



The accessibility of the depth of Turkish relative clauses by Turkish monolingual children from 2 to 9 years of ages

Ergül Yavuz¹

*Graduate School of Education,
Burdur Mehmet Akif Ersoy University*

Received : 02.08.2020
Accepted : 08.09.2020
Published : 30.09.2020

Abstract

This study investigates the comprehension and production of Relative Clauses (henceforward RC) structures by monolingual Turkish speaking children from 2 to 9-year-olds. Participants of this study were 150 children, and 10 adults took part in the study as the normative group. This study aims to reveal the order and depth of RCs in children's development and to find out the most complex structure of RCs that children can comprehend or produce within the determined age groups.

This is a descriptive study and the data were obtained from participants concerning their current status. Piloting was conducted before the real experiment to check the feasibility of the study. As the data collection tools, pictures were presented to participants for each depth together with a relevant scenario. All responses were video/audio recorded and the recorded data were transcribed on a word document.

Results showed that children can comprehend RC structures as early as 2-year-old and they start producing RCs at the age of 3 and the rate of production increased with the age. The production of RCs stabilized between ages 6 to 8. Lastly, at the age of 9, the proportion of RC production decreased suddenly. The findings of this study confirm that comprehension and production of RCs require cognitive maturity, knowledge of usage of the language and time to internalize that knowledge.

Keywords FLA, depth of relative clauses, RC in Turkish, RC acquisition

1. Introduction

In Relative clauses (RC) are complex structures that modify and give either essential information or clearance about the noun. "Relative clauses seem to be essential for the linguistic expression of complex concepts, and it comes as no surprise that practically every language uses relativization in one way or another" (de Vries, 2013, p.3). Constructions of RCs require cognitive ability and language competency to comprehend and produce these complex structures. Children need to combine particular meaning with the grammatical form of the RC. Their understandings and productions reflect their language and cognitive development. "Relative clauses constitute a network of related constructions that children acquire in a piecemeal bottom-up way, starting with relative clauses that are only little different from simple sentences which are gradually extended into more complex grammatical patterns" (Tomasello and Diesel, 2005). Investigating the

¹ Bio: Her research interests cover teaching English to young children, first language acquisition, the acquisition of Turkish morphology and teaching English in general terms. Contact: ergulyavuz@gmail.com

understanding and production of RCs would give a deeper insight into language acquisition and cognitive development. Although several studies were held on the development of comprehension and production of RC structures, most of them focused on European languages primarily, English and German (Diessel and Tomasello, 2005; Brandt, Kidd, Lieven and Tomasello 2009). There are also several studies conducted on RCs in Turkish to provide a full understanding of these structures. In Turkish, these studies are mostly descriptive and mainly focused on either comprehension (Slobin, 1982; 1986; Kornfilt et al. 2012) or production (Sarılar and Küntay, 2011) of the RCs by foregrounding semantic (Bulut, 2012), syntactic (Paluluoğlu, 2017) or morphologic (Altinkamış and Altan, 2016) properties of these structures. The first study about Turkish RCs is carried out by Slobin (1982). He conducted a descriptive study on Turkish monolingual preschoolers and English monolingual preschoolers. He concluded that Turkish RCs are harder on comprehension than English RCs. In 1986, Slobin carried out another research on RCs of Turkish and English. He engaged children in a conversation and extracted RCs from their everyday language. He found that Turkish speaking children use RCs less than half of the number compared to their American counterparts. Most of the RC studies in Turkish refer to Slobin's studies (1982; 1986). Slobin proposed that "the mastery of relative clauses in Turkish must take place later than 4; 8 (1986, p. 277).

In another study, Kornfilt et al. (2012) examined the acquisition patterns of RCs of Turkish monolingual children. They aimed to confirm the asymmetry of the subject and object RCs and find out the reasons for the differences via investigated production experiments. Twenty Turkish speaking children participated in the study at the age of 4; 1 and 6; 2 and randomly chosen pictures were presented to participants. After each picture was presented to the child, a related question was asked to check the comprehension of RC. The result revealed that "Turkish speaking children are able to produce both subject and object relative clauses at much younger ages than generally claimed in the literature" (Kornfilt et al., 2012, p, 300).

There are some other studies that analyzed the syntactic properties of RC structures. Çağrı (2009) held a descriptive study and proposed that most of the RCs in Turkish can be rated as Minimal in terms of syntactic properties. In his research, he analyzed Minimality in Turkish. 'kamyon geçen köprü': 'the bridge that trucks go on' is actually

Ø üzer-in-den kamyon geç-en köprü
on-Gen.-Abl. truck pass-SubjP. bridge
the bridge that trucks go on top of' (p, 368).

Subject RC helps to form the meaning of non-subject RC by reducing the number of words in the sentence. The sentences which he analyzed were composed of RC structures. As a result, he was able to explain the acceptability of subject relatives to form the non-subject relatives by Minimality. Although his study is mainly linguistic, it is related to the production of the RC structures.



A recent study was held by Ketrez (2007) who examined the acquisition of RCs in Turkish and held a descriptive study. She particularly focused on relation to Parallel Function Hypothesis (Sheldon 1974), and Accessibility Hierarchy (Keenan and Comrie, 1977) in Turkish RCs. The Parallel Function Hypothesis suggests that it is easier to understand the meaning if the “head” and the “gap” have the same syntactic roles. For example:

- A. The dog that jumps over the pig bumps into the lion (parallel function)
- B. The lion that the horse bumps into jumps over the giraffe (non-parallel function).

According to Parallel Function Hypothesis, the sentence (A) is easier to understand because the parts of the RC have the same function. Both of them are subjects of the sentence. However, in sentence (B) they have different functions. In (B), the lion is both a subject (bumps) and an object (the horse bumps the lion).

To investigate the Parallel Function Hypothesis, Ketrez collected data using the story; Frog, where are you? She also included TV news programs and adult speech in her study. She found that in terms of Accessibility Hierarchy and Parallel Function Hypothesis, adult speech order and children’s speech order had common results, and subject RCs were higher in the ranking than object RCs. Based on these two hypotheses Ketrez built a hierarchy and concluded that “While AH seems to be a stronger and a more dominant strategy in the relative clause production and use frequency in Turkish, Parallel Function also has an essential and explanatory role in the production preference of some relative clauses” (Ketrez, 2007, p. 21).

The research focusing on the accessibility of RCs was initiated by Keenan and Comrie (1977). They studied 50 languages and tried to build a universal hierarchy for the comprehension and production of relative constructions. They opened the way to organize hierarchically the depth of RCs in particular languages. They argue that languages vary in terms of their RC structures and this variation is not incidental rather relativizability of the structures is dependent on the position of each part of a sentence. They proposed a graphic and placed easier RCs on a higher position and harder RCs on the lower positions. Positions of the graph are called “depth”. It is as follows;

Accessibility Hierarchy (AH) SU > DO > LO > OBL > GEN > OCOMP

*SU: subject, DO: direct object, LO: indirect object, OBL: oblique case GEN: genitive, OCOMP: object of comparison (Keenan and Comrie, 1977, p. 66).

Just as the case in other languages, Turkish has its nature of utilizing RCs. Turkish “exhibits a more complex pattern in terms of the form of relative clauses, the kinds of predication they can express, and their stacking possibilities” (Larson and Takahashi, 2018, p.5). There are three common RC participles in Turkish; -(y)An, -DIK, and -(y)AcAk. The -(y)An participle is not inflected by a person or case. It consists of a verb and the -(y)An participle. Past and present times are represented by the same morpheme in Turkish. This participle is also named as a Subject participle and reflects the aspect

of the verb. Aspect is a grammatical category associated with verbs that express a temporal view of the event or state expressed by the verb (Glossary of Linguistic Terms). The -DIK participle mostly refers to past events or ongoing situations. It has accusative-possessive construction. The -(y)AcAk participle has identical structural properties with the -DIK participle. However -(y)AcAk participle mostly refers to present or future situations. This research differs from the previous researches in terms of investigating the comprehension and production of RCs in Turkish in different age groups of monolingual children.

This research aims to find the depth of comprehending and producing RCs by monolingual Turkish speaking children at different ages. It also aims to reveal the most complex RCs in these age groups.

2. Methodology

As the research method, a quasi-experimental design was used. A comparison group took part in the study. The data were analyzed qualitatively; however, quantitative analysis was also done to support the qualitative analysis. Descriptive study researchers work with fewer participants intensively; therefore, the number of participants of this study was sufficient to determine the depth of RC production and accessibility among the same and different age groups.

In this study, a picture-cued elicitation task was used. Comprehension and production of RC structures in Turkish were explored via pictures. While designing the pictures, the semantic properties of RCs in Turkish were considered. Every picture was designed to investigate the depth of RC construction. Turkish has the following RC structures.

-Subject items: -An, -DIK, -(y)AcAk.

Object items: -An, -DIK, -(y)AcAk

-Direct Objects

-Indirect Objects

-Auxiliary -ol

-Passive constructions: -Il,-In

For this study, children were oriented to use RC constructions by presenting them with relevant pictures together with a relevant scenario. The questions and the scenario did not include any RC structures to not dictate children to use similar expressions. One of the considerations of the study was to lead children to produce RC structures naturally

1.1. Participants

The piloting phase was carried out by 18 participants. They were divided into two groups; the study group and the normative group. The study group consists of 8 children aging from 4;03 to 7;07 and the normative group is made up of 10 adults aging from 18;05 to 36;10.

The second phase was the experimental stage. All children were chosen randomly from a public elementary school and a preschool with the permission of the National Education Directorate and the consent of their families. A total of 150 children (age range 2;01 to 9;08) took part in this



study. Participants were divided into 8 different age groups. The number of children was not enough for the groups containing 2 and 3-year-old children. For this reason, 15 students were involved instead of 20, in 2 and 3-year-old children's groups. All the other groups except for 2 and 3 had 20 participants.

1.2. *Data collection and processing*

The complexity of RC structures differs in terms of accessing and producing them. This study tried to juxtapose the hierarchical conditions of RC structure from more complex to less complex, regarding their accessibility. The following items are examples of the RCs in Turkish. The first line of the items represents the type of RC and its function in the clause. The second line is the example of the Turkish structure of that type. The third line is a morphological analysis of the given Turkish RC and the last line is the semantic translation of that RC. Since it is not a verbatim translation, determiners were added to the sentence which are not common in Turkish but highly used in English.

(1)

[Subject, Factive Nominal]

Kırmızı şapka-lı çocuk

Red hat-Pos. child

The boy with a red hat

(2)

[Subject, Action Nominal]

Yürü-y-en kadın

Walk-Buf.-SbjP woman

The woman who is walking

(3)

[Future Subject, Passive]

Oku-n-acak kitap-lar

read-Pass-Fut book-pl

The books which are going to be read

(4)

[Comparative, Subject]

Uzun ol-an çocuk

Tall be-SbjP child

The child who is tall

(5)

[Possessive, Factive Nominal]

Saç-ı beyaz ol-an adam

Hair-3.sg white be-SbjP man

The man whose hair is white

(6)
 [Dative, Indirect Object]
 [kendi-si-n-e] Kitap ver-diği-m oğlan
 [self-3.sg.-Buf.-Dat] book give-ObjP-1.sg boy
 The boy whom I gave a book (to)

(7)
 [Direct Object]
 Yol-da gör-düğü-m adam
 Road-Loc see- ObjP-1.sg man
 The man whom I saw on the street

(8)
 [Accusative, Indirect Object]
 Kalem-i-n-i kullan-dığı-m kız-
 Pen-3.sg.-Buf.-Acc. use- ObjP-1.sg girl
 The girl whose pen I used

(9)
 [Ablative, Agent]
 Araba-sı-n-dan in-en adam
 Car-3.sg.-Buf.-Abl. Get out-SbjP man
 The man who gets out of his car

(10)
 [Subject of Comparison]
 Kendi-si-n-den uzun ol-duğu-m çocuk
 self-3.sg.-Buf.-Abl tall be- ObjP-1.sg child
 The boy than whom I am taller.

Functions of the morphemes of the “kalemini” in depth (8) Acc.-Ind. Obj. has been on the debate by the linguists (Başdaş, 2014). This word could be analyzed morphologically in two different ways as follows;

- a. Kalem-i-n-i
 Pen-3.sg.-Buf.-Acc.
- b. Kalem-in-i
 Pen-Gen.-3.sg.

Since there is not a consensus regarding the morphological analysis of this morpheme, it will be treated as it is in the Kornfilt’s convention (1997).

Applied parts of the study were conducted in two phases. The first phase was piloting. Several pictures, regarding the related item, were presented to the participants to determine the best possible picture which serves to produce the expected answer from the participants. The pictures which did not serve our purpose were eliminated based on the answers of the piloting group. Because of the irrelevant answers, all of the pictures used in this study were revised several times for modification.



1.3. *Data analysis*

All responses were video/audio recorded and the recorded data were transcribed on a word document. Based on children's responses, all the answers were classified into four groups as follows;

A: the participant produced relevant answers.

B: the participant responded to the question with an RC structure, but this structure is not relevant to the expected answer.

C: the participant understood the scenario and question and pointed to the relevant picture, but s/he did not produce any RC constructions.

D: the participant did not understand the scenario and the prompt question.

The categories A and B are related to the production of RC structures, while C and D categories are related to the comprehension of these structures.

All codes have been gathered in an excel file. Each type of code has been calculated. Based on the number of the codes, graphics were created for each depth of RCs and each age group.

In the study, ages 2 and 3 have 15 participants in each age group. Since there are 10 different RC depths presented to participants, the expected response was 150 for each age group of 2 and 3. All the other age groups, from 4 to 9, have 20 participants in each age group. The expected response for each age group is 200. Ten adults took part in the normative group. In total, 1600 responses were recorded and analyzed throughout the whole study.

3. Findings

Concerning the comprehension and production of RCs, Figure 1. demonstrates the total responses of all age groups and adults. As was expected, as early as 2 years of age, children succeeded in understanding most of the RC structures but they did not produce any of them. The first RC production was observed at the age of 3; 04. The proportion of the expected RC production increased by age. At the age of 9, there was a decrease in the production of the expected RC structures while the production of RC structures other than expected was increased. As it is seen in Figure 1, the answers of the normative group are similar to those of age 7 and 8.

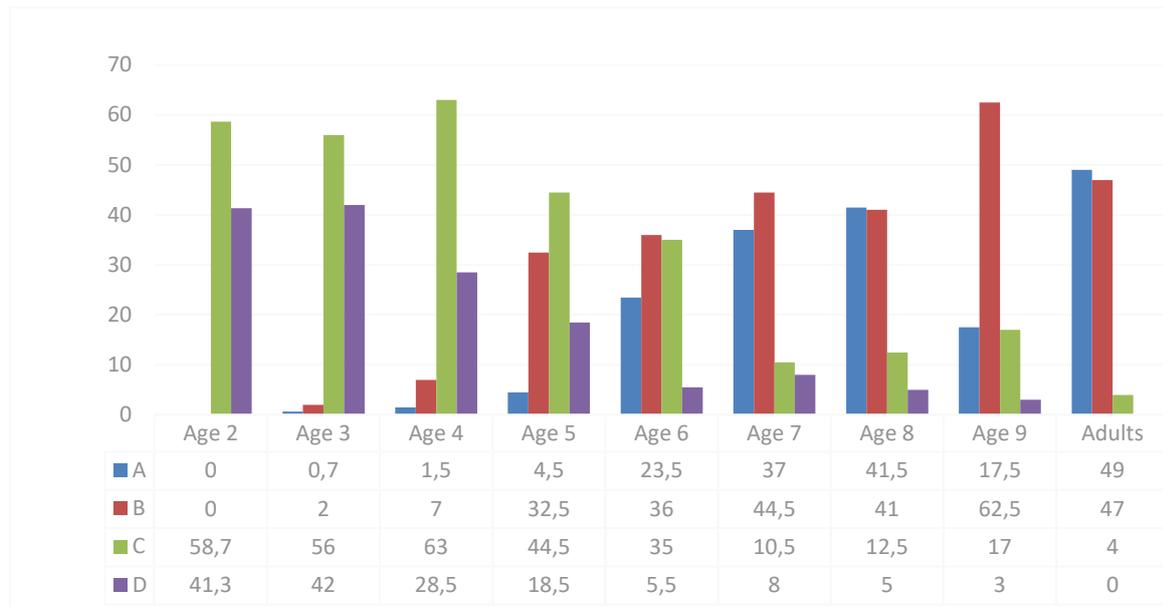


Figure 1. The distribution of all answers by all participants.

A: expected correct answer

B: answer with an RC structure other than the expected one

C: no RC production but understands the RC structure

D: no understanding.

The data reveal that 2-year-olds could listen and understand some of the RC structures, but they were not prolific in RC production. They produced simple pointing words such as; here and there, but they did not produce any RC structures.

First RC production was observed in the age of 3. Even though only one child produced an expected answer and only 3 RC structures were generated out of 150 answers, it was a starting point for children to utilize speaking skills and produce RC structures. At the age of 4, comparing the ages 2 and 3, the proportion of children who understood the RC structures increased 13% by the age of 4. Five-year-old children started to produce RCs; however, they are likely experiencing a struggle when they produce them. For example;

(5; 02 m): kitap.. şu ders yap-ma-sı adam
book.. that do-ANom-3.sg. man
(The) book that man needs to do

This answer indicated that participant (5;02 m) understood the prompt question and tried to utter a response. However, his response was not an RC structure nor a full sentence. One of the important findings emerged from depth (8) Acc. Ind. Obj. When the prompt question "Kalemimi kullandığın kız hangisi?" "Which girl is the one whose pen you used?" directed to participants none of them produced Accusative- Indirect Object RC structure; instead they produced a full sentence with no RC (5;08 f), or Subject RC (ex: 5;05 f; 5;10 m).

(5;08 f): çocuk ders çalış-ı-yor-du
child lesson study-Buf.-Pr.Prog.-Past.



(The) child was studying (her) lesson.

(5; 05 f): ödev çalışan kız

homework study-Sbj.P. girl

(The) girl who is doing (her) homework.

Participant (5;11 m) produced a minimal form of the subject RC. He said: “ver-en kız” “(the) girl who gives”. This answer is unsatisfactory in terms of semantic and syntactic features of the particular depth. The participant preferred subject RC and did not utter any indirect objects and avoided using the full structure and the indirect object together in one phrase. This answer does not make any sense without context. Since the context was given with the scenario, the participant (5;11 m) uttered the minimal phrase to answer the question.

Concerning the RC production, the age of 6 is a turning point for children, because at the age of 5, expected RC structures were recorded in 3 depths, but for the age of 6, expected RC structures were recorded for all 10 depths.

There were no significant differences between ages 7 and 8. All of the depths were produced except for the depth (3) Fut. Pas. RC structure. When pilot studying was held, this depth had the lowest proportion of production by adults (3 out of 10). The usage of this depth seems to be uncommon.

Even though the proportion of RC production increased with age, there is a sudden decrease (24.5%) in the proportion of the production of the expected structures by the age of 9. They responded almost all the questions and produced a number of sentences; however, the proportion of the expected RC structure was quite low (17.5%). Some of the participants produced several sentences instead of producing the expected RC structure. Some of the participants preferred to produce an easier way of expressing the same meaning and produced subject participle instead of object participle.

3.1. *Distribution of Comprehension and Production of RCs*

Comprehension and production of RC structures require cognitive maturity and knowledge. Children differ in terms of acquiring the RC structures. Not all children comprehend or produce RC structures at the same time. Therefore, revealing the sequence of comprehension and production of RC structures may unveil the hierarchical order of the RC structures in the language development process.

The RC structures are placed in the table based on the responses of the participants. Table 1 demonstrates the distribution of the acquisition of RC structures, whereas Table 2 demonstrates the distribution of the production of RC structures in each age group. The percentages of the acquisition were calculated together with all expected answers, relevant RC productions and any responses that indicate an understanding of the particular depth. The calculations of the percentage of the acquisition and production of the depths were held for each age and each depth; henceforth every depth is juxtaposed in the table from the highest to lowest percentage of acquisition and production. If the percentages are the same, the aforementioned sequence is kept in the table.

Table 1

Distribution of the Acquisition of RC Structures in Each Age Group

order/ ages	1	2	3	4	5	6	7	8	9	10
2	Sbj.Fac.Nom	Sbj.Act. Nom	Abl. Agent	Comp. Sbj.	Dir. Obj.	Poss.Fac.Nom	Acc.Ind.Obj.	Fut.Sbj. Pas	Dat.Ind. Obj.	Sbj. of Comps.
	100%	93.3%	80%	73%	66.7%	46.7%	46.7%	40%	40%	0%
3	Sbj.Fac. Nom	Sbj.Act. Nom	Fut.Sbj. Pas	Comp. Sbj.	Abl. Agent	Poss.Fac.Nom	Acc.Ind.Obj	Dir. Obj.	Dat.Ind. Obj.	Sbj. of Comps
	93.3%	86.7%	86.7%	80%	73.3%	40%	40%	33.3%	20%	20%
4	Sbj.Fac. Nom	Abl. Agent	Sbj.Act. Nom	Fut.Sbj. Pas	Comp. Sbj.	Poss.Fac.Nom.	Acc.Ind. Obj	.Dat.Ind. Obj.	Dir. Obj.	Sbj. of Comps
	100%	100%	95%	95%	80%	60%	55%	50%	45%	30%
5	Sbj.Fac. Nom	Sbj.Act. Nom	Fut.Sbj. Pas	Poss.Fac.Nom	Abl. Agent	Comp. Sbj.	Acc.Ind.Obj.	Dir. Obj.	Sbj. of Comps.	Dat.Ind.Obj.
	100%	100%	100%	100%	100%	85%	70%	70%	55%	35%
6	Sbj.Act. Nom.	Fut.Sbj. Pas	Sbj. Fac. Nom	Comp. Sbj.	Poss.Fac.Nom	Acc.Ind. Obj.	Sbj. of Comps.	Dat.Ind. Obj.	Dir. Obj.	Abl. Agent
	100%	100%	95%	95%	95%	95%	95%	90%	90%	90%
7	Sbj.Fac. Nom	Sbj.Act. Nom	Fut.Sbj. Pas	Comp. Sbj.	Poss.Fac.Nom	Abl. Agent	Sbj. of Comps.	Dir. Obj.	Acc.Ind. Obj	Dat.Ind Obj.
	100%	100%	100%	100%	100%	100%	90%	80%	80%	70%
8	Sbj.Fac. Nom	Sbj.Act. Nom	Fut.Sbj. Pas	Comp. Sbj.	Poss.Fac.Nom	Abl. Agent	Acc. Ind. Obj.	Sbj. of Comps.	Dat.Ind. Obj	Dir. Obj.
	100%	100%	100%	100%	100%	100%	90%	90%	85%	85%
9	Sbj.Fac. Nom	Sbj.Act. Nom	Fut.Sbj. Pas	Comp. Sbj.	Poss.Fac.Nom	Abl. Agent	Dir. Obj.	Acc.Ind. Obj.	Sbj. of Comps.	Dat.Ind.Obj.
	100%	100%	100%	100%	100%	100%	95%	95%	95%	85%



Table 2

Distribution of the Proportion of the Production of Expected RC Structures in Each Age Group

Order / ages	1	2	3	4	5	6	7	8	9	10
2	Sbj.Fac. Nom	Sbj.Act. Nom	Fut.Sbj. Pas	Comp. Sbj.	Poss.Fac.Nom	Dat.Ind. Obj.	Dir. Obj.	Acc.Ind.Obj.	Abl. Agent	Sbj. of Comps.
	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
3	Sbj.Fac. Nom	Sbj.Act. Nom	Fut.Sbj. Pas	Comp. Sbj.	Poss.Fac.Nom	Dat.Ind. Obj.	Dir. Obj.	Acc.Ind.Obj.	Abl. Agent	Sbj. of Comps.
	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4	Sbj. of Comps.	Comp. Sbj.	Sbj.Fac. Nom	Sbj.Act. Nom	Fut.Sbj. Pas	Poss.Fac.Nom	Dat.Ind. Obj.	Dir. Obj.	Acc.Ind.Obj.	Abl. Agent
	10%	5%	0%	0%	0%	0%	0%	0%	0%	0%
5	Comp. Sbj.	Sbj.Fac. Nom	Abl. Agent	Sbj.Act. Nom	Fut.Sbj. Pas	Poss.Fac.Nom	Dat.Ind. Obj.	Dir. Obj.	Acc.Ind.Obj.	Sbj. of Comps.
	25%	10%	10%	0%	0%	0%	0%	0%	0%	0%
6	Sbj. of Comps.	Poss.Fac.Nom	Comp. Sbj.	Abl. Agent	Dat.Ind. Obj.	Sbj.Fac. Nom	Sbj.Act. Nom	Dir. Obj.	Acc.Ind.Obj.	Fut.Sbj. Pas
	60%	45%	30%	30%	25%	10%	10%	10%	10%	5%
7	Poss.Fac.Nom	Sbj.Fac. Nom	Comp. Sbj.	Abl. Agent	Sbj.Act. Nom	Sbj. of Comps.	Dat.Ind. Obj.	Fut.Sbj. Pas	Dir. Obj.	Acc.Ind.Obj.
	65%	60%	60%	50%	40%	40%	25%	20%	10%	0%
8	Comp. Sbj.	Poss.Fac.Nom	Sbj.Act. Nom	Abl. Agent	Sbj.Fac. Nom	Sbj. of Comps.	Dir. Obj.	Dat.Ind. Obj.	Acc.Ind.Obj.	Fut.Sbj. Pas
	70%	70%	65%	60%	55%	35%	30%	15%	15%	0%
9	Abl. Agent	Sbj.Fac. Nom	Sbj. of Comp.	Sbj.Act. Nom	Dat.Ind. Obj.	Poss. Fac. Nom	Comp. Sbj.	Acc.Ind. Obj.	Fut.Sbj. Pas	Dir. Obj.
	55%	40%	25%	20%	15%	10%	5%	5%	0%	0%



As it is shown in Table 1, the acquisition of RC starts as early as 2-year-olds. This is the youngest age in the study. Even though the proportion is low, the acquisition of RC structures was observed for all of the depths at the age of 3. Comparing the age 3, there is a notable increase in the proportion of acquisition of RC structure for each depth at the age of 4. Considering the proportion of acquisition, there is no striking difference between the ages of henceforth. In each age group from 5 to 9-year-olds, almost all children displayed an understanding of the prompt question.

As seen in Table 2, there is no production of any expected RCs at the ages of 2 and 3. Although the proportion of RC production is low, the first expected RC production was recorded at the age of 4. Out of 20 participants, only two 4-year-olds produced expected RCs. There is a sharp increase at the age of 6. All depths are produced by at least one 6-year-old child. At the age of 7 and 8, the proportions of the production of RCs were almost stabilized. There is an unexpected decrease at the age of 9. This decrease was observed at each RC structures.

4. Conclusion

Language development and cognitive development can be predicted from language production (Ramirez, Lieberman, Mayberry, 2012). However, all the phases of this development do not emerge exactly at the same time. The results of this study indicate that the monolingual Turkish speaking children can understand the RCs; however, they cannot produce RC structures as expected. The first production of RC structures is observed at the age of 3 and it is increased with the age and at the age of 6 children show similar patterns to adults. There were no significant differences between 6 to 8-year-olds. Until the age of 6, the number of expected RC structures was only 13 in total. At the age of 6, this number increased sharply and 47 expected RC structures were produced by this age group. This sudden increase suggests interesting insight into their abilities related to their cognitive and language development. At the age of 6, participants produced expected RC structures from every depth which shows that children have enough knowledge regarding the production of RC structures around this age and the proportion of the answers was almost the same at the ages 7 and 8.

The most interesting outcome of this study is that there is a decrease in the production of RC structures at the age of 9. Unlike the increase in the production of RC structure at the younger ages, there is a decrease in the production of the expected RC structure by 9-year-olds. It seems that 9-year-olds are experiencing a transition phase related to their cognitive and language development. Berman and Slobin (1994) claim that regarding language production 9-year-olds are maintaining a bridge between 5-years and adults. Sometimes they fall behind the 6 and 7-year-old children in terms of expected RC structures. Piaget (1954) identifies developmental stages and categorizes 9-years-old children in the concrete operation stages which is between 7 and 11 years. Özcan (2005) proposes that during this

transitional period children develop organized and rational thinking and their responses are not homogeneous. They may have marks from logical thoughts but they may not use these thoughts.

The result of this study is consistent with the previous studies that children at early age can produce subject RC structures easier than object RCs. It was observed that when children answer the prompt questions, they prefer to produce an easier form of the expected RC, or they produce syntactically different but functionally similar responses such as the minimal form of the particular depth.

The most complex RC structure differs in the age groups. Regarding comprehension, all adults comprehended all the depths. For the ages 2 and 4 the depth (10) Subj. of Comps., for the age 3 the dept (6) Dat. Ind. Obj. and the depth (10) Subj. of Comps., for the ages 5, 7 and 9 the dept (6) Dat. Ind. Obj., for the age 6 the dept (6) Dat. Ind. Obj., the depth (7) Dir. Obj and the depth (9) Abl. Agent, and for the age 8 (10) Subj. of Comps., for the ages 5, 7 and 9 the dept (6) Dat. Ind. Obj., for the age 6 the dept (6) Dat. Ind. Obj. and the depth (7) Dir. Obj. are the most complex structures for children to comprehend.

The developmental process does not have sharp changes. "There is a continuum in that the improvement is incremental with increasing age (Özcan, 2018, p: 1498). The study shows that the acquisition and production of RC structures are not an easy process for children; rather it is a developmental process and requires cognitive maturity and knowledge.

This research determines the Turkish monolingual children's accessibility of RCs. Based on the results of the study, Turkish lessons might be rectified and the curriculum of the lessons might include teaching usage of the RC structures which children are ready to achieve. Moreover, the findings could be applied to English lessons to teach these structures. Children's current cognitive level of understanding the depth of RC could be taken into consideration. It is observed that at the age of 9 there is a sharp decrease regarding the RC production. The reason behind this decrease should be investigated in further studies.

References

- Altınkamış, F. & Altan, A., (2016). A usage-based approach into the acquisition of relative clauses in Turkish. *Dilbilim Araştırmaları Dergisi*, 1, 69-91. Retrieved from <http://dad.boun.edu.tr/download/article-file/224728>
- Başdaş, C. (2014). Türkçede üçüncü şahıs iyelik eki ve zamir n'si. *The Journal of Academic Social Science Studies*, 30, 147-161.
- Berman, R. & Slobin, D. (1994). *Relating Events in Narrative*. New York: Psychology Press. doi:10.4324/9780203773512
- Brandt, S., Kidd, E., Lieven, E. & Tomasello, M. (2009). The discourse bases of relativization: An investigation of young German and English-speaking children's comprehension of relative clauses. *Cognitive Linguistics*, 20 (3), 539-570 doi:10.1515/COGL.2009.024



- Bulut, T. (2012). *Processing asymmetry in Turkish subject and object relative clauses*. (Unpublished Master's thesis). Hacettepe University, Ankara. Retrieved from: <https://tez.yok.gov.tr/UlusalTezMerkezi> no:314983
- Cagri, I. (2009) Arguing against subject incorporation in Turkish relative clauses. *Lingua*, 119, 359–373. doi:10.1016/j.lingua.2007.10.019
- de Viries, M. (2013). *Relative clauses*. New York, NY: Oxford.
- Diessel, H. & Tomasello, M. (2005). A new look at the acquisition of relative clauses. *Linguistic Society of America*, 81(4), 882-906 doi:1353/lan.2005.0169
- Keenan, E. L. & Comrie, B. (1977). Noun phrase accessibility and universal grammar. *Linguistic inquiry*, 8(1), 63–99. Retrieved from <http://lingo.stanford.edu/sag/L222B/papers/KeenanComrie.pdf> 28.03.2020
- Ketrez, N. (2007). Revisiting the Turkish Relatives. *Journal of Turkish Linguistics*.1, 1-22 Retrieved from: https://www.academia.edu/5171891/Journal_of_Turkish_Linguistics_FU_LL_Vol_1_Number_1_September_2007?auto=download 16.03.2020
- Kırkıcı, B. (2004). The processing of relative clause attachment ambiguities in Turkish. *Turkic Languages*, 8, 1-11 Retrieved from: http://turkoloji.cu.edu.tr/DILBILIM/bilal_kirkici_relative_clause.pdf
- Kornfilt, J. (1997). *Turkish*. New York, NY: Roulledge
- Kornfilt, J., Yağmur, K., Hermon, G., Öztürk. Ö. & Yalnız, Y. (2012). Relative clauses in the L1-acquisition of Turkish; in the Szeged Conference: *Proceedings of ICTL 15*, É. Kincses-Nagy & M. Biacsí (Eds.); Studia Uralo-Altaica; Szeged: University of Szeged; 291-301.
- Larson, R. & Takahashi, N. (2002). Order & interpretation in prenominal relative clauses. *Paper presented at the 2002 annual meeting of the linguistic society of America*. San Francisco, CA Retrieved from: <https://semlab5.sbs.sunysb.edu/~rlarson/waf12.pdf>
- Özcan, M. (2005). *The emergence of temporal elements in narrative units produced by children from 3 to 9 plus 13*. (Unpublished dissertation). ODTU. Ankara.
- Özcan, M. (2018). Developmental differences in the construction of concepts by children from 3 to 14-year-olds: perception, language and instruction. *International Journal of Cognitive and Language Sciences*, 12(10),1490-1499
- Paluluoğlu, N. Ş. (2017). Syntactic processing differences and the effects of memory-load interference for object relative and subject relative clauses in Turkish. (Unpublished dissertation). University of Yeditepe, İstanbul Retrieved from <https://tez.yok.gov.tr/UlusalTezMerkezi>
- Piaget, J. (1954). *The construction of reality in the child*. New York: Basic Books. doi:10.1037/11168-000
- Ramirez, N. F., Lieberman, A. M. & Mayberry, R. (2013). The initial stages of first-language acquisition begun in adolescence: when late looks early. *Journal of Child Language*, 40, 391-414.

doi:10.1017/S0305000911000535

- Sarılar, A., & Küntay, A. C. (2011). Do young learners pick up relative clause constructions in referential communication? a training study. In E. Erguvanlı-Taylan & B. Rona (Eds.), *Puzzles of language: Essays in honour of Karl Zimmer*. (1-16). Wiesbaden: Harrassowitz Verlag.
- Sheldon, A. (1974). On the role of parallel function in the acquisition of relative clauses in English. *Journal of Verbal Learning and Verbal Behavior*, 13, 272-81. doi:10.1016/S0022-5371(74)80064-2
- Slobin, D. I. & Bever, T. G., (1982). Children use canonical sentence schemas: A crosslinguistic study of word order and inflections. *Cognition*, 12, 229-265. doi:10.1016/0010-0277(82)90033-6
- Slobin, D. I. (1986). The acquisition and use of relative clauses in Turkic and Indo-European languages. In D. I. Slobin & K. Zimmer (Eds.), *Typological studies in language, studies in Turkish linguistics*, 8, 273-294. Amsterdam/Philadelphia, PA: John Benjamins.