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İKİNCİ DİLİ ÖĞRENE YETİŞKİNLERİN ÖZNE- NESNE KONUMUNDAKİ SIFAT CÜMLECİKLERİNİ EDİNİMİ¹

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ÖZET

Sıfat cümleciklerinin edinilmesi, üretilmesi ve anlaşılması üzerine çalışmalar, son yıllarda önemli bir şekilde artmaktadır. Sıfat cümleciklerinin mekanizmasını ve dinamiklerini açıklamak için çeşitli modeller önerilmiştir. Sıfat cümleciklerinin görece karmaşık doğası, dilbilimciler ve bilişsel bilim alanında çalışan insanlar için önemli bir sorun olarak devam etmektedir. Bununla birlikte, bu modellerdeki ortak yönlerden biri, nesne konumundaki sıfat cümleciklerinin işlenmesinin, anlaşılmasının ve üretilmesinin özne konumundaki sıfat cümleciklerine göre daha zor olmasıdır. Bu çalışma, yetişkin öğrencilerin sıfat cümleciklerini edinmelerine odaklanmıştır. Özne-nesne konumundaki sıfat cümleciklerinin üretimi ve anlaşılmasına ilişkin verileri ortaya çıkarmak için dört veri toplama aracı geliştirilmiştir. Bu çalışmada Hamilton'un özne-nesne hipotezi test edilmiştir. Hamilton'a göre nesne konumundaki sıfat cümleciklerinin edinimi özne konumundaki sıfat cümleciklerinden daha zordur ve daha geçir. Çalışmaya Türkçe öğrenen beş uluslararası ve İngilizce öğrenen yedi Türk öğrenci katılmıştır. Sonuçlar, tüm katılımcıların özne konumundaki sıfat cümleciklerini nesne konumundaki sıfat cümleciklerine göre daha kolay ürettiklerini ve anladıklarını göstermektedir. Çalışmanın bulguları, nesne konumundaki sıfat cümleciklerinin işlenmesinin, üretilmesinin ve anlaşılmasının daha zor olduğu ilgili alan yazındaki bulguları desteklemektedir.

Anahtar kelimeler: Sıfat cümlecikleri, ikinci dil edinimi, dilbilimsel üretim, özne-nesne konumundaki sıfat cümlecikleri.

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THE ADULT SECOND LANGUAGE LEARNERS' ACQUISITION AND PRODUCTION OF SUBJECT- OBJECT RELATIVE CLAUSES

ABSTRACT

Studies on the acquisition, production and comprehension of relative clauses have been increasing dramatically in recent decades. Various models have been proposed to explain the mechanism and dynamics of relative clauses. The relative complex nature of relative clauses has been challenging linguists and cognitive scientists. However, one of the commonalities in these models is that object relative clauses are harder to process, comprehend and produce than subject relative clauses. This study aimed to focus on the adult learners' acquisition of relative clauses. Therefore, four tasks were developed to elicit the data regarding the production and comprehension of subject-object relative clauses. Hamilton's subject-object hypothesis was tested. Five international participants learning Turkish and seven Turkish individuals learning English were involved in the study. The results show that all of the participants produced and comprehended subject relative clauses more easily than object relative clauses. The findings of the study support those of the related literature in that object relative clauses are harder to process, produce and comprehend.

Keywords: Relative clauses, second language acquisition, linguistic production, object-subject relative clauses.

INTRODUCTION

Understanding the nature of relative clauses is a rather complex phenomenon in linguistics and cognitive sciences. In generative and cognitive linguistics, the embeddedness of a matrix and subordinate clause specifically pose a serious challenge for researchers and language learners as well. In this study, the term acquisition has not been limited only first language learners in a narrow scope. Rather, acquisition is also an inevitable part of new language learners. Various models have been proposed to explain and describe the processability, acquisition, production and comprehension of relative clauses. Therefore, studies regarding these clauses in first and second language acquisition as well as various linguistic theories such as structural, systemic-functional, generative, construction-grammar based and cognitive linguistic ones have been on the rise in recent decades (Andrews, 2007; Chomsky, 1965; Comrie, 1981; De Vries, 2002; Diessel, 2004; Diessel and Tomasello, 2005; Guasti, Vernice and Frank, 2018; Hamilton, 1995; Kornfilt, 1997, 2000a, 2000b; Lehmann, 1986; Ross, 1967; Smith, 1964; Wiechmann, 2015; Wilson, 1963; Young, 2018; Yun et al., 2015). From a Chomskyan

perspective, relative clauses can be assessed in wh-movement incorporating cleft-type constructions and wh-questions. In this tradition, Kornfilt (2000b) adopts Kayne's (1994) head-raising approach into Turkish and Turkic languages by proposing additional steps. The head noun and the whole IP are placed into Spec-CP position³. In generative grammar, a derivational view of relative clauses is adopted, and gradual or intermediate stages are rejected. However, in cognitive linguistics and usage-based grammar supported through corpus linguistics, the acquisition of relative clauses can be explained by various intermediary steps such as the extension of 'that' determiner. (Diessel, 2004; Diessel and Tomasello, 2005; Goldberg, 1995, 2006; Wiechmann, 2015). Klein and Purdue (1997) question the nature of simple and complex structures in second language acquisition and investigate whether the second language could be simpler. I also claim in this study that the acquisition of relative clauses might be composed of these gradual steps. The reason why Klein and Purdue (1997) ask this question is that complex constructions are not produced at the desired level in second language acquisition. Similar questions have been asked by different linguists who developed different models. Keenan and Comrie (1977) interpret the state of relative clauses in a hierarchical manner and maintain that some relative clauses are harder to process and produce. This model is called Noun Phrase Accessibility Hierarchy. In this hierarchy, a continuum from simple to complex processability is proposed. The findings in this model show that there are more examples and data regarding the production of subject relative clauses. In order to explain the relative difficulty of some constructions in adjective clauses, Hawkins (1999) and O'Grady, Lee & Choo (2003) claim that proximity can be a factor that leads to the processability problems. Thus, they approach the problem from the perspective of linearity. The more distant the head is from the gap, the harder it is to process them. This linear distance hypothesis predicts the relative complexity and difficulty of some adjective clauses by taking the proximity and intervening items into consideration (Tarollo & Myhill, 1983). O'Grady (2011) posits the idea that it is the structural distance that determines the difficulty of processing some types of relatives clauses based on certain boundaries between the head and the gap. MacDonald & Christiansen (2002) claim that if the structure is regular and is constructed matrix-clause-like, it is easier to process them. Thus, the relative ease and difficulty of relative clauses are related to word order. If the subordinate clause is a continuation of standard

³ IP in generative grammar refers to an inflectional phrase and Spec-CP to Specifier-Complementizer Phrase

word order, then it is highly likely that it will be easier to process them (Tabor, Juliano, & Tanenhaus, 1997). Since the acquisition of relative clauses is related to memory load, the locality seems to be a pivotal factor (Gibson, 1998). Therefore, syntactic prediction locality theory is important in that it can bring some explanations regarding the asymmetrical syntactic relations. Another hypothesis developed by Hamilton (1994, 1995) is that there are four variations regarding the processability. This hypothesis is called SO Hierarchy that proposes that subject relatives are easier to process, understand and produce. In recent years, usage-based hypothesis has also been effective in explaining the dynamics of relative clause constructions. This hypothesis postulates that frequency, salience, patterns, exemplars and schema are important factors that make the acquisition of relative clauses easy or hard (Bergen & Chang, 2005; Bod, 2006; Dessel 2007, Gennari & MacDonald 2008; Wiechmann, 2015). It is essential to work with more data to show which types of relative clauses are used in real life contexts. Wiechmann (2015) uses large corpora to show the frequent and less frequent usages of relative clauses. Different types of relative clauses are given below.

1. The woman that_ visited the museum (Subject RC)
2. The woman that the man missed _ (Object RC)
3. The woman that the man told the story to_ (Indirect Object RC)
4. The woman whom I am talking to_ (Object of a preposition)
5. The woman whose room was painted _ (Genitive RC)
6. The woman who the man is shorter than _ (Object of Comparison)
7. The woman I worked with _ (Zero Object RC)

Turkish is an agglutinative language rich in inflectional morphology and morphosyntactic constructions used with SOV word order (Aksu-Koc and Slobin, 1995; Goksel & Kerslake, 2004 Kornfilt, 1997a; Underhill, 1972; van Schaaik, 2020). Turkish uses two separate suffixes for subject and object relative clauses. Turkish uses *en/an* suffix for subject relatives and *dık/dik* for object relatives as well as *(y)acak* suffix for both subject and object relative clauses. English use much fewer inflectional morphology and has SVO word order. Most of wh-words are used in relative clauses and are called relativizers. In the English language, these relativizers except for *whose* can be omitted in object relative clauses. The omission of these relativizers is related to and depends on the level of entrenchment and frequency. If a construction is used at a high frequent, it is possible

that a relativizer may be left out. Based on the data obtained from the large corpora, Wiechmann (2015) emphasizes that zero relative clauses are highly frequent since they are also used in an entrenched manner. In the context of Turkey, research into relative clauses has been conducted by comparing Turkish with other languages, largely English and other European languages (Boran, 2018; Çağrı, 2009; Erdoğan, 2005; Goksel & Kerslake, 2004; Kocak, 2020; Kornfilt, 1997b; Ordem, 2017; Ordem et al., 2018; Özcelik, 2006; Paluluoğlu, 2017; Turan, 2012, 2018; Uzundag & Kuntay, 2019; van Schaaiik, 2020; Yas, 2016; Yumrutaş, 2009). This study aims to test the hypothesis developed by Hamilton (1994, 1995). SO hierarchy hypothesis proposes that subject relative clauses are easier to process, produce and comprehend.

METHOD

The study is quantitative in nature and aimed to investigate the acquisition of SO relative clauses in the adult learners of Turkish and English. Brown and Rodgers (2002) note that it is pivotal to use appropriate elicitation tasks to collect reliable data from language learners. Mackey and Gass (2015) also emphasize that in order to be able to measure the level of language learners, it is of central importance to focus on both comprehension and production elicitation tasks so that validity and reliability can be obtained. Since relative clauses are inherently complex in first and second language acquisition, designing various elicitation tasks is essential. The complexity of relative clauses has contributed to the emergence of different hypotheses proposed to explain this mechanism. This study specifically tested Hamilton's (1994) subject-object hierarchy. For this purpose, production-based sentences were created in the study, and the participants were asked to use relative clauses at different levels. Three different elicitation data tools were used for the production purpose. Only one of the tools, a grammatical judgement test, was designed to measure comprehension. Thus, four tasks in total were developed to understand the nature of the acquisition of relative clauses in Turkish and English. In order to lessen the burden of memory from a lexical perspective, the vocabulary was selected at elementary level. Thus, an emphasis on syntax was placed.

PARTICIPANTS

This study involved 12 adults, and a warm-up interview was made with the participants to familiarize them with the tasks, and the content of the study was also explained to them to decrease the confusion. It was found that the participants' adjective clause knowledge in Turkish and English was sufficient to conduct the study,

and that their grammar level was at least B2. The average age of the participants is 28. The average duration of their stay in the USA was 20 months. Five of the participants were people from different countries and seven of them were the Turkish individuals living in America. The foreign participants were those learning Turkish both in their own countries and in America. All of the foreign participants had Turkish friends and participated in various international events with the Turkish people. The Turkish participants did not know a third language and therefore the second language of all was English only.

DATA COLLECTION TOOLS

Four different tests were given to 12 participants. These tests consisted of tools that helped the participants to use inflectional suffixes correctly, translate, and combine independent sentences with adjective clauses and to judge the accuracy of sentences. Three of these data collection tools are designed for production and only one for comprehension. The sentences were lexically kept at an elementary and pre-intermediate level in their literal meaning to decrease the burden on the memory because the study aimed to measure the syntactic knowledge. The first data collection tool was composed of 16 sentences for the correct use of conjugation suffixes (Appendix A), the second an English-Turkish data set consisting of 50 sentences (Appendix, B). The last two tools were obtained based on the study by Baysal (2001). Thus, the third task was comprised of 12 sentences created to connect two sentences considering different situations (Appendix C), and lastly 20 sentences to measure grammaticality judgment of the related sentences (Appendix D).

FINDINGS

The overall findings of the study show that relative clauses that take prepositions in object position are more difficult to produce. In the translation task, it was found that the ablative and instrumental prepositions were more difficult to produce. Considering the task of combining independent relative clauses, it was observed that the relative clauses in the subject position were produced more easily in both languages, but the relative clauses in the object position were relatively more difficult. When the grammaticality of the sentences was judged, it was observed that the accuracy rate was higher in the sentences in the subject position than in the sentences in the object position.

Table 1. Correct use of inflections in FS

Subject and object relative clauses	%
Subject relative en/an suffix	95
Object relative dık/dik suffix	70

It is clear from Table 1 that the suffixes in the subject position are produced more easily in the target language. Considering that subject position is used more frequently in daily life and social practices, the result in Table 1 can be predicted. It is likely that object relative clauses are less frequently used in daily life. In addition, it can be thought that the use of prepositions in English affects the adjective clauses in the object position in Turkish.

Table 2. Correct use of the translated relative clauses

Subject and object relative clauses	% (TS)	% (FS)
Subject relative	92	90
Object relative	74	76

Considering the translations related to relative clauses, it is observed that the translations of the participants are more accurate in the subject position. It is clear that this is understandable in terms of cognitive linguistics depending on the frequency of use and entrenchment. Considering the usage-based linguistic studies, it is obvious that relative clauses in subject position are used more frequently. It can be said that the object position is relatively asymmetrical and it is produced less easily because there may be preposition / suffix transfer. In Table 2, the performance of both groups in the object position decreased when compared to the uses in the subject position.

Table 3. Results of the combined clauses

Subject and object relative clauses	% (TS)	% (FS)
Combining subject relatives	85	88
Combining object relatives	78	75

When the participants were asked to combine two independent clauses to produce a relative clause, they combined subject relative clauses at a higher percentage. Thus, when the independent sentences entailed a subject position, it was easier for the participant to produce. However, when the object position was required, the accuracy rate decreased significantly. Since the object location may be asymmetrical as mentioned before, it predicts that it may be more difficult to produce.

Table 4. Results of grammaticality judgment test

Subject and object relative clauses	% (TS)	% (FS)
Judgment of subject relatives	96	94
Judgment of object relatives	80	82

Participants were given an equal number of sentences in the subject and object position, and they were asked to judge the accuracy of these sentences. While the accuracy rate increased in subject relative clauses, it is observed that the accurate number in the object position was relatively lower. It is striking that it is easier to perceive and judge object relative clauses. A possible explanation as to why object relative clauses are harder to judge is that they contain a different subject, which makes them asymmetrical. In the subject position, subject refers only to the subject itself. Besides, it is also possible that typologically different languages affect each other at different levels. Thus, language transfer can be an important factor in that it could influence the performance of the participants.

DISCUSSION AND CONCLUSION

The emergence of different hypotheses and models regarding the acquisition, production and comprehension of relative clauses shows that more data are needed to explain the mechanism of these clauses. The variations pose a serious challenge to understanding the nature of relative clauses. In addition, it is important to determine which linguistic perspective is adopted to explicate the dynamics of relative clauses. Larsen-Freeman (1997) emphasizes that a foreign language is never learned in a linear and predictable manner. Rather, how even simple sentences and lexical knowledge are acquired is unpredictably an enigma. Therefore, considering the higher complexity state of relative clauses, it is hard to explain the chaotic nature of these clauses. Therefore, Larsen-Freeman and Lynne (2008) interpret the acquisition of a second language as complex systems in an entropic manner. It is maintained that following the emergence of complex

sentences such as relative clauses is highly unpredictable. Diessel (2004) and Wiechmann (2015) discuss that frequency, salience and entrenchment are strong factors that determine how complex sentences can be comprehended and produced. A pure syntax is not adopted in cognitive linguistics. Similarly, usage-based linguistic studies emphasize a continuum between lexical and syntactic elements with an entrenched interaction between word and structure (Reali & Christiansen, 2007; Reali, 2014). This study focused only on syntax. However, considering that cognitive linguistics and usage-based linguistics are in the background of the study, it is thought that the frequency factor in the related literature is important. In the study, it is possible that some typological difference may have played an important role in obtaining different results regarding subject and object relative clauses, and asymmetric structures may also cause this difficulty. Since subject relative clauses in English do not change the word order, it is possible that it is more accessible and comprehensible. However, in object relative clauses, this word order radically changes into an asymmetrical position. Therefore, it may be harder to process and comprehend. In Turkish, subject relative clauses are co-referential with one suffix, while object relative clauses taking relativizer and personal pronoun suffixes are layered, hierarchical and asymmetrical. Therefore, in both languages, object relative clauses are relatively harder to access and produce in second language learning. Therefore, Klein and Purdue (1997) problematize the nature of simplicity and complexity in second language learning because adult language learners tend to produce fewer complex and more simple sentences. From a cognitive linguistic perspective, this result is understandable in that encountering relative clauses is less frequent, and it is possible that fewer tasks are given to adult learners, which hinders them from practicing these complex constructions.

A degree of difficulty is addressed in the hypotheses regarding relative clauses. It is clear that there are certain factors that influence the binding of two independent clauses. The relatively difficult acquisition of relative clauses in object position can be explained by the fact that these structures are asymmetrical. Asymmetry refers to the movement in word order because a noun in object position is placed before the subject. This movement is called asymmetrical in relative clause constructions. Similar results were obtained in the studies of Kim and Won (2020) on relative clauses. Gutierrez-Mangado (2011) also found similar results in their study with children. It has been observed that relative clauses in object position are acquired later. Diessel (2007) and Diessel and Tomasello (2005), in their studies with children, show that relative clauses in object position are acquired later. These studies are in a position to support

Hamilton's Subject-Object hierarchy model. Croft (2001) mentions the importance of exposure to frequency in his radical construction grammar study.

Emphasizing that usage and frequency are very important and effective factors, Croft (2001) emphasized that such elements should be given importance in typological studies. Neath and Surprenant (2003) mentioned that some sentences or grammatical events are related to memory and cognitive load. In this study, it can be said that relative clauses in object form increase the cognitive load. Different models actually refer to such a cognitive load. Based on the data obtained through corpora, Wiechman (2015) shows that object relative clauses are used less than subject relative clauses. The more frequent use of relative clauses in the subject position in daily life contributes to the emergence of the fact that they can be processed more easily. This study also shows that relative clauses in the subject position are more easily accessible. The result of this study is in parallel with other studies in this sense (Diessel, 2007; Kim and Won; 2020; O'Grady, 2011; Wiechman, 2015; Young, 2018)

The results of the study show that the sentences in the object position are more difficult to acquire. Usage-based linguistic studies show that frequently used structures are comprehended and produced more easily. Subject relative clauses are used more frequently. This study shows that the productions in the subject position and relative clauses in accusative object position are produced more easily. It is clear from this study that the relative clauses in object position are more difficult to produce.

This study showed that it was easier to produce and comprehend subject relative clauses than object relative clauses. The findings confirm Hamilton's SO hierarchy hypothesis. It is possibly clear that subject relative clauses put fewer burdens on second language learners. Further studies should test Hamilton's hypothesis with various elicitation and comprehension tasks by using different languages.

REFERENCES

- Aksu Koç, A. A. and Slobin, D. I. (1985). Acquisition of Turkish. In (D. I. Slobin, Ed.) *The cross-linguistic study of language acquisition*, Vol. 1: The data. (839-878) Hillsdale, NJ: Lawrence Erlbaum Associates.

- Andrews, A. D. (2007). Relative clauses. In (T. Shopen, Ed.) *Language typology and syntactic description 2*, 206–236 (2nd ed.), Cambridge: Cambridge University Press.
- Baysal, A. (2001). A study on restrictive relative clauses with particular reference to data triangulation in ELT research. *Anadolu Üniversitesi Sosyal Bilimler Dergisi*, 1(1), 129-146.
- Bergen, B. and Chang, N. (2005). Embodied construction grammar in simulation-based language understanding. *Construction Grammars: Cognitive Grounding and Theoretical Extensions*, 3, 147-190.
- Bod, R. (2006). Exemplar-based syntax: How to get productivity from examples. *The Linguistic Review*, 23(3), 291-320.
- Boran, B. (2018). The role of context on processing of Turkish subject and object relative clauses. Unpublished master thesis, Hacettepe University, Ankara.
- Brown, J. D. and Rodgers, T. S. (2002). *Doing second language research*. Oxford: Oxford University Press.
- Cagri, I. M. (2009). Arguing against subject incorporation in Turkish relative clauses. *Lingua*, 119(2), 359-373.
- Chomsky, N. (1965). *Aspects of the theory of syntax*. Cambridge, Massachusetts: MIT Press.
- Comrie, B. (1981). The formation of relative clauses. In (B. Lloyd and J. Gay, Ed.) *Universals of Human Thought: Some African Evidence*, 215–233. Cambridge: Cambridge University Press.
- Croft, W. (2001). *Radical construction grammar: Syntactic theory in typological perspective*. Oxford: Oxford University Press.
- De Vries, M. (2002). The syntax of relativization. Unpublished doctoral dissertation. Utrecht, Netherlands Graduate School of Linguistics.
- Diessel, H. (2004). *The acquisition of complex sentences*. Cambridge: Cambridge University Press.
- Diessel, H. (2007). Frequency effects in language acquisition, language use, and diachronic change. *New Ideas in Psychology*, 25(2), 108-127.
- Diessel, H. and Tomasello, M. (2005). A new look at the acquisition of relative clauses. *Language*, 81(4), 882-906.

- Erdoğan, A. G. V. (2005). Use of English relative clauses by Turkish learners: A study of errors. *Çukurova Üniversitesi Eğitim Fakültesi Dergisi*, 3(2), 22-28.
- Gennari, S. P. and MacDonald, M. C. (2008). Semantic indeterminacy in object relative clauses. *Journal of Memory and Language*, 58(2), 161-187.
- Gibson, E. (1998). Linguistic complexity: locality of syntactic dependencies. *Cognition*, 69, 1-76.
- Goldberg, A. E. (1995). *Constructions: A construction grammar approach to argument structure*. University of Chicago Press.
- Goldberg, A. E. (2006). *Constructions at work: The nature of generalization in language*. Oxford University Press on Demand.
- Göksel, A. and Kerslake, C. (2004). *Turkish: A comprehensive grammar*. London: Routledge.
- Guasti, M., Vernice, M. and Franck, J. (2018). Continuity in the adult and children's comprehension of subject and object relative clauses in French and Italian. *Languages*, 3(3), 24.
- Gutierrez Mangado, M. J. (2011). Children's comprehension of relative clauses in an ergative language: the case of Basque. *Language Acquisition*, 18(3), 176-201.
- Hamilton, R. (1994). Is implicational generalization unidirectional and maximal? Evidence from relativization instruction in a second language. *Language Learning*, 44, 123- 157.
- Hamilton, R. L. (1995). The noun phrase accessibility hierarchy in SLA: Determining the basis for its developmental effects. In (F. Eckman, D. Highland, P. W. Lee, J. Mileham and R. Weber, Eds.) *Second Language Acquisition Theory and Practice*, 101–114. Mahwah, NJ: Lawrence Erlbaum.
- Hawkins, J. (1999). Processing complexity and filler-gap dependencies across grammars. *Language*, 75, 244-285.
- Kayne, R. S. (1994). *The antisymmetry of syntax*. Cambridge, Massachusetts: The MIT Press.
- Keenan, E. and Comrie, B. (1977). Noun phrase accessibility and Universal Grammar. *Linguistic Inquiry*, 8, 63-100.
- Kim, J., and Won, E. (2020). Effects of inductive and deductive grammar instruction based on the noun phrase accessibility

- hierarchy: on Korean efl middle school students. *Language & Literature*, 46, 169-197.
- Klein, W. and Perdue, C. (1997). The basic variety (or: Couldn't natural languages be much simpler?). *Second Language Research*, 13(4), 301-347.
- Koçak, A. (2020). Turkish tertiary level EFL learners' recognition of relative clauses. *Journal of Language and Linguistic Studies*, 16(4), 1637- 1655.
- Kornfilt, J. (1997a). *Turkish*. London: Routledge.
- Kornfilt, J. (1997b). On the syntax and morphology of relative clauses in Turkish. *Dilbilim Araştırmaları Dergisi*, 8, 24-51.
- Kornfilt, J. (2000a). Some syntactic and morphological properties of relative clauses in Turkish. In (A. Alexiadou, P. Law, A. Meinunger and C. Wilder, Eds.) *The Syntax of Relative Clauses*, Amsterdam/Philadelphia: John Benjamins, 121-159.
- Kornfilt, J. (2000b). Locating relative agreement in Turkish and Turkic. In (C. Kerslake and A. Göksel, Eds.) *Studies in Turkish and Turkic languages*, 189-196. Wiesbaden: Harrassowitz Verlag.
- Larsen Freeman, D. (1997). Chaos/complexity science and second language acquisition. *Applied Linguistics*, 18(2). 141-165.
- Larsen Freeman, D. and Lynne C. (2008). *Complex systems and applied linguistics*. Oxford: Oxford University Press.
- Lehmann, C. (1986). On the typology of relative clauses. *Linguistics*, 24(4). 663-680.
- MacDonald, M. C. and Christiansen, M. (2002). Reassessing working memory: comment on Just and Carpenter (1992) and Waters and Caplan (1999). *Psychological Review*, 109, 35-54.
- Mackey, A. and Gass, S. M. (2015). *Second language research: Methodology and design*. Routledge.
- O'Grady, W. (2011). Relative clauses: Processing and acquisition. In (E. Kidd, Ed.) *The Acquisition of Relative Clauses: Processing, Typology, and Function*, 13-38. Amsterdam: John Benjamins.
- O'Grady, W., Lee, M. and Choo, M. (2003). A subject-object asymmetry in the acquisition of relative clauses in Korean as a second language. *Studies in Second Language Acquisition*, 25, 433-448.

- Örдем, E. (2017). Acquisition of Zero Relative Clauses in English by Adult Turkish Learners of English. *Journal of Education and Training Studies*, 5(1), 190-195.
- Örдем, E., Özezen, M. Y., Darancık, Y., Mavaşođlu, K. and Hadutođlu, K. (2018). Syntactic variation of zero object (non-subject) relative clauses: A cross-linguistic perspective. *International Journal of Language Academy*, 6(5), 391-401.
- Özçelik, Ö. (2006). Processing relative clauses in Turkish as a second language. Doctoral dissertation, University of Pittsburgh, PA, The United States of America.
- Paluluođlu, N. Ş. (2017). Syntactic processing differences and the effects of memory-load interference for object relative and subject relative clauses in Turkish. Unpublished master thesis, University of Yeditepe, İstanbul.
- Realı, F. (2014). Frequency affects object relative clause processing: Some evidence in favor of usage-based accounts. *Language learning*, 64(3), 685-714.
- Realı, F. and Christiansen, M. H. (2007). Word chunk frequencies affect the processing of pronominal object-relative clauses. *Quarterly Journal of Experimental Psychology*, 60(2), 161-170.
- Ross, J. (1967). Constraints on variables in syntax. Doctoral dissertation, MIT. Reprinted as *Infinite Syntax!* (1986). Norwood, New Jersey: ALEX Publishing Corporation.
- Smith, C. (1964). Determiners and Relative Clauses in a Generative Grammar of English. *Language* 40(1), 37-52.
- Tabor, W., Juliano, C., and Tanenhaus, M. K. (1997). Parsing in a dynamical system: an attractor-based account of the interaction of lexical and structural constraints in sentence processing. *Language and Cognitive Processes*, 12(2), 211-272.
- Tarollo, F. and Myhill, J. (1983). Interference and natural language processing in relative clauses and wh-questions. *Studies in Second Language Acquisition*, 14, 39-70.
- Turan, C. (2012). Degree of access to universal grammar / transfer from L1 in the learning of relative clauses by Turkish learners of English. Unpublished master thesis, University of Hacettepe, Ankara.

- Turan, C. (2018). An eye-tracking investigation of attachment preferences to relative clauses in Turkish. Unpublished Doctoral dissertation, University of Hacettepe, Ankara.
- Underhill, R. (1972). Turkish participles. *Linguistic Inquiry*, 3, 87-99.
- Underhill, R. (1976) *Turkish grammar*. Cambridge, Massachusetts, London, England: The MIT Press.
- Uzundag, B. A. and Küntay, A. C. (2019). The acquisition and use of relative clauses in Turkish-learning children's conversational interactions: a cross-linguistic approach. *Journal of child language*, 46(6), 1142-1168.
- Van Schaaik, G. (2020). *The Oxford Turkish grammar*. New York: Oxford University Press.
- Wiechmann, D. (2015). *Understanding relative clauses: A usage-based view on the processing of complex constructions (Vol. 268)*. Walter de Gruyter GmbH and Co KG.: Berlin.
- Wilson, W. (1963). Relative Constructions in Dagbani. *Journal of African Languages*, 2(2), 139-144.
- Yas, E. (2016). Acquisition of English relative clauses by German L1 and Turkish L1 speakers. Doctoral dissertation, Südwestdeutsche Verlag für Hochschulschriften, Germany.
- Young, S. K. (2018). Relation between frequency and processing difficulty of English relative clauses by L2 learners: a learner corpus analysis. ■ ■ ■ ■ ■ , 34(3), 491- 504.
- Yumrutaş, N. (2009). Acquisition of relative clauses in Turkish. *Unpublished MA thesis*, Boğaziçi University, Istanbul.
- Yun, J., Chen, Z., Hunter, T., Whitman, J. and Hale, J. (2015). Uncertainty in processing relative clauses across East Asian languages. *Journal of East Asian Linguistics*, 24(2), 113-148.

Appendix A

Conjugation suffix task

1. Ali eve geldi. Ali'yi tanıyorum.
2. Elif araba sürüyor. Elif'i Ali ile tanıştırdım.
3. Adam evini sattı. O şimdi çok mutlu.
4. Piraye'yi ziyaret ettim. Piraye Almanca öğreniyor.
5. Köpekler çok havlar. Köpekler zekidir.
6. Amerikan evleri çok büyüktür. Her gün Amerikan evlerine bakıyorum.
7. Kadın okulu başarıyla bitirdi. Şirket kadını işe aldı.
8. İstanbul'u görmek istiyorum. İstanbul'da yaşamak istiyorum.
9. Çocuk topla oynadı. Çocuğu izledim.
10. Herkes kedi sever. Kedi asil bir hayvandır.
11. Almanlar Türkçeyi öğrenmek istiyor. Türkçe bir Orta Asya dilidir.
12. Aşk güzel bir duygudur. Semra aşk yaşamak istiyor.
13. Atatürk iyi bir devlet adamıydı. Türkler, Atatürk'ü çok sever.
14. Dün Neslihan'ı gördüm. Ali, Neslihan'ı çok seviyor.
15. Yarın, müzeyi ziyaret edeceğim. Müzeyi uzun zamandır merak ediyordum.
16. Okulda öğrencileri iyi eğitiyoruz. Müdürler, öğrencileri destekliyor.

Appendix B

Translation Task

1. Okuduğum kitap çok güzel.
2. Satın aldığım araba çok rahattı.
3. Gelen insanlar yakın arkadaşım.
4. Sattığım telefon çok pahalıydı.
5. Hapse giren adam fakirdi.
6. Dokunduğum masa özeldir.
7. Yürüyen çocuk çok mutlu.
8. Terk ettiğimi üniversite çok büyük.
9. İzleyeceğim film beni heyecanlandırıyor..
10. Sevdığım kadın evlendi.
11. Alacağım araba iyi çalışıyor.
12. Giydiğim elbise kırmızıydı.
13. Yemek yiyen çocuk açtı.

14. Türkiye'de yaşayan insanlar mutludur.
15. Uçan kuşu vurdular.
16. Çektiğim diş ağrıyordu.
17. Top oynayan çocukları tanıyordum
18. Tanıdığım çocuklara oyuncak verdim.
19. Destekleyeceğim insan iyi biri olmalı.
20. Sandalyede oturan adam düştü.
21. Geçtiğim sınav çok kolaydı.
22. Takip ettiğim adam zengindi
23. Mektup yazan öğrenciler zekiydi.
24. Boyadığım oda çok küçük.
25. Gördüğüm orman çok güzel.
26. Yüzen insanlar kilo verir.
27. Gösterdiğim film güzeldi.
28. Verdiğim hediye pahalıydı.
29. Ofiste çalışan adam sandalyeye oturdu.
30. Bilgisayar kullanan adam çok para kazanıyor.
31. Herkesi kandıran adam kaçtı.
32. Her gün gözlemlediğim kuşlar beni mutlu ediyor.
33. Muayene ettiğim hasta iyileşti.
34. Transfer ettiğimiz futbolcu iyi oynadı.
35. Konferansı düzenleyen kadın çok güzel konuştu.
36. Kestiğim ekmeğe büyüktü.
37. Şirketi yenileyen kadın zengin oldu.
38. Şarkı besteleyen kadın ünlü oldu.
39. Araba ve eve sahip olan insanlar mutludur.
40. Öldürdüğüm kişi insan değildi.
41. Beslediğim kuşlar öldü.
42. Terk ettiğim insanlar beni sevmiyorlardı.
43. Kokladığım yemek lezzetliydi.
44. İnsanları dinleyen adam bilgeydi.
45. Araştırma yapan bilim insanları ödül aldı.
46. Açtığım kapı renkliydi
47. Göçmenleri istemeyen insanlar mutsuzdu.

48. Kapatacağım pencere çok farklı görünüyor.
49. Kansere neden olan şey sigaradır.
50. Sorduğum soru zordu.

Appendix C
Combining Task

1.
 - a. The man was fired by his boss.
 - b. He had forgotten to pay the salaries.
2.
 - a. I always visit the child.
 - b. I told my life story to the child.
3.
 - a. The man was taken to hospital.
 - b. His wife was killed in the accident.
4.
 - a. I found the bag.
 - b. I had hidden her present in the bag.
5.
 - a. I know the woman.
 - b. He offered the money to the woman.
6.
 - a. The idea was excellent.
 - b. My father suggested it.
7.
 - a. I spoke to the manager.
 - b. His hotel is at the seaside in Florida.
8.
 - a. I have a list of words.
 - b. They are not in the dictionary.
9.
 - a. We noticed the train.
 - b. I lost my bag on the train.
10.
 - a. He wants to see the student.
 - b. He interviewed them yesterday.
11.
 - a. Everyone respects the headmaster.

- b. I gave a present to the headmaster.
12.
a. John's colleague has left quite early.
b. He was present at the meeting.

Appendix D
Grammaticality Judgment Test

1. I found the taxi in whose I forgot my purse.
2. The woman whose dress was tom got very upset.
3. I cooked Italian food which actually tasted Indian.
4. The boss called the secretary who he employed last week.
5. Mary likes the children to whom she gives presents every week.
6. I love my girlfriend to whom i bought all the flowers in the city.
7. The girl who she had disappeared suddenly could not be found.
8. This is the diary in which I keep my memories.
9. Jane discussed with the woman whom child had stolen her bag.
10. One of my roommates whose father is a famous lawyer he will be a lawyer, too.
11. Our neighbour's son who had broken our window did not apologize.
12. The book which I am reading now was written by Stephen King.
13. That is the wall over which the athletes are going to jump tomorrow.
14. I broke the vase which Mary had bought me as a present.
15. I saw the bank manager to who I gave my cheque.
16. The little boy wanted the chair which I was keeping my books under it.
17. The journalist whose interview i watched yesterday has a program on TV.
18. The homework which our teacher had assigned it was rather difficult.
19. I bought a wonderful car which it is right at the comer.
20. I saw the man to whom the woman gave her ticket to.