THE ACQUISITION OF PRINCIPLE A OF THE BINDING THEORY BY TURKISH-SPEAKING PRESCHOOL CHILDREN

Esra Ölçal

Hacettepe University Graduate School of Social Sciences
Department of English Linguistics

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_____

Doç. Dr. Aymil DOĞAN (Başkan)

_____

Prof. Dr. Nalan BÜYÜKKANTARCIOĞLU (Danışman)

_____

Doç. Dr. Işıl ÖZYILDIRIM

_____

Yar. Doç. Dr. Emine YARAR

_____

Öğr. Gör. Dr. Zeynep DOYURAN

Yukarıdaki imzaların adı geçen öğretim üyelerine ait olduğunu onaylarım.

Prof. Dr. İrfan ÇAKIN
Enstitü Müdürü

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ABSTRACT

ÖLÇAL, Esra. *The Acquisition of Principle A of The Binding Theory by Turkish-speaking Preschool Children,* Master's Thesis, Ankara, 2009.

The concepts of locality and the antecedent possibilities for reflexives are relevant to the Government and Binding Theory (Chomsky 1981). The universal Principle A of GB constitutes a major component of adult syntactic knowledge. Principle A governs the binding properties of reciprocals as well as reflexives. Therefore, research on the development of both reflexive and reciprocal within Principle A is essential to the study of language acquisition. In this sense, the purpose of this research is to seek the acquisition of semantic distinction of reflexives and reciprocals and the access to Principle A during the acquisition of reflexives.

Research subjects were 60 Turkish-speaking preschool children ranging between the ages 4 and 6. Picture-identification tasks were used for data collection throughout three experiments. The test sentences were formed with syntactically simple and complex structures. The collected data were analyzed by means of percentage analyses and statistical analyses.

The research reports that children acquire the semantic knowledge of reciprocals quite earlier than reflexives. Moreover, beginning from the age 5, children know that reflexive must locally c-command its antecedent, and they interpret both the bare form "kendi" and the inflected form "kendisi" of the third person singular reflexive involved in simple structures in the extent of Principle A . However, the complexity of the syntactic structure may mislead them to violate Principle A. Beginning from the age 6, their obedience to Principle A increases in the case of the bare form of reflexive in contrast to with the case of the inflected form.

The research also compares its results with the results of other studies conducted on first language acquisition in the context of Binding Theory.

Key Words: Language acquisition, Binding Theory, reflexive, reciprocal.

ÖZET

ÖLÇAL, Esra. *Bağlama Kuramı'nın A İlkesi'nin Türkçe'de Edinimi,* Yüksek Lisans Tezi, Ankara, 2009.

Yerellik kavramı ve dönüşlü gönderge için öncül olasılıkları, Yönetme ve Bağlama Kuramı kapsamında açıklanmaktadır (Chomsky, 1981). Bu kuramın A ilkesi, yetişkinlerin sahip olduğu sözdizimsel bilginin temel bir parçasını oluşturmaktadır. A İlkesi dönüşlü göndergelerin olduğu gibi işteş göndergelerin de bağlama özelliklerini açıklamaktadır. Bundan dolayı, A İlkesi bağlamında dönüşlü ve işteş göndergelerin gelişiminin incelenmesi, dil edinim çalışmaları için gereklilik arzetmektedir. Bu doğrultuda, bu çalışma dönüşlü ve işteş göndergeler arasındaki anlamsal farkın edinimini ve dönüşlü göndergelerin edinimi sırasında A İlkesine bağlılığı incelemektedir.

Araştırma 4-6 yaşlarında anadili Türkçe olan çocukların katılımıyla gerçekleştirilmiştir. Veriler, yürütülen 3 deney boyunca resim-tanılama metoduyla toplanmıştır. Çalışmalarda basit ve birleşik tümceler kullanılmıştır. Toplanan veriler yüzde analizleri ve istatistiksel analizler yoluyla değerlendirilmiştir.

Çalışmada ulaşılan bulgular, çocukların işteş göndergelerin anlamsal bilgisini dönüşlü göndergeninkine göre daha erken edindiklerini göstermektedir. Bunun yanında, çocukların 5 yaşından itibaren dönüşlü göndergenin öncülünü yerel bağlamda k-buyurması gerektiği bilgisine sahip oldukları ortaya çıkmıştır. Dönüşlü göndergenin çekimli "kendisi" ve çekimsiz "kendi" formlarının basit tümce yapılarında Bağlama Kuramının A İlkesine uygun olarak yorumlandığı, ancak birleşik tümce yapılarının A ilkesinin ihlaline neden olabildiği saptanmıştır. Ayrıca, 6 yaşından itibaren çekimsiz dönüşlünün algılanmasında A İlkesine bağlılık artarken çekimli dönüşlünün algılanmasında A ilkesinin ihlalinin arttığı ortaya çıkmıştır.

Bu araştırmada elde edilen sonuçlar, Bağlama Kuramı çerçevesinde dil edinimini inceleyen diğer araştırmaların sonuçlarıyla karşılaştırılmıştır.

Anahtar Kelimeler: dil edinimi, Bağlama Kuramı, dönüşlü gönderge, işteş gönderge

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CHAPTER 1

INTRODUCTION

1.1 CLEARING THE GROUNDS

As a matter of fact, one of the most complex skills that any person would acquire is language. Notwithstanding its complexity, the acquisition of language by every healthy human being with a surprising speed and without overt instruction indicates that human species is capable of acquiring any language by means of the distinguishing feature of human mind. Because of the impossibility of any explicit examination of the human mind, implicit ways to understand how human mind works during the process of language acquisition have been regarded as important by philosophers, psychologists and linguists. The researches have made apparent that children achieve mastery of this rich and complex system at a very young age without effort, given that the linguistic input children are exposed to is impoverished and degenerate. Further, children receive no direct evidence from the environment to judge the ungrammaticality of sentences in the language. The question of how children arrive at adult grammar in spite of these difficulties, which is sometimes referred to as “Plato’s problem” or “logical problem of language acquisition”, has been one of the main concerns of linguistic theory for decades, especially with the introduction of generative grammar. In order to account for the rapid acquisition of native language, linguistic theory postulates the assumption that human beings are innately endowed with universal principles of language, i.e. Universal Grammar (UG).

Being a theory of knowledge, UG concerns the internal structure of the human mind. It attempts to integrate human mind and grammatical principles in the process of language acquisition. UG consists of a certain number of abstract principles and parameters which constrain the form and functioning of grammars. In Cook’s words, “the speaker knows a set of principles that apply to

all languages, and parameters that vary within clearly defined limits from one language to another" (1988:1-2).

Binding Theory, a subsystem of UG, deals with the referential properties of noun phrases, and it is assumed that the principles of the Binding Theory are universal, with parametric variation. In terms of children's language development, then, it is expected that children will show command of the Binding Theory as soon as they have learned the lexical properties of anaphors, pronouns and R-expressions. This is because the Binding Theory is assumed to be part of the innate endowment that the child brings to the language acquisition task. Therefore, acquisition of binding principles has been a central topic of investigation in linguistic theory and language acquisition theories to account for the logical problem of language acquisition. Among the studies that investigate the existence of knowledge explained within the scope of the Binding Theory, some studies have confirmed the assumption that children obey the conditions of principles as long as they know the relevant lexical unit; however, others have found that children still violate binding principles even after they have mastered these lexical items. In particular, a number of studies designed to test children's knowledge of reflexives and pronominals concluded that children had knowledge of Principle A, but not B though those lexical items had been grasped. Besides, several studies testing the knowledge of reflexives within Principle A indicated that children needed some other knowledge of language rather than that of lexical items to be able to make the coreference relation of reflexives with their antecedents in existence of syntactically complex structures. In the light of these researches, which were pursued on languages other than English, it has been claimed that the interpretation of referential expressions for all languages may not be accounted for by the Binding Principles through the course of language acquisition. This is because the Binding Theory states only syntactic conditions under which an anaphor can be co-indexed with a c-commanding antecedent within a local domain regardless of the nature of the antecedent. However, in several languages, including Turkish, the choice of antecedent among several possible ones is primarily of a

pragmatic nature and the binding of anaphors in those languages may not be subject to the c-command condition at all. As a result, Binding Principles may not be universal across all languages.

As there are considerable variations between different languages, the Turkish language differs from the English language in terms of the binding of anaphors in some cases. Within the scope of binding requirements of anaphors, that is the importance of c-commanding antecedent and the locality condition of reflexive and reciprocal anaphors, English and Turkish are similar in binding. However, in the cases where third person singular reflexive in its inflected form “kendisi” occurs, Turkish allows this type of reflexive being bound by a non-local antecedent, namely long-distance binding. On this account, English and Turkish differ in that Turkish allows the least restrictive domain (long-distance binding), whereas English has the most restrictive domain (local binding).

Accordingly, the researches conducted in order to explore the developmental phases of these principles in English-speaking children’s grammar reveal that the interpretation of anaphors during the acquisition of English is compatible with the requirements of Binding Principles. Even though it has been postulated that Turkish differs from English in application of Binding Principles, no researches have been carried out to account for Turkish-speaking children’s knowledge on binding of anaphors, pronominals and R-expressions.

1.2. STATEMENT OF THE PROBLEM

Many studies have tested how children acquire the principles of the Binding Theory. The order in which the three principles are acquired and the strategies that guide children in finding a domain corresponding to a certain referring expression have been studied extensively. As a result, the basic finding of the experiments on these units is that children acquire the knowledge of conditions which are explained by Principle A earlier than the knowledge of those which are claimed by Principle B and C of the Binding Theory. The conclusions

obtained from the studies that compares the knowledge of children considering Principle A and B are still controversial, though. Opposing the basic finding, some researchers claim that reflexive and pronominal systems, which are governed by Principle A and B respectively, are mastered very early and approximately around the same age. On the other hand, others conclude that they are acquired very gradually and that they are not grasped until a very late age. The principal reason for the contradiction is that the researchers have examined different properties of these systems. That is, examining the syntactic aspects of Binding Theory in respect of developmental process of language, proponents of Universal Grammar tend to assume early mastery of both systems, relying on the central claim that grammatical knowledge is innate. On the other hand, researchers considering the semantic and pragmatic properties of referring expressions through the acquisition process postulate relatively late mastery of these systems. Moreover, the studies pursued on languages that allow long-distance binding, as opposed to the postulations presented in Binding Principles, lead to the view of late mastery of Principles. Even though many studies have been conducted to search the development of three principles in children's languages, some units have not been paid necessary attention sufficiently. In other words, while all distinctive properties of reflexives have been searched in child grammar, especially in some languages, in order to test the efficiency of Principle A, reciprocals have not been considered so far, which are also explained by Principle A. Assessing the knowledge of children on reciprocals may contribute to the researches and may lead the researchers to new approaches.

Despite the abundance of the studies conducted to search the children's acquisition of the Principles of the Binding Theory in many languages, no research has been conducted to reveal the acquisition of the Binding Principles by Turkish-speaking children before. Moreover, the effect of the semantic difference between reflexive and reciprocal anaphors onto the application of Principle A has not ever been considered within the scopes of the studies before.

1.3. PURPOSE OF THE STUDY

This is an experimental study which aims to examine the acquisition of Turkish reflexive and reciprocal anaphors by Turkish-speaking preschool children ranging between the ages 4 and 6. It will explore the Binding Theory and its relationship to the processes of first language acquisition cases. In particular, it will deal with Principle A of the Binding Theory, as realized and postulated by Chomsky (1981, 1982, 1986) and its efficiency in the explication of Turkish reflexive and reciprocal through the course of language acquisition. It will investigate the knowledge of anaphors among the children at the age of 4, 5 and 6, considering the conditions claimed in Principle A in order to observe if the Binding Principle can effectively account for the properties of Turkish anaphors. Moreover, whether there is a developmental difference in children's knowledge at different ages will be explored. To illustrate more clearly, the study will investigate whether children can distinguish reflexive anaphor semantically from reciprocal both in simple and complex sentences. In addition, it will explore whether children have access to the knowledge of local c-command condition for reflexives when more than one possible antecedent occur. Besides, the interpretation of third person singular reflexive with its bare form "kendi" and inflected form "kendisi" will be examined in order to discover if both of them are comprehended in the same way by the children and if their interpretation construes the postulations of Turkish language researchers.

1.4. HYPOTHESES

The first general hypothesis in all the other studies depends on the assumption that the Binding Principles are a part of innate endowment, and that children, thus, obey these principles as soon as they learn the lexical properties of anaphors, pronominals and R-expressions. If this assumption is accepted, it is expected that children will be able to perform perfectly with respect to sentences involving these units as soon as they learn the lexicon. However, it is

predicted that even if children know the lexical properties of anaphors, they may not obey the conditions claimed in Principle A.

Another general hypothesis is based on the assumption that the Binding Principles are universal. If this assumption is accepted, it is expected that they can account for the binding properties of referential expressions across languages; and hence, that children who speak different languages, will display similar developmental curves. However, it is predicted that the performance of Turkish-speaking children will distinctively be different from the performance of English-speaking children because Turkish allows long-distance binding in contrast to English. As a result, the performance of Turkish-speaking children on anaphors is predicted to be similar to that of children speaking languages which also allow long-distance binding.

In Experiment One and Two, the hypothesis depends on the knowledge of children on semantics and lexical properties of reflexive and reciprocal in Turkish. The studies that examine the knowledge of reflexives indicate that children perform quite well in selecting local antecedent for reflexives in comparison to pronominals, beginning from the age of nearly 5:7 (Wexler&Chien 1985). On the basis of the claim that children will show the command of binding principles as soon as they grasp the properties of referential expressions, it is expected that children know the lexical and semantic properties of reflexives beginning from the age of 5:7. As the semantic and lexical properties of reflexive and reciprocal are concerned, it is predicted in Experiment One and Two that they do not grasp this knowledge as early as 5:7 because they tend to misinterpret reflexive as reciprocal until a later period of age; and that they grasp the semantic knowledge of reciprocals much earlier than that of reflexives.

In Experiment Three, the hypothesis depends on the notion of c-command, namely, the coreferentiality between the reflexive anaphor and its antecedent. Chomsky (1982) describes the binding condition of a reflexive anaphor in the

framework of Principle A of the Binding Theory in the way that an anaphor is bound within its governing category. If the assumption that Binding Principles is brought to the language acquisition task innately, it is expected that children will be able to distinguish between the right antecedent for reflexive anaphor in a given sentence at certain age, whenever they have acquired the lexical properties of the reflexive. However, it is predicted that children may not obey Principle A even if they know the lexical properties of the reflexive. Moreover, if the reflexive anaphor is presented within a simple sentence, beginning from an early age, children will obey the condition explained in Principle A by allowing the reflexive to be bound by the local antecedent even if a potential antecedent appears in the context. As for complex sentences, it is predicted that children will not obey Principle A as much as they do in simple sentences, by allowing the nonlocal antecedent to bind the reflexive anaphor. Another hypothesis for these experiments is that in the existence of inflected form “kendisi” of third person singular reflexive, children’s performance on local antecedent selection will be lowered, compared to their performance with the bare form of the reflexive.

1.5. RESEARCH QUESTIONS

This study will attempt to find answers to the following questions:

1. Are Turkish speaking-preschool children aware of the semantic differences between reflexive anaphors and reciprocal anaphors as they appear both in simple and complex structures?

2. Is there a priority of either anaphor in terms of acquisition of their lexical and semantic properties?

3. Do Turkish-speaking preschool children have the knowledge of what is claimed in the context of Principle A of the Binding Theory; and are they able to interpret anaphors as postulated in this Principle?

4. Do children have the notion of local c-command within the Principle A framework; and are they able to apply the right co-indexation to reflexive anaphors both in simple and complex structures?

5. Is there a difference in children's interpretation of the third person singular reflexive forms "kendi" and "kendisi"? If so, do they interpret "kendisi" as an anaphor or as a pronominal?

6. Is there a significant developmental change in children's performance in terms of both the semantic interpretation of anaphors and the awareness of local c-command condition between the ages of 4 and 6?

1.6. LIMITATIONS OF THE STUDY

This study was designed in order to explore the efficiency of the Binding Principles in the explication of Turkish-speaking children's knowledge of reflexive and reciprocal anaphors. The study was conducted with the participation of 60 preschool children-speakers of the Turkish language, ranging between the ages 4 and 6. Each group consisted of equal number of children. The children were selected from the same kindergarten, which is located in a district where middle or high income families inhabit, with the purpose that the children must have almost the same socio-economic background. Further, children were selected in regard to only their high performance in the pre-test activities, which tested children's capability of correct interpretation of verbs, subject constructions and syntactic structures used in the experiments. Otherwise, it would have been impossible to determine the reason of their possible low performance in the experiments. Moreover, the findings obtained from the children's performance on the target anaphors were not put into comparison with the performance of adults or children who are different in their background. Since the scope of the study was restricted only with the applicability of Principle A into the Turkish language, the knowledge of reflexive anaphors was not compared with the knowledge of pronominals, which is explained within Principle B, as many other studies did.

CHAPTER 2

LITERATURE REVIEW

2.1. LOGICAL PROBLEM OF LANGUAGE ACQUISITION

First language acquisition has been an intensely studied area of many fields in recent years, with its origin dating back to ancient times. Not only linguists but psychologists and philosophers have taken an interest in studying the acquisition and the systematic development of human language. Despite the diversity of approaches and theories, it is the commonly-held view by all the theorists that first language acquisition is a complex process with two aspects: all children acquire a semiotic system which is a characteristic of human species (human language), while acquiring a particular language that surrounds them (native language). What is to say, in the one hand, children's main task is to relate the forms and functions of language, regardless of their particular language. On the other hand, some aspects of this process are variable across languages. Many different theories have attempted to explain how children acquire this complex system; however, explaining child language acquisition still remains a problem.

One of the most challenging problems a theory of language acquisition faces is to provide a sensible clarification to the question of how children acquire the complex system of their language rapidly, given that the linguistic input, i.e. their linguistic experience, is limited. It is apparent that the process by which children acquire language by means of minimal input, and the emerging output are quite remarkable. The input to children consists of finite number of sample sentences generated by the finite number of rules, and children have to deduce generalizations from the finite sentence samples to produce infinite number of sentences. These sample sentences are, however, imperfect in that they consist of performance errors such as slips of tongue, false starts, etc, or syntactic and semantic ambiguity. More challengingly, finite input is consistent

with infinite number of hypothetical languages (Hendriks, n.d.). For all that, not only must children hypothesize to elicit and generalize the rules of the grammar of their language, but constrain their generalizations properly from these inadequate and degenerate sample sentences. What makes this task extremely difficult is that the input does not provide sufficient information to make children know what the exactly correct hypotheses are. In this case, children may be guided with more sample sentences of the language, that is positive evidence, they are learning. To account for the deficiency of such guide, Hendriks (n.d.) speculates that “positive evidence does not reduce the set of hypothetical languages to the correct one in all cases. If the target language is the subset of hypothetical language the child entertains, no amount of positive evidence will lead the child to conclude that the adopted hypothesis is incorrect.” Likewise, corrections provided by parents, i.e. negative evidence, do not contribute to the deduction of correct hypothesis since they are not very frequent and systematic.

All in all, the “stimulus” (input) is too poor to derive all the information about the grammar of a language. After all, despite the poverty of stimulus, children achieve mastery of this complex rule system at a very young age effortlessly, and they make a rapid progress in the absence of certain kinds of evidence indicating whether their deductions and the generalizations are correct.

The gap between available input and the eventual knowledge of language has been called “the logical problem of language acquisition”, and has drawn much attention in linguistic theory. Chomsky (1987) addresses this issue as “Plato’s Problem” inquiring “How do we come to have such rich and specific knowledge, or such intricate systems of belief and understanding, when the evidence available to us is so meager?” (cited in Kim 1993:11). Several theories have strived to demonstrate “the logical problem of language acquisition” with extremely contrasting views, illuminating the initial state and development of language in their own scope.

2.2. THEORIES OF LANGUAGE ACQUISITION

All healthy children learn to speak rapidly, following much the same pattern of development. Theories, however, are exceptionally dissimilar to clarify the prerequisite for language acquisition and developmental change during this process. More precisely, the demonstration of what essential quality of human mind enables children to learn such complex system rapidly with no effort is the main contradiction of the theories, seeking explanations for the initial state of the acquisition process. Further, the attempts to explicate the way how this essential quality directs the construction of language display the other disagreement among the theories.

The inquiry of whether a biological endowment attributed to children at birth exists constitutes the main discussion among theories. Two of the theories, the behaviorist and nativist theories, are diametrically opposed to each other. The behaviorist theories reject the existence of any faculty specialized for language acquisition, postulating that general principles of learning among similar environments give way to all kinds of learning; therefore, language is learned in the same way as any other behaviour is learned. In sharp contrast, nativist theories holds the view that children are born with an innate ability to acquire languages, and that children acquire languages using principles unique to language learning. In other words, behaviorist theories assume the existence of principles applicable to all types of learning whereas nativist theories put forth the actuality of principles that are used merely for language learning.

The chief notion of behaviorist theories is that studying mind is not scientific since mental processes are unobservable. Behaviorism studies only overt observable actions, appraising the correlations between environmental stimuli and behavioral responses as cornerstone of the scientific explanation of behaviour. Accordingly, in the explication of the initial state of language acquisition, behaviorism proposes that infants are at first a *tabula rasa,* that is, not endowed with any pre-programmed capacities, and they are controlled by the observable environmental conditions, i.e stimuli. In this notion, language is

regarded as a complex response system to the stimuli, in the same way as all behaviours occur as responses to stimuli in the environment. As a response to the stimulus, language is also learned through observation, imitation, associations and reinforcement. Bloomfield (1933), one of the chief exponents of the behaviorist view, proposes five steps in his *"Language"* to account for language acquisition through these stages :

> 1. Child innately vocalizes, and can recognize sounds which are similar and which are different. He develops the habit of repeating a familiar speech sound, e.g. [da].
> 2. When someone, such as mother, produces a word similar to one of his babblings, e.g. 'doll', he will imitate it with his closest speech form, e.g. [da].
> 3. The mother's use of 'doll' in the context of dolls will lead the child to associate the sounds with the event of seeing the doll. The sight of the doll becomes a stimulus for saying [da].
> 4. The habit of using [da] in specific contexts, e.g. seeing one's doll after one's bath, will lead the child to say [da] in that context when the doll is absent. That is, speech becomes displaced.
> 5. His successful attempts at speech are reinforced, leading him to adult-like pronunciation. His imperfect attemtps are lost. (cited in Ingram, D. 1989:19).

This account of acquiring indicates that children recognize similarities between their vocalizations and adults' through observation and imitate. Meanwhile, they associate a particular speech event with a context; and this context functions as a stimulus to the response, namely, language use. They are reinforced to act in certain ways; as a result, the attempts that are not reinforced are eventually extinguished.

In the mid-nineties, following the same view, Skinner (1957) proposed a more elaborate account of language acquisition with the basic notions of stimulus, reinforcement and association, with the attempt to account for the developmental change in child language, particularly the construction of syntax. Based on the assumption that children are not endowed with any equipment at birth, behaviorists put forth that children must construct all of language; and as they interact with the environment, more complex associations between stimuli

and responses are constructed gradually. Skinner conveys this view in the way that a set of associations between the words in the sentence constitute the sentence structure, and the acquisition of grammar is the learning of a chain of associations between words that can lead to classes of words. Based on these associations, children acquire grammar as a set of classes that occur in a predicted serial order (Ingram 1989:20). Ingram (1989) illustrates Skinner's behavioristic view for grammar acquisition in the way that a child knowing the words 'dog' and 'run', hearing the sentence 'dog is running' may imitate it and be reinforced. 'Dog' becomes a response by the child, and in turn, it becomes a stimulus for the word 'run'. More precisely, Skinner views language as a sophisticated response system which humans acquire through conditioning, and as particular linguistic patterns are reinforced by means of positive or negative feedback, generalizations are attained. On the other hand, those which are not reinforced are eventually extinguished.

The nativist theory contrasts in an extremely way with the behaviorist theory in the formulation of language acquisition theory. Nativists tend to adopt a linguistic theory, and submit that a theory of language acquisition must be developed to fit the requirements of the linguistic theory. Giving a particular linguistic theory a central place in language acquisition leads to the postulation of innate mechanism for the acquisition of specific linguistic facts. While behaviorists define children as "tabula rasa", nativists put forth that children know much about language in general before they learn any specific details. More specifically, children are equipped at birth with a brain that is entirely pre-programmed for the structure of human language. By means of this pre-programmed brain, or innate ability, and exposure to language, children seem quickly to display knowledge of the rules of grammar that allows them to produce and comprehend an infinite number of sentences, regardless of the wide diversity of environmental factors and an imperfect input. This view stands apart from the behaviorist view particularly in the influence of the environment on the acquisition. As for the behaviorists, language is formed by the general principles of learning, shaped by the environmental factors, whereas nativists

postulate innate predispositions toward the acquisition of very specific linguistic facts, distinct from all other behaviours, and minimizes the importance of environmental factors.

Noam Chomsky (1965), opposing the behaviorist theory and strongly criticizing Skinner's view of the language acquisition, regards language as an extremely rich and complex system, more than a series of associations between words, which is constructed from limited data in a very short time, independently from intelligence and environmental conditions, in a similar way by all children. In other words, associating the linguistic theory and language acquisition theory, Chomsky (1965:58) defines language acquisition process as a process of theory construction from limited data, with the assumption that children are endowed with a data-handling ability, and concludes his view in the way that

> "It seems plain that language acquisition is based on the child's discovery of what, from a formal point of view, is a deep and abstract theory – a generative grammar of his language …. A consideration of the character of the grammar that is acquired, the degenerate quality and narrowly limited extent of the available data, the striking uniformity of the resulting grammars, and their independence of intelligence, motivation and emotional state, over wide ranges of variation, leave little hope that much of the structure of the language can be learned by an organism initially uninformed as to its general character …. It may well be that the general features of language structure reflect, not so much the course of one's experience, but rather the general character of one's capability to acquire knowledge."

The assumption of the presence of an innate ability is suggested with the researches pursued on the sign language acquisition by deaf children, the acquisition of creoles and mother-child interaction. Deaf children, who are not exposed to any auditory stimuli, go through all the same stages as speaking children. Even in the event that their parents are not completely accurate and fluent in sign language, they still learn the sign language perfectly. It seems that children are capable of extract the required rules from the poor-quality input; and thus, they can use the sign language better than their parents. More extremely, even if their parents cannot use sign language, children can develop

their own sign language from any gestures made by their parents. The researches on the language of deaf children indicate that language faculty is independent of other mental faculties, and deaf children are capable of creating and acquiring signs that have many feature of formal language.

In the development of creoles, children are responsible for the linguistic changes in the acquisition process since creoles are structurally more complex than pidgins used by parents. While pidgin has no fixed grammar or vocabulary at all, children turn it into a real language with a fixed grammatical system and an expanded vocabulary.

The basic concepts of behaviorism, such as imitation and reinforcement, have also been criticised largely especially on the basis of researches pursued on the mother-child interaction. Nativists reject the assumption that children develop grammatical knowledge through imitating their parents by the suggestion that samples of overgeneralization made by children do not appear in the input from adults. Further, the researches indicate that children cannot imitate the grammatically complex structures that are beyond their immediate production level though they can comprehend them.

Nativists strictly criticise the notion of negative evidence (corrective feedback), that is the notion that children learn to use language correctly since their parents correct them when they make a wrong use of language, by the postulation that parents do not correct children for their grammatical errors, but for informational errors. Parents seem to be able to understand the language of their children perfectly well no matter how oversimplified or ungrammatical it is, and they give corrective feedback only in the case of informationally-false sentences.

In contrast to these basic issues of the behaviorist view for the explanation of language development, the nativist theory postulates a limited set of deductive processes that are assumed to be necessary and sufficient to account for the

discovery of structural properties of language. In other words, while children take the advantage of their biological endowment, which provides them with all universal properties of linguistic structure, children make some inferences on the basis of linguistic input that surrounds them in order to discover the particular properties of their native language. According to Chomsky, in the process of development of children, the innate universal structure either matures as children develop or is gradually uncovered by children through various discovery procedures. Children, who are endowed with innate parameters, along which languages differ, as well as innate universal structure, discover the characteristics of the language that surrounds them (Hickmann 2003). Imitation and reinforcement have nothing to do with the development of accurate language use.

Between these two poles, two other positions, cognitivist and interactionist theories, have been proposed. Cognitivist theory postulates a general cognitive capacity allowing infants to construct a gradually more complex representation of the world. Cognitivists strictly reject the behaviorist notion supporting that children's mind is "tabula rasa" at birth as well as denying the nativists view on the presence of an innate ability unique to language learning. Cognitivist view, however, adopts a middle approach to language acquisition with the acknowledgment of some basic notions of both views in the way that children bring some prior knowledge or faculty about what is to be learned as well as some general principles of learning to the task of acquiring language. In accordance with the fact; a more general capacity, cognitive capacity, is prerequisite to acquire any language, and its development gives way to the acquisition of any kind of skills or behaviours, including language. Cognitivists, thus, see cognitive processes and development, which are results of interaction with the environment, primary for language acquisition and development.

One of the chief exponents of the cognitivist view, Dan Slobin, puts forward that general cognitive development is the critical determinant of language acquisition. According to Slobin, children are born bringing certain operating

principles to the task of language acquisition, that is, children know something about both the structure and the function of language and look for the ways to develop means for expressing what they know within the limitations imposed by their knowledge of the world. Slobin (1971) defines these operating principles as “language-definitional universals”, and proposes that every child and adult have the same knowledge of language, stating that

> “children (and adults) everywhere have the same general definition of the form and the function of language. Everywhere language consists of utterances performing functions (such as asserting, denying, requesting, ordering, and so forth), expressing a universal set of underlying semantic relations, and using a universal set of formal means (such as combinable units of meaning, made up of combinable units of sound, etc). Furthermore, language -everywhere- is grammatical, in the sense that the meaning of a message is not fully determined by any combination of the meanings of its elements. In all language –child and adult- there is a non-direct relation between the surface, acoustic form of messages and their underlying meanings. It is in no way surprising that children should define language in the same way as adults: indeed, they could not learn language if they did not share this definition.“ (1971, 300-301).

According to Slobin, given that adults and children have the same basic linguistic capacities, children follow a universal course of linguistic development on the basis of universal course of cognitive development so as to display the properties of adult language. In other words, children do not attend to and perceive linguistic stimuli in the same way as adults. They attend to language in different ways and adopt different processing strategies at different times; therefore, the complexity of the linguistic forms in children language is consistent with the children’s level of cognitive development. Slobin indicates the notion that every child seems to express more and more complicated meanings, relying on certain linguistic capacities to guide them what to look for and how to go about looking in the way that

> “In order to acquire language, the child must attend both to speech and to the contexts in which speech occurs – that is, he must be trying to understand what he hears, and be trying to express the

> intentions of which he is capable. This means that he must have both cognitive and linguistic discovery procedures available…. The emergence of new communicative intentions must bring with it the means to decode those intentions in the speech the child hears, and this makes it possible for him to discover new means for expressing those intentions…“ (Slobin 1971:321-322).

The cognitive and semantic complexity are, thus, the main determinants of the linguistic complexity in the process of language acquisition. Semantic ability develops in a fairly consistent way across languages and the same kind of cognitive limitations appear on the expressibility of concepts. What is to say, there appears to be a universality about the acquisition process, just as there appear to be universal patterns of general human development.

Taking the notion that all the developments in children’s behaviours are determined by an underlying progression in cognitive development for granted, another advocate of cognitivist view, Jean Piaget, postulates that human cognitive development is a series of stages, whereby children gradually construct more abstract representations. In this respect, language use, as an abstract system of sign relations, is no different from any type of behaviour (Hickmann 2003). Children perceive and comprehend the information about the physical apperances and the functions of the objects around them, distinguish the differences between them and store this information in the mind. Afterwards, this information is used to establish a relation between the objects and to distinguish the relation between the objects and activities. Further, children are able to distinguish their own activities from other beings’ and people’s activities and also overcome to refer to the objects or time, depending on the available stage of the cognitive development. Likewise, children perceive and comprehend the sound units with their distinguishing features and store them. They relate and combine these sound units to form sound sequences and establish relations between the sound sequences and objects and activities. The establishment of these relations constitutes the formation of meaningful words and sentences, respectively. With the progression in cognition, they are able to refer to the activities of other people along with those of their own and to

the objects, time or situations, even in the absence of them. As pointed out by Çapan (1996:287), acquisition of language cannot be underestimated as acquisition of verbal ability; in fact, it is the signifier of the extent of a more extensive progression, namely, cognitive progression. Children use language and communicate on the basis of the stage of the cognitive development.

Strictly opposing to the behaviorist view and proposing the existence of another capacity, distinctly from the nativist and cognitivist views, the interactionist view gives the primary significance to the social interaction. The proponents of the interactionist view hold the belief that children are equipped with an initial capacity for social interaction, which allows them to participate in gradually more complex forms of communication. As a result, social interaction is the most important source of learning mechanisms for all of child development, including language, cognitive and social development. Although the interactionists do not generally deny the existence of an innate capacity for language acquisition, they tend to minimize its importance and instead stress the role of social interaction to emerge the potentials of this capacity. At this point, interactionists agree with nativists on the necessity of language faculty and exposure to language by children; however, they emphasize that exposure itself is not sufficient, but social interaction is a complete necessity for language acquisition. What is to say, language cannot emerge without contact and social interaction with other human beings.

Interactionists, unlike the exponents of the other views, stress the communicative function of language, and submits what children acquire is “language in use” rather than grammar of language. Halliday (1975:20) states that “children are surrounded by language, but not in the form of grammars and dictionaries, or of randomly chosen words or sentences…what they encounter is ‘text’, or ‘language in use’. Halliday (1975) identifies seven functions that language has for children in their early years, and proposes that children know these functions of language long before they can produce language. In order to

communicate their desires more precisely, children make use of language by initiating communication as well as responding to communications of others.

Similarly, for Vygotsky, children are born as social beings, and the development of children are determined by the society and the culture and by interaction with other people in this structure. More precisely, children's participation in social interaction is a way to interaction with the world, and the interaction with the world is, in turn, a primary factor for overall development, especially in relation to cognitive development. Consequently, the history of the society in which children are reared is the crucial determinant of the way in which those children will think. Vygotsky declares that the developments and the ways how children think are first on the social level, shaped by the socio-cultural phenomena which children encounter when they are born, then shifted into individual level, and calls this process of transforming an interpersonal process into intrapersonal process:

> "Every function in the child's development appears twice: first, on the social level, and later, on the individual level; first between people(interpsychological), and then inside the child (intrapsychological)… All the higher functions originate as actual relations between human individuals… The transformation of an interpersonal process into intrapersonal one is the result of a long series of developmental events. (Vygotsky 1978:56-57, cited in Lindblom&Ziemke)"

In this process of cognitive development, language used in the society is a crucial tool for determining how children will learn how to think. That is to say, forms of cognitive activity, including language acquisition, and changes in these forms cannot be assumed to be independent from social interaction, from which they emerge.

It is acknowledged that all these major theories attempting to account for the first language acquisition are, to some extent, are valid. The differences in their opinions emerge from the fact that they do not deal with a common component of language. Behaviorist and cognitivist

theories are concerned with the overtly observable phenomenon of language. In other words, behaviorist theory postulates that language is learned through stimulus-response relation like any other behaviour, which might emerge respectively as a stimulus and a response. The more complex stimulus-response relations occur, the more complex associations emerge. However, cognitivist theory presents language like any other complex behaviour, which emerge through the cognitive developments. The extent to which behavior is more complex and abstract depends on the progression of cognitive ability to deal with abstractions. In this respect, the two theories differ in the explanation of language acquisition while they both present language as an observable entity. On the other hand, interactionist theory is concerned with the matters of language use that are strongly related to social interaction. It presents interaction as the primary necessity in the course of acquisition, and deals with the later development more than early acquisition period, focusing on the acquisition of vocabulary, pragmatic functions. After all, all these theories, except for nativist theory, do not attempt much to account for the creativity of child language in spite of limited and impoverished input, and the uniformity of first language acquisition by all children despite the varieties of languages.

2.3. LINGUISTIC THEORY AND LANGUAGE ACQUISITION

With the introduction of generative grammar, a research program by Chomsky, the idea that language is a finite, but productive system of knowledge of rules, which is internalized by a native speaker and allows him to produce and interpret infinite numbers of creative and novel utterances, has been the focus of enquiry. Accordingly, it has been postulated that a grammar must go beyond describing the rules of a language, and it must describe the knowledge of a native speaker about the grammar of his language, which enables his performance on his language, as well. More specifically, a grammar must be "*descriptively adequate"* to account for the unconscious, tacit knowledge of a

native speaker about his language. The question of what a native speaker knows unconsciously about his language is not seperated from that of how a native speaker possesses the knowledge of his language. In other words, a grammar must be "*explanatorily adequate"* by accounting for the principles how a native speaker acquires his language. According to Chomsky (1981), linguistic theory and language acquisition are necessarily linked, and a linguistic theory must achieve both descriptive and explanatory adequacy to provide a unified account of language acquisition. Chomsky argues that a linguistic theory that selects best available descriptively adequate grammar for a language on the basis of primary linguistic data achieves explanatory adequacy, and postulates the principles of Universal Grammar (UG), which posits innate knowledge of certain linguistic principles to a native speaker, along with the parameters, by which the native speaker makes a selection of rules depending on his language, in favor of a descriptively and explanatorily adequate linguistic theory in relation to language acquisition issue.

It seems clear that linguistic theory and language acquisition research are related in a large extent and mutually beneficial. Gass and Schachter states that

> "the theory will guide and constrain the hypotheses that the research is willing to entertain and test in considering both the course of development and the ultimate knowledge to be attained. Conversely, particular language acquisition studies will provide emprical evidence for or against specific theoretical models." (cited in Kim 1993:5).

More specifically; linguistic theory guides language acquisition studies with the postulation of a testable model, that is, UG principles and parameters to reach a set of predictions. Conversely, language acquisition studies provide evidence for or against UG.

2.4. THE THEORY OF UNIVERSAL GRAMMAR

On the domain of nativist approach, the generative grammar adapts the notion that human beings have a genetic endowment that enables them to learn any

language. That is, the fact that language is species-specific (only a human child acquires language) and species-uniform (every human child acquires any language) is emphasized by the generativists with the acknowledgment of the presence of the innate principles, available in Universal Grammar (UG). According to Chomsky (1980:28), “biological properties, such as genetically determined and species-specific properties are the properties of human biological endowment that refer to Universal Grammar.”. It is claimed that children acquire their language through the interaction of UG with the linguistic experience.

UG is a set of principles with parameters that are fixed by experience with linguistic data. These linguistic principles are assumed to be transmitted genetically, and they are general enough to account for all natural languages. Accordingly, properties of UG define the initial state of language development. In other words, “UG is the basis on which language develops.” (Chomsky 1980:69). In order to account for this view, Chomsky (1981) states that

> “Endowed with these principles, a system provided with adequate experience will develop a grammar of the peculiar and specific sort characteristic of human language… Lacking these principles, a system will develop no grammar or some different system.“ (cited in Haegeman 1991:15).

According to Chomsky, experience, along with UG, plays a crucial role in the language acquisition process by determining the parameters. In this respect, experience, on the basis of UG principles, leads to core grammar. What Chomsky calls “core grammar” is a particular grammar which is determined “when the parameters of UG are fixed in one of the permitted ways” (1981:7). That is, in the course of language acquisition, the exposure to a language is an essential part of acquisition process by activating the innate principles of universal grammar; and, meanwhile, by providing children with the particular choices by means of parameters. Based on this postulation, there are two conditions the theory of UG has to satisfy (Chomsky 1981:3):

1. UG must be abstract enough to be compatible with the diversity of existing (or more accurately, possible) grammars.
2. UG must be rich and restrictive enough to account for the fact that each of the particular grammars develops in the child's mind on the basis of quite limited experience.

In an attempt to meet these conditions, Chomsky (1981) proposed the *Principles and Parameters Approach to UG* (P&P approach). In this approach, UG consists of *principles,* which exist in any language, namely, universal, and *parameters,* which are variable among languages and fixed by experience. According to Chomsky (1995), the P&P approach interprets the process of language acquisition as "the process of fixing the parameters of the initial state in one of the permissible ways" (cited in Sugisaki 2003:8).

2.5. GOVERNMENT AND BINDING THEORY

One of the most well-developed formulations of the *principles and parameters approach to UG* (P&P) is Government and Binding (GB) Theory. Within this framework, UG is seen as consisting of interacting subsystems. That is, it can be viewed as a system of rules, made up of subcomponents that generate several levels of grammatical representations, and as a system of principles, made up of subsystems that hold of rules, constraining representations of various sorts.

The rule system consists of three basic parts (Chomsky 1982:4):

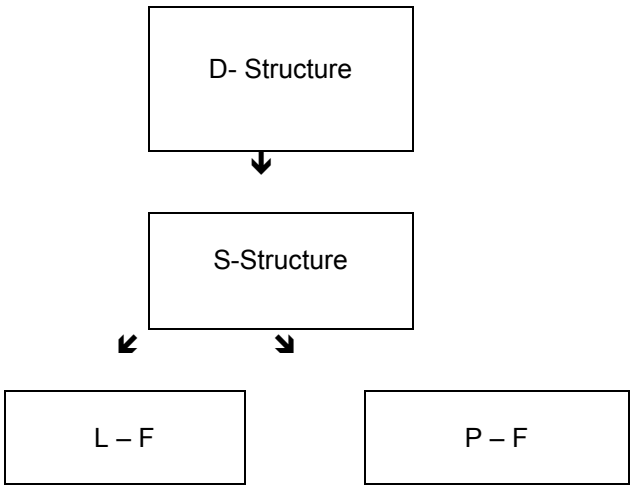
1. Lexicon
2. Syntax: (a) Base component
   (b) Transformational component
3. Interpretive components: (a): PF component
   (b): LF component

The lexicon is the component containing all the information about the structural properties of lexical items. Base component , containing a categorial component (specifying categories like S, NP, VP, etc.) and a lexical component (consisting

of lexical entries made up of features like animate, human, etc.) specifies the D-structure. Transformational component assigns to each D-structure an associated S-structure. PF and LF are grammatical representations of the sound and meaning, respectively.

Thus, the model of UG in the Government and Binding model of syntactic representation is represented as shown in Figure 2.1:

Figure 2.1. The model of UG in the Government and Binding model of syntactic representation



The subsystems of the principles include the following (Chomsky 1982:6) :

1. X–bar theory
2. Θ–theory
3. Case theory
4. Binding theory
5. Bounding theory
6. Control theory
7. Government theory

X–bar theory regulates the structure of phrases and clauses. It brings out what is common in the structure of phrases.

Θ–theory regulates the assignment of thematic roles such as ‘agent’, ‘patient’, etc. to the arguments of the predicates in a syntactic structure.

Case theory accounts for some of the formal properties of overt NPs and integrates the notion of case into the grammar. With the notion of case filter, it postulates the requirement that all overt NPs are assigned abstract case.

Binding theory deals with the relationships of anaphors, pronominals and R-expressions with their antecedents.

Bounding theory defines the boundaries for movement and determines how far an element can be moved, under the condition of *Subjacency*.

Control theory is concerned with the interpretation of PRO, the phonetically null NP.

Government theory deals with the relation between the head of a construction and the categories that depend on it. (Haegeman, 1991)

These systems of the principles interact in a variety of ways and, certain relations also obtain between the subsystems of principles and the subcomponents of the rule system. Further, they are assumed to be universal, that is, they function in some way for all languages. Among all these principles, binding theory will be dealt with in detail since this thesis is concerned with the application of the binding theory in the course of acquisition of the Turkish language.

2.6. BINDING THEORY

Binding Theory, which regulates the NP interpretation within a syntactic structure, is one of the central theories in generative linguistics. More specifically, “the theory of binding is concerned with the relations of anaphors

and pronominals to their antecedents, if any" (Chomsky 1982:6). It is claimed that binding rules or principles are part of UG. The Standart Binding Theory classifies NPs into three types, that is, anaphors, pronominals and R-expressions, and consists of three principles, Principles A, B and C, to account for the relations of these NPs to their antecedents, which are stated as :

(1) Binding Principle (Chomsky 1982:20):

Principle A: An anaphor is bound in its governing category.
Principle B: A pronominal is free in its governing category.
Principle C: An R-expression is free.

The anaphors include reflexives (herself, himself, etc.) and reciprocals (each other), (overt categories), and PRO and NP-trace (empty categories). Pronominals include elements such as "her, him" (elements which contain the features of gender, number, person, an optional phonological matrix, possibly Case). R-expressions include elements such as nouns ("Maria", "the boy") (overt categories), and variables bound by an operator (empty categories) (Chomsky 1982:20).

The term "bound" means "co-indexed with a c-commanding antecedent," and "free" means "not bound", where "c-command" and "governing category" are defined in the following ways:

(2) C - command (Chomsky 1986:8)

α c-commands β iff α does not dominate β and every G that dominates α dominates β.

(3) Governing Category (Chomsky 1981:211)

β is a governing category for α if and only if β is the minimal category containing α, a governor for α and a SUBJECT accessible to α.

A 'SUBJECT' accessible to α is, very roughly, the c-commanding subject of a tensed S or the "subject"/possessive element of an NP; for tensed S, the SUBJECT is the set of agreement features of the tensed verb, referred to as AGR. (Chomsky 1981:211). Therefore; the governing category is the minimal NP or S in which α appears.

This research deals with only Principle A of the Binding Theory, which involves the binding of reflexives and reciprocals by other NPs within the same clause. Principle A imposes a locality restriction on the binding of anaphors in that an anaphor must be bound in its local domain, called the governing category, by a c-commanding antecedent within this local domain. Following examples illustrate the conditions of Principle A:

(4) a. John$_i$ hurt himself$_i$.
b. *Jane$_i$ hurt himself$_i$.

(5) a. Sam$_j$ told that John$_i$ hurt himself$_i$.
b. *Sam$_i$ told that Jane hurt himself$_i$.

(6) a. John's brother hurt himself.
b. *John$_i$'s sister hurt himself$_i$.

(7) a. John$_i$ believes himself$_i$ to be the best.
b. *John$_i$ believes that himself$_i$ is the best.

(8) a. Jane believes John$_i$'s description of himself$_i$.
b. John$_i$ believes Jane's description of himself$_i$.

In accordance with Chomsky's Binding Principle A, sentence (a) is grammatical in each pair whereas (b) is ungrammatical. More precisely, for (4a) and (5a), the governing category for the anaphor *himself* contains *himself*, its governor *hurt* and an accessible SUBJECT, the agreement features AGR of *hurt. Himself* is required to be bound in that domain, namely it must be coindexed with a c-commanding antecedent, *John*, they are, thus, grammatical. In (4b) and (5b), however, SUBJECT in the minimal category containing *himself* is lack of the agreement features of reflexive. In (6a), the sentence contains two feature compatible antecedents, namely John and brother, however, *John* does not c-command *himself* since NP containing *John* is not dominated by IP. However, (6b) leads ungrammaticality because NP *John's sister* dominated by IP contains an antecedent which cannot bind the reflexive because of the lack of agreement of the nominal features. (7a) is grammatical since the reflexive is not governed in the lower clause, which lacks an accessible SUBJECT while in (7b) minimal category containing *himself* does not contain a c-commanding antecedent; and reflexive is free. In (8a), governing category for *himself* is the NP, which contains governor *of* and a SUBJECT, however, SUBJECT in the minimal category in (8b) does not carry the same agreement features with the reflexive.

(9) The students$_i$ like each other$_i$.

(10) They$_j$ think the students$_i$ like each other$_i$.

(11) John's friends$_i$ like each other$_i$.

(12) The students$_i$ believe each other$_i$ to be the best.

(13) John believes the students$_i$' description of each other$_i$.

According to Chomsky (1982), reflexives and reciprocals have identical distribution since they both are anaphors. Therefore, reciprocals are also subject to the same constraints as reflexives. Accordingly, (9) and (10) are

grammatical since *each other* is bound within the governing category, which contains the governor *like* and the accessible SUBJECT *the students*. In (11), the entire IP is the governing category for the reciprocal, in which the only antecedent with regards to nominal features c-commands *each other*. In (12), the antecedent within the governing category is the subject of IP, while it is the subject of NP in (13).

As it may be seen, the governing category for both reflexives and reciprocals in English is the smallest clause containing anaphor, its governor and its antecedent. Based on such examples, Dalrymple (1990:45-46) restates Chomsky's view on the basic notion of Binding Principles in the way that reflexives and reciprocals are anaphors, constrained by Principle A. They are taken to have exactly the same distribution in every language, that is binding conditions are universal. However, Lebeaux (1983) postulates that the distribution of the reflexives differs from the distribution of the reciprocals in many languages, including English. Moreover, many researches reveal that there are some languages in which the governing categories for anaphors are larger than that of English; hence, languages vary as to what counts as a governing category.

2.6.1. Problems in The Binding Theory

The standard Binding Theory provides a simple and appealing picture of binding relations in natural language. It clearly describes recurrent patterns in the various languages of the world. However, many researches pursued on the basis of Binding Theory on several languages as well as English have given rise to the criticisms about the constrains of the binding principles and also the applicability of these principles to the structure of every natural language. The basic problem is encountered when the relative distribution of pronominals, reflexives and reciprocals violates one or another of the binding principles. Dalrymple (1990:46) defines two sorts of violations:

> First, there are many positions in which either a pronominal or an anaphor can appear. In other words, pronominals and anaphors are not in complete complementary distribution, contrary to the statement of Binding Principles by Chomsky (1981).
>
> Second; although Binding Principles classify both reflexives and reciprocals as anaphors, the distribution of reflexives differs from that of reciprocals in some languages, including English.

In addition to the problems stated by Dalrymple, another criticism about the applicability of the Binding Principles is motivated by the fact that the binding of reflexives is not restricted by Principle A in some languages. Some languages allow for a relatively small local domain whereas others allow the governing category to be as large as the entire sentence. Therefore, in some languages reflexives can take only local antecedents, and in others antecedents can occur non-locally, a phenomenon called long-distance reflexivization.

This research deals with only Principle A of the Binding Theory; therefore, the problems encountered in the applicability of this principle with regards to reflexives and reciprocals will be considered in detail.

2.6.1.1. Reflexive and Reciprocal Differences

According to the theory of anaphoric binding, both of the reflexives and reciprocals are anaphors, and they are subject to Principle A. That is to say, they have the same distributional pattern.

Lebeaux (1983) postulates that there are syntactic positions where reciprocals may appear and may be bound by their antecedents, but reflexives cannot. Therefore; the distribution of reflexives and reciprocals is affected by some other principles in grammar. According to Lebeaux, the difference between the distribution of reflexives and reciprocals results from the sensitivity of reflexives to proper government condition much more than reciprocals, with the presentation of following set of data:

(14) a.[John and Mary]$_i$ brought some friends for each other$_i$ to meet.
b. ?? John$_i$ would like some books for himself$_i$ to read.

(15) a. [John and Mary]$_i$ didn't know what each other$_i$ had done.
b. * John$_i$ didn't know what himself$_i$ had done.

(16) a. [John and Mary]$_i$ like each other$_i$'s parents.
b. * John$_i$ likes himself$_i$'s parents.

Lebeaux claims that the examples in (a) are better than the ones in (b) although they all are not in a position of proper government. Therefore, reciprocals seem to have a wider distribution than reflexives when they occupy the position of the subject of a *for-to clause*, the subject of tensed clause and the subject of an NP. On the basis of these data, Lebeaux proposes two independent principles accounting for the distribution of anaphors:

(17) a. Reciprocals are subject to the binding theory.
b. Reflexives (a) are subject to the binding theory.
(b) must be properly governed.

In addition to proposing these two principles, Lebeaux makes a deeper explanation, considering that reflexives are semantically null at Logical Form while reciprocals are not. In other words, reflexive elements have no independent referential content; their meaning is totally determined by the meaning of their antecedent. Unlike reflexives, reciprocals have independent interpretive content beyond the content of their antecedent.

Like Lebeaux, Dalrymple (1990) also takes into account a semantic factor in the analysis of reciprocals which are not properly governed, presenting three types of interpretation, namely, *true reciprocal interpretation*, *local reciprocal interpretation* and *distributed pronoun interpretation*. Accordingly, true reciprocal

interpretation involves a reciprocal relation between the agents. Local reciprocal interpretation appear in environments in which there is no local binder; it is based on the construction of a local reciprocal relation. Similarly, distributed pronoun interpretation is allowed when there is no local binder, in which case reciprocal is replaced by a pronoun. Dalrymple states that the distribution of reciprocal is determined partly by the interpretations that speakers can give to it; therefore, the interpretation of sentences involving the reciprocal should be considered when determining its binding domain since these interpretations can affect binding possibilities.

2.6.1.2. Domain Variation: Long – Distance Reflexivization

The binding conditions presented by Chomsky (1981) are taken to be universal; however, there is a considerable variation in the domains in which anaphors must be bound across languages. In some languages, like in the case of English, governing category is relatively small while it is not in other languages, like in Turkish, Japanese, Icelandic, Korean, etc. This challenging problem to the Binding Theory, namely the existence of long-distance reflexivization, has called into question the definition of locality, determined by Principle A. Several researchers have attempted to revise the Binding Theory to address this problem.

2.6.2. Revisions of The Binding Theory

The existence of long-distance reflexivization in several languages, like Turkish, Japanese, Icelandic, Korean, etc, has led many reserchers to redefine the locality condition. One of the influential revisions, which will be discussed at greater length within this chapter, is the *Parameterization Approach.*

The *Parameterization* of the local domain as Governing Category Parameter is launched by Manzini and Wexler (1987). In this revision, the local domain in

which a reflexive is bound to its antecedent(s) constitutes a parameter equipped with five values.

2.6.2.1. Parameterization Approach

The introduction of *parameters* into linguistic theory as a solution to the tension between the existing variety of natural languages and the necessity of explaining how children acquire the grammars of their particular languages has inspired some researchers to account for the crosslinguistic variation in the behaviour of anaphors and pronominals, and therefore, variation in binding properties with the notion of parameterization. With the acknowledgment of existence of parameters, Manzini and Wexler (1987) propose to parameterize the notion of governing category and of proper antecedent. In this proposal, the local domain in which a reflexive is bound to its antecedent constitutes a parameter; therefore, they define the governing category in terms of a set of 5 parametric values :

(18)Governing Category Parameter (GCP) (Manzini and Wexler 1987:419)

y is a governing category for x iff
y is the minimal category that contains x and a governor for x and has

a. a subject; or
b. an Infl; or
c. a Tense; or
d. a “referential” Tense; or
e. a “root” Tense.

It is claimed that languages choose a proper value from among these five governing categories. For example, English *himself* assumes value (a), Italian *sè* (himself) value (b), Icelandic pronominal *hann* (he/him) value (c), Icelandic

reflexive *sig* (himself) value (d) and Japanese *zibun* (self) value (e). The governing category parameter is a hierarchy that divides languages into types according to how close an anaphor and its antecedent in a sentence must be in order to be properly bound. However, it seems that each of the pronominals and the types of reflexives within a language may be associated with their own value of the parameter, as in the case of Icelandic pronominal and reflexive. Therefore, Manzini and Wexler states that "the values of the governing category cannot be associated with grammars as a whole but rather must be associated with single items" within a grammar, with the introduction of *Lexical Parameterization Hypothesis* (1987:424):

(19) Lexical Parameterization Hypothesis

Values of a parameter are associated not with particular grammars but with particular items.

With the admission of this hypothesis, in contrast to the approaches of several other theories (Reinhart&Reuland 1993; Grodzinsky&Reinhart 1993; Sturt 2003; Fischer 2004) the semantic and pragmatic factors for the binding of local and long-distance reflexives are excluded, on the basis of the notion that two reflexives in a language have different governing categories, namely the difference is on the syntactic level.

As far as the Turkish language is concerned, Lexical Parameterization Hypothesis is instantiated by the government category selection of each type of Turkish reflexives. More specifically, the inflected form of reflexive "kendisi" and the bare form "kendi" display different characteristics of binding. Accordingly, the inflected form "kendisi" is associated with value (e) of the Governing Category Parameter, and it has long distance binding. On the other hand, the bare form "kendi" is associated with value (a), and it has local binding as English reflexive does (Demirci 1997:17).

Besides including the governing category parameter, Manzini and Wexler (1987) suggest that the theory of binding should include a proper antecedent parameter. Considering the variation of antecedent selection of anaphors within each language, they conclude that an anaphor must be bound in its governing category by a proper antecedent; and a pronominal must be free from all proper antecedents, illuminating what a “proper antecent” in the following way (1987: 431) :

(20) Proper Antecedent Parameter

A proper antecedent for x,
(a) a subject y; or
(b) any element y

Proper Antecedent Parameter determines whether the reflexive must be bound by a subject NP or by any NP within the governing category. Languages which allow nonlocal binding, like Japanese, require the antecedents of reflexives to be subject NPs, whereas languages which require local binding, like English, allow the antecedents to be subjects and non-subjects.

Thus, the theory of binding should include two different parameters: the five values of governing category parameter and the two values of proper antecedent parameter, and there is a correlation between them. Demirci (1997:19) restates this correlation in the way that languages which permit long-distance binding cannot have both subjects and non-subject antecedents, and languages which permit only local binding cannot have only subject antecedents. Accordingly, languages like Japanese allow only subjects as antecedents of reflexives, confirming value (a) of Proper Antecedent Parameter while languages like English and Turkish allow subjects and nonsubjects, instantiating value (b) (Demirci 1997:18).

Within the theory of parameterization, Manzini and Wexler (1987) accounts for the acquisition of languages with a subset relation of parametric values. The basis of the learning component is the Subset Principle (SP), which is responsible for the ordering of “the parameter values according to the subset relations of the languages that the values generate” (Manzini and Wexler 1987:414). That is to say, if language L1 is smaller than language L2, the child guesses L1 first, and changes to L2 only when the data are presented that is in L2 but not L1. The Subset Principle (SP) is given in the following way (Wexler and Manzini 1987:61):

(21) The Subset Principle:

The learning function maps the input data to that value of a parameter which generates a language:

(a) compatible with the input data, and
(b) smallest among the languages compatible with the input data.

In addition to its learnability side (SP), subset relationship has also a linguistic side, the Subset Condition (SC) (Wexler and Manzini 1987:60):

(22) The Subset Condition:

For every parameter *p* and every two values of *i, j* of *p*, the languages generated under the two values of the parameter are a subset one of the other, that is,
L (p(i)) L(p(J)) or L(p(J)) L(p(i))

The SC, thus, states that “ values of a parameter generate languages which are in a subset relation one to another” (Manzini and Wexler 1987:414). The SP determines the choice between two or more values of a parameter. More

precisely, on the basis of the input data, the learner initially selects the grammar that generates the smallest possible language that is compatible with the data.

The acquisition of languages with a subset relation of parametric values can be illustrated with the case of languages that display different properties for governing category selection of learners. In the case of acquisition of English, a child will initially select value (a) of the parameter, which generates the smallest language. Due to the fact the child will not come across any evidence which suggests that value (a) is not the correct one, the child will remain with the initially selected value. In contrast, in the case of acquisition of the inflected form of the Turkish reflexive “kendisi”, a child will first select value (a) as s/he does for the bare form “kendi”; however, s/he will abondon the value (a) for more inclusive parameter values when s/he encounters additional evidence which shows that value (e) is correct for the Turkish reflexive “kendisi”. The Subset Principle guides the child to choose the most restrictive value available first, and to reject it only when additional data proves it to be wrong. In other words, the child will be guided by the Subset Principle to select value (a) initially, and will move towards value (e) only in the presence of another data which show that the smaller values are not correct.

2.6.3. Binding Theory in Turkish

The Binding Theory states only syntactic conditions under which an anaphor can be co-indexed with a c-commanding antecedent within a local domain regardless of the nature of the antecedent. However, in several languages, like Turkish, Chinese, Japanese, Korean, etc., the choice of antecedent among several possible ones is primarily of a pragmatic nature and the binding of anaphors in these languages may not be subject to the c-command condition at all.

The existence of the properties of Turkish anaphors, which in some cases disobey the conditions of the Binding Theory, therefore, has led the researchers

to examine the binding properties of Turkish anaphors more widely. Among the studies pursued on this scope, NP-reflexives are paid more attention in terms of their structural and pragmatic properties than verbal reflexives.

2.6.3.1. Turkish Reflexives

Faltz (1977:4) defines reflexivity as a "grammatical device which specifically indicates that the agent / experiencer and the patient in clauses are the same referent.". Faltz calls this grammatical device as *primary reflexive strategy* while presenting *middle reflexive strategy*, including several more devices, as being restricted to a small number of lexical items. That is to say, a language will have a unique primary reflexive strategy, which indicates subject-object coreference, but it may have some middle strategies, which are manipulated just for some lexical items. Therefore, primary reflexive strategy is a grammatical and productive process, applicable freely to all verbs whereas middle strategies are semantic processes, employed for special subclasses of verbs (Faltz 1977:17). Among the middle strategies Faltz postulates, the addition of an affix to the verbs is regarded as an intransitivizing device. A grammar, thus, can mark reflexive in two ways. On the one hand, as a primary strategy, an "*NP-reflexive"*, in which a special pronoun is used as the object NP to signal its coreference with the subject is used. On the other hand, as a middle strategy, the verb can be modified as a signal for reflexivization, in which the "*verbal reflexive"* appears in an intransitive clause structure (Faltz 1977:14-15).

Faltz's description of reflexivity is instantiated for the Turkish grammar by Kornfilt (1997, 2001), Özsoy (1999), Underhill (1976). Kornfilt (2001:197) claims that there are two types of reflexives in Turkish, one of which is a bound morpheme and the other one is a free morpheme. In order to express reflexivity, the free morpheme "kendi" and its inflected forms for person and number are manipulated as a primary reflexive strategy. Similarly, Özsoy (1999:334) states that the reflexivity is formed with the reflexive pronoun "kendi" or the verbal reflexive suffix *{–(I)n}.*

2.6.3.1.1. The Binding Properties of Verbal Reflexive in Turkish

It seems to be apparent that there are not so many researches on verbal reflexivization on Turkish. Of all researches on reflexivity, Özsoy (1999) and Kornfilt (1997, 2001) deal with the structural properties of “kendi” reflexive pronoun more comprehensively. However, on verbal reflexivization, only general descriptions have been proposed. Kornfilt (1997) and Underhill (1976) propose that the reflexive affix *{-(In)}* is not very productive, and there is only a certain number of such reflexive verbs, which are in some way related to the corresponding simple verbs in meaning. On the pursuit of the same view, Özsoy (1999:335) states that some verbs reflexivized by the use of verbal affix can also form reflexive with the reflexive pronoun “kendi” while a limited number of these verbs allows only the use of *{-(In)}*.

(23) kendini korumak korunmak
kendini övmek övünmek

(24) giyinmek
yıkanmak

Verbal reflexives in (23) are formed from the corresponding simple verbs, having a related meaning as Kornfilt (1997) and Underhill (1976) define. Simple verbs are also reflexivized with the use of reflexive pronoun with the same meaning. However, simple verbs in (24) can form their reflexives only with verbal affix.

As for the binding properties of verbal reflexive, Kornfilt states that only subjects can act as antecedent to the verbal reflexive element, and the antecedent binds the verbal reflexive only within the same clause. However, in the event that the actual antecedent itself is an anaphoric element, thus, deleted in the contexts of subordinate clause, reflexive element has the antecedent in the superordinate clause, as shown in the following example (1997:140):

(25) (biz) Ahmet –e_i [$Ø_i$ daha güzel giy –in_i –me –sin –i]
we Ahmet –Dat. Ø more nice wear -Refl. -ANom. 3.sg. Acc
söyle –di –k.
say –Past -1.pl.
(We told Ahmet$_i$ that he$_i$ should dress himself$_i$ better.)

2.6.3.1.2. The Binding Properties of NP-Reflexives in Turkish

Underhill (1976), Kornfilt (1997) and Özsoy (1999) declare that reflexive structure is formed with the reflexive pronoun “kendi” and its inflected forms to agree in number and person with its antecedent.

(26) kendi-m	kendi-n	kendi-Ø / kendi-si
kendi-miz	kendi-niz	kendi-leri

It seems that a reflexive pronoun is, in general, bound with its antecedent within the same clause, which is compatible with the requirement of Principle A of the Binding Theory, though this restriction is stricter in the case of verbal reflexives. Further, Kornfilt (1997:132) states that the antecedent of anaphoric expressions must be structurally higher than the anaphoric expression, that is, must c-command the reflexive.

(27) a. Ali$_i$ kendin-$i_{i/*j}$ yarala-dı.
Ali -Refl -Acc. hurt -Past
(Ali hurt himself)

b. Ahmet$_i$ [Ali-nin$_j$ kendin-$i_{*i/j}$ yarala- dığ -ın] -ı bil -iyor.
Ahmet Ali-Gen Ref. Acc. hurt -Ger .3.sg. Acc. know-Pres.Progr.
(Ahmet knows that Ali hurt himself.)

Seemingly, Ali c-commands and binds the reflexive element within the governing category in both simple and complex structures.

The reflexive pronouns in (27) are bound within the governing category; however, in some examples they look as if they are bound non-locally though they are, in fact, not. As stated in the case of verbal reflexives, the reflexive pronoun in a subordinate clause can be bound by the antecedent in the superordinate clause if the actual antecedent in the subordinate finite or infinitival clause is an anaphoric element and can be deleted. In this case, the antecedent of the reflexive element can be said to occur within the same clause. (Kornfilt 1997:140-141)

(28) a. (biz) Ahmet$_i$ -e [Ø$_i$ kendin -i$_i$ daha fazla
we Ahmet -Dat. Ø Refl. –Acc. more much
sev -me -sin -i] söyle - di -k.
like -Anom. -3.sg. -Acc. say -Past -1.pl.
(We told Ahmet$_i$ that he$_i$ should like himself$_i$ more.)

b. Ahmet$_i$ [Ø$_i$ kendin -i$_i$ daha fazla sev -mey -e] çalış -ıyor.
Ahmet Ø Refl. -Acc. more much like -Inf. -Dat. try –Pr.Prog.
(Ahmet$_i$ is trying to PRO$_i$ like himself$_i$ more.)

2.6.3.1.3. The Problems in The Binding Theory for Turkish Reflexives

Several researchers indicate that binding properties of anaphors in Turkish are not accounted for with the Binding Principles. The view postulated in common by these researchers is that binding properties of Turkish anaphors cannot be described by the theories that explain binding of anaphora only under the condition of c-command because Turkish anaphors may be bound with the antecedents that do not c-command those anaphors. Further, it is submitted that the disregard of the pragmatic nature of the structure and anaphors by the Binding Theory gives way to the problems in the account of Turkish anaphors.

Uzun (2000) declares that Binding Principles and c-command condition cannot actually illustrate all the binding properties of reflexive pronouns. In the following

example, reflexive pronoun is bound by the antecedent which does not c-command it though the requirement of governing category is held (Uzun 2000:255).

(29) a. [Baba -m -ın$_i$ kardeş -i]$_j$ kendin -den$_{i/*j}$ daha yakışıklı.
Father -1.sg.-Gen. brother -Acc. Refl. -Abl. more handsome
(My father's brother is more handsome than him.)

However, in a similar structure (30) binding conditions are held.

(30) [Ali -nin annes -i]$_i$ kendin -e$_i$ bir ev al -dı.
Ali -Gen.mother -Acc. Refl. -Dat. one house buy –Past
(Ali's mother bought a house for herself.)

The problem arises from the binding of reflexive with an antecedent that does not c-command it in (29) in contrast to (30), where reflexive is bound with a c-commanding antecedent, though both sentences are similar in structure. Uzun (2000) proclaims that the difference results from the intrinsic structure of the predicates, which causes binding of reflexive with or without a c-commanding antecedent. Accordingly, that the predicate in (30) is a verbal predicate distinctly from the one in (29), which is nominal, allows the binding of reflexive in accord with Principle A whereas nominal predicate does not.

In opposition to Uzun's claim, Kornfilt (2001:216-217) puts forward that c-commanding condition is held for the example in (29); therefore, the requirements of Principle A are not violated. Kornfilt also emphasizes the type of the predicate by stating that static verbs like in (29) allow a possessor within a DP in subject position of an embedded clause to undergo Exceptional Case Marking. In other words, with the existence of static verbs, possessor raising will take place, resulting in the reflexive being c-commanded by the raised possessor, and maintaining the well-formedness of the structure.

It is assumed that NP-reflexives in Turkish, being bound by a local c-commanding antecedent, comply with the conditions of Principle A. The indispensable problem, however, arises in the case of third person singular reflexive. Turkish is commonly assumed to have two reflexive forms for third person singular: “kendi”, which is the bare form and “kendisi” which is the inflected form, each of which has different binding properties. The simple form “kendi” is locally bound as a genuine reflexive, whereas “kendisi” may also be bound non-locally, as a long-distance reflexive.

According to Kornfilt (1997, 2001) and Underhill (1976), the uniflected reflexive “kendi” is always bound within the minimal clause with a c-commanding antecedent, as in (31) (Kornfilt 2001:198):

(31) Fatma$_j$ [Ahmed -in$_i$ kendin -i$_{i/*j}$ çok beğen -diğ -in] -i
Fatma Ahmet -Gen. Refl -Acc. very admire Ger. -3.sg. Acc.
bil -iyor.
know Pres.Progr.
(Fatma knows that Ahmet admires himself very much.)

In (31), according to Kornfilt, “kendi” can only be coindexed with the local NP “Ahmet”, and not with the nonlocal NP “Fatma”. The uninflected reflexive is always bound by a c-commanding local antecedent, following Principle A.

However, the inflected form “kendisi” displays a behaviour similar to pronominals. It can be bound either within the local domain, following Principle A, or within the non-local domain, following Principle B (Kornfilt 1997, 2001; Underhill 1976; Uzun 2000; Temürcü 2002).

(32) Fatma$_j$ [Ahmed -in$_i$ kendi -sin -i$_{i/j/k}$ çok beğen -diğ -in] -i
Fatma Ahmet -Gen. Refl 3.sg.-Acc. very admire Ger. -3.sg. Acc.
bil -iyor.
know Pres.Progr.
(Fatma knows that Ahmet admires self very much.)

Like in (31), according to Underhill (1976:356) and Kornfilt (2001:198), in subordinate clauses, “kendisi” may refer to the subject of the subordinate clause (Ahmet). Moreover, it may refer to the subject of the main clause (Fatma), or to a subject mentioned in the discourse. Therefore, Kornfilt (2001:199) defines “kendi” as “a genuine syntactic anaphor with local binding requirement” and “kendisi” as “an Agreement Phrase (AgrP) whose specifier is *pro*”.

As far as the binding properties of the bare and inflected reflexive are concerned, it is noticed that the pronominal-like behaviour of “kendisi” allows its appearance on the subject position whereas reflexive pronouns are restricted to the object position (Kornfilt 1997:131).

(32) Ahmet$_i$ [kendi -sin -in$_i$ /kendinin$_{*i}$ çok akıllı ol -duğ –un] -u
Ahmet Refl 3.sg. Gen. very clever be Ger. -3.sg. Acc.
san -ıyor.
think Pres.Progr.
(Ahmet thinks that self is very clever.)

Even though it is assumed that “kendi” is bound with a c-commanding antecedent, the binders of “kendisi” do not need to c-command the anaphor.

(33) [Ali –nin$_j$ annes -i]$_i$ kendi -sin -e$_{i/j}$ bir ev al -dı.
Ali -Gen.mother -Acc. Refl. 3.sg. -Dat. one house buy –Past
(Ali’s mother bought a house for herself.)

Unlike the example in (29), where the existence of a static predicate allows the possessor raising, hence, the reflexive’s being c-commanded by the raised possessor, in (33) the inflected reflexive “kendisi” seems to be likely to be bound with the possessor within the DP in subject position despite the lack of static verb, though bare reflexive “kendi” cannot.

In the light of the examples above, which display the variation of the binding properties of the bare and inflected reflexive, the binding of the inflected reflexive “kendisi” non-locally seems to be similar to that of long distance reflexives in languages like Chinese, Japanese, etc. However, Kornfilt (2001) postulates that the inflected reflexive in Turkish is not actually long-distance reflexive. Its use is determined by discourse related factors rather than structural ones.

2.6.3.2. Turkish Reciprocals

According to Lichtenberk (1999:315), reciprocity is, in general, expressed with the mutual action of two participants; however, mutual action cannot be restricted to two participants, though. As a result, in reciprocal structures plural pronouns must be used. Languages differ in expressing reciprocity, in which they make use of reciprocal pronouns or reciprocal affix; yet, in some cases, these elements may not be used.

Considering Lichtenberk’s description of reciprocity, Turkish has two types of reciprocals, one of which is a bound morpheme *{(-Iş)}* and the other one is a free morpheme “*birbiri”*. In order to express reciprocity, the free morpheme “birbiri” and its inflected forms with appropriate suffix to indicate person and number are employed (Underhill 1976; Kornfilt 1997; Özsoy 1999). Bound morpheme *{(-Iş)}*, on the other hand, is attached to a very limited number of verbs (Underhill 1976; Kornfilt 1997).

2.6.3.2.1. The Binding Properties of Verbal Reciprocal in Turkish

Like in the case of verbal reflexives, verbal reciprocals in Turkish have not also been paid much attention as their distribution is limited to very few verbs. Of all descriptions on reciprocal verbs, Kornfilt (1997) makes a general account of structural properties of verbal reciprocal in Turkish while Underhill (1976) considers their semantic function as well as structural function more

extensively. Kornfilt (1997) and Underhill (1976) propose that the reciprocal affix *{-(Iş)}* is not very productive, and there is only a certain number of such reciprocal verbs, which are in some way related to the corresponding simple verbs in meaning like the ones in (34); however, some verbs that exhibit the reciprocal suffix with a reciprocal meaning are not related to existing simple verbs in contemporary Turkish, like those in (35).

(34) öp- "to kiss" öp -üş- "to kiss each other"
anla- "to understand" anla-ş- "to understand each other"

(35) konuş- "to talk to each other"
mektuplaş- " to write to each other"

The general use of reciprocal is to form verbs in which participants act upon one another. In other words, reciprocity involves mutual action of the participants. As well as displaying reciprocal semantics, Underhill (1976:366) emphasizes the structural inflection of the verbs for person and number in respect of the form of the subject. Acorrdingly, if the subject of the reciprocal verb is made of conjoined nouns by "ile(with)" or "ve(and)", these two nouns are considered to be the grammatical subjects of the verb, which, therefore, has a plural ending as shown in (36.a). In the event that conjunction follows the second noun, grammatical subject is considered to be the first one, and the reciprocal verb is inflected on the basis of that noun, as illuminated in (36.b):

(36) a. Ayşe ile Hasan anlaştılar.
b. Ayşe, Hasan ile anlaştı.

As Underhill states, verbal reciprocals in (36) reveal the mutual action of the participants semantically; besides, the conjoined plural subject as grammatical subject leads the verb to be inflected with a plural ending in (36(a)) while that the grammatical subject is singular gives way to the inflection of verb as singular in (36(b)). However, Erdem (2002:156), in opposition to Underhill,

declares that the similar examples as stated in (36(b) do not carry as much reciprocal meaning as the ones in (36(a)).

In addition to this common use of reciprocal suffix with the meaning in which participants act upon one another, another general use of verbal reciprocal exhibits the meaning that participants act separately though their action is, somehow, related. This type of reciprocity, which is formed with the attachment of reciprocal suffix to certain intransitive verbs, are very limited in language.

(37) Kuşlar uçuştu.

The example implies that although each bird flew in a different direction, the actions were related in the way that they flew toward or away from a common point. In contrast to Underhill, Kornfilt (1997) regards this use as nonreciprocal as it refers to actions performed together rather than mutually.

As far as the binding properties of the verbal reciprocals are concerned, it seems to be apparent that there is a complete similarity between the behaviours of verval reflexives and reciprocals. As stated for verbal reflexives, verbal reciprocals are also bound only with an antecedent occupying the subject position within the same clause. However, on condition that the actual antecedent occurring within the subordinate clause is itself an anaphoric element, thus, deleted, reciprocal element has the antecedent in the superordinate clause, as illustrated in the following example (Kornfilt 1997: 160):

(38) (biz) çocuk -lar –a_i [$Ø_i$ öp -üş$_i$ -me -me -lerin -i]
we child -pl. -Dat. kiss -Recip.-Neg. -ANom. 3.pl. –Acc.
söyle -di -k.
say -Past.-1.pl.
(We told the children that they shouldn't kiss each other.)

Even though reciprocal seems to be bound by an antecedent nonlocally, it is actually bound by the antecedent, which is deleted, within the local domain.

2.6.3.2.2. The Binding Properties of NP-Reciprocal in Turkish

The reciprocity is expressed with the inflected forms of “birbiri” to indicate person and number.

(39) birbir -imiz
birbir -iniz
birbir -leri (birbiri)

As stated for NP reflexives, NP reciprocals are also restricted to be bound with an antecedent locally in accord with the conditions of Principle A of the Binding Theory. The governing category for reciprocals in Turkish is, hence, said to be the smallest clause as the following examples indicate:

(40) a. $(siz)_i$ birbir -iniz $-i_i$ tenkit et -me -yin.
you Recip.-2.pl.-Acc. critique do -Neg. -2.pl.Imp.
(Don’t criticize each other.)

b. Ali [çocuk -lar $-ın_i$ birbir -lerin $-e_i$ bak -ma -ların -ı]
Ali child -pl -Gen. Recip -3.pl -Dat. look -Anom -3.pl. -Acc.
söyle -di.
say -Past.
(Ali told that children should look at each other.)

The only context where the reciprocal pronoun is bound with an antecedent outside the governing category is when the antecedent in the subordinate clause itself is an anaphoric element. Due to the deletion of that anaphoric element, which is actually in the same clause as the reciprocal, the reciprocal in

the subordinate clause is bound by the antecedent in the superordinate clause, as postulated for the reflexive pronouns, as well.

(41) a. (biz) çocuk -lar -a_i [$Ø_i$ birbir -lerin -i_i
we child -pl.-Dat. Recip.-3.pl.-Acc.
öp -me -me -lerin -i] söyle -di -k.
kiss -Neg. -Anom.-3.pl.-Acc. say -Past -1.pl.

b. hasta -lar_i [$Ø_i$ birbir -lerin -i_i daha fazla
patient -pl. Recip. -3.pl. -Acc. more much
sev -mey -e] çalış -ıyor -lar.
like -Inf. -Dat. try -Pr.Prog. -3.pl.

The examples in (40) and (41) also illustrate that the only position a reciprocal pronoun cannot occupy is the position of subject, especially in nominative case, as stated by Kornfilt (1997:161). However, on condition that the reciprocal element is a genitive-marked subject of nominalized subordinate clause, it is likely to be bound nonlocally, though its acceptability is controversial.

All in all, as claimed by the researchers of Turkish grammar, the properties of NP reflexives and NP-reciprocals are compatible with the Principle A condition of the Binding Theory; that is, they both are bound by a c-commanding antecedent locally. However, the binding property of third person singular reflexive “kendisi” results in a complete contradiction to this commonly-held view, allowing to nonlocal binding. It is postulated that the principal distinction between the overall forms of reflexives and third person singular reflexive “kendisi” is of pragmatic nature rather than syntactic one.

Following the same view; Yarar (2007) claims that the types of verbs have an influence on binding of reflexive forms “kendi” and “kendisi” due to the pragmatic reasons. More precisely, depending on the existence of transitive, psych or causitive verbs, reflexive anaphor has a differential referential

relationship with its antecedent because each verb has its own antecedent pattern. In contrast to the common assumption that the only reflexive allowing to nonlocal binding is the inflected form of third person reflexive “kendisi”, Yarar (2007) postulates that types of the verbs affect not only coreference relation of “kendisi” with its antecedent, but that of “kendi” is also determined by the pragmatics of verbs. Moreover, another finding, which reveals that the binding property of reflexive anaphor in Turkish is determined mostly by pragmatic conditions rather than syntactic ones, is that the position of possible antecedents within the sentence is not as influential as the types of verbs in the process of making coreferential judgments.

The existence of similar conditions and assumptions in other languages has led the researchers to examine the case of reflexives and reciprocals in terms of the acquisition process. Though some studies have confirmed the assumption that children will show command of the Binding Theory as soon as they have learned the lexical properties of anaphors, pronominals and R-expressions because the binding theory is assumed to be part of the innate endowment that the child brings to the language acquisition task, others have found that children still violate binding principles even after they have mastered the relevant lexical items. In particular, a number of studies designed to test children’s knowledge of reflexives and pronominals concluded that children had knowledge of Principle A, but not B even though those lexical items had been grasped. Besides, several studies testing the knowledge of reflexives within Principle A indicated that children needed some other knowledge of language rather than that of lexical items to be able to make the coreference relation of reflexives with their antecedents in existence of syntactically complex structures. These studies, which were conducted in order to examine referential judgments of children, will be presented more comprehensively in the following sections.

2.7. PREVIOUS STUDIES ON ACQUISITION OF BINDING PRINCIPLES

All the studies investigating the acquisition of binding principles have focused on the comparison of the acquisition process of each principle with the other, especially of Principle A with Principle B. It has been mostly concluded that children had knowledge of Principle A, but not B. However, no studies have been pursued on comparison of acquisition of lexical units concerning Principle A, namely, that of acquisition of reflexive and reciprocal anaphors. The studies which dealt with the lexical units whose binding properties are explained within Principle A revealed controversial conclusions. More precisely, the notion of early mastery of Principle A has been postulated when the developmental phase of local reflexives is considered, while the view that Principle A has not been grasped completely until a late period when the acquisition of long-distance reflexives is examined. Further, it has been discovered that not only reflexives but reciprocals also lead children to violate the Principle A in syntactically complex structures.

2.7.1. First Language Acquisition of Reflexives

A great number of studies have examined children's comprehension of reflexives through its comparison with comprehension of pronominals. These studies display a striking divergence in the conclusions with respect to the extent of development. Some researchers claim that reflexive and pronominal systems are mastered very early and approximately around the same age while others conclude that they are acquired very gradually and that they are not grasped until a very late age. As opposed to these two extremely contrast views, some researchers postulate that knowledge of reflexive system is acquired very early whereas that of pronominal system is mastered more gradually. Although such a wide variability and controversy of claims may seem unusual, the principal reason for the contradiction is that the researchers have examined different properties of these systems. That is, examining the syntactic aspects of Binding Theory in respect of developmental process of language, proponents of Universal Grammar tend to assume early mastery of both

systems, relying on the central claim that grammatical knowledge is innate. On the other hand, researchers considering the semantic and pragmatic properties of referring expressions through the acquisition process postulate relatively late mastery of these systems.

Wexler and Chien (1985), who were among those claiming early mastery of reflexives and later mastery of pronominals, investigated the development of major properties of reflexives and pronouns. Wexler and Chien investigated the developmental change on comprehension of reflexives and pronouns in both simple and complex sentences with children in the age ranging from 2:7 to 6:7. They designed the first two experiments with simple sentences by varying the syntactic structure of subject constructions in order to observe if the linear order of the antecedent had an influence on the comprehension of reflexives and pronouns, and the third experiment with complex sentences.

In Experiment One, Wexler and Chien tested 129 English-speaking children on simple sentences constructed with possessive subject structures like the ones in (42) in a picture identification task so as to measure children's coreference judgments between the reflexive or pronoun and their potential antecedents.

(42) a. Cinderella's sister points to herself.
b. Cinderella's sister points to her.

The results showed that children's correct responses to the reflexive sentences grew from the 50% chance level to a level of about 90% correct by 6:7 whereas their correct responses to the pronoun sentences did not increase in the same rate as to the reflexive sentences.

In Experiment Two, Wexler and Chien tested 124 children on simple sentences formed with genitival subject structures as shown in (43), using the same task.

(43) a. The sister of Cinderella points to herself.
b. The sister of Cinderella points to her.

As in Experiment One, children's correct responses to the reflexive sentences increased to about 82% by 6:7 while their correct responses to the pronoun sentences remained around 60% and increased to only about 70% for the oldest children. In both experiments, it was demonstrated that children older than 5:7 knew that the antecedent must c-command the reflexive. Moreover, it was apparent that genitival subjects were a bit more complicated than possessive subjects for comprehension.

In Experiment Three, Wexler and Chien tested 156 children in an act-out task on complex sentences which were formed with finite embedded clauses in order to observe the linguistic development on the selection of antecedent for reflexive, which requires a local antecedent, and pronoun, which is bound by a nonlocal antecedent. In the design of the sentences, the actors of both clauses were considered to have the same gender as shown in (44) so as to investigate the children's coreference judgments for reflexive and pronoun.

(44) a. Kitty says that Sarah should point to herself.
b. Kitty says that Sarah should point to her.
c. Snoopy says that Adam should point to himself.
d. Snoopy says that Adam should point to him.

The results revealed that children's correct responses to the reflexive sentences increased from 20% to about 90%, whereas their coreference judgments between the pronoun and the nonlocal c-commanding antecedent stayed between 64% and 78%. In other words, children older than 5:7 had the knowledge of the Principle A, according to which the antecedent of the reflexive must be local; however, as for the application of Principle B, children in all age groups were perplexed about the antecedent selection.

Wexler and Chien argued that the fact that the steady increase in children's correct responses to the reflexive sentences as they grow older did not mean that the younger children did not know Principle A. As an explanation to this fact, they proposed the Lexical Learning Hypothesis, according to which only lexical items have to be learned. More specifically, Principles A and B are part of what children bring to the language learning task, that is, they are innate, and as children learn the reflexives and pronouns lexically, their performance on comprehension of such units develops. As a result, children's lexical knowledge of reflexives develops around 5:7; however, lexical knowledge of pronouns improves much slower in comparison to that of reflexives.

Deutsch, Koster and Koster (1986) also investigated how children interpreted sentences containing reflexives and pronouns. Differently from Wexler and Chien, they conducted the study on the Dutch language with children at the age of 6, 8 and 10 in a picture-identification task. Further, they designed their study only with simple sentences by varying the syntactic structure of the antecedent in the form of possessive and genitival as illustrated in (45).

(45) a. De broer van Piet wast zich.
"The brother of Piet washes himself."

b. De broer van Piet wast hem.
"The brother of Piet washes him."

c. Piet z'n broer wast zich.
"Piet's brother washes himself."

d. Piet z'n broer wast hem.
"Piet's brother washes him."

The results indicated that 6-year-olds made the correct choice with both reflexive and pronoun with approximately equal frequency; namely, children's

correct responses to reflexive sentences were 53%, and 54% to pronominal sentences. In contrast, 8- and 10-year-olds performed better with reflexive sentences than they did with pronominal sentences. More clearly, correctness frequency to reflexives was 87% by 8-year-olds and 91% by 10-year-olds whereas their correct responses to pronouns increased from 71% to 81%. Moreover, as far as the influence of the syntactic form of the sentence subject on the resolution of reflexive and pronoun was concerned, it was found that in all three age groups the percentages of correct responses were higher when the subject was the genitival construction than when the possessive construction was used.

On the basis of these findings, it was observed that children performed better with the reflexive sentences than with the pronominal sentences with an increasing frequency, and the syntactic structure of the subject of the sentence had an effect on comprehension. Considering the performance of children on comprehension of reflexive and pronominal sentences, Deutsch, Koster and Koster concluded that the findings did not still show that the resolution of reflexives and pronouns occured in separate, sequential phases in acquisition, but the crucial difference lay in the rate of acquisition.

As opposed to Wexler and Chien, Deutsch, Koster and Koster and many other researchers, who postulated that children acquired the knowledge of Principle A at some earlier stage than that of Principle B, Grimshaw and Rosen(1990) argued that children indeed knew Principle B like Principle A at the same age, but they did not obey it whenever other more pressing concerns interfered with their performance. Unlike the other researchers, they designed their study with a grammaticality judgment task to compare how children responded to BT-grammatical and BT-ungrammatical sentences, assuming that if the BT-grammatical sentences were consistently treated differently from the BT-ungrammatical sentences, this meant that children indeed had the knowledge of Principle B. Grimshaw and Rosen actually tested children’s knowledge of Principles B and C, and concluded that children were able to distinguish BT-

grammatical sentences from BT-ungrammatical ones, and thus they must know Principles B and C. Referring to the results of the studies pursued by the other researchers, they also attempted to find reasons for the children's poor performance on Principle B relative to Principle A. According to their assertion, that children expect pronouns to have discourse antecedents leads them to violate Principle B in order to provide an antecedent. Moreover, in studies in which possessive NPs inside subjects are used as alternative antecedents for the pronoun or the anaphor, like in the study of Wexler and Chien(1985), the complexity of the possessive construction may lead to lowered overall performance. That is, if children misanalyze the possessive construction, construing the possessor rather than the head as the subject of the sentence, this may cause failure to obey the Binding Theory. Criticizing the type of the task used to test the children's knowledge, Grimshaw and Rosen claims that certain picture identification tasks designed to test knowledge of Principle A allow subjects to perform correctly without using their knowledge of binding. Further, if children misinterpret some of the presented pronouns as emphatic, which are not subject to the Binding Theory, this may lower obedience to the Binding Theory. Lastly, Grimshaw and Rosen claim that on condition that children fail to construct the bound variable reading, they will reject the picture-sentence pair, and this will lead to the high performance on pronouns as bound variables relative to performance on referential pronouns.

McDaniel, Cairns and Hsu (1990), standing apart from Grimshaw and Rosen(1990), also agreed on the conclusion that Principle A was obeyed quite earlier than Principle B. They tested 20 children aged from 3,9 to 5,4 with simple and complex sentences composed of infinitive and finite embedded complements in regard to Principles A, B and C in an act-out task. In terms of Principle A, it was reported that only four of the children did not obey Principle A by allowing reflexives to be free. As for Principle B, nine of the children were stated to obey it whereas seven children violated it. Four of the children displayed partial knowledge by disallowing coreference in complex sentences, but allowing it in simple sentences. On the basis of these results, it was

concluded that children performed better with reflexive sentences than with pronominal sentences.

With a distinctive study, McDaniel, Cairns and Hsu also observed the relationship between the acquisition of Principle A and that of the emphatic reflexive in a judgment task with such sentences as shown in (46):

(46) a. Grover is washing himself.
b. Himself is going to school.
c. He himself is going to school.

Their hypothesis was that children who were in the process of acquiring emphatic reflexive still lacked the knowledge that emphatic reflexive must contain an initial NP; therefore, they would not only obey Principle A but accept the reflexive in subject position. According to the results of the study, no children were found who obeyed Principle A but accepted the reflexive in subject position in sentences like (46b) and not the emphatic reflexive in sentence (46c). On the basis of these findings, McDaniel, Cairns and Hsu postulated that when Principle A was not mastered yet, children's grammar generated sentences with reflexive in subject position, and that when Principle A emerged, the grammar no longer generated such sentences. As a result, their hypothesis was that in the case where the emphatic reflexive was acquired imperfectly, the grammar generated them again until the emphatic reflexive was correctly formulated.

McDaniel, Cairns and Hsu concluded that in language development, grammars kept changing in the way that sentences generated by the earliest grammars came in and out of intermediate grammars and were finally not generated by the adult grammar. They argued that the assumption that the developing linguistic system generated increasingly more complex constructions and at each developmental stage, the constructions of the previous ones were properly included could not be maintained.

2.7.2. First Language Acquisition of Long – Distance Reflexives

That the choice of antecedent among several possible ones in several languages like Korean, Portuguese, Icelandic, etc. causes the violation of the Binding Principles has led many researchers to examine the development of knowledge of reflexives in these languages.

In contrast to the results obtained from the comparison of developmental process of Principle A and B, which have revealed that reflexives are mastered much earlier than pronominals, several studies designed to test the knowledge of long-distance reflexives by children have displayed that children's linguistic development on pronominals is earlier and better than reflexives. Nevertheless, these conclusions bring to light to the linguistic development of binding of reflexives in the existence of some other grammatical constraints rather than invalidating the conclusions drawn from the comparison of Principle A and B.

On the examination of linguistic performance and development of children on long-distance reflexives, Solan and Ortiz (1982) conducted a study with Spanish-speaking children, aged 4-6. They presented children four Spanish complex sentence types in a comprehension act-out task. The four sentence types consisted of reflexive (*se*, "him/hersef") and pronoun (*lo*, "him"; *la*, "her"), with tensed and infinitive complements. The Solan and Ortiz's results indicated that children scored lower with reflexive sentences (41% correct) than with the pronoun sentences (57% correct), and with respect to the type of the complement clause, children had more difficulty with sentences containing infinitive complements than with those containing tensed complements.
According to Solan and Ortiz, the results stem from the fact that children misinterpret the anaphor *se* as pronominal more often than they misinterpret pronominal as anaphor. The reason why children comprehend reflexive as pronominal is that Spanish reflexive *se* can also function as a pronominal, but only in the existence of impersonal verb forms. The claim that children

misinterpret the reflexive *se* as pronominal also implies that children do not know the difference between personal and impersonal verbs.

Like Solan and Ortiz, Hyams and Sigurjonsdottir (1990) put forward that children misinterpret the anaphor as pronominal very often. Their study was designed to test the interpretation of reflexive SIG (himself) and pronominals by Icelandic speaking children aged from 2:7 to 6. Test sentences were constructed with indicative, subjunctive and infinitive complements only with one verb “gefa (to give)”. The results of the experiment indicated that Icelandic children consistently misinterpreted the reflexive SIG as pronoun by preferring the long-distance antecedent over the local antecedent for all sentence types, which disconfirmed the prediction of the Subset Principle. On the other hand, as for the interpretation of pronouns, they consistently preferred the nonlocal antecedent as binder of pronouns with a steady increase in performance from younger to older children, reaching 90% correct response for all sentence types by the age of 5. In order to account for the children’s preference for the long-distance antecedent in the interpretation of reflexive SIG, Hyams and Sigurjonsdottir assumed that the long-distance verbs have the lexical property of assigning a pronominal feature to SIG, which is otherwise an anaphor. However, that all the test sentences in Hyams and Sigurjonsdottir’s study contained the verb “gefa”, which imposes a strong preference for a long-distance antecedent was severely criticized with the claim that the misinterpretation of SIG as pronominal because of the type of verb cannot be taken as an evidence of the nonoperation of the Subset Principle.

Lee (1990), another researcher testing whether Subset Principle holds for the acquisition of long-distance binding, asserted the Subset Principle operated for binding acquisition of reflexive “caki”(himself), in opposition to Hyams and Sigurjonsdottir (1990). Lee tested 90 Korean children ranging between the ages 5:1 and 8 with four different types of sentences in a truth-value judgment task. In the first type of sentences, each sentence contained two referential names, either of which was a potential antecedent of the reflexive “caki”. Second type of

sentences was constructed in the way that the subject of the embedded clause was a quantified phrase while the matrix subject was a referential name. In such sentences, reflexive “caki” could be bound by the long-distance subject, or interpreted as a variable bound by the local quantified subject. Conversely, in the third type of sentences embedded subject was a referential name whereas matrix subject was a quantified phrase. Therefore, as opposed to the second type of sentences, “caki” could be interpreted as a variable bound by the long-distance subject, or bound by the local subject. Lastly, the fourth type of sentences was designed with two quantified phrases, either of which was a potential antecedent of “caki”.

The results of the experiment showed that children at the age of 5:7 performed better with the local antecedent than the long-distance antecedent whereas some older children at 6:7 and 7:7 preferred the long distance antecedent more than the local one. With respect to the antecedent type, no significant response differences were found. Based on the findings of the experiment, Lee argued that the Subset Principle held for Korean binding acquisition.

2.7.3. First Language Acquisition of Reciprocals

As opposed to the abundance of the studies pursued on the acquisition of reflexives and pronominals, very few researches have been conducted in order to investigate the acquisition process and development of reciprocals, which is also governed by Principle A of the Binding Theory.

One of the earliest researchers of the Binding Theory, Matthei (1981), tested children’s interpretation of reciprocal anaphor in an act-out task with four types of complex sentences. First type of sentences involved finite complements with an overt complementizer while second type was composed of finite complements without overt complementizers. Third type involved infinitival complements, and the last type involved gerundive complments, as shown in (47) (Atkinson 1992).

(47) a. The horses said that the cows jumped over each other.
b. The pigs said the chickens tickled each other.
c. The cows want the lambs to kiss each other.
d. The pigs noticed the boys kissing each other.

17 children aged between 4:2 and 6:7 were tested on 34 sentences of the types represented in (47). According to the test results, 64.4% of the total number of responses were ones in which the children chose the matrix clause subject as the antecedent of reciprocal. Matthei concluded that children mistreated reciprocal anaphor as reciprocal pronominal.

Matsuo (1999/2000) also conducted a study in order to investigate the reciprocal knowledge of children. In her study, Matsuo was inspired by Fiengo and Lasnik's (1973) claim that active predicates are ambiguous since they have both a strong and weak reciprocal reading whereas stative predicates have only a strong reciprocal reading, illustrating the phenomenon in the following way:

(48) a. The men in the room are hitting each other.
b. The men in the room know each other.

To illustrate, (48a) can be interpreted as a strong reading in the way that every one of the men in the room is hitting every other one whereas as a weak reading it can be interpreted in the way that A and B are hitting each other, and C and D are hitting each other, etc. On the other hand, in the existence of a stative predicate like in (48b), only strong reading, in which every one of the men in the room knows every other one, is allowed.

Following this view, Matsuo tested not only children's general knowledge of reciprocal but their interpretation of reciprocity depending on the type of predicate by comparison to adults' performance, and claimed that if children could distinguish the semantic interpretation of reciprocal sentences with two

types of predicates, it could be stated that this kind of knowledge emerged at a very early age as a natural result of innate language faculty. On the other hand, if children knew the general usage of reciprocal but failed to obtain different semantic interpretations, it could indicate that it was not an innate property. Matsuo tested 16 children ranging between the ages 3:11 and 5:10 in an Truth-Value Judgment Task in the first experiment in order to examine whether children know the meaning of reciprocal semantically. The results of the study indicated that most children responded correctly to reciprocal sentences.

In the second experiment, whether children knew the different interpretations in reciprocal sentences with active and stative predicates was tested, and it was found out that the children had the same interpretation as adults did in reciprocal sentences with different types of predicates, and that the children did not show any difference to the two types of predicates in terms of giving correct responses. Relying on the results of two experiments, Matsuo concluded that the basic semantics of reciprocity emerged by 4:4, and that the knowledge that determines the subtle differences in interpretations of reciprocal sentences with active and stative predicates emerged early in children's grammar.

The reference to these studies indicate that investigation on acquisition of knowledge concerning the Binding Principles is of paramount importance for the examination of UG and language acquisition issues. Since no study has ever been conducted in the Turkish language, this research aims at revealing Turkish-speaking children's knowledge on binding properties of local and nonlocal reflexives and reciprocals. The aim of the research and the methods in order to achieve this aim will be demonstrated comprehensively in the following chapter.

CHAPTER 3

METHODOLOGY

The interest in the acquisition of language has led to many studies on the developmental change in comprehension and production of language by children for decades. While studies on children's language production have provided a rich source for language acquisition theories, data from children's comprehension of language have been recognized to illuminate the acquisition process much better than the data from production alone as comprehension studies reveal structures which cannot be produced, but recognized. Hence, in much of the earlier work on children's acquisition of binding, comprehension tasks were used much more than production tasks.

Accordingly, in this research, comprehension and interpretation of reflexives and reciprocals by Turkish-speaking pre-school children is observed on the pursuit of the Binding Theory. This research is the first comprehensive study on the acquisition of binding and the first study to probe children's comprehension of both reflexive and reciprocal anaphors in Turkish.

3.1. SUBJECTS

The subjects were 60 Turkish-speaking children ranging between the ages 4 and 6. The child subjects were divided into three groups with equal number of children in each group. The children were selected from a kindergarten in Ankara, located in a district where middle or high income families live, which is Çekirdek Kindergarten and Family Consulting Center. As the purpose of the research was to describe children's performance on the knowledge of anaphors considering their age rather than to find out whether the divergence of the parents' socio-economic and educational background would have an effect on children's performance, all the children were selected among those whose parents were nearly equal in their background.

3.2. DATA COLLECTION

3.2.1. Means of Data Collection

3.2.1.1. Sentences and Pictures

In this research, the acquisition of semantic contrast of reflexive “kendi” and reciprocal “birbiri” and the selection of antecedent among possible ones for reflexive, especially for two forms of third person singular “kendi” and “kendisi” were examined. The children were tested in a picture-identification task for comprehension tests. The conditions tested are given in the following table:

Table 3.1.Types of the test sentences

	Simple Structures	**Complex structures**
Kendileri “themselves”	+	+
Birbirleri “each other”	+	+
Kendi/Kendisi “himself/herself” (bare/inflected forms)	+	+

There were four factors in the experimental design of the test sentences, which will be presented in a more detailed way. First, syntactically different subject forms were considered for the construction of the sentences. Second, three different verbs, which were selected deliberately to meet some requirements, were used in the sentences. Moreover, reflexives and reciprocals were presented in both syntactically simple and complex structures. Finally, reflexives were presented with two potential antecedents in simple as well as in complex structures, in which the mood of the complement clause was only of one type, infinitival clause.

Subjects of the simple and the complex structures were constructed in a variety of ways. More specifically, subjects of simple structures were constructed in the

way that they were formed with plural nouns, conjoined singular or plural nouns and genitive nouns. As for complex structures, subjects of the matrix clauses were plural nouns when the subject constructions in the complement clauses were varied among plural, conjoined singular and plural, singular and plural genitive nouns as shown in Table 3.2, and in turn, when the subjects of the matrix clauses were varied among these five types of forms, the subjects of the complement clauses were plural nouns.

Table 3.2. Types of the subject constructions in the complex structures formed with reflexive and reciprocal

<table>
<tr><th colspan="2">Complex Structures</th></tr>
<tr><th>Subject Constructions in The Matrix Clauses</th><th>Subject Constructions in The Complement Clauses</th></tr>
<tr><td rowspan="5">Plural nouns</td><td>Plural nouns</td></tr>
<tr><td>Conjoined/singular nouns</td></tr>
<tr><td>Conjoined/plural nouns</td></tr>
<tr><td>Singular genitive nouns</td></tr>
<tr><td>Plural genitive nouns</td></tr>
<tr><td>Plural nouns</td><td rowspan="5">Plural nouns</td></tr>
<tr><td>Conjoined/ singular nouns</td></tr>
<tr><td>Conjoined/ plural nouns</td></tr>
<tr><td>Singular genitive nouns</td></tr>
<tr><td>Plural genitive nouns</td></tr>
</table>

The subjects of the sentences involving the two forms of third person singular reflexive both in simple and complex structures were made up from either a singular noun or a genitive noun. These subjects occupied the subject position both in the matrix and complement clauses in complex structures as shown in Table 3.3. When the subject of the matrix clause was singular noun, the subject of the complement clause was either a singular or a genitive noun, and similarly, when the subject of the matrix clause was a genitive noun, both types of the nouns were used in the complement clause.

Table 3.3. Types of the subject constructions in the sentences formed with 3rd person singular reflexives "kendi" and "kendisi"

Simple structures	Complex structures	
	Matrix clause	**Complement clause**
Singular noun Genitive noun	Singular noun	Singular noun Genitive noun
	Genitive noun	

The verbs selected to govern the proforms in the experiment had to meet several requirements. Thus, the verbs had to be transitive and be able to select both an animate subject and object. Moreover, it was preferable that children should know the meanings of the verbs prior to the experimentation and it had to be possible to illustrate them with pictures, considering the cognition of children. Therefore, 3 verbs were selected, which were "yıkamak (to wash)", "kurulamak (to dry)" and "kaşımak (to scratch)". All the verbs were inflected for Present Progressive Tense.

The general structure of the test sentences designed for the studies One through Three was very similar in that all the sentences used in these studies reflected the application of Principle A of the Binding Theory in the scope of both reflexives and reciprocals.

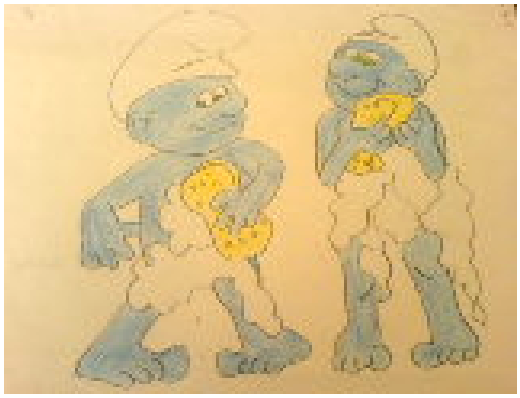
3.2.1.1.1 Experiment One

Experiment One included 10 test sentences, and it had reflexives and reciprocals, coindexed with their proper antecedent in syntactically simple structures in order to be able to describe the children's performance on distinguishing reflexives from reciprocals semantically. 5 types of subject forms were used in the sentences; that is, the sentences were formed with the use of one among plural nouns, conjoined singular or plural nouns and genitive nouns. Both the reflexive and reciprocal anaphors were used in structurally and lexically identical sentence pairs, which were formed with the use of one of the verbs and the subject forms mentioned above. The reason why the target units

were positioned in exactly alike sentences was to observe children's performance on distinguishing semantics of either anaphor more explicitly. For each sentence pair, two pictures were prepared. In other words, one of the pictures illustrated the corresponding content of reflexive sentence whereas the other illustrated the meaning of reciprocal sentence, and these two pictures were presented for both of the sentences. The following examples indicate the presentation of sentences with their corresponding pictures:

(1) Test Sentence : Şirinler kendilerini yıkıyorlar.

"The Smurfs are washing themselves."



Pic. 1.The match condition



Pic. 2.The mismatch condition

(2) Test Sentence: Şirinler birbirlerini yıkıyorlar.

"The Smurfs are washing each other.



Pic. 2.The match condition



Pic. 1.The mismatch condition

As shown in the preceding examples, reflexive and reciprocal sentences seem to constitute a pair as both of them are constructed with the same verb and

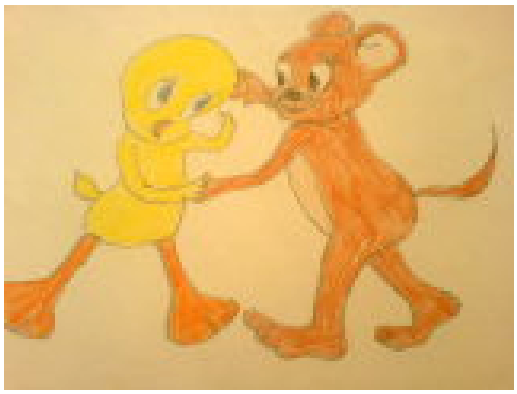
subject form. Moreover, the same two pictures were prepared for both sentences, but one of them is the matching picture while the other is the mismatching one for one of the sentences; and vice versa. That is, Picture 1 is the matching one for (1), and the Picture 2 is the one that is mismatching with the corresponding sentence. However, as for (2), Picture 1 is the mismatching one whereas the Picture 2 is the matching one.

The other test sentences and the corresponding pictures prepared for Experiment One are given below:

(3) Test Sentence: Jerry ve Tweety kendilerini kaşıyorlar.
"Jerry and Tweety are scratching themselves."



Pic. 3.The match condition



Pic. 4.The mismatch condition

(4) Test Sentence: Jerry ve Tweety birbirlerini kaşıyorlar.
"Jerry and Tweety are scratching each other."



Pic. 4.The match condition



Pic. 3.The mismatch condition

(5) Test Sentence: Şirinler ve Cüceler kendilerini kuruluyorlar.

“The Smurfs and the Dwarfs are drying themselves. “



Pic. 5.The match condition



Pic. 6.The mismatch condition

(6) Test Sentence: Şirinler ve Cüceler birbirlerini kuruluyorlar.

“The Smurfs and the Dwarfs are drying each other.”



Pic. 6.The match condition



Pic. 5.The mismatch condition

(7) Test Sentence: Pamuk Prenses’in arkadaşları kendilerini kaşıyorlar.

“Snow White’s friends are scratching themselves.



Pic. 7.The match condition



Pic. 8.The mismatch condition

(8) Test Sentence: Pamuk Prenses'in arkadaşları birbirlerini kaşıyorlar.

"Snow White's friends are scratching each other."



Pic. 8.The match condition



Pic. 7.The mismatch condition

(9) Test Sentence: Şirinler'in arkadaşları kendilerini yıkıyorlar.

"The Smurfs' friends are washing themselves.



Pic. 9.The match condition



Pic. 10.The mismatch condition

(10) Test sentence: Şirinler'in arkadaşları birbirlerini yıkıyorlar.

"The Smurfs' friends are washing each other."



Pic. 10.The match condition



Pic. 9.The match condition

3.2.1.1.2. Experiment Two

Experiment Two involved 18 test sentences, formed with both reflexives and reciprocals in syntactically complex structures on the pursuit of Experiment One in order to find out if the presence of anaphors in complex structures could bring about a perplexity for children semantically. Complex structures were constructed with infinitival complement clauses, involving either reflexive or reciprocal. The three verbs were always used in the complement clauses. Moreover, the subjects of the sentences were used in two ways: as the subjects of the matrix clauses were plural nouns, the subjects of the complement clauses were selected among the plural nouns, conjoined singular or plural nouns, and genitive nouns. Conversely, as the subjects of the matrix clauses were selected among those, the subjects of the complement clauses were plural nouns. The reason why a subject form was positioned as subject of the matrix clause in one of the sentences, and as the subject of the complement clause in the other was to test whether the structure of the subject in any position would have an influence on the comprehension of the sentences. As a result, reflexive and reciprocal sentences were formed in the syntactically and lexically same sentences. These identical reflexive and reciprocal sentences, thus, constituted a pair. For each sentence pair, two pictures were prepared. In other words, one of the pictures illustrated the corresponding content of reflexive sentence whereas the other illustrated the meaning of reciprocal sentence, and these two pictures were presented for both of the sentences. The following examples indicate the presentation of sentences with their corresponding pictures:

(11) Test Sentence: Cüceler, Şirinler'in kendilerini yıkamalarını istiyorlar.
"The Dwarfs want the Smurfs to wash themselves."

Pic. 11.The match condition



Pic.12.The mismatch condition



(12) Test Sentence: Cüceler, Şirinler'in birbirlerini yıkamalarını istiyorlar.

"The Dwarfs want the Smurfs to wash each other."

Pic. 12. The match condition



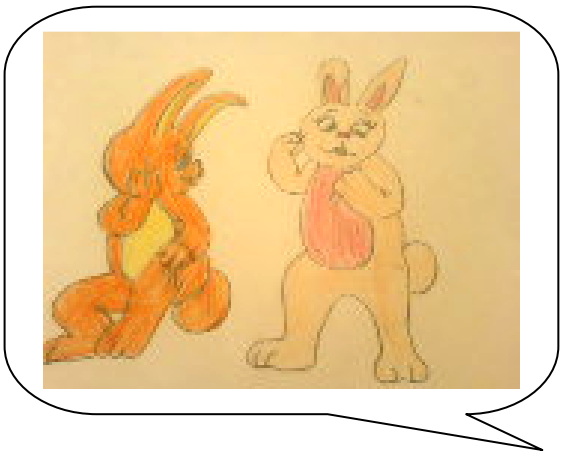
Pic.11. The mismatch condition



(13) Test Sentence: Şirinler'in arkadaşları, tavşancıkların kendilerini kaşımalarını istiyorlar.

"The Smurfs' friends want the rabbits to scratch themselves."

Pic. 13.The match condition



Pic. 14.The mismatch condition





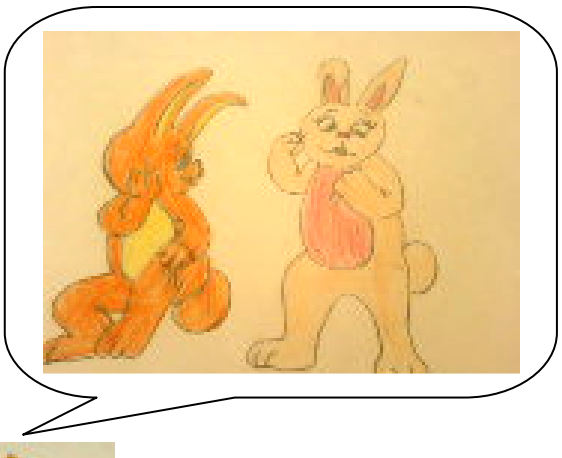
(14) Test Sentence: Şirinler'in arkadaşları, tavşancıkların birbirlerini kaşımalarını istiyorlar.

"The Smurfs' friends want the rabbits to scratch each other."

Pic. 14.The match condition



Pic. 13.The mismatch condition

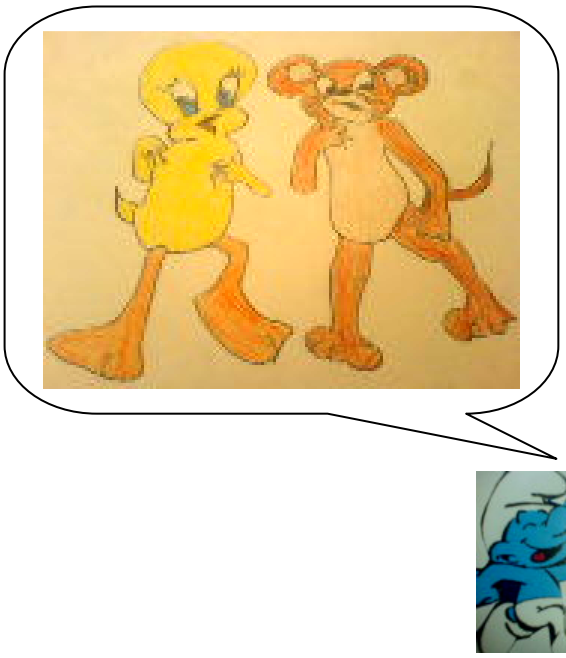




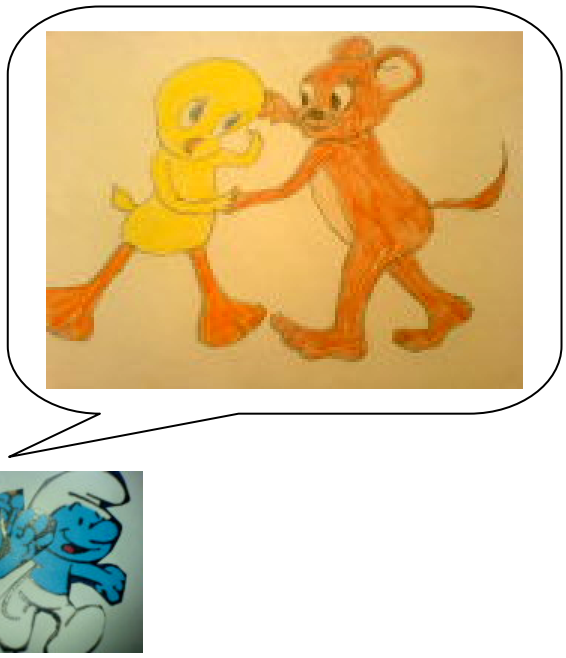
(15) Test Sentence: Şirinler, Jerry ve Tweety'nin kendilerini kaşımalarını istiyorlar.

"Smurfs want Jerry and Tweety to scratch themselves."

Pic. 15.The match condition



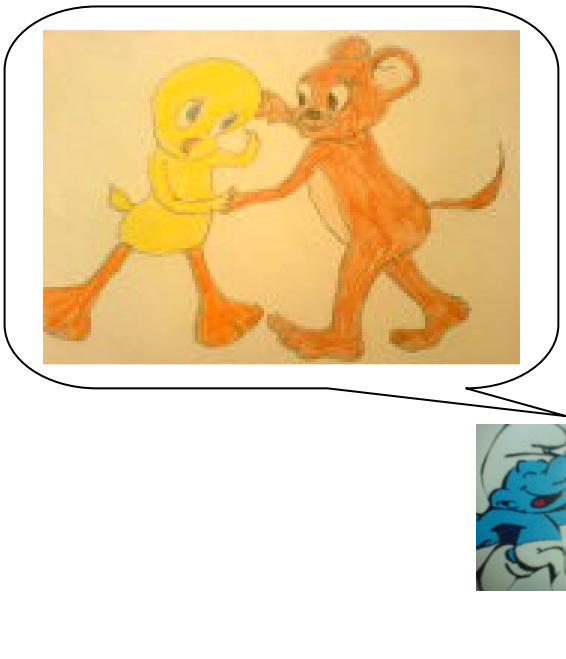
Pic. 16.The mismatch condition



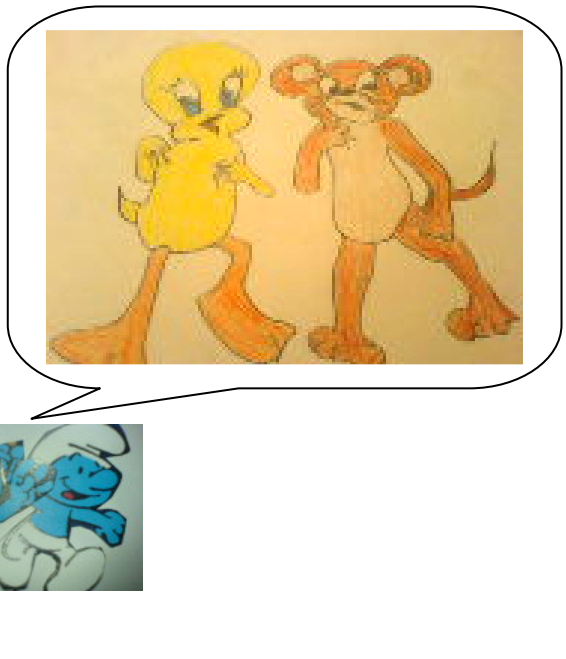
(16) Test Sentence: Şirinler, Jerry ve Tweety'nin birbirlerini kaşımalarını istiyorlar.

"Smurfs want Jerry and Tweety to scratch each other."

Pic. 16.The match condition



Pic. 15.The mismatch condition



(17) Test Sentence: Pamuk Prenses'in arkadaşları kediciklerin kendilerini yıkamalarını istiyorlar.

"Snow White's friends want the cats to wash themselves."

Pic. 17.The match condition



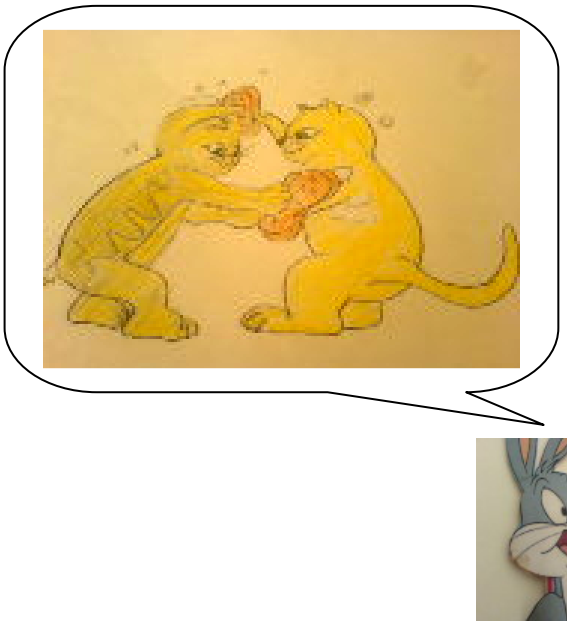
Pic. 18.The mismatch condition



(18) Test Sentence: Pamuk Prenses'in arkadaşları kediciklerin birbirlerini yıkamalarını istiyorlar.

"Snow White's friends want the cats to wash each other."

Pic. 18.The match condition



Pic. 17.The mismatch condition



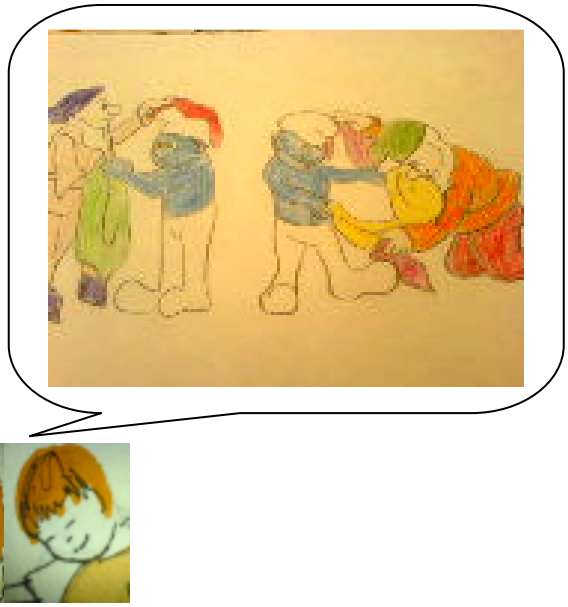
(19) Test Sentence: Çocuklar, Şirinler ve Cüceler'in kendilerini kurulamalarını istiyorlar.

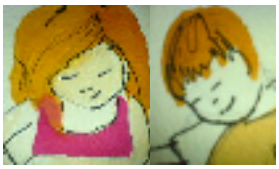
"The Children want the Smurfs and the Dwarfs to dry themselves."

Pic. 19.The match condition



Pic. 20.The mismatch condition





(20) Test Sentence: Çocuklar, Şirinler ve Cüceler'in birbirlerini kurulamalarını istiyorlar.

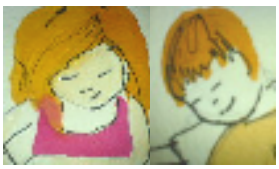
"The Children want the Smurfs and the Dwarfs to dry each other."

Pic. 20.The match condition



Pic. 19.The mismatch condition





(21) Test Sentence: Şirinler ve Cüceler, çocukların kendilerini kurulamalarını istiyorlar.

“The Smurfs and the Dwarfs want the children to dry themselves. “

Pic. 21. The match condition



Pic. 22.The mismatch condition





(22) Test Sentence: Şirinler ve Cüceler, çocukların birbirlerini kurulamalarını istiyorlar.

“The Smurfs and the Dwarfs want the children to dry each other. “

Pic. 22.The match condition



Pic. 21. The mismatch condition

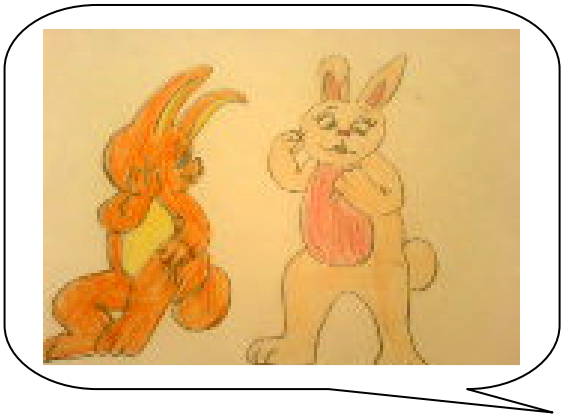




(23) Test Sentence: Kedicikler, Pamuk Prenses'in arkadaşlarının kendilerini kaşımalarını istiyorlar.

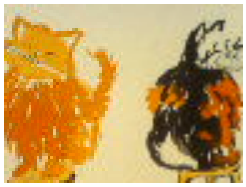
"The cats want Snow White's friends to scratch themselves."

Pic. 23.The match condition



Pic. 24.The mismatch condition





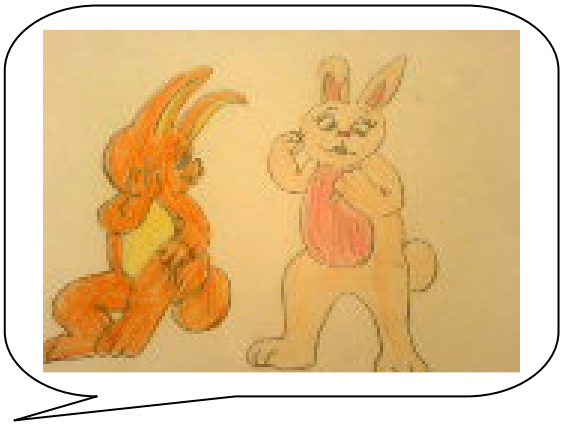
(24) Test Sentence: Kedicikler, Pamuk Prenses'in arkadaşlarının birbirlerini kaşımalarını istiyorlar.

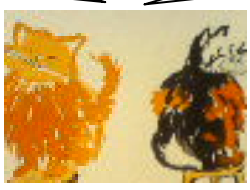
"The cats want Snow White's friends to scratch each other."

Pic. 24.The match condition



Pic. 23.The mismatch condition





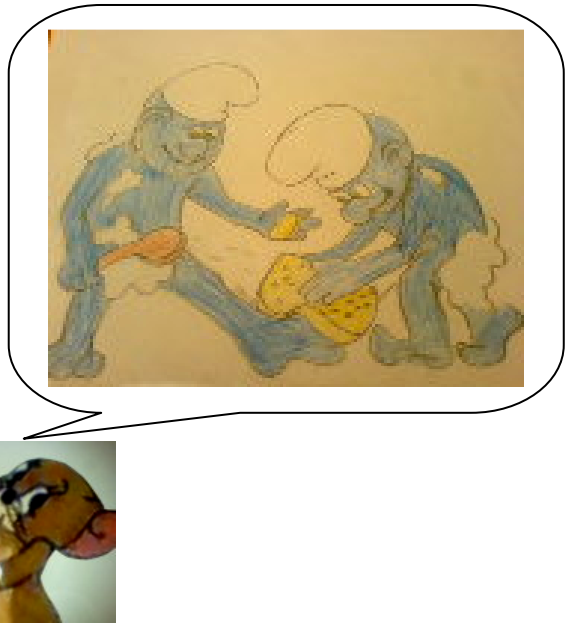
(25) Test Sentence: Jerry ve Tweety, Şirinler'in kendilerini yıkamalarını istiyorlar.

"Jerry and Tweety want the Smurfs to wash themselves."

Pic. 25.The match condition



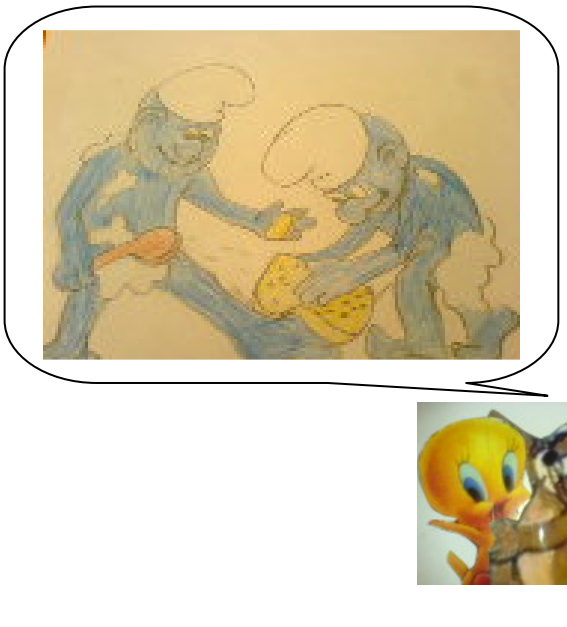
Pic. 26.The mismatch condition



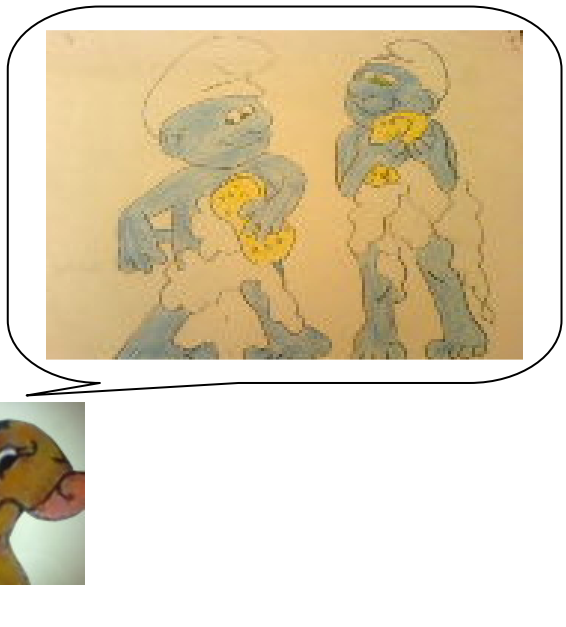
(26) Test Sentence: Jerry ve Tweety, Şirinler'in birbirlerini yıkamalarını istiyorlar.

"Jerry and Tweety want the Smurfs to wash each other."

Pic. 26. The match condition



Pic.25. The mismatch condition



(27) Test Sentence: Şirinler, çocukların arkadaşlarının kendilerini yıkamalarını istiyorlar.

“The Smurfs want the boys’ friends to wash themselves.”

Pic. 27.The match condition



Pic. 28.The mismatch condition





(28) Test Sentence: Şirinler, çocukların arkadaşlarının birbirlerini yıkamalarını istiyorlar.

“The Smurfs want the boys’ friends to wash each other.”

Pic. 28.The match condition



Pic. 27.The mismatch condition

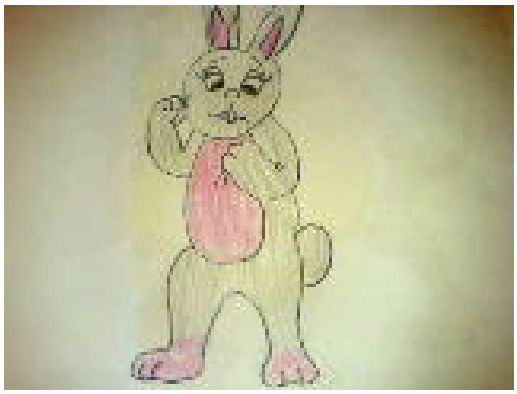




3.2.1.1.3. Experiment Three

Experiment Three involved 4 simple and 8 complex structures, which were designed with two forms of third person singular reflexive, namely the bare form “kendi” and inflected form “kendisi”. The purpose of the experiment was to find out how children interpret two forms both in simple and complex structures in the existence of one more possible antecedent in the context as it was stated in Chapter 2 that the bare form was interpreted as a pure reflexive, but the inflected form may be interpreted as either a reflexive or a pronominal. More precisely, the experiment was designed for three purposes: First, how influential the syntactic structure was considered. Further, whether the bare form of the reflexive was interpreted only as a reflexive as stated in Turkish grammar was concerned. Lastly, whether the inflected form differed from the bare form in terms of interpretation as claimed by Turkish grammarians was questioned. Accordingly, the test sentences were formed, taking into account these three purposes. Two types of subject forms, which were singular and genitive nouns, were used both in simple and complex sentences. Sentences, formed with the bare form and the inflected form, constituted a syntactically and lexically identical pair to enable the comparison. Two pictures were prepared for each identical sentence. In other words, the same two pictures were used for both of the sentences, formed with “kendi” and “kendisi”. One of the pictures illustrated the meaning which was perceived when the reflexive was bound by the c-commanding antecedent, being compatible with Principle A of the Binding Theory. However, in the other picture, the meaning which was perceived when the reflexive was bound by the subject outside the local domain was illustrated, which violated the Binding Principle. In other words, one of the pictures was the matching one with the target test sentence while the other picture was the mismatching one, following the notion of the Binding Principle that the reflexive must be bound within the local domain. The following sentences show the design of simple sentences and their accompanying pictures:

(29) Test Sentence: Tavşancık kendini kaşıyor.
“The rabbit is scratching herself.”



Pic. 29.The match condition



Pic. 30.The mismatch condition

(30) Test Sentence: Tavşancık kendisini kaşıyor.

“The rabbit is scratching herself.”



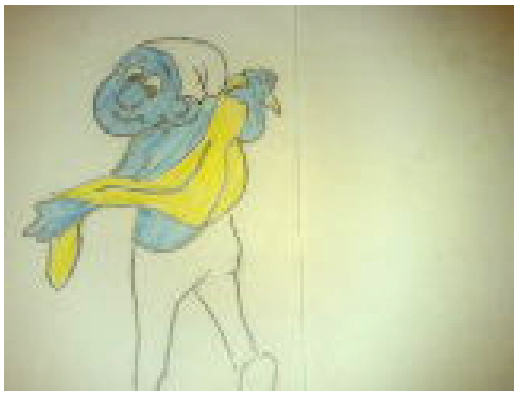
Pic. 29.The match condition



Pic. 30.The mismatch condition

(31) Test Sentence : Ece’nin arkadaşı kendini kuruluyor.

“Ece’s friend is drying himself.”



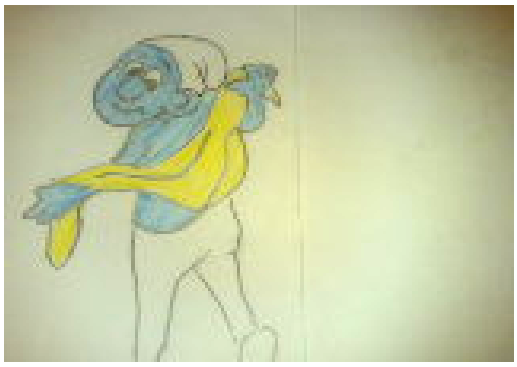
Pic. 31.The match condition



Pic. 32.The mismatch condition

(32) Test Sentence : Ece'nin arkadaşı kendisini kuruluyor.

"Ece's friend is drying himself."



Pic. 31.The match condition



Pic. 32.The mismatch condition

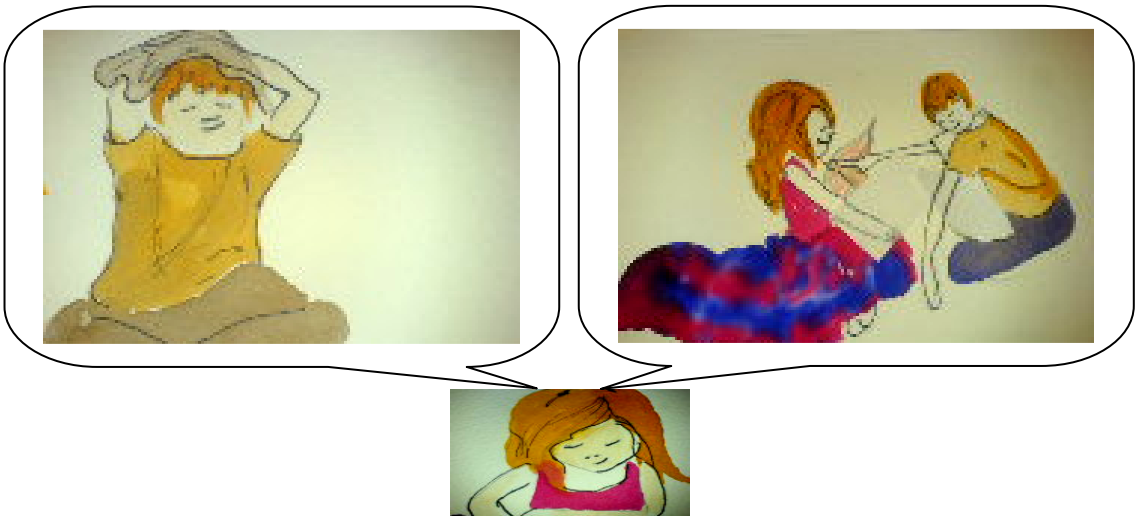
As shown in the preceding examples, the sentence involving the bare reflexive is similar to the one involving the inflected reflexive in syntactic and lexical form. Moreover, the same two pictures were prepared for these similar test sentences. The same experimental design was considered during the preparation of complex structures. In addition, they were constructed with each subject form being reversed in matrix and complement clauses. That is, each subject form was positioned both in the matrix and complement clause. The following examples show the design of the complex sentences and their pictures:

(33) Test sentence: Ece, Efe'nin kendini kurulamasını istiyor.

"Ece wants Efe to dry himself."

Pic. 33.The match condition

Pic. 34.The mismatch condition



(34) Test sentence: Ece, Efe'nin kendisini kurulamasını istiyor.

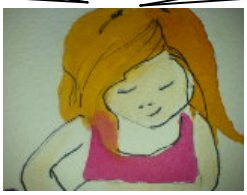
"Ece wants Efe to dry himself."

Pic. 33.The match condition



Pic. 34.The mismatch condition





(35) Test sentence: Pamuk Prenses'in arkadaşı, Şirin'in kendini yıkamasını istiyor.

"Snow White's friend wants the Smurf to wash himself."

Pic. 35.The match condition



Pic. 36.The mismatch condition





(36) Test sentence: Pamuk Prenses'in arkadaşı, Şirin'in kendisini yıkamasını istiyor.

"Snow White's friend wants the Smurf to wash himself."

Pic. 35.The match condition



Pic. 36.The mismatch condition



(37) Test sentence : Şirin, Tom'un arkadaşının kendini kaşımasını istiyor.

"The Smurf wants Tom's friend to scratch himself."

Pic. 37.The match condition



Pic. 38.The mismatch condition



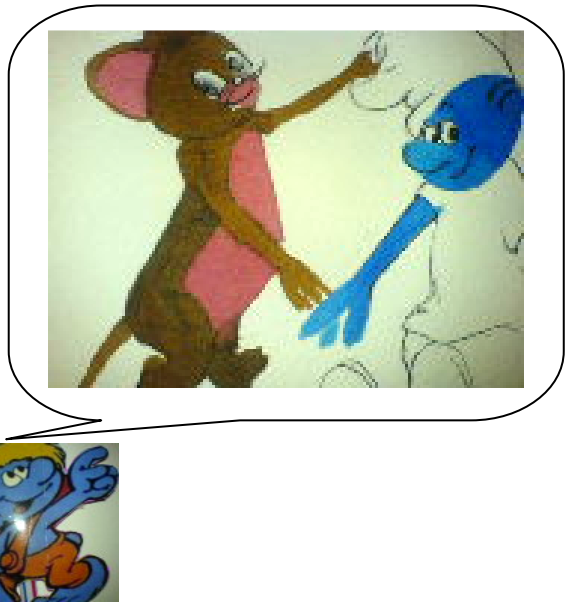
(38) Test sentence : Şirin, Tom'un arkadaşının kendisini kaşımasını istiyor.

"The Smurf wants Tom's friend to scratch himself."

Pic. 37.The match condition



Pic. 38.The mismatch condition

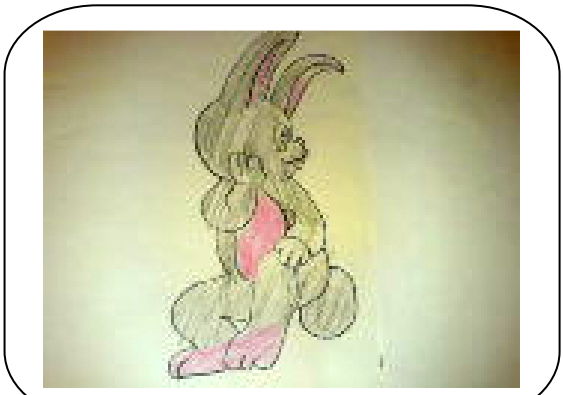




(39) Test Sentence: Kediciğin yavrusu, tavşancığın yavrusunun kendini kaşımasını istiyor.

"The kitten wants the young rabbit to scratch himself."

Pic. 39.The match condition



Pic.40.The mismatch condition





(40) Test Sentence: Kediciğin yavrusu, tavşancığın yavrusunun kendisini kaşımasını istiyor.
"The kitten wants the young rabbit to scratch himself."

Pic. 39.The match condition



Pic.40.The mismatch condition



3.2.2. Method of Data Collection

The general procedure for all studies included individual interviewing for all the children by the experimenter. The children were selected from Çekirdek Kİndergarten and Family Consulting Centre in Çankaya district in Ankara for their willingness to complete the task, and each child was seen individually in an empty room for a series of 4 sessions, each of which lasted approximately 20-30 minutes.

Each one of the tests was presented with the Picture-Identification task, which requires the children to identify a single picture from a set of two pictures presented with each sentence. Before the experimentation, the children were introduced with a well-known puppet, Mickey Mouse, and they were told that

Mickey Mouse requested them to help him to learn Turkish. Besides, a set of props, which were characters from popular cartoons, e.g Snow White, Tom and Jerry, Tweety, etc, was shown to the children in order to familiarize them with the characters used in the test sentences and to eliminate the potential perplexity caused by less known characters before each experiment. Moreover, children were asked to act out all the verbs used in the test sentences and to show the characters used in different subject constructions in order to observe whether the recognition of these units would affect the result of the focused structure. After the completion of the "familiarization phase", namely children were deemed to be familiar with the all the relevant props, the meaning of the verbs and subject constructions in the test sentences, the experimenter introduced the training sentences, specially designed to train the children in the task they would be asked to perform, and to ensure that the children understood the task. Each experiment started with 2 training sentences and followed by test sentences. Each of the sentences was preceded with a short introductory story to provide children with an actual context, and they were asked to help Mickey Mouse to identify the picture depicting the test sentence among two pictures when he was confused. Alltogether, each child received 40 test sentences during the tests. The test sentences in each experiment were considered to be presented in such an order that similar sentence pairs were not following each other. After each experiment, the test sentences which were concluded to be mostly recognized wrongly by all three age groups were tested in a lexically different structure with an extra experiment in order to observe if the same results would be obtained. All responses by the children were systematically reinforced regardless of whether the answers were right or wrong. All of the answers were recorded on a response sheet at the time of the interview.

3.2.2.1. Experiment One

The picture-identification task was used to test all the conditions given in Table 3.1 for the tests. Semantic comprehension of reflexives and reciprocals in syntactically simple structures was tested in Experiment One. Each of the

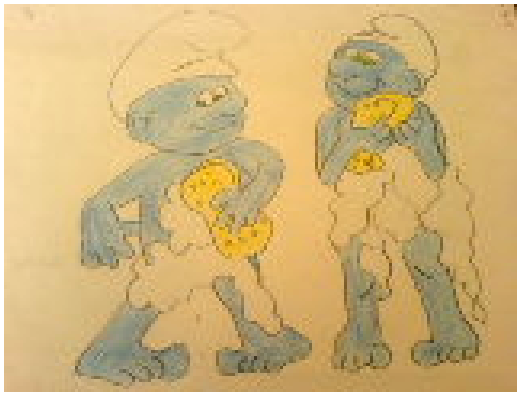
syntactically and lexically identical sentence pairs was constructed with either reflexive or reciprocal by use of one of the three verbs and a different subject construction. The children heard each test sentence once with two pictures to identify the one depicting the sentence constructed with either reflexive or reciprocal, and they were told to help Mickey Mouse to show the picture illuminating the test sentence. Each test sentence was preceded with an introductory story, and the introductory story was told with the accompaniment of the props. The children were tested on totally 10 test sentences, five of which were constructed with the use of reflexives and the other half with reciprocals. Before the actual test, children were tested on simple sentences that did not involve reflexives or reciprocals with an act-out task to ensure that the given sentence structures, verbs and subject constructions were already acquired, and that the possible perplexity in the actual test did not result from these units but from the target units. The one in (41) is a sample pre-test sentence testing their recognition on simple structures, excluding reflexives and reciprocals.

(41) Pre-test Sentence: Pamuk Prenses'in arkadaşları burunlarını kaşıyorlar.
"Snow White's friends are scratching their noses."

With the presentation of such a simple sentence, children were first asked to show which characters were performing the action in order to observe whether they could comprehend the subject construction, and then to make these characters act out the event corresponding to the content of the sentence to observe if they could comprehend the verbs and the simple sentences. Moreover, children were presented two training sentences that were similar to the ones in the actual test in order to ensure that they understood the procedure of the game. The ones in (42) and (43) are sample sentences in the actual test examining the semantic comprehension of reflexive and reciprocal in simple sentences with their introductory stories and accompanying pictures:

(42) Introductory Story: The Smurfs (Lazy Smurf and Handy Smurf) go to the forest to play. They both are very dirty after having been outside playing in the mud. Lazy Smurf says “we have to clean up before going home” and Handy Smurf agrees that Papa Smurf will get angry otherwise. Look what they do:

Test Sentence : Şirinler kendilerini yıkıyorlar.
“The Smurfs are washing themselves.”



Pic. 1.The match condition



Pic. 2.The mismatch condition

(43) Introductory Story: The Smurfs have a birthday party for Smurfette. While Clumsy Smurf is bringing the birthday cake, he falls down, and his clothes get dirty. Handy Smurf tries to help him, but when Clumsy Smurf hugs him to thank, his clothes also get dirty. Look what they do:

Test Sentence: Şirinler birbirlerini yıkıyorlar.
“The Smurfs are washing each other.





Pic. 2.The match condition Pic. 1.The mismatch condition

As shown in the samples above, each similar sentence was constructed with either reflexive or reciprocal, and presented with the different stories but with the same pictures in each time in order to test children's comprehension on reflexive and reciprocal semantically. With the presentation of the introductory stories, an actual context was provided, and children were prepared for the following test sentences. In succession to the presentation of the test sentence, the pictures that were matching and mismatching with the target sentence were shown, and their correct and incorrect responses were recorded on the answer sheet.

3.2.2.2. Experiment Two

Experiment Two included complex sentences constructed with the use of reflexives and reciprocals in order to test semantic interpretation in complex structures. The subjects of the matrix and complement clauses were varied among the five types of forms, shown in Table 3.2., and the verbs were used as the predicate of the complement clauses. Each sentence was presented with the inclusion of either reflexive or reciprocal in a random order to test if the existence of these units in complex structures would have an influence on the semantic comprehension, distinctly from the comprehension of these units in simple structures presented in Experiment One. Each sentence was presented once with two pictures and their introductory stories to test the children's capability on distinguishing reflexives from reciprocals semantically in complex structures. Before the experimentation, the children were told that the characters were playing a game called "Simon says", in which some characters wanted the others to perform something, and one of the pictures illustrated the correct action; however, Mickey Mouse was sometimes confused about finding which picture it was and wanted the children to help him. As the experiment involved eighteen sentences, the experiment was completed in two sections in order to eliminate the risk of distraction caused by a large number of test sentences. Moreover, two training sentences, which were identical to the ones

in the actual test, were presented to the children to prepare them to the actual test. The following sample sentences are among the test sentences used in Experiment Two with their introductory stories:

(44) Introductory Story: The children, the Smurfs and the Dwarfs are playing Simon Says game, and the children want the Smurfs and the Dwarfs to perform something; look what it is:

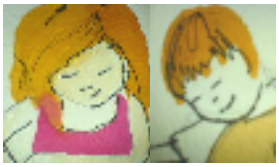
Test Sentence: Çocuklar, Şirinler ve Cüceler'in kendilerini kurulamalarını istiyorlar.
"The Children want the Smurfs and the Dwarfs to dry themselves."

Pic. 19.The match condition



Pic. 20.The mismatch condition

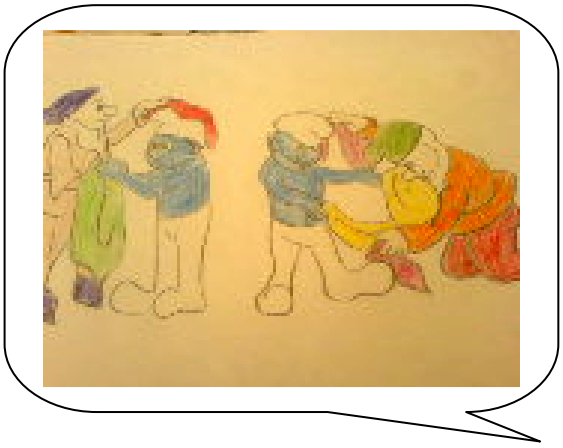




(45) Introductory Story: The children, the Smurfs and the Dwarfs are playing Simon Says game, and the children want the Smurfs and the Dwarfs to perform something; look what it is:

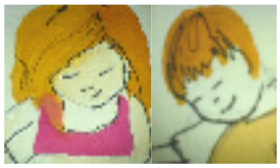
Test Sentence: Çocuklar, Şirinler ve Cüceler'in birbirlerini kurulamalarını istiyorlar.
"The Children want the Smurfs and the Dwarfs to dry each other."

Pic. 20.The match condition



Pic. 19.The mismatch condition





As illuminated in the sample sentences (44) and (45), each similar sentence was presented with the use of the reflexive in the one, and with the use of the reciprocal in the other. In each time, the same two pictures were shown to the children in a random order. Further, the position of the subjects used in these sentences were substituted in another pair of sentences in order to test whether the structure of the subject in the complement clause would be of importance to the comprehension, as displayed in (46) and (47).

(46) Introductory Story: The Smurfs, the Dwarfs and the children are playing Simon Says game, and the Smurfs and the Dwarfs want the children to perform something; look what it is:

Test Sentence: Şirinler ve Cüceler, çocukların kendilerini kurulamalarını istiyorlar.

“The Smurfs and the Dwarfs want the children to dry themselves.

Pic. 21. The match condition



Pic. 22.The mismatch condition



(47) Introductory Story: The Smurfs, the Dwarfs and the children are playing Simon Says game, and the Smurfs and the Dwarfs want the children to perform something; look what it is:

Test Sentence: Şirinler ve Cüceler, çocukların birbirlerini kurulamalarını istiyorlar.

“The Smurfs and the Dwarfs want the children to dry each other.”

Pic. 22.The match condition



Pic. 21. The mismatch condition



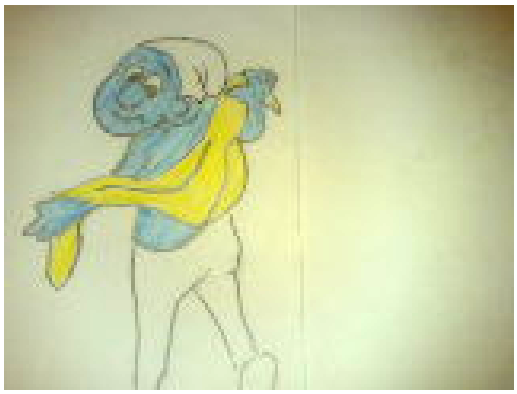
3.2.2.3. Experiment Three

Experiment Three was designed in order to observe the comprehension of the children on antecedent selection for the two types of third person singular reflexive “kendi” and “kendisi” in simple and complex structures. As stated in Chapter Two, while “kendi” is interpreted as a reflexive, “kendisi” is likely to be interpreted as either a reflexive or a pronominal. On that account, the purpose of this experiment was to find out how children interpret two forms both in simple and complex structures in the existence of one more possible antecedent in the context. More precisely, this experiment was designed for three purposes: First, whether the syntactic structure had an influence in the correct interpretation of either anaphor was considered. Moreover, whether the bare form of the reflexive was interpreted only as a reflexive as stated in Turkish grammar was concerned. Lastly, whether the inflected form differed from the bare form in terms of interpretation as claimed by Turkish grammarians was questioned. Therefore, both forms were presented with their introductory stories which were designed in the way that the reflexives in the test sentences could refer to the both local and nonlocal antecedents. In simple sentences, singular nouns and genitive nouns were used as antecedents. Each sentence was constructed with either the bare form “kendi” or the inflected form “kendisi”, and presented to the children with the same pictures for the presentation of both usages. Based on the stories presented prior to the test sentences, the children were observed about which antecedent, namely local or nonlocal antecedent, would be selected for the reflexives. The children heard 4 simple sentences totally. As pursued in all studies, the children were tested on two training sentences before the actual test, which were very similar to the test sentences displayed in (48) and (49).

(48) Introductory Story : It starts raining when Ece and her friend play in the garden. They go into the house, but Ece’s mother say that they must get dried not to be ill. Ece’s mother gives them a towel. Ece’s friend gets the towel and look what he does.

Test Sentence : Ece'nin arkadaşı kendini kuruluyor.

"Ece's friend is drying himself."



Pic. 31.The match condition

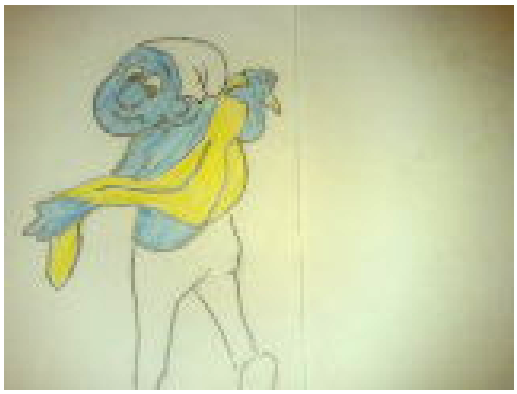


Pic. 32.The mismatch condition

(49) Introductory Story: Ece and her friend are at the bus stop. A fast car splashes water over them. They've got only one towel. Ece's friend gets the towel, and look what he does.

Test sentence: Ece'nin arkadaşı kendisini kuruluyor.

" Ece's friend is drying himself."



Pic. 31.The match condition



Pic. 32.The mismatch condition

For such test sentences, the children were shown the same pictures in each time, in one of which it was illustrated that Dwarf is drying himself, and in the other, he is drying Ece. The children's responses were assessed as correct when they pointed at picture 31; which was accepted as the matching one, following the Binding Principle.

As for the complex structures, reflexives were placed within the infinitival complement clauses, whose subjects were either a singular noun or a genitive noun. Likewise, the subjects of the matrix clauses were the ones used in the complement clauses. The children were tested on 8 sentences for the antecedent selection among the potential ones for the reflexive in complex structures, and they were told that the characters were playing a game called “Simon says”, in which some characters wanted the others to perform something, and one of the pictures illustrated the correct action; however, Mickey Mouse was sometimes confused about finding which picture it was and wanted the children to help him. As pursued in all studies, the children were tested on two training sentences with their introductory stories in an act-out task like the following actual test sentences :

(50) Introductory Story : Snow White’s friend and the Smurf play in mud. Before going home, they go near the lake to wash up. Snow White’s friend wants the Smurf to perform something; look what Snow White’s friend wants:

Test sentence: Pamuk Prenses’in arkadaşı, Şirin’in kendini yıkamasını istiyor.
“Snow White’s friend wants the Smurf to wash himself.”

Pic. 35.The match condition



Pic. 36.The mismatch condition





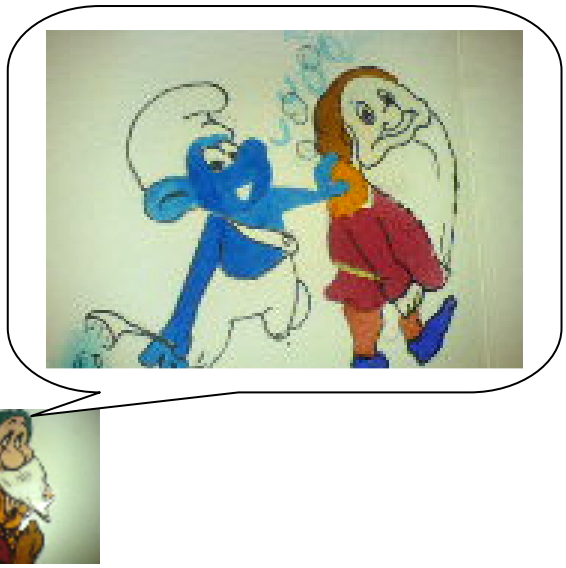
(51) Introductory Story: Snow White's friend and the Smurf fall over a muddy area when playing in the garden. They must wash up before going home. Snow White's friend wants the Smurf to perform something; look what Snow White's friend wants:

Test sentence: Pamuk Prenses'in arkadaşı, Şirin'in kendisini yıkamasını istiyor.
"Snow White's friend wants the Smurf to wash himself."

Pic. 35.The match condition



Pic. 36.The mismatch condition

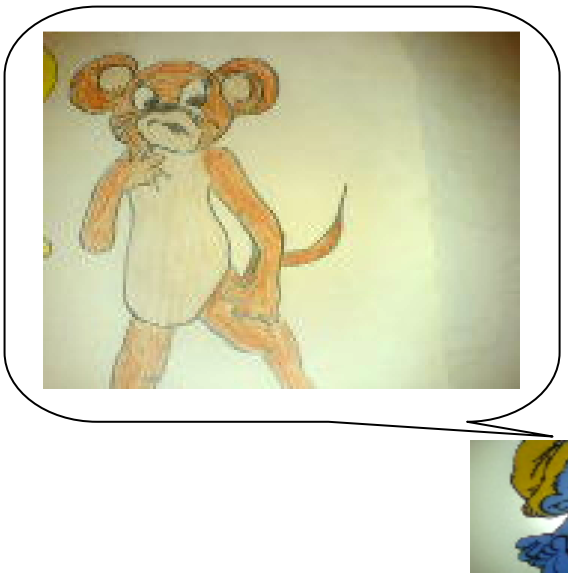


As indicated in the examples above, each similar sentence structure was presented both with the bare form and the inflected form of reflexive. As regarded in Experiment Two, which were also designed with complex sentences, through this experiment each subject construction was considered to be used as the subject of both matrix clause and the complement clause, as shown in the following examples:

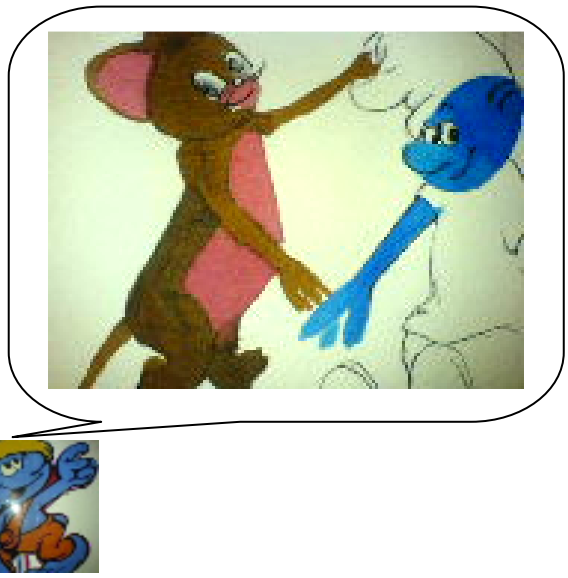
(52) Introductory Story : The Smurf and Tom's friend go picking up flowers. But the flowers make them scratch. The Smurf wants Tom's friend to perform something; look what the Smurf wants:

Test sentence : Şirin, Tom'un arkadaşının kendini kaşımasını istiyor.
"The Smurf wants Tom's friend to scratch himself."

Pic. 37.The match condition



Pic. 38.The mismatch condition





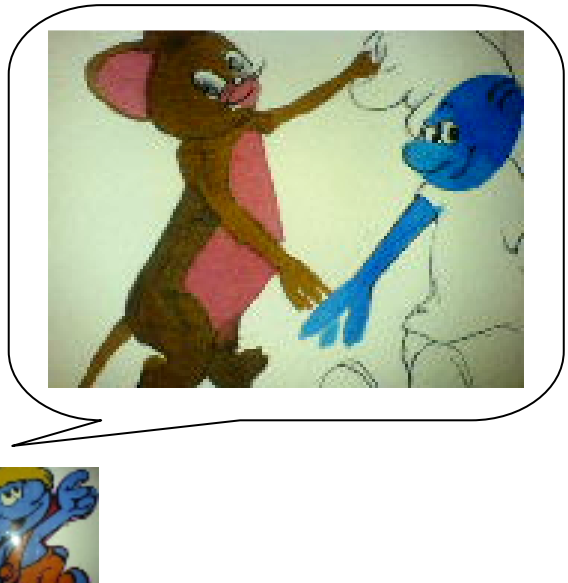
(53) Introductory Story : The Smurf and Tom's friend are ill; and they have got some red spots on their skin. These spots make them scratch. The Smurf wants Tom's friend to perform something; look what the Smurf wants:

Test sentence : Şirin, Tom'un arkadaşının kendisini kaşımasını istiyor.
"The Smurf wants Tom's friend to scratch himself."

Pic. 37.The match condition



Pic. 38.The mismatch condition





The principal difference between the pair of examples (50)-(51) and (52)-(53) is the position of the subject constructions. That is, the genitive subject in the matrix clause in (50) and (51) is positioned in the complement clause in (52) and (53); conversely, singular noun is the subject of the complement clause in (50) and (51) while it takes place in the matrix clause in (52) and (53).

3.3. DATA ANALYSIS: SCORING PROCEDURES AND STATISTICAL ANALYSIS

Before the experiments were conducted, their validity and reliability were checked out. For the validity of the experiments, an expert's opinion was sufficient. Further, the Cronbach Ω value has been found to be 0.55 for Experiment One, 0.75 for Experiment Two and 0.61 for Experiment Three, which indicates the reliability of the experiments.

During the data collection, the responses of the children for each sentence were marked on an answer sheet, prepared specially for each experiment (see Appendices 1, 2, 3) as correct or incorrect, depending only on the children's selection of the matching or mismatching picture. In Experiment One and Two, the children's selection of the picture that illustrated the correct meaning of the target anaphor presented to the children was regarded as the "correct response". In Experiment Three, the selection of the picture which illustrated the meaning which was perceived when the reflexive was bound by the c-commanding antecedent, being compatible with Principle A of the Binding Theory was regarded as the "correct response". Their performance on each anaphor was shown in the form of percentages. The significance values of these percentage analyses were assessed with the use of One Way Anova and Tukey HSD tests. In the cases that these tests could not be used because the parametric conditions were not met, Kruskal Wallis and Dunnett C tests were used. The way how the scoring and the analyses were done can be summarized in the following way:

For the analysis of the data in the form of percentage, the correct interpretation of each child for each sentence was scored 1, and the incorrect interpretation was scored 0. Accordingly, the mean of the correct responses to all sentences involving the target anaphor was considered as the percentange of the performance of each group. The percentage analysis was done in order to explore each age group's performance on each target anaphor. Accordingly, these results were used to discuss three points:

First, the presentation of every age group's performance by percentages enabled to compare the performances of the groups in order to clarify whether there was a difference between the three age groups in terms of the correct interpretation of each target anaphor. The reason why a comparison was made between the performances of the age groups is to discover if there was a developmental change in the correct interpretation of each target anaphor, depending on the age of the children. For instance, in Experiment One, the performances of 4-, 5- and 6-year-old children on the semantic interpretation of reflexive was compared by percentage, and the difference between them was displayed. This comparison was also considered for other studies.

Moreover, the performances of a group on a target anaphor involved in the syntactically different structures, were compared with each other in order to find out if the syntactic complexity affects the correct interpretation of that target anaphor. In other words, to what extent the existence of an anaphor either in simple or complex structures influences a group's performance on that anaphor was investigated by the comparison of the performances of that age group on both simple and complex sentences.

Lastly, percentage analysis allowed to compare an age group's performances on two target anaphors in order to discover if the performances of that group on the target anaphors, which were in comparison to each other, changed depending on the anaphor.

For the statistical analysis of the data, the correct interpretation of each child for each sentence was scored 1, and the incorrect interpretation was scored 0 in each experiment. Accordingly, the performance of each child was assessed with the total of his/her correct responses to the target anaphor in each experiment. Before the analysis of each experiment, whether the conditions for the parametric test were available was tested with the tests of scale, normality and homogeneity of groups. Accordingly, the One Way Anova test was used in order to find out if there was a significant difference between the groups in the event that the parametric conditions were available. Moreover, the Tukey HSD test was conducted in order to determine which age group's performance was significantly different from the others. On condition that the parametric conditions were not met, the Kruskal Wallis test was utilized instead of One Way Anova, and Dunnett C test instead of Kruskal Wallist test. To determine the statistical significance for each of the studies, a probability level of p= .05 was required. The statistical analyses were done in order to display if the results shown in the form of percentages were significant. More precisely, the statistical analyses were conducted in parallel with the percentage analyses in order to explore whether the results displayed by percentage analyses were, indeed, significant. Therefore, statistical analyses were also used to discuss three points like percentage analyses:

First, whether the differences between the age groups' performances on a target anaphor were significant was explored by statistical analyses. Second, the differences between the performances of an age group on a target anaphor, appearing in syntactically different structures, were analyzed with the purpose of discovering its significance value. Lastly, whether the differences between the performances of an age group on two target anaphors were significant was analyzed.

The data in each experiment were analyzed both with the presentation of mean percentages of the performances and of the statistical significance of differences between these performances. The way how these analyses were conducted is clarified as the following:

The data in Experiment One were grouped in two as the performances on reflexive and the performances on reciprocal. In order to find out the developmental change on the interpretation of each anaphor among age groups, the age groups' performances were compared with each other by percentages on reflexive and reciprocal, respectively. Following the completion of this first comparison, each group's performance on reflexive was compared with its performance on reciprocal by percentage analysis so as to discover whether there was a difference between the anaphors in terms of the correct interpretation. Every one of the percentage analyses was followed by the statistical analyses to explore its significance value.

As Experiment Two also comprised reflexive and reciprocal, the same procedure as the one in Experiment One was held. Due to the fact that Experiment One included simple structures and Experiment Two contained complex structures, the findings in these studies were also compared with each other. In other words, each group's performance on simple structures was compared with its performance on complex structures in order to investigate the effect of syntactic structure on the correct interpretation of each anaphor.

As for Experiment Three, the data were sorted into two as the performances on the bare form of the third person singular reflexive "kendi" and the performances on the inflected form "kendisi". The performances of age groups were compared with each other by percentage analysis with the purpose of finding out the developmental change in the correct interpretation of each anaphor among the groups. In succession to this analysis, each group's performance on simple structures was compared with its performance on complex structures in order to seek if the syntactic complexity influenced the interpretation of each target anaphor. Lastly, whether the interpretation of two forms of reflexive differed, each group's performances on the syntactically same structures, which involved two forms of reflexive, were compared with each other. For instance, the performance on simple sentences including "kendi" was compared with the performance on simple sentences including "kendisi". All these percentage analyses were followed by statistical analyses, as well.

CHAPTER 4

FINDINGS

4.1. EXPERIMENT ONE : THE INQUIRY OF THE AWARENESS OF SEMANTIC DISTINCTION BETWEEN REFLEXIVE AND RECIPROCAL INVOLVED IN SIMPLE STRUCTURES

Experiment One has been designed to test the children's knowledge of semantic distinction between reflexive and reciprocal in simple structures with the hypotheses that children tend to interpret reflexive as reciprocal up to a certain period, and that children acquire the semantic knowledge of reciprocal earlier than that of reflexive. On the investigation of this hypothesis, Experiment One, thus, aims at accounting for two questions: first, how influential the children's age is on the correct interpretation of each target anaphor is inquired, considering the development among three age groups. Second, whether there is a remarkable difference between interpreting reflexive and reciprocal correctly as far as the individual group's performances on both reflexive and reciprocal are considered. Table 4.1. shows, by age group, the percentages of correct responses to reflexive sentences and reciprocal sentences.

Table 4.1. The percentages of correct responses to reflexive and reciprocal in simple structures in terms of semantic interpretation

	REFLEXIVE	RECIPROCAL
4-year-old N:20	56	84
5-year-old N:20	62	96
6-year-old N:20	84	99

4.1.1. Semantic Interpretation of Reflexive Within Simple Structures

Figure 4.1. shows the difference in the groups' performances in the semantic interpretation of reflexive sentences in simple structures in order to exhibit the effect of the children's age on the correct interpretation. Figure 4.1. indicates that the growth observed for children's correct interpretation of reflexive sentences semantically varies from about a level of 50% (56%) at age 4 to a level of about 80% correct (84) at age 6, with 28% variation from the lowest to the highest level among all the groups. The increase in children's correct interpretation of reflexive by age group (4-year-old, 56%; 5-year-old, 62%; 6-year-old, 84%) seems to indicate that there is a developmental change between age groups in terms of semantic interpretation of reflexive in parallel with the growth of children. However, as the variation of the rates between the age groups is considered, it is explored that the variation between the correct responses of 4- and 5-year-old children is 6%, whereas it is 14% between the performance of 5- and 6-year-old children. This result appears to imply that there is a remarkable change in the interpretation of reflexive around 6.

The rate of this developmental change in the children's performances on the correct interpretation of reflexive is also shown in Table 4.2. In order to determine if the developmental change between the groups is, indeed, on a significant rate as stated on the results of the percentage analysis, One-Way Anova has been conducted on children's responses to the sentences. The results of the Anova for the semantic interpretation of reflexive by age groups reveal that there is a significant difference between the groups in terms of development ($p<.05$), as shown in Table 4.3. The results of the Tukey HSD, which has been conducted on children's responses to the sentences in order to determine which age group's interpretation is significantly different from the others, indicate that the results obtained from the correct responses of 6-year-old children are significantly different from the results obtained from those of 4- and 5-year-old children, as shown in Table 4.4. However, the difference

between the scores of 4- and 5- year-old children is evaluated not to be significant statistically.

Figure 4.1. The percentages of the performance in semantic interpretation of reflexive in simple structures by age groups.

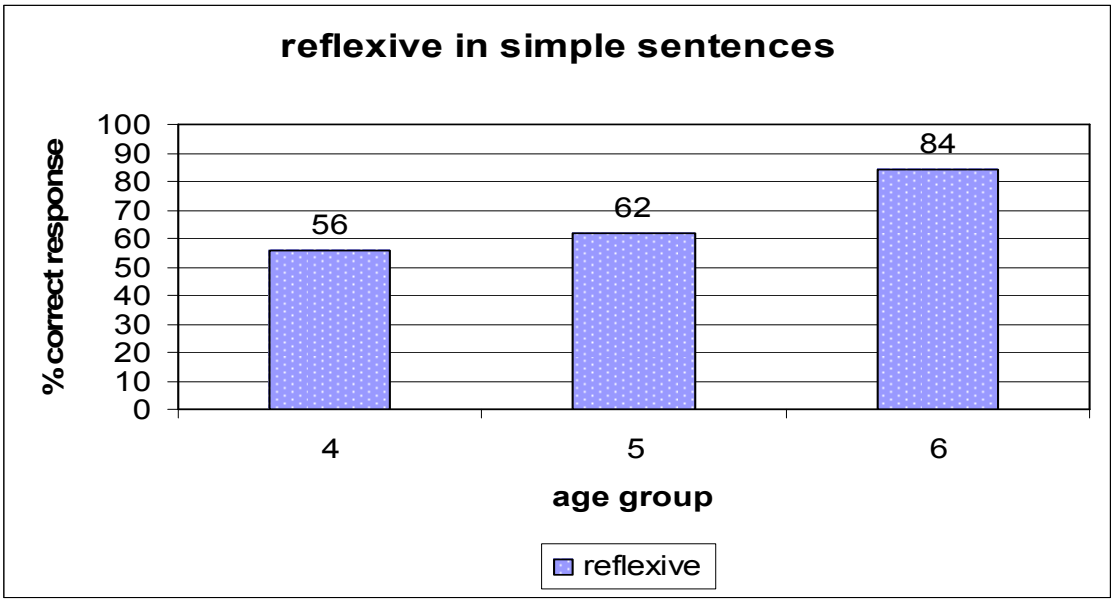


Table 4.2. Mean and standart deviations of the correct responses to reflexive in simple structures

Group	N	Mean	Std. Deviation
4	20	2,80	1,322
5	20	3,10	1,714
6	20	4,20	1,056
Total	60	3,37	1,495

Table 4.3. Anova test on the scores of the semantic interpretation of reflexive in simple structures

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	21,733	2	10,867	5,621	,006
Within Groups	110,200	57	1,933		
Total	131,933	59			

Table 4.4. Tukey HSD test on the scores of the semantic interpretation of reflexive in simple structures

Dependent Variable	(I) Age	(J) Age	Mean Difference (I-J)	Std. Error	Sig.
	4	5	-,300	,440	,775
		6	-1,400(*)	,440	,007
	5	4	,300	,440	,775
		6	-1,100(*)	,440	,040
	6	4	1,400(*)	,440	,007
		5	1,100(*)	,440	,040

4.1.2. Semantic Interpretation of Reciprocal Within Simple Structures

As proceeded in the case of reflexive, the differences between the age groups in terms of the correct interpretation of reciprocal are considered in order to explore if there is a significant developmental change. Figure 4.2. shows the growth observed for children's correct interpretation of reciprocal sentences semantically, which increases from about 80% correct (84%) at the age of 4 to a level of nearly perfect performance (99%) at age 6. The variation between the lowest and the highest is 15% among all the groups. As observed in the interpretation of reflexive sentences, the increase in children's correct interpretation of reciprocal by age group (4-year-old, 84%; 5-year-old, 96%; 6-year-old, 99%) indicates the continuous development in the semantic interpretation of reciprocal as children grow.

The differences in children's performances are also shown in Table 4.5. The results of the Anova, which are illuminated in Table 4.6., have also given out the fact that these developmental differences are significant ($p<.05$). The Tukey HSD test, conducted in order to explore the differences between the groups more explicitly, discloses that the semantic interpretation of reciprocal by 4-year-old children is significantly different from the interpretation by 5- and 6-year-old children in terms of correctness. On the other hand, the difference

between the rates of 5- and 6-year-old children's correct interpretation is not distinctive.

Figure 4.2. The percentages of the performance in semantic interpretation of reciprocal in simple structures by age groups.

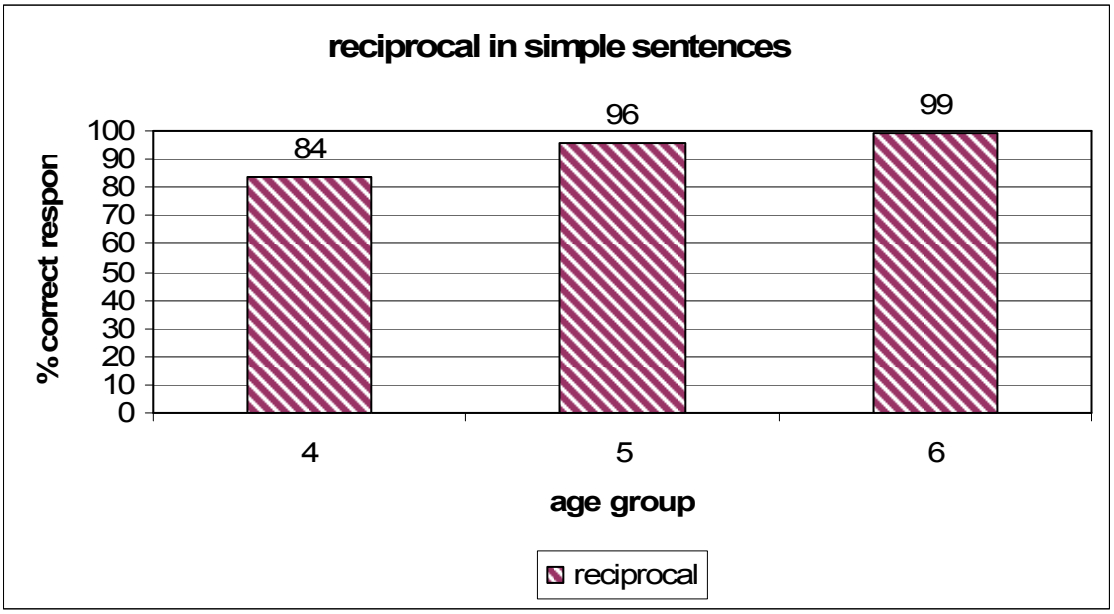


Table 4.5. Mean and standart deviations of the correct responses to reciprocal in simple structures

Group	N	Mean	Std. Deviation
4	20	4,20	,894
5	20	4,80	,523
6	20	4,95	,224
Total	60	4,65	,685

Table 4.6. Anova test on the scores of the semantic interpretation of reciprocal in simple structures

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	6,300	2	3,150	8,410	,001
Within Groups	21,350	57	,375		
Total	27,650	59			

Table 4.7. Tukey HSD test on the scores of the semantic interpretation of reciprocal in simple structures

(I) Age	(J) Age	Mean Difference (I-J)	Std. Error	Sig.
4	5	-,600(*)	,194	,008
	6	-,750(*)	,194	,001
5	4	,600(*)	,194	,008
	6	-,150	,194	,720
6	4	,750(*)	,194	,001
	5	,150	,194	,720

4.1.3. The Comparison of Semantic Interpretation of Reflexive and Reciprocal Within Simple Structures

The comparison of the age groups' performances on reflexive and reciprocal will enable to give comprehensible explanations to the questions of to what extent children know the semantic distinction between reflexive and reciprocal and of how influential the children's age is in terms of the development, by inquiring the hypothesis that children acquire the semantic knowledge of reciprocal earlier than that of reflexive.

As the rates of the development of reflexive and reciprocal is considered on the basis of the findings, a remarkably important result is discovered. As observed in Figure 4.3., which exhibits the comparison of the children's performances on semantic interpretation of both reflexive and reciprocal, the frequency of the correct responses to reflexive by the oldest children is the same as the frequency of the correct responses to reciprocal by the youngest children (84%). In other words, that the highest performance on reflexive is equal to the lowest performance on reciprocal seems to imply that the children's knowledge of the reflexive does not develop in the same rate as the knowledge of reciprocal. Moreover, as the rate of each individual group's correct interpretation of reflexive is compared with the rate of that group's correct interpretation of reciprocal, it is discovered that the frequency of the correct responses to

reciprocal is higher than the frequency of the correct responses to reflexive by all age groups, with 28%, 34% and 15% variations for the ages of 4, 5 and 6, respectively.

The results of the Anova indicate that there is a significant difference in the interpretation of these two units by each age group.

Figure 4.3. The comparison of the percentages of the children's performance in semantic interpretation of reflexive and reciprocal in simple structures.

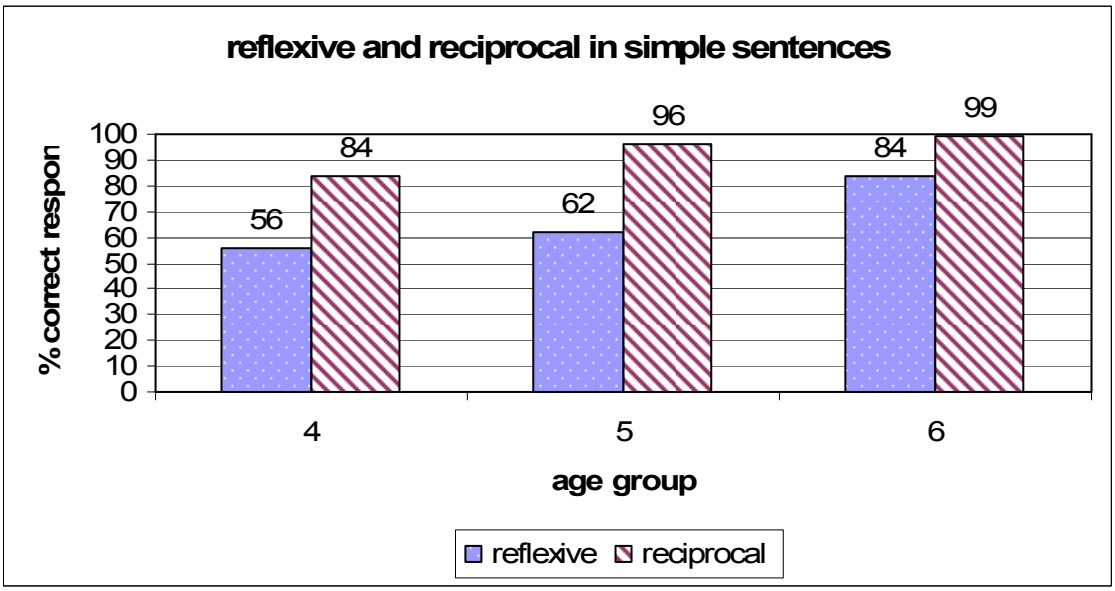


Table 4.8. Anova Test on the scores of semantic interpretation of reflexive and reciprocal in simple structures by 4-year-old children

		Mean	N	Std. Deviation	t	Sig.
Pair 1	**Reflexive**	2,80	20	1,322	-3,687	,002
	Reciprocal	4,20	20	,894		

Table 4.9. Anova Test on the scores of semantic interpretation of reflexive and reciprocal in simple structures by 5-year-old children

		Mean	N	Std. Deviation	t	Sig.
Pair 1	**Reflexive**	3,10	20	1,714	-3,955	,001
	Reciprocal	4,80	20	,523		

Table 4.10. Anova Test on the scores of semantic interpretation of reflexive and reciprocal in simple structures by 6-year-old children

		Mean	N	Std. Deviation	t	Sig.
Pair 1	**Reflexive**	4,20	20	1,056	-3,000	,007
	Reciprocal	4,95	20	,224		

4.2. EXPERIMENT TWO: THE INQUIRY OF THE AWARENESS OF SEMANTIC DISTINCTION BETWEEN REFLEXIVE AND RECIPROCAL INVOLVED IN COMPLEX STRUCTURES

Experiment Two has also been designed in order to test the children's awareness of the semantic difference between reflexive and reciprocal with the hypothesis that children acquire the semantic knowledge of reciprocal earlier than that of reflexive. Distinctly from Experiment One, Experiment Two has included complex structures. As stated in Experiment One, Experiment Two also inquires if there is a significant developmental change in terms of correct interpretation of each target anaphor among three age groups, and if there is a noteworthy difference between interpreting reflexive and reciprocal correctly for each age group. Table 4.11. shows the percentages of the correct responses to reflexive and reciprocal sentences by each age group. It is inferred from the Table that the older the children gets, the more their performances on the semantic interpretation of both reflexive and reciprocal increase. Moreover, as the performances of individual groups are concerned, it seems that children's performance is better on reciprocal than on reflexive.

Table 4.11. The percentages of correct responses to reflexive and reciprocal in complex structures in terms of semantic interpretation

	REFLEXIVE	RECIPROCAL
4-year-old N:20	36,6	76,1
5-year-old N:20	46,6	91,1
6-year-old N:20	65	97,2

4.2.1. Semantic Interpretation of Reflexive Within Complex Structures

The analysis of the children's semantic interpretation of reflexive in complex structures has been carried out in order to explore if there is a developmental change in terms of the semantic interpretation of reflexive among the age groups. According to the results shown in Table 4.11., children at the age of 4 and 5 interpret reflexive correctly on a level of nearly 35% and 45%, respectively. However, they misinterpret reflexive as reciprocal on higher levels. As for 6-year-old children's performance, the level of correct interpretation of reflexive remains at only 65%. The increase in children's performance indicates that a developmental change seems to occur continuously in children's grammar as shown in Figure 4.4. More explicitly, children's correct responses increase from about 35% correct for the youngest to 65% correct for the oldest. Though it is observed that the rate of the development is on a level of nearly 30% between 4- and 6-year-old children, it is remarkable that the performance of both 4- and 5-year-old children remains below 50% chance level.

As shown in Table 4.12., the mean and the standard deviations of children's performance also indicate that children's correct interpretation of reflexive in complex sentences differ from each other in relation to their age. In order to determine if the developmental change between the groups is truly on a significant rate, the Kruskal Wallis Test has been conducted on children's responses to the sentences. The resolution that the requirement to manipulate a parametric test is not met has brought about the utilization of the Kruskal

Wallis Test instead of the One-Way Anova Test. The results of the Kruskal Wallis Test in Table 4.14. reveal that there is a significant difference among age groups in the interpretation of reflexive in complex structures ($p<.05$). Moreover, Dunnett C Test, presented in Table 4.15., exhibits that the performance of 4- and 6-year-old children differ from each other significantly. Nevertheless, the performance of 5-year-old children is significantly different from neither that of 4-year-old nor that of 6-year-old children.

Figure 4.4. The percentages of the performance in semantic interpretation of reflexive in complex structures by age groups.

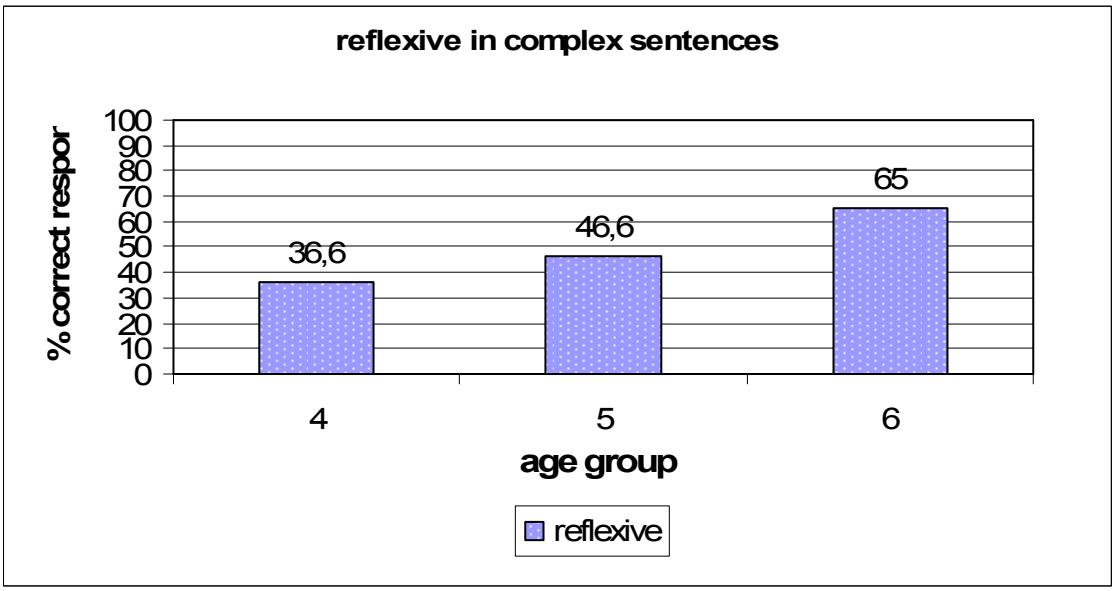


Table 4.12. Mean and standard deviations of the results

	N	Mean	Std. Deviation
4	20	3,30	1,949
5	20	4,20	2,397
6	20	5,85	1,872
Total	60	4,45	2,310

Table 4.13. Mean ranks of the results

	Age	N	Mean Rank
Reflexive total 3	4	20	21,55
	5	20	28,30
	6	20	41,65
	Total	60	

Table 4.14. Kruskal Wallis Test on the scores of the semantic interpretation of reflexive in complex structures

	Reflexive total 3
Chi-Square	14,016
df	2
Asymp. Sig.	,001

Table 4.15. Dunnett C test on the scores of the semantic interpretation of reflexive in complex structures

(I) Age	(J) Age	Mean Difference (I-J)	Std. Error
4	5	-,900	,691
	6	-2,550(*)	,604
5	4	,900	,691
	6	-1,650	,680
6	4	2,550(*)	,604
	5	1,650	,680

4.2.2. Semantic Interpretation of Reciprocal Within Complex Structures

Semantic interpretation of reciprocal in complex structures has also been analyzed with the purpose of the exploration of the differences between the age groups' performances. According to the results shown in Table 4.11., children's correct interpretation of reciprocal increases from about a level of 75 % at the age of 4 (76,1%) to a nearly perfect level at the age of 6 (97,2), with

approximately 20% variation from the lowest to the highest among the groups. As observed in the interpretation of reflexive sentences, the increase in children's correct interpretation of reciprocal by age group (4-year-old, 76,1%; 5-year-old, 91,1%; 6-year-old, 97,2%) indicates the continuous development in the semantic interpretation of reciprocal as children grow, as shown in Figure 4.5.

Displaying mean and standart deviations of the results, Table 4.16 also reveals that the children's correct interpretations of reciprocal in complex sentences differ from each other in relation to their age. In order to determine if the performances of the children are significantly different from each other, the Anova test has been conducted on children's responses. Accordingly, Table 4.17 displays that there is a significant difference among age groups in the interpretation of reciprocal in complex sentences ($p<.05$). Moreover, on the observation of Table 4.18, it has been discovered that the performance of 4-year-old children differs from that of both 5- and 6-year-old children significantly whereas the difference between the performance of 5- and 6-year-old children is not on a significant rate.

Figure 4.5. The percentages of the performance in semantic interpretation of reciprocal in complex structures by age groups.

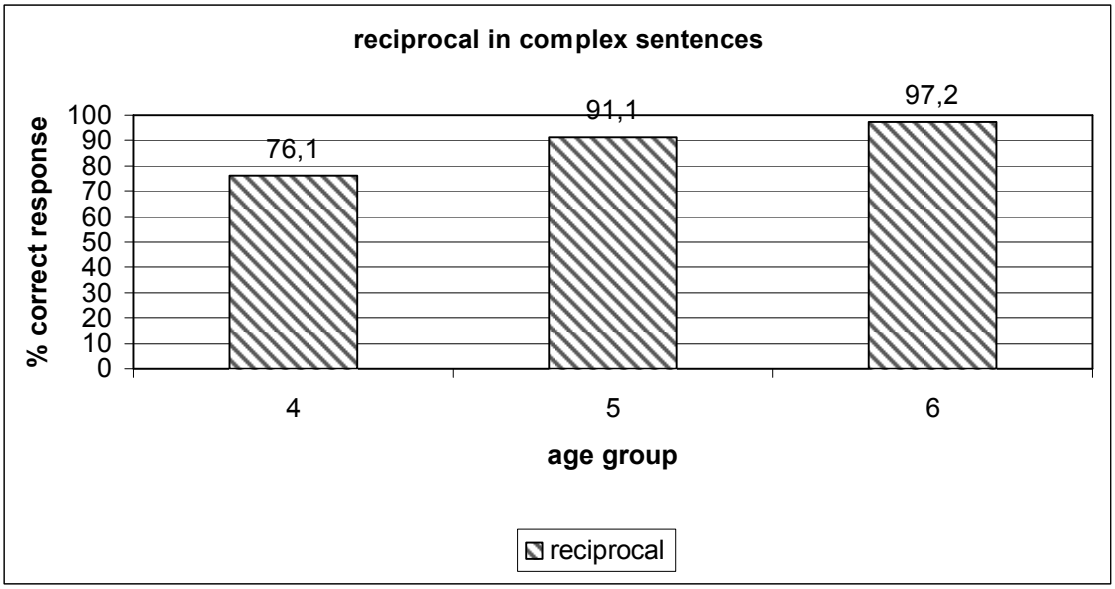


Table 4.16. Mean and standart deviations of the correct responses to reciprocal in complex structures

	N	Mean	Std. Deviation
4	20	6,85	2,834
5	20	8,20	,951
6	20	8,75	,444
Total	60	7,93	1,894

Table 4.17. Anova test on the scores of the semantic interpretation of reciprocal in complex structures

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	38,233	2	19,117	6,280	,003
Within Groups	173,500	57	3,044		
Total	211,733	59			

Table 4.18. Tukey HSD test on the scores of the semantic interpretation of reciprocal in complex structures

(I) age	(J) age	Mean Difference (I-J)	Std. Error	Sig.
4	5	-1,350(*)	,552	,045
	6	-1,900(*)	,552	,003
5	4	1,350(*)	,552	,045
	6	-,550	,552	,582
6	4	1,900(*)	,552	,003
	5	,550	,552	,582

4.2.3. The Comparison of Semantic Interpretation of Reflexive and Reciprocal Within Complex Structures

Besides the consideration of the developmental change among the age groups for the semantic interpretation of each target anaphor, comparative examination of each group's performance on both reflexive and reciprocal has contributed to the resolution of the hypothesis that children acquire the semantic knowledge of reciprocal earlier than that of reflexive. It is a notable result that the frequency of

the correct responses to reciprocal by the youngest children (76,1%) is higher than the frequency of the correct responses to reflexive by the oldest children (65%). In other words, the lowest performance on reciprocal seems to be higher than the highest performance on reflexive. Further, the comparison of individual group's performance on both reflexive and reciprocal in Figure 4.6. discloses that frequency of correct responses to reciprocal is higher than the frequency of correct responses to reflexive by all age groups, with 39,5%, 44,5% and 32,2% variations for the ages of 4, 5 and 6, respectively.

The results of the Anova, which has been conducted in order to investigate whether these variations are significant, indicate that there is a significant difference in the interpretation of these two anaphors by each age group ($p<.05$). More explicitly, it can be inferred from Table 4.19., 4.20 and 4.21., which display the results of the interpretation of both reflexive and reciprocal by 4-, 5- and 6-year-old children, respectively, that each group's performance on reciprocal is significantly different from their performance on reciprocal in terms of correct interpretation.

Figure 4.6. The comparison of the percentages of the children's performance in semantic interpretation of reflexive and reciprocal in complex structures.

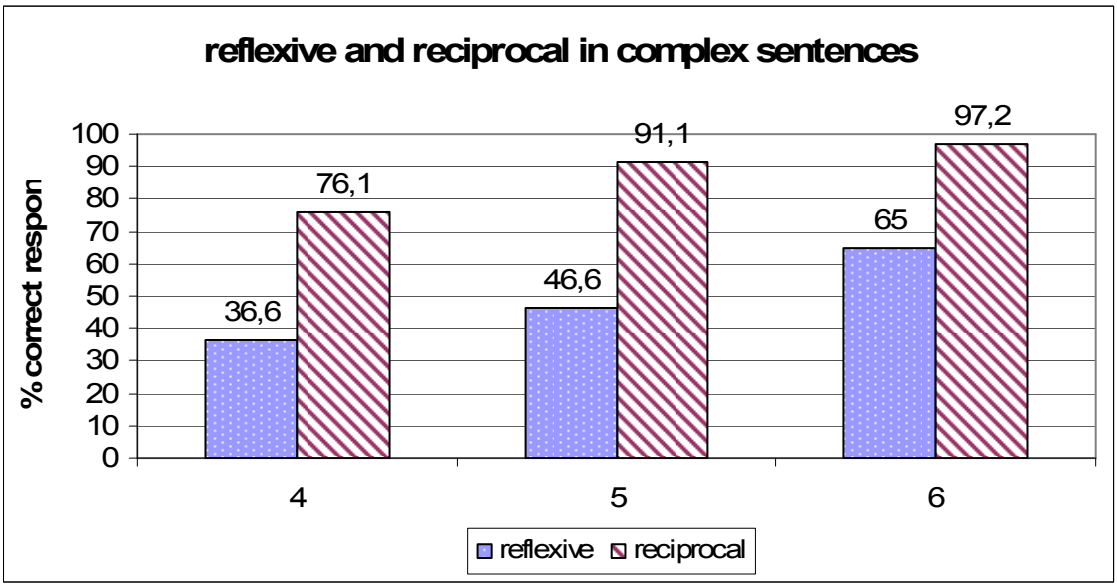


Table 4.19. Anova Test on the scores of semantic interpretation of reflexive and reciprocal in complex structures by 4-year-old children

		Mean	N	Std. Deviation	t	Sig.
Pair 1	**Reflexive**	3,30	20	1,949	-7,889	,000
	Reciprocal	6,85	20	2,834		

Table 4.20. Anova Test on the scores of semantic interpretation of reflexive and reciprocal in complex structures by 5-year-old children

		Mean	N	Std. Deviation	t	Sig.
Pair 1	**Reflexive**	4,20	20	2,397	-8,312	,000
	Reciprocal	8,20	20	,951		

Table 4.21. Anova Test on the scores of semantic interpretation of reflexive and reciprocal in complex structures by 6-year-old children

		Mean	N	Std. Deviation	t	Sig.
Pair 1	**Reflexive**	5,85	20	1,872	-6,672	,000
	Reciprocal	8,75	20	,444		

4.3. THE COMPARISON OF EXPERIMENT ONE AND EXPERIMENT TWO

Both of the Experiment One and Experiment Two have been designed in order to test the children's awareness of the semantic difference between reflexive and reciprocal. The only distinction between these two studies is the syntactic structure of the sentences; that is, Experiment One has involved simple structures whereas Experiment Two has comprised complex structures. In addition to the analyses within each experiment, the results of these studies can be compared with each other in order to explore whether there is a difference in interpretation of each target anaphor, considering the syntactic structure of the sentences it is involved. In other words, the comparison of the results of Experiment One and Two will reveal if each age group's performance on either

reflexive or reciprocal will be affected by the existence of these target anaphors in either simple or complex sentences.

4.3.1. The Comparison of Semantic Interpretation of Reflexive Within Simple and Complex Structures

The question of whether children are aware of the semantic distinction between reflexive and reciprocal being involved in either simple and complex structures has also given rise to the investigation of whether the syntax of the structure affects the correct interpretation of each target anaphor. Consequently, it has been discovered that the complexity of the syntactic structure brings about a decrease in the level of correct interpretation of reflexive semantically. Table 4.22. shows, by age group, the percentages of correct responses to reflexive in simple and complex structures.

Table 4.22. The percentages of correct responses to reflexive in simple and complex structures in terms of semantic interpretation

	SIMPLE STRUCTURES (EXPERIMENT ONE)	COMPLEX STRUCTURES (EXPERIMENT TWO)
4-year-old N:20	56	36,6
5-year-old N:20	62	46,6
6-year-old N:20	84	65

Figure 4.7. compares each group's performance on reflexive in simple sentences with its performance on complex sentences . As each age group's performance is considered, it is inferred from Figure 4.7. that there is a definite decrease in correct responses of children in the event that reflexive is utilized in complex sentences. More specifically, the frequency of correct responses to reflexive declines from about 55% (56%) to about 35% (36,6%) at age 4, with 19,4% variation between the simple and complex sentences. Likewise, the rate

of the development observed for 5-year-old children's correct interpretation of reflexive declines from a level of nearly 60% (62%) to a level of nearly 45% (46,6%), with 15,4% variation between the simple and complex sentences. Further, while the frequency of correct responses to simple sentences by 6-year-old children is 84%, it decreases to 65% in the existence of complex sentences, with 19% variation. As a result, nearly 20% decrease can be said to exist in the semantic interpretation of reflexive in complex sentences in comparison to simple sentences among all the groups.

Further, the differences between the frequencies of the correct responses to reflexive in simple structures and complex structures have been discovered to be statistically significant at age 5 and 6 ($p<.05$), but not at 4 ($p>.05$). That is, the difference in the frequency of the correct interpretation of reflexive, depending on the syntactic structure of the sentences is not on a significant rate at the age of 4 ($p=.315$) while that frequency is significantly different at age 5 ($p=.01$) and 6 ($p=.04$), as illuminated in Table 4.23., 4.24. and 4.25.

Figure 4.7. The comparison of the percentages of the children's performance in semantic interpretation of reflexive in simple and complex structures.

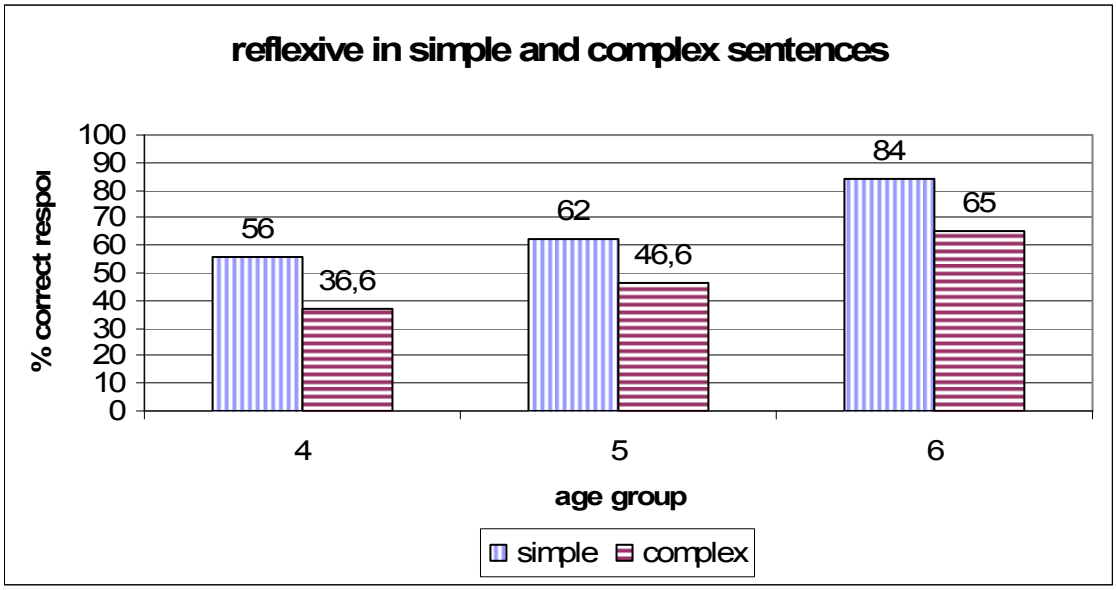


Table 4.23. Anova Test on the scores of semantic interpretation of reflexive in simple and complex structures by 4-year-old children

		Mean	N	Std. Deviation	t	Sig.
Pair 1	**Simple**	2,80	20	1,322	-1,033	,315
	Complex	3,3000	20	1,94936		

Table 4.24. Anova Test on the scores of semantic interpretation of reflexive in simple and complex structures by 5-year-old children

		Mean	N	Std. Deviation	t	Sig.
Pair 1	**Simple**	3,10	20	1,714	-4,067	,001
	Complex	4,2000	20	2,39737		

Table 4.25. Anova Test on the scores of semantic interpretation of reflexive in simple and complex structures by 6-year-old children

		Mean	N	Std. Deviation	t	Sig.
Pair 1	**Simple**	4,20	20	1,056	-3,308	,004
	Complex	5,8500	20	1,87153		

4.3.2. The Comparison of Semantic Interpretation of Reciprocal Within Simple and Complex Structures

As discovered in the case of reflexive, children's performance in the semantic interpretation of reciprocal correctly is dissimilar, depending on the complexity of the syntactic structure. Table 4.26. exhibits the frequency of correct interpretation of reciprocal both in simple and complex sentences by each age group.

Table 4.26. The percentages of correct responses to reciprocal in simple and complex structures in terms of semantic interpretation

	SIMPLE STRUCTURES (EXPERIMENT ONE)	COMPLEX STRUCTURES (EXPERIMENT TWO)
4-year-old N:20	84	76,1
5-year-old N:20	96	91,1
6-year-old N:20	99	97,2

Figure 4.8. presents the frequency of correct interpretation of reciprocal both in simple and complex sentences by each group comparatively. As each age group's performance is considered, it is inferred from Figure 4.8. that there is a slight decrease in the correct responses of children in the cases that reciprocal is involved in complex sentences. More precisely, the frequency of correct responses to reciprocal in simple sentences is about 85% (84%) while it is nearly 75% (76,1%) in complex sentences at age 4, with 7,9% decrease. As for 5-year-old children's performance, the frequency of correct responses to reciprocal in simple sentences is nearly 95% (96%); however, it decreases to about 90% (91,1%), with a less variation (4,9%) than it is at age 4. Likewise, the rate of the development observed for 6-year-old children's correct interpretation of reciprocal declines from nearly a perfect level (99%) to a level of 97,2%, with 1,8% variation between the simple and complex sentences, which is the least one among all the groups.

Further; Table 4.27., 4.28. and 4.29. indicate that the rates of the variations between the correct responses to reciprocal in simple and complex sentences are significantly different at all age groups ($p<.05$).

Figure 4.8. The comparison of the percentages of the children's performance in semantic interpretation of reciprocal in simple and complex structures.

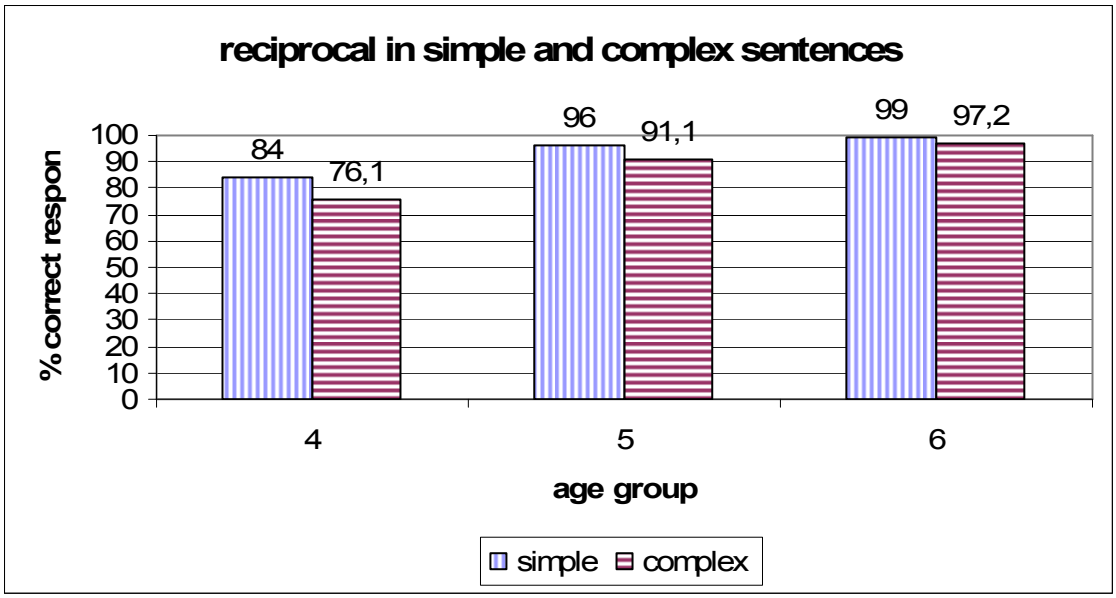


Table 4.27. Anova Test on the scores of semantic interpretation of reciprocal in simple and complex structures by 4-year-old children

		Mean	N	Std. Deviation	t	Sig.
Pair 1	Simple	4,20	20	,894	-4,052	,001
	Complex	6,8500	20	2,83354		

Table 4.28. Anova Test on the scores of semantic interpretation of reciprocal in simple and complex structures by 5-year-old children

		Mean	N	Std. Deviation	t	Sig.
Pair 1	Simple	4,80	20	,523	-12,350	,000
	Complex	8,2000	20	,95145		

Table 4.29. Anova Test on the scores of semantic interpretation of reciprocal in simple and complex structures by 6-year-old children

		Mean	N	Std. Deviation	t	Sig.
Pair 1	Simple	4,95	20	,224	-32,484	,000
	Complex	8,7500	20	,44426		

4.4. EXPERIMENT THREE: THE INQUIRY OF THE AWARENESS OF C-COMMAND CONDITION

Experiment Three has been conducted to test if children, during the acquisition of their language, comply with the condition in Principle A that reflexive must be bound within its governing category. This investigation has been carried out for the acquisition of two forms of third person singular reflexive, namely the bare form “kendi” and the inflected form “kendisi”, putting forth two hypotheses: first, the hypothesis that syntactic complexity affects the children’s obedience on coreferentiality condition has been sought to be clarified. Second, the hypothesis that children uphold the condition within Principle A in the cases of the bare form of reflexive on a higher level than they do in the cases of the inflected form of reflexive. Therefore, Experiment Three has sought explanations to several questions as well as seeking these principal hypotheses. First, it has been investigated whether there is a developmental change in the obedience to Principle A in regard to each form of reflexive among three age groups. Second, the effect of the complexity of the syntactic structure, involving each form, has been inquired. Further, whether there is a difference in children’s interpretation of the third person singular reflexive forms, which appear in the syntactically same structures, has been examined considering the coreferentiality relations of these anaphors with their antecedents.

4.4.1. The Awareness of C-Command Condition for “Kendi”

How frequently the children accept the c-commanding antecedent among the potential ones has been considered, and their obedience to Principle A has been regarded as the “correct response” for the analyses. Table 4.30. shows, by age group, the percentages of correct responses to the bare form of third person singular “kendi” in simple and complex structures.

Table 4.30. The percentages of correct responses to the bare form of the reflexive "kendi" in simple and complex structures in terms of coreferentiality

	SIMPLE STRUCTURES	COMPLEX STRUCTURES
4-year-old N:20	80	41,25
5-year-old N:20	97,5	67,5
6-year-old N:20	100	87,5

4.4.1.1. "KENDİ" in simple structures

The consideration of the performance on the bare form of reflexive "kendi" by age groups allows to realize if the growth of children is influential in their obedience to the coreferentiality condition between the reflexive and its antecedent in simple structures. As inferred from Figure 4.9., which shows the performance of each age group on reflexive, the rate of the awareness of the c-command condition is nearly equal at 5 and 6 and on a nearly perfect level, distincly from the rate at 4. More specifically, the awareness of the c-command condition increases from 80% at age 4 to a perfect level (100%) at age 6 as "kendi" is involved in syntactically simple structures. Moreover, it is a remarkable difference that the variation between the performance of 4- and 5-year-old children is 17,5% whereas the variation between the performance of 5- and 6-year-old children is 2,5%.

The difference in children's performance in obedience to the c-command condition is also displayed in Table 4.31. In order to determine if the variation between the performances of the groups is on a considerably significant rate, One-Way Anova has been conducted on children's responses to sentences, regarding their acceptance of c-commanding antecedent as correct response. The results of the Anova reveal that there is significant difference between the groups in terms of development ($p<.05$), as shown in Table 4.32. The results of the Tukey HSD indicate that the performance of 4-year-old children is

significantly different from the performance of both 5- and 6-year-old children as shown in Table 4.33 However, the difference between the performance of 5- and 6-year-old children is not statistically significant.

Figure 4.9. The percentages of the performance in the awareness of c-command condition for "kendi" in simple structures by age groups

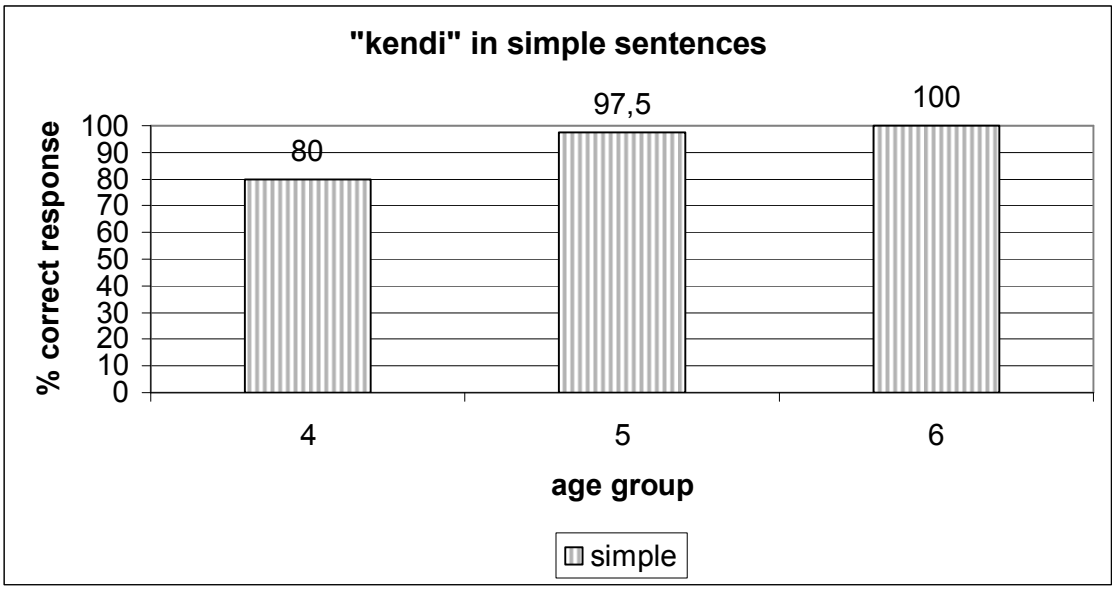


Table 4.31. Mean and standart deviations of the correct responses to "kendi" in simple structures

Group	N	Mean	Std. Deviation
4	20	1,6000	,68056
5	20	1,9500	,22361
6	20	2,0000	,00000
Total	60	1,8500	,44436

Table 4.32. Anova test on the scores of the awareness of c-command condition for "kendi" in simple structures

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1,900	2	,950	5,554	,006
Within Groups	9,750	57	,171		
Total	11,650	59			

Table 4.33. Tukey HSD test on the scores of the awareness of c-command condition for "kendi" in simple structures

Dependent Variable	(I) age	(J) age	Mean Difference (I-J)	Std. Error	Sig.
	4	5	-,35000(*)	,13079	,026
		6	-,40000(*)	,13079	,009
	5	4	,35000(*)	,13079	,026
		6	-,05000	,13079	,923
	6	4	,40000(*)	,13079	,009
		5	,05000	,13079	,923

4.4.1.2. "KENDİ" in complex structures

Similar to the analysis of performance in the case of "kendi" in simple sentences, the differences between the age groups in obedience to the c-command condition is also considered in the existence of syntactically complex structures in order to explore if there is a significant developmental change between groups. As shown in Figure 4.10., there is a definite increase in the rate of the children's acceptance of the c-commanding antecedent between the potential two antecedents. The growth observed for the children's awareness of the c-commanding antecedent remains below the 50% chance level (41,25%) at age 4, that is, 4-year-old children regard the subject outside the local domain as the antecedent of the reflexive "kendi" on a level of nearly 60%. On the other hand, both 5- and 6-year-old children perform above the chance level. While the rate of the acceptance of the c-commanding antecedent is about 65% at 5 (67,5%), it increases to nearly 85% at 6 (87,5%). As the lowest and the highest performance are considered, nearly 45% variation is detected.

The differences of the performance between the age groups are also presented in Table 4.34. Besides, the results of the Anova test, shown in Table 4.35. reveal that the variation between the performances of children on obedience to the condition explicated by Principle A is on a significant level ($p<.05$). Further, it is inferred from Table 4.36., displaying which age group's response is

significantly different from the others, that each age group's performance differs from that of one another significantly; that is, the rate of the obedience to c-command condition at 4 is significantly different from the rates at 5 and 6, and this rate at 5 is significantly different from the rate at 6.

Figure 4.10. The percentages of the performance in the awareness of c-command condition for "kendi" in complex structures by age groups

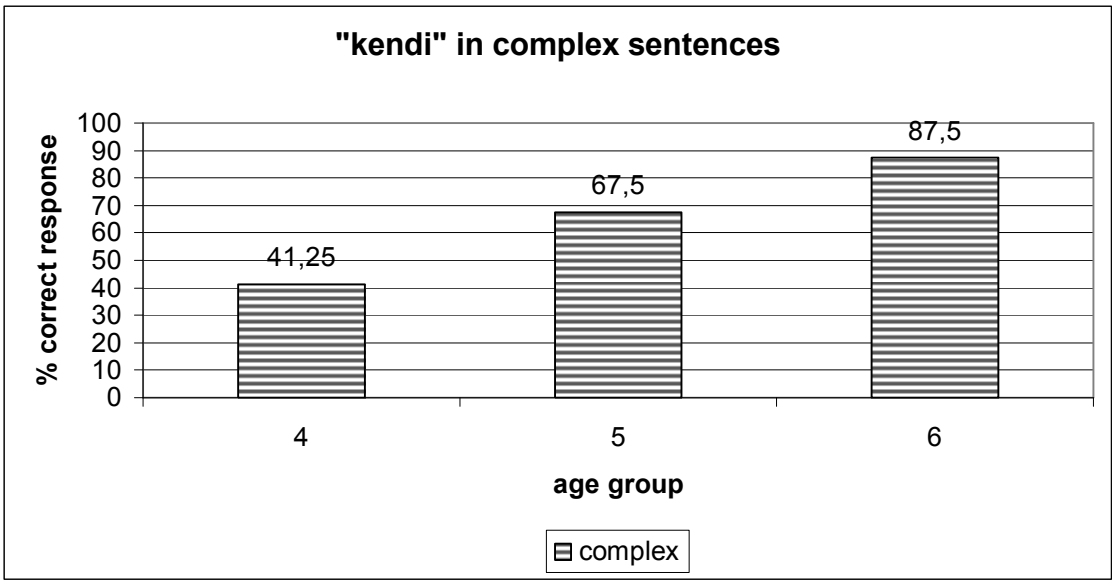


Table 4.34. Mean and standart deviations of the correct responses to "kendi" in complex structures

Group	N	Mean	Std. Deviation
4	20	1,6500	1,03999
5	20	2,7000	1,17429
6	20	3,5000	,68825
Total	60	2,6167	1,23634

Table 4.35. Anova test on the scores of the awareness of c-command condition for "kendi" in complex structures

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	34,433	2	17,217	17,603	,000
Within Groups	55,750	57	,978		
Total	90,183	59			

Table 4.36. Tukey HSD test on the scores of the awareness of c-command condition for "kendi" in complex structures

Dependent Variable	(I) age	(J) age	Mean Difference (I-J)	Std. Error	Sig.
	4	5	-1,05000(*)	,31274	,004
		6	-1,85000(*)	,31274	,000
	5	4	1,05000(*)	,31274	,004
		6	-,80000(*)	,31274	,035
	6	4	1,85000(*)	,31274	,000
		5	,80000(*)	,31274	,035

4.4.1.3.The comparison of "KENDİ" in simple and complex sentences

The concern how distinct each age group's performance is on simple sentences from their performance on complex sentences in the awareness of the condition within Principle A will lead to realize the influence of the syntactic structure in the acceptance of the c-commanding antecedent among the potential ones. Figure 4.11. shows that there is a definite decrease in the acceptance of the c-commanding antecedent among the possible ones for the reflexive "kendi" when it takes place within syntactically complex sentences. In other words, the existence of one more possible antecedent in the matrix clause when the reflexive is in the complement clause with its c-commanding antecedent results in confusion in children's interpretation and may mislead them to accept the subject in the matrix clause as the antecedent of the reflexive. On the other hand, even if there is a potential antecedent in the discourse rather than its occurance in the sentence, as it is the case in the existence of syntactically simple sentences, children in each age group does not mostly regard it as the antecedent of the reflexive "kendi". When each group's performance both on simple and complex sentences is compared, this case is realized more clearly. For instance, 4-year-old-children accept the c-commanding antecedent on a level of 80% when "kendi" is in simple sentences while this level decreases to about a level of 40% in the case of complex sentences (41,25%). Similarly, 5-year-old-children's obedience to c-command condition decreases from 97,5% to

67,5%; and as for 6-year-old-children, it decreases from 100% to 87,5%. Further, it is a noteworthy result that the lowest performance on interpretation of correct antecedent when “kendi” is in simple sentences with its potential antecedents (80%) is nearly equal to the highest performance when “kendi” is in complex sentences (87,5%).

Further, the variation between the performances on simple sentences and the performances on complex sentences for the awareness of the c-command condition has been detected to be significant at the age of 5 (p=.005) and 6(p=.000), but not at 4 (p=.858) as illuminated in Table 4.37., 4.38. and 4.39.

Figure 4.11. The comparison of the percentages of the performance in the awareness of c-command condition for “kendi” in simple and complex structures by age groups

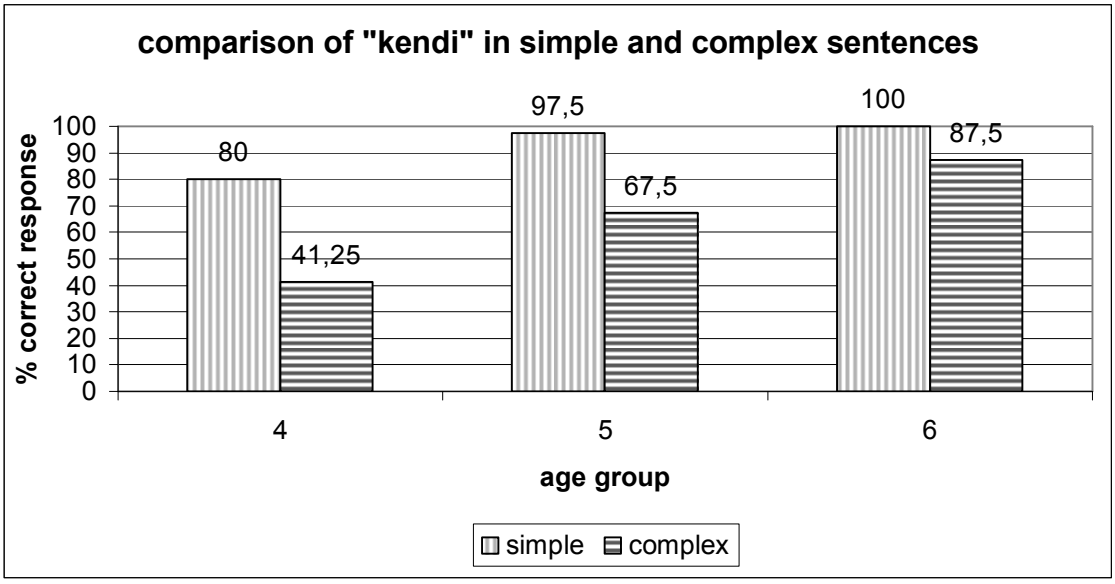


Table 4.37. Anova test on the scores of the awareness of c-command condition for “kendi” in simple and complex structures by 4-year-old-children

		Mean	N	Std. Deviation	t	Sig.
Pair 1	**Simple**	1,6000	20	,68056	-,181	,858
	Complex	1,6500	20	1,03999		

Table 4.38. Anova test on the scores of the awareness of c-command condition for "kendi" in simple and complex structures by 5-year-old-children

		Mean	N	Std. Deviation	t	Sig.
Pair 1	**Simple**	1,9500	20	,22361	-3,135	,005
	Complex	2,7000	20	1,17429		

Table 4.39. Anova test on the scores of the awareness of c-command condition for "kendi" in simple and complex structures by 6-year-old-children

		Mean	N	Std. Deviation	t	Sig.
Pair 1	**Simple**	2,0000	20	,00000	-9,747	,000
	Complex	3,5000	20	,68825		

4.4.2. The Awareness of C-command Condition for "KENDİSİ"

The inquiry of how the inflected form of third person singular reflexive "kendisi" is interpreted has been considered on the pursuit of the assumption that "kendisi" may be perceived either as a reflexive or as a pronominal. Accordingly, the analysis is regulated for the exploration of two basic questions: first, whether the syntactic complexity affects the way of the interpretation of "kendisi" has been considered. Moreover, whether the way how it is interpreted changes depending on the age of the children has been sought. Children's interpretation of "kendisi" as a reflexive, namely their awareness of the c-command condition, has been regarded as "correct response" during the analyses. Table 4.40. shows the frequency of the interpretation of "kendisi" as a reflexive, governed by the condition of Principle A.

Table 4.40. The percentages of correct responses to the inflected form of the reflexive "kendisi" in simple and complex structures in terms of coreferentiality

	SIMPLE STRUCTURES	COMPLEX STRUCTURES
4-year-old N:20	75	35
5-year-old N:20	100	61,25
6-year-old N:20	100	73,75

4.4.2.1. "KENDİSİ" in simple structures

Whether the inflected form of the reflexive "kendisi" is mostly interpreted as a reflexive or a pronominal when it appears in syntactically simple structures has been inquired. In other words, in the occurance of one more potential antecedent within the discourse rather than within the sentence, children's obedience to c-command condition by regarding the target anaphor as a reflexive has been questioned. Accordingly, it has been discovered as shown in Figure 4.12. that every age group interprets "kendisi" as a reflexive in a large extent. More specifically, the frequency of the acceptance of the c-commanding antecedent as the binder of "kendisi" increases from 75% at age 4 to a perfect level at age 5 and remains at the perfect level at 6. It can be deduced from this result that the children at the age of 5 and 6 completely reject the potential antecedent outside the local domain as the binder of "kendisi", eliminating the possibility of "kendisi" being interpreted as pronominal in simple sentences.

As the increase between the groups in the obedience to the c-command condition for "kendisi" is considered, the difference between the groups has been noticed to be significant ($p<.05$) according to the results of the Anova test, as illustrated in Table 4.42. Furthermore, the results shown in Table 4.43. exhibit that the performance of 5- and 6-year-old children on the acceptance of the c-commanding antecedent as the correct binder of "kendisi" does not differ from each other significantly. Nevertheless, the performance of 4-year-old-

children is significantly different from that of 5- and 6-year-old children. In other words, the frequency of interpreting “kendisi” as a reflexive at age 4 is significantly distinguishable from that at 5 and 6.

Figure 4.12. The percentages of the performance in the awareness of c-command condition for “kendisi” in simple structures by age groups

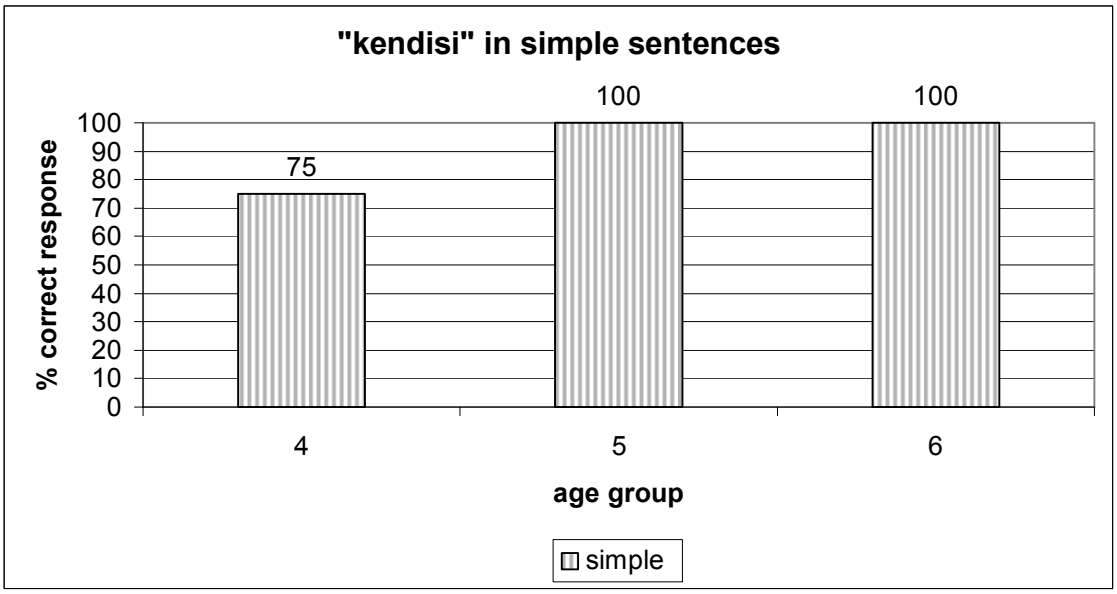


Table 4.41. Mean and standart deviations of the correct responses to “kendisi” in simple structures

Group	N	Mean	Std. Deviation
4	20	1,5000	,60698
5	20	2,0000	,00000
6	20	2,0000	,00000
Total	60	1,8333	,41850

Table 4.42. Anova test on the scores of the awareness of c-command condition for “kendisi” in simple structures

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3,333	2	1,667	13,571	,000
Within Groups	7,000	57	,123		
Total	10,333	59			

Table 4.43. Tukey HSD test on the scores of the awareness of c-command condition for "kendisi" in simple structures

Dependent Variable	(I) age	(J) age	Mean Difference (I-J)	Std. Error	Sig.
	4	5	-,50000(*)	,11082	,000
		6	-,50000(*)	,11082	,000
	5	4	,50000(*)	,11082	,000
		6	,00000	,11082	1,000
	6	4	,50000(*)	,11082	,000
		5	,00000	,11082	1,000

4.4.2.2. "KENDİSİ" in complex structures

Whether the appearence of "kendisi" in syntactically complex sentences leads the children to violate the condition explicated by Principle A has been inquired. That is, in the existence of one more possible antecedent in the matrix clause apart from the c-commanding antecedent in the complement clause, the tendency of children in the interpretation of "kendisi" as a reflexive or a pronominal has been investigated, considering the differences by age groups. Consequently, it has been found out that the children's obedience to Principle A increases in parallel with their age. More precisely, the older the children grow, the more they are inclined to uphold Principle A. As shown in Figure 4.13., the growth observed for children's regard the c-commanding antecedent as the binder of "kendisi" varies from a level of 35% at age 4 to a level of about 70% correct (73,75%) at age 6, with nearly 40% variation from the lowest to the highest level among all the groups. It seems that the obedience to Principle A, namely interpreting "kendisi" as a reflexive, remains below the 50% chance level until the age of 5 though there is a continuous development as the children grow.

Moreover, it has been noticed that the rate of the developmental change between the groups is significantly different from one another ($p<.05$). The results shown in Table 4.46. indicate that the variation of the obedience to

Principle A between the ages of 5 and 6 is not found to be significantly different. Nonetheless, the rate of the development at age 4 is significantly different from the rates at 5 and 6.

Figure 4.13. The percentages of the performance in the awareness of c-command condition for "kendisi" in complex structures by age groups

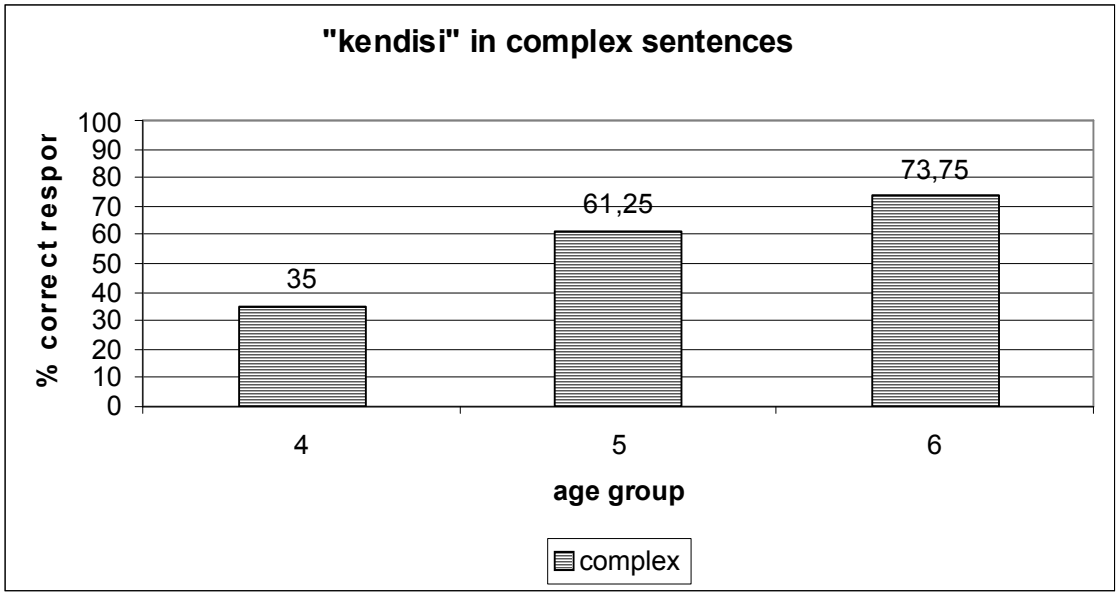


Table 4.44. Mean and standart deviations of the correct responses to "kendisi" in complex structures

Group	N	Mean	Std. Deviation
4	20	1,4000	,82078
5	20	2,4500	,88704
6	20	2,9500	,82558
Total	60	2,2667	1,05552

Table 4.45. Anova test on the scores of the awareness of c-command condition for "kendisi" in complex structures

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	21,733	2	10,867	5,621	,006
Within Groups	110,200	57	1,933		
Total	131,933	59			

Table 4.46. Tukey HSD test on the scores of the awareness of c-command condition for "kendisi" in complex structures

Dependent Variable	(I) age	(J) age	Mean Difference (I-J)	Std. Error	Sig.
	4	5	-1,05000(*)	,26721	,001
		6	-1,55000(*)	,26721	,000
	5	4	1,05000(*)	,26721	,001
		6	-,50000	,26721	,156
	6	4	1,55000(*)	,26721	,000
		5	,50000	,26721	,156

4.4.2.3. Comparison of "KENDİSİ" in simple and complex structures

Besides the consideration of the developmental change among the age groups for the awareness of c-command condition in simple and complex structures separately, comparative examination of individual group's performance on these sentences has illuminated the hypothesis that syntactic complexity may have an effect on the awareness of c-command condition. As shown in Figure 4.14., the obedience to Principle A reaches a perfect level beginning from the age of 5 in the appearance of "kendisi" within simple sentences whereas it remains, at most, on a level of nearly 75% in the context of complex sentences. Moreover, this rate is noticed to be the lowest performance on upholding the c-command condition for "kendisi" within simple sentences. As for the comparison of the individual group's performance on both simple and complex sentences, it is realized that there is an explicit increase in the interpretation of "kendisi" as a reflexive when it appears in simple sentences in opposed to complex sentences.

Besides, the variations of the performance on both simple and complex structures have been explored to be significant at age 5 and 6, but not at 4 as displayed in Table 4.47., 4.48. and 4.49.

Figure 4.14. The comparison of the percentages of the performance in the awareness of c-command condition for "kendisi" in complex structures by age groups

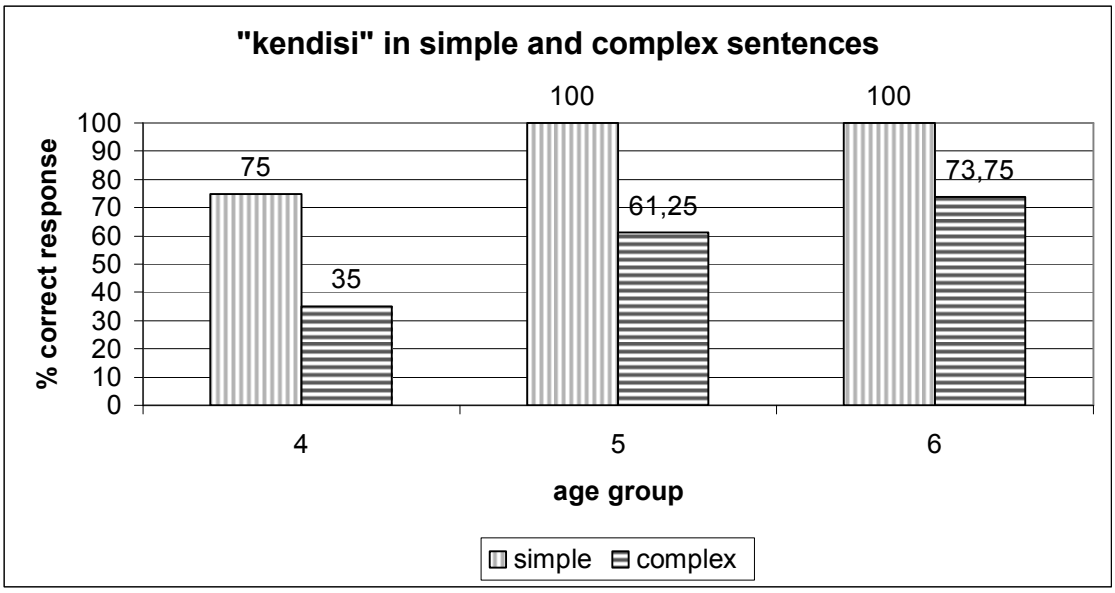


Table 4.47. Anova test on the scores of the awareness of c-command condition for "kendisi" in simple and complex structures by 4-year-old-children

		Mean	N	Std. Deviation	t	Sig.
Pair 1	**Simple**	1,5000	20	,60698	,462	,649
	Complex	1,4000	20	,82078		

Table 4.48. Anova test on the scores of the awareness of c-command condition for "kendisi" in simple and complex structures by 5-year-old-children

		Mean	N	Std. Deviation	t	Sig.
Pair 1	**Simple**	2,0000	20	,00000	-2,269	,035
	Complex	2,4500	20	,88704		

Table 4.49. Anova test on the scores of the awareness of c-command condition for "kendisi" in simple and complex structures by 6-year-old-children

		Mean	N	Std. Deviation	t	Sig.
Pair 1	**Simple**	2,0000	20	,00000	-5,146	,005
	Complex	2,9500	20	,82558		

4.5.THE COMPARISON OF "KENDİ" AND "KENDİSİ" WITHIN SYNTACTICALLY SAME STRUCTURES

The reason why the acquisition of the bare and the inflected forms of reflexive has been examined both in syntactically simple and complex structures is to find out whether the syntactic complexity affects the children's attitude in the acceptance of c-command condition. In addition to the comparison of the results of each target unit being involved in different structures, the comparison of the results of both unit appearing in the same structures has been considered. Such an analysis has given light to how children's interpretation of every target anaphor differs from one another as they appear in the syntactically same structures.

4.5.1. The Comparison of "Kendi" and "Kendisi" Within Simple Structures

The consideration of whether children's obedience to Principle A in regard to the bare and inflected forms of the reflexive being involved in syntactically simple structures changes has contributed to the resolution of the hypothesis that children's performance will be lowered in the case of the inflected form. Figure 4.15 shows that the awareness of c-command condition in regard to "kendi" and kendisi" within simple sentences changes by age group. As far as the performances of 4-year-old children on both units are considered, it has been noticed that the acceptance of c-command condition is on a higher level for the bare form "kendi" (80%) than it is for the inflected form "kendisi" (75%). As for 5-year-old children's performance, the case has been discovered to be

completely opposite. In other words, the obedience to Principle A is on a perfect level for the inflected form while it is on a lower level for the bare form (97,5%). Distinctly from these two age groups, the obedience to Principle A has been noticed to be on the same level, namely perfect level, for both forms of the reflexive at age 6.

The variation between the interpretation of two forms with relation to Principle A has been discovered not to be significantly different at age 4 and 5, as shown in Table 4.50. and 4.51. Moreover, whether there is a significant difference in the obedience to c-command condition at age 6 cannot be analyzed statistically since the performance of 6-year-old-children on both forms is on the same level.

Figure 4.15. The comparison of the percentages of the children's performance in awareness of c-command condition for "kendi" and "kendisi" in simple structures.

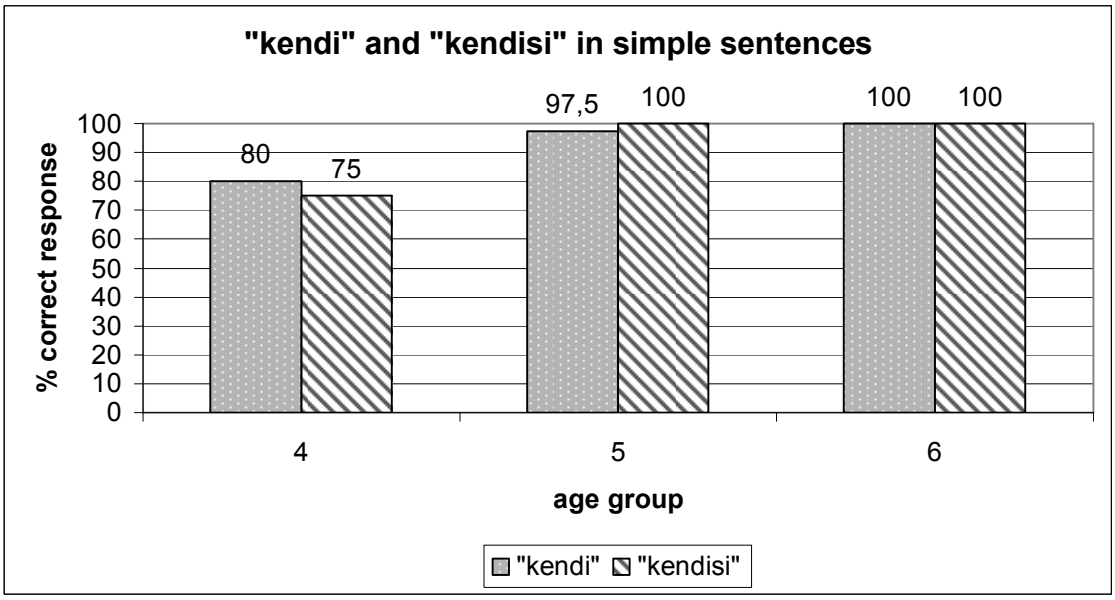


Table 4.50. Anova test on the scores of the awareness of c-command condition for "kendi" and "kendisi" in simple structures by 4-year-old-children

		Mean	N	Std. Deviation	t	Sig.
Pair 1	**"kendi"**	1,6000	20	,68056	,490	,629
	"kendisi"	1,5000	20	,60698		

Table 4.51. Anova test on the scores of the awareness of c-command condition for "kendi" and "kendisi" in simple structures by 5-year-old-children

		Mean	N	Std. Deviation	t	Sig.
Pair 1	**"kendi"**	1,9500	20	,22361	-1,000	,330
	"kendisi"	2,0000	20	,00000		

Table 4.52. Anova test on the scores of the awareness of c-command condition for "kendi" and "kendisi" in simple structures by 6-year-old-children

		Mean	N	Std. Deviation	t	Sig.
Pair 1	**"kendi"**	2,0000*	20	,00000		
	"kendisi"	2,0000*	20	,00000		

4.5.2.The Comparison of "Kendi" And "Kendisi" Within Complex Structures

The concern of how different children interpret the forms of third person singular reflexive appearing in syntactically complex structures has resulted from the hypothesis that children's obedience to c-command condition will be lowered in the event of the acceptance of the appropriate antecedent binding "kendisi". Figure 4.16. indicates that there is a slight decrease in the acceptance of c-commanding antecedent in the case of "kendisi" in comparison to "kendi". The performance of 4-year-old children shows that their awareness of the c-command condition decreases from nearly a level of 40% in regard to the

binding of “kendi” to a level of 35% in the case of binding of “kendisi”. Similarly, the performance at 5 decreases from about 65% for “kendi” to about 60% for “kendisi”, and at 6 it decreases from nearly 85% for “kendi” to about 70% “kendisi”. Moreover, it is notable that the level of the obedience to the c-command condition in relation to the binding of both “kendi” and “kendisi” is below 50% chance level until the age of 5.

Furthermore, it has been explored that the differences between the performances of children on the acceptance of c-commanding antecedent for the binder of either “kendi” or “kendisi” are not significant at age 4 (p=.425) and 5 (p=.536); however, this variation is observed to be significant at age 6(p=.004), as shown in the following Tables.

Figure 4.16. The comparison of the percentages of the children’s performance in awareness of c-command condition for “kendi” and “kendisi” in complex structures.

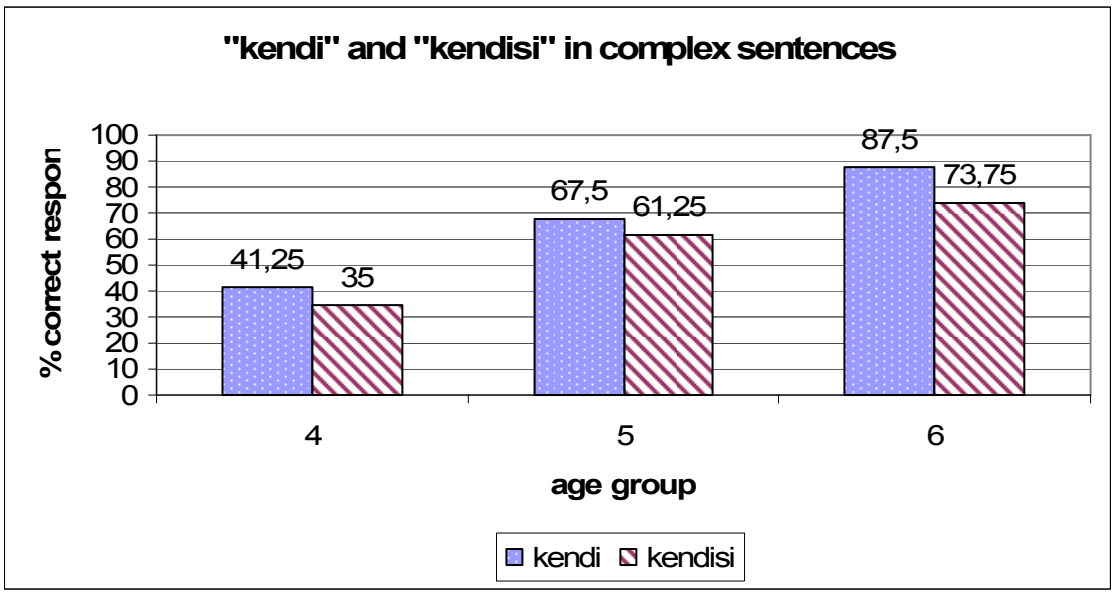


Table 4.53. Anova test on the scores of the awareness of c-command condition for "kendi" and "kendisi" in complex structures by 4-year-old-children

		Mean	N	Std. Deviation	t	Sig.
Pair 1	**"kendi"**	1,6500	20	1,03999	,815	,425
	"kendisi"	1,4000	20	,82078		

Table 4.54. Anova test on the scores of the awareness of c-command condition for "kendi" and "kendisi" in complex structures by 5-year-old-children

		Mean	N	Std. Deviation	t	Sig.
Pair 1	**"kendi"**	2,7000	20	1,17429	,630	,536
	"kendisi"	2,4500	20	,88704		

Table 4.55. Anova test on the scores of the awareness of c-command condition for "kendi" and "kendisi" in complex structures by 6-year-old-children

		Mean	N	Std. Deviation	t	Sig.
Pair 1	**"kendi"**	3,5000	20	,68825	3,240	,004
	"kendisi"	2,9500	20	,82558		

CHAPTER 5

DISCUSSION AND CONCLUSION

5.1.SEMANTIC INTERPRETATION OF REFLEXIVE AND RECIPROCAL

Given the results of the experiments investigating the children's semantic interpretation of reflexive and reciprocal, many questions have been answered. These results have given light to the inquiries of the awareness of the semantic distinction between reflexive and reciprocal, of the development in the interpretation of either reflexive and reciprocal in regard to the syntactic complexity and of the effect of the age of children on these two issues.

5.1.1. Semantic Interpretation of Reflexive and Reciprocal in Simple Structures

Experiment One has been conducted in order to explore children's awareness of the semantic distinction between reflexive and reciprocal in syntactically simple structures, considering the influence of the children's age.

The comparative consideration of all the age groups' performances on target anaphors enables to explore the developmental differences between the age groups in terms of the correct interpretation and to reveal the age period in which the development of each anaphor is notably distinctive. As the children's correct responses to these anaphors in syntactically simple structures are considered, it has been discovered that the children's correct responses to the reflexive sentences vary from 56% correct at age 4 to 84% correct at age 6, in contrast with the children's correct responses to the reciprocal sentences which vary from 84% correct at age 4 to 99% correct at age 6. While it is clear that there is a developmental change in the correct interpretation of both reflexive and reciprocal as children grow, it is remarkable that the performance on reflexive at age 6 and the performance on reciprocal at age 4 are on the same

level. As far as the children's performances on the syntactically simple structures have been considered, this finding implies the result that the children's knowledge of the reflexive does not develop in the same rate as their knowledge of reciprocal, and that children know the semantic and lexical properties of reciprocal more than those of reflexive, beginning from an earlier age.

Moreover, it has been discovered that the development in the correct comprehension of reflexive by 5-year-old children does not differ from the development in 4-year-old children's comprehension in a significant way. However, the rate of the correct interpretation at age 6 differs from the rate for these two age groups siginificantly. As a result, it is clear from this finding that an important development can be said to occur in the grammar of children at age 6, distinctly from the grammar of children in the other age groups in terms of the correct interpretation of reflexive involved in simple sentences. In other words, children younger than 6 seem to know the semantic and lexical properties of reflexives, but the remarkable change in the semantic awareness of reflexive occurs around age 6.

As for reciprocal, the level of correct interpretation at age 5 and 6 has been explored to be significantly different from the level at age 4, reaching a nearly perfect level. This finding may indicate that beginning from the age of 4 through 5, leading to the perfectness, there is a noteworthy change in the correct interpretation of reciprocal. Though the semantic interpretation of reciprocal by 4-year-old children is also on a high level, this rate of the development reaches nearly perfect level around age 5. All in all, the result that the children interpret reflexive more correctly beginning from age 6 and reciprocal beginning from age 5 indicates that children's development on the semantic interpretation of reciprocal starts earlier than that of reflexive.

In addition to the results that display the differences between the age groups on each anaphor, individual group's performances on both reflexive and reciprocal

sentences reveal that the rate of the development of reciprocal is remarkably higher than that of reflexive for every age group. It has been found out that the rate of the correct interpretation of reflexive at age 4 remains around the 50% chance level whereas it is nearly 80% for the reciprocal. Similarly, the rate of the correct responses to reflexive sentences at age 5 is around 60% while it is on a nearly perfect level to reciprocal sentences. Moreover, at age 6 reflexive sentences are interpreted on a level of 80% correct in contrast with reciprocal sentences on a perfect level. The variations between the interpretation of reflexive and reciprocal, which have been found to be significant, indicate that children acquire semantic and lexical knowledge of reciprocal earlier than those of reflexive.

5.1.2. Semantic Interpretation of Reflexive and Reciprocal in Complex Structures

The results in Experiment Two have revealed the children's capability to distinguish between reflexive and reciprocal sentences in syntactically complex structures, regarding the influence of children's age.

The comparison of all the age groups' performances has given out the conclusion that the correct interpretation of both anaphors involved in complex structures develops as children grow, and that the development accelerates beginning from a specific period of age. The correct interpretation of reflexive has been discovered to increase from about a level of 35% at age 4 to 65% at age 6. Though the children interpret reflexive sentences in complex structures correctly with a continuous development, the rate of the development remains below the 50% chance level until the age of 6. This finding indicates that children tend to misinterpret reflexive involved in complex structures as reciprocal on a level of more than 50% until the age of 6. In contrast, children's correct interpretation of reciprocal increases from about a level of 75 % at the age of 4 to a nearly perfect level at the age of 6. As opposed to the case with the reflexive sentences, all age groups' correct interpretation of reciprocal within

complex structures is above the 50% chance level. More remarkably, the lowest performance on reciprocal sentences seems to be higher than the highest performance on reflexive sentences. It can be inferred from these findings that children interpret reciprocal correctly on a higher rate than reflexive in the event that they are involved in complex structures, and the knowledge of reciprocal, thus, develops earlier than that of reflexive.

Further, it has been found out that the performance of 4-year-old-children differs from the performance of 6-year-old-children significantly when reflexive is involved in complex structures. However, the performance at age 5 is not significantly different from the performances either at age 4 or at age 6. As a result, it is clear that there is a continuous development in the correct interpretation of reflexive as far as the significant difference between the ages 4 and 6 is considered. Furthermore, it is likely to state that the age of 5 is a transition period for the development, yet it is not too significant to be assumed as the beginning period of a remarkable development, leading to the high level of correctness or perfectness.

As the increase in the correct interpretation of reciprocal in complex structures has been considered, the performances at age 5 and 6 have been discovered not to be significantly different. On the other hand, the performance at age 4 is significantly different from the performances at 5 and 6. More clearly, even though the rate of the correct interpretation of children at age 4 is not too low, this rate increases to a very high level at age 5 and reaches almost complete perfectness at age 6. As a result, it can be inferred that the semantic interpretation of reciprocal in complex structures correctly develops around the age of 4, reaching a nearly perfect level beginning from the age of 5. The overall results bring about two claims about the correct interpretation of reflexive and reciprocal involved in complex structures: first, the results on reflexive sentences show that children in all age groups tend to misinterpret reflexive as reciprocal extensively. Second, the results on reciprocal sentences show that children, beginning from the age of 5, can interpret reciprocal correctly. These

results, thus, seem to imply that children's acquisition of semantic and lexical properties of reciprocal is earlier than their acquisition of reflexive.

The difference between the performance on reflexive and reciprocal by each age group is also an indication of the result that children acquire semantic and lexical knowledge of reciprocal earlier than those of reflexive. More specifically, at age 4 the performance on reflexive is about 35% while this level increases strikingly to the level of nearly 75% for reciprocal. More surprisingly, at age 5 the performance on reflexive is below the chance level as it is at age 4, it increases to nearly perfect level for reciprocal. Likewise, at age 6 reflexive sentences are interpreted on a level of 65 % correct in contrast with reciprocal sentences on a nearly perfect level. The finding that the differences between the performances on both anaphors are significant indicates that even if both anaphors appear in complex structures, all age groups tend to interpret semantic of reciprocal more correctly with a higher level than that of reflexive; however, they may misinterpret reflexive as reciprocal. The complexity of the syntactic structure does not affect too much the correct interpretation of reciprocal sentences.

The overall results of children's performances indicate that beginning from the age 5, children must know the lexical and semantic properties of reflexives quite well. Nevertheless, the complexity of the structures may mislead them to interpret reflexive as reciprocal until the age 6, at which a remarkable change in children's grammar occurs in terms of correct interpretation regardless of the syntactic structure. On the other hand, the knowledge of reciprocal is fairly well at age 4, reaching into the perfect level at age 5.

5.1.3. Semantic Interpretation of Reflexive Within Simple and Complex Structures

The comparison of the children's performances on reflexive involved in syntactically different structures has disclosed the result that structural

complexity affects the children's correct interpretation of reflexive. It has been found out that there is a definite decrease in the correct interpretation of reflexive by all age groups in the event that reflexive is in complex structures. Nevertheless, the decreases in the correct interpretation of reflexive from nearly 60% to nearly 45% at age 5 and from nearly 85% to 65% at age 6 have been found significant while the decrease from about 55% to 35% at age 4 has been found not to be significant. These findings indicate that the children's performance at age 4 is not affected by the syntactic complexity so much as the performances of children at age 5 and 6. More clearly, as reflexive appears in complex structures, the children at the age of 5 and 6 may be led to misinterpret reflexive as reciprocal more frequently than as it is in simple structures. However, no matter how simple or complex the syntactic structure is, the children at the age of 4 misinterpret reflexive as reciprocal nearly on a level of 50%.

The performances of children on reciprocal show that there is a slight decrease in the correct responses of children in the cases that reciprocal is involved in complex sentences. Nonetheless, the decreases from nearly 85% to nearly 75% at age 4, from nearly 95% to about 90% at age 5 and from 99 to 97% at age 6 have been discovered surprisingly to be significant. In other words, the rate of the correct interpretation of reciprocal is affected by the syntactic complexity of the structures. Even though the children's performances are high on both simple and complex structures, it has been explored that they interpret reciprocal more correctly when it is in simple structures.

5.2. THE AWARENESS OF C-COMMAND CONDITION

The results of the experiments conducted with the purpose of investigating children's obedience to Principle A have given light to many inquiries. The results have enabled to explore how influential the syntactic complexity is in obedience to the c-command condition by children. In addition to the effect of the syntactic structure, the extent of the development from age 4 through 6

hasbeen discovered. Moreover, the comparison of the performances on two forms of third person singular reflexive, “kendi” and “kendisi”, has revealed the awareness of c-command condition in relation to the difference in morphological structure and how distinct the interpretation of two forms is.

5.2.1. The Awareness of C-Command Condition for “Kendi” in Simple and Complex Structures

The examination of the awareness of the coreferentiality relation of reflexive with its antecedent within syntactically different structures has disclosed the result that syntactic complexity of the structures brings about a decrease in children’s obedience to the condition explicated in Principle A. Nevertheless, the awareness of c-command condition has been discovered to increase as children grow. As the children’s obedience to Principle A has been tested, it has been explored that children’s performance on reflexive within syntactically simple structures increases from 80% correct at age 4 to the perfect level at age 6, in contrast with the children’s performance on reflexive within syntactically complex structures, which increases from nearly 40% at age 4 to nearly 85% at age 6. These findings indicate that there is a definite development in the awareness of c-command condition by children regardless of the syntactic structure, but in regard to their age. Nonetheless, what is significant is that the lowest performance on simple sentences is nearly equal to the highest performance on complex sentences. This finding seems to imply that children tend to violate Principle A more frequently when reflexive appears in complex sentences than when it is in simple sentences.

In addition to the exploration of a definite developmental change in children’s grammar, it has been dicovered that the performance at age 4 is significantly different from the performances at age 5 and 6; however, there is no difference between the performances at age 5 and 6 when reflexive is in simple sentences. These findings indicate that children older than 4 know that the antecedent must locally c-command reflexive. However, in the event that

reflexive appears in complex sentences, the performances of all groups have been found significantly different from each other. These findings show that children tend to violate the Principle A more often when there is one more potential antecedent within the syntactic structure. Moreover, it is possible to state that children's performance on reflexive in complex sentences develops more remarkably around age 6 or after 6. All in all, children's performances on reflexive show that while children perform on a level of perfectness beginning from the age of 5 as it is in simple sentences, their obedience to Principle A proceeds to develop as it is in complex sentences. In other words, children are likely to regard the subject outside the local domain as the local antecedent in relation to the complexity of the structure. Nevertheless, as the performance at age 6 is considered, it is possible to state that children react to the Principle A more positively beginning from the age 6 when reflexive is in complex structures.

The consideration of each group's performances on reflexive within different syntactic structures also shows that the obedience to Principle A is higher in the existence of simple structures than it is in the existence of complex structures. It is observed that the rate of the acceptance of the local antecedent among the potential ones decreases from 80% in simple sentences to 40% in complex sentences at age 4, from 97,5% to 67,5% at age 5 and from 100% to 87,5% at age 6. These results also indicate that children react more suitably to the condition that reflexive must have a local antecedent when reflexive is in simple structures. Moreover, the finding that the difference between the performances on reflexive in simple and complex sentences is not significant at age 4, but at age 5 and 6, implies that the children at the age 4 do not seem to know the condition that reflexive is bound within the local domain no matter how the syntactic structure is. In contrast, children older than 4 must have the knowledge of Principle A, but they may violate the Principle in the existence of more than one possible antecedent.

5.2.2.The Awareness of C-Command Condition for “Kendisi” in Simple and Complex Structures

As similar to the case in the examination of the awareness of “kendi”, the consideration of how influential the syntactic structure is in the obedience to Principle A for the interpretation of “kendisi” has revealed the result that children violate Principle A more often when the syntactic structure is complex. Moreover, it has been found out that the rate of the children’s acceptance of the c-commanding antecedent among the potential ones for reflexive in simple sentences increases from 75% at age 4 to the perfect level at age 5 and 6. In contrast, this level varies from 35% at age 4 to about 70% correct at age 6 when reflexive appears in complex sentences. Although it is clear that there is a continuous development in obedience to Principle A, it is also remarkable that the performances of the children decrease in relation with the complexity of the sentences.

Moreover, the performance at age 4 has been found to be significantly different from the performances at age 5 and 6 in the cases that “kendisi” appears both within simple and complex sentences. As for the reflexive in simple sentences, this finding may imply that children, beginning from the age 5, completely know that “kendisi” is a reflexive, and it must, thus, be bound by the local antecedent. Nevertheless, in the case of the awareness of reflexive in complex sentences, this finding, with the consideration of the children’s performances as well, seems to imply that the awareness of children older than 4 develops more remarkably in terms of the nature of “kendisi” and obedience to Principle A. Therefore, it is possible to infer that beginning from the age 5, there is a remarkable developmental change in the awareness of c-command condition for “kendisi”, which reaches the perfect level in the existence of simple structures and accelarates through the perfectness in the existence of complex structures. More explicitly, children older than 4 know that reflexive must be bound within its local domain.

The consideration of each group's performances on reflexive within different syntactic structures also shows that the rate of the obedience to Principle A decreases in the existence of complex sentences. The rate of the acceptance of the c-commanding antecedent among the potential ones declines from 75% in simple sentences to 35% in complex sentences at age 4, from the perfect level to nearly 60% at age 5 and from the perfect level to nearly 70% at age 6. Moreover, the differences between the performances on reflexive in different structures have been explored to be significant for all age groups, except for age 4. These findings seem to imply that the rate of the development in the awareness of c-command condition for "kendisi" does not differ in relation the syntactic structure at age 4. Nevertheless, the decrease from the perfect level in the acceptance of the local antecedent at age 5 and 6 indicate that though children know "kendisi" is a reflexive, in some cases they tend to misinterpret it as a pronominal, depending on the complexity of the structures. Moreover, it is likely to claim the existence of a real developmental change beginning from the age 5 regardless of the structure containing "kendisi".

5.2.3. The Awareness of C-Command Condition for "Kendi" and "Kendisi" Within Syntactically Same Structures

Whether the children's obedience to Principle A is affected by the morphological structure of the third person singular reflexive has been discovered by the comparison of the children's performances on each form. In consideration of the performances on simple structures, it has been found out that children at age 4 tend to accept the local antecedent among the possible ones on a slightly higher rate for "kendi"(80%) than they do for "kendisi"(75%). In contrast, at age 5 the obedience to c-command condition is on the perfect level for "kendisi" while it is on a level of 97,5% for "kendi". Distinctly from these age groups, at age 6 children always accept the local antecedent on the perfect level. Moreover, these differences have been found not to be significant. Accordingly, there is not a notable difference in children's awareness of the coreferentiality relations of the bare and the inflected forms with their antecedents when they

appear in simple structures. In other words, children know that two forms are regarded as reflexive, and they, thus, must be locally bound with their antecedents. As the increase in the rate of the awareness, by age group, has been considered, it is also possible to state that this kind of knowledge develops as children grows older.

Nevertheless, it has been explored that there is a slight decrease in the acceptance of the local antecedent for “kendisi” in contrast with “kendi” by all age groups as they are involved in complex structures. The obedience to Principle A decreases from about 40% for “kendi” to 35% for “kendisi” at age 4, from about 65% for “kendi” to about 60% for “kendisi” at age 5 and from nearly 85% for “kendi” to nearly 70% for “kendisi”. It can be inferred from these findings that children at age 4 misinterpret both forms as pronominal on a level of more than 50% when they appear in complex structures. Although the rate of the misinterpretation of both forms decreases as children grows older, the tendency to the violation of Principle A is always a bit higher in the case of the inflected form “kendisi.” Moreover, the finding that the differences in obedience to Principle A by each age group are not significant at age 4 and 5, but at age 6, seems to imply that until the age 6, children react to Principle A for both forms in the same way. As far as the rate of the performances are also considered along with this finding, it is possible to state that children younger than 6 tend to misinterpret reflexive involved in complex structures as pronominal regardless of the morphological form of the third person singular reflexive. However, beginning from the age 6, children tend to interpret the bare form as reflexive whereas they tend to interpret the inflected form as pronominal.

The overall results indicate that children older than 4 seem to know the major property of reflexives; that is, the principle that the antecedent must be local. However, they may still violate this principle until the age 6 when reflexives appear in complex sentences. Nevertheless, beginning from the age 6, their obedience to Principle A increases in the case of the bare form of reflexive in contrast with the case of the inflected form.

5.3. CONCLUSION

The major emprical findings of this thesis can be summarized in terms of children's knowledge of lexical and semantic difference of reflexive and reciprocal and their knowledge of Principle A of the Binding Theory.

Children's performance with respect to the lexical and semantic distinction between reflexive and reciprocal indicate that the children's correct interpretation of both anaphors develops steadily from 4 through 6. Nevertheless, the complexity of the syntactic structure affects their use of the developing knowledge. The correct interpretation of reciprocal is not influenced as negatively as that of reflexive in the existence of the complex structures, though. The children's overall performances on both syntactically simple and complex structures reveal the result that children know the semantic and lexical properties of reflexive quite well beginning from age 5, but their knowledge develops more remarkably around age 6, and their knowledge of reciprocal reaches into the perfect level around age 5. This result indicates that children acquire the lexical and semantic knowledge of reciprocal quite earlier than the knowledge of reflexive. Moreover, in relation to the claims that children will show the command of binding principles as soon as they grasp the properties of referential expressions, and that children perform quite well in selecting local antecedent for reflexives in comparison to pronominals, beginning from the age of nearly 5:7 (Wexler&Chien 1985), it can be inferred that children have the knowledge of reflexives quite well earlier from or, at least, beginning from 5:7. This thesis displays that children must know the general properties of reflexive beginning from the age 5 a bit earlier than the implication of Wexler and Chien.

Children's performances in regard to the notion of Principle A that a reflexive must have a local c-commanding antecedent indicate that there is a continuous development in the awareness of c-command condition from 4 through 6. Nonetheless, syntactically complex structures may result in their violation of Principle A. The children's overall performances on both syntactically simple

and complex structures reveal that children, beginning from the age 5, must have the knowledge of Principle A, but they may violate the Principle in the existence of complex structures. Moreover, the results in this thesis can be said to be similar to the conclusion of Wexler and Chien (1985), who conducted their study with English-speaking children, in which they suggest that children beginning from the age of nearly 5:7 have the knowledge of the Principle A. The comparison of Turkish-speaking and English-speaking children's knowledge of Principle A leads to the resolution of the hypothesis that Turkish children's performance will be different from English children's in the way that Turkish children's obedience to Principle A on high levels may start a bit earlier, yet their performance is not said to be so different at all, though.

As for the performances on the third person singular inflected reflexive, the similar results as in the case of the bare form of third person singular reflexive have been discovered. More clearly, the children's obedience to Principle A has been found to increase from 4 through 6, and the syntactic complexity causes the children's tendency to misinterpret reflexive as pronominal. Moreover, beginning from the age 5, children must know that this form of reflexive must also be bound by a local antedent; however, they may tend to violate Principle A in the existence of complex structures.

The overall results on both the bare and inflected forms of reflexive indicate that children older than 4 seem to know the major property of reflexives, that is, the principle that the antecedent must be local. However, they may still violate this principle until the age 6 when reflexives appear in complex structures. This process of development is similar to the ongoing process on the acquisition of the semantic and lexical properties of reflexive, in which children at 5 know these properties but their development is accelerated through 6. This result indicates that children's obedience to Principle A develops in parallel with the development in their lexical and semantic knowledge of the anaphor. Another result inferred about the bare and inflected forms of reflexive is that beginning from the age 6, children's obedience to Principle A increases in the case of the

bare form of reflexive in contrast to with the case of the inflected form. As a result, the hypothesis that children may not obey the principles even if they know the semantic and lexical properties of anaphors may not be construed completely, because children obey the Binding Principles almost completely as long as they know the lexical and semantic properties of reflexives and, most importantly, as they appear in simple structures. However, their tendency to violate Principle A in complex structures may result from the ongoing development on the acquisition of syntactically complex structures. In other words, the reason why they may violate Binding Principles even if they have the knowledge of reflexives lexically and semantically is that the acquisition and development of syntactically complex structures may not be completed at all.

Some Turkish grammarians' postulations that inflected form of reflexive may be bound nonlocally may allow to compare the results of this thesis with the results of the studies investigating the acquisition of long-distance binding with the hypothesis that Turkish-speaking children's performance on anaphors may be similar to the performance of children whose native languages allow long-distance binding. Consistent with the postulations of Solan and Ortiz (1982) and Hyams and Sigurjonsdottir (1990), who conducted their researches on long-distance binding, this thesis reveals that children misinterpret inflected form of reflexive as pronominal in complex structures. However, these results are not so different from the ones postulated in the case of the bare form of reflexive. Nevertheless, as the decrease in children's obedience to Principle A for the inflected form of reflexive beginning from the age 6 is considered, Lee's (1990) conclusion that children at age 5:7 perform better with the local antecedent than the long-distance antecedent whereas some older children at 6:7 and 7:7 prefer the long distance antecedent more than the local one can be said to be similar to the conclusion in this thesis.

REFERENCES

ATKINSON, M. (1992). *Children's Syntax: An Introduction to Principles and Parameters Theory .* UK: Blackwell Publishers.

CHOMSKY, N. (1965). *Aspects of The Theory of Syntax.* Cambridge, Mass: MIT Press.

CHOMSKY, N. (1980). On Binding. *Linguistic Inquiry*, *11*, 1-46.

CHOMSKY, N. (1981). *Lectures on Government and Binding*. Dordrecht: Foris Publications.

CHOMSKY, N. (1982). *Some Concepts and Consequences of The Theory of Government and Binding.* Cambridge: The MIT Press.

CHOMSKY, N. (1986). *Barriers.* Cambridge: MIT Press, 1986.

COOK, V. J. (1988). *Chomsky's Universal Grammar: An Introduction.* Oxford: Basic Blackwell.

ÇAPAN, S. (1996). Bilişsel Gelişim ve Dil Edinimi. *Dilbilim Araştırmaları*, 284-288.

DALRYMPLE, M. E. (1990). *Syntactic Constraints on Anaphoric Binding*. Ph.D Thesis, Stanford University.

DEMİRCİ, M. (1997). *The Role of Pragmatics in the Acquition of Reflexive Binding in L2.* PhD Thesis, Michigan State University.

DEUTSCH, W., KOSTER, C. and KOSTER. J. (1986). What Can We Learn from Children's Errors in Understanding Anaphora?. *Linguistics*, *24*, 203-225.

ERDEM, M. (2003). Türkçe'de İşteş Yapıların Anlamsal ve Sözdizimsel Özellikleri. G. König, N. Büyükkantarcıoğlu and F. Karahan (Ed.). *XVI. Dilbilim Kurultayı Bildirileri* (p:146-158). Ankara: Hacettepe Üniversitesi.

ERGÜN, M. and ÖZSÜER, S. (2006). Vygotsky'nin Yeniden Değerlendirilmesi. *Sosyal Bilimler Dergisi 2*, 269-292. 10 January 2008, http://www.egitim.aku.edu.tr/**vygotsky**.pdf

FALTZ, M. L. (1977). *Reflexivization:A Study in Universal Syntax*. PhD Thesis, University of California, Berkeley.

FISCHER, S. (2004). Optimal Binding. *Natural Language and Linguistic Theory, 22*, 481-526.

GRIMSHAW, J. and ROSEN, S. T. (1990). Knowledge and Obedience:The Developmental Status of the Binding Theory. *Linguistic Inquiry*, *21*, 187-222.

GRODZINSKY, Y. and REINHART. T. (1993). The Innateness of Binding and Coreference. *Linguistic Inquiry*, *24*(1), 69-101.

HALLIDAY, M. A. K. (1975). *Learning How to Mean: Explorations in The Development of Language.* London: Edward Arnold.

HAEGEMAN, L. (1991). *Introduction to Government and Binding Theory.* UK: Blackwell Publishers.

HENDRIKS, P. *The Problem with Logic in the Logical Problem of Language Acquisition.* University of Groningen, Netherlands. 18November2007 http://www.ircs.upenn.edu/cogsci2000/PRCDNGS/SPRCDNGS/PAPERS/HENDRICK.PDF

HICKMANN, M. (1986). Psychological Aspects of Language Acquisition. P. Fletcher and M. Garman (Ed.) *Language Acquisition Studies in First Language Acquisition Development (*p:9-29). UK: Cambridge University Press.

HYAMS, N. and SIGURJONSDOTTIR, S. (1990). The Development of Long-Distance Anaphora:A Cross-Linguistic Comparison With Special Reference to Icelandic. *Language Acquisition*, *1*, 57-93.

INGRAM, D. (1989). *First Language Acquisition: Method, Description and Explanation.* Cambridge: Cambridge University Press.

KIM, H. R. (1993). *First and Second Language Acquisition of Binding: An Investigation of Korean-Speaking Children and Korean Adult Learners of English.* Ph.D. Thesis, University of Florida.

KORNFILT, J. (1997). *Turkish*. London: Routledge.

KORNFILT, J. (2001). Local and Long-Distance Reflexives in Turkish. *Syntax and Semantics*, *33*,197-225.

LEBEAUX, D. (1983). A Distributional Difference Between Reciprocals and Reflexives. *Linguistic Inquiry*, *14*, 723-730

LEE, H. J. (1990). *Logical Relations in the Child's Grammar: Relative Scope, Bound Variables, and Long-Distance Binding in Korean*, Ph. D. Thesis, University of California, Irvine.

LICHTENBERK, L. (1999) Reflexives and Reciprocals. K. Brown, J. Miller (ed.) *Concise Encyclopedia of Grammatical Categories* (313-319). Amsterdam: Elsevier.

LINDBLOM, J. and ZIEMKE, T. *Social Situatedness: Vygotsky and Beyond*, Dept. Of Computer Science, University of Skövde, Sweeden. 10 January 2008 www.lucs.lu.se/ftp/pub/LUCS_Studies/LUCS94/Lindblom.pdf

MANZINI, M. R. and WEXLER, K. (1987). Parameters, Binding Theory and Learnability. *Linguistic Inquiry, 18*(3), 413-444.

MATSUO, A. (1999/2000) Children's Acquisition of Reciprocal Sentences With Stative and Active Predicates. *Language Acquisition 8*(1), 1-22.

MCDANIEL, D., CAIRNS, H. S. and HSU, J. R. (1990). Binding Principles in the Grammars of Young Children. *Language Acquisition 1*, 121-138.

ÖZSOY, S. (1999). *Türkçe*. İstanbul: Boğaziçi Üniversitesi Dil Uygulama ve Araştırma Merkezi.

REINHART, T. and REULAND, E. (1993). Reflexivity. *Linguistic Inquiry*, *24*, 657-720.

SHIM, R. J. (1994). *The Sensitive Period of Second Language Acquisition – An Experimental Study of Age Effects on Universal Grammar and Language Transfer.* PhD Thesis, University of Illinois.

SLOBIN, D. (1971). Developmental Psycholinguistics. W. O. Dingwall (Ed.) *Survey of Linguistic Science* (p:300-410). University of Maryland.

SOLAN, L. and ORTIZ, R. (1982). *The Development of Pronouns and Reflexives: Evidence from Spanish*. paper presented at the Boston University Language Development Conference.

STURT, P. (2003). A New Look at the Syntax-Discourse Interface: The Use of Binding Principles in Sentence Processing. *Journal of Psycholinguistic Research*, *32*,(2), 125-139.

SUGISAKI, K. (2003). *Innate Constraints on Language Variation: Evidence from Child Language.* PhD Thesis, University of Connecticut.

TEMÜRCÜ, C. (2002). *The Interaction of Syntax and Discourse in Word Order: Data From Turkish*. The University of Antwerp. 21 October 2007.http://www.ii.metu.edu.tr/~temurcu/docs/WO-Temurcu2005.pdf

UNDERHILL, R. (1976). *Turkish Grammar*. Cambridge: MIT Press.

UZUN, N. E. (2000). *Ana Çizgileriyle Evrensel Dilbilgisi ve Türkçe.* İstanbul: Multilingual.

WEXLER, K. and CHIEN, Y. C. (1985). The Development of Lexical Anaphors and Pronouns. *Papers and Reports on Child Language Acquisition*, *24*, 138-149

YARAR, E. (2007). Dönüşlü Adıllar ve Eylem Etkileşimi: Deneysel Bir İnceleme. *Hacettepe Üniversitesi Edebiyat Fakültesi Dergisi, 2*.

APPENDIX 1

EXPERIMENT 1 – ASSESSMENT TABLE

Name / Surname:
Age:
Date of Birth:
Length of the experimentation:

Sentences	True	False
1. Şirinler kendilerini yıkıyorlar. “The Smurfs are washing themselves.”		
2. Jerry ve Tweety birbirlerini kaşıyorlar. “Jerry and Tweety are scratching each other.”		
3. Şirinler ve Cüceler kendilerini kuruluyorlar. “The Smurfs and the Dwarfs are drying themselves.”		
4. Pamuk Prenses’in arkadaşları birbirlerini kaşıyorlar. “Snow White’s friends are scratching each other.”		
5. Şirinler’in arkadaşları kendilerini yıkıyorlar. “The Smurfs’ friends are washing themselves.”		
6. Jerry ve Tweety kendilerini kaşıyorlar. “Jerry and Tweety are scratching themselves.”		
7. Pamuk Prenses’in arkadaşları kendilerini yıkıyorlar. “Snow White’s friends are washing themselves.”		
8. Şirinler birbirlerini yıkıyorlar. “The Smurfs are washing each other.		
9. Şirinler’in arkadaşları birbirlerini yıkıyorlar. “The Smurfs’ friends are washing each other.”		
10. Şirinler ve Cüceler birbirlerini kuruluyorlar. “The Smurfs and the Dwarfs are drying each other.”		

APPENDIX 2

EXPERIMENT 2 – ASSESSMENT TABLE

Name / Surname:
Age:
Date of Birth:
Length of the experimentation:

Sentences	True	False
1.Cüceler, şirinlerin kendilerini yıkamalarını istiyorlar. “The Dwarfs want the Smurfs to wash themselves.”		
2.Şirinlerin arkadaşları, tavşancıkların birbirlerini kaşımalarını istiyorlar. “The Smurfs’ friends want the rabbits to scratch each other.”		
3.Şirinler, Jerry ve Tweety’nin kendilerini kaşımalarını istiyorlar. “The Smurfs want Jerry and Tweety to scratch themselves.”		
4.Pamuk Prenses’in arkadaşları, kediciklerin birbirlerini yıkamalarını istiyorlar. “Snow White’s friends want the cats to wash each other.”		
5.Çocuklar, Şirinler ve Cüceler’in kendilerini kurulamalarını istiyorlar. “The children want the Smurfs and the Dwarfs to dry themselves.”		
6.Şirinler ve Cüceler, çocukların birbirlerini kurulamalarını istiyorlar. “The Smurfs and the Dwarfs want the children to dry each other.”		
7.Kedicikler, Pamuk Prenses’in arkadaşlarının kendilerini kaşımalarını istiyorlar. “The cats want Snow White’s friends to scratch themselves.”		
8.Jerry ve Tweety, Şirinler’in birbirlerini yıkamalarını istiyorlar. “Jerry and Tweety want the Smurfs to wash each other.”		
9.Şirinler, çocukların arkadaşlarının kendilerini yıkamalarını istiyorlar. “The Smurfs want the children’s friends to wash themselves.”		
10.Cüceler, şirinlerin birbirlerini yıkamalarını istiyorlar. “The Dwarfs want the Smurfs to wash each other.”		

11.Jerry ve Tweety, şirinlerin kendilerini yıkamalarını istiyorlar. “Jerry and Tweety want the Smurfs to wash themselves.”		
12.Şirinler, Jerry ve Tweety’nin birbirlerini kaşımalarını istiyorlar. “The Smurfs want Jerry and Tweety to scratch each other.”		
13.Şirinler ve Cüceler, çocukların kendilerini kurulamalarını istiyorlar. “The Smurfs and the Dwarfs want the children to dry themselves.”		
14.Çocuklar, Şirinler ve Cüceler’in birbirlerini kurulamalarını istiyorlar. “The children want the Smurfs and the Dwarfs to dry each other.”		
15.Pamuk Prenses’in arkadaşları kediciklerin kendilerini yıkamalarını istiyorlar. “Snow White ‘s friends want the cats to wash themselves.”		
16.Kedicikler, Pamuk Prenses’in arkadaşlarının birbirlerini kaşımalarını istiyorlar. “The cats want Snow White’ s friends to scratch each other.”		
17.Şirinlerin arkadaşları, tavşancıkların kendilerini kaşımalarını istiyorlar. “The Smurfs’ friends want the rabbits to scratch themselves.”		
18.Şirinler, çocukların arkadaşlarının birbirlerini yıkamalarını istiyorlar. “The Smurfs want the children’s friends to wash each other.”		

APPENDIX 3

EXPERIMENT 3– ASSESSMENT TABLE

Name / Surname:
Age:
Date of birth:
Length of the experimentation:

Sentences	True	False
1. Tavşancık kendini kaşıyor. “The rabbit is scratching herself.”		
2. Tavşancık kendisini kaşıyor. “The rabbit is scratching herself.”		
3. Ece’nin arkadaşı kendini kuruluyor. “Ece’s friend is drying himself. “		
4. Ece’nin arkadaşı kendisini kuruluyor. “Ece’s friend is drying himself.”		
5. Ece, Efe’nin kendini kurulamasını istiyor. “Ece wants Efe to dry himself.”		
6. Ece, Efe’nin kendisini kurulamasını istiyor. “Ece wants Efe to dry himself.”		
7. Pamuk Prenses’in arkadaşı, Şirin’in kendini yıkamasını istiyor . “Snow White’s friend wants the Smurf to wash himself.”		
8. Pamuk Prenses’in arkadaşı, Şirin’in kendisini yıkamasını istiyor. “Snow White’s friend wants the Smurf to wash himself.”		
9. Şirin, Tom’un arkadaşının kendini kaşımasını istiyor. “The Smurf wants Tom’s friend to scratch himself.”		
10. Şirin, Tom’un arkadaşının kendisini kaşımasını istiyor. “The Smurf wants Tom’s friend to scratch himself.”		
11. Kediciğin yavrusu, tavşancığın yavrusunun kendini kaşımasını istiyor. “The kitten wants the young rabbit to scratch himself.”		
12. Kediciğin yavrusu, tavşancığın yavrusunun kendisini kaşımasını istiyor. “The kitten wants the young rabbit to scratch himself.”		

APPENDIX 4

EXPERIMENT 1 - INTRODUCTORY STORIES AND TEST SENTENCES

(1) Introductory Story : The Smurfs (Lazy Smurf and Handy Smurf) go to the forest to play. They both are very dirty after having been outside playing in the mud. Lazy Smurf says “we have to clean up before going home” and Handy Smurf agrees that Papa Smurf will get angry otherwise. Look what they do:

Test Sentence : Şirinler kendilerini yıkıyorlar.
“The Smurfs are washing themselves.”

(2) Introductory Story : The Smurfs have a birthday party for Smurfette. While Clumsy Smurf is bringing the birthday cake, he falls down, and his clothes become dirty. Handy Smurf tries to help him, but when Clumsy Smurf hugs him to thank, his clothes also get dirty. Look what they do:

Test Sentence: Şirinler birbirlerini yıkıyorlar.
“The Smurfs are washing each other.”

(3) Introductory Story : Jerry and Tweety hide in flowers because Tom wants to catch him. But the flowers make them scratch. Look what they do:

Test Sentence: Jerry ve Tweety kendilerini kaşıyorlar.
“Jerry and Tweety are scratching themselves.”

(4) Introductory Story : Jerry and Tweety are ill; and they have got some spots on their skin. It makes them scratch a lot. Look what they do:

Test Sentence: Jerry ve Tweety birbirlerini kaşıyorlar.
“Jerry and Tweety are scratching each other.”

(5) Introductory Story : The Smurfs and the Dwarfs go to the forest to pick up flowers as a suprise for Snow White. But suddenly it starts to rain; and they all get wet. Look what they do:

Test Sentence: Şirinler ve Cüceler kendilerini kuruluyorlar.
“The Smurfs and the Dwarfs are drying themselves. “

(6) Introductory Story : The Smurfs and the Dwarfs go for a picnic in the forest. The Jokey Smurf jumps into the nearby lake to make them wet as a joke. They all get angry, and look what they do:

Test Sentence: Şirinler ve Cüceler birbirlerini kuruluyorlar.
“The Smurfs and the Dwarfs are drying each other.”

(7) Introductory Story: Happy Smurf goes to visit Snow White and her small friends; and gives some flowers to them. But Snow White’s friends do not like flowers. Look what they do:

Test Sentence: Pamuk Prenses’in arkadaşları kendilerini kaşıyorlar.
“Snow White’s friends are scratching themselves.

(8) Introductory Story: When Snow White is out, her friends eats all the chocolate and candies. But they eat so much that it makes them ill with spots on their skin. Look what they do:

Test Sentence: Pamuk Prenses’in arkadaşları birbirlerini kaşıyorlar.
“Snow White’s friends are scratching each other.”

(9) Introductory Story: When the Smurfs are painting their house, their friends are playing. They spill all the paint on the floor by mistake. While they try to clean it, their clothes get dirty. Look what they do:

Test Sentence: Şirinler'in arkadaşları kendilerini yıkıyorlar.
"The Smurfs' friends are washing themselves.

(10) Introductory Story: When the Smurfs are in the forest to work, their friends decide to make a cake for them. But they are so clumsy that they make the whole house and their clothes dirty. After cleaning the house, look what they do :

Test sentence: Şirinler'in arkadaşları birbirlerini yıkıyorlar.
"The Smurfs' friends are washing each other."

APPENDIX 5

EXPERIMENT 2 - INTRODUCTORY STORIES AND TEST SENTENCES

1) Intoductory Story: The Dwarfs and the Smurfs are playing Simon Says game; and The Dwarfs want the Smurfs to perform something; look what it is:

Test Sentence: Cüceler, Şirinler'in kendilerini yıkamalarını istiyorlar.
"The Dwarfs want the Smurfs to wash themselves."

2) Intoductory Story: The Dwarfs and the Smurfs are playing Simon Says game; and The Dwarfs want the Smurfs to perform something; look what it is:

Test Sentence: Cüceler, Şirinler'in birbirlerini yıkamalarını istiyorlar.
"The Dwarfs want the Smurfs to wash each other."

3) Introductory Story: The Smurfs and their friends are playing Simon Says game; and the Smurfs' friends want the Smurfs to perform something; look what it is:

Test Sentence: Şirinler'in arkadaşları, Şirinler'in kendilerini kaşımalarını istiyorlar.
"The Smurfs' friends want the Smurfs to scratch themselves."

4) Introductory Story: The Smurfs and their friends are playing Simon Says game; and the Smurfs' friends want the Smurfs to perform something; look what it is:

Test Sentence: Şirinler'in arkadaşları, Şirinler'in birbirlerini kaşımalarını istiyorlar.
"The Smurfs' friends want the Smurfs to scratch each other."

5) Introductory Story: The Smurfs, Jerry and Tweety are playing Simon Says game; and the Smurfs want Jerry and Tweety to perform something; look what it is:

Test Sentence:Şirinler, Jerry ve Tweety'nin kendilerini kaşımalarını istiyorlar.
"Smurfs want Jerry and Tweety to scratch themselves."

6) Introductory Story: The Smurfs, Jerry and Tweety are playing Simon Says game; and the Smurfs want Jerry and Tweety to perform something; look what it is:

Test Sentence:Şirinler, Jerry ve Tweety'nin birbirlerini kaşımalarını istiyorlar.
"Smurfs want Jerry and Tweety to scratch each other."

7) Introductory Story: Snow White's friends and the cats are playing Simon Says game; and Snow White's friends want the cats to perform something; look what it is:

Test Sentence: Pamuk Prenses'in arkadaşları kediciklerin kendilerini yıkamalarını istiyorlar.
"Snow White's friends want the cats to wash themselves."

8) Introductory Story: Snow White's friends and the cats are playing Simon Says game; and Snow White's friends want the cats to perform something; look what it is:

Test Sentence: Pamuk Prenses'in arkadaşları kediciklerin birbirlerini yıkamalarını istiyorlar.
"Snow White's friends want the cats to wash each other."

9) Introductory Story: The children, the Smurfs and the Dwarfs are playing Simon Says game; and the children want the Smurfs and the Dwarfs to perform something; look what it is:

Test Sentence: Çocuklar, Şirinler ve Cüceler'in kendilerini kurulamalarını istiyorlar.
"The Children want the Smurfs and the Dwarfs to dry themselves."

10) Introductory Story: The children, the Smurfs and the Dwarfs are playing Simon Says game; and the children want the Smurfs and the Dwarfs to perform something; look what it is:

Test Sentence: Çocuklar, Şirinler ve Cüceler'in birbirlerini kurulamalarını istiyorlar.
"The Children want the Smurfs and the Dwarfs to dry each other."

11) Introductory Story: The Smurfs, the Dwarfs and the children are playing Simon Says game; and the Smurfs and the Dwarfs want the children to perform something; look what it is:

Test Sentence: Şirinler ve Cüceler, çocukların kendilerini kurulamalarını istiyorlar.
"The Smurfs and the dwarfs want the children to dry themselves. "

12) Introductory Story: The Smurfs, the Dwarfs and the children are playing Simon Says game; and the Smurfs and the Dwarfs want the children to perform something; look what it is:

Test Sentence: Şirinler ve Cüceler, çocukların birbirlerini kurulamalarını istiyorlar.
"The Smurfs and the dwarfs want the children to dry each other. "

13) Introductory Story: The cats and Snow White's friends are playing Simon Says game; and the cats want Snow White's friends to perform something; look what it is:

Test Sentence: Kedicikler, Pamuk Prenses'in arkadaşlarının kendilerini kaşımalarını istiyorlar.
"The cats want Snow White's friends to scratch themselves."

14) Introductory Story: The cats and Snow White's friends are playing Simon Says game; and the cats want Snow White's friends to perform something; look what it is:

Test Sentence: Kedicikler, Pamuk Prenses'in arkadaşlarının birbirlerini kaşımalarını istiyorlar.
"The cats want Snow White's friends to scratch each other."

15) Introductory Story : Jerry, Tweety and the Smurfs are playing Simon Says game; and Jerry and Tweety want the Smurfs to perform something; and look what it is:

Test Sentence: Jerry ve Tweety, Şirinler'in kendilerini yıkamalarını istiyorlar.
"Jerry and Tweey want the Smurfs to wash themselves."

16) Introductory Story : Jerry, Tweety and the Smurfs are playing Simon Says game; and Jerry and Tweety want the Smurfs to perform something; and look what it is:

Test Sentence: Jerry ve Tweety, Şirinler'in birbirlerini yıkamalarını istiyorlar.
"Jerry and Tweey want the Smurfs to wash each other."

17) Introductory Story: The Smurfs and the boys' friends are playing Simon Says game; and the Smurfs want the boys' friends to perform something; look what it is:

Test Sentence: Şirinler, çocukların arkadaşlarının kendilerini yıkamalarını istiyorlar.
"The Smurfs want the boys' friends to wash themselves."

18) Introductory Story: The Smurfs and the boys' friends are playing Simon Says game; and the Smurfs want the boys' friends to perform something; look what it is:

Test Sentence: Şirinler, çocukların arkadaşlarının birbirlerini yıkamalarını istiyorlar.
"The Smurfs want the boys' friends to wash each other."

APPENDIX 6

EXPERIMENT 3 - INTRODUCTORY STORIES AND TEST SENTENCES

1) Introductory Story: While the rabbit and her little friend, the kitten, are playing in the park, they want to eat the delicious blackberries. But the blackberries make both of them scratch. Look what the rabbit does:

Test Sentence: Tavşancık kendini kaşıyor.
"The rabbit is scratching herself."

2) Introductory Story: While the rabbit and her little friend, the kitten, are playing and jumping through the park, they fall over the bushes. It makes both of them feel scratched. Look what the rabbit does:

Test Sentence: Tavşancık kendisini kaşıyor.
"The rabbit is scratching herself."

3) Introductory Story : It starts raining when Ece and her friend play in the garden. They go into the house, but Ece's mother say that they must get dried not to be ill. Ece's mother gives them a towel. Ece's friend gets the towel and look what he does.

Test Sentence : Ece'nin arkadaşı kendini kuruluyor.
"Ece's friend is drying himself."

4) Introductory Story: Ece and her friend are at the bus stop. A fast car splashes water over them. They've got only one towel. Ece's friend gets the towel, and look what he does.

Test sentence: Ece'nin arkadaşı kendisini kuruluyor.
"Ece's friend is drying himself."

5) Introductory Story: Ece and her friend, Efe, go swimming. But suddenly a strong wind starts to blow; and they get cold. Ece wants Efe to perform something; look what Ece wants:

Test sentence: Ece, Efe'nin kendini kurulamasını istiyor.
"Ece wants Efe to dry himself."

6) Introductory Story : It starts raining when Ece and her friend Efe play in the park. Ece wants Efe to perform something; look what Ece wants:

Test sentence: Ece, Efe'nin kendisini kurulamasını istiyor.
"Ece wants Efe to dry himself."

7) Introductory Story : Snow White's friend and the Smurf play in mud. Before going home, they go near the lake to wash up. Snow White's friend wants the Smurf to perform something; look what Snow White's friend wants:

Test sentence: Pamuk Prenses'in arkadaşı, Şirin'in kendini yıkamasını istiyor.
"Snow White's friend wants the Smurf to wash himself."

8) Introductory Story: Snow White's friend and the Smurf fall over a muddy area when playing in the garden. They must wash up before going home. Snow White's friend wants the Smurf to perform something; look what Snow White's friend wants:

Test sentence: Pamuk Prenses'in arkadaşı,Şirin'in kendisini yıkamasını istiyor.
"Snow White's friend wants the Smurf to wash himself."

9) Introductory Story : The Smurf and Tom's friend go picking up flowers. But the flowers make them scratch. The Smurf wants Tom's friend to perform something; look what the Smurf wants:

Test sentence : Şirin, Tom'un arkadaşının kendini kaşımasını istiyor.
"The Smurf wants Tom's friend to scratch himself."

10) Introductory Story : The Smurf and Tom's friend are ill; and they have got some red spots on their skin. These spots make them scratch. The Smurf wants Tom's friend to perform something; look what the Smurf wants:

Test sentence : Şirin, Tom'un arkadaşının kendisini kaşımasını istiyor.
"The Smurf wants Tom's friend to scratch himself."

11) Introductory Story : The cat family and the rabbit family go for a picnic together. The kitten and the young rabbit eat all the cakes. But it makes them scratch. The kitten wants the young rabbit to perform something; look what the kitten wants:

Test Sentence: Kediciğin yavrusu, tavşancığın yavrusunun kendini kaşımasını istiyor.
"The kitten wants the young rabbit to scratch himself."

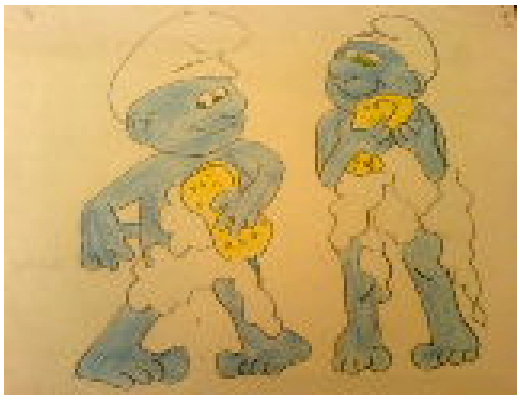
12) Introductory Story : The kitten and the young rabbit are ill; and they have got spots on their skin, which makes them scratch. The kitten wants the young rabbit to perform something; look what the kitten wants:

Test Sentence: Kediciğin yavrusu, tavşancığın yavrusunun kendisini kaşımasını istiyor.
"The kitten wants the young rabbit to scratch himself."

APPENDIX 7

EXPERIMENT 1 - PICTURES FOR THE TEST SENTENCES

Sentences (1)and (2)



Pic. 1

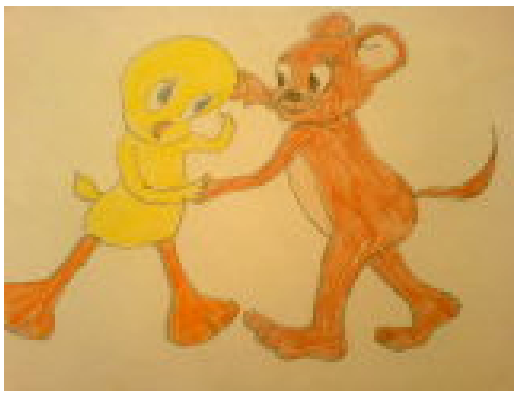


Pic. 2

Sentences (3) and (4)



Pic. 3



Pic. 4

Sentences (5) and (6)



Pic. 5



Pic. 6

Sentences (7) and (8)



Pic. 7



Pic. 8

Sentences (9) and (10)



Pic. 9



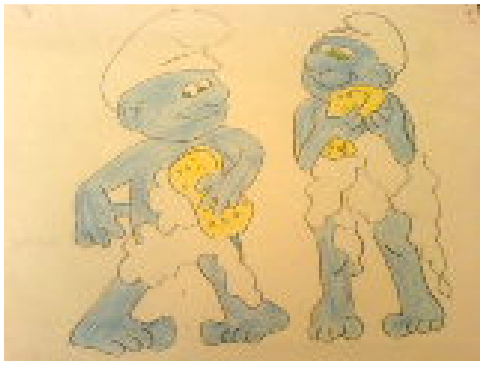
Pic. 10.

APPENDIX 8

EXPERIMENT 2 - PICTURES FOR THE TEST SENTENCES

Sentences (11) and (12)

Pic. 11.



Pic. 12.





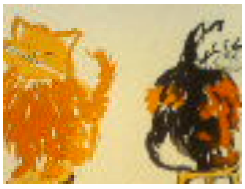
Sentences (13) and (14)

Pic. 13.



Pic. 14.



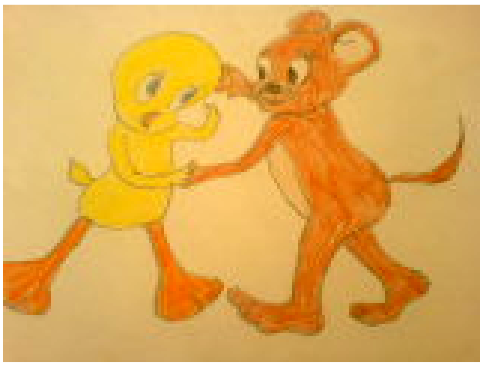


Sentences (15) and (16)

Pic. 15.



Pic. 16.





Sentences (17) and (18)

Pic. 17.



Pic. 18.



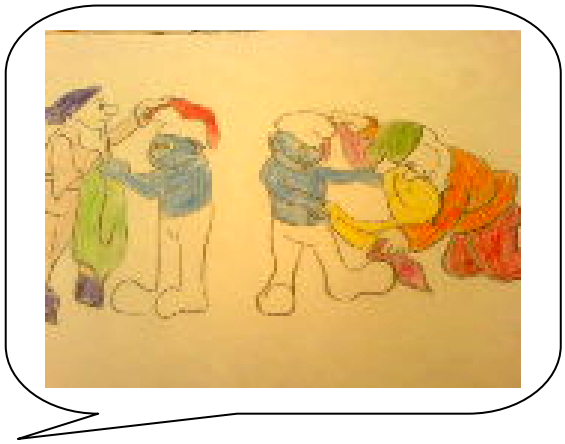


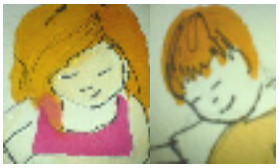
Sentences (19) and (20)

Pic. 19.



Pic. 20.





Sentences (21) and (22)

Pic. 21.



Pic. 22.





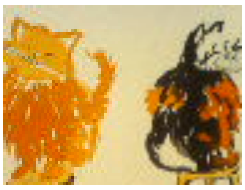
Sentences (23) and (24)

Pic. 23.



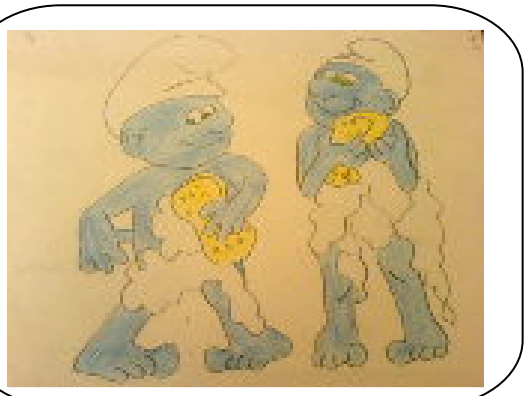
Pic. 24.



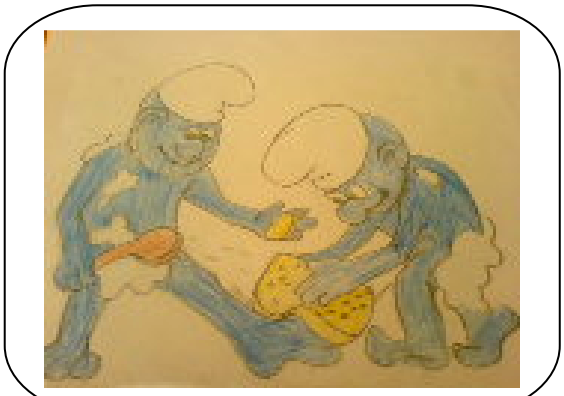


Sentences (25) and (26)

Pic. 25.



Pic. 26.





Sentences (27) and (28)

Pic. 27.



Pic. 28.



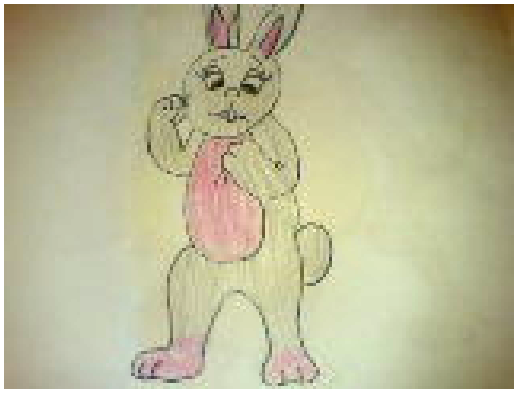


APPENDIX 9

EXPERIMENT 3 - PICTURES FOR THE TEST SENTENCES

Sentences (29) and (30)

Pic. 29.

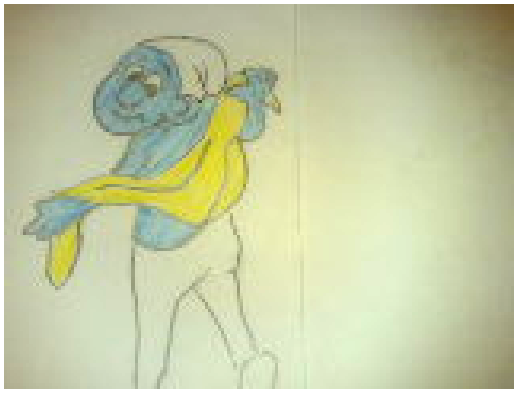


Pic. 30.



Sentences (31) and (32)

Pic. 31.



Pic. 32.



Sentences (33) and (34)

Pic. 33.



Pic. 34.





Sentences (35) and (36)

Pic. 35.



Pic. 36.



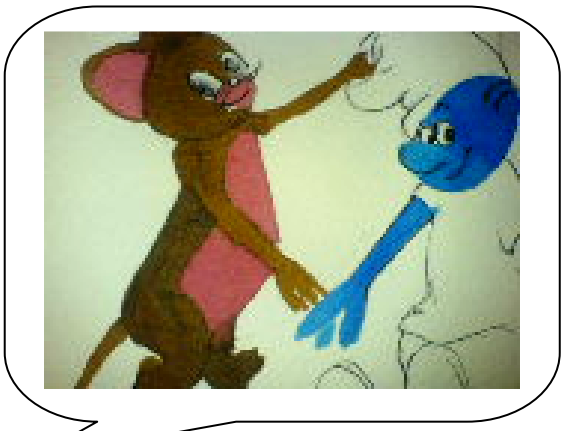


Sentences (37) and (38)

Pic. 37.



Pic. 38.





Sentences (39) and (40)

Pic. 39.



Pic.40.



