the agent was inanimate. On the contrary, they observed that sentences with animate agent and inanimate patient became the ones that were used with passive constructions the least. Overall, they came into conclusion that accessibility caused the choice of animate agents/patients in the first place.

Similarly, Sridhar (1998) arranged a cross-linguistic experiment and asked participants to describe the transitive actions that were shown to them in silent films. He discovered that the speakers of other SVO languages as well as English had a tendency to produce passive constructions more when they met an animate patient to be able to bring the animate entity in a sentence-initial position (Sridhar, 1998, as cited in Bergen, 2011, p.16).

After listing the studies on both fixed word order and flexible word order languages, one conclusion can be drawn from the outcomes of those studies: In languages that have a fixed word order like English, passivization can be used as a kind of strategy to bring an animate concept to the beginning of a sentence. However, in languages like Turkish, which have less rigid word orders, an animate word can already be scrambled to sentence initial position even in the absence of a passivization process as long as it is case marked. Nevertheless, there are some constructions in Turkish where the words have to remain in their fixed position even after passivization process such as relative clauses (participial constructions). The passivization in these constructions is handled by the suffix *'-(I)l'* that is attached onto the verb of the construction, and the agent is specified by the postpositional word 'tarafından (by)', but the word order does not change. Whether the participants are going to exploit passivization to bring the head nouns, which are animate to a more salient position in Turkish relative clauses, is still an issue of concern. Therefore, exploring the effect of animacy on object relative clause constructions in Turkish might lead to interesting results and could add a different point of view to the discussions regarding the relationship between animacy and grammatical function assignment in structures that have to remain in a fixed word order.

2.2. TURKISH RELATIVE CLAUSE CONSTRUCTIONS AND THEIR TYPOLOGICAL FEATURES

2.2.1. An Overview of Turkish Relative Clauses

Relative clause constructions are made of participial constructions in Turkish (Erguvanlı, 1984, p. 73), which means that verb takes one of the participial suffixes and precedes the head noun as illustrated in the sentences below:

(11)

a. Çocuk ev-e gid-iyor.
Child house-DAT go-PROG
'The child is going to the house.'

b. Ev-e gid-en çocuk
House-DAT go-SP child
'The child who is going to the house'

c. Çocuğ-un git-tiğ-i ev
Chil-GEN go-OP-POSS3 house
'The house, which the child is going to'

(taken from Erguvanlı, 1984, p. 73)

As can be seen above, the nouns *çocuk* 'child' and *eve* '*home-DAT*' in (11a) are the heads of subject and object relative clauses in (11b) and (11c), respectively. While forming relative clauses (participial constructions) from a simple sentence, the word order in relative clause remains almost the same as the one in the main clause in Turkish. The only difference is that head noun is carried to the end of the sentence after adding the related participial suffix to the verb (Underhill, 1976, p. 277).

Another point regarding relative clause constructions is that grammatical functions of relative clauses are determined by the type of participial suffix the verb takes. For instance, subject relative clauses (SRCs) are designated by the suffix *'-An'*, whereas object relative clauses (ORCs) are specified by the suffix *'-DIK'* (Erguvanlı, 1984, p.73).

As exemplified above, there are mainly two types of relative clauses in Turkish, which are object (ORCs) and subject relative clauses (SRCs). Subject relative clauses (11b) are formed by replacing the tense marker, which was *'-(i)yor'* in the verb of the non-relativized sentence (11a), with the suffix *'-An'*. The reason for calling similar relative clauses to the one in (11b) a subject relative clause is that the head noun of the phrase (11b) is originally the subject of non-relativized sentence (11b). Therefore, such kinds of

phrases are named as subject relative clauses. Similarly, object relative clauses modify the objects of a non-relativized sentence. Whether it modifies a direct object or an indirect object of a non-relativized sentence, the participial marker of an object relative clause is usually *'-DIK'*. Similar to the procedure in subject relative clauses, the head noun in an object relative clause is moved to the end of the non-relativized sentence and the tense marker of the verb (which was *-(i)yor*) is replaced by the marker *'-DIK'* as can be seen in the example relative clause (11c) by modifying the object of the non-relativized sentence (Underhill, 1972, pp. 87-89).

2.2.2. Structural Properties Pertaining to Relative Clauses in Turkish

Although the two main types of relative clause suffixes are indicated as *'-An'* and *'-DIK'*, there are still other suffixes in Turkish that are eligible to be used as a relative clause marker. In the following, examples to these markers and some major properties of Turkish relative clauses are going to be shared.

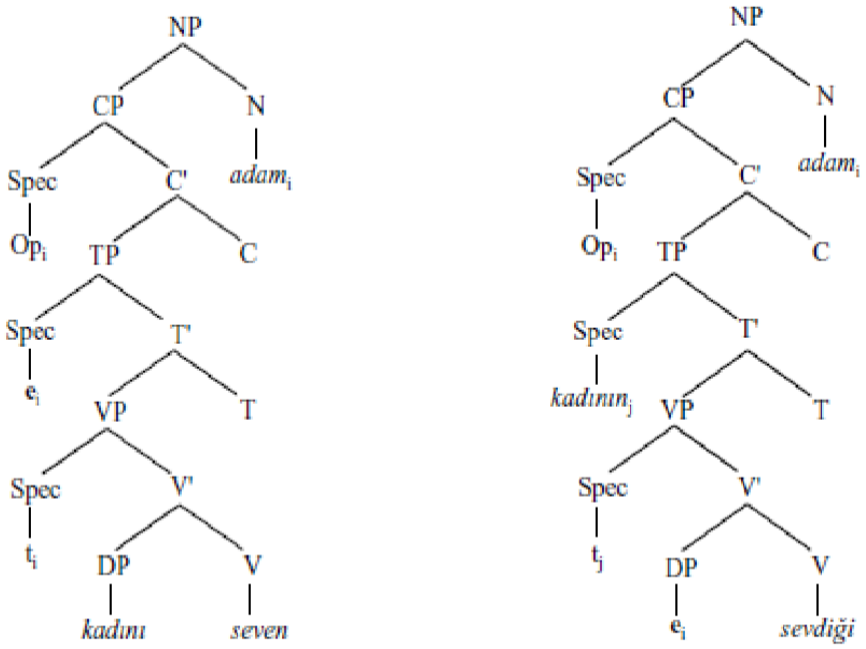
2.2.2.1. Word order and Branching

Being a head-final language, Turkish allows the head nouns to remain on the right side of the whole phrase. In parallel with the nature of the language, the head noun in relative clause constructions is also moved to right hand side of the non-relativized structure before the tense markers are replaced by the relativizer suffixes (*'-An'* or *'-DIK'*).

Based on the information above, a basic tree diagram for each relative clause type is shared below to visualize the relative clause formation in Turkish:

Figure 3

Tree diagram demonstrations of Subject (on the left) and Object (on the right) relative clauses



Note. Reprinted from Aydın, 2007, p.299, as cited in Boran, 2018, p.10

Figure 3 above indicates that the head noun in ORCs covers a longer distance compared to the one in SRCs. To clarify, the head noun *adam* 'man' in the SRC on the left moves only two phrasal nodes, whereas the same head noun in the ORC on the right moves three phrasal nodes. The difference in the distance of the movement was evaluated in various ways in terms of the production difficulty of object and subject relative clauses. However, the relevant discussions will be presented under a different heading in the following sections in a more detailed way.

Even though canonical order is SOV in Turkish, relative clause constructions follow a pre-nominal structure (Özge, Marinis & Zeyrek, 2015) and the verb with a relativizer suffix ('-

An' or *'-DIK'*) comes in the middle in such kind of constructions as demonstrated in the examples (12):

(12)
a. SRCs in Turkish

---------- RC ---------- Head noun

[__ Mektubu getiren] postacı

__ $letter_{ACC}$ $bring\text{-}An_{SUB.REL.}$ postman

(The postman [who __ brought the letter])

Head noun

b. ORC construction in Turkish

---------- RC ---------- Head noun

[Çocuğun çiçekleri __ verdiği] kız $arkadaşı_{1}{}_{3SG.POSS}$

boy_{GEN} flowers __ $give\text{-}DIK_{OB.REL\text{-}3SG}$ girlfriend

(his girlfriend [who the boy gave the flowers to __)

Head noun

(Adapted from Boran, 2018, p.11)

As can be inferred from the examples (12a, 12b) above, both SRCs and ORCs follow a different order from the canonical order in Turkish and the gap position comes before the head noun on the grounds of left-branching nature of the language. Those properties of Turkish relative clauses contradict with the ones in most right-branching languages such as English, German or French in which the gap position comes after the head noun. To differentiate between these two language groups more clearly, an example for the linear

sequential arrangement of SRCs and ORCs on a linear level in English is presented below (13):

(13)

a. Subject relative

the lion [$_{CP}$ that [$_{IP}$ __ carries the cow]]

b. Object relative

the lion [$_{CP}$ that [$_{IP}$ the cow [$_{VP}$ carries __]]]

(Adapted from Özçelik, 2006, p.6)

The fact that post-nominal languages like English above have been studied before many times and Turkish have many contradicting features with those languages makes Turkish RCs more attractive and interesting to study in a more detailed way. As a result of that, the focus of this thesis will be on Turkish RC constructions.

2.2.2.2. Null Complementizer in Turkish RCs

One other property of Turkish RCs is that Turkish RCs exploit no overt complementizers in contrast to the RCs in most head-initial languages with overt complementizers like German, English or Spanish. As being opposed to such kind of head-initial languages, Turkish, which is a head-final language, exploits some suffixes to come up with RC constructions without needing any overt complementizers. A set of examples is shared below to demonstrate the relativization process for each language with null (14a, 14b) and overt (15a, 15b) complementizer (Boran, 2018, p.12):

(14)

Examples for RCs with 'Null' Complementizer from Turkish Language

a. Anne-si-ni özle-yen kız
Mother$_{3SGPOSS-ACC}$ miss-(y)An$_{SUB.REL.}$ daughter
'The daughter who misses her mother'

b. Anne-si-nin özle-diğ-i kız
Mother$_{3SGPOSS-GEN}$ miss-DIK$_{OB.REL.-3SGPOSS}$ daughter
'The daughter who her mother misses'

(Adapted from Boran, 2018, p.12)

(15)

Examples for RCs with 'Overt' Complementizer from English Language

a. The lion which carries the cow
The lion (NOM) which (SUB REL) carry (3SG-PRESENT) the cow (ACC)

b. The lion which the cow carries
The lion (ACC) which (OBJ REL) the cow (NOM) carries (3SG-PRESENT)

(Adapted from Özçelik, 2006, p.8)

In (15a and b), we can see that English has made use of a special relative pronoun (which) to come up with both subject and object relative clauses, which means that English language requires an overt complementizer to create RC constructions. On the other hand, in (14a and b) Turkish language seems to have exploited special suffixes with different relativization functions (*'-An'* and *'-DIK'*) to be able to form subject and object relative clauses without an obligatory RC marker. Therefore, Turkish is among the languages with null complementizer in their RCs.

2.2.2.3. Morphological Characteristics

Within the frame of the current heading, the morphological features of *'-An'* and *'-DIK'* will be compared; meanwhile, the characteristics and the meanings of the other relativizer suffixes that are available in Turkish are also going to be introduced.

In addition to the relative clause types they create, there are some other distinctions as well between the relativizer suffixes *'-An'* and *'-DIK'* (Özsoy, 1998). Those differences will be explained in detail by using the example (14) above:

In the example (14a), we see that the noun '*kız (daughter)*' is not only the subject of the RC, but it is also the head noun of the relative clause construction. In spite of that, '*kız (daughter)*' does not appear to take any suffixes after all. Furthermore, the SRC suffix '-An' which is attached to the verb of construction does not take any agreement markers either, which directly shows us that there is no agreement relationship between the head NP and the verb of SRC constructions in Turkish. On the contrary, the object relative clause marker *'-DIK'* seems to be in an agreement relationship with the head noun of the relative clause construction according to the example (14b) since the subject '*anne (mother)*' receives a genitive marker *(-In)* while the verb that the suffix *'-DIK'* is attached to receives a third person singular possessive agreement marker to be in harmony with the '*anne (mother)*' which is the agent of ORC (Underhill, 1972, pp. 87-99). All in all, it can be deduced from the RCs in (14) that the SRC marker *'-An'* does not require any agreement relationship between the agent and the verb though ORC marker *'-DIK'* requires an agreement between them.

Although the main relativizer suffixes are considered to be *'-An'* and *'-DIK'* in Turkish, there are still other suffixes that are actively utilized by Turkish native speakers to modify the tense of the RC constructions. One of these is the morpheme *'-AcAk'*. Göksel and Kerslake (2005) claim that the morpheme *'-AcAK'* functions in the same way as the

morpheme *'-DIK'* does and they both are utilized to come up with ORC constructions in Turkish. The major difference between these two morphemes is said to be their time references. While *'-DIK'* is used in past or ongoing situations, *'-AcAK'* is preferred to refer to a future action as presented in the following examples (16):

(16)

a. [Fatma'nın yarın gör-eceğ-i] film
Fatma-GEN tomorrow see-PART-3SG.POSS film
'the film [that Fatma <u>is going to see</u> / <u>will be seeing</u> tomorrow]'

b. [Fatma-nın doku-duğ-u] halı
Fatma-GEN weave-PART-3SG.POSS rug
'the rug [<u>that</u> Fatma <u>is / was weaving/wove/has woven</u>]'

(Adapted from Göksel & Kerslake, 2005, pp.383-384)

In the example (16) above, we see that the subjects (*'Fatma'*) of both RC constructions are in genitive *(-In)* form. Meanwhile, the verbs (*'gör- [see]'*) receive a 3rd person possessive marker to agree with the singular subjects of RCs although their object relativizer suffixes differ in terms of their tense features. Even though the tense references of *'-AcAK'* and *'-DIK'* differ in Turkish, Kornfilt (2000) suggests that their nature of agreement overlaps and they show identical morphological properties in terms of agreement. Another issue that can be raised related to the use of *'–DIK'* and *'–AcAK'* suffixes in Turkish RCs is that *'–DIK'* suffix may cause a tense ambiguity depending on context as it can indicate two time references (past and present) at the same time (see the interpretation of the RC in 17b above). On the other hand, the time reference of the suffix *'–AcAK'* is only future (see the interpretation of the RC in 16a), so it cannot lead to any tense ambiguity as *'–DIK'* can.

Based on these three relativizer suffixes *(-DIK, -AcAK* and *–An*), Göksel and Kerslake (2005) group the functions of relativizer suffixes in Turkish as demonstrated below (p.387):

i.	Relativizing subjects	*-(y)An*
ii.	Relativizing direct objects	*-DIK / -(y)AcAK*
iii.	Relativizing oblique objects	*-DIK / -(y)AcAK*
iv.	Relativizing adverbials	*-(y)An / -DIK / -(y)AcAK*
v.	Relativizing possessors	
	a. which are part of subjects	*-(y)An*
	b. which are not part of subjects	*-(y)An* or *-DIK / -(y)AcAK*
vi.	Relativizing possessed constituents	
	a. which are part of subjects	*-(y)An*
	b. which are not part of subjects	*-DIK / -(y)AcAK*

According to the grouping above, the participle *'-En/-An'* is assumed to have three main relativizing functions: to relativize subjects, to relativize either the possessor or the possessed that is part of subjects and to relativize non-subject constituents in an RC with a non-definite subject. An example for each function of the participle *'–En/-An'* is going to be shared in the following:

(i). '-En/–An' participle that is used to relativize subjects

(17)

a.
[burada sat-ıl-**an** ***kitap-lar*** (cf. ***Kitaplar*** burada satılıyor.)
here sell-PASS-PART book-PL
'*the books* [(*which* are) sold here]'

b.
[öğretmen ol-**an** ***Haydar*** (cf. ***Haydar*** öğretmen.)
teacher be-PART ***Haydar***
'*Haydar*, [*who* is a teacher]'

(Adapted from Göksel & Kerslake, 2005, p.381)

(ii). 'En/–An' participle that is used to relativize either the possessor or the possessed that is part of the subject

(18)

a.
[araba-***sı*** çal-ın-***an***] ***komşu-muz***
car-3SG.POSS steal-PASS-PART neighbour-1PL.POSS

‘our neighbor [whose car was stolen]’

b.
[rol***ü*** büyük olma***yan oyuncu*** (cf. ***Oyuncunun*** rolü büyük değil.)
‘the actor [whose part isn’t big]’ / ‘the actor [who does not have a big part]’

(Adapted from Göksel & Kerslake, 2005, p.382)

(19)

[komşu-muz-un	çal-ın-**an**]	araba-sı
neighbor-1PL.POSS-GEN	steal-PASS-PART	car-3SG.POSS

‘our neighbor’s car, [*which* was stolen]’ / ‘our neighbor’s stolen car’
[oyuncunun büyük olma**yan** rolü (cf. Oyuncunun rolü büyük değil.)
‘the actor’s part, [*which* isn’t/wasn’t big]’

(Adapted from Göksel & Kerslake, 2005, p.383)

In both RC examples above the non-relativized construction is “Komşumuzun arabası çalındı (The car of our neighbour was stolen)”. As can be understood from the non-relativized structure, the subject of the verb ‘çalındı (was stolen)’ here is the NP ‘Komşumuzun arabası (our neighbour’s car)’ in which ‘komşu (neighbor)’ can be considered the possessor and ‘araba (car)’ can be the possessed. Whether it is the possessor or the possessed one, both nouns are included in the subject of the non-relativized structure. Therefore, the verbs of both RC constructions have received the relativizer suffix ‘–An’. The same explanation can be made for the second example whose non-relativized sentence is “Oyuncunun rolü büyük değil (The actor’s/actress’ role isn’t/ wasn’t big.).” Since both the possessor and the possessed parts of the noun phrase ‘oyuncunun rolü (The actor’s/actress’ role)’ are inside the subject NP of the non-relativized sentence, the same SRC marker ‘–An’ is preferred in its RC form.

(iii). '-En/-An' participle that is used to relativize a part of any non-subject constituent of a RC structure with a non-definite subject

a. The participle *-En/-An* can relativize a direct object:

(20)

[koyun-ların-ı ***kurt*** kap-***an***] köylü-ler

(cf. Köylülerin koyunlarını kurt kaptı.)
sheep-PL.3PL.POSS-ACC wolf catch-PART villager-PL
'the villagers [*whose* sheep were caught by wolves]'
(lit.'whose sheep wolves caught')

b. The participle "*-En/-An"* can relativize an adverbial:

(21)

[çatı-sın-dan birkaç küçük ***kiremit*** düş-***en***] ev
roof- 3SG.POSS-ABL a.few small tile fall-PART house
'the house [from the roof of *which* a few small tiles fell]'

c. The participle "*-En/-An"* can relativize a possessive-marked postposition:

(22)

[arka-sın-da ***adam*** ol-**an**] çocuk (cf. Çocuğun arkasında adam var.)
back-3POSS.SG-LOC man be-PART child
'the child [behind *whom* there is a man]'

(Adapted from Göksel & Kerslake, 2005, p.382)

Another interesting fact about SRC marker *'-An/-En'* in Turkish is that it can be utilized in RCs whose head is a non-subject constituent of the non-relativized structure. As demonstrated in the examples above the participle *'-An/-En'* has been utilized to relativize a direct object (Köylülerin koyunlarını [villagers' sheep-ACC] as in 21), an adverbial (Evin çatısından [from the roof of the house] as in 21) and a possessive marked postposition (Çocuğun arkası [the child's back-3POSS] as in 22) even though it is a SRC marker in original. However, the common point among all those three RC examples is that they have a non-definite subject with no genitive marker, which means that their subjects are generic in nature and are placed in immediately preverbal position in the RCs as shown in **bold** and *italics* within the examples above. In such kind of constructions where the RC

subject has no genitive marker, it is not possible to change the place of the non-definite subject within the RC itself, and although the head noun of those RCs is a non-subject constituent, the participle *'-An/-En'* is usually attached to the verb of these RCs.

Another relativizer suffix group that was seen in the grouping made by Göksel and Kerslake (2005) was the participles *'-DIK' and '-AcAK'*. As referred to before and can be inferred from the list that they have come up, these two suffixes show the same morphological tendencies and they can be used interchangeably in similar relativizing conditions (Göksel & Kerslake, 2005, pp.383-384). The only difference between these suffixes is claimed to be their time reference. To illustrate, *'-AcAK'* is said to refer to a future time reference, whereas *'-DIK'* might refer to a past or an ongoing action. In that sense, *'-DIK'* has been claimed to cause ambiguity in meaning as long as the RC construction does not include any time adverbs like 'şu anda (right now)' or 'dün (yesterday)'.

As for the relativizing functions of the participles *'-DIK'* and *'-AcAK'* according to the list created by Göksel and Kerslake (2005, p.387) above, an example for each of them is provided as in the following:

(i). '-DIK' and '-AcAK' participles that are used to relativize the direct object of the verb in RC.

(23)

a.
[bil-***diğ***-im] bir turizm şirketi (cf. Bir turizm şirketi biliyorum.)
know-PART-1SG.POSS a tourism agency
'a tourist agency [*(that)* I know]'

b.
[gönder**ecek**leri] temsilci)cf. Bir temsilci gönderecekler.)
'representative [*(whom)* they *will* send]'

(Adapted from Göksel & Kerslake, 2005, p.384)

(ii). '-DIK' and '-AcAK' participles that are used to relativize the oblique object or the adverbial modifier of the verb in RC

(24)

a.
[benim kork**tuğ**um] bazı hayvanlar (cf. Bazı hayvanlardan korkuyorum.)
'some animals [*of which* I am/was afraid]'

b.
[Turhan-ın et-i kes-**eceğ**-i] bıçak (cf.Turhan eti bıçakla kesecek.)
Turhan-GEN meat-ACC cut-PART-3SG.POSS knife
'the knife [*with which* Turhan *will/would* cut the meat]'

(Adapted from Göksel & Kerslake, 2005, p.384)

(iii). '-DIK' and '-AcAK' participles that are used to relativize a part of any non-subject constituent of a RC structure with a definite subject

a. The participles could relativize the possessor of the direct object

(25)

[usta-nın kapı-sın-ı değiştir-eceğ-i] çamaşır makinası
(cf. Usta *çamaşır makinasını* değiştirecek.)
engineer-GEN door-3SG.POSS-ACC change-PART-3SG.POSS washing machine
'the washing machine [*of which* the engineer is/was going to change the door]'

(Adapted from Göksel & Kerslake, 2005, p.385)

b. The participles could relativize the possessor of an adverbial

(26)

[***kız-ın-a*** piyano ders-I ver-**diğ**-im] hanım
(cf. *Bir hanımın kızına* piyano dersi veriyorum.)
daughter-3SG.POSS piano lesson-NC give-PART-1SG.POSS lady
'the lady [*to whose daughter* I give/gave piano lessons]'

(Adapted from Göksel & Kerslake, 2005, p.385)

c. The participles could relativize the possessor of possessive-marked postposition

(27)

[***ön-ün-den*** köprü-nün geç-**tiğ**-i] ev-ler
(cf. Köprü evlerin önünden geçiyor.)
front-3SG.POSS-ABL bridge-GEN be.situated-PART-3SG.POSS house-PL
'the houses [in front of which the bridge is situated]'

(Adapted from Göksel & Kerslake, 2005, p.385)

When compared to the uses first relativizer suffix group *(-En/-An)* exemplified in (20), the categories including the use of suffixes *'-DIK'* and *'-AcAK'* seem similar at first. However, the main difference between the uses of SRC marker *(-An)* and ORC markers *('-DIK'* and *'-AcAK'*) is the subjects of the RCs they create. In the first group (RCs with *–An*), the subjects of the RCs were non-definite, and they were free from the GEN case marker. Additionally, the movement of their subjects was forbidden as the movement of the non-definite subject in those RCs causes to ungrammaticality within the structure. On the other hand, the second group including RCs with the use of *'-DIK'* and *'-AcAK'*, the subjects of the examples above (the usta [repairman / engineer], ben ['I' as a prodrop subject], köprü [the bridge]) were not generic nouns and they were specified as definite with the help of GEN marker within the RCs above. Furthermore, the places of those subjects can be altered without leading to any ungrammaticality. Another fact that encourages the use of *'-DIK'* and *'-AcAK'* suffixes in the RC examples (e.g. 25, 26, 27) above is that these suffixes work as an ORC marker and they can create every type of RC other than SRCs in Turkish. Since the RCs listed above show us the relativization of the possessor constituent of a non-subject noun phrase in the underlying sentence, the use of *'-DIK'* and *'-AcAK'* participles become natural in such kind of non-subject RC constructions then. Nevertheless, as it was previously explained in detail, the participles *'-DIK'* and *'-AcAK'* can directly be replaced by the SRC marker *'-An/-En'* in case of a preference for a non-definite subject in such kind of RCs even though a non-subject component of the non-relativized sentence is relativized.

(iv). '-DIK' and '-AcAK' participles that are used to relativize a possessed item in a non-subject constituent of the RC

(28)

a.
[araba-nın kır-**dığ**-ın] sol ayna-sı (cf. *Arabanın sol aynasını* kırdın.)
car-GEN break-PART-2SG.POSS left mirror-3SG.POSS
'the left mirror of the car, [*which* you broke]'

b.
[ev sahib-in-in kork-tuğ-um] köpeğ-i
(cf. *Ev sahibinin köpeğin***den** *korkuyorum*.)
landlord-NC-GEN fear-PART-1SG.POSS dog-3SG.POSS
'the landlord's dog, [*which* I'm afraid of]'

(Adapted from Göksel & Kerslake, 2005, p.386)

Mostly, the participle *'-An'* is attached to the verb of RC if the relativized noun is either the possessor or the possessed noun within the subject of the non-relativized structure. As for the possessors within a noun phrase that is not the subject of the non-relativized structure, the RC marker assignment is carried out according to the definiteness feature of the RC subject as explained above. Finally, possessed items or people within a phrase that are not included in the subject of the non-relativized sentence are also relativized by using ORC markers *'-DIK'* and *'-AcAK'* as exemplified in the examples (28) above. When we look at the non-relativized structure of the first example (Arabanın sol aynasını kırdın [You broke the car's left rear-view mirror.]), the word *'ayna (mirror)'* which is the possessed item within the direct object of the non-relativized sentence has been relativized. Since the possessed item is not a part of the subject, it has been relativized by using *'-DIK'*. On the other hand, in the second example the non-relativized sentence is "Ev sahibinin köpeğinden korkuyorum (I am afraid of the landlord's dog)." In this sentence, again the possessed item/thing is '*köpek (dog)'* there and it is a part of the oblique object. Since the possessed noun within a non-subject constituent (the oblique object) of the non-relativized sentence is relativized, the participle *'-DIK'* has been preferred in that RC one more time.

(v). Special uses of the participles '-DIK' and '-AcAK'

(29)

[çayla yiy**ecek**] bir şeyler (cf. Çayla insan bir şeyler yer/yiyebilir.)
'things [*to* eat with tea]'

(Adapted from Göksel & Kerslake, 2005, p.386)

As demonstrated in (29) it is possible to use the suffix *'-AcAk'* with no person marking as in the case of *'-An'* when a non-definite (i.e. categorical or indefinite) object of the verb is relativized in the non-relativized sentence.

(30)

[seni anlay**acak yaş**(ta değil) (cf. Bu yaşta seni anlayamaz.)
'(s/he is not) old enough (lit. 'at an age') [to understand you]'

(Adapted from Göksel & Kerslake, 2005, p.386)

A similar use of *'-AcAK'* can be observed in case of the use of a noun like an adverbial. For example, the word *'yaş (age)'* could be associated with a time of doing something in the RC above. Therefore, the participle *'-AcAK'* above was added to the verb of the RC without marking the person when the noun *'yaş (age)'* had to be relativized.

(31)

[Hasan'a yönelt-il-ecek] soru
Hasan-DAT direct-PASS-PART
'a question / questions [to be directed to Hasan]'
(cf. Birisi Hasan'a bir soru yöneltecek [Somebody will/isgoing to direct a question to Hasan].)

(Adapted from Göksel & Kerslake, 2005, p.386)

In case of talking about a possibility and an indefiniteness of the subject within the RC construction like in the example above (31), *'-AcAK'* participle could also be utilized as an

SRC marker when the verb is changed into a passive voice due to the indefiniteness of the subject.

Within the light of the morphological information that has been covered under the current heading, morphological similarities and differences between Turkish RC markers will also be taken into consideration during the analysis and the grouping of the participant answers.

2.2.2.4. Restrictive vs. Non-Restrictive Relative Clauses in Turkish

In addition to their structural distribution like ORCs and SRCs, there is also a distribution in Turkish RCs based on their discourse information such as restrictive and non-restrictive RCs. Similar to the case in English RCs, restrictive RCs in Turkish specify the head noun and make it more identifiable. On the other hand, non-restrictive RCs are only responsible for providing extra information related to the head noun. They do not have any objective such as distinguishing the referent noun. The examples for both types of RCs are provided below to make the distinction more clearly:

(32)

a. Restrictive

Yapraklar-ı dökülen ağaçlar
leaves-3SG.POSS lose-$AN_{SUB.REL.}$ trees
'Trees that lose their leaves'

b. Non-Restrictive

Damad-ı-yla hiçbir zaman iyi
Groom-3SG.POSS-with never well
geçin-me-miş ol-an Hayriye Hanım
get-NEG.PAST on be-$AN_{SUB.REL.}$ Hayriye Hanım
'Hayriye Hanım, who has never got on well with her son-in-law'

(Adapted from Görsel and Kerslake, 2005, p.388, as cited in Boran, 2018, p.19)

Within the light of the information and the examples above, the first example (32a) could be considered in a way that the context includes more than one tree some of which were with leaves and some of them were without leaves. And the trees without leaves were distinguished from the others by using a restrictive RC to depict them as the ones that have lost their leaves. On the other hand, in the following context (32b), the speaker is already talking about a proper name (Hayriye Hanım) which distinguishes a specific woman from others. Therefore, it is a non-restrictive RC since it talks about a person whose referent is already specific.

Although both restrictive and non-restrictive RCs are quite common in Turkish, the current study is going to concentrate on restrictive RCs.

2.2.3. Passivization in Turkish Relative Clauses

Passivization in Turkish is usually achieved by adding the passive suffix *'–Il'* to the verb. Nevertheless, in some cases the verb stem may end in a vowel or consonant *'–l'*. In such kind of conditions, the passive suffix changes into *'–In'* (Underhill, 1976, p. 331). Some examples for the verbs that are changed into passives are provided in (34):

(33)

a. ara-	'search'	aran-	'be sought'
de-	'say'	den-	'be said'
b. yor-	'tire'	yorul-	'be tired'
kaybet-	'lose'	kaybedil-	'be lost'

(Adapted from Underhill, 1976, p. 332)

The passive suffix in Turkish usually precedes other types of verb suffixes as well such as negations, participles like *'–An'* or *'–DIK'* in RCs, infinitives, person markers as exemplified in (34):

(34)

a. bekle- yen	bekle-n-en
wait- SP	wait-PASS-SP
b. bitir - diğ - i	bitir - il - diğ - i
finish- OP - POSS3	finish - PASS - OP - POSS3

(Adapted from Underhill, 1976, p. 332)

One additional point that needs to be added is that agents in passive constructions in Turkish are usually designated by *'tarafından'* in both simple sentences and participle constructions (in other words relative clauses) as illustrated in the examples below:

(35)

a. Hasan tarafından açılan pencere
'The window that was opened by Hasan'

b. 1923 senesinde Atatürk tarafından kurulan Halk Partisi
The 'National Party' that was founded by Atatürk in 1923'

(Adapted from Underhill, 1976, p. 333)

2.3. ACCOUNTS REGARDING RELATIVE CLAUSE PROCESSING

As it has been explained in the preceding sections, animacy has an important influence on relative clause processing. However, there are also some other factors, which may have a priority over animacy in sentence production as well as sentence processing. The approaches that have put forward various ideas regarding those factors that might interfere with sentence or relative clause processing can mainly be collected under three main categories: memory-based accounts (Gibson, 1998, 2000; Hsiao & Gibson, 2003, Gordon, Hendrick & Johnson, 2001; Lewis & Vasishth, 2005; Van Dyke & McElree, 2006; Sheldon, 1974; MacWhinney, 1977, 1982; MacDonald & Christiansen, 2002; Bever, 1970; Diessel & Tomasello, 2005), syntax-based accounts (O'Grady, 1997; O'Grady, Lee & Choo, 2003; Carreiras et al., 2009; Keenan & Comrie, 1977; Hawkins, 2004) and finally discourse-based accounts (Reali & Christiansen, 2007; Hale, 2001, 2003; Levy, 2008;

Gennari & MacDonald, 2008; MacDonald, 1994; McRae, Spivey-Knowlton & Tanenhaus, 1998; Reali & Christiansen, 2007; Gordon & Randall, 2005; Fox, 1987; Roland, Dick & Elman, 2007; Traxler & Gernsbacher, 2006; Ferreira & Clifton, 1986; Mak, Vonk & Schriefers, 2002).

Memory-based accounts mainly suggest that working memory capacity is one of the main factors that restrict sentence processing, and the element number that occupies working memory causes sentence processing difficulty and a slow-down in the processing. On the other hand, syntax-based accounts put forward a uniform non-relativized syntactic structure across all languages and the difficulty level of structures produced in each language is justified by universal processing dynamics, inherent complexity and the transformations that those structures have been through (Hsiao & Mac Donald, 2015). Finally, discourse-based accounts assert that just syntax is inadequate in explaining all the processing difficulties on its own by emphasizing that the influence of semantics and context should not be neglected either when explaining language comprehension and production.

Although animacy feature is said to have a considerable influence on different structures produced in a language, the accounts that have been referred to above may also put an influence on the production results of RCs that are going to be analysed within the frame of the current thesis. Those accounts may either cooperate with animacy accessibility, and strengthen its effect, or they can inhibit its influence and prevent possible alterations that are going to take place in the structure of RCs. In the following, some hypotheses and theories belonging to each account are going to be explained in detail.

2.3.1. Memory-Based Accounts

In this section, a discussion on the hypotheses and the theories that explain sentence-processing within the light of how much burden it places on working memory will be given.

2.3.1.1. Dependency Locality Theory (DLT)

DLT was first proposed by Gibson (1998) together with the claim that SRCs are much easier than ORCs in terms of processing load, and the distance between the head noun and its referent was shown to be the main reason for that processing asymmetry between those structures.

DLT explains the processing dynamics of SRCs and ORCs with the help of two different metrics: storage resources and integration resources.

a. Storage Resources

Storage resources can basically be explained by the number of incomplete dependencies that are kept in working memory (Hsiao & Gibson, 2003). According to the proposal made by DLT, ORCs include more temporarily incomplete dependencies than SRCs. Therefore, they are processed with more difficulty and more slowly. To illustrate the logic behind storage resources, two different relative clause samples from English were provided below:

(36)

a. The scientist$_i$ who e_i praised the author smiled.
b. The scientist who the author praised e_i smiled.

(Adapted from Bulut, Yarar & Wu, 2019)

According to the subject (36a) and object RC (37b) samples above, DLT proposes that the processor needs to track for the incomplete dependencies and store all those dependencies until they are completed by their heads. Based on that suggestion, SRCs are claimed to have only two head dependencies left to be completed into a full sentence after appearance of the relative pronoun (*who*) such as 'The scientist who ei praised'. These two heads that need to be completed in the SRC above are the object of the verb *'praise'* (*the author*) and the verb of the matrix clause (*smiled*). On the other hand, in ORCs the head number that needs to be completed after the relative pronoun (*who*) is twice as many as the ones required in SRCs. To clarify, ORCs require four heads to complete a RC such as 'The scientist who the': the head noun of the determiner *'the'*, a verb head to complete the ORC (*praised*), a gap position for the filler object head (*the scientist [ei]*) and finally a verb head to complete the matrix clause (*smiled*). Depending on the number of head components that need to be stored in working memory until the full sentence is resolved, ORCs are claimed to bring more processing load. Therefore, ORCs are considered to be more difficult both to produce and to comprehend than SRCs are (Adapted from Bulut, Yarar & Wu, 2019).

b. Integration Resources (Linear Distance Hypothesis – LDH)

Integration resources can be named as Linear Distance Hypothesis as well (Carreiras et al., 2010). Whereas storage resources are concerned about the number of head dependencies created by the processor to save in working memory, integration resources are mainly interested in the distance of those dependencies created between the incoming word and its dependent on linear level (Gibson, 1998, 2000; Hsiao & Gibson, 2003).

As far as LDH is concerned, the integration cost can be calculated by counting the number of new discourse items (noun phrases and main verbs) intervening between the head and the gap (e.g., Gibson, 1998; Babyonyshev & Gibson, 1999; Pearlmutter & Gibson, 2001; Warren & Gibson, 2002). Related to the integration cost, Gibson (1998) also adds that together with the integration of a head noun into the structure, the structure becomes more

difficult since it lengthens the distance between the gap and the head. When the distance between the gap and the head increases, the predictions that are made at the beginning of sentences may be hard to maintain in the working memory. To exemplify the phenomenon put forward by integration resources side of DLT (Gibson, 1998), RC sets from both English as a head-initial language and Turkish as a head-final language are going to be compared below:

(37)

a. Subject Relative

the lion that [__ carries the cow] 1 word

b. Object Relative

the lion that [the cow carries __] 4 words

(Adapted from Özçelik, 2006, p.6)

When we look at the English RC types as in the set above, LDH asserts that SRCs are easier to process than ORCs as the distance between the head noun that has been moved from its original position and the gap that it has left behind is shorter compared to the one in ORCs. To illustrate, in the SRC sample above (37), only one word interferes between the head noun (*lion*) and its gap position (__). On the other hand, in ORC sample, there are four words between the head noun (lion) and its gap position (__). Therefore, they are considered to be more challenging for the processor both to comprehend and to produce.

(38)

a. Subject Relative

[$_{IP}$ __ inek-i	taşı-an]	aslan	LDH
cow-ACC	carry-AN$_{SUB\text{-}REL}$	lion	2 words

'the lion that carries the cow'

b. Object Relative

[$_{IP}$ inek-in [$_{VP}$ __ taşı-dığ-ı]]	aslan	LDH
cow-GEN carry-DIK$_{OBJ-REL}$	lion	1 word

'the lion that the cow carries'

(Adapted from Özçelik, 2006, p.9)

As for Turkish as a head-final language, when we want to calculate the integration cost in Turkish subject and object RCs by looking at the distance between the H noun (*aslan-lion*) and its gap position (__), we have to reach a conclusion that ORCs in Turkish seems to be easier compared to SRCs since the word number interfering between the head noun (*aslan-lion*) and its dependent is only one in the ORC sample whereas the SRC sample includes two words. However, this is an outcome contradicting with the predictions of DLT; therefore, it leads us to question the universality of the theory itself and requires us to come up with more studies especially on head-final languages like Turkish.

2.3.1.2. Similarity-Based Interface

The similarity-based interface supporters suggested that besides the number or the distance of incomplete dependencies within a RC, the semantic relationship between the items composing the RC could also adjust the processing ease of RCs.

To support such a claim, a self-paced reading task together with a recall task was applied in English language by Van Dyke and McElree (2006). Within the frame of the study, the participants were shown some words to keep in mind before they read the English relative clauses and their reading times and fixations were recorded. However, the demonstrated RCs included two different matrix verb options as presented in the RC sample below:

(39)

"It was the boat that the guy who lived by the sea sailed/fixed in two sunny days."

As far as the fixation times of the participants were concerned, the participants seemed to be focused on the matrix verb *'fixed'* more than the other verb *'sailed'* when they had to keep in mind the nouns *'table-sink-truck'*. The results proved the retrieval interference in RC processing because the matrix verb (*fixed/sailed*) is the region where the correct referent (*the boat*) is to be retrieved from memory and thus the dependency is to be established. However, the words shown beforehand have proved to manipulate the dependency relation that had been established at the end of the study.

Besides the similarity among the RC components as exemplified above, the effects of some other structural and discourse similarities have also been added to the discussions regarding the difficulty level evaluation of RCs, and different ideas have been raised to prove why SRCs can be processed more easily compared to ORCs in different languages. Brief information regarding those approaches will be provided in the following.

a. Word Order Canonicity (WDH)

The effect of canonical or non-canonical word order has been a topic of interest for many cognitive psychologists such as MacDonald and Christiansen (2002) and Tabor, Juliano, and Tanenhaus (1997). Related to the structural hierarchy, MacDonald and Christiansen (2002) asserted that the word order in subject relative clause is very similar to the frequent canonical word order of English. Therefore, the processing of those relative clauses is supported by the 'previous experience' of the speaker/comprehender and 'the frequency' of the structure in the language (p.40). In terms of evolving around the explanations regarding the 'frequency' and the 'probability', this hypothesis is much closer to experience-based accounts. Nevertheless, the same assistance cannot be observed for object relative clauses, as they do not have a word order similar to the canonical one. An example of the assumptions made by the Word Order Difference Hypothesis is going to be shared below in (41), and the different word orders are indicated in italics:

(40)

a. Subject relative

the lion [$_{CP}$ that [$_{IP}$__ carries the cow]] S V O (*canonical*)

b. Object relative

the lion [$_{CP}$ that [$_{IP}$ the cow [$_{VP}$ carries ___]]] O S V (non-*canonical*)

(taken from Özçelik, 2006, p.8)

As can be seen above, since subject relative clauses have a structure similar to the canonical word order in English, they are expected to be more easily processed compared to direct object relative clauses in English.

On the other hand, when we analyse Turkish RCs by utilizing the same Turkish RC set below (41), we can reach the conclusion that both subject and object RCs in Turkish possess a word order that is quite distinct from the canonical word order in Turkish.

(41)

a. Subject Relative

[$_{IP}$ __ inek-i taşı-an] aslan WDH
cow-ACC carry-AN$_{SUB-REL}$ lion not canonical (OVS)
'the lion that carries the cow'

b. Object Relative

[$_{IP}$ inek-in [$_{VP}$ __ taşı-dığ-ı]] aslan WDH
cow-GEN carry-DIK$_{OBJ-REL}$ lion not canonical (SVO)
'the lion that the cow carries'

(taken from Özçelik, 2006, p.9)

Therefore, word order canonicity may not have the same influence on Turkish native speakers as it does on English native speakers since neither RC forms have a word order similar to the canonical word order in Turkish.

b. Perspective Maintenance

Another approach that tried to support the relatively easy nature of SRCs is the Perspective Maintenance account suggested by MacWhinney (1977, 1982). Being an aspect of Parallel Function Hypothesis (Sheldon, 1974), Perspective Maintenance account MacWhinney (1982) was mainly established on the number of perspectives that one needs to change when processing especially complex structures, and it has been studied frequently in the interpretation of RCs. The details of the account are going to be discussed with the help of the example RC set from English (42) below:

(42)

a. SRC: The dog that chased the cat
b. ORC: The dog that the cat chased

(Adapted from MacWhinney, 1982, p. 112)

MacWhinney (1982) argues that SRCs (as in 42a) are easier to process than ORCs (as in 42b) because the comprehender does not need to change the perspective when interpreting SRCs. The main reason for that the head (*dog*) is already the agent of the action (*chase*) specified in the subordinate clause, and it remains as the agent when the RC processing is finished. On the other hand, in ORCs (42b) the perspective of the comprehender starts with the head of the RC (*dog*), then it is changed towards the agent (*the cat*) of the action (*chase*) indicated in the subordinate clause. As a result of such a requirement for perspective change in ORCs, MacWhinney (1982) concludes that SRCs are regarded to be easier to process both in production and comprehension compared to ORCs.

2.3.2. Syntax-Based Accounts

The accounts that are going to be covered in this section assert that the structural difficulty could only be explained by means of the inherent syntactic complexity of the structures themselves, and these accounts try to produce some universal explanations to why some structures are inherently more difficult than some others within a language.

2.3.2.1. Structural Distance Hypothesis (SDH)

The main prediction of SDH, as a hypothesis under syntax-based accounts, is that the difficulty level of all gap containing structures such as wh-questions, scrambled constructions and relative clauses can be predicted by the differences in the depth of embedding of the gap (Collins, 1994; Hamilton, 1995; Hawkins, 1999; O'Grady, 1997, 1999).

Within the light of SDH, O'Grady (1999) showed a way to calculate the depth of the relative clauses. He briefly states that the relative difficulty of subject and object relative clauses can be determined by counting the number of nodes that intervene between the head noun and its gap. In the following, examples (43 and 44) from both English and Turkish will be provided to demonstrate how Structural Depth Hypothesis is applied to calculate the difficulty level of relative clauses in both head-initial and head-final languages.

To start with the RC set from English as a head-initial language, the structural distance between the head and the gap is shown in italics in the examples below (43).

(43)

a. Subject relative

the lion [CP that [IP__ carries the cow]] *2 nodes (CP and IP)*

b. Object relative

the lion [CP that [IP the cow [VP carries ___]]] *3 nodes (CP, IP and VP)*

(taken from Özçelik, 2006, p.7)

As can be understood from the node numbers above, the prediction of SDH seems compatible with the predictions made by Linear Distance Hypothesis (LDH) for English RCs since the node number intervening between the gap and the noun seems to be higher in number in the direct object relative clause (3 nodes) compared to the subject relative clause (2 nodes), which makes direct object relative clauses a bit harder to process in English. Similarly, LDH also puts forward that SRCs are easier to process than ORCs because the number of words interfering between the head and its gap are fewer in number than the ones in ORCs.

After the analysis of RCs in a head-initial language above, one other RC sample set is going to be shown from Turkish, which is a head-final language to test whether the predictions of SDH will match for RC constructions in both languages (44):

(44)

a. Subject Relative

[$_{IP}$ __ inek-i	taşı-an]	aslan	SDH
cow-ACC	carry-AN$_{SUB\text{-}REL}$	lion	1 node

'the lion that carries the cow'

b. Object Relative

[$_{IP}$ inek-in [$_{VP}$ __ taşı-dığ-ı]] aslan SDH
cow-GEN carry-DIK$_{OBJ-REL}$ lion 2 nodes
'the lion that the cow carries'

(taken from Özçelik, 2006, p.9)

When we look at the Turkish RC set above (44), the ORC seems to have two nodes interfering between its head and the gap position whereas the SRC has only one node between them. Hence, similar to English SRCs, Turkish SRCs also have been proved to be easier in nature compared to ORCs and the results gained from the analysis of RCs in Turkish according to the SDH seem to overlap the predictions of the other accounts as well except for the results gained from LDH.

Similarly, Aydın (2007) also found parallel outcomes with SDH at the end of the research he conducted on L2 Turkish speakers of different levels and agrammatics to be able test whether LDH or SDH is more effective in explaining the comprehension of SRCs in Turkish. His study proved that intermediate level L2 speakers of Turkish found SRCs easier to understand compared to ORCs by being compatible with the hypothesis of SDH. However, agrammatics and elementary level L2 speakers of Turkish did not provide the same outcome as the intermediate level speakers. On the contrary, they did not demonstrate any significant difference between their comprehension of Subject or Object RCs. Interestingly, Aydın (2007) also found out that some errors of agrammatics and elementary level speakers of Turkish were quite similar such as trace deletion or referential strategy. So, the proposals of LDH and SDH present quite different and controversial outcomes for Turkish RCs compared to English RCs.

2.3.2.2. Accessibility Hierarchy

As a result of the analysis conducted on relative clauses by Keenan and Comrie (1977) in 50 different languages, a universal typological generalization was formulated regarding the acquisition order of RCs. Within the frame of their generalization, two main components were taken into consideration: head noun and restricting clause.

Depending upon that analysis, the generalization of acquisition order they came up with is shared below:

Table 1

The Noun Phrase Accessibility Hierarchy (English)

Subject	(S)	The man who knows the woman
[a]<Direct Object	(DO)	The man that the woman knows
<Indirect Object	(IO)	The man that the woman gave a pencil to
<Oblique	(OBL)	The desk that the woman put the pencil on
<Genitive	(GEN)	The woman whose pencil the woman took
<Object of Comparison	(OBL)	The man that the woman is taller than

[a] < means *less marked/complex* than

Note. Reprinted from Baysal, 2001, p.132

Based on the table prepared by Keenan and Comrie (1977, as cited in Baysal, 2001, p.132), a table showing the relative clause difficulty order in Turkish is also shared below:

Table 2

The Noun Phrase Accessibility Hierarchy (Turkish)

Subject	(S)	Kadını bilen adam
[a]<Direct Object	(DO)	Kadının bildiği adam
<Indirect Object	(IO)	Kadının kalem verdiği adam
<Oblique	(OBL)	Kadının üzerine kalem koyduğu masa
<Genitive	(GEN)	Kalemi kadının aldığı adam
<Object of Comparison	(OBL)	Kadının kendisinden daha uzun olduğu adam

[a]< means *less marked/complex* than

Note. Adapted from Baysal, 2001, p.132

From the two tables demonstrated above, subject relative clauses are acquired first in order and they are the easiest RC type both to comprehend and to produce by native speakers of Turkish. After SRCs, direct object RCs comes in the second place, then it is followed by an indirect object RC. This order is completed by Oblique, Genitive and Object of Comparison RC types. Another implication that could be extracted from the generalization above was that if a RC type exists (e.g. Oblique RCs) within a language, all other RC types below that RC type in the hierarchy (Subject, Direct Object and Indirect Object RCs) will also exist within the language as well.

Although Keenan and Comrie (1977) tried to generate a universal fact related to the acquisition difficulty of RCs, some other cross-linguistic studies continued to test their hierarchy and some hypotheses and assumptions were put forward to confute the universality of Accessibility Hierarchy. For instance, Fox (1987) was one of those researchers who challenged the idea by means of a corpus study comparing the relative clause use in context in English, Tagalog and Batak languages and she postulated Absolutive Hypothesis, which especially criticized the idea that SRCs are the easiest RC

type and explained that constraints on relativization mainly stems from the constraints on conversationally suitable strategies for introducing the antecedents into the discourse. On the other hand, Ozeki and Shirai (2007) conducted cross-linguistic research on Japanese language as an L2 in the form of a corpus study by interviewing the native speakers of Korean, Cantonese Chinese and English who were trying to learn Japanese. At the end of the study, it was observed that even the low proficiency level old non-native speakers could produce DO or OBL RCs (Oblique Relative Clauses), which suggested that SRCs may not be much easier than DO or OBL RCs as suggested by Noun Phrase Accessibility Hierarchy (Keenan & Comrie, 1977). Final study that is going to be discussed within the frame of the present section that opposes the assumptions initiated by Accessibility Hierarchy was organized by Özçelik (2006) on Turkish language and he tried to explain why there is a RC asymmetry in the languages. Meanwhile, he tried to test whether the RC asymmetry (SRCs are easier than ORCs to process) suggested by Keenan and Comrie (1977) is valid in Turkish as well by exploiting a picture selection task to English, Japanese and Mongolian learners of Turkish as a second language. At the end of the study, he reached the conclusion that participants had a more difficult time differentiating SRCs compared to ORCs, which was a result opposing many theories supporting the easy nature of SRCs and confuting the postulations regarding the views on ‘language universals’ and ‘interlanguages’.

Within the light of those studies and approaches, the current research will also focus on Turkish subject and object relative clauses, and aims at shedding light on the current discussions about whether semantic or discourse factors such as animacy could overshadow the syntactic complexity in language production.

2.3.3. Discourse-Based Accounts

Under the heading of discourse-based accounts, the allegations raised from interactive processing approach are going to be discussed. Being raised from interactive language

processing approach, the hypotheses within this section mainly assert that syntax is inadequate in explaining the processing difficulty on its own and the influence of discourse should not be overlooked, either.

2.3.3.1. Constraint-Based Approach

Being a common interactive account, constraint-based approach suggests that both semantic and syntactic factors are activated at the same time during the language processing (MacDonald et al., 1994; McRae, Spivey-Knowlton, and Tanenhaus, 1998). It also puts forward that those activated structures are in competition during the processing and the most frequent and plausible ones have a tendency to be selected first by the processor. Based on that constraint-based accounts claim that the processor is assumed to pick the components of a construction based on two main factors: frequency and plausibility.

a. Frequency

As explained before, frequency factor in language processing mainly proposes that the more frequent a structure is, the more easily it will be processed. As for the case of the RCs, SRCs are alleged to be more frequent than ORCs; therefore, they are considered to be easier. Frequency accounts take the statistical regularities into account when evaluating the real time processing of a structure or comparing the processing difficulties of structures within a language; therefore, they usually consult corpus outcomes.

In some theories embracing the frequency approach, frequency could be verbalised as experience and surprisal (Hale, 2001; Levy, 2008, as cited in Bulut, et. al., 2019, p.219) or entropy (Hale, 2003, as cited in Bulut, et. al., 2019, p.219). The hypotheses concerning those terms will be briefly discussed in the following:

i. *Tuning Hypothesis:* This hypothesis suggests that processing is affected by the experience of language user. The less one is exposed to a linguistic structure, the less he/she will be proficient at that structure both in production and comprehension level (Mitchell, Cuetos, Corley & Brysbaert, 1995; Jurafsky, 1996). However, the hypothesis was later revised within the light of the findings of some cross-linguistic studies and it was divided into two main versions such as fine-grain (Mitchell, et. al., 1995) and coarse-grain versions (Mitchell, et. al., 1992) of Tuning model. The coarse-grain version of the hypothesis was an earlier version which started with the finding of a high RC attachment tendency in Spanish by Cuetos and Mitchell (1988) as opposed what late closure principle of garden path approach suggested. Within the light of that finding, the coarse-grain version of the hypothesis put forward that the languages were not governed by universal principles such as late closure or minimal attachment, but by some structural frequencies that were specific to each language. Since then, there have been a lot of studies on RC attachment in various languages to find out the structural frequencies for RC attachment sites in each language influence. Some languages such as English (e.g., Carreiras & Clifton, 1999; Fernandez, 1998; Frazier & Clifton, 1996;Henstra, 1996), Brazilian Portuguese (Miyamoto, 1998), Swedish, Norwegian, and Romanian (Ehrlich, Fernandez, Fodor, Stenshoel & Vinereanu, 1999) have shown low attachment tendency within language whereas some others like Spanish (Carreiras & Clifton, 1993, 1999; Cuetos, Mitchell & Corley, 1996; Gibson, Pearlmutter & Torrens, 1999; Igoa, Carreiras & Meseguer, 1998; Thornton, MacDonald & Gil, 1999), Dutch (Brysbaert & Mitchell, 1996; Mitchell, Brysbaert, Grondelaers & Swanepoel, 2000; Wijnen, 1998), Afrikaans (Mitchell et al., 2000), French (Frenck-Mestre & Pynte, 2000; Mitchell, Cuetos, & Zagar, 1990; Zagar, Pynte & Rativeau, 1997) and German (Hemforth, Konieczny & Scheepers, 2000) have evidenced a high attachment inclination within the language. Fine-grain version of the hypothesis (Mitchell, et. al., 1995) was the revised form of the framework and it broadened the traditional

view on the analysis of structures based on their structural frequencies by adding lexical and semantic frequencies within the framework. Based on that revised model, structural frequency cannot estimate the general tendency within the language on its own. The smaller components that form the structure together with their semantic properties could also be regarded when reaching a decision about the general linguistic tendencies within a language.

ii. *Surprisal:* Surprisal within the frame of this 'Surprisal Hypothesis' could be defined as the difficulty in replacing the old information with the new one. So, it suggests that if a new coming structure does not match the language user's expectation, the processing will naturally slow down and be difficult (Hale, 2001; Levy, 2008).

iii. *Entropy Reduction:* Entropy Reduction and Surprisal Hypotheses are two common approaches that are mostly confused, but the two are quite different since surprisal hypothesis evaluates the difficulty of a structure based on its log probability. On the other hand, entropy hypothesis relies on induced change in uncertainty. Being different from Surprisal, Entropy Reduction proposes that reduction in the uncertainty requires more labor and time; as a result, uncertain structures are processed with more difficulty (Hale, 2006; Yun, Chen, Hunter, Whitman & Hale, 2015).

b. Plausibility

To be able to understand whether the language processing takes place in a modular or interactive way, one other factor that is utilized by researchers is plausibility. Since it proposes a good chance to test plausibility, animacy has been utilized a lot to test plausibility influence on language processing (e.g. Ferreira & Clifton, 1986; Trueswell et al., 1994; Mak, Vonk & Schriefers, 2002, as cited in Boran, 2018, pp.26-27). It is also

thought that the perception of SRCs being easier than ORCs is caused by the animacy feature as the processor is inclined to assign an animate NP ‘an agent’ or ‘an experiencer’ role during the processing, so in ORCs assigning an agent role to an inanimate NP could be a more complicated procedure. In parallel with those claims, Mak, Vonk & Schriefers (2002) [Mak et al. (2002)] asserted that the speakers’ perception related to the difficulty of subject and object RCs could be adjusted by means of animacy feature as a plausibility factor. At the end of the study, their findings served as a significant evidence to plausibility factor in language processing by proving that the processing load could be diminished in ORCs or increased in SRCs by playing with the animacy features of the head nouns.

2.4. RELATIVE CLAUSES AND ANIMACY

Similar to its impact on the structural organization (active/passive) and the word order of simplex sentences, animacy feature is claimed to put an effect on the structure of relative clauses (active/passive or subject/object) as well. Thus, animacy effect on relative clause constructions has been an area of interest for most researchers studying on various languages, such as English, Spanish, Catalan, German or Serbian, etc. In the present section, some of those cross linguistic studies will be presented. Meanwhile, the question about whether the animacy effect could overshadow the effect of other RC processing accounts listed in the previous section will be discussed.

To start with the first study concentrating on animacy impact on relative clause processing, Vonk and Schriefers (2002) came up with a study, comparing subject and object relative clauses in Dutch and German. At the end of the corpus study they conducted based on Dutch and German newspapers, animacy was proved to have a significant role in the distribution of subject and object relative clauses. Another finding was that no reading time difference was detected between subject and object relative clauses in Dutch when the objects were inanimate. On the other hand, animate object increased the processing

difficulty of the relative clauses, which was a finding that was compatible with the nature of constraint based approach to sentence processing.

The second study was conducted by Kırkıcı (2004) on Turkish RCs and it targeted the RC attachment preferences in Turkish when resolving RC ambiguities. Within the frame of the study, to main complex noun phrases were analyzed: RCs followed by a complex NP with GEN constructions and RCs followed by a complex NP with postpositional phrases. The main reason for preparing such kind of two item sets were to test whether some fine-grain syntactic (e.g. pre/postpositions) or semantic (e.g. animacy) features within a language could adjust RC attachment preferences in Turkish although there are some languages demonstrating either high or low attachment tendencies within themselves. Within the light of that aim, two offline questionnnaires were conducted to participants so as to see their attachment preferences. And the results showed that RC attachment preferences in Turkish were not only governed by syntactic or locality-based constraints, but some semantic constraints such as animacy might also get involved in the RC attachment procedure.

Being inspired by the other studies within the field, Gennari, Mirkovic and MacDonald (2005) wanted to test animacy effect on Spanish and Serbian RCs as well as they did in English RCs by means of a cross-linguistic study. They came up with a picture description task in which one agent was executing an action upon either an animate or an inanimate patient. Related to each scene, some biasing questions were directed to the participants so that they can produce more RCs. At the end of the study, the data gathered from different languages were compared and the results showed that the Spanish and Serbian speakers were not affected by animacy feature of the patient as much as English speakers were. One additional result that was derived from the observations was that if both the agent and the patient of the action were similar in terms of their animacy features, the semantic competition between those two components lead to the inhibition of the agent in its syntactic position, which resulted in the use of more passive structures or some other

different constructions. In the end, it was speculated that similarity-based competition among the concepts may influence the various stages of production planning.

Another study implemented by Gennari and MacDonald (2008) utilized animacy and relative clause relation as a tool to prove the connection between production and comprehension within a language by examining how the production rate of a certain type of relative clause influences its comprehension difficulty among English native speakers. The main hypothesis of their study was that the frequency of a structure produced by native speakers automatically affects the processing speed of these constructions in their comprehension, too. Processing load of a structure is somehow determined by its distribution. To test this Production-Distribution-Comprehension approach, six studies were arranged in total. The first two tests were production tests demonstrating that animacy-based accessibility does have an effect on relative clause production. The following two corpus studies will be put in action to compare the outcome of production tests with the real data collected from the authentic language samples. The final comprehension study also verified that the structures preferred in few numbers in production studies were more difficult to understand compared to the ones used in higher amounts. For instance, if the use of subject relative clauses with an animate head is more common than object relative clauses with an animate head then processing subject relative clauses with an animate head will be much easier compared to object relative clauses with an animate head since its distribution is in a wider range.

A similar study was conducted on Greek relative clause constructions by Loui and Gennari (2008). The focus of their study was also the production of RCs in Greek and they tested whether the animacy feature of the head noun in a RC can influence the structural choices and grammatical function assignment in Greek RCs as it does in English. Within the frame of this aim, they showed native Greek speakers some pictures including actions that occur between one animate and one inanimate entity or two animate entities. Based on the pictures and actions, they asked the participants some questions to prime them to produce

Greek RCs with either animate or inanimate head and wanted them to write their answers by focusing on the action only in each picture. The same test had been conducted for English and Spanish (Gennari, Mircovi & MacDonald, 2005) languages as well before, and the outcomes of all three studies were compared with each other. At the end of the research, it was concluded that animacy does not play a major role in determining the structure or the voice (active/passive) of the RCs in Greek as much as it does in English relative clauses. Moreover, more emphasis was placed upon the language-specific constraints in production mechanisms by putting forward that those constraints were more important in determining the structural choices than conceptual factors such as animacy.

The same data collection tool was implemented in a comparative study organized by Montag and MacDonald (2009) to compare the rates of animacy effect that could be seen in English and Japanese relative clauses. The data were collected by means of the same picture description task that was utilized in a previous study by Gennari and Loui (2008) on Greek RCs. Finally, the results of the task showed that more passive structures were chosen in both languages when the head noun was an animate entity. As for the variance between the passivization rates of these both languages, it was stated that it could be explained either by cognitive or language-dependent reasons.

Next study was concerned about the RC attachment in European Portuguese and it aimed to see whether the animacy of the NPs would have any influence on the RC attachment sites (Soares, et.al. 2010). A metalinguistic awareness and a self-paced reading task based on four animacy conditions were organized in their study. In the end, it was observed in both tasks that the overall tendency of European Portuguese native speakers was towards high-attachment; however, they also proved that this tendency could be adjusted by means of the animacy of host NPs. That is, if the first host was inanimate and the second one was animate, the parser's preference could be adjusted to low attachment site. As a result, the findings of Soares, et. al. (2010) supported the interactive model in language processing by

proving the parser considers extra-syntactic information such as animacy even in the early stages of the processing with the help of their research design.

RC processing has been a conflicting topic in Mandarin Chinese as well, and there are studies in the field that have tried to evaluate the processing load caused by subject and object relative clauses. Wu, Kaiser and Andersen (2012) hypothesized that some extra-syntactic factors such as animacy may help adjust the processing ease of those structures in Mandarin Chinese. Within the light of that hypothesis, they came up with three different experiments, which were composed of self-paced reading tasks to evaluate the real time processing of RCs. In experiment one, they discovered a marginal facilitation of the animate head together with an inanimate object. In the second experiment, they observed a significant facilitation effect of inanimate object head. As for the final experiment, they found out that when the subject is animate and the object is inanimate, SRCs are almost in the same difficulty level as the ORCs although SRCs should have been processed faster according to the Accessibility Hierarchy by Keenan and Comrie (1977). Nevertheless, if the subject is inanimate and the object is animate, the processing of ORCs became much more difficult and the reading time of SRCs were recorded to be faster. All in all, the outcome of the study was compatible with the hypothesis at the beginning and their findings showed that the animacy of the head and the embedded noun must be taken into account when evaluating processing ease.

Another study on Chinese RCs were concerned about exploring the relationship between production and comprehension in Mandarin Chinese. A triangulation in data collection was preferred by Hsiao and MacDonald (2015), and three different experiments were implemented separately to collect data about production, distribution and comprehension of Mandarin Chinese RCs respectively. In the first phase of the study, a picture description task was applied to observe a strong head noun animacy influence on the structural choice when producing RCs in Mandarin Chinese. The findings also suggested some implications related to incremental nature of language processing. Next stage went on with a corpus

study to see the distribution of RC preferences in case of an animacy-based bias in natural context. In the final stage of the study a gated Metalinguistic Awareness Task was applied to test the comprehension of RCs in Mandarin Chinese and the outcome of the study revealed that comprehenders' animacy-linked expectations put an effect on the processing of RCs. Overall, the study proved that the processing difficulty of some structures (in their case RCs) in Mandarin Chinese were dependent on the experience of comprehenders about that structure rather than its structural difficulty, which means that the more one is exposed to a particular linguistic structure, the more easily s/he begins to understand and produce that structure.

Finally, Başer (2018) ran a study to test the priming effect on relative clause attachment by making use of animacy as one of the factors affecting the relative clause attachment. Three different data collection tools were exploited within the frame of the study: offline (pen-and-paper), online (self-paced reading), and eye-tracking studies. The target group of the study was composed of monolingual Turkish speakers and Turkish learners of English. According to the results of the study, animacy can have an effect on relative clause attachment depending on the condition and the differences between the target attachment sites.

CHAPTER 3:

METHODOLOGY

In the methodology section, more detailed information will be provided regarding the participant profile, data collection tools, procedure of both pilot and main studies. Next the outcomes from these tests are going to be presented with the help of tables and graphs together with their interpretations.

3.1 PILOT STUDY

The main objective of the pilot study was to see whether the data collection items prepared to test animacy effect on Turkish RCs were valid and reliable enough to conduct in the main study section of the study.

3.1.1. Participants

In total, there were twenty people in G1 and seventeen people in G2; however, the ones whose L2 proficiency level was above B1 according to CEFR and the ones whose age was outside 18-35 age range were eliminated from the study. Considering those age range and language criteria in order to be in rapport with target participant group in the main study, ten participants' data could be included in the Picture Description study whereas nine participants' data were analysed in Metalinguistic Awareness Task for the first group. As for the second group, only the data of eight people could be included in the analysis part of both Picture Description and Metalinguistic Awareness Tasks.

3.1.2. Data Collection Tools

The same Picture Description and Metalinguistic Awareness Tasks to be used in the main study part are utilized in the current section so that their reliability and normality analyses could be conducted before applying them on the target participant group.

3.1.3. Data Collection Procedure

Twenty target and twenty filler questions were split into two groups and the distribution of target and filler items in each set was done by using an online program called ‘Randomizer (https://www.randomizer.org/)’.

To data were collected from the participants by using an online survey tool called ‘SurveyLegend (https://www.surveylegend.com/)’. On the opening page of the tasks, short information related to content of the study and an approval sign of voluntary participation were placed so that it could be understood that participants were taking part in the study on their own will. After asking the consent of participants, a short participant information form was added to collect the necessary background information related to each participant. In that way, necessary information about the age group and (if there is) second language competency of the participants were going to be gained.

The online tasks were left open throughout a week and the participants were allocated one week to complete the study from the link sent by the researcher.

3.1.4. Data Analysis

For the analysis of the collected data, the following statistical tests were applied in the given order:

- Normality Tests (TURCOSA)
- Reliability Tests (TURCOSA)

As for the application of those tests to our samples, normality and reliability tests were applied to the question sets focusing on animate and inanimate conditions separately in each group of participants for both Picture Description and Metalinguistic Awareness Tasks. In total, both normality and reliability tests were applied on eight different data sets each of which was composed of five different target items as listed below:

- Picture Description Group 1 animate
- Picture Description Group 1 inanimate
- Picture Description Group 2 animate
- Picture Description Group 2 inanimate
- Metalinguistic Awareness Group 1 animate
- Metalinguistic Awareness Group 1 inanimate
- Metalinguistic Awareness Group 2 animate
- Metalinguistic Awareness Group 2 inanimate

When checking the parametric/non-parametric nature of the data for each condition above two different ways of analyses were utilized: Kolmogorov-Smirnov Test and Shapiro Wilk Test because Kolmogorov-Smirnov is criticized to be an obsolete way of assessing normality on its own (Marusteri & Bacarea, 2010).

As for testing the reliability of the items, again three different reliability measures had to be checked which were Cronbach's alpha, inter-item correlation matrices and item-total statistics. The main reason for utilizing one than one measure was that Cronbach's alpha values can be influenced by the number of items in a scale quite easily and it can bear quite low values (e.g. 0.5) especially when it is applied to a short scale including ten (10) items or below as in the case of data groups listed above. Additionally, Cronbach's alpha was not

enough on its own to detect the problematic items in question set because it provides an overall reliability value (DeVellis, 2003). When applying all those three reliability test, Spearman's rho correlation was used since both the dependent and independent variables were categorical in the current study (Pallant, 2010).

3.1.5. Findings

3.1.5.1. Findings of Normality Tests

As it was suspected in the Data Analysis section, Kolmogorov-Smirnov and Shapiro-Wilk provided very different outcomes from each other in terms of demonstrating the parametric or non-parametric nature of the items (see APPENDIX I for normality analyses). To illustrate, Kolmogorov-Smirnov test results demonstrated that all the data were distributed normally except for one question targeting inanimate condition in both Picture Description Task and Metalinguistic Awareness Tasks. On the contrary, Shapiro-Whilk test demonstrated that all the items had non-normally distributed data except for one item in Picture Description Task and two items in Metalinguistic Awareness Task, which meant that non-parametric test alternatives were required to be utilized in the main study section.

3.1.5.2 Findings of Reliability Tests

At the end of all three tests applied on each set composed for five questions (see APPENDIX II for reliability analyses), all the items proved to be reliable except for two items targeting animate condition in Metalinguistic Awareness Task, and those items were provided below (45):

(45)

a. Q3

Arkadaşı yemek sırasında çocuğu itti. Çocuk arkadaşına tepki gösterdi.
_____ çocuk, arkadaşına tepki gösterdi.

His/Her friend pushed the kid in the meal queue. The kid reacted to his/ her friend.
The kid _____ reacted to his/ her friend.

b. Q4

Öğretmen öğrenciyi tahtaya kaldırdı. Öğrenci hemen tahtayı sildi.
_____ öğrenci, hemen tahtayı sildi.

The teacher made the student come to the board. The student cleaned the board.
The student _____ cleaned the board.

Depending on the reliability outcomes provided above, the analyses of the answers to the above mentioned questions had to be excluded from main study.

3.2. MAIN STUDY

After testing the validity and reliability of the data collection tools, the present chapter focuses on analysing the data collected from target participant group.

In the following, the target participant profile and data collection tools are going to be shared in detail together with their rationales. Then, which analyses were conducted on each data set are going to be explained in more detail.

3.2.1. Participants

Two main criteria were paid a special attention when choosing the participant groups in the main study section: age and second/third language proficiency level of the participants. The main reason for fixing participant profile to a certain age and language level was to avoid some possible and scientifically proven interference effects of age and second/third language on native language production.

To illustrate some possible ageing effects that were abstained from in the current study, three main hypotheses were put forward in the literature explaining how ageing in language can affect L1 tendencies in elder group of participants (Altmann & Kemper, 2006):

a. General slowing hypothesis: Overall slowing in cognitive computations may lead to result in some decrements in older adults' language production performance as well (Salthouse, 1994, 2000).

b. Inhibitory deficit hypothesis: Older adults can have a tendency to excessively rely on over-learned 'default' structures due to the possible inability of working memory to delete no longer relevant information (Zacks, Hasher, and Li, 2000).

c. Reduced resources hypothesis: Older adults have diminished processing resources which emerge when they need to come up with complex structures and which push them to rely more on environmental support such as perceptual characteristics of the stimuli (Craik, 1986; Craik & Byrd, 1982).

To diminish such kind of effects proposed by the hypotheses above, the participant profile was chosen from young adult Turkish native speakers whose age range was 18-35 years old.

As for exemplifying the effects of a second / foreign language, there were some discussions regarding L2 effect. For instance, some claimed that L2/L3 can be enhancing for L1 (Kesckes & Papp, 2000) whereas some others stated that L2/L3 can be harmful (Cook, 2003). Still others avoided such value judgements like good or bad effect and they preferred to focus on differences between L1 and L2 that were causing those L2 effects on L1 (Cook, 2003). Based on such kind of presumptions related to L2 effect on L1 processing / production, no proficient L2 users were included in the target participant group of current study and the proficiency level of participants in any languages other than Turkish were limited to maximum B1-B2 according to CEFR.

Within the light of both main criteria provided above, voluntary response and purposive sampling methods were embraced in the current study (McCombes, 2021), and the participants were chosen among the students who were learning English at pre-intermediate level (B1) at Atilim University Department of Basic English.

Being in compatible with the criteria above, there were 46 people in Group 1 (G1) and 58 people in Group 2 (G2) whose data were accepted for the analysis section after two people from G1 and three people from G2 were eliminated from the study due to their high level of L2 or L3 language competency. All of the participants in both groups were native Turkish speakers and they were students at Atilim University Department of Basic English. The L3 backgrounds of students were changing such as mostly German, French, Georgian in G1; and Arabic, Chinese, Japanese, Russian, Serbian, Ossetic and again German in G2. However, the overall language competencies of those participants were not higher than B1-B2 level for their L3.

The age range of the participants was between 18-25 in G1, whereas that range was between 18-24 in G2. The participant age profile was kept almost the same in both groups of participants so as not to cause any discrepancies between group outcomes due to age differences.

3.2.2. Data Collection Tools

In the main study, the same materials that had been used in the pilot study were used since the reliability analyses on the test items have been proven to be reliable except for two items from G1 - Metalinguistic Awareness Task. Therefore, these two items were extracted from the analysis part in main study as well due to their unreliable values as a result of the reliability analyses conducted in the previous section. Additionally, it was observed that the materials used in the pilot study encouraged participants adequately to use active or passive RCs as was expected at the beginning of the study. Besides, the items that were used in the main study appeared in the same order as they did in the pilot study.

Similar to the pilot study, the main study was also composed of two sections: a picture description task and a metalinguistic awareness task both of which included twenty target and twenty filler questions in total.

Though the data collection tools used in the pilot study were not changed in the main part of the thesis, one additional corpus analysis part was added in the current section both to be able to compare the participant outcomes from the data collection tools with one reliable and fixed resource and to achieve methodological triangulation in the current study (Denzin, 1973). By doing that, the main aim of the current research was not only to come up with more valid results but also to gain a cross-verification from more than two resources. Similarly, Carvalho and White (1997) also support such kind of methodological triangulation use in scientific research on account of four main features of it: its enriching, refuting, confirming and explaining features enrich the study in their opinion. It is enriching because outputs from different resources can add value to each other and they can help explain various aspects of a topic. It is refting since one resource can disprove the outcome of another resource as was the case in our pilot study. It is confirming as being different from the case of refuting, one set of options can confirm the outcomes of another

set of options. Finally, it explaining because one set of options gained from one method can help explain the unexpected outcomes gained from another set of options.

By considering the benefits of utilizing methodological triangulation above, it was aimed to see whether the different modes of data collection (Picture Description, Metalinguistic awareness and Corpus in our case) could create any differences among RC preferences in Turkish language.

Accordingly in the following, the target items and fillers that were used in both picture description and Metalinguistic Awareness Tasks in the main study are going to be explained in more detail than it was done in the pilot study and they are going to be introduced in separate headings by sharing examples, rationales and theoretical background for them. After that, a brief introduction related to the corpus that was used for the indicated aim above is going to be added before finalizing the current section.

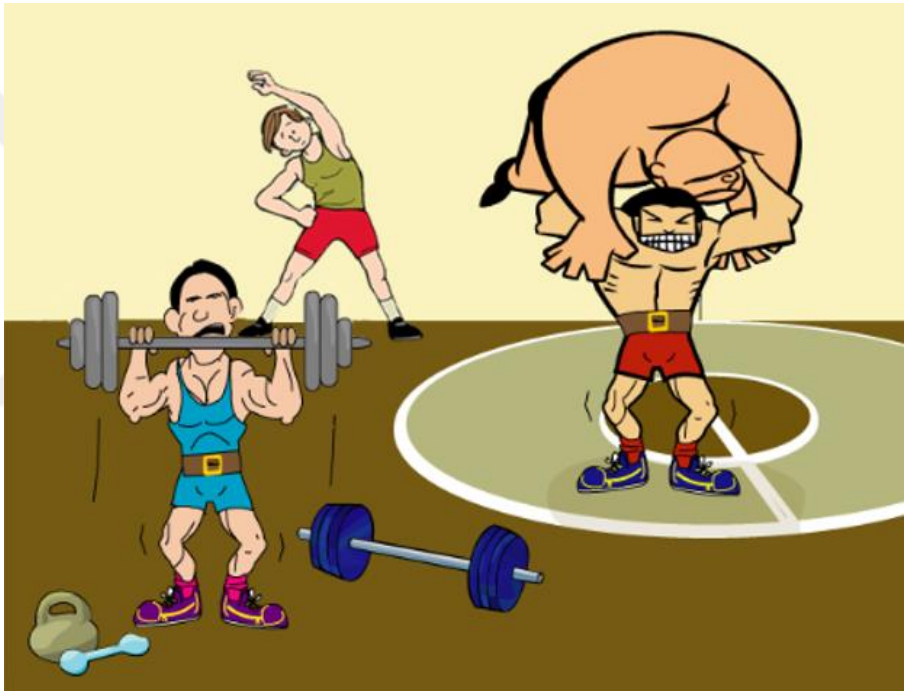
3.2.2.1. Picture Description Task

In the first phase of the study, a picture description task was applied to the participants. In this task, ten target verbs were set and ten different pictures were arranged representing each verb. The pictures were selected from a cross linguistic study conducted on English and Japanese languages by Montag and MacDonald (2009). Afterwards, related to each picture two questions were asked concerning the animate and inanimate objects upon which the indicated action was performed. While answering the questions, participants were especially warned about using the target verb (keyword) given to them below each picture. Based on the aim of the study, one question was aimed at encouraging RC use with an animate head while the other question aimed at encouraging RC use with an inanimate head. By doing that, the main objective was to enforce the application of relative clauses when the participants describe the animate/inanimate entities in each picture. By looking at the participant outcomes of the pilot study, it seemed that the items served their

purpose well as the participants seemed to have produced RCs either in active and passive form.

Depending on the information provided above, an example that illustrated a target item (46) is given below:

(46)



Keyword: Kaldır- *(to lift)*

a. **Animate-animate condition:**
Resimde hangi adamın saçları yoktur*?*
Which man in the picture has no hair?

b. **Animate-inanimate condition:**
Resimde hangi halter gri renktedir?
Which barbell in the picture has grey color?

As can be seen in the picture, many similar people and many similar items were illustrated in the same frame. The main purpose for that is that the participants could produce a

defining relative clause when they were asked to describe an object or a person in the picture. Otherwise, only one object or one person would be enough. In that way, the main objective was to bring standardization to the type of relative clause that could be preferred by participants for each picture. Additionally, the animacy of agents of the verb demonstrated in the picture was the same while the animacy of patients was different. To clarify, there were two different people performing the same action (lifting) in the picture above, but one was performing it on an inanimate (barbell), and the other one was performing it on an animate recipient (the bald man). For the condition where a human was lifting another human, the name 'animate-animate' was given, and for the condition where a human was lifting a barbell, the name 'animate-inanimate' condition was given. Related to these two different conditions, two different questions were asked so that the participants could come up with a RC describing the object of the action. Based on the previous information related to RCs covered in the literature review, the participants had two options when describing the patients in this picture. The first one was using an active object relative clause and the second one was using a passive subject relative clause as exemplified in the following (47):

(47)

a. Active object relative clause

Sporcunun havaya kaldırdığı halter
The barbell that the sportsman is lifting

b. Passive subject relative clause

Sporcu tarafından havaya kaldırılan halter
The barbell that is being lifted by the sportsman

Similar to the example above, there were ten different target verbs illustrated by ten different pictures, and those verbs chosen for target items were listed below (48):

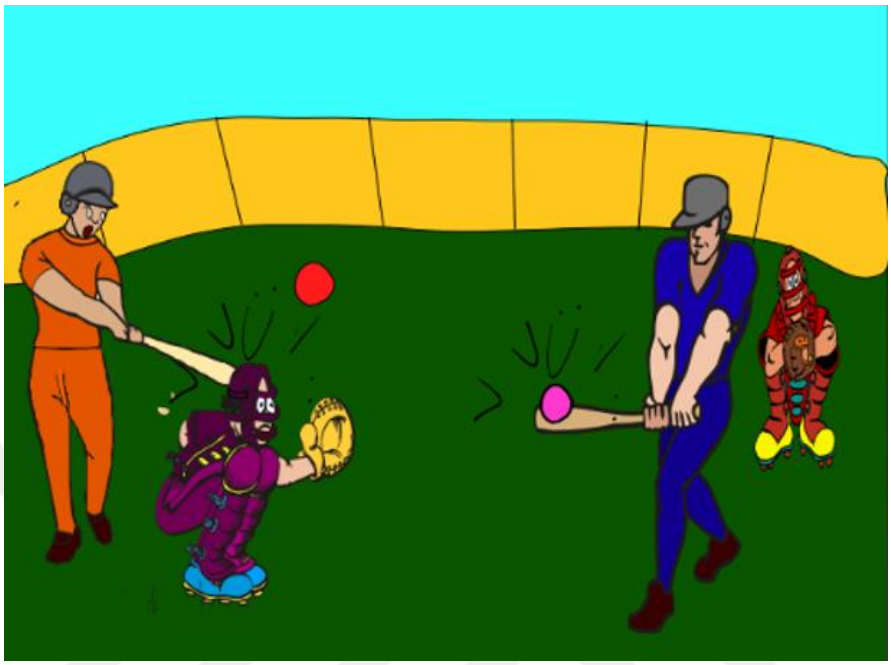
(48)

Kaldır- *(to lift)*	Yumrukla- *(to punch)*
Taşı- *(to carry)*	Öp- *(to kiss)*
Tut- *(to hold)*	Boya- *(to paint)*
Çek- *(to pull)*	Kucakla- *(to hug)*
İt- *(to push)*	Bağla- *(to tie)*

The main motive behind why those verbs were chosen for target items was that all of these verbs were transitive verbs that allow either animate or inanimate entities as their objects without causing any ungrammaticality or semantic flaws, and the same verbs were used in metalinguistic awareness task as well.

As for the filler items, similar pictures with animate and inanimate entities were used, but this time the participants were required to describe the actions that were taking place in the pictures, not the entities themselves. A sample filler set that was used in the picture description task part of the main study is given below (49):

(49)



Keyword: vur- *(to hit)*

a. **Animate-animate condition:**
Resimde turuncu formalı oyuncu ne yapıyor?
(What is the player with an orange uniform doing in the picture?)

b. **Animate-inanimate condition:**
Resimde mavi formalı oyuncu ne yapıyor?
(What is the player with a blue uniform doing in the picture?)

As can be observed in the examples above, the questions for filler items were also targeted towards an animate and an inanimate entity as was done in target questions, but the main difference was that the filler questions aimed at enforcing participants to come up with statements, not relative clauses. Similarly, participants needed to utilize the verbs given to them while answering the questions. In this way, it was aimed to distract the participants' attention from the main purpose of the study, which was relative clauses and to come up with a more natural data in the end.

3.2.2.2. Metalinguistic Awareness Task

In the second phase of the study, a Metalinguistic Awareness Task was presented to the participants as was done in the pilot study since the results of the picture description task were intended to be compared with the outcome of the current Metalinguistic Awareness Task. In this way, the main aim was also to observe whether the task quality or type was going to affect the production of relative clause types. Therefore, the task nature was also changed by adding a task requiring more linguistic awareness as opposed to the aim in Picture Description Task. Being no different from the one in the pilot study, this Metalinguistic Awareness Task included two different sentences to be combined by the attendees in a logical way. Similarly, the subject part of the sentences was left empty on purpose so that participants could focus only on the part of the sentence that required RC use. Additionally, the second part of the sentence that was already given was initiated by the head noun of the expected RC structure so as to encourage potential attendants to utilize object RCs. By the phrase 'expected RC structure', the main objective was to reach a similar outcome to the one that has been referred to in the picture description task part above.

Although the context was kept same for both animate and inanimate conditions of the same verb in picture description task, the sentences and contexts were prepared and presented separately in Metalinguistic Awareness Task for animate and inanimate conditions of the same verb. Examples for both animate-animate and animate-inanimate condition in target items (50) and for filler items (52) are provided below:

(50)

a. Animate-animate condition
Anne kızını kolundan çekti. Kız ne olduğunu anlayamadı.
_____ kız, ne olduğunu anlayamadı.

The mother pulled the girl from her arm. The girl couldn't understand what happened.
The girl _____ couldn't understand what happened.

b. Animate-inanimate condition
Kadın pazar arabasını zorlukla çekiyordu. Araba tümsekte yere devrildi.
_____ pazar arabası, tümsekte yere devrildi.

The woman were pulling the shopping carriage with difficulty. The carriage tumbled down at the bump.
The shopping carriage _____ tumbled down at the bump.

In the target structures in Metalinguistic Awareness Task as exemplified above, the second part of the sentences was given to the participants on purpose so as to encourage participants to come up with relative clause constructions. Additionally, two different tasks were prepared to encourage the production of RCs with an animate (50a) and an inanimate head (50b) in target questions. Meanwhile, in all target structures the subject position was left blank so that standardization will be achieved among all target items and the participants will not be distracted due to the position of blank parts. Another part on which extra attention was paid was the standardization among the number of the words that was expected from participants to write in each blank. The blank parts in the target structures were arranged in a way that required three (in active form) or four words (in passive form) to complete. Although it was not a self-paced reading or eye-tracking experiment, it was targeted that the participants will not be affected by the length of the target structures that were expected from them to come up with and this will not influence the probable outcome of the task.

Based on the information above ten different verbs allowing either animate or inanimate objects were used within the frame of the Metalinguistic Awareness Task and two different questions were prepared for each verb to meet two different conditions (animate-animate and animate - inanimate conditions) which made twenty questions in total. Although most of the verbs were similar to the ones in the picture description task, only one verb (*vur-* [to shoot]) was kept different from the first phase of the study. Based on the aim of the study, a list of the verbs included in the target structures in Metalinguistic Awareness Task is provided below (51):

(51)

Kaldır- *(to lift)*	Yumrukla- *(to punch)*
Taşı- *(to carry)*	Öp- *(to kiss)*
Tut- *(to hold)*	Boya- *(to paint)*
Çek- *(to pull)*	Kucakla- *(to hug)*
İt- *(to push)*	Vur- *(to shoot)*

As for the filler questions, they were prepared in a way that participants could complete sentences by using adverbial clauses this time so as to distract the participants' attention from the main focus of the study. Although the fillers aimed at making participants form adverbial clauses, the sentence initial positions were left blank in filler sentences, as well as it was done in target questions. On the other hand, the actions were being done with either animate or inanimate objects in similar with target structures. Finally, the filler question number was also kept equal with the main target questions in the second phase of the study. In total, twenty filler structures were prepared together with twenty target structures and a sample filler set is demonstrated below (52):

(52)

a.
Çocuk taşı denize attı. Taş birkaç kere suda sekti ve kayboldu.
_____ sonra taş, birkaç kere suda sekti ve kayboldu.

The boy threw the stone into the sea. The stone bounced a few times on the water and disappeared.
After _____ , the stone bounced a few times on the water and disappeared.

b.
Arkadaşları genç kızı havuza attı. Kız baştan aşağı sırılsıklam oldu.
_____ sonra genç kız baştan aşağı sırılsıklam oldu.

Her friends threw the young lady into the pool. The girl was soaked to the skin.
After _____ , the girl was soaked to the skin.

As it has been exemplified above, the participants were asked to connect the sentences in a way that will comply with the adverbial time linker 'after' (e.g. arkadaşları genç kızı havuza attıktan sonra *[after her friends threw the young lady into the pool]*). Being similar with the target actions, the action in filler sentences such as *'at- (to throw)'* in (52) above was acted upon one animate (52b) and inanimate object (52a) as was done in the target structures. By coming up with such a filler set, the main objective was to maintain the balance between reminding the target structures and coming up with structures that completely differ from the target structures at the same time.

3.2.2.3. Corpus Study

As stated in the previous section, the final phase of our study included corpus analyses of Turkish RCs and statements. In this phase of the study, METU Turkish Corpus (MTC) was utilized (https://ii.metu.edu.tr/metu-corpora-research-group). MTC consists of a collection of two million words of post-1990 written Turkish samples from ten different literary genres which were narratives, memories, research papers, travel writings, diaries, newspaper columns, articles, short stories, novels and interviews. When sampling the data for MTC, maximum two samples, which were composed of 2000 words were used from one source.

In addition to validating the findings gained from our data collection tools, there were some other significant theoretical objectives that we wanted to achieve by also adding corpus data in our study. The first objective of ours was to see whether the participant preferences within the frame of our tasks were going to be shaped by the frequent uses of those verbs (in active or in passive form) that we had chosen for our tasks. The second objective was to check whether the RC preferences change depending on the animacy feature of the head noun in Turkish corpus as well, and also whether the performance that our participants showed in our tasks depending on the head noun animacy might somehow be associated with the RC formation preferences within the corpus. The final objective was

to observe whether there was a similarity between statement and RC formations in the corpus depending on animacy of the entities and whether the RC outcomes from the participant data could be associated with the statement formations represented in the corpus.

3.2.3. Data Collection Procedure

The target and the filler items were presented to the participants in the same order as was done in the pilot study. Except from questions 4 and 5 in Metalinguistic Awareness Task presented to G1, the questions remain the same in the data collection tool. The results of those questions were excluded from the data analysis part of the main study, as well.

In total, twenty target and twenty filler items were prepared both for Metalinguistic Awareness and Picture Description Tasks, and those questions were split into two groups in a way that there were ten target and ten filler questions in each task for each group. To illustrate the distribution pattern of the animate and inanimate conditions depending on the groups in a better way, the following tables (Tables 3 and 4) were prepared:

Table 3

Animacy Condition Distribution between G1 and G2 for Picture Description Task

Target Verbs	**Group 1**	**Group 2**
Kaldır- *(to lift)*	Animate	Inanimate
Taşı- *(to carry)*	Inanimate	Animate
Tut- *(to hold)*	Animate	Inanimate
Çek- *(to pull)*	Inanimate	Animate
İt- *(to push)*	Animate	Inanimate
Yumrukla- *(to punch)*	Inanimate	Animate
Öp- *(to kiss)*	Animate	Inanimate

Boya- *(to paint)*	Inanimate	Animate
Kucakla- *(to hug)*	Animate	Inanimate
Bağla- *(to tie)*	Inanimate	Animate

As can be seen in Table 3 above, the questions were distributed in a way that one group would be encouraged to produce an RC with an animate head, whereas the other group would be enforced to come up with an RC with an inanimate head in Picture Description Task. By doing that, they were going to use the same verb that was provided for them for either an animate or an inanimate condition. In that way, participants would not be aware of the main purpose of the study by exposing the same picture with questions targeting one animate and inanimate condition.

Table 4

Animacy Condition Distribution between G1 and G2 for Metalinguistic Awareness Task

Target Verbs	**Group 1**	**Group 2**
Kaldır- *(to lift)*	Animate	Inanimate
Taşı- *(to carry)*	Inanimate	Animate
Tut- *(to hold)*	Animate	Inanimate
Çek- *(to pull)*	Inanimate	Animate
İt- *(to push)*	Animate	Inanimate
Yumrukla- *(to punch)*	Inanimate	Animate
Öp- *(to kiss)*	Inanimate	Animate
Boya- *(to paint)*	Animate	Inanimate
Kucakla- *(to hug)*	Inanimate	Animate
Vur- *(to shoot)*	Animate	Inanimate

As for Table 4 above, it shows that a similar distribution to the one in Table 3 was done for Metalinguistic Awareness Task items as well. Similarly, animate and inanimate conditions for each verb was distributed between G1 and G2 to avoid any possible participant bias.

Such kind of grouping might raise some concerns related to answer differences between two groups. However, Mann-Whitney U results in the pilot study already helped prove that there happened no significant differences between the answers of two groups as long as the participants were distributed in a homogeneous way and the participant profiles were kept even.

After arranging the items in the tables for Picture Description (Table 3) and Metalinguistic Awareness Task (Table 4) for each group separately, the participant groups were called in different time periods on the same day. In morning session G1 data were collected, whereas in afternoon session G2 data were collected.

In both sessions, the procedure was kept identical. In order to eliminate a possible experimenter bias, the material was not introduced to both groups by the experimenter.

As the first step, the participants were given a consent form so that they could notify their voluntary participation officially. After making sure all the participants read the information related to the general framework of the study, they were provided with the participant information form. This form was required so that it was possible to learn whether the participants knew any languages other than English and what was their proficiency level in that language so that their data could be eliminated in case they happened to be B2 or above in another language. As the following step, the warm up session was introduced to the participants. In warm-up session, the participants were exposed to the expected structures within the frame of the tasks. They were shown the questions first, then they were reflected the answers and the instructor read the question first and possible answers later aloud so that all the participants can follow her and the

answers. An example for both target and filler structures were provided for the participants before they continue with each task. Especially for target question examples, both possible answers were shown and read aloud by the volunteer instructor. An example for warm-up questions both for metalinguistic awareness (53) and picture description task (54) together with their fillers (examples 53b and 54b) is provided below:

(53)

a. A warm-up example for target item for Metalinguistic Awareness Task

Question:
Kocası hayranlıkla kadını izliyordu. Kadın, akşam yemeği için hazırlık yapıyordu.
'The husband was watching the wife with admiration. The wife was getting ready for dinner.'

Sample Answer:
Kocası tarafından hayranlıkla izlenen kadın, akşam yemeği için hazırlık yapıyordu.
'The wife who was being watched by her husband with admiration was getting ready for dinner.'

OR

Kocasının hayranlıkla izlediği kadın, akşam yemeği için hazırlık yapıyordu.
'The wife who her husband was watching with admiration was getting ready for dinner.'

b. A warm-up example for filler item for Metalinguistic Awareness Task

Question:
Şarkıcı arabayı hızlı sürdü. Araba, yoldan çıkıp bariyerler çarptı.
The singer drove the car fast. The car hit the barriers by going off the road.

Sample Answer:
Şarkıcı arabayı hızlı sürdüğü için araba, yoldan çıkıp bariyerlere çarptı.
Since the singer drove it fast, the car hit the barriers by going off the road.

OR

Araba şarkıcı tarafından hızlı sürüldüğü için yoldan çıkıp bariyerlere çarptı.
*As it was driven fast by the singer,*the car hit the barriers by going off the road.

(54)

a. A warm-up example for target item for Picture Description Task

Keyword: Çağırmak [Call]

Question:
Kim kumda başına kadar gömülü?
'Who is buried in the sand?'

Sample Answer:
Çocuk tarafından çağrılan adam
'The man who is being called by the kid'

OR

Çocuğun çağırdığı adam
'*The man who the kid is calling'*

b. A warm-up example for filler item for Picture Description Task

Keyword: Sürmek (Stroll)

Question:
Resimde ne oluyor?
'What is happening in the picture?'

Sample Answer:
Kadın bebek arabası sürüyor.
'The woman is driving the baby stroller.'

OR

Bebek arabası kadın tarafından sürülüyor.
'The baby carriage is being driven by the woman.'

As can be observed through the examples above (53 and 54), the participants were kept passive in the warm up section of the study and they were only exposed to the possible answers for the questions in a neutral way before conducting each task. After presenting warm-up questions, the volunteer instructor waited for a few seconds for the participants to ask their questions before they do the relevant task.

When applying the data collection tools, the picture description task was presented first and Metalinguistic Awareness Task next together with their warm-up sections. The main

reason for presenting the picture description task first was that the Metalinguistic Awareness Task output could affect the output of picture description task as it was a bit more controlled in nature and the form could be seen in written form compared to picture description task. Therefore, the picture description task was placed in the first place in the experiment and it was followed by the Metalinguistic Awareness Task later so that more natural and unbiased data could be gained at the end of the study.

After applying all the data collection tools to the participants, next study consisted of comparison of their data with the corpus data so as to check frequency effect as well. Therefore, the data extracted from Turkish corpus were utilized to check the frequency influence. When the data were retrieved from the corpus, two main things were taken into consideration most:

- Searching for the target verbs which were included within the main study section
- Looking for both active and passive formations of those target verbs in RC and statement structures

In this part of the study, the scope of the study was not intended to be restricted with only checking RC use. The relationship animacy and RC formation with other types of structures were also aimed to be examined, so it was decided to check the use of our target verbs in statements as well in order to compare their outcome with the outcome of the main study within the frame of corpus research.

To continue with how the target verbs were searched in MTC, different strategies were applied to check RCs and statements separately during the procedure. When searching for RC forms of our target verbs, their combinations with suffixes *'-DIK', '-mIş olduğu'* for active and *'–(i)nAn / -(i)lAn'* and *'-(i)nmIş olan / -(i)lmIş olan'* for passive form of each target verb were checked. However, these suffixes stand for only past or present meaning. To specify also future tense, Turkish has one additional relativizer as well, which is '-

AcAK'. Similarly, *'-AcAK'* was used for active and *'–(i)nAcAK / -(i)lAcAK'* for passive RC forms of each target verb. Additionally, the data collected from the participants in the main study part of the current study included some relative clauses with the suffix *'- mAktA olduğu'*. Although it was not as common as the others, it seemed that some students preferred this suffix to emphasize the continuous meaning of the action indicated in the picture. As a result, this suffix was also included as well in corpus research for RCs, so the verbs with the suffix *'-mAktA olduğu'* for active and *'(i)lmAktA / (i)nmAktA olan'* for passive uses were looked for within corpus for analysis. To make the corpus search part more clear, an example for each formation is provided below by using the verb *'taşı-* (carry)*'* (55):

(55)

Relativization by *'-DIK'*	taşı-dığ-ı
Relativization by *'-mIş olduğu'*	taşı-mış olduğu
Relativization by *'–(i)nAn / -(i)lAn'*	taşı-n-an
Relativization by *'-(i)nmIş olan / -(i)lmIş olan'*	taşı-n-mış olan
Relativization by *'-AcAK'*	taşı-y-acağ-ı
Relativization by *'–(i)nAcAK / -(i)lAcAK'*	taşı-n-acak (olan)
Relativization by *'-mAktA olduğu'*	taşı-makta olduğu
Relativization by *'(i)lmAktA / (i)nmAktA olan'*	taşı-nmakta olan

As for the search of our target verbs in statements, different tenses and aspects of the target verbs had to be taken into consideration. Thus, all the possible tenses and aspects in which the target verbs could be used in statements were searched in the corpus as indicated in Table 5 below for a sample verb "git-":

Table 5

A summary of synthetic tense-aspect combinations in Turkish

	Present	*Past*	*Evidential*
Progressive	gid-iyor-Ø	gid-iyor-du	gid-iyor-muş
Dispositive	gid-er-Ø	gid-er-di	gid-er-miş
Prospective	gid-ecek-Ø	gid-ecek-ti	gid-ecek-miş
Perfective	git-miş-Ø	git-miş-ti	git-miş-miş
		git-ti	

Note. Reprinted from "A Fresh Look at the Tense-aspect System of Turkish" by Gerd Jendraschek (2011, p. 265)

Another thing on which extra attention was paid when looking for both clause types was trying to maintain the standardization between main data collection tool and corpus research. First of all, all the questions in our both picture description and Metalinguistic Awareness Tasks were aiming to make participants produce RCs according to third person singular (3rd sg) as demonstrated in the example (55) and the table (Table 5). For that reason, all the searches that were conducted in our corpus study part were according to 3rd person singular form of the target verbs. Moreover, meaning overlap issue between the target verbs represented in the corpus and the ones included in our data collection tools was also considered. In our both tasks, the verbs were used in their main meanings. However, the meanings of those verbs were differing depending on the context in our corpus study as most of the samples had been taken from literary works. Consequently, some verbs were carrying a figurative meaning in some contexts. To eliminate the distortion that those verbs may cause in our comparison data later, the meanings of the target verbs were checked from the online Turkish dictionary prepared Turkish Language Association (https://sozluk.gov.tr/) to detect their figurative meaning, and to exclude those verbs that were used in their figurative meanings. In that sense, a considerable amount of

effort was spent in order to align the data gained from Turkish corpus research with the data gained from the main data collection tools to be able to come up with a valid comparison analysis.

3.2.4. Data Analysis

Since the normality and reliability analyses had already proved the reliability and validity of the data collection tools in the pilot study section, the same tests were nor repeated one more time in this section of the research. Indeed, the same grouping and the procedure that were followed in pilot study were repeated in the main study section as well. Similarly, Mann-Whitney U and Chi-square tests were applied on the data collected from target groups, which were later followed by a corpus analysis by being different from the pilot study. In the following, the tests and analyses applied in this part of the study are going to be discussed together with their rationales in a more detailed way.

The first analysis that was conducted was to compare the outcome of our groups so that they could be combined for the main statistical analysis that was going to be applied at the end of the study. As suggested in participants section, the participants were attempted to be distributed homogeneously in terms of their ages and their language backgrounds. So, the current study was based on the assumption that those homogeneous groups would not significantly differ from each other in terms of their answer. In the following step of the study, it was decided to compare those group outcomes statistically within the current section as well so that it could be tested whether the previous assumptions regarding the homogeneity of our groups was statistically true or not and also to see whether the data of two groups could be combined under one condition to be able to come up with a generalized outcome. Therefore, a correct test needed to be chosen to come up with a reliable outcome.

To be able to choose the correct statistics both in pilot and main study sections, the article named “Statistical Tests Selection Process when Comparing Groups” written by Marusteri and Bacarea (2010) was utilized. Based on the information they provided, the best statistics that could be used was Mann Whitney U Test (or Mann Whitney Wilcoxon or Wilcoxon Rank Sum Test). The main reason for that current study had a non-normally distributed data, which required a non-parametric alternative. Additionally, it had two unpaired samples to compare. Additionally, an unpaired alternative was chosen since the samples of current study were not related by being the same group of people , the same items or the same conditions, and they were completely independent from each other (Gleichmann, 2020). The final decision that needed to be made was to choose between one-tailed or two-tailed statistics. The two-tailed alternative was embraced at the end since there was no prior experience or data related to the relative clause use in either animate and inanimate conditions to compare. Since it was not possible to guess the possible direction of the relationship between animacy and RC structure choices of the participants and there was no other valid reason to conduct a one-tailed comparison test, it was concluded with continuing with the two-tailed option of Mann Whitney U Test to be on the safe side (Marusteri and Bacarea, 2010, p.29) both in pilot study and main study.

As for the application of Mann-Whitney U Test in the current study within the light of the information provided above, it was conducted separately to compare the answers of the participants in Group 1 and Group 2 for the conditions as listed below:

- Picture Description Task - Animate
- Picture Description Task - Inanimate
- Metalinguistic Awareness Task - Animate
- Metalinguistic Awareness Task - Inanimate

When the data of the two groups’ participants were compared for each condition above, four different Mann-Whitney U Tests in total had to be conducted and the results of them

indicated that there was no significant difference between Group 1 and Group 2 for any of the conditions above, which indicated that it would be appropriate to combine their data during the next phase of the data analysis.

As for the main statistics part of the study, Chi-square test was again chosen to apply in this section as well as a data analysis method as was done in pilot study section to understand whether there is a significant relationship between animacy and relative clause structure preferences of our Turkish native speaker attendees. The main reason for applying Chi-square test was that both dependent (active/passive RC preferences) and independent variables (animacy) of the current study were composed of non-normally distributed categorical data, in which case Chi-square statistics was the only non-parametric test option that had to be utilized due to the nature of the data.

Before applying the Chi-square test the answers of the G1 and G2 participants were combined so that RC preferences of all the participants for animate and inanimate conditions could be analyzed as a whole and the study could bear a more generalizable outcome related to animacy effect on RC preferences among Turkish native speakers.. The data of those two groups could be combined at this stage of data analysis part thanks to Mann-Whitney U outcomes for both animate and inanimate conditions that had shown that there was no significant difference between the answers of G1 and G2 participants for each condition (as will be explained under the Results section in more detail). Otherwise, chi-square analyses would have been conducted for each group separately.

After combining G1 and G2 data, Chi-square test was done by utilizing Microsoft Excel. Chi-square test was applied after the data were arranged as a 2x2 cross tabulation table composed of animate / inanimate conditions and active / passive RC preferences. The other types of answers (e.g. no RC preference, no answer or irrelevant RC) were not included in this cross tabulation table due to two main reasons. The first one was the main focus of our study was to understand whether animacy really triggers passivization in RC use in

Turkish or not. Therefore, the relation between RC passivization and animacy of the head noun had to be checked as the main objective first. The other reason for why other answer options were not included within that crosstabulation table during chi-square analysis procedure was that the participants who provided such kind of answers could not understand the nature of the task and they did not provide answers that really answered the questions that had been asked to them. The answers they provided were not covering the requirements of the tasks included in the current study, which might have stemmed from lack of concentration or motivation. For that reason, focusing on such kind of answers in minority was avoided as much as possible so as not to move too much away from the starting point of the thesis.

When the Chi-square for independence test was applied on the data of each task, another formula was run on Excel so as to find the phi-coefficient value and to be able to evaluate the effect-size of the study. When commenting on effect size and the phi-value that we found out at the end of the test, Cohen's (1988) criteria of 0.10 for small effect, 0.30 for medium effect and 0.50 for large effect size was made use of.

The final stage of the Chi-square for independence analysis was to figure out the direction of the relationship between animacy and passivization rate as long as their relation was proved to be significant at the initial stage of analysis as chi-square for independence test is a non-parametric alternative which can only provide information whether there is a significant relationship between the two categorical variables or not. Therefore, additional post-hoc statistics were run for the participant data from each task after calculating the effect sizes of the chi-square test results. As for how to conduct an appropriate post-hoc analysis, four reasonable options came forward according to Sharpe (2015):

- Calculating residuals
- Comparing cells
- Ransacking

- Partitioning

Taking its practicality into consideration, the first way (calculating residuals) of conducting a post-hoc test was preferred. Another reason for preferring that method was that calculating residuals is a method which is exploited by also SPSS with the name of 'adjusted residuals' (pp. 2-3). Therefore, it was thought that calculating residuals could be a reliable way of finding the direction of the relationship between the variables of current study.

After applying the chi-square statistics, next step was to see whether the results of Picture Description Task and Metalinguistic Awareness Task would agree with each other in terms of the animacy effect they demonstrated. Since we applied those two tests on the same participant groups, we needed to apply a repeated measures statistics, which was suitable for using with abnormally distributed data. Therefore, Kappa Measure of Agreement was applied to check the agreement between the outcomes of our data collection tools (Pallant, 2010, pp.224-226). With the help of Kappa Measure of Agreement test, it would be possible to reach a decision about whether the type of the data collection tool had already influenced the participant outcomes.

After comparing outcomes of our both data collection tools by means of Kappa Measure of Agreement, the analysis of RC and statement data gained from MTC was initiated. At the beginning, the RC and statement data extracted from the corpus were coded by using a coding program called MAXQDA (https://www.maxqda.com/). While coding, the animacy condition and the structure that was used for that condition were indicated in the code. For instance, the code 'an-an-act' was preferred for the condition that animate affecting another animate entity and active verb form was preferred in the context. After finishing with the coding procedure, the data for the conditions gained from the corpus (animate-animate-passive/ animate-inanimate-active/etc.) were transferred into a table first by making use of MAXQDA again. Later, those tables were transferred to Excel to follow the

same Chi-square analysis procedures that were followed for the data gathered from our main data collection tools (picture description and Metalinguistic Awareness Tasks). The only thing that was different in corpus analysis phase from the participant data analysis phase was two proportions z-test was applied for different data pairs within the light of the research aims of the current study to compare the outcomes from the corpus (MTC) with the outcomes from the participant answers and to see whether those outcomes were going to match with each other or not. The main reason for not using Kappa statistic at this stage of the analysis was that two different data gained from two separate sources of data were being compared that time and the data collected from the corpus were nominal and not normally distributed. Thus, the most appropriate data analysis method would be Two Proportions Z-Test to compare our corpus and participant data statistically (Petty, 2012).

Depending on the information and rationale provided above, the pairs on which Two Proportions Z-Test were applied are listed in the following:

- Picture Description data compared to RC data from MTC
- Picture Description data compared to Statements data from MTC
- Metalinguistic awareness data compared to RC data from MTC
- Metalinguistic awareness data compared to Statements data from MTC

At this point, it is highly important to note that different categories were also encountered in terms of their animacy and structural preferences during the corpus analysis procedure such as ‘inanimate-animate-passive’ or inanimate-inanimate-active’ which were outside of this study’s target conditions. Although those unexpected conditions were not included in either Chi-square or Two Proportions Z-Test, a separate Frequency analysis for those conditions were still conducted. The main reason for discussing those unexpected categories within the frame of Frequency analysis was that those conditions were not completely outside of the research objectives of the current study, so they could not be totally ignored. However, their animacy and structural categories did not either comply

with the research design or the target categories expected from the participants in the main study section. Therefore, statistically comparing the structures having two completely different categorical variables in terms of their animacy could have damaged the validity and reliability of our results. As a result, only the structures having the same animacy variables (animate-animate / animate-inanimate) as the ones in participant data were included in both Chi-square and two-proportions analyses in the corpus study part to test animacy influence and the harmony between the outcomes of corpus and participant data respectively.

As for the results of all the analyses explained above, they are going to be provided in more detail under ‘Results’ section in the following.

CHAPTER 4:

RESULTS

In this section of the thesis, the results of the above mentioned analyses are going to be presented under two main headings: results of participant answers and the results of corpus analysis.

Under each heading, the existence of animacy effect on the structure formation is going to be questioned by comparing the data gained from different contexts by means of different data collection tools.

4.1. RESULTS OF PARTICIPANT ANSWERS

In the following, Mann-Whitney U Test results are going the shared to demonstrate the homogeneity of our both participant groups at first. Then, the chi-square test statistics are going to follow that to specify how animacy affected our participants' RC preferences in either task. Finally, Kappa Measure of Agreement results are going to be presented to be able to statistically compare the outcomes of our both data collection tools to see whether the type of task will have any influence on structural choices.

4.1.1. Mann-Whitney U Test Results

As stated before, Mann-Whitney U-Test was applied for each condition (animate-animate / animate-inanimate) to be able to combine the data gained from both groups in order to run a Chi-square test. In case, there was no significant difference between G1 and G2 data, it would be possible to combine the outcomes of those participant groups for each condition.

Within the light of that objective, the first two tables below (Tables 33 and 34) are going to demonstrate the Mann-Whitney U outcomes for picture description task data.

Table 6

Main Study Mann-Whitney U Statistics for Animate Condition in Picture Description Task

Group number	*n*	*Median*	*Mean Ranks*	*Min.*	*Max.*	*Q1*	*Q3*
Group 1	180	1	196.3667	1	4	1	2
Group 2	209	1	193.823	1	4	1	2

Variable	*Statistic*	*p value*
Answers	19056	0.601

As far as the p value in Table 6 shows above, Mann-Whitney U Test that was run on the data gained from G1(*Md* = 1, *n* = 180) and G2 (*Md* = 1, *n* = 209) revealed no significant difference between their RC preferences for questions targeting the animate condition (animate-animate) in picture description task (*p* = 0.601, *Confidence level* = 95%).

Table 7

Main Study Mann-Whitney U Statistics for Inanimate Condition in Picture Description Task

Group.no	*n*	*Median*	*Mean Ranks*	*Min.*	*Max.*	*Q1*	*Q3*
Group 1	135	1	210.1963	1	4	1	1
Group 2	259	1	190.8822	1	4	1	1

Variable	*Statistic*	*p value*
Answers	19196.5	0.994

Similarly, the p value in the Table 7 above also seems to be quite high and this shows that Mann-Whitney U Test that was run on the data gained from G1(*Md* = 1, *n* = 135) and G2 (*Md* = 1, *n* = 259) revealed no significant difference between their RC preferences for also the questions targeting inanimate condition (animate-inanimate) in picture description task (p = 0.994, Confidence *level* = 95%).

Besides picture description task data, the same comparison test was applied on metalinguistic awareness data as well. The last two tables in the following (Tables 35 and 36) are going to summarize those comparison results.

Table 8

Main Study Mann-Whitney U Statistics for Animate Condition in Metalinguistic Awareness Task

Group.number.	*n*	*Median*	*Mean Ranks*	*Min.*	*Max.*	*Q1*	*Q3*
Group 1	126	2	180.3056	1	4	1	2
Group 2	217	1	167.1774	1	4	1	2

Variable	*Statistic*	*p value*
Answers	14717.5	0.903

Table 8 presents a result which is no different from the first two tests applied on each condition. According to the p value represented in the table (Table 8) above, Mann-Whitney U Test that was run on the data gained from G1(*Md* = 2, *n* = 126) and G2 (*Md* = 1, *n* = 217) revealed no significant difference between their RC preferences for questions targeting the animate condition (animate-animate) in Metalinguistic Awareness Task (p = 0.903, Confidence *level* = 95%).

Table 9

Main Study Mann-Whitney U Statistics for Inanimate Condition in Metalinguistic Awareness Task

Group.number.	*n*	*Median*	*Mean Ranks*	*Min.*	*Max.*	*Q1*	*Q3*
Group 1	206	1	208.2209	1	4	1	2
Group 2	225	1	223.1222	1	4	1	2

Variable	*Statistic*	*p value*
Answers	21572.5	0.072

Final comparison between G1 and G2 data was made for inanimate condition in Metalinguistic Awareness Task, and the result summarized in Table 9 above affirms that there is no significant difference between the RC preferences of G1 (*Md* = 1, *n* = 206) and G2 (*Md* = 1, *n* = 225) for questions targeting the inanimate condition (animate-inanimate) in Metalinguistic Awareness Task (p = 0.072, Confidence *level* = 95%).

Depending on the information gathered from all the four tables above, it is possible to conclude that a homogeneous distribution between the participant groups could be achieved for both tasks. Thus, they did not differ in their answers for each condition that was provided for them in each task. In that case, it can be deduced that those two groups' data can be combined when applying Chi-square statistics for animate and inanimate conditions to be able to come up with a more generalizable result in the following steps of thesis.

4.1.2. Chi-square Test Results for Picture Description Task

After combining the participant answers from both groups for animate and inanimate conditions, Chi-square statistics were applied on the data gained from each task to be able to see whether there was an effect of animacy on the structural choice of RCs among

Turkish young-adult native speakers. In case of a significant relationship detection between head animacy and the structural choices, a post hoc analysis was done after the chi-square test to be able to detect the direction of that relationship.

Based on the procedure explained above, chi-square test results of the picture description task were provided in the following (Table 10).

Table 10

Main Study Chi-square Statistics and Effect Size Results of Picture Description Task

Chi square independence test		*Effect Size Calculation*			
p value	4.31619E-14		Mean	SD	N
Test-statistic	57.01783817	*Animate*	1.314869	0.465142	343
Critical Value	7.814727903	*Inanimate*	1.088154	0.28391	363

M1-M2	*0.226715*
Pooled SD	0.382822
Cohen's d	0.592219

Similar to what was done in the Mann-Whitney U test section, a special attention was paid to the p value in Chi-square test as well to be able to test the null hypothesis (H0) of current thesis. As for the effect size evaluation, Cohen's d value was taken into consideration and the effect size criteria set by Cohen (1988) specifying the values 0.10 for small, 0.30 for medium and 0.50 for large effect size were made use of.

When the test results of Picture Description Task as demonstrated in the Table 10 are analysed, it can be deduced that there is a significant association between the head animacy and RC structure choices for Turkish RCs among young adult natives with a large effect size, χ^2 (1, n = 706) = 57.02 , z = 7.81, p = 4.32E-14, d = 0.59).

Due to the finding of a direct relationship between animacy and preferred RC structures, next step was to find out the direction of that relationship. Therefore, the following table (Table 11) shows the adjusted residuals of the data for each condition.

Table 11

Main Study Picture Description Task Post-Hoc Analysis (Adjusted Residuals)

ADJUSTED RESIDUALS

Row Labels	Animate	Inanimate
Active	-7.551093595	7.551093595
Passive	7.551093595	-7.551093595

Significance level	*0.05*
Number of tests	4
Adjusted Sig. Value	0.0125
z criteria	-2.49770547

Table 11 demonstrating the adjusted residuals proves one more time that alternative hypothesis (H1) is true in picture description task since the adjusted residuals in the table show values outside the array *-2.50 < Adj Res < 2.50*. Additionally, it is observed that passive use of RCs seems to be higher than expected for animate condition (*Adj Res=7.55 > z criteria=2.50*), whereas its number decreases below expectation for inanimate condition (*Adj Res= -7.55 < z criteria= -2.50*). On the contrary, active RC use appears to be higher than expected for inanimate condition (*Adj Res=7.55 > z criteria=2.50*), while its number significantly decreases for animate condition (*Adj Res= -7.55 < z criteria= -2.50*). To summarize, the picture description outcome proved the hypothesis that head animacy could encourage passivization when forming RCs in Turkish.

In the following, the chi-square test result of the Metalinguistic Awareness Task are going to be discussed together with its post hoc analysis.

4.1.3. Chi-square Test Results for Metalinguistic Awareness Task

In this section, whether the animacy effect interference might still have influenced the participant outcome in case of a task change or not is going to be discussed within the light of the Chi-square test outcome of the participant answers to Metalinguistic Awareness Task.

Table 12

Main Study Chi-square Statistics and Effect Size Results of Metalinguistic Awareness Task

Chi square independence test		*Effect Size Calculation*			
p value	0.000426		Mean	SD	N
Test-statistic	12.41604	*Animate*	1.433898	0.496453	295
Critical Value	7.814728	*Inanimate*	1.303571	0.460387	392

M1-M2	*0.130327*
Pooled SD	0.476202
Cohen's d	0.27368

When both p-value and the test-statistic values of Metalinguistic Awareness Task are checked in Table 12, it is possible to see a significant relation between the head animacy and RC structure choices for Turkish RCs among young adult native speakers with a medium effect size, χ^2 (1, n = 687) = 12.42 , z = 7.81, p = 0.00043 , d = 0.3).

Since H0 can be rejected for Metalinguistic Awareness Task according to the chi-square statistics demonstrated above (Table 12), the post-hoc analysis of those chi-square results are also going to be shared in the form of adjusted residuals in the following table (Table 13).

Table 13

Main Study Metalinguistic Awareness Task Post-Hoc Analysis (Adjusted Residuals)

ADJUSTED RESIDUALS

Row Labels	Animate	Inanimate
Active	-3.52364	3.52364
Passive	3.52364	-3.52364

Significance level	*0.05*
Number of tests	4
Adjusted Sig. Value	0.0125
z criteria	-2.497705

When the post-hoc outcome is checked in Table 13, the Adjusted Residuals also ascertain a significant relation between head animacy and RC passivization as the values indicated in the table (Table 13) were outside the array *-2.50(z) < Adj Res < 2.50(z)* as was the case for Picture Description Task residuals. In concordance with the inclination demonstrated in Picture Description Task, passive RCs seem to have been preferred more than expected for animate condition (*Adj Res=3.52 > z criteria=2.50*) in Metalinguistic Awareness Task as well, while active RC use was preferred less (*Adj Res= -3.52 < z criteria= -2.50)*. On the other hand, active RCs appear to have been utilized more for inanimate condition (*Adj Res=3.52 > z criteria=2.50)*, while passive RC use seems to be much less in number for the same case (*Adj Res= -3.52 < z criteria= -2.50)*. Being in common with the results obtained from picture description task, Metalinguistic Awareness Task results also proved that head animacy in Turkish RCs may encourage passivization in RC formation.

In the next section, the outcomes acquired from Metalinguistic awareness and Picture Description tasks are going to be compared statistically in terms of the degree of animacy effect seen in each case.

4.1.4. Kappa Measure of Agreement Results of the Data Gained from Metalinguistic Awareness and Picture Description Tasks

After analysing the outcomes gathered from both different tasks, it was observed that these two different tasks bore identical outcomes in terms of showing the effect of animacy on RC passivization when creating Turkish RCs. Both of them claim that there is an effect of animacy on RC structure choices in Turkish. However, the question of whether the outcomes of those two different data collection tools are going to present statistically parallel results with each other or not still remains unanswered. In that way, it will also be possible to evaluate whether the nature of the task will influence the participant outcome when it comes to the animacy effect on RC formation in Turkish or not.

To be able to calculate the statistical agreement between these two different data calculation tools, Kappa Measure of Agreement Test was applied and the results of that comparison test are shared for each animacy condition below (Tables 41 and 42):

Table 14

Kappa Results of Picture Description and Metalinguistic Awareness Tasks for Animate Condition

		Metalinguistic awareness			
		Act	**Pass**	**TOTAL**	**%**
Picture Description	**Act**	83	60	143	65.00%
	Pass	37	40	77	35.00%
TOTAL		120	100	220	
%		54.55%	45.45%		

Pr(a)	*0.56*
Pr(e)	0.51
Kappa (k)	0.09
sensitivity	40%
specificity	69%

To start with explaining the Kappa results for animate condition in Table 14, the first value that needs looking at is Kappa (k) value, and the *k* value (0.09) in Table 14 indicates that the outcomes of the data collection tools used in current study do not statistically agree with each other at all, and they are far from being in agreement. When the details of the test outcomes are also scrutinized by checking the sensitivity (40%) and specificity (69%) values in Table 14, it is again possible to spot this inconsistency between two tasks both in active (specificity) and passive preferences of structures (sensitivity) in animate condition since their agreement frequencies are quite low and close to each other.

Table 15

Kappa Results of Picture Description and Metalinguistic Awareness Tasks for Inanimate Condition

		Metalinguistic awareness			
		Act	**Pass**	**TOTAL**	**%**
Picture Description	**Act**	204	82	286	90.79%
	Pass	17	12	29	9.21%
TOTAL		221	94	315	
%		70.16%	29.84%		

Pr(a)	*0.69*
Pr(e)	0.66
Kappa (K)	0.06
sensitivity	13%
specificity	92%

As for the Kappa test results for inanimate condition demonstrated above (Table 15), the results seem to be in harmony with ones for animate condition in Table 14 since the k value (0.06) demonstrates almost no agreement between picture description and Metalinguistic Awareness Task outcomes for inanimate condition. On the other hand,

specificity value seems to be quite high (92%), which pinpoints a high agreement on active RC preferences for inanimate condition between two tasks in spite of the very low sensitivity value (13%) specifying the RC passivization agreement rate.

All in all, Kappa outcomes gained for animate (Table 14) and inanimate conditions (Table 15) appear to be compatible with the previous research (Vonk & Schriefers, 2002; Gennari & MacDonald, 2008; Hsiao & MacDonald, 2015; Montag & MacDonald, 2009; Wu, Kaiser & Andersen, 2012). According to the specificity and sensitivity values observed in the tables above, the sensitivity value, in other words the passivization use agreement rate, seems to be decreasing, whereas the specificity value (a.k.a. active RC use agreement rate) is increasing when the animacy condition is adjusted from 'animate' to ' inanimate', which once again hints a possible animacy effect on RC formation. On the other hand, it is understood that the type of data collection tool may have an influence on the degree of animacy effect and the RC structure choices of participants since they did not bear statistically compatible outcomes with each other in terms of structural preferences for either condition.

4.2. RESULTS OF CORPUS ANALYSIS

As being different from the previous section of the research, two different formations were focused on in this corpus analysis section: relative clauses and statements. Although active or passive form statements are not the target structures of the current study, there were two main reasons to check also the statements in which our target verbs were used in MTC. The first one was that RC samples were so few in number to come up with a generalizable result related to active or passive use conditions of our target verbs used in our data collection tools. Another reason was the intention to gather information about whether the animacy condition and the use of our target verbs in statements could somehow have an influence on their uses in RCs as well. Thus, it was aimed to check the most frequent conditions and the rate of active/passive use of the target verbs of current study as a whole both in Turkish RCs and statements to be able to evaluate the frequency effect on RC

formation in Turkish from all perspectives. Therefore, in the following the frequency and chi-square analyses of both statements and RCs will be shared together with their comparison with the participant data by a Two-Proportions Z Test.

4.2.1. Frequencies

Under normal circumstances, four main conditions were taken into consideration to be able to reach a judgement related to animacy effect on RC formation as indicated below together with their contractions:

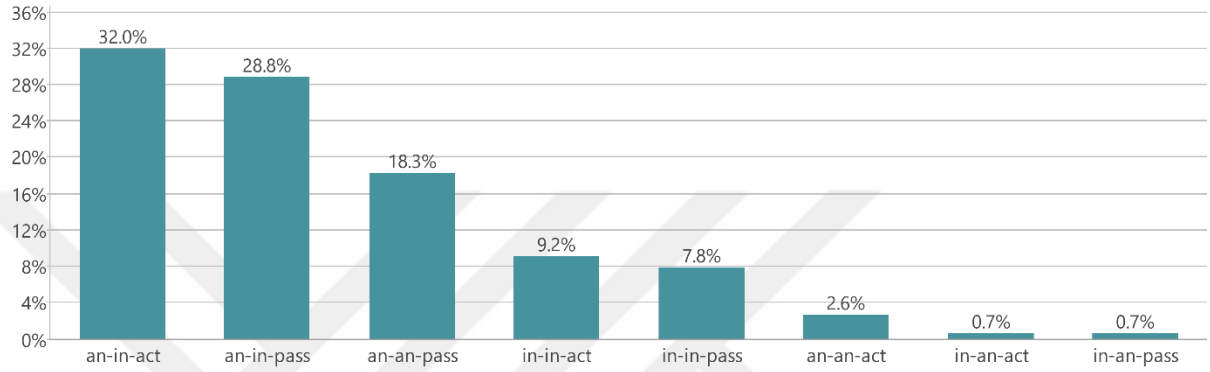
animate-animate-active (an-an-act)
animate-animate-passive (an-an-pass)
animate-inanimate- active (an-in-act)
animate-inanimate-passive (an-in-pass)

However, four other animacy conditions were also encountered when conducting the corpus research such as inanimate-animate-active (in-an-act), inanimate-animate-passive (in-an-pass), inanimate-inanimate-active (in-in-act), inanimate-inanimate-passive (in-in-pass) although those conditions were quite low in number. As they were not the focus of the study and were quite low in number, those conditions were not included in the Chi-square analysis section. However, they were impossible to be ignored completely either since those categories were still indirectly related to the animacy effect on RC formation. Thus, it was decided to analyse those categories superficially within the frame of frequencies section by discussing their percentage distribution in MTC both for statements and RCs data.

At first, the frequency analysis of animacy conditions and preferred structures for each condition in Turkish RCs included in corpus is going be presented in Figure 4.

Figure 4

Distribution of Observed Animacy Conditions and Preferred Structures for Turkish RCs in MTC

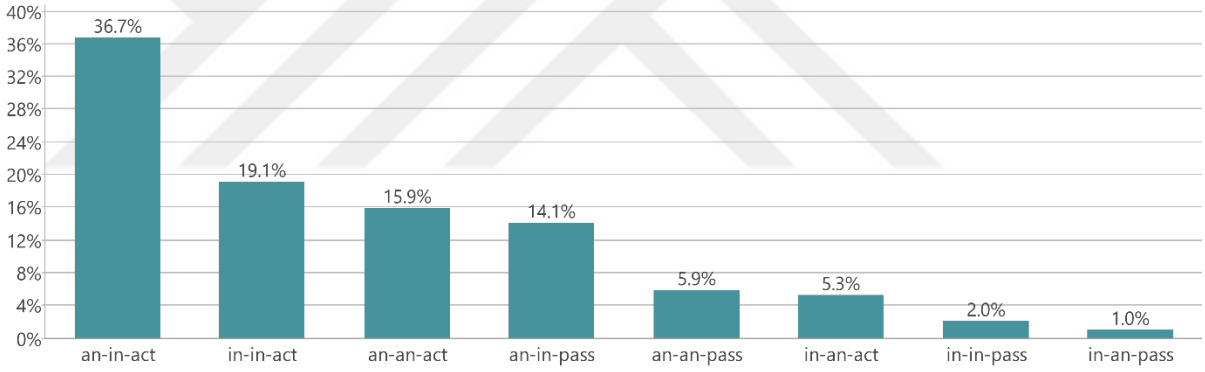


According to the graph outcome for RCs observed in MTC, the most common animacy condition that was met was an-in condition. Being in compatible with both our picture description and Metalinguistic Awareness Task outcomes, METU Corpus also shows that active RC use (32.0%) was in common among animate-inanimate condition, whereas passive RC use (28.8%) was a bit less in percentage. Next most common animacy condition was animate-animate and the figure shows that passive RC use (18.3%) was much higher in percentage for an-an condition compared to active RC preference in the same animacy condition (2.6%). All in all, the percentage distributions for the conditions including an animate agent seem to be in harmony with the results of our data collection tools. In the following, inanimate-inanimate condition was used most commonly in MTC where active RC use (9.2%) seems to be slightly higher than passive RC use (7.8%). Interestingly, in in-an condition, active and passive RC use seems to be equal in percentage (0.7%) although a higher rate of passivization was expected depending on the previous study outcomes and hypotheses regarding animacy effect (Vonk & Schriefers, 2002; Gennari & MacDonald, 2008; Hsiao & MacDonald, 2015; Montag & MacDonald, 2009; Wu, Kaiser & Andersen, 2012).

As for the utilization of the target verbs in Turkish statements, the following graph (Figure 5) shows the distribution of each animacy condition observed in corpus and the structural preferences for each condition. By also looking at the graph outcomes in Figure 5, it is possible to have a general idea whether the participants' RC use was shaped somehow by the way of their frequent use in statements, and also to see whether the use of target verbs in RCs in MTC fits their use in statements.

Figure 5

Distribution of Observed Animacy Conditions and Preferred Structures for Turkish Statements in MTC



To start with the most common animacy condition, it is possible to observe a similarity between the results of RC data in Figure 4 as active form (36.7%) was preferred more than passive form (14.1%) in case of existence of an animate subject and inanimate object in statements, too. On the other hand, this time the percentage difference between active and passive statement use seems to be higher in animate-inanimate condition compared to the one in RC use. The following most widespread condition was inanimate-inanimate condition and it appears that again active statement use (15.9%) was common in that condition as well. Passive use in in-in condition (2.0%) seems to be relatively quite low in percentage compared to active sentences. To continue with next condition, it is seen that active statements (15.9%) were preferred much more widely in animate-animate condition

than passive statements (5.9%) as being opposed to what was expected and what was detected in RC preferences represented in Figure 4. Final animacy condition that was intended to discuss and compare in this section is inanimate-animate condition. In this condition, the expected outcome was the use of passive structures in a much higher percentage than active structure preferences. It was anticipated that especially in this condition the effect of animacy should have been stronger due to the inanimate nature of the subject (Vonk & Schriefers, 2002; Gennari & MacDonald, 2008; Hsiao & MacDonald, 2015; Montag & MacDonald, 2009; Wu, Kaiser & Andersen, 2012). However, both RC and statement data from the Turkish corpus provided a completely conflicting data with the literature and the expectations held at the beginning of the test. For instance, the data above also showed that active statement preference was 5.3%, whereas passive statement use was 1.0%. This outcome might have been influenced by the few number of instances of in-an condition or by the allocation of scrambling in Turkish. However, the consistent results of RC and statement outcome at this stage might open some question marks about the animacy effect on structure formation in Turkish.

Although all the conditions observed within MTC were included and structural preferences in this section of the corpus outcome analysis, the conditions including inanimate subject were excluded from the main study analyses in the following phases of the thesis since those conditions were not in the scope of our main research aim and data collection tools at the beginning. Therefore, only target animacy conditions which were the focus of current study at the beginning are going to be included in the following chi-square analyses.

4.2.2. Chi-square Test Results for Turkish Relative Clauses in Turkish Corpus (MTC)

In this section of our corpus analysis, the chi-square analysis outcomes of both Turkish RC and statement data that were collected from MTC within the frame of the two main

animacy conditions (animate-animate / animate-inanimate) set at the beginning when preparing the data collection tools are going to be presented in more details.

Table 16

Main Study Chi-square Statistics and Effect Size Results of the RCs from MTC

Chi square independence test		*Effect Size Calculation*			
p value	7.24953E-05		Mean	SD	N
Test-statistic	15.74457998	*Animate*	1.875	0.625	32
Critical Value	7.814727903	*Inanimate*	1.473118	0.500722	93

M1-M2	*0.401882*
Pooled SD	0.534773
Cohen's d	0.751499

As far as the p-value in Table 16 proves, there is a significant relation between head animacy and RC structure choices for Turkish RCs in MTC with a large effect size, χ^2 (1, n = 125) = 15.74 , z = 3.84, p = 7.25E-05, d = 0.75), which is also a result quite compatible with the outcome that was gained from the participants via data collection tools of current study.

Since the relation between head animacy and RC structure choices was proved to be significant, next step was to add a post-hoc analysis to be able to see whether the direction of that relationship was in parallel with the previous analyses conducted on Picture Description and Metalinguistic Awareness data.

Table 17

Main Study Post-Hoc Analysis Results of RCs from MTC

ADJUSTED RESIDUALS

Row Labels	Animate-Animate	Animate-Inanimate
Active	-23.07155113	23.07155113
Passive	23.07155113	-23.07155113

Significance level	*0.05*
Number of tests	4
Adjusted Sig. Value	0.0125
z criteria	-2.497705474

Adjusted residuals seen in Table 17 show that passive RC use was common for animate-animate condition (*Adj Res=23.07 > z criteria=2.50)*, whereas active RC was widespread for animate-inanimate condition (*Adj Res=23.07 > z criteria=2.50)* since the positive values indicate a movement much higher than the expected range (Durrheim & Tredoux, 2004, pp.375-376). This RC use tendency in MTC seems to be in line with the previous research in the area and the findings of the data collection tools of current study. This finding related to RC use in Turkish corpus might testify the frequency effect on participant data; however, it was necessary to check the use of our target verbs in statements as well to be able to reach a holistic decision about the active and passive preferences of those verbs in corpus.

4.2.3. Chi-square Test Results for Turkish Statements in Turkish Corpus (MTC)

As was discussed above, this section is going to summarize the outcome of corpus analysis results that were done on statements in MTC that included the target verbs were used in the data collection tools of current study so that it can be possible to reach a holistic decision

about the frequency effect on the participants' answers when they were forming Turkish RCs.

Table 18

Main Study Chi-square Statistics and Effect Size Results of the Statements from MTC

Chi square independence test		*Effect Size Calculation*			
p value	0.808383055		Mean	SD	N
Test-statistic	0.058812324	*Animate*	1.269036	0.550767	197
Critical Value	7.814727903	*Inanimate*	1.278261	0.546963	460

M1-M2	*0.009225*
Pooled SD	0.548104
Cohen's d	0.016831

As being opposed to what was found for RCs, the chi-square test applied on statements data in MTC yielded completely different results from previous findings. The p-value gained at the end of the test in Table 18 above demonstrates that there is no significant influence of animacy of the object on passivization of the statement structure with a very small effect size, χ^2 (1, n = 657) = 0.06 , z = 3.84, p = 0.81, d = 0.02). As it was explained in the Frequencies section of the paper, this outcome was not a good fit both with the participant data and corpus outcome related to Turkish RCs. Based on that outcome at this stage, it can be deduced that the way the target verbs are used in statements has no connection with how they are implemented in RC data.

Since there is no significant relationship between two variables according to statement data, there will be no need for a post-hoc analysis in the following. Instead, the comparison outcomes of the main study and corpus data are going to presented before concluding the results section.

4.2.4. Comparison of Corpus Results with Main Study Outcomes

Being different from the comparison was made between metalinguistic awareness and picture description task in terms of both its aim and the methodology, this part of the data analysis section was required to be able to test whether there might be a frequency effect on the participants' RC choices.

When trying to test it, a different test from Kappa Measure of Agreement was preferred this time due to nature of our data sources. Since the data to be compared were not withdrawn from the same source, the outcomes of two proportion z-test were referred to in the end to statistically compare the proportions of both RC data and statement data withdrawn from MTC with the proportions of our participants' RC preferences as can be shown in the Table 19 and Table 20 below.

Table 19

Comparison of the Corpus RC Data with the Main Study Picture Description Task Data

Two Proportions p values for Picture Description-MTC			*Z-statistics for Picture Description-MTC*		
	Animate-Animate	Animate-Inanimate		Animate-Animate	Animate-Inanimate
Active	0.00000	0.00000	*Active*	6.42985	8.75581
Passive	0.00000	0.00000	*Passive*	-6.42985	-8.75581

Table 20

Comparison of the Corpus RC Data with the Main Study Metalinguistic Awareness Task Data

Two Proportions p values For Metalinguistic awareness-MTC			*Z-statistics for Metalinguistic awareness-MTC*		
	Animate-Animate	Animate-Inanimate		Animate-Animate	Animate-Inanimate
Active	0.00000	0.00176	*Active*	4.84218	3.12830
Passive	0.00000	0.00176	*Passive*	-4.84218	-3.12830

As can be understood from the very low p values demonstrated above both for Metalinguistic Awareness and Picture Description Tasks, the proportions of RC data withdrawn from MTC are not the same as the proportions of the RC preferences by the participants, which rejects the H0. As the z-scores gained from this comparison are examined closely, it can be seen that the values are not between the range $-3<x<3$, which works as another proof for the confirmation of H1. In Table 19 and 47, the reference point (p1) was the main study proportions, so there seems an interestingly higher rate of active RC preference for animate condition in both Picture Description and Metalinguistic Awareness data compared to the one in MTC data. As for inanimate condition, main study data again shows a higher rate of tendency to use active RCs for inanimate condition than MTC data, which shows that the participants who joined in our study answered the questions by being independent from the corpus and they showed a significantly higher inclination to utilize active RCs for both conditions in general.

Table 21

Comparison of the Corpus Statement Data with the Main Study Picture Description Task Data

Two Proportions p values for Picture Description-MTC			*Z-statistics for Picture Description-MTC*		
	Animate-Animate	Animate-Inanimate		Animate-Animate	Animate-Inanimate
Active	0.32671	0.00000	*Active*	-0.98076	6.81499
Passive	0.32671	0.00000	*Passive*	0.98076	-6.81499

Table 22

Comparison of the Corpus Statement Data with the Main Study Metalinguistic Awareness Task Data

Two Proportions p values for Metalinguistic awareness-MTC			*Z-statistics for Metalinguistic awareness-MTC*		
	Animate-Animate	Animate-Inanimate		Animate-Animate	Animate-Inanimate
Active	0.00031	0.52104	*Active*	-3.61005	-0.64174
Passive	0.00031	0.52104	*Passive*	3.61005	0.64174

Within the light of the provided information when commenting on RC data (Tables 48 and 49), it can be observed that the p values indicate different proportions only for inanimate condition in Picture Description task (Table 21), whereas the same case is observed only for animate condition in Metalinguistic Awareness Task (Table 22) because those values seem to be far below our α value (0.05). This might also mean that statements observed in MTC show some similarities with the RC data retrieved from Picture Description and Metalinguistic Awareness Tasks. For instance, active / passive structure choice distributions seem to be the same for animate condition in Picture Description Task, whereas this distribution seems to differ for inanimate condition. Similarly, Metalinguistic

Awareness Task seems to have similar distributional proportions of active / passive structure preference for inanimate condition this time, while this distribution seems to be significantly different for animate condition.

Although main study outcomes indicate a significant effect of animacy on RC preferences, Corpus outcome for statements (as shown in Table 21 and 49) suggest similar proportions with Picture Description Task for animate condition and with Metalinguistic Awareness Task for inanimate condition, which might signal some influence of frequent use of our target verbs within statements on RC production in Turkish. On the other hand, z-statistic values above imply that the active use of structures are higher in RCs in Picture Description Task than in statements for inanimate condition. Similarly, passivization rate seems to be above the average for animate condition in RCs in Metalinguistic Awareness Task as opposed to lower passivization rate observed in statements in MTC. This outcome might be presented as an evidence for animacy effect; however, this effect might not have the same amount of influence on different structural formations in Turkish.

After summarizing all the results of our data collection tools and corpus analysis, the following section is going to present the discussion of our test results within the light of the theoretical framework and the previous research concerning the animacy effect on RCs.

CHAPTER 5:

DISCUSSION OF THE RESULTS

In this section, the test results of participant and corpus data presented in the previous section are going to be revised and analysed within the light of previous research related to animacy effect and the theoretical framework shared in the literature review section.

As it was indicated in the previous sections, the main objective of the current study is to figure out whether the structure of RCs produced by Turkish native speakers can be influenced by a conceptual factor like animacy. Another objective of the study was to be able to explain the language production mechanisms behind Turkish RC formation by making use of animacy concept.

Based on the aims above and the research questions of the study, the discussion section will be composed of two sections: implications of participant data and implications of corpus data. In the first section, how the animacy concept shaped the participant outcome and how the nature of the task affected the participant data are going to be discussed together with their probable reasons. In the latter one, the corpus outcome will be analysed so as to explain how the frequent use of RCs shaped the RC production of Turkish native speakers and whether the RC formation in Turkish could be influenced by some other less complex structures such as statements.

5.1. IMPLICATIONS OF PARTICIPANT DATA

In this part of the discussion the results of the data collected from the participants are going to be analyzed in terms of animacy influence on RC formation in Turkish depending on the task provided for the native speakers of Turkish.

5.1.1. Animacy Effect on Turkish Relative Clause Formation

Chi-square test results for Picture Description (Table 10) and Metalinguistic Awareness Tasks (Table 12) in Results section proved that there is a significant effect of animacy on relative clause formation in Turkish. Picture description task proved it with a large effect size (d = 0.59) whereas this effect size was medium (d = 0.3) for metalinguistic awareness data outcome. Additionally, post-hoc tests applied for each task (Tables 11 and 13) also demonstrated that Turkish native speakers have a tendency to passivize Turkish object relative clauses in case the object of the clause is an animate entity.

By changing active DO-RCs into passive SRCs to bring the animate entity in object position into a more prominent position like subject position, the participants' data showed similar results with the assumptions of the present study and the views related to language processing such as the conceptual accessibility hypothesis (Prat-Sala & Branigan, 2000), which puts forward that easily recalled items are included in language processing earlier than the ones retrieved in more difficulty. The participant data results also overlap the grammatical role assignment view of Bock and Warren (1985) on how 'conceptual accessibility' and 'imageability' factors play a role in determining the word order during language processing. According to this view, humans and animals are regarded as natural agents and they are the most appropriate ones to be activated as subjects (S). On the other hand, plants, artifacts or natural inanimates are the common recipients of a human action, so they are mostly activated as direct objects (DO) (Bock & Warren, 1985). As a result, our participant data proved the view that more accessible elements in the language are assigned to grammatically more active and more prominent positions during sentence formation process by showing how animate nouns are assigned to subject positions with the help of passivization in case of an animate condition. Such kind of animacy influence observed in the current study on Turkish RC formation is compatible with other previous related studies in other languages as well such as in English (Gennari & MacDonald, 2008), in Japanese (Montag & MacDonald, 2009), in Mandarin Chinese (Wu, Kaiser & Andersen, 2012), in Dutch and German (Vonk & Schriefers, 2002).

Despite providing support for grammatical function assignment account, the participant data conflicted with some accounts such as Dependency Locality Theory. As explained in the previous sections, DLT proposes that the difficulty of structures are determined either by the number of incomplete dependencies within the structure (Hsiao & Gibson, 2003) or by the words interfering between the head of clause and its gap (aka LDH in Gibson, 1998, 2000; Hsiao & Gibson, 2003), and an example for each resource is shared below to visualize their proposals (56):

(56)

Passive SRC:
ei adam tarafından[1] taşınan[2] kadını[3] (three words)

Active Object RC:
Adamın[1] ***ei*** taşıdığı[2] kadını[3] (one word)

(Adapted from Aydın, 2007)

When an active ORC and its passive form are examined by utilizing the former method of DLT as demonstrated above (56), it is possible to deduce the number of incomplete dependencies (shown as over-script) are same for both types of RCs in Turkish, which makes it difficult to reach a conclusion about the structural difficulty of active ORCs and passive SRCs. On the other hand, the analysis of the structure within the light of the latter proposal of DLT projects that passive SRCs are much more difficult to process compared to active ORCs because there are three words in total interfering between the head (kadın) and its gap (*ei)* in passive SRCs whereas there is only one word interfering between the RC gap and the head in active ORCs on linear level. As a result, Turkish native speakers preferred to passivize the ORCs in Turkish although passivization in Turkish RCs is a much more difficult process according to LDH, which implies that the conceptual accessibility influence might sometimes get a head of structural difficulty during RC production process in Turkish.

As the current result of the Chi-square outcomes are analyzed from the point of SDH as a syntax-based account (Collins, 1994; Hamilton, 1995; Hawkins, 1999; O'Grady, 1997, 1999), especially the passive SRCs in Turkish lead to some interesting outcomes as exemplified below (57):

(57)

Passive Subject RC:
$_{CP}$[$_{IP}$ [____ $_{VP}$[$_{PP}$[adam tarafından] taşı-n-an]] kadın$_i$]

Active Object RC:
$_{CP}$[$_{IP}$[adam-ın $_{VP}$[____ taşı-dık-ı]] kadın]

(Adapted from Aydın, 2007)

In the example above (57), SDH demonstrates that passive RCs are easier to process in Turkish compared to ORCs because there are two nodes interfering between the head and its gap in ORCs whereas the node number is only one in the passive RC example above. Although the structure is in passive form, that proposal of SDH has not changed and the passive SRC still seems to be easier than ORC formation in Turkish according to SDH. The significant rise in the number of passive SRCs depending on animacy shown in Chi-square analysis might also suggest that passivization in Turkish RCs could not be a process as hard as it has been thought. However, the high specificity values in Kappa tests (*specificity* = 69% in Table 14, *specificity* = 92% in Table 15) standing for active ORC preference overlap between two data collection tools both for animate and inanimate conditions in spite of the significant animacy effect proved the tendency of participants to produce active ORCs more in number than passivized RCs. Thus, it is possible to conclude that SDH does not comply with Turkish passive RCs because participants have hard time producing those structures frequently, so they do not seem to be processed more easily than active ORCs. Therefore, DLT (a.k.a LDH) seems to be in line with Turkish RCs in terms of reflecting the correct structural difficulty; however, the outcomes of the chi-square outcomes also show that some semantic factors such as animacy sometimes could

surpass the structural difficulty foreseen by LDH during RC processing by complying with the grammatical function assignment and conceptual accessibility.

As a conclusion, different language processing accounts such as Dependency Locality Theory or Structural Distance Hypothesis put forward different comments related to the processing difficulty of Turkish ORCs and their passive forms. The most harmonious one among those suggestions with the participant outcome was LDH since it foresaw that SRCs in passive form would be much more difficult than active ORCs and the Kappa outcomes of the participant data have already proved that with the higher percentages of active ORC preference in both conditions. This is a data evidencing that passivization brings an extra processing load on the memory although SRCs are in theory easier to acquire and process than ORCs according to the Accessibility Hierarchy offered by Keenan and Comrie (1977). On the other hand, Chi-square outcomes applied on the participant data testified that structural difficulty could be overcome or modified by including some semantic variables in the process such as animacy since the interference of animate objects in RC processing increased the amount of RC passivization significantly, which will be in compliance with conceptual accessibility effect proposed by Bock and Warren (1985). All those interaction seen between semantics and syntax at the end of the analysis of participant outcomes for each task could also imply that sentence production could be realized based on the interactive language processing model where syntax and semantics are included in the sentence processing procedure at the same time as the Turkish native speaker participants seem to have considered the conceptual accessibility factor too when choosing the right grammatical position for the animate components when forming their RCs (Kempen & Vosse, 1989; McRoy & Hirst, 1990; Vosse & Kempen, 2000).

In the following section, the data gained from picture description and Metalinguistic Awareness Tasks are going to be compared so as to see whether the animacy influence in RC formation shows any differences depending on the task or the context in Turkish.

5.1.2. Task Interference

As the Kappa (k) values obtained for both animate (k = 0.09 in Table 14) and inanimate condition (k = 0.06 in Table 15) attested, there is no agreement between the outcomes of Metalinguistic awareness and Picture Description Tasks in terms of structural preferences, which implies that the rate of animacy effect on sentence / clause formation could vary depending on the task, condition or context even though it has significant influence on the grammatical role assignment to the items to be included in the processing. However, such an outcome was not actually expected due to the similar Chi-square results of Picture Description and Metalinguistic Awareness Tasks in the previous section. Nevertheless, the Chi-square p-values gained at the end of the test for each task are far different from each other although they both are adequate to prove the animacy influence on RC formation and this considerable difference between the p-values might be the reason for such kind of discrepancy between the outcomes of those two different tasks according to the Kappa test results.

The different rate of animacy effect seen on different tasks as explained above might provide another hint for constraint-based language processing which mainly defends that all contextual influences and syntactic, semantic and pragmatic preferences can have an impact on human language processing as was seen above as different rates of animacy influence on RC passivization depending on different nature of tasks (Kempen & Vosse, 1992; McRoy & Hirst, 1990; Vosse & Kempen, 2000).

Another reason for such a difference between the animacy effect results of data collection tools might be due to the different complexity levels of the participant tasks included in the current study. There are previous studies proving that language learners have a tendency to utilize more various and complex level of vocabulary when the tasks become more complex (Robinson, 1995; Gilabert, 2005). Robinson (2001) made a distinction between the terminologies: task difficulty and task complexity. He proposed that task complexity is about cognitive demands of the task, whereas task difficulty can be based on some learner

factors such as aptitude, motivation, task conditions / demands, etc. Many researchers like Robinson (1995), Rahimpour (1997) and Gilabert (2005) figured out that manipulating the number of elements or increasing the task demands (in other word the task difficulty) were not effective at motivating the structural complexity either in spoken (Michel, Kuiken & Vedder, 2007) or written language production (Kuiken & Vedder, 2007; Kuiken, Vedder & Mos, 2005). On the contrary, Révész (2012) found out some substantial influence of increased number or instructions (in other words task complexity) on both the amount of reasoning and the structural complexity. Additionally, Robinson (2001) puts forward that there-and-then type tasks like narratives are more complex compared to here-and-now type of tasks such as picture description. The main reason for that picture description tasks already include a visual support for the learners to organize their thought; however, narratives require more effort to organize thoughts. There is the influence of tense and aspect, as well. As for the case of current study, picture description task might have been easier for participants to handle compared to Metalinguistic Awareness Task, so they could have paid extra attention to their sentences and the semantic variables in them during picture description task instead of focusing on the task demands more as in the case of metalinguistic awareness. The main reason for that is the participants were provided extra supporting questions to answer together with visual support in the picture description task. Additionally, the tenses of the sentences were arranged in Present Continuous form, so they were here-and-now type of tasks as suggested by Robinson (2001). In contrast, Metalinguistic Awareness Task sentences were all arranged in past form and they were in the format of there-and-then tasks. Furthermore, there was no visual support or no guiding questions and the participants were only required to complete the beginning of the sentences within the light of two sentences given to them during the task.

When the p-values gained from chi-square test results for those two different tasks are compared, it is observed that the p-value for picture description task (p = 4.32E-14 in Table 10) was much lower than the p-value for Metalinguistic Awareness Task (p = 0.000426 in Table 12). Those different p-values of participants suggest that animacy might have put a much more intense effect on picture description data outcome than it does on

the metalinguistic awareness data, which indicates that higher task complexity level of metalinguistic awareness might have suppressed the animacy influence on RC production for metalinguistic awareness data, while the relatively less task complexity level of picture description might have encouraged more passivization in RC production of the participants as being in parallel with the findings of Révész (2012) and Robinson (2001) who analysed how task complexity put an impact on the structural complexity as well.

One final remark that could be made related to task complexity is the fact that most of the studies conducted on task complexity effect on language processing in literature (Finardi, 2008; Declerck & Kormos, 2012; Hassanein & Abu-Ayyas, 2018) were applied in second language acquisition as were the ones mentioned above (Robinson, 2001; Robinson, 1995; Gilabert, 2005; Kuiken, Vedder & Mos, 2005; Michel, Kuiken & Vedder, 2007; Révész, 2012). By looking at how complexity of Metalinguistic Awareness Task has precluded the conceptual accessibility and its passivization influence on the Turkish RCs, it could also be inferred that some similarities might exist between L1 and L2 production mechanisms. Levelt (1989) explains that conceptualization and monitoring are the two main processes in L1 production that are contingent on conscious attentional control (as cited in Declerck & Kormos, 2012, p.8). Linguistic encoding is assumed to be done automatically as long as there is no high conceptual demand that might cause monitoring and planning stage to interfere with each other (Levelt, 1983; Horton & Keysar, 1996). Thus, lexical selection process also could be a conscious process in L1 depending on cognitive demands (Ferreira & Pashler, 2002). On the other hand, Kormos (2006) puts forward that L2 speakers make use of attentional control starting from planning till monitoring stage no matter what the task or the conceptual demand is. Retrieving the appropriate lemma to match the activated concept is also included in this conscious processing procedure (as cited in Declerck & Kormos, 2012, p.9). As a result, lexical selection process could be liable to some interference effects in both L1 and L2 production, and the results of current research on Turkish RCs might provide a small evidence for how the lexical selection and structure formation procedure of L1 speakers could be influenced by task complexity interference being in similarity with the outcomes of L2 speakers (Robinson, 2001; Robinson, 1995;

Gilabert, 2005; Kuiken, Vedder & Mos, 2005; Michel, Kuiken & Vedder, 2007; Révész, 2012).

Final rationale that could be put forward related to such an unanticipated disagreement between Picture Description and Metalinguistic awareness RC preferences could be the visual salience effect (Montag & MacDonald, 2014). That is the participants made use of a visual aid when forming Turkish RCs, but the entities and the items in the pictures were arranged in a way that their sizes and locations would differ from each other, which might have manipulated the outcome of picture description task when the participants were forming RCs. In contrast, Metalinguistic Awareness Task was lack of such kind of visuals as well as such a visual salience influence on structure formation. This main difference might be one of the reasons for the disagreement between metalinguistic awareness and picture description tasks. There were some studies in literature proving visual salience influence on sentence formation or grammatical function assignment (Gleitman et al., 2007, Tomlin, 1997). However, their study design did not include any animacy manipulations as in the case of the current study. When the picture description task of the current research is analysed closely in terms of visual salience, it seems that it includes eight highly salient entities for animate condition out of ten target items while their number is nine for inanimate condition. As a result, the salient item/entity amount appears to be almost the same for animate and inanimate conditions in picture description task; however, the animacy seems to have put a greater effect on Turkish RC formation compared to visual salience effect as the chi-square outcome attested a significant number of rise in the passivization rate in case the target was an animate patient. This outcome might suggest that visual salience influence might not have been as strong as animacy influence on structure formation and grammatical function assignment process; however, it might have supported and strengthened the influence of animacy significantly in the picture description task and might have led to a substantial difference between metalinguistic awareness and picture description task outcomes in terms of RC preferences. Such kind of collaboration of visual salience with other semantic or discourse features have been proved by a study carried out by Montag and MacDonald (2014) as well. The study included the

same picture description materials that have been utilized in the current research and it was aiming to find out the nature of visual salience and its interaction with the linguistic context during utterance production. Their study also confirmed the robust influence of animacy influence on RC formation and it concluded that the relationship between visual salience and structure formation is not straightforward, and it might be based on some other semantic and linguistic variables as well such as animacy, task demands, as was proved by the current research as well. An interesting fact observed in the study of Montag and MacDonald (2014) was that there was no active ORC preference in animate condition and passive RC use seemed to be a bit higher than active RC preference for inanimate condition due to visual salience effect. In contrast, the active ORC preference rate was relatively higher than passive RCs in Turkish in spite of high amount of visually salient target items and animacy influence according to the high specificity values of Kappa tests (*specificity* = 69% in Table 14, *specificity* = 92%, in Table 15) showing the agreement rate of active RC preference in both tasks. That is to say producing passive SRCs could be a more difficult process compared to the production active ORCs for Turkish native speakers as explained in the previous section. Therefore, the participants might also have considered the syntactic difficulty/complexity of their alternatives when forming their RCs in Turkish as being different from the case in Montag and MacDonald's study (2014). All in all, Turkish native speakers attending the current research might have been influenced by visual salience factor as well besides the feature of animacy in picture description task and their collaboration within the task might have promoted the passivization more to assign both animate and visually salient entities to a more prominent position within the clause, and differentiated its outcome from the outcome of Metalinguistic Awareness Task which has lack of visual salience effect due to its task nature. Nevertheless, their influence did not remain as strong as the influence of syntactic complexity and the participants still preferred to use active ORCs more than their passive counterparts despite the significant influence of animacy on the passivization rate.

In the following section, the outcomes of the METU Corpus data are going to be analysed within the frame of frequency influence on structure formation of Turkish RCs.

5.2. IMPLICATIONS OF CORPUS DATA

In this part of the discussion section, corpus and participant data are going to be compared analytically so as to answer the question whether the animacy influence on RCs is something that Turkish native speakers learn from their environment with the help of exposure to similar RCs or the associations they establish between RC constructions and more common and simpler structures like statements.

5.2.1. Which one is more influential: Frequency or Animacy?

The RC outcome of corpus data bore the same results as the participant outcome does in terms of animacy effect, which might mean that animacy effect seen on RC formation of Turkish native speakers might have a relation with the frequent use of RCs in context; and animacy effect might be a concept which is learnt from the environment by the native speakers of Turkish and which shapes the way they produce language.

According to Figure 4 demonstrating the distributions of those conditions and the structures preferred for each condition, it is still possible to say that Object RCs in active form seem to dominate most of the conditions. However, the percentage of passive RC use (18.3%) appears to be approximately seven times higher than active Object RC preference rate (2.6%) for animate condition (animate-animate), which is again an indicator of a possible animacy influence on RC formation in corpus data, too. The proposition of animacy influence by Figure 4 is also proved by Chi-square and post-hoc analysis as well, as shown in Table 16 and Table 17 within the scope of results section. The chi-square outcome of corpus data also demonstrated that there is a significant rate of passivization tendency in Turkish ORCs in case of appearance of an animate object within the structure.

Such kind of similarity in the formulation of Turkish RCs in the participant and corpus data in the face of an animacy influence might assert that the RC use of Turkish native speakers might be shaped by the frequent use of Turkish RCs in context and the animacy

influence that was observed in the participant data could actually be a learnt behavior from the speakers' own environment or from their experiences. Such kind of animacy influence correspondence between distribution and production data might be an evidence for fine-grain version of Tuning Hypothesis (Mitchell, et. al., 1995; Jurafsky, 1996) which is a hypothesis based on the assumption that that language processing (it can be either on production or comprehension level) might have been influenced by experiences or previous input as discussed under constraint-based language processing approach in the literature review section. Although there is a tendency to produce active ORCs both in corpus and participant data, the way they reorganized the RCs in order to bring the animate entity in a more prominent position shows that smaller grains such as animacy could also influence the syntactic organization in a language independently from larger structural frequencies. Similarly, this significant animacy effect observed in both resources might also prove that conceptual accessibility might be a feature that is learnt by means of high rate of exposure from the speaker environment and conceptually more accessible elements like animacy might shape or rearrange the grammatical function assignments within a structure (Bock & Warren, 1985).

The relationship between animacy and frequency has been studied in other languages as well within the framework of RC attachment. For instance, Desmet et. al. (2002) came up with some connection between animacy and frequency as they were comparing the corpus and Dutch speakers' production data in RC attachment preferences that were in the form of '*NP1 van NP2* __ (e.g. *the servant of the actress who*)'. In that way, their objective was to test whether the already present corpus prepared by Mitchell and Brysbaert (1998) was a good representative of the real data collected from native speakers. At the end of the study, they realized that the corpus data (Mitchell & Brysbaert, 1998) did not match the participant reading outcomes at the beginning of the study because the semantic feature of humanness was manipulating the structural preference tendencies. When the corpus data were analysed and compared with the participant outcome by considering animacy as well, the results demonstrated both resources presented a similar outcome, which was that the animacy was manipulating the RC attachment. For instance, high RC attachment tendency

was observed if the NP1 was an animate noun. If NP1 did not refer to a human, then the data demonstrated dominant low attachment continuations in both corpus and the metalinguistic awareness data of participants in spite of the frequent NP1 (high) attachment tendency in Dutch language (Brysbaert & Mitchell, 1996). After observing such kind of animacy influence, a follow up study was organized by Desmet et. al. (2006) by using the same corpus again, but this time the corpus outcome was compared with the self-paced reading data so as to see whether the corpus and comprehension outcomes were going to match in terms of the animacy influence on RC attachment process. The results were compatible with the previous study as well as the fine-grain version of Tuning Hypothesis as the current study on Turkish RCs does. To clarify, animacy as a single semantic unit put a significant influence on RC processing in Dutch and it averted the structural frequency effect as was foreseen by coarse-grain version of the hypothesis. Although the frequent structure that needed to be observed in Dutch RCs was NP1 attachment depending on the coarse-grain version of hypothesis, the RC attachments demonstrated varieties depending on the animacy feature of NP1. In addition to animacy influence, the study interestingly put forward another semantic feature that averted animacy: concreteness. If NP1 was an abstract animate noun and NP2 was a concrete animate noun, they figured out that participants preferred low attachment (NP2) more when reading the sentences. In that way, concreteness became another semantic unit that might interfere with the sentence processing procedure. As for the Turkish RCs included in the current study, they were also manipulated by the animacy feature of the object of the RCs as in the case of Dutch RCs (Desmet et. al., 2002; Desmet et. al., 2006). Although Figure 4 implies that common RC preference was active ORCs in Turkish data, both the participant data and the corpus data have proven significant rises in the form of passive RCs when the object of the structure was animate. Thus, it is possible to say that such kind of different animacy effect realizations on different contexts might be proof for experience-based approaches not on coarse-level but on lexical-level.

Besides Dutch, Spanish RCs were analyzed in terms of RC attachment preferences based on Desmet et. al. (2002, 2006) ’s findings related to Dutch RCs, (Acuña-Fariña, et. al.,

2009) and the similar corpus and on-line data analysis procedures were followed for Spanish RCs as well as was done for Dutch RCs. Being different from the outcome from Dutch RC attachments, Spanish RCs demonstrated a high rate of NP1 (high) attachment in all conditions except for the condition where NP1 was inanimate and NP2 was animate. In such kind of inanimate-animate condition, the regularity of NP1 attachment disappeared, so only one condition could provide an evidence for animacy influence in Spanish RCs. All in all, Spanish RCs were mostly compatible with coarse-grain version of Tuning Hypothesis due to dominant NP1 attachment preferences in all conditions; however, inanimate-animate condition still provided an evidence for how a semantic feature of animacy could damage the usual structural tendency though its effect was not on a significant level. In terms of the animacy influence seen on sentence processing, Spanish RCs were also in line with the fine-grain level of Tuning Hypothesis besides the findings of current research.

Besides the studies mentioned above, there are also some studies in Turkish as well regarding RC attachment and RC processing. For instance, Kırkıcı (2004) aimed to discuss processing mechanisms behind RC disambiguation process in Turkish. Within the frame of the study, RCs with genitive constructions [NP1Gen+NP2] and RCs containing NPs with postpositional phrases [[NP1 P] PP+NP2] were analyzed by means of two off-line questionnaires. One of the experiments focused on hosts with [+human] while the other one targeted hosts with [-human] feature. After the data collection procedure was finished, the outcomes of the study were summarized and analysed within the light of three main approaches to language processing: Construal Theory, Predicate Proximity and Tuning Hypothesis.

The findings of the study are as in the following for Turkish RC attachment preferences:

i. In case of two potential [+human] hosts, the participants did not attest any attachment tendencies in genitive constructions (Experiment 1).

ii. If it is a RC in postpositional form, the participants demonstrated tendency towards low NP attachment in case of a [+human] condition (Experiment 1).
iii. Finally, participants mostly showed low NP attachment preferences again in genitive condition in case of the existence of two [-human] hosts (Experiment 2).

Considering all three outcomes above, Kırkıcı (2004) asserted that the participants behaved in accordance with the Recency Principle in [-human] GEN condition whereas they could not come up with any dominant structural processing strategies for [+human] condition. Since the study could not present a satisfactory syntactic explanation to the processing of RCs with an animate [+human] host, Kırkıcı (2004) suggested applying a well-designed corpus study to be able to check the role of Tuning Hypothesis too in the processing of Turkish RCs containing and attached to an animate host by referring to the case of Dutch RCs in Desmet et. al. (2002)'s study. Though the current study did not aim to look at the RC attachment preferences in Turkish as in the case of Kırkıcı's work (2004), it included a corpus study to be able to observe a possible frequency effect on Turkish RC processing as suggested in his work and achieved finding some traces of fine-grain version of Tuning Hypothesis at the very end. Additionally, the pure structural approaches to RC processing such as LDH or SDH did not provide consistent outcomes in the current study as was the case in Kırkıcı's (2004) study for Recency Principle. The outcome of the current study related to animacy influence were more in line with the constraint-based approach rather than garden-path model in language processing as opposed what Kırkıcı (2004) suggested.

Another RC attachment study in Turkish was conducted by Turan (2018) who was aiming to find the RC type (ORC and SRC) influence on RC attachment kinds (low, high, high with ambiguity) and the data were collected by means of online eye-tracking experiments. Although the study did not include the influence of contextual factors or semantic properties of the constituents as was done in the current study, it exhibited significant outcomes regarding the working principles of Turkish parser. According to the outcomes of his research, Turkish proved to have a tendency to be a High Attachment language and

Turkish parser mechanism works in parallel with Garden Path Model in language processing, which suggests that the syntactic information is processed first, then the semantic information is added in the language processing procedure later. The main reason for that result was that eye-tracking outcomes was that High Attachment sentences caused a significant slow-down on NP2 although the overall reading time was relatively shorter in High Attachment sentences. Therefore, it was thought that the parser might be sensitive to lexical/semantic features of the following words in sentences. Despite the valuable information it presents related to Turkish parser mechanisms, the study conducted by Turan (2018) is in conflict with the outcomes and the assumptions of the current study. The main reason for that the current study presented results which are in line with experience-based approach as well as interactive language processing system whereas the findings of Turan (2018) support a modular language processing approach. However, the materials of Turan did not exploit any animacy differences and all the heads of target RCs in Turan's study were composed of animate entities. On the contrary, in the present study, natural language use is assessed regarding mainly the effect of animacy. Therefore, due to the differences related to material designs and the procedures of the studies, finding different outcomes may not be surprising.

As a result, the chi-square outcomes of both corpus and participant data and some previous studies imply that animacy influence is a feature that might be learnt by exposure from speaker environment and the learners might have utilize such frequency influence not on coarse-grain level but on fine-grain level. However, there might be some other factors as well other than frequency affecting the RC organization in corpus and since it is a production study, a certain statement regarding the frequency effect cannot be made with the current data. Therefore, the current data cannot certainly answer the question whether frequency or animacy influence is stronger, but it can be a topic of a follow-up study with a more elaborate analysis of the corpus from both syntactic and semantic aspects.

Though the animacy influence seems to be significant in both corpus and participant data sets, their comparison results demonstrated by two-proportions analyses (Tables 19 and 20) were not parallel to each other in terms of structural preference outcomes for animate and inanimate conditions, which was also a proof that some other factors other than animacy could have affected the high passivization rate in the corpus and frequency data in corpus might not have been the exact reflection of native speaker data or of Tuning Hypothesis. The main reason for that is two-proportions and the z-scores gained at the end of the test suggest that the task outcome and the corpus data are interestingly not statistically compatible with each other although they suggest the same outcome in terms of animacy effect. When you get into the details of the z-scores, it is possible to discover that active RC preference is much higher in the participant data compared to the one in corpus data for both animate and inanimate conditions. The main reason for such an unexpected statistical difference between the RC use in participant data and in corpus could be related to the differences between context / discourse and genre of the outputs or other syntactic factors.

To start with the context / discourse influence, relative clauses extracted from the corpus were a part of coherent text; however, the RCs that were expected from participants to produce were in isolated form. The participants were not expected to create a context for those target RCs. Therefore, the existence of a context in corpus might have caused some distortions in the structural preferences of participants. Regarding the issue, Crain and Steedman (1985); and Altman and Steedman (1988) also confirms that it is natural that the context may put some effect on sentence processing since the entities used within the text might have some unique referents in the previous discourse. Based on that rationale, Crain and Steedman (1985) propose Referential Support Theory, which can be a guideline and explanation for the higher rate of passivization in corpus that was observed in the current study although the main focus of the theory was the asymmetry between Subject and Object RC processing. The theory is mainly in favor of the possibility that the processing difficulty of structures could be reduced by means some contextual support and it states that the Subject and Object RC asymmetry offered by Accessibility Hierarchy of Keenan

and Comrie (1977) could be eliminated with the help of context interference. Within the light of the suggestions put forward by Referential Support Theory (1985), it is possible to say that our corpus RC outcome might also have been under the influence of contextual factors that might have increased the number of passivization in spite of more complex nature of the passive RCs. Therefore, factors other than animacy such as topicalization or referent information could have manipulated the structural choices depending on context.

When the previous studies were scanned related to the context effect on RC processing especially in Turkish language, there were two main recent comprehensive studies that attempted to test Referential Support Theory of Crain and Steedman (1985) in the literature. The first one belonged to Kahraman (2015). Kahraman (2015) examined Turkish SRCs and ORCs in neutral and topic context by checking the self-paced reading outcomes of the participants. By exploiting topichood, he aimed to question the universality of Discourse Function Hypothesis as well in his study. The reading output of the participants demonstrated that both neutral and topic contexts facilitated RC processing in Turkish; however, context attested no significant influence on the elimination of RC asymmetry between SRCs and ORCs in Turkish as suggested by Referential Support Theory (Crain & Steedman, 1985). Though the context influence was not as strong as to prevent RC asymmetry in Turkish in his research, the research did not completely deny the facilitative impact of the context on RC processing, either. In that sense, its outcome might partially comply with the assumptions of the current research related to the high passivization rate observed in corpus data. The other recent research that focused context effect on RC processing was conducted by Boran (2018) as a thesis study. In her research, she similarly analysed Turkish Subject and Object RCs and she tried to discover whether the processing asymmetry between SRCs and ORCs in Turkish could be averted by means of contextual manipulations. As different from Kahraman's work, she conducted an eye-tracking study and recorded the reading times of the participants for RCs in isolation and RCs with context. She also made use of topic context by providing participants with short paragraphs. Compared to Kahraman's (2015) research design, she provided a wider context for her participants by placing Subject or Object RCs within them. At the end of

the study, total fixation time and regressive eye movements proved that discourse has no facilitative role on the processing of either SRCs or ORCs in Turkish, which is an outcome that certainly contradicts with the hypothesis of the current study as well as the propositions of Referential Support Theory (Crain & Steedman, 1985). In contrast, discourse provided in Boran's study caused both Subject and Object RCs to be processed more slowly and harder. Nevertheless, her study could still indicate a context influence on RC processing though it was not in positive sense as suggested by Referential Support Theory (Crain & Steedman, 1985) as well as the corpus data of current research.

To sum up, one of the reasons for the significant difference observed as a result of the two-proportions analysis between participant and corpus data in the current study might be possible discourse influence such as topichood or referent information. The high passivization rate in the corpus data might mean that discourse influence could have a facilitating impact on RC processing in Turkish; however, some recent studies conducted on Turkish SRCs and ORCs did not support that claim, but they did not deny the influence of context either. In that sense, the current study and those studies gather under the same roof in terms of the fact that context might put some impact on RC processing. However, the corpus data of the current research need a more detailed analysis so as to reach an agreement about whether context / discourse has a facilitative or complicating role in the processing of Turkish RCs. Since the main aim of the current study is only to understand whether the animacy influence seen in participant data is significantly influenced by frequency, the interaction between context and passivization in RCs will be spared for a later analysis; however, the comparison outcome of the current study obviously demonstrated that there might be some other semantic or discourse factors affecting sentence processing.

In addition to influence of coherence or topicalization, there might have been some other semantic or syntactic factors that could have influenced the processing of RCs in corpus other than animacy in the current study. To clarify, extra attention was paid to the tasks

prepared for participants so that the sentences could be similar in terms of plausibility, length, or difficulty. Additionally, they were arranged in way that there was no noise or interference of any other syntactic or semantic property. On the other hand, corpus relative clauses were less controlled and it could be possible to observe an influence of any other conceptually more accessible items according to Prat-Sala and Branigan (2000) such as concreteness and prototypicality or givenness. To exemplify, Desmet et. al. (2006) also found out in one of his studies concreteness might avert the influence of animacy in corpus data. In their study, it was observed that the common behavior of NP2 (low) attachment preference in case of an inanimate NP1 in Dutch was avoided when the NP1 was a concrete inanimate entity and NP2 was an abstract animate entity (e.g., 'the books of the reading group'). This shows that there might be some other semantic factors as well that might have caused the discrepancy between the participant and corpus data in the current study as well because all the items in the current research were also prepared by choosing concrete objects or people so as to prevent the interference of other semantic features; however, the corpus data could not be manipulated in such a way. Therefore, more deep research into MTC is needed to find the main motive for the higher rate of RC passivization in corpus data than in participant data in the following of this current study. Besides the interference of some other semantic factors, the syntactic variety might have also caused the observed differences between those two data sets in the current study. In the participant tasks of current research, the main focus was active ORCs and passive RCs in Turkish, so the sentences were arranged in that way. All the arguments of the verbs should have appeared overtly in all RCs to be accepted for data analysis, and there was no place for syntactic variation other than the production of active ORCs or passive SRCs. In contrast, some of the RCs included hidden items in MTC as was shown in the following:

(58)

Tekrar ve son kez ortaya çıktığında gördüğümüz , kendisinden çok taşıdığı kocaman kırmızı şemsiyedir . Periveş Hanım bu kırmızı şemsiyenin altında kaybolmuş gibi durur .

The last time (she) reappears, the thing that we see more than herself is the red umbrella which (she) carries with her. Perives stands under this umbrella as if (she) disappears.

As opposed to participant data, it is possible to understand the subject of the RC thanks to the help of the context in (58). However, no such thing was possible in participant tasks because all the sentences were in isolated form, so the participants had to include every argument in the clauses in order to provide an understandable RC for the reader. This is one of the unique features of Turkish on account of is morphologically rich nature as the verbs show agreement with their subject in person and number. Therefore, the subject position of the sentences does not have to be filled by a phonological realization of a subject. That pro-drop feature is not limited to statements in Turkish as is supported by Kelepir (2001). The subjects of noun phrases don't have to be overtly present within the clause, either one example of which can be observed in the example (58).

Finally, the genre or style covered in participant output and corpus output might also have put some impact on the production of RCs. To clarify, the data of the MTC were mostly collected from ten different written genres such as memories, narratives, short stories, novels, newspaper articles, interviews, etc., which were mostly planned outcomes. On the other hand, the data collection tools of the current research were not based on literary output, and it was aiming to collect unplanned production data on every day Turkish. Those genre discrepancies between corpus and participant data might have led to some differences between their structural outcomes. Concerning the genre influence, Coupland (2011) brings forward the claim that genre is not only about text (including spoken language as well), but it is also about a speaker's mental model of speech situation. To clarify, speakers of a language can infer the linguistic genre of a text from its internal linguistic markers. For instance, a mix of dialects could be welcomed within a literary genre such as a poem or a novel whereas only Standard English is expected in a written academic publishing. The production or linguistic expectation during comprehension process might be reshaped based on such kind of style influences (Ferguson, 1994; Biber

& Conrad, 2009). Based on that idea how genre might influence the linguistic variation both in production and comprehension levels, Squires (2018) conducted a self-paced study including three different experiments serving for different purposes, and the study was conducted to observe the processing of popular songs in English from different aspects. It was mainly composed of three experiments. The first experiment was aiming to see how the context information provided beforehand related to genre of the sentences could impact the overall processing of participants. The second experiment was aiming to test how the nonstandard use of the 'don't' (e.g. *' NP_{SG}+don't*) would be processed in English pop songs and the final experiment was testing whether there would be any significant difference between the standard and nonstandard conditions for Strong and Weak context recruitment in their reading results. The results of the first experiment demonstrated that the Context group who was informed related to the genre of the lyrics they were going to read beforehand provided more consistent processing data compared to NoContext group who was not informed about what they were going to read. In the second experiment, both participant groups seemed to be influenced by the nonstandard use of 'don't'*(NP_{sg}+don't*); however, the participant group with genre information appeared to have been surprised by the ungrammatical use of 'don't' less than the NoContext group. Finally, the third experiment proved that stronger context supply might not always cause a stronger expectation shift in language processing. However, the significant facilitating genre influence observed on the processing of nonstandard use of 'don't' (*NP_{sg}+don't*) could present a perfect evidence for also the assumptions of the current study that different types of written genres included in MTC might have caused the significantly higher rate of passivization in corpus than the one in participant data at the end of two-proportions comparison because the genre of the literary outputs might have also influenced the selection of passivization in RCs. In the case of current study, the written genres might have encouraged the passive use in Turkish RCs more whereas participants produced their RCs in an isolated environment within the style of spoken output. Therefore, they might have produced active ORCs more since it was simpler in form than passive SRCs according to LDH and frequency analysis. Another study related to genre influence on sentence processing was conducted in German by utilizing German poems (Blohm et. al.,

2017). The main aim of the study was to figure out how genre awareness might change the perception of semantic congruency and archaic inflection in German. Two experiments were conducted one of which was a meaningfulness task and the other one of which was an ERP study. At the end of the study, starting the sentence with a morphologically odd and infrequent words caused some uncertainty in NoPoetry group whereas that uncertainty seemed to diminish in Poetry group. On the other hand, offline meaningfulness test outcomes attested that the rate of incongruency perception in presented sentences reduced to a certain extent when the genre information was provided for the participants beforehand. However, ERP outcomes demonstrated that semantic congruency on P600 differed based on genre instead of whereas there was no a change in N400 depending on genre. In NoPoetry group P600 values can be evaluated as a marker of well-formedness while in Poetry group it might indicate the pragmatic processing, which might also mean that literary genres are related to genre-specific interpretive strategies. In sum, ERP analysis demonstrated that real-time sentence processor is sensitive to subtle morphological manipulations and the implicit prosodic differences at first. On the contrary, genre impact has an influence on the later stages of processing. Though the ERP test did not attest a direct relationship between genre and sentence processing, it still provides some clues that genre might have an influence on structural choices in production or perception of grammaticality or anomaly in comprehension and the assumptions put forward related to the genre influence on RC processing could also be true. However, a more detailed comparison analysis of the corpus data and native speaker data is needed in a separate study.

All in all, two-proportions outcome and the significant difference between the participant and corpus data could indicate that there might be some other semantic or discourse units that might have interfered the RC processing procedure in the corpus data and distorted the corpus outcome. Those factors that might have interfered the RC production in corpus and that required more detailed analyses in separate studies might be context effect such as topicalization, other semantic factors such as concreteness or genre influence. Therefore, we could not prove a statistical parallelism between the animacy influence on native

speaker production and distribution data although we could observe a considerable rate of animacy influence on grammatical function assignment in Turkish RCs in both cases.

The one final remark that is needed to make related to the distribution data in corpus outcome is that although the data collected from two different sources presented similar outcomes in terms of animacy influence on RC formation, there were some other conditions as well in METU Corpus (as shown in Figure 4) which were somehow related to animacy, but not included within the scope of the research questions of the current research such as inanimate-animate or inanimate-inanimate conditions and those conditions surprisingly did not demonstrate compatible results with the participant data. To illustrate, active and passive RC preferences appear to be in the same rate (0.7%) for in-an condition whereas active ORC use (9.2%) seems to slightly outnumber the use of passive SRCs (7.8%) for in-in condition. If animacy effect is a powerful determiner of the sentence structure as we have witnessed in an-an and an-in conditions, it is surprising to observe no passivization effect of animacy on RC constructions especially in in-an condition, which is the condition where the animacy influence should have been observed the most. Nevertheless, the animate feature of the RC object seems to have never influenced the Turkish RC formation in that condition. In such kind of situation, it is possible to come up with two probable explanations for such an outcome. The first one could be METU Corpus did not have an adequate amount of data to prove the influence of animacy, which seems to be the most probable scenario since the data of in-an condition occupies only 1.4% of the whole RC data gained from the corpus in total according to Figure 4. Another explanation might be semantic competition or frequency factors might have influenced the outcome of the data. To clarify, the animate entities used in the RCs in corpus might not be as frequent as the animate words that have been chosen for the target RCs of the data collection tools. The animate entities included in the target RCs of the current study were mostly common nouns such as mother, child, woman or man. On the other hand, animate entities used in the RCs included in corpus were mostly composed of names with a more narrow scope like occupations or proper names due to the sources of information used by METU Corpus

such as books or newspaper articles, and an example (59) for such kind of RCs used in corpus for in-an condition is demonstrated below:

(59)

Atlatılmış bir büyük fırtına vardır, taşınan askerlerle filanca savaş kazanılmıştır . Yıllarca yaşamış bir geminin mutlaka anlatacak bir şeyleri vardır.

There was a storm that was dodged (by the ship); many wars were won with the soldiers that were carried (by the ship). A ship that lived for years certainly had many things to talk about.

After discussing animacy influence output of corpus data and comparing it with the participant output within the light of previous studies, next section is going to compare statement data from METU Corpus and RC data from participant answers to be able to reach a conclusion about whether the animacy influence seen on participants' RC use might also be associated with the frequent use of other simpler structures such as statements.

5.2.2. Interaction between Structural Formations

The tests that were conducted on the statements data bore much more different results than the RC data. First of all, the chi-square results attested no animacy effect on passivization rate in statements (*p=0.80838305* in Table 18) in contrast to the outcome of RC data (*p= 7.24953E-05* in Table 16), which suggests that the way animacy influence seen on Turkish RCs has a relation with the frequent use of RCs in context, but it is not directly related to the contextual use of less complex structures such as statements. Though lack of animacy influence was observed in the statements data in corpus according to chi-square test results, the RC use of the participants interestingly did not seem to completely differ from them when the RC data of participants and statements data from the corpus were compared in more detail with the help of two-proportions test later. The details of those findings are going to be explained below within the light of previous findings and theories.

To begin with, Chi-square test results of the statements from MTC as shown in Table 18 have interestingly shown that there is no relation between animacy and passivization or grammatical role assignment as being opposed what RC data both from the corpus and the participant answers have attested. The main reason behind that discrepancy could be the differing nature of word order flexibility of those structures. To clarify, Turkish statements can allow for scrambling of the words whereas Turkish RCs have a fixed word order. If there had been an animacy influence on the statements, it might only have revealed as a change in the word order on linear level in contrast to RCs that show the animacy influence in the form of grammatical function assignment (Bock & Warren, 1985; Bock, Loebell & Morey 1992). Animacy influence on statements was studied by Solak (2007) as well in a more detailed way, and her results were compatible with our findings. She also figured out that the precedence factors like animacy have an influence only on the linear word order of Turkish statements not on the grammatical functions of the words included in the statements. Since Turkish statements allow scrambling, the strategy used to bring prominent item at the beginning of the sentence was much more economical one compared to grammatical function assignment as can be seen in fixed structures such as RCs. This might show us that animacy effect realizations could be done in different ways depending on the flexibility nature of structures. Although animacy did not show an influence on the statements as passivization in Turkish Corpus in the current study, it might have put an influence on them as scrambling the prominent and animate noun to sentence initial position. Since the current study did not pay extra effort to explore the scrambled sentences in MTC, scrambling the animate noun to sentence initial position only remains as a hypothesis right now based on the study by Solak (2007). A more detailed explanation related to topic can only be made by a follow up study focusing only on the statements covered in Turkish Corpus.

To continue with discussing the general distribution of structural preferences depending on animacy condition for statements data according to Figure 5 above, statements in active form seem to be higher in total percentage ($\sum_{active}=77\%$) than the ones in passive form ($\sum_{passive}=23\%$) similar to the high specificity percentages standing for the common active

RC preference rates in RC data of participants (*Animate=69%, Inanimate= 92%*) according to their Kappa comparison results shown in Table 14 and Table 15. Additionally, statements outcome of the corpus also include all four animacy conditions (*an-an, an-in, in-an, in-in*) similar to the corpus outcome of RCs in the previous section, and the passive RC use seems to be lower in percentage compared to its active correspondence for each condition in the statements graph. The lack of animacy influence observed in Figure 5 is also officially proved by the very high p-value of chi-square test results of the statement data (*p=0.80838305* in Table 18) as explained above with possible reasons; however, the distribution of structures in Figure 5 and high specificity values of Kappa tests might mean that there still might be a relationship between participant RC use and the statements data by deducing from the consistent active form preference rates observed in both data resources.

When the two data sets are compared by a two-proportions test to check such a possible relationship between corpus statements and RC data of the participants for each task (Tables 21 and 22), the results present that the active RC use of participants in Picture Description Task is significantly higher than the active statement preference in corpus for inanimate condition; however, that active RC preference decreases significantly in animate condition and the proportion of active RC preference of participants for Picture Description Task comes significantly closer to the proportion of active statement preference in corpus. Thus, those two different data sets share similar proportions for animate condition in terms of the distribution of active/passive structure preferences. Similarly, the proportions of RC use in Metalinguistic Awareness Task seem to show some similarities with the statements data from the corpus for inanimate condition since active RC preference is high in amount for each condition in Metalinguistic Awareness Task as well by being parallel to statements outcome from the corpus although it is not as high as the one in Picture Description Task. However, passivization rate for the RCs in Metalinguistic Awareness Task seems to be significantly higher than the passivization rate of statements in MTC. In conclusion, z-scores gained at the end of two-proportions analyses do not present a regular pattern for us to explain the exact relationship between statements and RC formation in

Turkish as the picture description task shows similarity with corpus data for animate condition, whereas metalinguistic awareness data attests similarity for inanimate condition. Nevertheless, it is still possible to claim that such kind of irregular similarity between RC and statement data might stem from the high rate of active structural preferences in both conditions despite the effect of animacy. Moreover, that partial similarity between the RC production of participants and corpus statements data might also evidence that the formation of more difficult structures like RCs in Turkish could be conducted under the impact of simpler structures such as statements. Correspondingly, previous studies conducted on English, Portuguese and German RCs certify that the RC acquisition of children may be built upon some patterns observed in main clauses, and the RCs that share the same word order or morphological features with main clauses are claimed to be easier to process both in L1 and L2 contexts (Brandt, Diessel & Tomasello, 2008; Kidd & Bavin, 2002; Kidd, Brandt, Lieven & Tomasello, 2007). From that point of view, it will not be a mistake to claim that RC production of adult Turkish native speakers in the current study could also partially have been guided either by morphological or syntactic features of statements in Turkish.

Compared to most European languages such as English or German, Turkish is a morphologically rich language, so the morphological marking in statements and RCs differ from each other considerably. For instance, subjects of ORCs receive genitive marker *'-In'* whereas subjects of statements are usually in nominative form. On the other hand, morphological variation of the head noun (object) of the ORCs or passive RCs may depend on the position of the RC within a matrix clause while the objects in statements are usually in accusative case. Therefore, comparing the morphological features of RCs and statements cannot provide any help about explaining a probable connection between their processing mechanisms.

As for their syntactic features, an analysis conducted by Özçelik (2006) on the word order in Turkish RCs which was shared in literature review section concluded that neither

subject (OVS) nor object Turkish ORCs (SVO) are in canonical word order, so WDH is not adequate enough to explain Subject - Object RC asymmetry in Turkish although it can explain how SRCs in English are acquired and produced more easily than ORCs. However, there have been some other approaches and explanations as well to the analysis of word order effect on RC processing in different languages including Turkish before. To give an example, Diessel and Tomasello (2005) studied and compared RC production of German and English-speaking children by means of two sentence-repetition tasks. They also worked on Subject-Object RC asymmetry, but they did not study RCs in an isolated format. They analysed SRCs and ORCs within main clauses and evaluated their difficulty by taking into consideration the syntactic role of 'head' and 'gap'. The starting point of their study was the conjoined-clause hypothesis of Tavakolian (1978) who claimed that SS-Relatives are easier to process in English due to the similarity of their word order to the word order of a conjoined clause as exemplified below:

(60)

	NP		V	NP		V	NP	
a.	The horse	[that	pushed	the goat]		stands on	the lion.	(relative)
b.	The horse		pushed	the goat	and	stands on	the lion.	(coordinate)

(taken from Diessel & Tomasello, 2005, p. 883)

As for the current study, the dynamic of Turkish RCs are a bit different from the hypothesis of conjoined clauses. First of all, the current study does not focus on SRC-ORC asymmetry. Instead, it compares active and passive RC processing depending on animacy condition. Within the light of that aim and based on what Tavakolian (1978) foresaw, an analysis of one of the Turkish RCs used in Metalinguistic Awareness Task part is shared below (61):

(61)

a. Conjoined Statements in Turkish

NP(S)	NP(DO)	VP		NP(S)
Arkadaş-ı	**çocuğ-u**	**it-ti**	(ve)	çocuk
friend-3SG.POSS	**kid-ACC**	**push-PAST**	(and)	the kid

NP(IO)	VP
arkadaş-ı(n)-a	tepki göster-di.
friend-3SG.POSS-DAT	respond-PAST

*'**His friend pushed the kid** and the kid responded to his friend.'*

b. ORCs in Turkish

NP(S)	VP	NP(O_{RC}/S_{MC})
Arkadaş-ı-nın	**it-tiğ-i**	**çocuk,**
friend-3SG.POSS-GEN	**push-DIK-3SG.POSS**	**kid-NOM**

NP(IO)	VP
arkadaş-ı-na	tepki göster-di.
friend-3SG.POSS-DAT	respond-PAST

*'**The kid who his friend pushed** responded to his friend.'*

c. Passive Relative Clauses in Turkish

OBLP		VP	NP(S_{RC}/S_{MC})
Arkadaş-ı	**tarafından**	**it-(i)l-en**	**çocuk,**
friend-3SG.POSS	**by**	**push-PASS-(E)N**	**kid-NOM**

NP(IO)	VP
arkadaş-ı(n)-a	tepki gösterdi.
friend-3SG.POSS-DAT	respond-PAST

*'**The kid who was pushed by his friend** responded to his friend.'*

When we compare the word orders in ORCs and passive RCs in Turkish with the conjoined clauses as suggested by Tavakolian (1978), both the main clause and the ORC in Turkish in the examples start with and NP which is the subject of the clause. On the other hand, passive RC starts with an Oblique Phrase including the agent of the phrase by degrading the agent of the action to an optional category while moving the animate object/theme of action into a subject position within the clause. Meanwhile, the animate

object/theme remains in object position of the clause in Turkish ORCs as in the case of conjoined clauses. To sum up, it could be appropriate to assert that there are still some similarities between the syntactic positions of some thematic roles such as agent and theme between ORCs and conjoined statements as can be understood from the example (61) although the complete word order of either passive or Object RCs in the current study do not match the word order of conjoined clauses as a whole. In contrast, passive RCs do not share any similarities with the statements concerning the word order of either grammatical roles or the thematic roles of their components, and that lack of similarity might have been the reason for why they appeared in quite low number both in corpus and participant data. Since the ORCs in Turkish share more similarities with the statements in terms of thematic role or grammatical function positions, participants might have produced them more in the current study and caused statement data and RC data to bear partially resembling proportions as a result of two-proportions comparison test. Similarly, Diessel and Tomasello (2005) could not find a direct or holistic relation between conjoined clauses word order and the word order of RCs in German either although the study on English RCs proved the hypothesis. The word order inclinations they observed in German RCs bore a similar outcome to the implications of the current study in terms of word order similarity influence on RC production since they also found out that the most correctly produced RCs consisted of an actor / agent of the action (which is a role in the highest priority) in sentence-initial position (which is the most significant grammatical position in a sentence) as in the case of the current research.

A different study whose implications were related to such a word order similarity belonged to Özge, Marinis and Zeyrek (2010). They conducted a study on younger (age mean=5.6) and older (age mean= 7.6) monolingual Turkish children and the study was about their production of SRCs and ORCs in Turkish. At the end of the study, the participant errors were also analysed closely based on age groups and the implications related to those participant mistakes were shared. One implication was related to the effect of word order similarity between statements and Turkish RCs. Özge et. al. (2010) suggested that children and adults can choose SRCs more as the SRCs include the OV word order that can be

observed in statements as well. On the other hand, ORCs are in VO order, and it does not match the OV order in statements. Therefore, SRCs are much easier to process due to its OV word order similarity to main clauses. As the object and passive RCs in the example (61) are examined from the point of Özge et.al. (2010), the ORC is in the order of SVO, which is not similar to the main clause as a whole except for including an SV pattern. Meanwhile, the passive RC consists of some different components from canonical word order in Turkish such as an oblique phrase (*arkadaş-ı tarafından* [by his friend]). In addition to that, the clause starts with that OBLP which is completely an optional category in Turkish sentences and not included in canonical word order and the Subject of the clause is moved to the very end by forming a OBL-V-S order. Concluding from the comparison of both components and word orders of Passive and Object RCs in Turkish with statements, it is possible to imply that ORCs might have been perceived as much easier compared to their passive counterparts and they were produced in much higher numbers in spite of the animacy influence in the current study because the ORCs in Turkish are compatible with the SV order observed in statements (SOV) in contrast to passive RCs showing a VS order, and because the ORCs do not include any items other than the ones covered in canonical word order pattern in Turkish in contrast to passive RCs. As a result, ORCs seem to share more similarities with the statements than passive RCs, which might have encouraged the use of active structures more than the passive ones and this might have been another motive for the statistical similarity between statements and RC data in the two-proportions test results of the current study (Tables 21 and 22).

Another approach to RC processing that was discussed under similarity-based accounts in the literature review section together with word-order similarity was perspective maintenance (Mac Whinney, 1982). Based on that approach, the agent of the RCs changes two times in ORC whereas SRC includes only one agent and the perspective never changes in SRCs in that way. That might be one other reason for why SRCs are easier to process than ORCs in general. However, this assumption was made by looking at English RCs as in the example (42), but Turkish RCs are head-final, so there is usually no perspective or agent change in online/offline processing as in the case of English ORCs. Additionally, the

genitive marker (-In) in Turkish ORCs already marks the agent of the action beforehand as can be seen in the example (61b) above. On the other hand, passive RCs (61c) might cause a perspective change during online processing since the agent of the action is usually given at the beginning of RC as an oblique phrase in nominative form and the RC finishes with the subject of the clause, which might confuse native speakers of Turkish during online/offline RC processing. In conclusion, perspective maintenance claim of Mac Whinney (1982) also presents an outcome which is compatible with why ORCs were produced much more than passive RCs in the current study as the perspective remains the same in Turkish ORCs thanks to its head-final nature, whereas the perspective can change once in passive RCs due to the nominative form of the sentence-initial oblique phrase and the movement of the subject to the head (a.k.a. clause-final) position.

To wrap up, statements data from MTC displayed no changes depending on the animacy features of their objects according to chi-square test results, which might indicate that animacy influence may not only be realized in the form of grammatical function assignment. It can also be implemented by scrambling, as well. On the other hand, two-proportions analyses for both tasks indicated some differences and similarities between corpus statements and participant RC data, which might stem from the high rate of ORC preference by participants and which might suggest that RC use of participants might have been shaped by the simple nature of statements as well besides the influence of animacy and frequency factors. Even though it is possible to hypothesize about the probable influence of variables such as animacy, word order, LDH or frequency in the current research based on test results, which one is considered first or which one is in priority during processing is another research object.

In the following section, the findings and the implications of the current study are going to be summarized together with further research suggestions and recommendations for a possible improvement in the current study.

CHAPTER 6:

CONCLUSION

At the beginning of study, the current thesis had three main objectives to achieve in the end by making use of both Turkish RCs and the semantic feature of animacy.

The first objective was to test conceptual accessibility influence on Turkish RC production of native speakers of Turkish by utilizing animacy as the target semantic feature. The main reason for focusing especially on animacy and RC formation relation in the current study was the lack of systematic approach to the topic in Turkish literature though animacy influence on RC processing has been tested in many other eastern or western languages before such as in English (Gennari & MacDonald, 2008), in Japanese (Montag & MacDonald, 2009), in Mandarin Chinese (Wu, Kaiser & Andersen, 2012), in Dutch and German (Vonk & Schriefers, 2002). Therefore, the current study aimed to complete this gap first in the literature by testing animacy effect on another head-final language, Turkish as well and shed a light on the other following studies targeting conceptual accessibility in language production in the future. By doing that, the current study did not only target examining the animacy influence, but it also aimed to check its consistency by means of applying a data triangulation during its data collection process and by taking the structural difficulty factor into consideration, too. To be able to achieve that data triangulation, three sources of data were utilized: native speaker data collected by Picture Description and Metalinguistic Awareness Tasks and data collected from METU Turkish Corpus. Two different data collection tools were used to collect data from the participants in order to check the consistency between participant answers in different tasks considering animacy influence and to test whether the animacy influence would attest any statistical deviations depending on the nature of the task. Those data collection tools were applied at the same time and the procedure was initiated with a picture description task. The data collected in pen-and-paper format in both types of tasks. After that, animacy influence on RC production was analyzed by means of a Chi-Square test applied on data collected from

each task and the outcomes of those two different tasks were also compared by a Kappa Measure of Agreement test to be able to check how consistent the structural preferences were depending on each animacy condition between those two tasks.

The second objective of current research was to check a possible relationship between animacy and frequency. By checking the frequent use of RCs depending on animacy condition, there would also be an opportunity to make some deductions about whether animacy influence or lack of animacy influence on Turkish RCs that would be observed in native speaker production data could be a feature that was acquired or shaped by native speakers of Turkish as a result of the common way in which those structures were utilized within context in their environment. To be able to achieve that a corpus analysis section was also added in the current study as was indicated before and the RCs including the target verbs used in the Picture Description and Metalinguistic Awareness Tasks were coded by considering the animacy of words utilized in them and active/passive structure of the RC itself. After coding procedure, the animacy influence on RCs in corpus were tested by chi-square analysis and the data of RCs in corpus were statistically compared to the data of participants gained from Picture Description and Metalinguistic Awareness Tasks separately by means of a two-proportions analysis. In this way, whether there was a statistically significant relationship between frequency and animacy was intended to be learnt and meanwhile the RC use in Turkish were going to be evaluated from different syntactic, semantic or discourse factors discussed under different sentence processing accounts by examining both participant RC data collected in an isolated context and the corpus RC data collected within a richer context.

The third and the final objective of the thesis was to check whether RC formation in Turkish could also be shaped or influenced by a less complex but more frequent structure such as statements in Turkish. The main reason for including statements in the study was to see whether the reactions of those two different structures would be the same against animacy influence or different since RCs has a stricter word order that does not allow

scrambling compared to statements in Turkish which has a flexible worder allowing scrambling. Though RCs were not studied in terms of animacy influence in detail before in Turkish literature, statements in Turkish were studied by focusing only on Turkish native speaker behavior when they were forming Turkish statements in the face of an animacy influence (Solak, 2007). And it was concluded that Turkish statements reacted to animacy influence in the form of scrambling. Even though an answer was provided for how statements in Turkish which have a flexible word order were organized by native speakers of Turkish when there was an influence of animacy, the question concerning how more strict structures in terms of their word order such as RCs in Turkish would react to animacy influence still remained unanswered. Within the light of that gap, animacy influence on RCs was kept as the main objective of the study; meanwhile, the statements data were not ignored either and the statements used in Turkish Corpus (MTC) were also analyzed in terms of animacy influence to be statistically compared with the participant RC data later by following a similar procedure as was followed for corpus RC data. At first, the data were coded; however, Subject, Object of the statements were not coded within the frame of the current study so as to focus on only animacy effect. Then, chi-square test was applied on data which were grouped based on their animacy and structural features and finally, the RC use of participants and the statements use of corpus were again statistically compared by means of a two-proportions of analysis. In that way, the proportional distributions of active/passive structure preferences for each animacy condition were compared. Finally, the comparison outcomes were evaluated in terms of whether there might be a connection between RC formation and statement formation procedures, or whether the way Turkish native speakers utilized the RCs in Turkish carried any similarities with the Turkish statements which were easier in terms of its structure. In that way, both the influence of statements on RC production in Turkish and the interaction of those two different structures with animacy would be analyzed by both doublechecking the information and filling the gap in literature.

6.1. CONCLUSIONS CONCERNING THE RESEARCH QUESTIONS

Based on the research aims listed above, the following research questions were formulated at the beginning and answered throughout the study.

1. Does animacy affect the formation of relative clause production in Turkish?

    1.a. If animacy affects relative clause production, does the consistency of animacy influence change depending on the nature of the task or context?

    1.b. If no effect of animacy is observed, do structural factors (e.g., linear distance or structural distance hypothesis) outweigh the effect of animacy in relative clause production?

2. Is there a relationship between animacy and the frequency of the way Turkish RCs utilized within context?

    2.a. If frequency effect is observed, how does it affect the Turkish native speakers' relative clause productions?

    2.b. Do other structural formations like statements affect Turkish native speakers' relative clause productions?

To start with answering the first main research question of the current research which was " Does animacy affect the formation of relative clause production in Turkish?", Chi-square outcomes of the participant data proved that animacy significantly influenced RC formation of Turkish native speakers in both Picture Description and Metalinguistic Awareness Tasks as the RC passivization rate in RCs with an animate object was observed to increase significantly compared to the RCs with an inanimate object. The outcome of Chi-square analyses gained at the end of study served as a proof for the allegations of Bock

& Warren (1985) regarding the grammatical function assignment effect of animacy on sentence processing, which claims humans are natural agents and they are appropriate for Subject position, whereas inanimate entities are the natural recipients of an action and they are directly suitable for Direct Object position within a sentence, which means that conceptually more important elements (e.g. animate entities) within a sentence are usually assigned to grammatically prominent positions in a sentence or a clause such as Subject position during the sentence formation process. On the other hand, inanimate entities were considered to be appropriate for Direct Object position within a sentence, and this assignment could mostly be achieved by passivization depending on the requirements of condition. Similarly, the current study also confirmed that hypothesis by means of the linguistic behavior of participants who tried to come up with more passive RCs to assign the animate entities into a subject position of the new RCs. All in all, RCs created by participants in both Picture Description and Metalinguistic Awareness Tasks proved a significant effect of animacy which was also in line with the proposals of Bock and Warren (1985) who advocated that animacy influence can usually reveal itself in the form of grammatical function assignment.

To continue with responding the first sub-question (1a) above which was “If animacy affects relative clause production, does the consistency of animacy influence change depending on the nature of the task or context?”, the results of Kappa Measure of Agreement interestingly attested no agreement between the active/passive RC preferences of Picture Description and Metalinguistic Awareness Tasks though animacy effect was seen on RC formation significantly in both data collection tools. This was an unexpected outcome, so p-values gained from chi-square test results were rechecked and it was observed that there was a much stronger rate of passivization among the RCs preferred for Picture Description task compared to the RCs used for Metalinguistic Awareness Task.in case of an animate condition. The current research suggested two possible reasons for such kind of a discrepancy between the animacy effects seen in different tasks: task complexity and visual salience. To start with explaining the former factor that might have distort the participant data, it was claimed the differences between tense structures and nature of tasks

might have provoked the influence of animacy in one task while inhibiting it in the other one. For instance, picture description task was evaluated as much easier in form than Metalinguistic Awareness Task since it had the visuals and questions related to them to lead the participants in a more controlled way whereas Metalinguistic Awareness Task had no such visuals or questions to provoke RC use. The participants were only provided a sample to be able to make use of that as a guideline for other questions. Additionally, picture description task was a here-and-now type of task, which means that the participants were expected to answer questions by means of utilizing a present continuous tense while the questions included in the Metalinguistic Awareness Task encouraged participants to utilize simple past in the form of narrative (there-and-then type task). Since the narrative forms were perceived as much more difficult than present forms (Robinson, 2001), the current study concluded that picture description task might have encouraged animacy effect more by means of it simple here-and-now nature while the more demanding there-and-then nature of Metalinguistic Awareness Task might have inhibited the animacy influence as the participants could not have focused on the animacy variable while they were struggling with the demanding nature of Metalinguistic Awareness Task. Another reason for the inconsistency of animacy influence between two different data collection tools was deduced to be the visual salience factor observed in the pictures used for collecting data in the picture description task as it was realized that most target items in the picture description task differed in terms of their size and location from the other items in the picture. Though the salient item number was almost even for both conditions (*eight highly salient animate items and nine highly salient inanimate items*), it was concluded that the highly salient animate items in picture description task might have strengthened the influence of animacy and caused more passivization rate in picture description task results, which was shown as another explanation for drastically lower p-value of picture task results and consequently a lack of agreement between two data collection tools. To sum up, the Kappa Measure of Agreement test showed no agreement between the outcomes of picture description and Metalinguistic Awareness Tasks, which meant that the outcomes of those two data collection tools did not comply with each other in terms of their RC structure preferences for animate and inanimate conditions though RC passivization rate

was observed to significantly increase in both tasks when the theme of action was an animate agent. Accordingly, it was deduced that some other conditions other than animacy might have interfered in the production procedure of those depending on the task nature such as task complexity or visual salience.

The final research question (1b) to be answered within the frame of first set of question was "If no effect of animacy is observed, do structural factors (e.g. linear distance or structural distance hypothesis) outweigh the effect of animacy in relative clause production?", and the answer to that question was the structural difficulty of the passive RCs did not seem to be completely ignored either as far as the high specificity values standing for the overlap rate of active ORC preference between picture description and Metalinguistic Awareness Tasks for animate and inanimate conditions were taken into consideration although animacy influence outweighed the effect of structural difficulty in RC formation according to Chi-square outcomes. According to those values, participants preferred active ORCs in a higher rate than passive RCs even if the condition was animate and animacy increased the rate of passivization in Turkish RCs in a considerable amount. However, the principle of simplicity was not abandoned, either. When the structure of ORCs and passive RCs were analyzed from the point of two main structural complexity hypotheses which were Linear and Structural Distance Hypotheses, each hypothesis bore a completely different foresight from the other related to the structural difficulty of ORCs and their passive forms. According to Linear Distance Hypothesis, active Object RCs were easier to process whereas Structural Distance Hypothesis defended that passive RCs were easier to process. As a conclusion, those two different structural approaches to sentence processing did not present compatible outcomes for Turkish RCs when evaluating their structural difficulty; however, the high rate of active ORC preference in the participant data according to Kappa specificity values seemed to be in line with the hypothesis of Linear Distance Hypothesis. In spite of that tendency of choosing RCs in a simpler form (active Object RCs) among participants, the animacy influence seemed to outweigh the impact structural difficulty by leading to a significant level of rise in RC passivization rate

in participant data in case of an animate object within the clause in a way that was in line with the grammatical function hypothesis of Bock and Warren (1985).

To continue with revising the findings and implications of current research for the second set of research questions listed above, the second main research question "Is there a relationship between animacy and the frequency of the way Turkish RCs utilized within context??" and its sub-question "If frequency effect is observed, how does it affect the Turkish native speakers' relative clause productions?" were going to be answered together within the current paragraph as the findings regarding those two questions were connected to each other in a tight way. As far as the Chi-square outcomes of the corpus RCs demonstrated, the distribution of RC preferences in the corpus data also demonstrated a significantly high rate of passivization for animate condition. In terms of the significant level of change in the RC preferences, participant data and corpus data seemed to have overlapped outcomes, which might lead to a conclusion that there might be a relationship between native speaker production and frequent use of structures and the native speakers of Turkish might have learnt the animacy influence on RCs by means of high rate of exposure to it from their environment. Such kind of frequency influence was concluded as a probable proof for fine-grain version of Tuning Hypothesis which suggests that some smaller components of language as well could shape the structural preferences within a language for a certain type of clause, phrase, or sentence as in the case of animacy influence observed in the current study. To clarify, animacy by being a small unit increased the rate of passivization in both participant and corpus RC preferences in the current study despite the more complex nature of passive RCs. Despite such kind of similar reactions to animacy influence, the statistical comparison of participant RC use and corpus RC use by means of two-proportions analysis interestingly and unexpectedly did not present similar outcomes in terms of the proportional distributions of active Object / passive RC preferences for each animacy condition. The proportions analyses demonstrated that participants preferred more Object RCs in active form in both Metalinguistic awareness and Picture Description tasks than the RCs utilized in the texts included in METU Turkish Corpus (MTC). According to analyses that were made on both sources of data (participant

RCs from Picture Description and Metalinguistic Awareness Tasks and RCs from the corpus) and within the light of previous studies conducted related to the topic, two main possible reasons were proposed at the end as the main reasons for such a proportional difference between those two sources of data: context / discourse influence or genre influence. To start with discourse / context factor, the higher number of passivization rate observed in RC data gained from the corpus for animate condition furnished results compatible with the allegations of Referential Support Theory by Crain and Steedman (1985). Being in line with the theory, it was presumed that some discourse factors such as topicalization or referent information besides animacy could also have facilitated or boosted the production of passive RCs in Turkish corpus whereas there was no such an effect of additional discourse factors other than animacy in either of the data collection tools applied on Turkish young adult native speakers as both tasks were free from context and presented in an isolated format. Because of that, the use of passive RCs remained much higher in number in corpus than the ones in participant data. The second factor that was deduced to cause a significant difference between corpus and participant data by evaluating the nature of all three different data resources (Metalinguistic awareness, Picture Description and METU Turkish Corpus) separately was genre influence. The main motive behind such an assumption was the united nature of METU Corpus which was formed by collecting data from ten different literary genres composed of spoken and written outputs (memories, narratives, short stories, novels, newspaper articles, interviews, etc.). In contrast, picture description task or Metalinguistic Awareness Task was not prepared by being dependent on any type of literary genre. Instead, they were aiming to collect RC data from participants in an everyday Turkish form. As a result of that variety in genre types in METU Turkish Corpus, it was suggested that some genres might have provoked passivization in RCs more and this might have led to much higher rate of passivization in corpus data compared to the RCs in participant data. To clarify more, Coupland (2011) regards genre as much more than just a text and defines it as a ‘mental model of speech situation’. So, the legitimacy of some structures may vary depending on the style or genre of the text. For instance, ungrammatical sentences in a song (Squires, 2018) or different dialects in a novel or a poem could be welcomed; however only standard

English is expected in a written academic publishing. In other words, production or comprehension of some structures might be reshaped depending on the style influences (Ferguson, 1994; Biber & Conrad, 2009), which might also serve as a proof for the genre effect hypothesis of the current thesis claiming that RC outcomes could have been manipulated by knowingly or unknowingly due style/genre requirements within corpus data as well by giving a considerable rate of rise to the preference of passive RCs. As a result, the RC preferences of participants in Picture Description and Metalinguistic Awareness Tasks bore similar outcomes with the RCs preferences in corpus in terms of how they were organized depending on animacy since the passivization rate of RCs rose in a significant number in the face of an animate condition in both sources of data. Such kind of similar reactions in terms of animacy influence in the current study served as a proof for fine-grained version of Tuning Hypothesis as well and lead to a thought that animacy influence on RCs could be a feature that is acquired by native speakers of Turkish by means of exposure from their environment. However, when those two data resources were compared by means of a statistical comparison analysis, the results were unexpectedly different from the assumptions before the comparison as the comparison test did not attest parallel outcomes with each other in terms of the use of RCs in animate and inanimate conditions in corpus and participant tasks. However, a close analysis of corpus and data collection tool lead to a conclusion that such kind of discrepancy between those resources might have stemmed from the rich context by being in line with the Referential Support Theory of Crain and Steedman (1985), or different types of genres covered in Turkish corpus.

As for the final research question (2b) to be answered in the current section which was “Do other structural formations like statements affect Turkish native speakers’ relative clause productions?”, two-proportions analyses which were conducted to compare the active/passive structure preference proportions of RCs in picture description and metalinguistic awareness data with the statements data from the corpus demonstrated some proportional similarities between RC and statements data for different conditions. For instance, the proportions of RCs used in Metalinguistic Awareness Task showed

similarities with the proportions of corpus statements data for inanimate condition whereas RCs used in Picture Description Task attested a similar outcome for animate condition. Indeed, such resembling proportions between RC and statement data were not expected at the beginning of the study as there was no animacy influence observed on the structural preferences for statements in Turkish corpus according to chi-square test results as being opposed to the very significant influence of the animacy influence that was seen on RC data gained from the same resource. Therefore, their proportions were anticipated to considerably differ from each other. Those findings were also compatible with Boran's study (2018) as well since the statements in her study did not demonstrate the animacy influence in the form of passivization, either. Instead, the animate nouns were scrambled to sentence initial positions without changing their grammatical functions. This also showed that reaction to animacy influence in each clause might change depending on their fixed or flexible word order system. However, two-proportions test analysis suggested a completely conflicting outcome with the earlier expectations, and it demonstrated some similarities between corpus statements and participant RC data. At first, it was thought such kind of statistical similarity might have been due to high rates of active Object RC preference by the participants since both statements and participant data gained from each task included ORCs in active form more in number, which was finalized by an explanation that RC formation of Turkish native speakers carried some similar features with Turkish statements and the RCs might have been realized by also considering a simplicity principle in language production and they might have been produced in a way that they shared some similarities with less complex structures such as statements during their production procedure. Why participants preferred active ORCs more compared to their passive counterparts and why it was assumed that participants did not ignore the simplicity principle either were explained within the light of three different reasons in the current study. The first reason was participants preferred more active ORCs because active ORCs (SVO) in Turkish share more similarities with Turkish statements (SOV) in terms of the position of agent which is in Subject position in both statements and ORC word order even though they were not completely compatible with a similarity based account, Word order Canonicity Hypothesis since none of the RCs in Turkish share the same word order as the

canonical word order in Turkish (SOV) due to its head final feature as opposed to the Subject RCS in English (SVO) that shares the same word order as the canonical word order in the language (SVO). On the contrary, passive RCs in Turkish (OBL V O) included an extra element called Oblique Phrase (birisi tarafından [by someone]) which is not a natural part of a canonical word order in Turkish (SOV) besides having a completely different word order from the Turkish statements having a canonical word order (SOV). The second reason for why active RCs were trendy among participants was deduced from a study conducted by Özge, Marinis and Zeyrek (2010). In the study, they focused on the production of SRCs and ORCs in Turkish among younger and older Turkish monolingual children and found out that children had tendency to choose SRCs more which had an OV word order than ORCs which had VO word order since they concluded that children might have made use of their background information about statements that had an SOV order and tried to come up with similar structures to them by using their word order similarity in the end. Similarly, the participants of the current study might have also chosen active ORCs (SVO) which shared at least some similarities with statements data (SOV) in terms of their SV word order instead of choosing passive RCs (OBL V S) which shared not a single similar feature with Turkish statements and their canonical word order. Based on that tendency and previous research findings, it was concluded that establishing a relationship with a less complex structure when dealing with a more difficult one might be a strategy used by native speakers of a language regardless of their ages. The final reason that was utilized as a proof for the assumption that the RC production procedure in Turkish might have been affected by the frequent use of statement data as well was perspective maintenance issue (MacWhinney, 1982). When the ORCs and their passive forms were analyzed within the light of that approach, passive RCs were concluded to cause a perspective change in the RC processing for participants. The main reason for that agent was used in an optional phrase at the beginning of a clause and the clause is finished by a Subject and this might have brought an extra processing load for the native speakers of Turkish. On the other hand, Subject and the agent were already used as the same word and at the beginning of the ORC as was expected by the native speakers as well. Therefore, it might not have been confusing for participants to process ORCs compared to their passive

form and as a consequence of that they might have preferred more ORCs in active form instead of using their passive counterparts. In conclusion, the answer to the final question of the study was yes because the RC preferred by Turkish native speakers carried some features of statements in Turkish. Even though the structural features of Turkish RCs were not completely compatible with the expectations of similarity-based accounts such as WDH (Word Order Canonicity) or Perspective Maintenance (MacWhinney, 1982), the current study found out that the way RCs were utilized by the participants and the way they tried to establish connections between statement and RC formation procedures by preferring the RC option that shared similarities with statements in terms of word order, the position of agent or perspective still partially may serve as an evidence for those similarity-based accounts.

After covering all the research questions asked at the beginning of the research, next two sections were separated to refer to the sides of the thesis that were open to some improvement and to suggest some further improvements and research points that could not be covered within the frame of current study and was spared for further research.

6.2. LIMITATIONS OF THE STUDY

In this section of the study, a self-criticism regarding the methodology of the current study is going to be shared.

The most important drawback in the main study was the time limitation and consequently the data collection tools, and the data collection procedure had to be arranged accordingly. In terms of both its practicality and time-saving nature of the method, all the data analyzed within the frame of the current study were collected in pen-and-paper format. On the other hand, it was believed that picture description task could have been collected in the form of an interview whereas metalinguistic awareness data could have remained in the form of pen-and-paper format. In that way, it could have also provided a chance to compare the

animacy effect differences between those two data collection tools and the modes of communication.

Another point to consider regarding the methodology of current study, the item order in the main study remained the same as the one given in pilot study section. In the main study section, the order of items could have been rearranged so as to prevent any possible distraction effects on the participant data due to the length of the study or the order of items. Another solution could have been applying the Picture Description and Metalinguistic Awareness Tasks on separate days to avoid such kind of distraction or boredom influence that they might have caused on the participant answers.

Finally, most of the theories covered in the theoretical framework were the theories related to parsing or language comprehension; however, the current study tried make some assumptions related to language processing based on the production data gained from participants and corpus. Although some comprehensive assumptions or implications regarding the sentence processing mechanisms were made within the frame of the current research, those implications could have been proved and supported by applying an additional online data collection tool to the participants such as a self-paced reading or an eye-tracking study. Even though the data collection tools utilized in the current study were controlled to some extent, they were not adequate enough to come up with certain claims regarding the RC processing. As a result, more controlled comprehension tests were also needed to be able to sustain the unity between theoretical framework and the methodology sections of the study. Applying a comprehension test would also help doublecheck how the distribution data play a role in language processing in terms of both comprehension and production. Furthermore, it would also be a chance to explain the relationship of how production feeds frequency and how frequency feeds comprehension and how the comprehension affects production again, and the conclusion related to a possible relationship between frequency and animacy would not be based on assumptions but on

stronger evidence by means of a support from a data collection tool collecting the data of online language processing.

6.3 SUGGESTIONS FOR FURTHER STUDIES AND IMPLICATIONS

Even though the research questions raised at the beginning of research were answered with statistical analyses together with some support from previous literature, there were still some issues in the current study that were encountered during the data analyses and literature review procedure but could not be answered or delved into due to time limitation considerations or the intention of not damaging the unity of the whole study. Therefore, those issues that were related to the current findings of the thesis and could enrich the findings of the current research from different perspectives are going to be shared in the following of this section.

First, animacy and frequency were concluded to be in interaction within the frame of the current research. Animacy and its effect on clauses were deduced to be an acquired feature by native speakers of Turkish by means of exposure to them; however, which one had a stronger influence on language production was still an unanswered question since the two-proportions data demonstrated that there might be some other factors as well interfering the RC production process by causing considerable proportional differences between those two data resources such as topicalization, concreteness or visual salience which were taken into consideration while producing utterances. However, the order of them or the strength of them could not be decided by only considering the language production outcomes. As a result, another more systematic and a well-designed study needed based on online experimental analyses so that all those factors could be analyzed more closely and on the spot.

The second suggestion for further study within the frame of current thesis could be about the conditions which were not included in the statistical analysis part of the current study.

Those animacy conditions were inanimate-animate (in-an) and inanimate-inanimate (in-in). Although their number was very few in literature, an extra study could also be conducted by also including those conditions in the data collection tools as the target items and re-evaluate the animacy influence on RC production in Turkish to see whether they are going to strengthen the effect of animacy or inhibit that.

Next suggestion that could be made regarding the points that were suitable for expanding and analyzing more extensively within a separate study was the analysis of statements in the current study. As the focus of the current research was RCs, statements data in the Turkish corpus could not be analyzed in detail so as to reach a conclusion about whether the lack of animacy effect indicated by chi-square outcome was due to scrambling as being in line with the outcome of Boran's study, or due to the fact that the statements data did not really demonstrate animacy influence. As the main intention was only to see statements and RC data in Turkish would demonstrate similar or different reactions to animacy effect, the details of the statements data we avoided. Therefore, it was assumed that it could be discussed in a separate study in a more detailed way.

Finally, the current study mainly focused on Object RCs including transitive verbs in Turkish as was done in most previous studies. However, Turkish is a language that allows the passivization of the verbs that are not genuinely transitive as well by creating impersonal passive constructions as exemplified below:

(62)

Pro_{EXPL} otobüs-e bu durak-lar-da bin-il-ir (*-Ier)
bus-DAT. this stop-PL-LOC board-PASS-AOR.-3.PL.
'One boards the bus at these stops'

(Taken from Kornfilt, 1997, p.46)

Though the current study tried to contribute to the previous literature that was explaining how animacy affects RC constructions in different languages, animacy effect on the

formation of Subject RCs or impersonal Subject RCs which were constructed from the sentences as in the example (62) can also be analyzed as a language specific property.

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APPENDIX 1

THE RESULTS OF NORMALITY ANALYSES

Table 23

Picture Description Task G1 Kolmogorov-Smirnov Test Results

AN-AN				*AN-IN*			
Var	Statistic	p value	Norm	*Var*	Statistic	p value	Norm
Q1	0.2539	0.539	YES	*Q2*	0.3348	0.265	YES
Q5	0.3963	0.118	YES	*Q3*	0.4327	0.047	NO
Q7	0.2887	0.375	YES	*Q4*	0.2717	0.452	YES
Q8	0.3172	0.325	YES	*Q6*	0.3602	0.149	YES
Q9	0.3362	0.208	YES	*Q10*	0.4116	0.067	YES

Table 24

Picture Description Task G2 Kolmogorov-Smirnov Test Results

AN-AN				*AN-IN*			
Var	Statistic	p value	Norm	*Var*	Statistic	p value	Norm
Q2	0.3273	0.358	YES	*Q1*	0.4554	0.072	YES
Q3	0.4554	0.072	YES	*Q5*	0.4554	0.072	YES
Q4	0.2963	0.571	YES	*Q7*	0.3252	0.366	YES
Q6	0.4554	0.072	YES	*Q8*	0.2996	0.469	YES
Q10	0.4554	0.072	YES	*Q9*	0.3252	0.366	YES

Table 25

Metalinguistic Awareness Task G1 Kolmogorov-Smirnov Test Results

AN-AN				*AN-IN*			
Var	Statistic	p value	Norm	*Var*	Statistic	p value	Norm
Q3	0.4706	0.037	NO	*Q1*	0.3963	0.118	YES
Q4	0.356	0.204	YES	*Q2*	0.3333	0.27	YES
Q6	0.3889	0.131	YES	*Q5*	0.4142	0.091	YES
Q7	0.2985	0.399	YES	*Q8*	0.3748	0.159	YES
Q10	0.2778	0.491	YES	*Q9*	0.3031	0.38	YES

Table 26

Metalinguistic Awareness Task G2 Kolmogorov-Smirnov Test Results

AN-AN				*AN-IN*			
Var	Statistic	p value	Norm	*Var*	Statistic	p value	Norm
Q1	0.3273	0.358	YES	*Q3*	0.3708	0.221	YES
Q2	0.2996	0.469	YES	*Q4*	0.2632	0.637	YES
Q5	0.2996	0.469	YES	*Q6*	0.375	0.211	YES
Q8	0.3013	0.462	YES	*Q7*	0.3708	0.221	YES
Q9	0.3376	0.402	YES	*Q10*	0.5044	0.057	YES

Table 27

Picture Description Task G1 Shapiro-Wilk Test Results

AN-AN				*AN-IN*			
Var	Statistic	p value	Norm	*Var*	Statistic	p value	Norm
Q1	0.8325	0.036	NO	*Q2*	0.7485	0.005	NO
Q5	0.6843	<0.001	NO	*Q3*	0.5942	<0.001	NO
Q7	0.7777	0.008	NO	*Q4*	0.8022	0.015	NO
Q8	0.7673	0.009	NO	*Q6*	0.7309	0.002	NO
Q9	0.7835	0.009	NO	*Q10*	0.6467	<0.001	NO

Table 28

Picture Description Task G2 Shapiro-Wilk Test Results

AN-AN				*AN-IN*			
Var	Statistic	p value	Norm	*Var*	Statistic	p value	Norm
Q2	0.8104	0.037	NO	*Q1*	0.5659	<0.001	NO
Q3	0.5659	<0.001	NO	*Q5*	0.5659	<0.001	NO
Q4	0.84	0.099	YES	*Q7*	0.6647	<0.001	NO
Q6	0.5659	<0.001	NO	*Q8*	0.7976	0.027	NO
Q10	0.5659	<0.001	NO	*Q9*	0.6647	<0.001	NO

Table 29

Metalinguistic Awareness Task G1 Shapiro-Wilk Test Results

AN-AN				*AN-IN*			
Var	Statistic	p value	Norm	*Var*	Statistic	p value	Norm
Q3	0.5358	<0.001	NO	*Q1*	0.6843	<0.001	NO
Q4	0.6547	<0.001	NO	*Q2*	0.763	0.008	NO
Q6	0.7282	0.003	NO	*Q5*	0.6173	<0.001	NO
Q7	0.7519	0.006	NO	*Q8*	0.6369	<0.001	NO
Q10	0.8533	0.081	YES	*Q9*	0.7102	0.002	NO

Table 30

Metalinguistic Awareness Task G2 Shapiro-Wilk Test Results

AN-AN				*AN-IN*			
Var	Statistic	p value	Norm	*Var*	Statistic	p value	Norm
Q1	0.8104	0.037	NO	*Q3*	0.7238	0.004	NO
Q2	0.7976	0.027	NO	*Q4*	0.8272	0.056	YES
Q5	0.7976	0.027	NO	*Q6*	0.7322	0.005	NO
Q8	0.7823	0.018	NO	*Q7*	0.7238	0.004	NO
Q9	0.7693	0.02	NO	*Q10*	0.453	<0.001	NO

APPENDIX 2

THE RESULTS OF RELIABILITY ANALYSES

Table 31

Inter-Item Correlation Matrices for G1 Picture Description Task

	Inter-item Correlation Matrix (Animate)						*Inter-item Correlation Matrix (Inanimate)*				
	Q1	*Q7*	*Q5*	*Q8*	*Q9*		*Q2*	*Q3*	*Q4*	*Q6*	*Q10*
Q1	1	0.304	0.442	0.421	0.144	*Q2*	1	0.546	0.612	0.464	0.129
Q7	0.304	1	0.442	0.817	0.909	*Q3*	0.546	1	0.668	0.824	0.423
Q5	0.442	0.442	1	0.252	0.162	*Q4*	0.612	0.668	1	0.811	0.632
Q8	0.421	0.817	0.252	1	0.681	*Q6*	0.464	0.824	0.811	1	0.359
Q9	0.144	0.909	0.162	0.681	1	*Q10*	0.129	0.423	0.632	0.359	1

Table 32

Cronbach's Alpha Values for G1 Picture Description Task

	Cronbach's alpha	*Standardized Cronbach's alpha*	*Alpha's standard error*
Animate	0.825	0.808	0.082
Inanimate	0.802	0.858	0.108

Table 33

Item Total Statistics for G1 Picture Description Task

Item	*Correlation*	*Item*	*Correlation*
Average item total correlation (Animate)	0.743	*Average item total correlation (Inanimate)*	0.759
Q1	0.532	*Q2*	0.647
Q7	0.951	*Q3*	0.737
Q5	0.422	*Q4*	0.928
Q8	0.919	*Q6*	0.689
Q9	0.893	*Q10*	0.796

Table 34

Inter-Item Correlation Matrices for G2 Picture Description Task

	Inter-item Correlation Matrix (Animate)						*Inter-item Correlation Matrix (Inanimate)*				
	Q2	*Q3*	*Q4*	*Q6*	*Q10*		*Q1*	*Q5*	*Q7*	*Q8*	*Q9*
Q2	1	0.849	1	0.849	0.141	*Q1*	1	0.333	0	-0.104	0.577
Q3	0.849	1	0.849	1	0.4	*Q5*	0.333	1	0.577	0.726	0.577
Q4	1	0.849	1	0.849	0.141	*Q7*	0	0.577	1	0.898	0.5
Q6	0.849	1	0.849	1	0.4	*Q8*	-0.104	0.726	0.898	1	0.539
Q10	0.141	0.4	0.141	0.4	1	*Q9*	0.577	0.577	0.5	0.539	1

Table 35

Cronbach's Alpha Values for G2 Picture Description Task

	Cronbach's alpha	*Standardized Cronbach's alpha*	*Alpha's standard error*
Animate	0.9	0.902	0.06
Inanimate	0.81	0.811	0.106

Table 36

Item Total Statistics for G2 Picture Description Task

Item	*Correlation*	*Item*	*Correlation*
Average item total correlation (Animate)	0.791	*Average item total correlation (Inanimate)*	0.75
Q2	0.921	*Q1*	0.392
Q3	0.813	*Q5*	0.784
Q4	0.921	*Q7*	0.849
Q6	0.813	*Q8*	0.873
Q10	0.488	*Q9*	0.849

Table 37

Inter-Item Correlation Matrices for G1 Metalinguistic Awareness Task

	Inter-item Correlation Matrix (Animate)						*Inter-item Correlation Matrix (Inanimate)*				
	Q3	*Q4*	*Q6*	*Q7*	*Q10*		*Q1*	*Q2*	*Q5*	*Q8*	*Q9*
Q3	1	0.598	-0.327	-0.421	-0.567	*Q1*	1	0.895	0.574	0.132	0.229
Q4	0.598	1	0	-0.217	-0.237	*Q2*	0.895	1	0.459	0.038	0.115
Q6	-0.327	0	1	0.891	0.722	*Q5*	0.574	0.459	1	0.082	0
Q7	-0.421	-0.217	0.891	1	0.9	*Q8*	0.132	0.038	0.082	1	0.945
Q10	-0.567	-0.237	0.722	0.9	1	*Q9*	0.229	0.115	0	0.945	1

Table 38

Cronbach's Alpha Values for G1 Metalinguistic Awareness Task

	Cronbach's alpha	*Standardized Cronbach's alpha*	*Alpha's standard error*
Animate	0.628	0.436	0.15
Inanimate	0.714	0.726	0.161

Table 39

Item Total Statistics for G1 Metalinguistic Awareness Task

Item	*Correlation*	*Item*	*Correlation*
Average item total correlation (Animate)	0.555	*Average item total correlation (Inanimate)*	0.71
Q3	-0.052	*Q1*	0.692
Q4	0.263	*Q2*	0.647
Q6	0.847	*Q5*	0.513
Q7	0.925	*Q8*	0.824
Q10	0.795	*Q9*	0.876

Table 40

Inter-Item Correlation Matrices for G2 Metalinguistic Awareness Task

	Inter-item Correlation Matrix (Animate)						*Inter-item Correlation Matrix (Inanimate)*				
	Q1	*Q2*	*Q5*	*Q8*	*Q9*		*Q3*	*Q4*	*Q6*	*Q7*	*Q10*
Q1	1	0.482	0.789	-0.326	0.789	*Q3*	1	0.52	0.367	0.731	-0.24
Q2	0.482	1	0.731	0.032	0.731	*Q4*	0.52	1	0	0.801	0.167
Q5	0.789	0.731	1	0.032	0.731	*Q6*	0.367	0	1	0	0
Q8	-0.326	0.032	0.032	1	-0.414	*Q7*	0.731	0.801	0	1	0.32
Q9	0.789	0.731	0.731	-0.414	1	*Q10*	-0.24	0.167	0	0.32	1

Table 41

Cronbach's Alpha Values for G2 Metalinguistic Awareness Task

	Cronbach's alpha	*Standardized Cronbach's alpha*	*Alpha's standard error*
Animate	0.691	0.736	0.193
Inanimate	0.705	0.645	0.148

Table 42

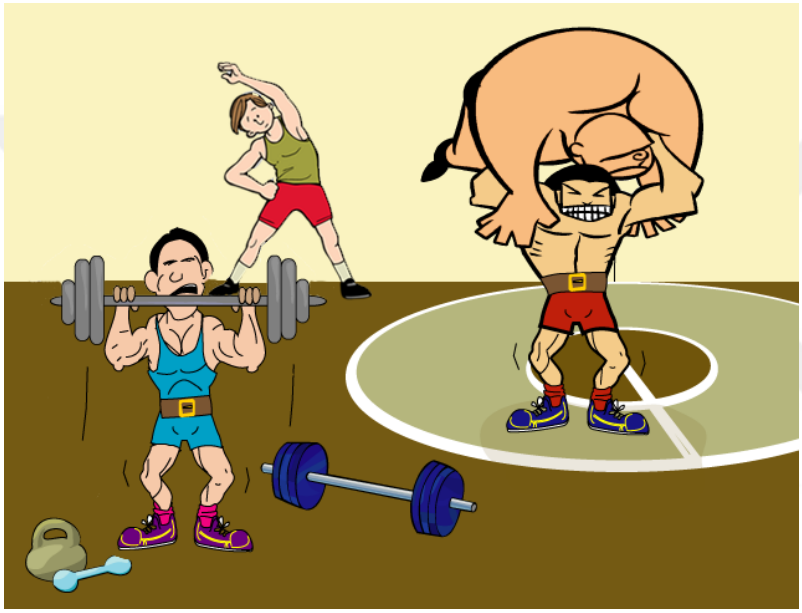
Item Total Statistics for G2 Metalinguistic Awareness Task

Item	*Correlation*	*Item*	*Correlation*
Average item total correlation (Animate)	0.669	*Average item total correlation (Inanimate)*	0.627
Q1	0.657	*Q3*	0.674
Q2	0.777	*Q4*	0.701
Q5	0.896	*Q6*	0.539
Q8	0.359	*Q7*	0.809
Q9	0.657	*Q10*	0.412

APPENDIX 3

PICTURE DESCRIPTION TASK

Group 1 Target Items



1. Anahtar kelime: kaldırmak
Resimde hangi adamın saçları yoktur? _____

1. Keyword: *to lift*
Which man in the picture is bald? _____

2. Anahtar kelime: Taşımak
Resimde hangi kutu beyaz renklidir? _____

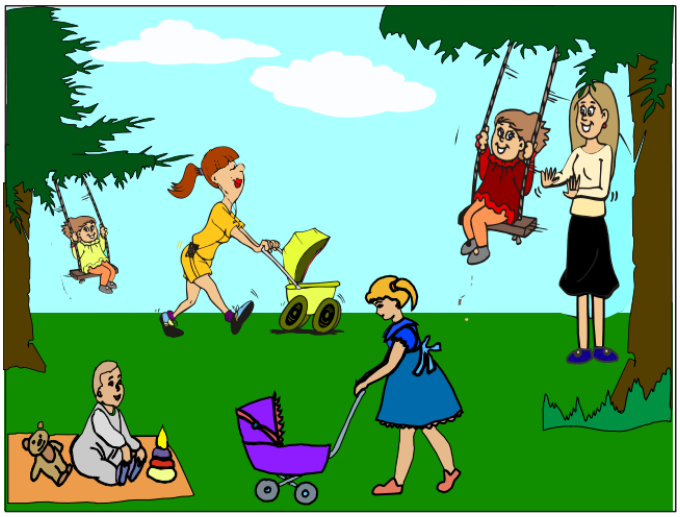
2. Keyword: *to carry*
Which box in the picture is white? _____

3. Anahtar kelime: Tutmak
Resimde hangi çocuk pembe bir takım giymiş? _____

3. Keyword: *to hold*
Which child in the picture is wearing pink? _____

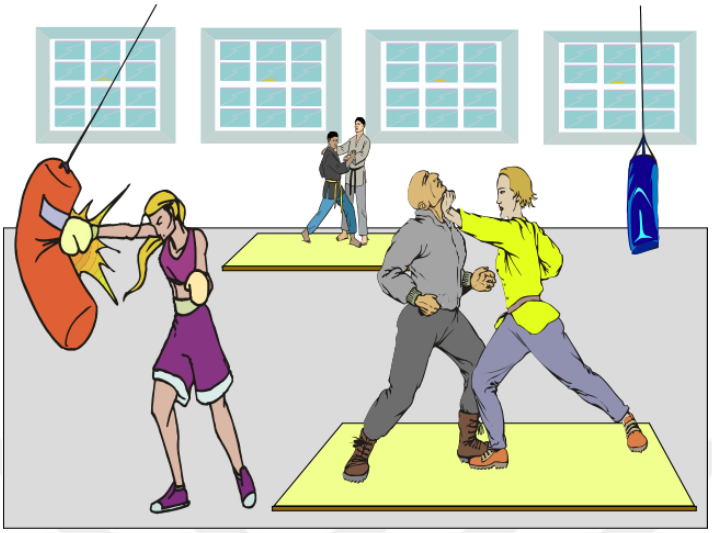
4. Anahtar Kelime: Çekmek
Resimde hangi oyuncak kamyon mavi renklidir? _____

4. Keyword: *to pull*
Which toy truck in the picture is blue color? _____



5. Anahtar Kelime: İtmek
Resimde hangi kız kırmızı bir bluz giymiş? _____

5. Keyword: *to push*
Which girl in the picture is wearing a red blouse? _____



6. Anahtar Kelime: Yumruklamak
Resimde hangi kum torbası turuncu renklidir? _____

6. Keyword: *to punch*
Which sandbag in the picture is in orange color? _____

7. Anahtar kelime: Öpmek
Resimde hangi kız siyah ve uzun saçlara sahiptir? _____

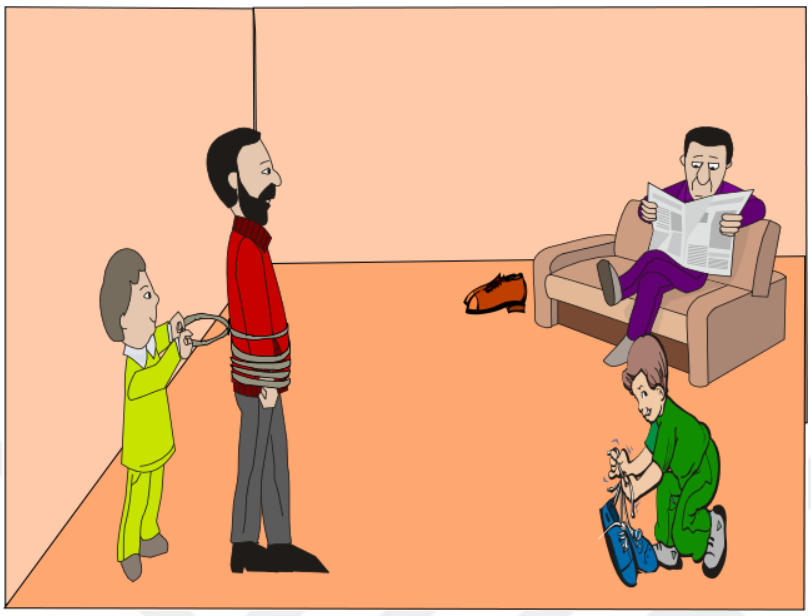
7. Keyword: *to kiss*
Which girl in the picture has long and black hair? _____

8. Anahtar Kelime: Boyamak
Resimde hangi heykel koyu gri renktedir? _____

8. Keyword: *to paint*
Which sculpture in the picture is in grey color? _____

9. Anahtar Kelime: Kucaklamak
Resimde hangi adam yeşil bir takım elbise giyiyor? _____

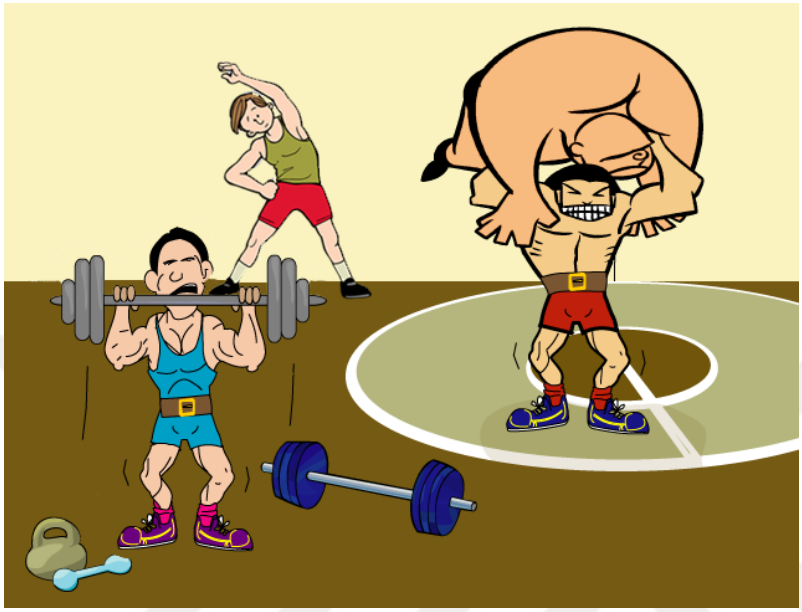
9. Keyword: *to hug*
Which man in the picture is wearing a green suit? _____



10. Anahtar Kelime: Bağlamak
Resimde hangi ayakkabılar mavi renklidir? _____

10. Keyword: *to tie*
Which shoes in the picture are in blue color? _____

Group 2 Target Items



1. Anahtar kelime: kaldırmak
Resimde hangi halter gri renktedir? _____

1. Keyword: *to lift*
Which barbell in the picture is in grey color? _____

2. Anahtar kelime: Taşımak
Resimde hangi çocuk kırmızı bir tişört ve açık kahve saçlara sahiptir?
_____

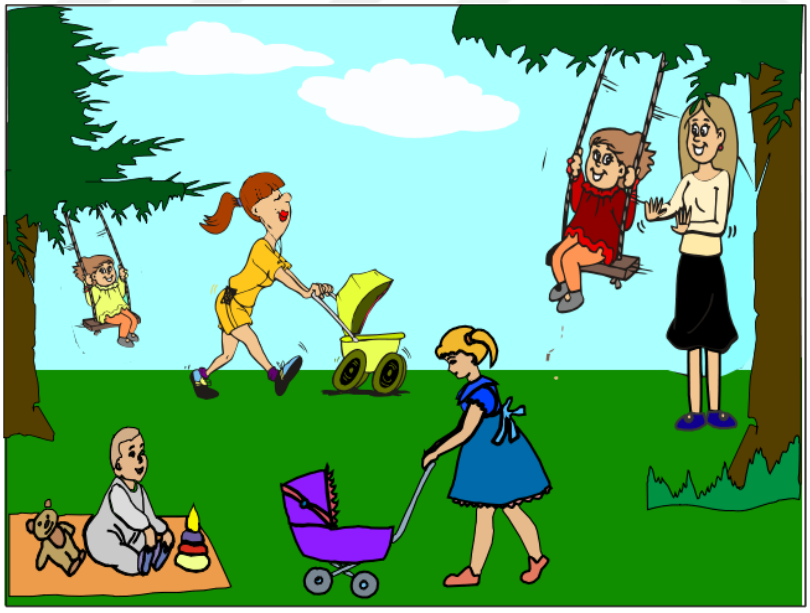
2. Keyword: *to carry*
Which child in the picture is wearing a red shirt and has light brown hair?
_____

3. Anahtar kelime: Tutmak
Resimde hangi vazo yeşil renktedir? _____

3. Keyword: *to hold*
Which vase in the picture is in green color? _____

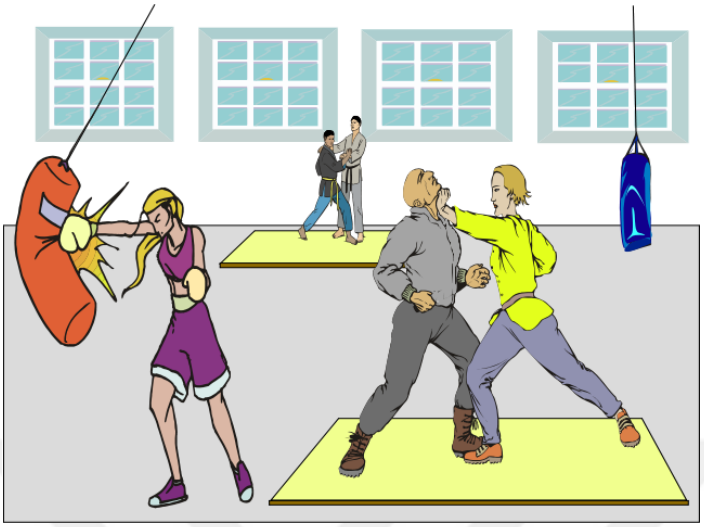
4. Anahtar Kelime: Çekmek
Resimde hangi çocuk beyaz bluz giyiyor? _____

4. Keyword: *to pull*
Which child in the picture is wearing a white blouse? _____



5. Anahtar Kelime: İtmek
Resimde hangi bebek arabası mor renklidir? _____

5. Keyword: *to push*
Which baby carriage is in purple color in the picture? _____



6. Anahtar Kelime: Yumruklamak
Resimde hangi adam gri bir takım ve bot giyiyor?
_____

6. Keyword: *to punch*
Which man in the picture is wearing a grey suit and and boots?
_____

7. Anahtar kelime: Öpmek
Resimde hangi kupa sarı renktedir? _____

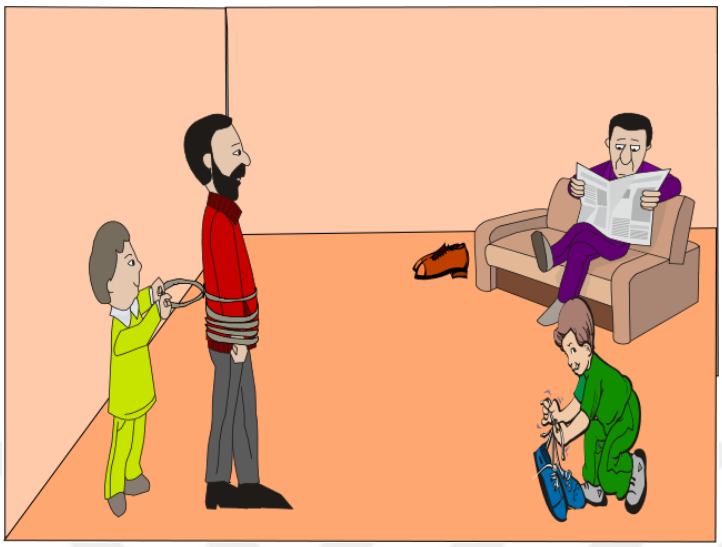
7. Keyword: *to kiss*
Which cup in the picture is in yellow color? _____

8. Anahtar Kelime: Boyamak
Resimde hangi çocuk yeşil bir tişört giyiyor? _____

8. Keyword: *to paint*
Which child in the picture is wearing a green T-shirt? _____

9. Anahtar Kelime: Kucaklamak
Resimde hangi oyuncak ayı beyaz renklidir? _____

9. Keyword: *to hug*
Which teddy bear in the picture is in white color? _____



10. Anahtar Kelime: Bağlamak
Resimde hangi adam kırmızı bir bluz giyiyor? _____

10. Keyword: *to tie*
Which man in the picture is wearing a red blouse? _____

Group 1 Filler Items

1. Anahtar Kelime: Gömmek
Resimde yeşil şortlu çocuk ne yapıyor? _____

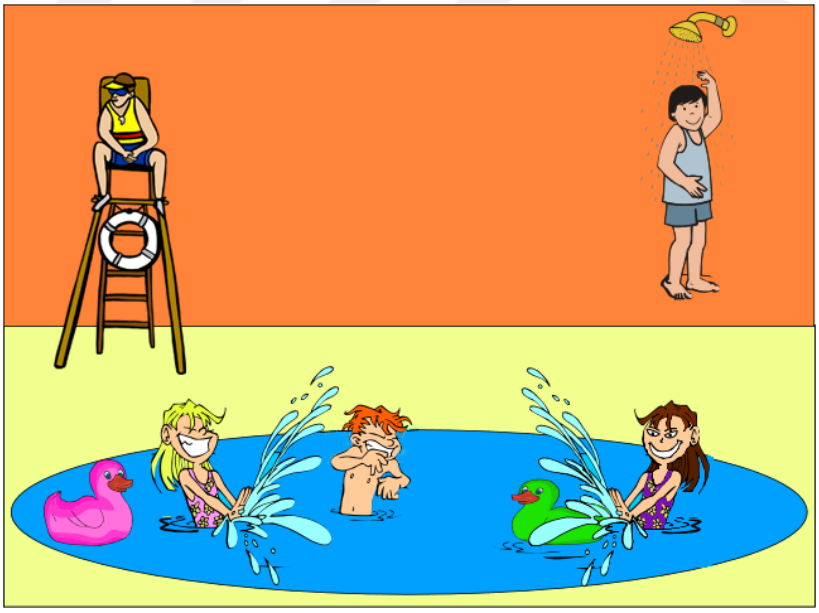
1. Keyword: *to bury*
What is the boy with green shorts doing in the picture? _____

2. Anahtar Kelime: Kesmek
Resimde mor kıyafet giyen adama ne olmuş? _____

2. Keyword: *to cut*
What is happening to the man with a purple kimono? _____

3. Anahtar Kelime: Tekmelemek
Resimde kırmızı formalı çocuk ne yapıyor? _____

3. Keyword: *to kick*
What is the boy with a red uniform doing in the picture? _____

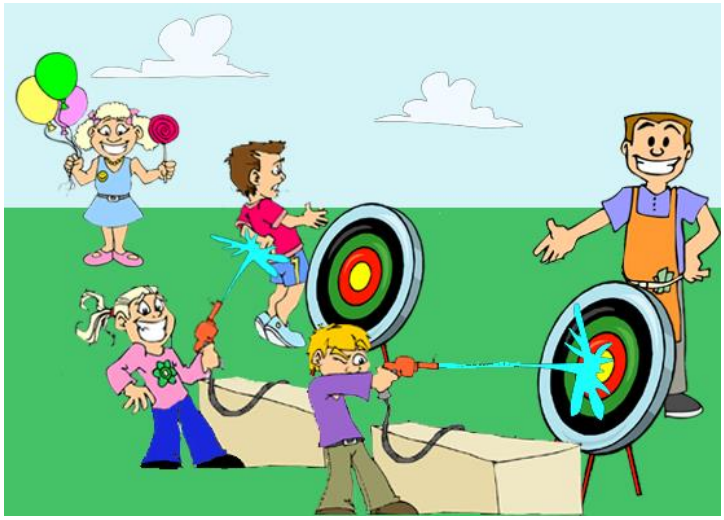


4. Anahtar Kelime: Sıçratmak
Resimde sarı saçlı kız ne yapıyor? _____

4. Keyword: *to splash*
What is the girl with yellow hair doing in the picture? _____

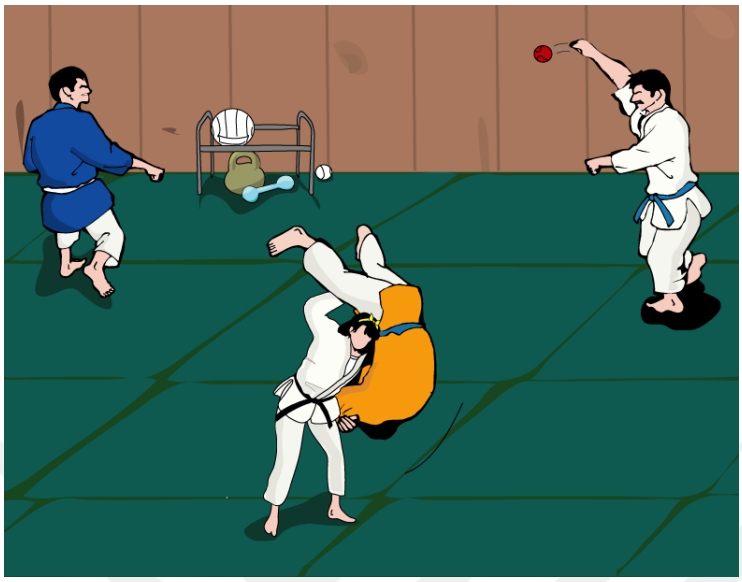
5. Anahtar Kelime: Dokunmak
Resimde mor elbise giyen kadın ne yapıyor? _____

5. Keyword: *to touch*
What is the woman with a purple dress is doing in the picture? _____



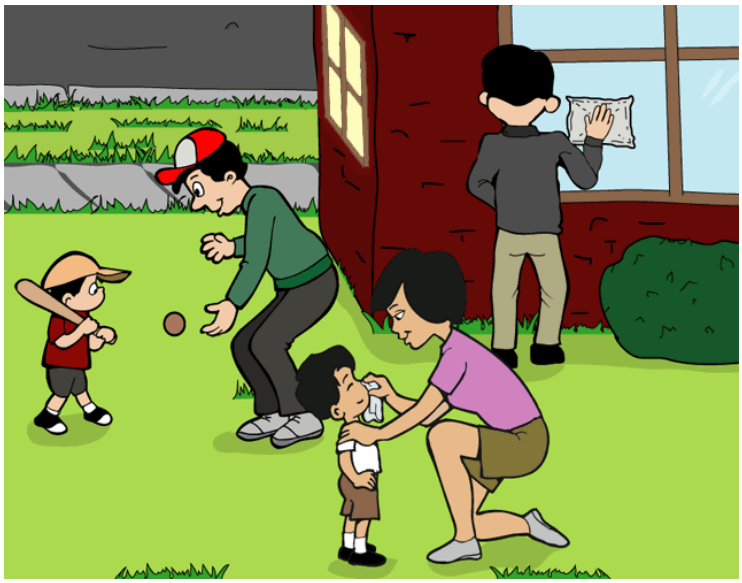
6. Anahtar Kelime: Islatmak
Resimde mor bluzlu ve sarışın olan erkek çocuğu ne yapıyor?
_____

6. Keyword: *to wet*
What is the blonde boy with a purple shirt is doing in the picture?
_____



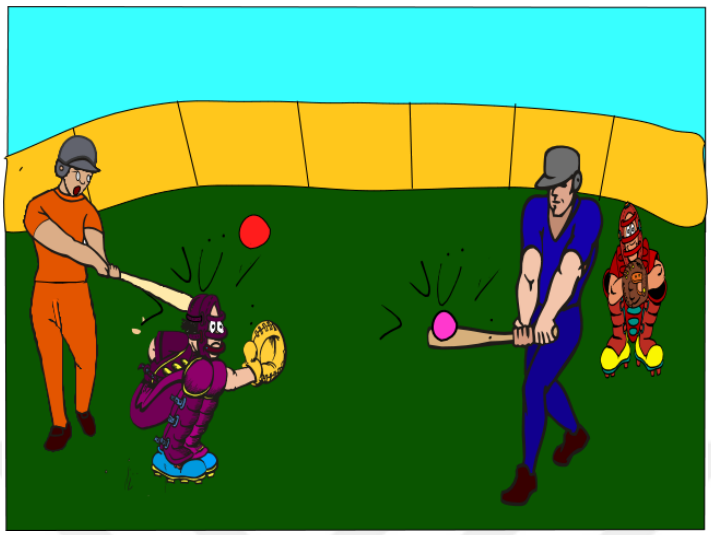
7. Anahtar Kelime: Atmak
Resimde turuncu gömlekli adama ne olmuş? _____

7. Keyword: *to throw*
What happens to the man with an orange shirt in the picture? _____



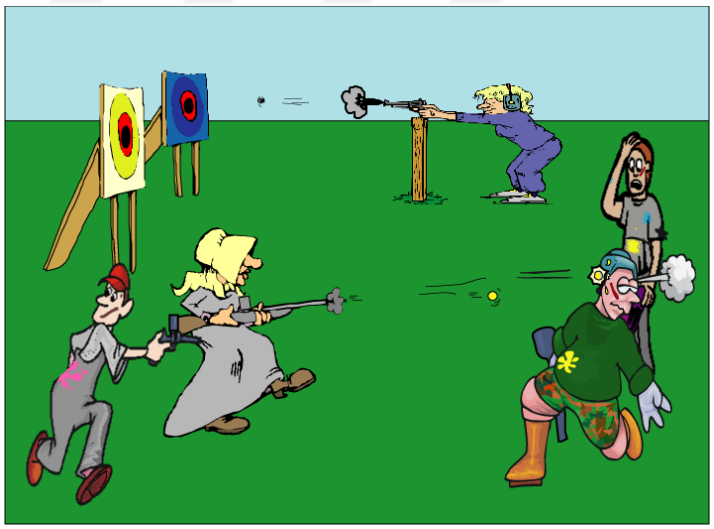
8. Anahtar Kelime: Silmek
Resimde gri kazaklı adam ne yapıyor? _____

8. Keyword: *to wipe*
What is the man with a grey pullover doing in the picture? _____



9. Anahtar Kelime: Vurmak
Resimde mavi üniformalı oyuncu ne yapıyor? _____

9. Keyword: *to hit*
What is the player with a blue uniform doing in the picture? _____



10. Anahtar Kelime: Ateş etmek
Resimde sarı bir başlığı ve elbisesi olan kadın ne yapıyor?
_____

10. Keyword: *to shoot*
What is the woman with a dress and a yellow cap doing in the picture?
_____

Group 2 Filler Items

1. Anahtar Kelime: Gömmek
Resimde yaşlı ve saçları olmayan adama ne olmuş? _____

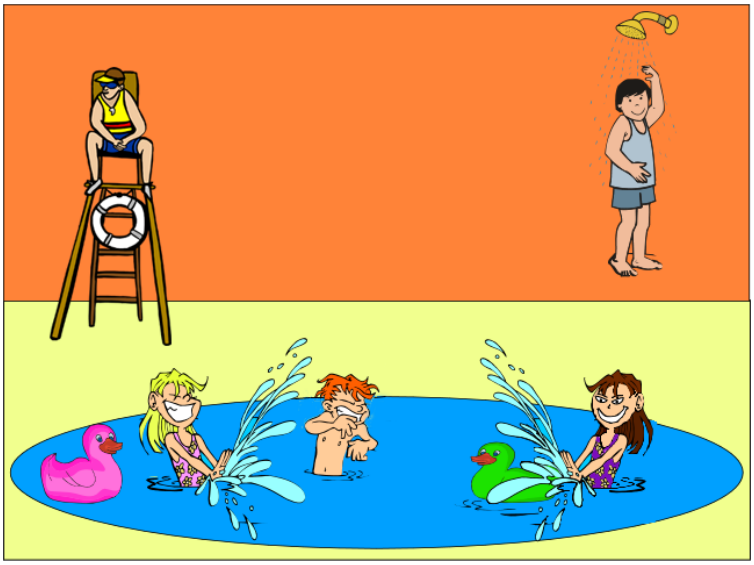
1. Keyword: *to bury*
What happens to the bald and old man in the picture? _____

2. Anahtar Kelime: Kesmek
Resimde siyah kıyafetli adam ne yapıyor? _____

2. Keyword: *to cut*
What is the man with a black kimono doing in the picture? _____

3. Anahtar Kelime: Tekmelemek
Resimde mor formalı çocuk ne yapıyor? _____

3. Keyword: *to kick*
What is the boy with a purple uniform doing in the picture? _____

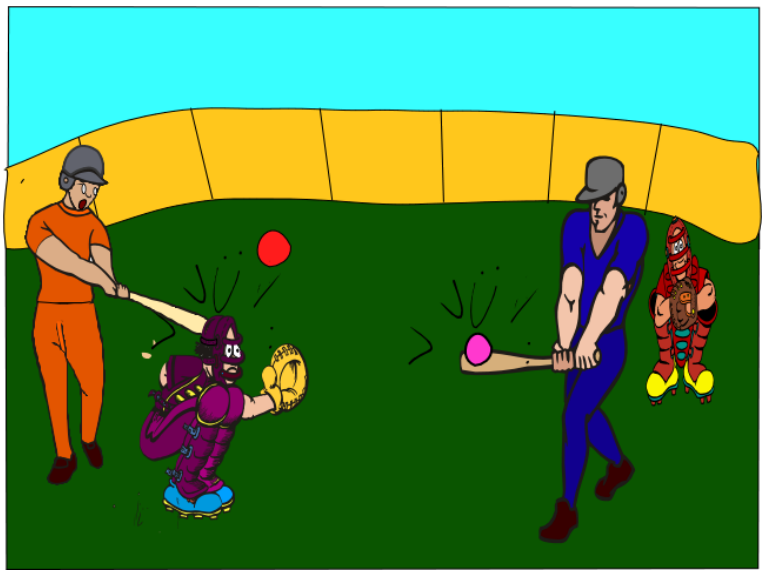


4. Anahtar Kelime: Sıçratmak
Resimde kahverengi saçlı kız ne yapıyor? _____

4. Keyword: *to splash*
What is the girl with brown hair doing in the picture? _____

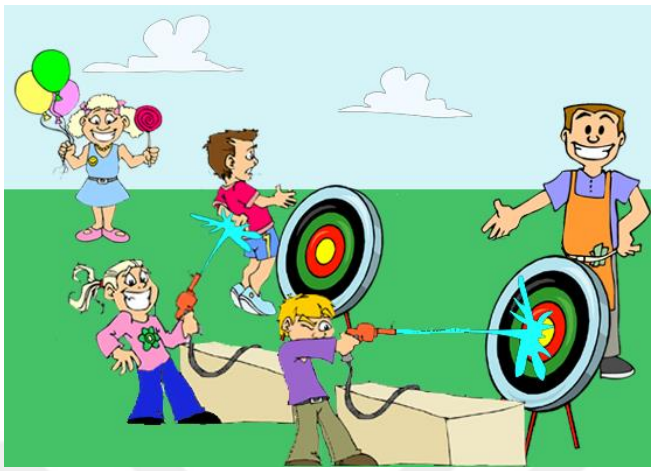
5. Anahtar Kelime: Dokunmak
Resimde kırmızı elbise giyen kadın ne yapıyor? _____

5. Keyword: *to touch*
What is the woman with a red dress doing in the picture? _____



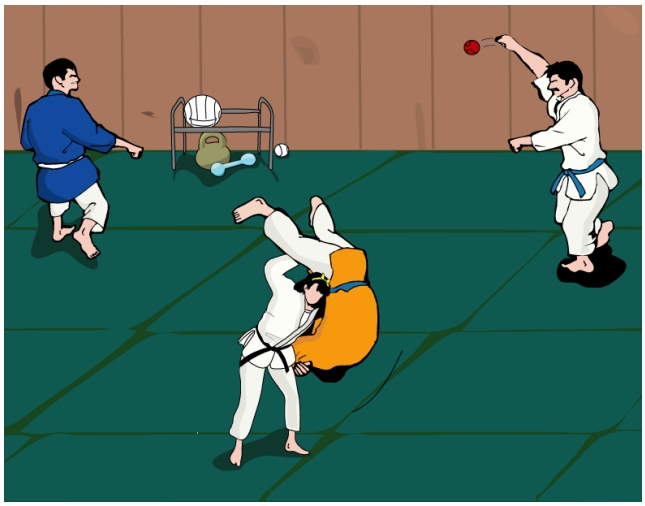
6. Anahtar Kelime: Vurmak
Resimde mavi üniformalı oyuncu ne yapıyor? _____

6. Keyword: *to hit*
What is the player with a blue uniform doing in the picture? _____



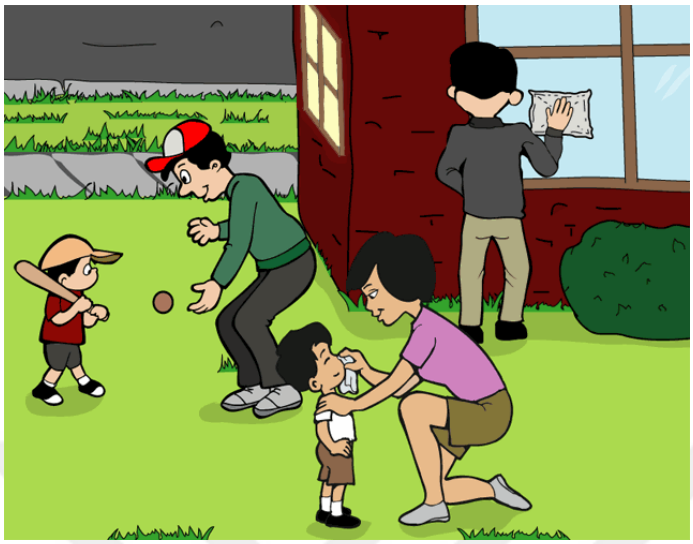
7. Anahtar Kelime: Islatmak
Resimde pembe tişörtlü ve kumral olan çocuğa ne olmuş?
_____

7. Keyword: *to wet*
What happens to the boy with brown hair and a pink T-shirt in the picture?
_____



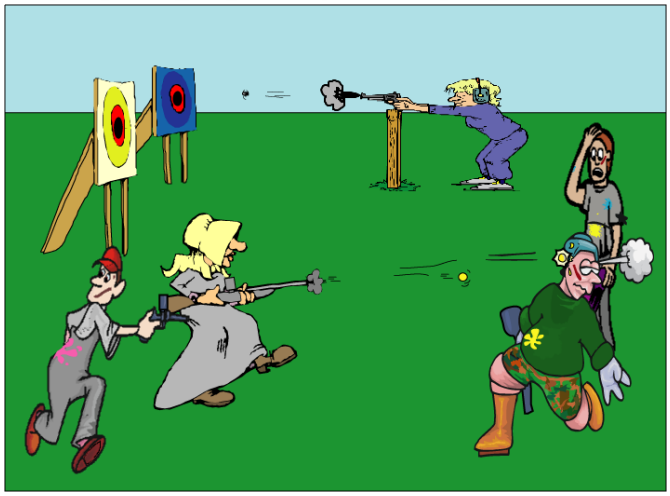
8. Anahtar Kelime: Atmak
Resimde mavi kuşak ve beyaz gömlekli adam ne yapıyor?
_____

8. Keyword: *to throw*
What is the man with a white shirt and blue ribbon doing in the picture?
_____



9. Anahtar Kelime: Silmek
Resimde pembe tişörtlü kadın ne yapıyor? _____

9. Keyword: *to wipe*
What is the woman with a pink T-shirt doing in the picture? _____



10. Anahtar Kelime: Ateş etmek
Resimde mavi eşofmanlı, sarışın kadın ne yapıyor?
_____

10. Keyword: *to shoot*
What is the blonde woman with a training suit doing in the picture?
_____

APPENDIX 4

METALINGUISTIC AWARENESS TASK

Group 1 Target Items

1. Öğretmen öğrenciyi tahtaya kaldırdı. Öğrenci hemen tahtayı sildi.
_____ öğrenci, hemen tahtayı sildi.
1. The teacher made a student go to the chalkboard. The student cleaned the board.
The student _____ cleaned the board.

2. Kadın çantaları arabada taşıyordu. Çantalar araba kaza yapınca yola saçıldı.
_____ çantalar, araba kaza yapınca yola saçıldı.
2. The woman was carrying her bags in the car. The bags were scattered on the road when an accident happened.
The bags _____ were scattered on the road when an accident happened.

3. Adam kızı hemen tuttu. Kız denize düşmekten kurtuldu.
_____ kız, denize düşmekten kurtuldu.
3. The man held the girl at once. The girl got away from falling into the sea.
The girl _____ got away from falling into the sea.

4. Kadın pazar arabasını zorlukla çekiyordu. Araba tümsekte yere devrildi.
_____ pazar arabası, tümsekte yere devrildi.
4. The woman was pulling her shopping car with difficulty. The shopping car toppled down at a bump.
The shopping car _____ toppled down at a bump.

5. Arkadaşı yemek sırasında çocuğu itti. Çocuk arkadaşına tepki gösterdi.
_____ çocuk, arkadaşına tepki gösterdi.
5. His friend pushed the boy in the lunch queue. The boy reacted to his friend.
The boy _____ reacted to his friend.

6. Genç adam duvarı hırsla yumrukladı. Duvar, ortasından biraz içeri çöktü.
_____ duvar, ortasından biraz içeri çöktü.
6. The young man punched the wall with anger. The wall collapsed.
The wall _____ collapsed.

7. Polisler suçluyu bacağından vurdular. Suçlu acıyla yere yıkıldı ve yakalandı.
_____ suçlu, acıyla yere yıkıldı ve yakalandı.
7. Policemen shot the criminal on his leg. The criminal collapsed in pain and got caught.
The criminal _____ collapsed in pain and got caught.

8. Yaşlı kadın, çocuğunun resmini özlemle öptü. Resim, yılların etkisiyle bir hayli sararmıştı.
_____ resim, yılların etkisiyle bir hayli sararmıştı.
8. The old woman kissed her child's picture with longing. The picture was faded by the influence of all those passing years.
The picture _____ was faded with the influence of all those passing years.

9. Kardeşi küçük çocuğu baştan aşağı boyadı. Çocuk, banyoya girmek zorunda kaldı.
_____ çocuk, banyoya girmek zorunda kaldı.
9. His brother painted the little kid from head to toe. The kid had to take a bath.
The kid _____ had to take a bath.

10. Küçük kız, oyuncak bebeği sevgiyle kucakladı. Oyuncak bebek, annesinin hediyesiydi.
_____ oyuncak bebek, annesinin hediyesiydi.
10. The little girl hugged her doll with love. The doll was a present to her from her mom.
The doll _____ was a present to her from her mom.

Group 2 Target Items

1. Nakliyeciler dolabı yerinden kaldırdı. Dolap, tavana çarpıp orayı yaraladı.
_____ dolap, tavana çarpıp orayı yaraladı.
1. Transporters lifted the fridge. And the fridge hit the ceiling and left a mark there.
The fridge _____ hit the ceiling and left a mark there.

2. Anne bebeği kucakta taşıyordu. Çocuk birden ağlamaya başladı.
_____ bebek, birden ağlamaya başladı.
2. The mother was carrying her baby in her arms. The baby started to cry instantenously.
The baby _____ started to cry instantenously.

3. Balıkçı oltayı saatlerce tuttu. Olta herhangi bir hareketlenme göstermedi.
_____ olta, herhangi bir hareketlenme göstermedi.
3. The fisherman held the fishing rod for hours. The rod showed no sign of movement.
The fishing rod _____ showed no sign of movement.

4. Anne kızını kolundan çekti. Kız ne olduğunu anlayamadı.
_____ kız, ne olduğunu anlayamadı.
4. The mother pulled the girl from her arm. The girl did not understand what was going on.
The girl _____ did not understand what was going on.

5. Annem kitaplığı hafifçe itti. Kitaplık aniden arkaya devrildi.
_____ kitaplık, aniden arkaya devrildi.
5. My mom pushed the bookcase a bit. The bookcase toppled down backwards.
The bookcase _____ toppled down backwards.

6. Boksör rakip oyuncuyu tüm gücüyle yumrukladı. Rakip oyuncu o anda baygınlık geçirdi.
_____ rakip oyuncu, o anda baygınlık geçirdi.
6. The boxer punched his opponent with his full power. The opponent fainted at that moment.
The opponent _____ fainted at that moment.

7. Avcı şişe kapağını havadayken vurdu. Şişe kapağı, ortasında bir delikle yere düştü.
_____ şişe kapağı, ortasında bir delikle yere düştü.
7. The hunter shot the bottle cap in the air. The cap fell with a hole on it.
The bottle cap _____ fell with a hole on it.

8. Damat, gelini sevecenlikle öptü. Gelin, çevreye gülücükler saçıyordu.
_____ gelin, çevreye gülücükler saçıyordu.
8. The groom kissed the bride with love. The bride was spreading laughter around her.
The bride _____ was spreading laughter around her.

9. Boyacı okul duvarını güzelce boyadı. Duvar, işlem sonunda ışıl ışıl parlıyordu.
_____ duvar, işlem sonunda ışıl ışıl parlıyordu.
9. The painter painted the wall smoothly. The wall was shining at the end of the procedure.
The wall _____ was shining at the end of the procedure.

10. Annesi çocuğu sıkıca kucakladı. Çocuk, annesinin kolları arasında kayboldu.
_____ çocuk, annesinin kolları arasında kayboldu.
10. The mother hugged her son tightly. The son disappeared in the arms of his mom.
The son _____ disappeared in the arms of his mom.

Group 1 Filler Items

1. Ayşe annesini daha dün gömdü. O nedenle o, bu günlerde biraz dengesiz davranabilir.
_____ için bu günlerde biraz dengesiz davranabilir.
1. Ayşe just buried her mom yesterday. Therefore, she can be a bit unhinged these days.
Because _____, she can be a bit unhinged these days.

2. Anne çocuğu için meyveleri kesiyordu. Bıçağı yanlışlıkla eline kaydırdı.
_____ sırada bıçağı yanlışlıkla eline kaydırdı.
2. The mother was chopping fruit for her son. At that moment, she slided the knife to cut her hand.
While _____ she slided the knife to cut her hand.

3. Ünlü futbolcu karşı takımın oyuncusunu tekmeledi. Buna rağmen oyuncu oyunu bırakmadı.
_____ halde karşı takımın oyuncusu, oyunu bırakmadı.
3. The famous footballer kicked the player of the rival team. However, his opponent never gave up.
Though _____ , his opponent never gave up.

4. Temizlikçiler sabah camları sildiler. O yüzden camlar şu anda pırıl pırıl parlıyor.
_____ için camlar, şu anda pırıl pırıl parlıyor.
4. The cleaners cleans the windows. Therefore, the windows are shiny right now.
Since _____, the windows are shiny right now.

5. Anne bebeğine ilk defa dokunuyordu. Buna ragmen içinde bir heyecan duymuyordu.
_____ halde anne, içinde bir heyecan duymuyordu.
5. The mom was touching her baby for the first time. Nevertheless, she did not feel any excitement at all.
Even though _____, the mother did not feel any excitement at all.

6. Kız evlenmek istediğini söyledi. Babası ağzındaki suyu dışarı püskürttü.
_____ sırada kız, babasına evlenmek istediğini söylüyordu.
6. The young girl said that she wanted to marry. Her father splashed his water.
When _____, her father splashed his water.

7. Arkadaşları genç kızı havuza attı. Kız baştan aşağı sırılsıklam oldu.
_____ sonra genç kız, baştan aşağı sırılsıklam oldu.
7. Her friends threw the girl into the pool. The girl was soaking wet.
After _____, the girl was soaking wet.

8. Smaçör topa tüm gücüyle vurdu. Top karşı tarafa geçip hızla yere çarptı.
_____ sonra top, karşı tarafa geçip hızla yere çarptı.
8. The hitter hit the ball with full power. The ball came over and hit the ground with an incredible speed.
After _____, the ball came over and hit the ground with an incredible speed.

9. Polisler hırsıza hep birlikte ateş ettiler; fakat hırsız hiçbir şekilde yaralanmadı.
_____ rağmen hırsız, hiçbir şekilde yaralanmadı.
9. The policemen shot towards the criminal altogether, but the criminal did not get injured somehow.
Although _____, the criminal did not get injured somehow.

10. Çocuk sütü yere sıçrattı. O nedenle annesi yeri tekrar silmek zorunda kaldı.
_____ için annesi, yeri tekrar silmek zorunda kaldı.
10. The kid splashed milk on the floor. Therefore, his mom had to wipe the ground once again.
As _____, his mom had to wipe the ground once again.

Group 2 Filler Items

1. Hırsız parayı ormana gömmüş. O nedenle, polis orman bölgesinde arama başlattı.
_____ için polis, orman bölgesinde arama başlattı.
1. The thief buried the money in forest. Thereofore, the police started an investigation in the forest region.
Because _____, the police started an investigation in the forest region.

2. Çocuk arkadaşıyla oyun oynuyordu ki arkadaşını yanlışlıkla bıçakla kesti.
_____ sırada çocuk, arkadaşıyla oyun oynuyordu.
2. The kid was playing with his friend with a knife. At that moment, he cut his friend accidentally.
While _____, the kid cut his friend accidentally.

3. Adam kapıyı ısrarla tekmeliyordu. Buna rağmen karısı kapıyı açmadı.
_____ halde karısı, kapıyı açmadı.
3. The man was kicking the door persistently. However, his wife did not open it.
Though _____, his wife did not open it.

4. Anne bebeğini sürekli ıslak mendille sildi. O yüzden bebek enfeksiyon kapmış.
_____ için bebek, enfeksiyon kapmış.
4. The mother was wiping her baby with a wet towel. Therefore, the baby acquired an infection.
As _____, the baby acquired an infection.

5. Turistler tek tek tarihi eserlere dokundu. Güvenlik görevlisi onları görmezden geldi.
_____ halde güvenlik görevlisi onları görmezden geldi.
5. Tourists touched all the historical artifacts. The security guard just ignored them.
Even though _____, the security guard just ignored them.

6. Babam anneme kendi sorunlarından bahsediyordu ki annem de sinirle babama püskürdü.
_____ sırada babam, ona kendi sorunlarından bahsediyordu.
6. My father was telling my mom about his problems. Then, my mom fulminated against him.
While _____, my mom fulminated against him.

7. Çocuk taşı denize attı. Taş birkaç kere suda sekti ve kayboldu.
_____ sonra taş, birkaç kere suda sekti ve kayboldu.
7. The kid threw a rock to the sea. The rock bounced on the water a few times and disappeared.
After _____, the rock bounced on the water a few times and disappeared.

8. Futbolcu kontrolsüzce rakibine vurdu. Ardından kırmızı kartla oyundan çıkartıldı.
_____ sonra futbolcu, kırmızı kartla oyundan çıkartıldı.
8. The footballer hit his opponent with no control. Later, he was dismissed from the game with a red card.
After _____, he was dismissed from the game with a red card.

9. Askerler hedefe birçok kez ateş ettiler; fakat hedefte herhangi bir kurşun izine rastlanmadı.
_____ rağmen hedefte herhangi bir kurşun izine rastlanmadı.
9. The soldiers shot at the target many times, but there was no sign of a bullet on it.
Even though _____, there was no sign of a bullet on the target.

10. Kadın kahveyi arkadaşına sıçrattı. Bu yüzden ondan birçok kez özür diledi.
_____ için kadın, arkadaşından birçok kez özür diledi.
10. The woman splashed coffee on her friend. Therefore, she apologised many times.
Because _____, she apologised to her friend many times.