

Effects of Different Feedback Conditions on Children's
Referring Expressions

by

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STATEMENT OF AUTHORSHIP

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ABSTRACT

Proper linguistic identification of referents has been repeatedly found to be challenging for young children, especially via relative clauses in the Turkish language. We investigate the extent to which Turkish-learning children between the ages of 2 and 4 can be trained to use referential forms that include relative clauses and other uniquely identifying referring expressions in requesting a sticker from an adult. We also examine the link between using informative and syntactically complex referential expressions (e.g., relative clauses) and the rate and type of disfluencies displayed in speech.

How children referred to a target sticker from among several types of distracters was assessed in a pretest and a posttest following a training procedure. In both tests, the task of the child was to request a target sticker from Experimenter 2 standing on the other side of the room to make his/her book the same as the Experimenter 1's book, following a procedure developed by Matthews, Lieven and Tomasello (2007). Three different training conditions were run where children were modeled on three different constructions: the relative clause feedback condition (i.e., *pasta yiyen kıızı seçtin* 'you selected the girl eating cake'), the demonstrative-noun phrase feedback condition (i.e., *o kıızı seçtin* 'you selected that girl') and general feedback condition (i.e., *güzel seçtin* 'you did a nice selection').

The results of the experiment indicated that children as young as 36 months can learn to productively employ relative clauses and to be more informative in their referring expressions when they are modeled about relative clause constructions in a training session. We could not find any increments in the rate of total speech disfluencies when children produced relatively more informative and syntactically complex referring expressions. Discussion focuses on when and how young children

learn to produce referential forms that include relative clauses and other uniquely identifying referring expressions.

Keywords: referential communication, perspective taking, relative clauses, training, disfluency

ÖZET

Türkçe’de özellikle ortaçlı yapılar kullanarak uygun bir şekilde gönderme anlatımı (nesnelere hakkında konuşma) yapmanın zorlayıcı olduğu birçok araştırma tarafından bulunmuştur. Bu çalışmada amaçlanan, Türkçe konuşan 2 ile 4 yaş arasındaki çocukları, ürettikleri göndergesel cümlelerde ortaçlı yapıları ve açıklayıcı anlatımları kullanmaları konusunda eğitmektir. Ayrıca, açıklayıcı ve sözdizimsel açıdan kompleks cümleler üretme (örn., ortaçlı yapılar) ile konuşmada akıcı olmama oranı ve akıcılığı azaltan ifade tipleri arasındaki ilişkinin incelenmesi amaçlanmaktadır.

Çocukların çeldirici çıkartmalar ile birlikte sunulmuş doğru çıkartmayı nasıl ifade ettikleri ön-testte ve eğitim fazını takip eden son-testte değerlendirilmiştir. İki testte de, çocuğa verilen görev kendi kitabını birinci araştırmacının kitabı ile aynı yapan çıkartmayı, odanın diğer köşesinde bulunan ikinci araştırmacıdan isteyip kendi kitabını tamamlamaktır. Bu çalışmada Matthews, Lieven ve Tomasello’nun (2007) geliştirdiği deneysel prosedür kullanılmıştır. Eğitim fazında çocuklar atandıkları gruba göre üç farklı geribildirim durumuna maruz bırakılmışlardır: ortaçlı yapı geribildirim durumu (örn., *pasta yiyen kız seçtin*), işaret zamiri – isim geribildirim durumu (örn., *o kız seçtin*) ve genel geribildirim durumu (örn., *güzel seçtin*).

Araştırma sonuçları, ortaçlı yapıları kullanmaları konusunda çocuklara model olmanın, 36 aylık çocuklarda göndergesel cümlelerde üretken olarak ortaçlı yapıları ve açıklayıcı anlatımı kullanmalarını sağladığını göstermektedir. Açıklayıcı ve sözdizimsel açıdan kompleks cümleler üreten çocukların, konuşmada akıcı olmama oranlarında anlamlı bir artış bulunamamıştır. Çalışmanın bulguları, çocukların ne zaman ve nasıl göndergesel cümlelerde ortaçlı yapıları ve farklı açıklayıcı anlatımları kullanmayı öğrendikleri çerçevesinde tartışılmıştır.

Anahtar Sözcükler: ayırt edici iletişim, pragmatik dil gelişimi, ortaçlı yapılar, dil eğitimi, akıcılık

DEDICATION

To My Parents, My Brother and My Beloved One

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CHAPTER 1

Introduction

Speakers' ability to attract other people's attention to a particular referent is one of the most central aspects of human communication (Matthews, Lieven, & Tomasello, 2007). To fulfill the goal of reasonably clear communication, speakers need to take into account their listener's perspective and the shared knowledge between the speaker and the listener which is called as common ground.

Clark (1992) defined the common ground as the mutual knowledge, beliefs and assumptions shared by a listener and a speaker.

Although there is an ongoing controversy regarding whether children can take the listener's perception and knowledge into account and provide enough information to uniquely identify the referents, there have been several studies demonstrating that even 2-year-old children can tailor their referential attempts based on the knowledge state of the listener. Moreover, a number of training studies indicated that it is possible to improve younger children's referential strategies with adequate training.

There is a separate strand of research that proposes speakers' rates of disfluency markers increase when they experience a cognitive load in their speech planning system. Speakers become more disfluent when they try to use long and syntactically complex utterances.

The current study was designed to determine whether young children can be trained to produce referential forms including relative clauses and adequate referring expressions. Moreover, we aim to explore whether there is a link between linguistic complexity of the children's referential expressions and the frequency of disfluency they display while uttering these referential expressions.

CHAPTER 2

Literature Review

2.1 Adults and children's perspective taking in conversation

Many utterances used by speakers during communication are not informative enough for listeners to understand out of context (Ackerman, Szymanski & Silver, 1990). If the utterance alone cannot give enough information about the intent of the speaker, the listener needs to attend to the context of the utterance. Common ground, defined as the information shared by a listener and a speaker, is an important dimension of the context (Clark & Carlson, 1981). In fulfilling the goal of reasonably clear communication, speakers often design their speech based on common ground with their listeners.

Do young children design their speech based on the needs of the audience or the shared knowledge between the speaker and the listener? According to Piaget (1930), young children assume that other people see the world as they see it and so experience difficulty in evaluating other people's perspectives. Following the Piagetian framework, past cognitive developmental literature has often proposed that preschool children display an egocentric bias in perspective taking tasks.

Why are children considered to be egocentric? Epley, Morewedge, and Keysar (2004) conducted an experiment to investigate why adults exhibit egocentric biases to a lesser degree than children in referential communication tasks. A confederate playing the role of director and the participant were seated on two sides of a 5x5 array of boxes with objects. Four of these boxes were occluded from the director's perspective. The role of the participant in the game was to move the object as instructed by the director. In each trial, the director's instruction referred to only one

object in the director's visual perspective; however, the instruction could possibly have been referring to one of two objects in the participant's perspective. For instance, two sizes of trucks (big and small) were available in the director's perspective, whereas there were three sizes of trucks (small, medium and big) in the participant's perspective.

Consistent with the view of Piaget, Epley, Morewedge, and Keysar (2004) found that children showed a stronger egocentric bias than adults when choosing the objects to move in the grid. When the director's instruction referred to two objects in the participant's visual perspective, children reached for the object occluded from the director's view more frequently than adults. However, both adults and children have an initial egocentric tendency to look at the object hidden from the director's perspective. Although adults and children do not differ in terms of initial egocentric interpretation, they differ significantly in the speed with which they correct their initial egocentricism. In a nutshell, Epley et al. (2004) shows both adults and children initially make egocentric interpretations during language comprehension; however, adults are faster to correct their initial egocentric interpretations than children.

Some researchers propose that the reason for young children's discrepancies from adults in mental state reasoning and perspective taking is qualitative differences (Epley, Morewedge & Keysar, 2004; Sodian, 1988). However, other researchers claim that these difficulties are due to more general cognitive factors such as memory load and processing limitations (Bloom & German, 2000; Moses, 1993; O'Neill, 1996). For instance, Birch and Bloom (2003) propose an explanation, which they were referred to as the *curse of knowledge*, defined as "the tendency to be biased by one's own knowledge when judging the perspective of a more ignorant other's" (Birch & Bloom, 2003).

Birch and Bloom (2003) studied children between the ages of three and five playing with two sets of opaque containers used as toys. Each container was divided into two bags and the children were instructed that the toys in one of the bags are puppet friend Percy's toys, so Percy had played with them before. However, the toys in the other bag were labeled, as Percy had not seen them before. In order to make the distinction easy for children, smiling face stickers were placed on the containers in the bag showing the toys that were familiar to puppet Percy. Star stickers were placed on the other containers. Children were exposed to two conditions, namely, child-knowledgeable and child-ignorant conditions. In the child-knowledgeable condition, children were allowed to look at the object inside each container, whereas in the child-ignorant condition, the children were not allowed to look at the object inside each container. At the end of each session, toys were shown to the children and the children were asked the question does Percy know what is inside this toy?

The results of the study indicated that there is no difference between the child-knowledgeable and the child-ignorant conditions when the puppet Percy is familiar with the object inside the toys. However, 3- and 4-year-old children but not 5-year-old children were more likely to overestimate Percy's knowledge when they knew the content of the toys, even though the puppet Percy did not know the content of the toys.

This research supports that 3- and 4-year-old children have a tendency to be biased by their own knowledge. Therefore, Birch and Bloom (2004) proposed that the errors made by children in referential communication tasks are not due to egocentric tendencies but due to the *curse of knowledge*. Children did not have difficulty appreciating a perspective that was different from their perspective except in the child-knowledgeable conditions. Children can not take the listener's or the speaker's perspective into account in referential communication tasks when trying to appreciate

the perspective of someone more ignorant than themselves because they cannot inhibit their own knowledge.

Nilsen, Graham and Smith (2008) also demonstrated the effect of the curse of knowledge on preschoolers' evaluation of an ignorant person's knowledge state in a referential communication task. In their study, a wooden case was used to show pairs of objects located on opposite corner shelves. Pairs of objects used in each trial were chosen from the same category, but with different perceptual properties such as different colors or sizes. The child participant and a second experimenter (E2) were seated at a table allowing them to directly see the display case, whereas the first experimenter (E1) was seated behind the display case. In each trial, a sticker was hidden under the one of the paired objects in the display case by the first experimenter. The visual access of the second experimenter or both this experimenter and the child to the objects were occluded via a movable curtain which was attached at the front of the display case. Then, E1 gave the clue about the location of the sticker and the task of the child was to indicate where E2 thought the sticker was or point to the confused face if he/she thought that E2 did not know the sticker's location.

The position of the curtain and the ambiguity of E1's message were manipulated. In the open curtain ambiguous message condition, the child saw where the sticker was hidden and the adjective in E1's clue was ambiguous (e.g., "It's behind the furry bear", when the object pair consisted of a large and a small stuffed bear). In the open curtain-unambiguous message condition, the child also knew the location of the hidden sticker and the adjective in the experimenter's clue was unambiguous (e.g., "It's behind the big bear). In the closed curtain-ambiguous message condition, the child did not see where the sticker was hidden and the message of E1 was ambiguous. In the closed curtain-unambiguous message condition,

the child did not know the location of the hidden sticker and the clue in E1's message was unambiguous. The participants' eye movements were recorded by a camcorder located inside the display case.

It was found that, when compared to the knowledgeable child condition, the 4-year-old children in the ignorant child condition were more likely to point to the referential alternative. In other words, the children could only figure out the ambiguity of the referential expression when they themselves did not know the location of the hidden sticker. The explicit pointing behaviors of preschool children supported the social cognitive bias *curse of knowledge* proposed by Birch and Bloom (2003). However, the analyses of latency of pointing responses and duration of looks ("proportion of time spent fixating the object relative to the total time spent fixating the display across conditions") (p. 560) showed an inconsistency between the explicit behavior and the implicit understanding of ambiguity in the participants. These measures suggested that children were more likely to consider the referential alternative to be the target referent, although they knew the location of the hidden sticker when they were given ambiguous instructions compared to when they heard unambiguous instructions. This study of Nilsen, Graham and Smith (2008) demonstrates that preschoolers have an earlier implicit understanding of ambiguity in referential communication contexts than what their overt responses suggest.

In addition to comprehension studies showing younger children's understanding of ambiguity in referential contexts (Nilsen, Graham & Smith, 2008), other studies investigate younger children's sensitivity to the efficacy of their referential requests (O'Neill, 1996; O'Neill & Topolovec, 2001). These studies examined whether younger children can tailor their communication according to the knowledge state of the listener or the referential context.

For instance, in a study designed by O'Neill (1996), an experimenter placed toys in one of two containers on a shelf. The task for the child was to request the parent's help by telling the name of the container to the mother. In trials 1 and 3, parents saw the toys' placement in one of two containers (parent knowledgeable trial) whereas in trial 2, parents were not in the room during the placement process (parent ignorant trial). Moreover, parents closed their eyes and covered their ears in trial 4 (parent ignorant trial). Although significant differences among the four trials were not found, the older 2-year-old children with a mean age of 2;7 were more likely to name the toy in the parent-ignorant condition compared to the same aged peers in the parent- knowledgeable condition. Moreover, children more often named the location of the toy and gestured to the location of the toy in the parent-ignorant condition compared to the parent-knowledgeable condition. Therefore, older 2-year-old children can design their verbal and nonverbal requests according to the communicative partner's knowledge state. Moreover, the findings in the second study using the same procedure with study 1 demonstrated that even younger 2-year-old children with a mean age of 2;3 can tailor their communicative attempts according to the knowledge state of the listener.

O'Neill and Topolovec (2001) investigated whether 2-year-old children tailor their communication according to the properties of the referential context and whether they can shift from a pointing gesture to verbally naming the referent object when the pointing gesture is not sufficient to uniquely identify the object. Children with a mean age of 2; 8 were given a farmyard scene and were told that an experimenter had hidden stickers in one of two boxes. Therefore, children needed to inform their parents about the location of the hidden stickers in order to get the sticker and complete their pictures. Either one or two boxes were located on the table in one of four configurations. Two configurations of the boxes were called *nonadjacent trials*

because only one box was placed on the table or the two boxes were placed on the table about 50 cm apart. On the other hand, two configurations of the boxes were called *adjacent trial*, because the two boxes were placed side-by-side or one of the boxes was placed on top of the other box. The pointing gesture alone was sufficient to unambiguously refer to the box containing the sticker in nonadjacent trials, whereas a pointing gesture alone was not sufficient in adjacent trials because the boxes were closely placed to each other and children needed to uniquely specify the box with the sticker. The children were also exposed to two feedback trials after the adjacent trials if they could not uniquely identify a box in their first attempt. In the first instance, the experimenter asked the child to tell which one (of the boxes) he/she needed. If the child still could not uniquely name one of the boxes, the experimenter asked a clarification question in the form of a forced-choice (e.g., the boat one or the train one?).

When the boxes were placed close to each other, the older 2-year-old children preferred to use an unambiguous verbal descriptor to get the hidden sticker. Specifically, the children were more likely to specify the name of the picture on the box verbally where the boxes were adjacent than where the boxes were distant. However, O'Neill and Topolovec (2001) concluded that children cannot benefit from training because they cannot transfer their learning from the first feedback condition to the second feedback condition. The same procedure was applied to younger 2-year-old children with a mean age of 2;4. The younger group of 2-year-olds did not understand the inefficacy of their pointing gestures when the boxes were close to each other. Similar to the results of the first experiment, younger 2-year-old children also could not benefit from feedback. O'Neill and Topolovec concluded that older 2-year-old children but not younger 2-year old children were sensitive to referential inefficacy of their pointing gestures and were able to tailor their communication

accordingly, responding to feedback prompts in the form of *which one* or forced-choice questions.

2.2 Influence of training on referential communication

The results of O'Neill and Topolovec's (2001) study opposed the view that 2-year old children can take clarification requests into account and learn from them (Matthews, Lieven, & Tomasello, 2007). However, there has been several training studies demonstrating the beneficial effects of training on children's referential communication skills as listeners and speakers (Asher & Wigfield; 1981; Lefebvre-Pinard & Reid, 1980; Matthews, Lieven and Tomasello, 2007; Robinson & Robinson, 1985). Some of these studies concluded that older children can improve their referential skills by focusing on the different attributes of the referent object when compared to the non-referent objects (Asher & Wigfield; 1981; Lefebvre-Pinard & Reid, 1980). Other training studies demonstrated that children can improve their referential skills by experiencing communicative breakdown and repair (Matthews, Lieven & Tomasello, 2007; Robinson & Robinson, 1985) and by being exposed to adult models showing how to describe the target referents (Whitehurst, Sonnenschein & Ianfolla, 1981).

One of the studies that trained children's referential skills through emphasizing the featural comparison activity is Asher and Wigfield's study (1981). In this study, 20 children in third- grade ranged from 8 years 2 months old to 9 years 1 month old and 65 children in fourth-grade between the ages of 9 years 1 month old and 10 years 4 months old were randomly assigned to a practice control condition or a training condition. In the communication task used by Asher and Wigfield (1981), a pair of words which were quite similar (e.g. baby-child) were presented to the speaker. The role of the speaker was to provide a one-word clue about the underlined word to an imaginary listener who did not know which word was underlined. The children in the

training condition watched a film about a model generating clues for word pairs (e.g., rattle as a clue for the underlined word 'baby'), practiced the game as the model did and got feedback from the experimenter. The model in the film directed the child's attention to make him focus on the different attributes of the referent word in comparison to the non-referent word. On the other hand, the children in the practice control condition practiced the word pairs but did not receive any training and feedback. One month after the first session, the children were tested again with one old word pair set and one new word pair set to see whether children can offer an one-word clue to help the other person select which word was underlined.

The results of Asher and Wigfield's study (1981) showed that the children in the training condition improved their communicative accuracy more than the children in the practice control condition. Moreover, the effect of training was maintained one month after the training. Based on the beneficial effects of training aiming to teach children to engage in a comparison activity, Asher and Wigfield (1981) claimed that efficient comparison processing improves children's referential communication performance.

Robinson and Robinson (1985) applied a different kind of training procedure. They conducted an experiment with 5-year-old children in order to understand the effects of giving explicit information about the listener's understanding and non-understanding on children's referential skills. In their study, a set of 9 toys having some similar attributes such as a doll that was wearing a red hat and one different attribute such as a doll that was holding a flag were used in the pretest and the posttest conditions. When the children became speakers in the pretest, they were instructed to give two easy messages about the target toy so that the experimenter could understand which one the children meant and two hard messages about the target toy to the experimenter so that the experimenter could not guess which one the children meant.

When the children became listeners in the pretest, the experimenter gave unambiguous and ambiguous messages to the children and the children needed to decide which one was meant by the experimenter. If the children refused to interpret the ambiguous messages, this behavior was seen as an evidence of children's ability to discriminate between ambiguous and unambiguous messages.

Children were assigned to one of five intervention groups, namely, information plus behavior group, behavior only group, information only group and two control groups. In the information plus behavior intervention, children were given feedback about why the message was ambiguous after each ambiguous referring expression. However, in the behavior only intervention, the experimenter showed non-understanding without giving feedback about the reason for lack of clarity. In the information only intervention, children were given information about why the message was ambiguous after the experimenter chose the referent. The results of this study demonstrated that children in the information plus behavior intervention and the behavior only intervention used easier messages uniquely identifying the playperson in the posttest than in the pretest when they were instructed to give easy messages to the listener. Children in these interventions could also give harder messages which referred to more than one playperson in the posttest than in the pretest when they were instructed to withhold the information from the listener. Moreover, the children in the information plus behavior intervention and the behavior only intervention did not show a greater tendency to interpret ambiguous messages in the posttest as in the pretest. The behavior only intervention was as effective as information plus behavior intervention. As a result, Robinson and Robinson (1985) argued that telling children why and when the listener did not understand the message is not necessary as long as the children experience a communicative breakdown in their interactions with the experimenter.

Recently, Matthews, Lieven and Tomasello (2007) conducted a feedback study examining communicative breakdown and repair with very young children ranging in age from 2 years to 4 years. In their study, Matthews, Lieven and Tomasello (2007) focused on how children benefit from receiving feedback. A sticker book was used as a task. In this task, the aim of the child was to make his/her book similar to the experimenter's book. The child and one experimenter (experimenter 2- E2) were seated in front of their respective sticker books whereas another experimenter (experimenter 1- E1) was seated at the opposite side of the room. E1 could not see the child's and E2's books because of a large box barrier. Children were randomly assigned to one of four conditions in which they were exposed to different kinds of training. In one condition, the role of the child was the speaker, where the child needed to make his/her book similar to E2's book by asking for a sticker from E1. In the second condition, the role of the child was the addressee. The child and the E1 reversed their roles with the experimenter as the speaker and asked for the right sticker by saying sometimes ambiguous, sometimes unambiguous referential expressions, for example, *that one*. If the child could not understand the request, asked clarification questions or just selected a sticker, the experimenter gave the adequate description of the target sticker by saying *I need the girl swimming*. In the third condition, the role of the child was the onlooker, where he/she observed E1 and E2 talking about the sticker and negotiating the reference. In this condition, E1 asked E2 for the right sticker sometimes ambiguously but always arriving at an informative description at the end, instead of requesting the sticker from the child. In the fourth condition, the child needed to complete the sticker book by taking the stickers from E2, who described which sticker was necessary for the child with a fully informative description. In this condition, the child was exposed to an adult model describing the referent, and did not observe any negotiation of reference as in the onlooker

condition. In all the training conditions, the children were given training across 4 sessions spread over 3 separate days.

All of the referring expressions during the pretest, the posttest, and the training sessions were audio-recorded and transcribed. The pointing gestures that were easily detectable by the experimenter during the experiment were also recorded. Moreover, the utterances used by the children were coded in terms of their syntactic structures such as relative clauses (e.g., the little girl eating) in order to evaluate whether children used the same syntactic structures which were spoken by the models during the training. The results of this study (Matthews, Lieven and Tomasello, 2007) indicated that children in all the training conditions showed an improvement in their referring expressions in the posttest compared to the pretest sessions. However, it was shown that the speaker condition, in which the children received feedback about their own communicative expressions, was the most effective condition. The addressee and the model description conditions were found to be less effective than the other two conditions, namely, the speaker and the onlooker conditions. In particular, the increase in the production of multiword, uniquely identifying responses after the training was greater in the speaker and the onlooker conditions than in the addressee and the model description conditions. Moreover, the 2-year-old, 3-year-old and 4-year-old children did not differ in terms of the effect of training conditions. That means the effect of training was equally effective for all age groups.

The results of the study done by Matthews, Lieven and Tomasello (2007) raised important questions about the effect of the feedback on the referring strategies of the children between the ages of 2 and 4. One of the questions was whether younger children really understood the needs of the communicative partner and designed their communicative attempts accordingly or whether they learnt that they could actualize the goal of the game by using longer and more elaborate descriptions

independently of the informational needs of their addressee. The children might confuse the length of the utterance with informativity and learn to use longer linguistic descriptions in order to get the sticker they needed.

A previous study conducted by Whitehurst, Sonnenschein and Ianfolla (1981) provided one explanation about the questions raised in Matthews, Lieven and Tomasello's study (2007). Whitehurst, Sonnenschein and Ianfolla investigated why children become more informative and redundant after listening to informative and nonredundant speakers. In their study, school aged children, except those in a control group, were exposed to both a listener task and a speaker task. When the children were given the role of a listener, they heard different types of messages about triangles in an array which varied in size, color and pattern and were asked to point to the triangle mentioned by the adult. The children were assigned to different listener conditions: one-word contrastive message condition in which one adjective was sufficient to be informative (e.g., 'the red one' in situations where there was only one red triangle among all triangles), two-word contrastive message condition (two adjectives was necessary when there was one big green spotted, one big red striped and one small green spotted triangle), mixed contrastive message condition (participants received half of the time one-word messages and half of the time two-word messages), two-word redundant message condition (e.g., 'the big, red one' in a context where a big, red, spotted triangle was presented with a small, green, spotted triangle) one-word, and two-word ambiguous message conditions in which the message referred to more than one triangle in the array.

In the contrastive message conditions the models were only as informative as necessary, whereas in the redundant condition the models gave two-word redundant messages in which either one of the two adjectives was enough to uniquely identify the referent. On the other hand, in the one-word and two-word ambiguous message

conditions, children heard messages that could refer to two or three triangles in the array.

The children and the adult model reversed their roles after the listener task was completed. When the children became speakers, they needed to describe one of the triangles in the array to the adult. The results indicated that children exposed to long messages showed improvement in terms of their communication accuracy whereas children who heard short messages showed no improvement. Children exposed to two-word messages used more redundant and fewer contrastive and incomplete messages. Moreover, both groups of children listening to uninformative and informative long messages showed similar levels of improvement. Based on these results, Whitehurst, Sonnenschein and Ianfolla (1981) concluded that children are not sensitive to the informativeness of the message, and modeling made children more informative as a result of exposing them to long messages. In summary, children learnt to use long messages instead of using informative messages.

This effect was explored further in the study conducted by Matthews, Lieven and Tomasello (submitted) with 2- and 4- year old children. They created two conditions which are the two-sticker array condition (target object *the daddy eating carrot* was presented with one dissimilar object *an animal*) and the four-sticker array condition (target sticker *the daddy eating carrot* was placed in the middle of three stickers in which two of them were similar with the target one (*'the daddy crying'* and *'the little boy eating carrot'*). Moreover, in order to investigate why exactly children benefited more from the speaker condition in Matthews et al. (2007), they created two training conditions which were general feedback and specific feedback conditions. In the general feedback condition, the experimenter did not give any model description about the adequate referring expression (e.g., do you need this one?) whereas in the specific feedback condition, the response to the clarification request was in the form

of an adequate referring expression (e.g., do you need the daddy eating carrot?). The procedure of this study was similar to the study conducted by Matthews, Lieven and Tomasello (2007).

The results showed that both groups of children preferred to use simple descriptions for the condition where the array size was two items, whereas they were more likely to use complex descriptions for the condition where the array size were four items. Moreover, it was found that the children in the specific feedback condition were more likely to use complex descriptions compared to the children in the general feedback condition. On the basis of the results of these two experiments (Matthews, Lieven and Tomasello, 2007; Matthews, Lieven and Tomasello, submitted), the authors concluded that children as young as 2 can learn to tailor their referring expressions based on potential distracters in the referential context.

The training studies reviewed above (Asher & Wigfield, 1981; Lefebvre-Pinard & Reid, 1980; Matthews, Lieven & Tomasello, 2007; Matthews, Lieven & Tomasello, 2008; Robinson & Robinson, 1985) indicate that training can improve younger children's use of adequate referring expressions. With adequate training, children as young as 2 can learn from feedback to be more specific in their referring expressions.

The aim of the current study is to examine the extent to which Turkish speaking children between the ages of 2 and 4 can be trained to use referential forms including relative clauses and adequate referring expressions. We will assess changes in younger children's referring expressions from pretest to posttest following a similar training procedure to the Matthews, Lieven and Tomasello's method (2007), but testing the effects of different types of feedback constructions. In the present study, the children will be assigned to one of the three feedback conditions namely *relative*

clause feedback condition, demonstrative-noun phrase feedback condition and general feedback condition.

Departing from the procedure employed by the Matthews, Lieven and Tomasello (2007), the training in the present study will take place in one session, and will involve completion of two picture books namely *The Bumbles Go on Holiday* and *The Bumbles Have a Party*. Because the books used during the training session should be different from the books used for testing, the types of activities to be described by the children will be different, therefore calling for different verbs across the training and the testing session. Moreover, the experimenter conducting the training session will be different than the experimenter from whom the child will request the stickers in the pretest and the posttest. Therefore, it will be possible to examine whether younger children can generalize the feedback constructions learnt in the training session to different referring expressions during the posttest.

By modeling relative clauses in the training session, we aim to explore whether young children can understand the function of relative clauses and use them productively to distinguish competing pictures. However, producing utterances in the form of relative clause is challenging for young children because of the morphosyntactic complexity of the form (Slobin 1986; Sarılar & Küntay, submitted).

As Turkish is a head-final language, relative clauses precede the nominals they modify. Although the normative word order in simple transitive clauses is SOV, relative clauses require the verb (i.e., the action) to be preceding the head noun, as the verb now serves as a participle. There are two kinds of relativization constructions in Turkish: subject relative clauses and non-subject relative clauses (Hankamer & Knecht, 1976; Çağrı, 2009; Underhill, 1972). Subject relative clauses are used when the modified noun is the subject of the relativized clause as in *muz yi-yen adam*, banana eat-SR man, ‘the man that is eating a/the banana’ whereas in non-subject

relative clauses the relativized element is a non-subject *adam-in ye-diğ-i muz*, man-GEN eat-OR-POSS banana, ‘the banana that is eaten by the man’. Most previous accounts that studied the morphosyntax of relative clauses in Turkish (e.g., Çağrı, 2009; Hankamer & Knecht, 1976; Kornfilt, 1984; Özsoy, 1994; Underhill, 1972) treat subject relative clauses as less complex and structurally less embedded than object relative clauses. In the current study, we focus only on the relatively simple subject relative clauses.

In fact, earlier studies demonstrated that children experience speech production difficulties (e.g., disfluency) when attempt to produce utterances representing increasing complexity (e.g., relative clauses) (Bernstein Ratner & Sih, 1987; Gordon et al., 1986). Therefore, one additional question that deserves some consideration is whether there is a link between linguistic complexity of the children’s referential expressions and the frequency of disfluency they display while uttering these referential expressions.

This issue is discussed in the next chapter.

CHAPTER 3

Literature Review: Disfluency in speech production

3.1 Disfluencies in adults' speech

One of the most central parts of the language use is referring (Arnold, Fagnano & Tanenhaus, 2003). Speakers try to choose appropriate referential expressions in order to make their message clear and easy to process for listeners and do so quickly. If the speaker begins a referential utterance before formulating it, he/she may cut an utterance short and use a pause or filler in order to go on. On the other hand, if a speaker decides to change what they are saying, they also may hang up their speech and add new information or delete or replace already used words (Clark & Wasow, 1998).

There are different ways to classify occurrences of disfluency in speech. Carlo and Watson (2003) classified disfluency types as single-syllable word repetitions, multi-syllabic word repetitions, sound repetitions, repetitions of one syllable, repetitions of more than one syllable, phrase repetitions, interjections, revisions, incomplete phrases, unfinished words, broken words, prolongations, blocks and grammatical pauses. Yaruss, Newman and Flora (1999) categorized disfluency types by using a broad continuum described by Gregory (1986): more typical disfluencies and less typical disfluencies. More typical disfluencies could be generated largely by normally fluent speakers such as repetition of phrases ("I want- I want that"), revisions (e.g., "I want- I need that") and interjections (e.g., "um," "er") whereas less typical disfluencies could be largely produced by speakers who stutter such as including repetitions of words, sounds, or syllables (e.g., "l-l-look"), prolongations (e.g., "lllook"), or blocks (e.g., "l—ook")..

The high rate of disfluency in spontaneous speech raises the questions about the causes and the functions of disfluencies for normal speakers. Oviatt (1995) found that length of utterance is significantly linked to the rate of disfluency. Disfluency rate is higher in longer utterances than shorter ones. Moreover, the same study demonstrated that utterance length by itself explained 77% of variability in spoken disfluencies. Similarly, Yaruss et al. (1999) indicated that normally fluent speakers were highly disfluent during the production of longer and syntactically complex utterances when compared to shorter and syntactically easy utterances.

Barr (2001) proposed that speakers are more likely to have production difficulties when they are trying to refer to new information compared to the given information in a discourse. In his study, participants were seated in front of a computer and a pair of novel, abstract figures appeared. The task of the speaker was to refer to one of the two referents, one of which was discourse-new referent and the other discourse-old. The task of the listener was to select the target sticker. Barr (2001) found that speakers used utterance initial filled pauses such as “uh” and “um” 1.4 times more when referring to the new referent than to the old referent. That means speakers show extra effort in generating a message when a referent to be described is novel.

Clark and Wasow (1998) proposed that disfluencies have communicative functions and need to be seen as the consequences of certain strategies. Similarly, Brennan and Schober (2001) suggested that listeners are always on the alert during spontaneous speech in order to figure whether the speaker is having difficulty or not. In a study by Brennan and Schober, (2001), the task of the participant was to choose a unique referent on a display after hearing instructions. Instructions were either fluent or naturally disfluent and involved mid-word interruptions, mid-word with filler interruptions or between-word interruptions. In the mid-word interruption condition,

the speaker did not pronounce the whole word and replaced it with a new word. In the mid-word with filler interruption condition, the speaker did not say the whole word, and then used a filler like *uh* and replaced the unfinished word with a new one. In the between word interruption condition, the speaker pronounced the whole word but immediately replaced it with a new word. The results showed that after hearing the mid-word interruption with a filler, listeners chose the target object more quickly and accurately than after hearing fluent instructions (Brennan & Schober, 2001).

Interruptions with fillers warn the listener about the difficulty of the speaker in forming utterances. The perception of this difficulty, in turn, guarantees that the listener continues to attend to the conversational exchange and what is exactly said.

3.2 Disfluencies in children's speech

Disfluent speech behaviors in children are seen as indicators of incipient stuttering so there is abundant research in the literature exploring the qualitative and quantitative differences between non-stuttering children and children who stutter (Ambrose & Yairi, 1999; Boey et al., 2007; Curlee, 1980; Pellowski & Conture, 2002).

Ambrose and Yairi (1999) collected conversational speech samples from non-stuttering preschool aged children and children who showed stuttering behaviors during the interaction between the child and a parent, and also the child and an investigator. Children were instructed to play with clay and their partner (a parent or investigator) asked open-ended questions to the child about their favorite toys and movies. Disfluencies were classified according to six categories: part-word repetition, single syllable word repetition, disrhythmic phonation (prolongations, blocks and broken words), interjection, revision and multisyllable repetition. While the first three categories were coded as stuttering-like disfluencies (SLD), interjection, revision, and multisyllable repetition were labeled as other disfluencies (OD). Results showed that

the percentage of stuttering-like disfluencies (SLD) in the total disfluencies was 66% for children who showed stuttering behaviors whereas the percentage was 24 % for normally speaking children. On the other hand, the percentage of other disfluencies (OD) was 34% for children who showed stuttering behaviors and 76% for normally speaking children. Ambrose and Yairi (1999) concluded that the disfluency behaviors of children who stutter were quite different than the disfluency behaviors of normally speaking children.

Similarly, Pellowski and Conture (2002) conducted a study in order to find the differences between 3- and 4-year old children who stutter and children who speak normally. Mothers were instructed to talk and play with their children in the same way that they do at their homes. Disfluencies per 100 words were classified as stuttering like disfluencies (part-word repetition, single-syllable word repetition) or other disfluencies (interjection, phrase repetition). Children who stutter generated more total disfluencies than normally speaking children. Stuttering like disfluencies represent 81% of total disfluencies for children who stutter whereas they represent only 42% of the total disfluencies for children who do not stutter. Conversely, the percentage of other disfluencies was 19% for children who showed stuttering behaviors and 58% for normally speaking children. Pellowski and Conture's findings are consistent with the findings of Ambrose and Yairi's study (1999). Both of these studies demonstrated that there are differences between children who stutter and children who do not in terms of disfluency types they displayed. Moreover, stuttering-like disfluencies are the main indicators that lead to a differentiation between the two groups (Pellowski & Conture 2002).

Boey et al. (2007) compared the characteristics of stuttering-like disfluencies found in English speaking children with those found in Dutch speaking children. Their study included large numbers of children who were diagnosed as stutterers with

a mean age of 54 months and normal speaking children with a mean age of 69 months. Speech samples were collected during interactions between the researcher and the child. Similar to the findings of studies with English speaking children, they found that there are differences between children who stutter and children who speak normally in terms of stuttering-like disfluencies. Children who stutter produced significantly more stuttering like disfluencies than normally speaking children. Moreover, it was shown that one component of stuttering-like disfluencies which are prolongations or blocks was produced by 77% of children who stutter but it was generated by 0% children who speak normally.

These studies show that there are certain universal patterns for distinguishing children who stutter from children who speak normally. Non-stuttering children show different types of disfluencies when compared to stuttering children.

Researchers who were interested in disfluency behaviors of normally speaking children conducted studies in order to explore whether there is a gender difference in terms of both the frequency of disfluencies and types of disfluencies used (Kools & Berryman, 1971; Yairi, 1981; Robinson, Davis & Crowe, 2000).

Kools and Berryman (1971) conducted a study with first grade children who did not have a history of stuttering. Speech samples were collected by using 10 pictures from the Children's Apperception Test (Bellak and Bellak, 1961). Disfluencies were coded according to eight categories, which are interjections of sounds, part word repetitions, word repetitions, phrase repetitions, revisions, incomplete phrases, disrhythmic phonations and tension. They found that there are not any differences between girls and boys when all types of disfluencies were combined. However, male participants produced a greater number of incomplete phrases than the females. Moreover, the more frequently produced disfluency types by normally

speaking children were demonstrated in word-repetitions, revisions and incomplete phrases.

Robinson, Davis, and Crowe (2000) studied non-stuttering African American preschoolers using a different kind of data collection method. They collected speech samples from three different within subject conditions which were a spontaneous interaction with researcher, story retelling, and story generation. It was shown that children produced more disfluencies during narrative discourse tasks (story retelling and story generation) than during spontaneous speech. Although they found differences between conditions in terms of total disfluencies produced by non-stuttering African American children, they did not find any differences between male and female participants.

These studies (Kools & Berryman, 1971; Robinson, Davis & Crowe, 2000) show that male and female participants do not differ from each other in terms of the total disfluencies they produced both during spontaneous conversations and narrative tasks.

The questions whether different age groups are dissimilar in terms of total disfluency behaviors and whether younger age groups differ from older age groups with regard to the specific types of disfluencies they produced have been investigated (Dejoy & Gregory, 1985; Haynes & Hood, 1977; Carlo & Watson, 2003).

Dejoy and Gregory (1985) investigated the frequency of different types of disfluencies in children whose ages are between 3.5 and 5 years. They found that children from the younger age group produced significantly more part-word repetitions, word repetitions, phrase repetitions, incomplete phrases and disrhythmic phonations than children in the older age group. On the other hand, children in the older age group generated significantly more grammatical pauses than children from

the younger age group. Younger age groups differ from older age groups with regard to the specific types of disfluencies they produced.

Carlo and Watson (2003) examined whether the findings of studies about age differences in terms of disfluency types in English speaking children were also valid for Spanish speaking children. They studied two different age groups: children between the ages of 3;5–4;0 years and children between the ages of 5;0–5;5 years. When they compared frequencies of total disfluencies between two discrete age groups, they did not find any differences. Moreover, the younger age group did not differ from the older age group in the frequencies of different disfluency types. These findings contradict with the findings of studies that used only English speaking children (Dejoy & Gregory, 1985; Haynes & Hood, 1977).

Therefore, there is some inconsistency in the research findings looking at disfluency in children at different ages (Dejoy & Gregory, 1985; Haynes & Hood, 1977; Carlo & Watson, 2003). Because of the dissimilarity in the findings of different studies, especially those comparing different languages, the aim of the present study is to investigate whether there are any differences between 3-year-old and 4-year-old age groups in terms of total proportion of speech disfluencies and whether 3-year-old and 4-year-old Turkish speaking children differ from each other in terms of the speech disfluency types they produce.

Moreover, earlier studies demonstrated that speakers' disfluency rates increase when they experience more cognitive load in their speech planning system (Bortfield, Leon, Bloom, Schober, & Brennan, 2001; Siegman, 1979). For instance, speakers experience production difficulties when they refer to new objects in the discourse (Arnold, Fagnano & Tanenhaus, 2003; Barr, 2001) and when they attempt to use long and syntactically complex utterances (Oviatt, 1995; Yaruss et al. 1999). As an exploratory question, we aim to explore whether there is a link between the

form and the informativeness of the children's referential expressions and the frequency and the type of disfluencies they display while uttering these referential expressions.

CHAPTER 4

Method

4. 1. Participants

The participants recruited for this study were 45 Turkish-speaking three-year-olds (26 boys, 19 girls; mean age = 36.83, range: 31.97- 46.67) and 45 Turkish-speaking four-year-olds (24 boys, 21 girls; mean age = 51.72, range: 48.10- 58.87). Children were randomly assigned to one of three conditions, namely the relative clause feedback condition, the demonstrative-noun phrase feedback condition and general feedback condition. Table 1 presents the distribution of participants in each age and training group. Table 2 presents the mean age and the age range of the participants in each age and training group.

Table 1. Distribution of participants in each age and training group

	Relative Clause Feedback Condition	Demonstrative-Noun Feedback Condition	General Feedback Condition
Age groups			
3-year	15 (9 boy, 6 girl)	15 (9 boy, 6 girl)	15 (8 boy, 7 girl)
4-year	15 (7 boy, 8 girl)	15 (8 boy, 7 girl)	15 (9 boy, 6 girl)

Table 2. Distribution of the mean age and the age range of the participants in each age and training group

Age groups	Relative Clause		Demonstrative-Noun		General	
	Feedback Condition		Feedback Condition		Feedback Condition	
	Mean Age	Range	Mean Age	Range	Mean Age	Range
3-year	36.85	32.07- 41.47	36.58	32.27- 42.20	37.05	31.97- 46.67
4-year	52.18	48.67- 58.87	51.83	48.13- 57.73	51.16	48.10- 58.87

An additional 32 children (23 boys, 9 girls; mean age = 33.31) were excluded from the study either because they did not cooperate with the experimenter to complete the tasks or they could not concentrate on the tasks and understand the instructions. Moreover, 16 children (7 boys, 9 girls; age range: 31.46- 54.0) who did not produce any words except pointing during both the pretest and the posttest were excluded from the analysis because pointing does not indicate linguistic referential attempts.

The 3 year-old children were selected from a database of volunteers at the Koç University Language and Communication Development Laboratory in Istanbul. The 4-year-old children were recruited both from preschools in Istanbul and the database of volunteers at the Koç University Language and Communication Development Laboratory.

The children were tested either at the university laboratory or in a quiet place in their preschools. Two research assistants who were trained in the experimental procedure played the role of confederate in the pretest session and the posttest session.

The mothers whose children participated the study in Koç University Language and Communication Development Laboratory filled in a short demographic form during the test. For mothers whose children participated the study in their private preschools, the demographic survey was mailed to their home addresses.

Based on the demographic information taken from the mothers, 89 parents (99% of the parents) are married and 1 parent's data (1% of the parents) is missing. Fifty-five parents (61% of the parents) have one child, 33 parents (37% of the parents) have more than one child and 2 parents' data (2% of the parents) are missing. Sixty-eight mothers (76% of mothers) had college degrees, 20 mothers (22% of the mothers) had high school degrees and 2 mothers' educational information (2% of the mothers) is missing. Sixty-four fathers (71 % of fathers) had college degrees, 18 fathers (20% of fathers) had high school degrees, 6 fathers (7% of fathers) had not graduated from a high school and 2 fathers' educational information (2% of the fathers) is missing.

According to the mothers' reports, 66 children (73% of the children) are not exposed to other languages than Turkish at home, 20 children (22% of the children) are exposed to other languages specifically English and German, and 4 children's data (4% of the children) are missing. In this respect, while 19 mothers (95% of the mothers whose children are exposed to other languages than Turkish at home) reported that they mostly speak with their child in Turkish, only 1 mother (5% of mothers whose children are exposed to other languages than Turkish at home) reported that they mostly speak with their child in German. Because this child's data does not differ from her same age peers, she is not excluded from the analysis. Ten mothers (50 % of the mothers) whose children are exposed to another language other than Turkish think that their child will not learn the other language as fluently as Turkish while 7 mothers feel that their child will learn the other language as much as

Turkish. One mother (5% of the mothers) thinks that the child will learn the other language better than Turkish and 2 mothers' data (10% of the mothers) are missing.

At the time of participation in the study, 55 children (61% of the participants) attended a preschool whereas 30 children (33% of the participants) are not enrolled in any preschools. Because of missing data, 5 children's preschool information (6% of the participants) is unknown. Forty-eight children (87% of children who attend a preschool) spent five days of the week in preschool, 6 children (11%) spent only three days of the week in preschool and 1 child (2%) spent only 2 days of the week in preschool. The time spent in the preschool each day was as follows: 38 children are in school a whole day (69% of the children who were attending a preschool), 15 children were attending half-days (27%), 1 child was attending (2%) one or two hours and 1 child (2%) was not attending regularly.

4.2 Materials

Five of the six picture books about the adventures of a family (e.g., *The Bumbles Go to the Zoo*, *The Bumbles Stay at Home*) created by Matthews et al. (2007) were used in the current study with a culturally familiar family name, which is *Mutlu* (e.g., *Mutlu Ailesi Hayvanat Bahçesine Gidiyor*). The book *The Bumbles at Christmas Time* was not used in the present study because of the theme's relative foreignness to the Turkish culture. In each book, there were six different pictures showing different family members (dad, mother, girl, boy) performing simple actions (e.g., eating, sleeping). In each book, three pictures were about intransitive actions (e.g., the dad dancing) while three pictures were about transitive actions (e.g., the girl eating cake). In each picture, the subject performing the simple action was animate. However, one of the patients in the transitive scenes was human, the second was an animal and the third was an inanimate object.

Similar to the experimental procedure of Matthews et al.'s study (2007), two versions of the five picture books were used. One version of the picture book that includes all the characters was used by the experimenter. Another version of the book with some characters missing (e.g., mother, boy) was used by the child (See Appendix A for example pages from the experimenter's and the child's versions).

A board fixed high on the wall was used to display 14 stickers including a target and 13 non-target stickers for each missing picture in the child's book. The description of the target stickers in the five picture books is presented in Appendix B.

One of the experimenters (Experimenter 1) and the child were seated in front of a child-sized table. A large box barrier ensured that another experimenter (Experimenter 2) at the opposite side of the room could not see the child's and Experimenter 1's books.

4. 3 Procedure

4. 3. 1 Snap game

At the beginning of the experiment, a snap game was played as a warm-up task with the child in order to be sure that the child could understand the term *the same*. One of the experimenters and the child sat at a child-sized table and the experimenter placed six pairs of identical cards on the table in an arbitrary layout. The experimenter selected one of the cards and asked the child which one was the same as the card that she had just chosen. Most of the children easily understood the term *the same* and matched all six pairs of cards. Some of the children did not understand the game, so the experimenter showed the children how one card could be matched with its pair. After the child matched all six pairs of cards, the experimenter terminated the game.

4. 3. 2 Introduction and pretest

Once Experimenter 1 was sure that children could understand the term *the same*, Experimenter 2 went to the opposite side of the room and Experimenter 1 began to give instructions about the pretest to the child. The following instructions were used (See Appendix C for the Turkish instructions):

Look, there are two of the same picture books on the table. The name of the family is Mutlu. In order to be sure that children were familiar with the characters in the picture book, Experimenter 1 asked the children can you name all the characters on the picture book? If children did not want to name the characters, Experimenter 1 did not insist on it and continued to provide the rest of the instructions.

One of the picture books belongs to me and one of them belongs to you. I completed my picture book in the morning; however, some of the pictures are missing in your picture book. You got it? OK. Look, Gökçe [= Experimenter 2] has pictures placed on the wall that are missing in your book. You can make your book the same as my book by taking the relevant stickers from Gökçe. However, Gökçe can not see this part of table. Okay, go to the other side of the table. Can you see the picture books on the table? No, you cannot. Just like Gökçe cannot. Therefore, you need to go to Gökçe and say which sticker you want. Gökçe placed all of the stickers on the wall, so you can easily see them, OK?

After you retrieve the sticker from Gökçe, you will come back. We will place the sticker you took from Gökçe onto your page and our books will be the same. After finishing the picture book, you can take it home if you want to. OK, then. Let's begin.

E2 encouraged the child to walk over her side of the room and ask for the sticker needed. When the child comes to get the sticker, E2 gives instructions to the child by saying *Please stand in the circle in front of the sticker board before asking for a sticker* (See Appendix C for the Turkish instructions). The sticker board was

fixed high on the wall in order to prevent pointing behaviors. E2 encouraged the child to ask for the sticker, saying *tell me which sticker you want*. If the child could uniquely identify the character or simply named the character, E2 gave the right sticker to the child. However, if the child only pointed to the sticker or simply said *that one*, E2 each time handed over to the child the incorrect sticker that has the same person as the target but doing a different action. If the child did not accept the incorrect sticker, in this case E2 selected the right sticker and gave it to the child. However, the child might accept the non-target sticker. In this case, E2 gave the wrong sticker to the child and said *Ok. Here it is*. When the child returned to the table, E1 informed the child about the wrong sticker by saying *this is an incorrect sticker and an incorrect sticker does not make our books the same. You need to return to Gökçe and ask for the right sticker* (See Appendix C for the Turkish instructions). Occasionally, the child might ask for the wrong sticker. In this case, E2 gave the wrong sticker to the child and E1 gave the instructions she used when the child brought over a wrong sticker.

Once the child went through all the six stickers in approximately 10 minutes and completed his/her picture book, the pretest was terminated.

4. 3. 3 Training session

The children were exposed to one of the three feedback conditions with E1 immediately after the pretest. As mentioned above, the children were randomly assigned to one of the three between-subject feedback conditions namely, the *relative clause feedback condition*, the *demonstrative-noun phrase feedback condition* and the *general feedback condition*. In each feedback condition, the children completed two different picture books in approximately 20 minutes: *The Mutlus Go on Holiday* and *The Mutlus Have a Party*.

At the beginning of each training condition, the child and Experimenter 1 sat at a child-sized table and E1 placed a sheet of paper having 14 stickers on the table. Among the stickers on the sheet, there was one sticker matching the target sticker, one sticker that matched the character(s) but not the action they were performing, and one sticker that matched the action but not the character(s) performing this action. For each target sticker, a different sheet of paper having different stickers on it was used. E1 placed the child's version in front of the child and the experimenter's version in front of her and gave the following instructions to the participants (See Appendix D for the Turkish instructions):

Now, shall we play a new game like the one we just played? Let me tell you about our new game. Look, there are two versions of the same picture book on the table. The participants' familiarity with the characters on the picture book was ensured by asking can you name all the characters on the picture book? If children did not want to label the characters, Experimenter 1 did not insist and continued to give instructions.

OK. Look, this picture book belongs to me and this one belongs to you. As I completed my picture books in the morning, there are not any missing pictures in my book. However, some of the pictures are missing in your picture book. You can make your picture book the same as my picture book. But, this time you will not retrieve the stickers from Gökçe. The stickers will be placed on the table. You will select the stickers that make your picture book the same as my picture book. You got it? You need to tell me which sticker you selected. In this way, I can understand which sticker you choose. If you select the right sticker, we will together place the sticker onto your page and our books will be the same. OK? After getting confirmation from the child, E1 continued to give instructions by saying OK, then. Let's look at the first

page of my picture book and see whether you can make your book the same as my picture book.

In the *relative clause feedback condition*, if the child selected the right sticker *the girl eating cake* among distractor stickers (e.g., the mum eating cake, the girl singing) on the table, Experimenter 1 asked the child *Which sticker did you select? Tell me.* Once the child verbally described the sticker chosen by him/her, E1 informed the child about the correctness of the sticker by saying *hey, you selected the girl eating cake. This sticker makes our first pages the same.* However, if the child did not want to verbally describe the character on the sticker, E1 did not insist on the description and gave the relative clause feedback anyway by saying *hey, you selected the girl eating cake. This sticker makes our first pages the same.* In both cases, Experimenter 1 gave the feedback in the form of a relative clause twice by pointing to the sticker. The first feedback was given after the child selected the right sticker and the second one was presented during the placement of the right sticker onto the page (See Appendix E).

Occasionally, children selected the wrong sticker. In this case, E1 said *OK. But, you need to look one more time. You should select the sticker that is the same as the picture in my book. You got it?* After the child completed the two different picture books, the relative clause feedback condition was terminated. Experimenter 1's feedback constructions to be used in the relative clause feedback condition for the book *The Mutlus Have a Party* can be found in Appendix F and Appendix G, in English and in Turkish, respectively.

In the *demonstrative-noun phrase feedback condition*, if the child chose the correct sticker *the girl eating cake* from the non-target stickers (e.g., the mum eating cake, the girl singing) on the table, Experimenter 1 asked the child *Which sticker did you select? Tell me.* If the child verbally described the sticker, E1 gave feedback

about the correctness of the sticker by saying *Hey, you chose that girl. This sticker makes our first pages the same.* However, if the child did not want to say anything about the sticker, E1 gave demonstrative-noun phrase feedback by saying *Hey, you chose that girl. This sticker makes our first pages the same.* In both cases, Experimenter 1 gave feedback in the form of demonstrative phrase twice by pointing to the sticker. Feedback was also given right after the selection of the right sticker and the other one was expressed during the placement of the sticker onto the child's page.

However, if the child took the incorrect sticker, E1 informed the child by saying *OK. But, you need to look one more time. You will select the sticker that is same as the picture in my book. You got it?* After the child completed the two different picture books, the feedback condition was terminated. Experimenter 1's feedback constructions used in the demonstrative-noun phrase feedback condition for the book *The Mutlus Have a Party* is in Appendix F and Appendix G, in English and in Turkish, respectively.

In the general feedback condition, if the child took the right sticker *the girl eating cake* from the stickers on the table, E1 asked the child *Which sticker did you select? Tell me.* After the child verbally identified the sticker, E1 gave information about the right sticker by saying *Hey, you made a good choice. This sticker makes our first pages the same.* However, the child sometimes did not want to verbally describe the sticker. In this occasion, E1 did not insist on it and gave general feedback, saying *Hey, you did a nice selection. This sticker makes our first pages the same.* In both cases, Experimenter 1 gave general feedback twice by pointing to the sticker; one right after the selection of right sticker and the other during the placement of the sticker onto the page.

If the child took the inappropriate sticker, E1 informed the child by saying *OK. But, you need to look one more time. You should select the sticker that is same as the*

picture in my book. You got it? After the completion of two different picture books, the general feedback condition was terminated.

Experimenter 1's feedback constructions used in the general feedback condition for the book *The Mutlus Have a Party* is in Appendix F and Appendix G, in English and in Turkish, respectively.

Experimenter 1's feedback in Turkish for the other training book *The Mutlus Go on Holiday* in each feedback condition is presented in Appendix H.

4. 3. 4 Posttest

After the training conditions were completed, the children were moved to the posttest phase of the study. The procedures applied in the posttest and the pretest sessions were the same as in the pretest. In the posttest, children completed two different picture books in approximately 10 minutes namely *The Mutlus Go to the Farm* and *The Mutlus Stay at Home*. After the child was done with requesting all the 12 stickers from Experimenter 2, the posttest was terminated.

4. 4. Transcription and coding

The children's referential attempts in all the test sessions and the children's utterances in the training session were transcribed by Experimenter 1. An undergraduate Psychology student who is a native speaker of Turkish checked all the transcriptions. Once the few inconsistencies between the transcriptions were resolved, the agreement between the two transcribers was 100%.

4.4.1 Coding of referential forms

The utterances that children used to request stickers from E2 were coded in the pretest trials and the posttest trials. The first attempts and the second attempts of the children were coded separately with respect to whether the children produced relative clauses or not.

The referential attempts of children containing a full relative clause (e.g., *traktöre binen çocuk* – ‘boy driving tractor’) and headless –(y)an relative clause (e.g., *köpeği yıkayan* - dog-ACC wash-SR) were coded as *relative clause*. On the other hand, referential attempts not including relative clauses were coded as *other*. Occasionally, children used the word “the girl” instead of “the mom” or “the boy” instead of “the dad”. These kinds of appropriate nominal substitutions did not affect the type of the coding.

In order to determine the informativeness of the children’s referential expressions, both Experimenter 1 and Experimenter 2 coded the children’s first and second attempts with respect to whether the children’s referential form could uniquely identify the relevant sticker or not.

Referential attempts uniquely identifying the stickers (e.g., *yazı yazan kız* ‘girl writing’ or *kız ağlıyor* ‘the girl is crying’) or giving sufficient information about the characters in the case of stickers including two characters (e.g., *köpeği ve adamı* ‘the dog– ACCUSATIVE and the man’) were coded as *unique identification*. On the other hand, responses including just pointing behavior or referring to the character in the sticker (e.g., *anneyi* ‘the mummy- ACCUSATIVE) were coded as *non- unique identification*.

4.4.2 Coding of speech disfluency types and reliability

The transcribed referential attempts were coded with respect to whether the children’s responses were disfluent or not. A research assistant who was not knowledgeable about the aim of the study coded 20% of the data from both age groups and the three experimental groups. The average unit-by-unit agreement ratios between the two coders for whether the referential attempts were disfluent or not, were 98% for the pretest utterances and 94% for the posttest utterances.

Disfluent referential attempts were also coded with respect to the types of disfluencies children produced. The referential attempts of children in the pretest and the posttest were coded by using the disfluency classification system proposed by Carlo and Watson (2003) and Bortfeld et al. (2001). Referential attempts were coded as disfluent if they included any of the following categories:

- a) single-syllable word repetition (e.g. şu, şu kızın yanındaki + işaret- ‘next to the that that girl + pointing’)
- b) multi-syllable word repetition (e.g., şu resmi + işaret, koyun koyun resmi- ‘that picture + pointing, sheep sheep picture’)
- c) repetition of phrase (e.g., bize uyuyan kediyi verir misin? uyuyan kediyi + işaret- ‘Can you give us cat sleeping ? cat sleeping+ pointing’)
- d) unfinished word (e.g., şunu istiyorum + işaret, koyun ç*ı*.- ‘I want that one + pointing, sheep fen.... (fence)’)
- e) restart (e.g., ablayı, abla resim çiziyor- ‘the girl, the girl is drawing’)
- f) filler (e.g., eeee köpek babanın ayağını yiyeni- ‘eee the dog ate the father’s feet’)
- g) editing expression (e.g., çocuk oturuyor yemek yiyor ayy baba oturuyor yemek yiyor- ‘the child is sitting and eating ayy the dad is sitting and eating’)
- h) substitution (e.g., kızı, insani yalayan kopeği verir misin? – ‘Can you give the dog licking the girl, the human?’)
- i) no verbal response.

A research assistant who was not knowledgeable about the aim of the study coded 20% of the data from both age groups and the three experimental groups.

Average unit-by-unit agreement ratios between the two coders for disfluency types were 76% for the pretest utterances and 83% for the posttest utterances.

If one referential attempt included more than one disfluency category, all categories were coded separately. Repetition of single syllables was rarely seen in the speech sample so this category was excluded from the analysis. The children's responses that did not include any of the categories mentioned above were coded as fluent.

CHAPTER 5

Results

In order to determine the effects of the feedback conditions, we began by examining the proportion of referential forms including relative clauses and the proportion of uniquely identifying referential utterances for the pretest and the posttest. In order to test whether the proportion of relative clauses and the proportion of uniquely identifying referential utterances increased from the pretest to the posttest in each of the training conditions and age groups, two separate 2 (test: pretest, posttest) X 3 (training condition: relative clause feedback, demonstrative-noun phrase feedback, general feedback) X 2 (age: 3-year-old, 4-year-old) mixed ANOVAs were conducted with the proportion of relative clauses and the proportion of uniquely identifying referential utterances as dependent variables.

5.1 Relative clause production

We calculated the number of referential devices uttered by the children in the form of a relative clause (i.e., -(y)an relative clauses) separately for the pretest phase before the training and for the posttest phase after the training. Each child had 6 opportunities to produce referential expressions in the form of relative clause in the pretest phase and 12 opportunities in the post-test phase. The proportion of relative clauses for each child was calculated by dividing the sum of referential expressions in the form of relative clause by the total number of referential opportunities, i.e., 6 in the pretest and 12 in the posttest.

There was a moderate correlation between the pretest and the posttest in terms of the proportions of production of relative clauses produced (Pearson correlation coefficient = 0.67, $p < 0.01$). The children who produced a relatively high proportion

of referential forms that include relative clauses in the pretest phase continued to produce a higher proportion of referents including relative clauses in the posttest. The link between the pretest and the posttest scores was similar for both age groups. The pretest and the posttest scores of the 3-year-old children were correlated (Pearson correlation coefficient = 0.78, $p < 0.01$). Similarly, the pretest and the posttest scores of the 4-year-old children were correlated, although the strength of the correlation was somewhat weaker (Pearson correlation coefficient = 0.53, $p < 0.01$).

Table 3 presents the means and standard deviations of the percentage of trials in which relative clauses were produced for each training condition and the two age groups in the pretest and the posttest phases.

Table 3. Percentage of trials in which relative clauses were produced in each training condition and by both age groups in the pretest and in the posttest

Age groups		Relative Clause		Demonstrative-Noun		General	
		Feedback Condition		Feedback Condition		Feedback Condition	
		M	SD	M	SD	M	SD
3-year-old	Pre	21.11	23.95	16.66	20.89	8.88	13.89
	Post	40.55	34.33	18.88	24.49	6.66	12.27
4-year-old	Pre	30.0	34.61	47.77	25.09	33.33	30.86
	Post	45.0	35.32	50.0	31.81	39.44	31.57

An overall 2 (test: pretest, posttest) X 3 (training condition: relative clause feedback, demonstrative-noun phrase feedback, general feedback) X 2 (age: 3-year-

old, 4-year-old) mixed ANOVA was conducted with the proportion of relative clauses as a dependent variable. The ANOVA on relative clause production showed that there was a significant effect of the test, $F(1, 84) = 7.734, p = 0.007$. Children were more likely to produce referring expressions in the form of relative clauses in the posttest phase than compared to the pretest.

The main effect of age was also found to be significant, $F(1, 84) = 17.877, p < 0.05$, which means that 4-year-old children were significantly more likely to use relative clause constructions than 3-year-old children.

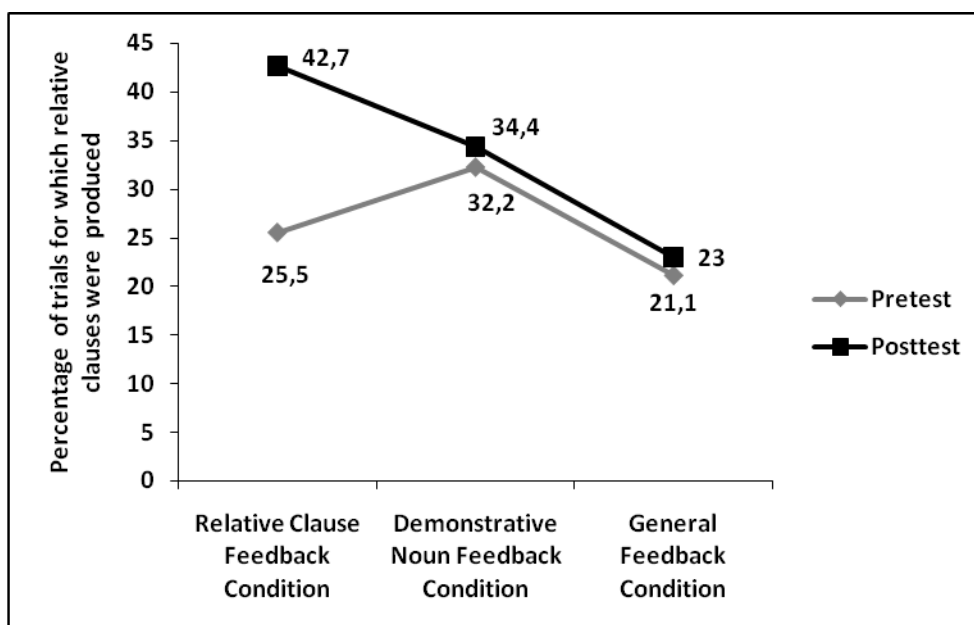
The analysis demonstrated that there was not a significant main effect of training condition. However there was a significant interaction between the test and the training condition, $F(2, 84) = 3.876, p = 0.025$. As Table 3 shows, in the relative clause feedback condition, referring expressions in the form of relative clause were produced in 21% of the trials in the pretest and 41% of the trials in the posttest by the 3-year-old children, and by the 4-year-old children, in 30% of the trials in the pretest and 45% of the trials in the posttest. In the demonstrative-noun phrase feedback condition, referential expressions including relative clauses were used in 17% of the trials in the pretest and 19% of the trials in the posttest by the 3-year-old children, and by the 4-year-old children, in 48% of the trials in the pretest and 50% of the trials in the posttest. In the general feedback condition, relative clause constructions were produced in 9% of the trials in the pretest and 7% of the trials in the posttest by the 3-year-old children, and by the 4-year-old children, in 33% of the trials in the pretest and in 39% of the trials in the posttest.

In consideration of normality assumptions, simple effect analysis of the test factor and the simple effect analysis of the training conditions were done by using more conservative non-parametric tests. The percentage increase in the production of relative clauses from the pretest to the posttest was 17% in the relative clause

feedback condition, 2% in the demonstrative-noun phrase feedback condition and 2% in the general feedback condition (See Figure 1). Simple effect analysis of the test factor indicated that within all three training conditions, the effect of the test factor was shown significant for the relative clause feedback condition through a Wilcoxon Signed-Ranks Test, $Z= 2.54, p < .011$ but not significant for the demonstrative noun feedback condition (Wilcoxon Signed-Ranks Test, $z= 0.58, p > .56$) and the general feedback condition (Wilcoxon Signed-Ranks Test, $z= 0.73, p > .46$). Only in the relative clause feedback condition, children increased their use of relative clauses in their referential utterances from the pretest to the posttest phase (See Figure 1).

Simple effect analysis of the training conditions demonstrated that there was not a significant effect of the training conditions within the pretest, Kruskal-Wallis Test, $\chi^2 = 3.018, p = .22$. On the other hand, simple effect analysis of the training conditions was found to be approaching to significance within the posttest, Kruskal-Wallis Test, $\chi^2 = 5.088, p = .079$.

Figure 1. Percentage of trials for which relative clauses were produced in different training conditions



The 2-way interaction between the age and the test and the 3-way interaction between the test, the training condition and the age were not found to be significant.

These findings indicated that children were more likely to use relative clause constructions in the posttest phase compared to the pretest. Also, it was found that the rate of relative clause production exhibited by the participants differed across age groups. That is, 4-year-old children were significantly more likely to use referring expressions in the form of relative clauses than compared to the 3-year-old children. Moreover, within all three training conditions, only children in the relative clause feedback condition were more likely to produce relative clause constructions in the posttest phase than compared to the pretest phase.

As an alternative way to analyze the data, an 3 (training condition: relative clause feedback, demonstrative-noun phrase feedback, general feedback) X 2 (sex: female, male) analysis of covariance (ANCOVA) was run with age and the proportion of relative clauses in the pretest as covariate factors and the proportion of relative clauses in the posttest as a dependent variable. The analysis revealed that there was

not a significant main effect of sex on the proportion of relative clauses in the posttest, $F(1, 82) = 0.034, p = 0.853$. It was also demonstrated that age was not related to the proportion of relative clauses in the posttest, $F(1, 82) = 3.441, p = 0.067$. However, the proportion of relative clauses in the pretest, was significantly related to the proportion of relative clauses in the posttest, $F(1, 82) = 48.251, p < .05$.

The analysis also indicated that there was a significant effect of condition on the proportion of relative clauses in the posttest after controlling for the effects of the proportion of relative clauses in the pretest and the age of the children, $F(2, 82) = 3.998, p < .05$. Planned contrasts were conducted to examine the effect of the condition further. Planned contrast revealed that the children in the relative clause feedback condition were significantly more likely to produce relative clauses in the posttest phase compared to the children in the general feedback condition, $p = .008$. However, it was shown that there were no significant differences between the demonstrative-noun phrase feedback condition and the general feedback condition with respect to the proportion of relative clauses in the posttest, $p = .481$.

The 2-way interaction between the sex and the condition was not found to be significant, $F(2, 82) = 0.672, p = 0.513$.

These results confirm that when compared to the children in the general feedback condition, only children in the relative clause feedback condition were more likely to use relative clauses in the posttest phase.

5.2 Unique identification of stickers

We also compared the number of referential attempts uniquely identifying the stickers (e.g., *ağlayan palyaço* – ‘clown crying’ or *kız yüzüyor* – ‘the girl is swimming’) or giving sufficient information about the characters (e.g., *köpeği ve adamı* – ‘the dog and the man’) in the pretest phase before the training to the posttest phase after the training. Each child had 6 opportunities to produce referential

expressions uniquely identifying the target stickers in the pretest phase and 12 opportunities in the post-test phase. The proportion of uniquely identifying referential utterances for each child was calculated by dividing the sum of uniquely identified referents by the total number of referential opportunities.

There was a strong and high correlation between the pretest and the posttest in terms of the proportion of uniquely identifying referential forms (Pearson correlation coefficient = 0.70, $p < 0.01$). The children who used relatively high rates of uniquely identifying referential forms in the pretest phase continued to produce higher proportion of uniquely identifying referential forms in the posttest. The correlation between the pretest and the posttest scores was similar for both age groups. The pretest and the posttest scores of the 3-year-old children were correlated (Pearson correlation coefficient = 0.79, $p < 0.01$). Similarly, the pretest and the posttest scores of the 4-year-old children were correlated, although the strength of the correlation was weaker (Pearson correlation coefficient = 0.51, $p < 0.01$).

An overall 2 (test: pretest, posttest) X 3 (training condition: relative clause feedback, demonstrative-noun phrase feedback, general feedback) X 2 (age: 3-year-old, 4-year-old) mixed ANOVA with the proportion of uniquely identifying referential forms as a dependent variable was conducted. The analyses revealed that there was a significant effect of test, $F(1, 84) = 50.837$, $p < 0.05$. Children were more likely to use informative referring expressions in the posttest than in the pretest phase.

The main effect of age was also found to be significant, $F(1, 84) = 56.037$, $p < 0.05$, which shows that 4-year-old children were significantly more likely to produce uniquely identifying referential forms than the 3-year-old children.

The analyses also demonstrated that there was a significant effect of condition, $F(2, 84) = 8.048$, $p < 0.05$. In the relative clause feedback condition, uniquely identifying referential forms were produced in 44% of the trials. In the demonstrative-

noun phrase feedback condition, children uniquely described the target stickers in 31% of the trials. In the general feedback condition, children uniquely identified the target stickers in 22% of the trials.

Table 4 presents the means and standard deviations of the percentage of trials in which uniquely identifying referential forms were produced for each training condition and the two age groups in the pretest and in the posttest.

Table 4. Percentage of trials in which uniquely identifying referential forms were produced for each training and age group for the pretest and for the posttest

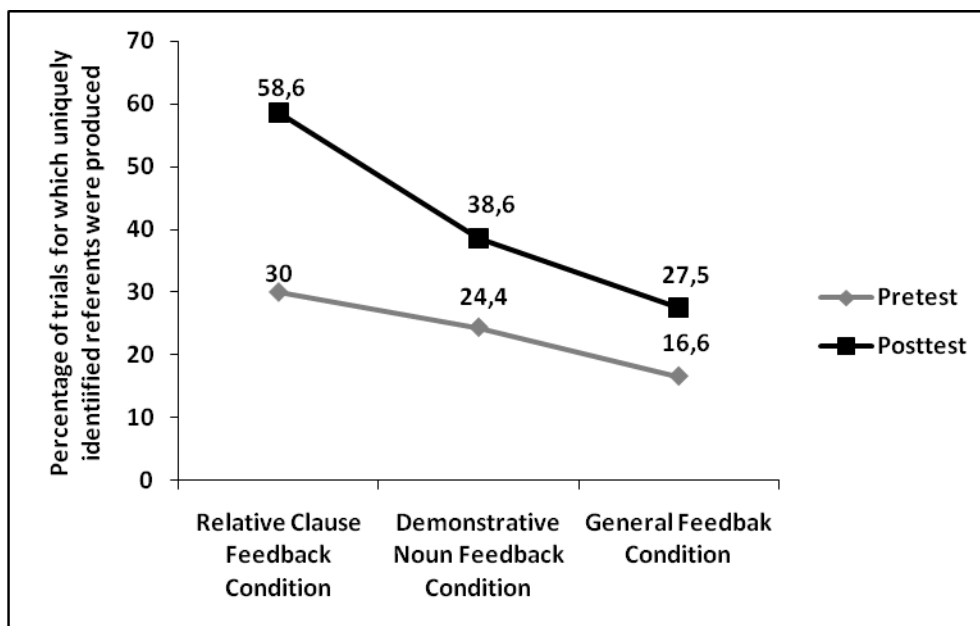
Age groups		Relative Clause		Demonstrative-Noun		General	
		Feedback Condition		Feedback Condition		Feedback Condition	
		M	SD	M	SD	M	SD
3-year-old	Pre	16.66	15.43	11.11	14.99	0	0
	Post	43.33	28.03	18.33	25.03	4.44	9.89
4-year-old	Pre	43.33	30.73	37.77	27.07	33.33	31.49
	Post	73.88	29.69	58.88	24.89	50.55	33.40

The interaction between the test and the training condition was found to be significant, $F(2, 84) = 4.739, p = .011$. As Table 4 reveals, in the relative clause feedback condition, uniquely identifying referential forms were used in 17% of the trials in the pretest and 43% of the trials in the posttest by the 3-year-old children, and by the 4-year-old children, in 43% of the trials in the pretest and 74% of the trials in the posttest. In the demonstrative noun phrase feedback condition, uniquely

identifying referential forms were produced in 11% of the trials in the pretest and 18% of the trials in the posttest by the 3-year-old children, and by the 4-year-old children, in 38% of the trials in the pretest and 59% of the trials in the posttest. In the general feedback condition, uniquely identifying referential forms were used in 0% of the trials in the pretest and 4% of the trials in the posttest by the 3-year-old children, and by the 4-year-old children, in 33% of the trials in the pretest and 51% of the trials in the posttest.

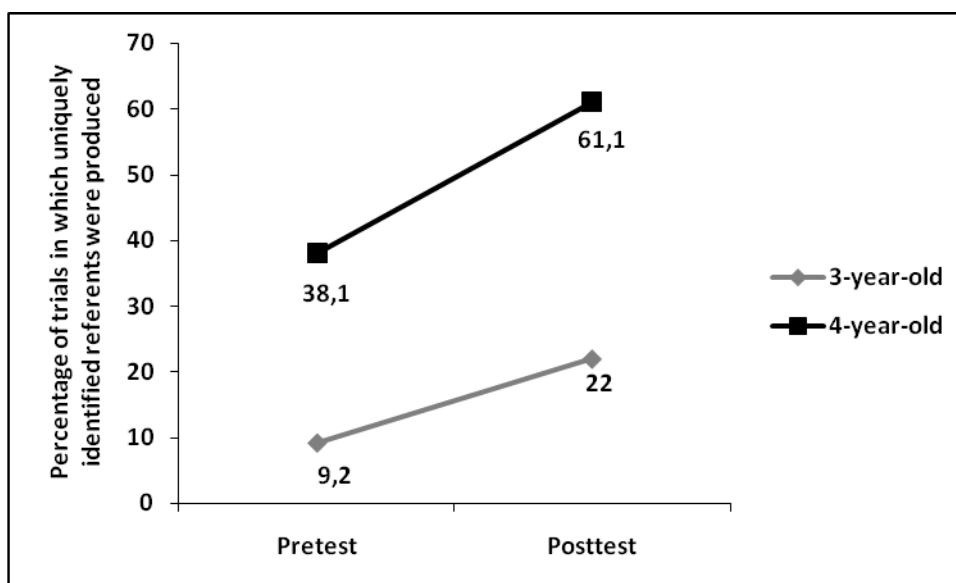
In order to be sure that children's performance are the same in the pretest in terms of unique identification of referents, an one-way ANOVA was conducted with training conditions as a between-subject variable and the proportion of uniquely identifying referential forms in the pretest as a dependent variable. The findings showed that there was no significant main effect of training condition during the pretest phase, $F(2, 89) = 1.863, p > 0.05$. Therefore, pair-wise comparisons of training conditions collapsing across age revealed that all conditions were equal in the pretest phase. Although all conditions were equal in the pretest phase, Scheffé post-hoc tests revealed that there was a significant difference in the proportion of uniquely identifying referential forms between the relative clause feedback condition and the general feedback condition from the pretest to the posttest. Children in the relative clause feedback condition produced significantly more uniquely identifying referential forms than the children did in the general feedback condition in the posttest phase compared to the pretest (See Figure 2). No difference in the production of uniquely identifying referential forms was found between the relative clause feedback condition and the demonstrative-noun phrase feedback condition and between the demonstrative-noun phrase condition and the general feedback condition.

Figure 2. Percentage of trials for which uniquely identifying referential forms were produced in different training conditions



The interaction between the test and the age group was also found to be significant, $F(1, 84) = 4.128, p = 0.04$. Analyses of simple effects following the significant omnibus interaction effect were conducted as suggested by Keppel (1982). The analysis revealed that 3-year-old children produced significantly more uniquely identifying referential forms in the posttest phase than in the pretest, $F(1, 44) = 21.83, p < 0.05$. The percentage increase in uniquely identifying referential forms from the pretest to the posttest was 13% for the 3-year-old children. The analysis also revealed that 4-year-old children used significantly more uniquely identifying referential forms in the posttest phase than in the pretest, $F(1, 44) = 27.12, p < 0.05$. The percentage increase in uniquely identifying referential forms from the pretest to the posttest was 23% for the 4-year-old children (See Figure 3). Although children in both age groups increased their rate of uniquely identifying referential forms from the pretest to the posttest, 4-year-old children were more likely to increase their rate of informative referring expressions than the 3-year-old children between the pretest to the posttest.

Figure 3. Percentage of trials for which uniquely identifying referential forms were produced by different age groups



The 3-way interaction between the test, the training condition and the age was not significant.

These findings demonstrated that the increase in the proportion of uniquely identifying referential forms from the pretest to the posttest showed differentiation in terms of the age of participants and which group they were assigned to separately. Children in the relative clause feedback condition were more likely to increase their rate of use of uniquely identifying referential forms from the pretest to the posttest when requesting a target sticker from an array of stickers than children in the general feedback condition. Moreover, there was a significant difference between the 3-year-old children and the 4-year-old children in terms of the proportion of uniquely identifying referential forms they produced from the pretest to the posttest. Four-year-old children's rate of use of uniquely identifying referential forms from the pretest to the posttest was higher than those of the 3-year-old children.

As an alternative way to analyze the data, an 3 (training condition: relative clause feedback, demonstrative-noun phrase feedback, general feedback) X 2 (sex:

female, male) analysis of covariance (ANCOVA) was run with age and the proportion of uniquely identifying referential forms in the pretest as covariate factors and the proportion of uniquely identifying referential forms in the posttest as a dependent variable. The analysis indicated that there was not a significant main effect of sex on the proportion of uniquely identifying referential forms in the posttest, $F(1, 82) = 2.004, p = 0.161$. It was also revealed that the covariate factor, age, $F(1, 82) = 16,240, p < 0.05$ and the covariate factor, the proportion of uniquely identifying referential forms in the pretest, $F(1, 82) = 34,257, p < 0.5$ were related to the proportion of uniquely identifying referential forms in the posttest.

Moreover, the analysis demonstrated that there was a significant effect of condition on the proportion of uniquely identifying referential forms in the posttest after controlling for the effects of the proportion of uniquely identifying referential forms in the pretest and the age of the children, $F(2, 82) = 7.444, p < .05$. Planned contrasts were run to analyze the differences between training conditions in more detail. The analysis revealed a significant difference between relative clause feedback condition and the general feedback condition, $p < .05$. In the relative clause feedback condition, when the children were modeled by an adult experimenter about relative clause constructions in a training session, they were more likely to be informative in their referring expressions in the posttest phase. On the other hand, the difference between the demonstrative-noun phrase feedback condition and the general feedback condition was found to be not significant, $p = 0.244$.

The 2-way interaction between the sex and the condition failed to reach the statistical significance, $F(2, 82) = 2.109, p = 0.128$.

These findings indicated that children in the relative clause feedback condition but not the children in the demonstrative-noun phrase condition were more likely to

produce informative referring expressions in the posttest compared to the children in the general feedback condition.

5.3 Speech disfluencies

We continued by examining the rate of total speech disfluencies and the rate of speech disfluency types for each child because it was assumed that speakers experience production difficulty when they are referring to new objects in the discourse (Arnold, Fagnano & Tanenhaus, 2003; Barr, 2001), and when they are trying to use long and syntactically complex utterances (Oviatt, 1995; Yaruss et al., 1999).

5.3.1 Total speech disfluencies

The rate of total speech disfluencies for each child was calculated separately for the pretest phase and the posttest phase by dividing the sum of disfluent referential expressions by the total number of referential attempts. The total numbers of referential opportunities were 6 in the pretest phase and 12 in the posttest phase. The referential attempts that did not include any verbal responses were excluded from the analysis.

Thirty-two percent of the referential expressions in the pretest phase and 34% of the referential expressions in the posttest phase were disfluent. There was a moderate correlation between the pretest and the posttest disfluency scores (Pearson correlation coefficient = 0.56, $p < 0.01$). The children who exhibited relatively high rates of disfluency in the pretest phase continued to exhibit higher proportion of disfluency in the posttest phase. The correlations between the pretest and the posttest disfluency scores were 0.59 for the 3-year-old children and 0.53 for the 4-year-old children.

Table 5 presents the means and standard deviations of the percentage of trials in which disfluent referential expressions were produced for each age group in the pretest and in the posttest.

Table 5. Percentage of trials in which disfluent referential expressions were produced for age groups in the pretest and in the posttest

Age groups	Pretest		Posttest	
	M	SD	M	SD
3-year-old	32.77	25.94	36.06	26.59
4-year-old	31.47	26.83	32.57	25.40

To determine the effect of age on the proportion of total speech disfluencies in the pretest phase, one-way ANOVA was used. Analyses of variance revealed no statistically significant differences in the total speech disfluencies exhibited by the 3-year-old and the 4-year-old children in the pretest phase. Similarly, one-way ANOVA on the proportion of total speech disfluencies in the posttest phase as a dependent variable showed no statistically significant differences between the 3-year-old and the 4-year-old children.

To examine the relationship between the relative clause production and the proportion of total speech disfluencies, the number of uses of relative clauses and the number of total speech disfluencies for each child were recoded. The pretest and the posttest counts were considered separately. In terms of relative clause production scores, children were divided into two categories separately for the pretest and the posttest as children whose relative clause production scores were less than the average

relative clause production score of all children and children whose relative clause production scores were more than the average relative clause production score of all children. Similarly, children were divided into two categories in terms of their total speech disfluency scores as children whose disfluency scores were less than the average disfluency score of all children and children whose scores were greater than the average disfluency score of all children. Chi-square analysis showed that there was no significant association between the proportion of relative clauses and the proportion of total speech disfluencies in the pretest, $\chi^2(1) = 1.179, p = .27$ (See Table 6).

Table 6. Distribution of frequency and percentages of children in terms of relative clauses production and total speech disfluency scores in the pretest

Relative clause production	Low Disfluency		High Disfluency	
	Number	Percentage	Number	Percentage
Low	24	49%	25	51%
High	15	37.5%	25	62.5%

Even though there was no significant association between the relative clause production and the proportion of total speech disfluencies in the pretest, there is a trend showing the speech production difficulty (i.e., disfluency) of children who use relatively high rates of relative clauses. Among the children whose relative clause production scores were less than the average relative clause production score of the group, 49% of them were less disfluent than the average speech disfluency score of the group and 51% were more disfluent than the average speech disfluency score of

the group. On the other hand, among the children whose relative clause production scores were above the average relative clause production score of the group, 37.5% were less disfluent than the average speech disfluency score of the group and 62.5% were more disfluent than the average speech disfluency score of the group.

Chi-square analysis revealed that the association between the proportion of relative clauses and the proportion of total speech disfluencies in the posttest is not significant, $\chi^2(1) = 0.80, p = .77$. No further analyses were conducted.

To determine the association between the children's unique identification attempts and the proportion of total speech disfluencies, the proportion of uniquely identifying referential forms and the proportion of total speech disfluencies for each child both in the pretest phase and in the posttest phase were recoded. Children were divided into two categories separately for the pretest phase and the posttest in terms of both their proportion of uniquely identifying referential forms and the proportion of total speech disfluencies: children whose unique identification scores and total speech disfluency scores were lower than the average unique identification score and speech disfluency score of all children and children whose unique identification and total speech disfluency scores were higher than the average unique identification score and speech disfluency score of all children. Chi-square analysis demonstrated that there was no significant association between the proportion of uniquely identifying referential forms and the proportion of total speech disfluencies in the pretest, $\chi^2(1) = 2.13, p = .14$ (See Table 7).

Table 7. Distribution of frequency and percentages of children in terms of uniquely identifying referential forms and total speech disfluencies in the pretest

Unique identification	Low Disfluency		High Disfluency	
	Number	Percentage	Number	Percentage
Low	27	50%	27	50%
High	12	34.3%	23	65.7%

Review of the numbers and percentages of children with regard to their unique identification scores and total speech disfluency scores revealed that there is a trend showing that children producing higher rates of uniquely identifying referential forms than the average unique identification score of the group began to be disfluent in their referential expressions. Among the children whose unique identification scores were less than the average unique identification score of the group, 50% of them were less disfluent than the average speech disfluency score of the group and 50% of them were more disfluent than the average speech disfluency score of the group. On the other hand, among the children whose unique identification scores above the average unique identification score of the group, 34.3% of them were less disfluent than the average speech disfluency score of the group and 65.7% of them were more disfluent than the average speech disfluency score of the group.

Chi-square analysis demonstrated that the association between the proportion of uniquely identifying referential forms and the proportion of total speech disfluencies in the posttest phase is not significant, $\chi^2(1) = 0.36, p = .54$. No further analyses were conducted.

These findings indicate that 3-year-old and 4-year-old children did not differ in terms of the production of disfluent referring expressions both in the pretest phase and in the posttest phase. Moreover, although there was no significant association between the relative clause production scores and the total speech disfluencies in the pretest, there was a trend showing that children who used relatively high rates of relative clause forms became more disfluent in their referring expressions than children who did not. Similarly, children who produced relatively high rates of uniquely identifying referential forms in their referential attempts became more disfluent than children who did not.

5.3.2 Speech disfluency types

Speech disfluency types per attempt for each child were calculated separately for the pretest phase and the posttest phase by dividing the sum of each disfluency type by the total number of referential attempts. The total numbers of referential opportunities were 6 in the pretest phase and 12 in the posttest phase. Means and standard deviations of each disfluency type per attempt for the younger and older age groups can be seen in Table 8.

Table 8. Means and standard deviations of each disfluency type for the younger and older age groups

Disfluency types	3-year-old		4-year-old	
	Pretest	Posttest	Pretest	Posttest
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Single-syllable word repetition	0.086 (0.13)	0.060 (0.11)	0.058 (0.14)	0.035 (0.06)
Multi-syllable word repetition	0.061 (0.11)	0.094 (0.14)	0.050 (0.10)	0.056 (0.08)
Repetition of phrase	0.014 (0.05)	0.021 (0.06)	0.010 (0.04)	0.019 (0.04)
Unfinished word	0.017 (0.05)	0.007 (0.02)	0.025 (0.07)	0.026 (0.06)
Restart	0.003 (0.02)	0.023 (0.05)	0.028 (0.07)	0.079 (0.10)
Filler	0.131 (0.21)	0.155 (0.23)	0.109 (0.16)	0.137 (0.22)
Editing expression	0.007 (0.04)	0.012 (0.04)	0.010 (0.04)	0.019 (0.04)
Substitution	0.003 (0.02)	0.010 (0.05)	0.007 (0.033)	0.023 (0.04)

Table 8 shows that fillers, single-syllable word repetitions and multi-syllable word repetitions were frequently used disfluency types by the 3-year-old children both in the pretest phase and in the posttest. Fillers, single-syllable and multi-syllable

word repetitions were frequently used in the pretest phase by the 4-year-old children, whereas fillers, restarts and multi-syllable word repetitions were frequently used in the posttest phase by the 4-year-old children.

To examine whether the disfluency types per attempt change from the pretest to the posttest, 2 (test: pretest, posttest) X 2 (sex: female, male) repeated measures multivariate analysis of covariance (MANCOVA) was run with the age as a covariate factor and the disfluency types as dependent variables. The analysis revealed that the multivariate result was not significant for sex after controlling the effect of age, $F(8, 80) = 1.895, p = .072$, meaning that there was no significant differences between males and females in terms of disfluency types they displayed. Moreover, multivariate result demonstrated that the interaction between the test factor and sex was not significant for disfluency types children produced, $F(8, 80) = 1.734, p = .103$.

However, the univariate F test showed there was a significant interaction between the test factor and the sex for restart disfluency type after controlling the effect of age, $F(1, 875) = 5.589, p = .02$ meaning that the increase in the restart disfluency type from the pretest to the posttest was higher for females compared to the males.

To explore whether there was a relationship between the form and the informativeness of the children's referential expressions and the type of disfluencies children displayed while uttering referential expressions, correlational analyses were conducted.

Table 9 presents the correlations among each disfluency type, relative clause production and uniquely identifying referential forms in the pretest phase.

Table 9. Correlations among each disfluency type, relative clause production and uniquely identifying referential forms in the pretest

Variables	1	2	3	4	5	6	7	8	9	10
1. Single syllable word repetition	–									
2. Multi-syllable word repetition	.19	–								
3. Repetition of phrase	-.09	.30**	–							
4. Unfinished word	-.01	-.04	-.08	–						
5. Restart	-.00	.04	.03	.22*	–					
6. Filler	-.00	-.15	-.03	.14	-.07	–				
7. Editing expression	.03	-.04	-.05	.13	-.06	.01	–			
8. Substitution	-.02	-.09	-.04	-.06	-.05	-.01	.18	–		
9. Relative Clause	.09	.04	-.04	.08	.35**	.00	.05	-.02	–	
10. Unique identification	.01	-.04	.04	.11	.24*	.16	.04	.14	.62**	–

* $p < .05$ ** $p < .01$

The analysis revealed that repetition of phrase and multi-syllable word repetition in the pretest was significantly correlated, as shown in Table 9 ($r(90) = 0.30, p < 0.01$). Moreover, it was shown that disfluency type of restart was significantly related to disfluency type of unfinished word in the pretest, $r(90) = 0.22, p < 0.05$.

As shown in Table 9, relative clause production and uniquely identifying referential forms were both significantly related to the disfluency type, $r(90) = 0.35, p < 0.01$ and $r(90) = 0.24, p < 0.05$, respectively. Thus, the children who used relatively high rates of referential expressions in the form of relative clauses and informative referring expressions in the pretest phase also displayed high rates of the disfluency type of restart. It was also demonstrated that there was a significant

correlation between relative clause production and uniquely identifying referential forms in the pretest, $r(90) = 0.62, p < 0.01$ showing that the children who used relatively high rates of relative clauses in the pretest phase also became more informative in their referential expressions.

Next, we examined correlations among each disfluency type, relative clause production and uniquely identifying referential forms in the posttest phase. Table 10 presents the correlations among each disfluency type, relative clause production and uniquely identifying referential forms in the posttest phase.

Table 10. Correlations among each disfluency type, relative clause production and uniquely identifying referential forms in the posttest

Variables	1	2	3	4	5	6	7	8	9	10
1. Single syllable word repetition	–									
2. Multi-syllable word repetition	.18	–								
3. Repetition of phrase	.01	.06	–							
4. Unfinished word	.04	-.05	-.10	–						
5. Restart	.09	-.01	-.01	.37**	–					
6. Filler	.06	-.01	-.09	.12	-.07	–				
7. Editing expression	.08	.10	.15	-.02	.10	.10	–			
8. Substitution	.14	.16	.03	.05	.03	.19	.16	–		
9. Relative Clause	-.02	.00	.06	.10	.16	.06	.14	.21*	–	
10. Unique identification	-.15	-.15	.10	.32**	.37**	.16	.01	.16	.55**	–

* $p < .05$ ** $p < .01$

As shown in Table 10, the restart disfluency type was significantly related to the unfinished disfluency type in the posttest, $r(90) = 0.37, p < 0.01$. Moreover, it

was shown that relative clause production was significantly correlated to the substitution disfluency type in the pretest, $r(90) = 0.21, p < 0.05$.

Unfinished word disfluency type and restart disfluency type in the posttest were both found to be correlated to uniquely identifying referential forms, $r(90) = 0.32, p < 0.01$ and $r(90) = 0.37, p < 0.05$, respectively. That means, children who were highly informative in their referring expressions in the posttest displayed high rates of unfinished word disfluency type and restart disfluency type. As expected, the correlation between relative clause production and uniquely identifying referential forms in the posttest was found to be significant $r(90) = 0.55, p < 0.01$ meaning that the children who used relatively high rates of relative clauses in the posttest phase also became more informative in their referential expressions.

These findings indicate that the type of disfluencies children displayed while uttering referential expressions did not show any differences from the pretest to the posttest and did not interact with sex. Relative clause production in the pretest and uniquely identifying referential forms both in the pretest and the posttest were correlated to the restart disfluency type meaning that children who produced more syntactically complex and informative referring expressions also displayed more restarts.

CHAPTER 6

Discussion

The aim of the present experiment was to investigate the extent to which Turkish speaking children at the ages of 3 and 4 learn to use referential forms that include relative clauses and adequate referring expressions as a result of three different experimental conditions. These three conditions provided either a relative clause, a noun preceded by the distal demonstrative o 'that', or a general positive comment to ratify the stickers the children picked to replace their missing stickers. The relationship between the form and the informativeness of the referential expression and the rate of disfluencies children displayed was also explored in the light of earlier studies demonstrating that speakers' disfluency rates increase when they experience more cognitive load in their speech planning system (Bortfield, Leon, Bloom, Schober, & Brennan, 2001; Siegman, 1979). In addressing both of these goals, age related differences between 3-year-old and 4-year-old children were laid out.

The results demonstrated that children were more likely to use referential forms including relative clauses in the posttest phase compared to the pretest. Moreover, it was shown that the rate of relative clause production differed across age groups. Across all the three training conditions, only children in the relative clause feedback condition who were modeled about relative clause production by an adult experimenter in a training session were more likely to increase their rate of using relative clause constructions from the pretest to the posttest. The results also indicated that the increase in the proportion of uniquely identifying referential forms differed

from the pretest to the posttest across the two age groups and which training group the children were assigned to.

Although no significant relationship between the rates of relative clause production scores and the total speech disfluencies and between the rates of uniquely identified referents and the total speech disfluencies in the pretest were found, there was a trend showing the speech production difficulty (i.e., disfluency) of the children who were producing high rates of referential forms including relative clauses and who were describing the referents uniquely. Moreover, it was shown that the disfluency type “restart” was the most widely used strategy by those children who were using high rates of relative clause constructions and who were using uniquely identifying linguistic forms when requesting a target sticker from an array of stickers.

6.1 Relative clause production across different age and training groups

By comparing the relative clause production of English and Turkish speaking children’s naturalistic productions, Slobin (1986) suggested that the mastery of relative clause production take place later than 4;8 in Turkish. In the current study, the training procedure employed by Matthews, Lieven and Tomasello (2007) was used to determine whether young Turkish speaking children between the ages of 2 and 4 can be trained to produce more referential forms including relative clauses from the pretest to the posttest as a function of training conditions they were assigned to.

These three conditions where children were modeled on three different constructions were the relative clause feedback condition (i.e., *pasta yiyen kıızı seçtin* ‘you selected the girl eating cake’), the demonstrative-noun phrase feedback condition (i.e., *o kıızı seçtin* ‘you selected that girl’) and general feedback condition (i.e., *güzel seçtin* ‘you did a nice selection’).

The results demonstrated that children were more likely to describe the stickers by using relative clause constructions in the posttest phase compared to the pretest. Moreover, it was found that the rate of children's responses that contained relative clauses differed across age groups. That is, 4-year-old children were significantly more likely than the 3-year-old children to produce relative clauses in their responses.

When the change in the rate of relative clause production from the pretest to the posttest were compared across training conditions, only children in the relative clause feedback condition showed significant improvement in the use of this construction format. That means, when the children were modeled by an adult experimenter about relative clause constructions in a training session, children as young as 36 months of age can adopt relative clauses. It is important to note that the books used during the training session were different from the books used for testing, making the types of activities to be described by the children different, and therefore calling for different verbs. Thus, any relative clause constructions produced by the children were not verbatim imitations of the first experimenter's words in the training phase; they reflected, rather, productive use of the construction.

However, this does not mean that both age groups perfectly produced fully specified relative clauses. Especially, 3-year-old children experienced difficulties when formulating relative clauses e.g., relative clauses without a head '*köpeği yıkayan*' - dog-ACC wash-SR (target sticker: the mom washing the dog) and misplacement of the head noun '*şu çocuk binen traktör-* that child ride-SR tractor (target sticker: boy driving the tractor).

Although most of the time children in our study experienced difficulties in the formation of fully specified relative clause constructions as suggested by previous studies, it was shown that young Turkish speaking children can learn to use relative

clauses with accuracy when they are modeled with the construction type in the training session. These findings raise the question what specific factors motivate the children to produce (at least try to use) relative clauses with accuracy in the posttest phase.

We suggest that modeling children to produce relative clauses in the training session increased the tendency of children to use a syntactic form they just heard from the adult experimenter. This phenomena is called as structural priming (Bock, 1986) in adult psycholinguistic literature and explained as (Bock & Griffin, 2000) “unintentional and pragmatically motivated tendency to repeat the general syntactic pattern of an utterance” (p.177) and it is “subject to such probabilistic factors as the frequency or recency of use of particular structural forms” (Bock, 1986, p. 355). Bock and Griffin (2000) propose that the explanation of structural priming is implicit learning rather than the memory activation mechanism. In their study (Bock & Griffin, 2000), they found that change in the use of syntactic pattern of an utterance persisted and speakers generalized the change to the other utterances requiring to use different words. Similarly, in the current study the types of activities to be described by the children in the posttest phase were different than the activities in the training. However, result supporting the implicit learning showed that children in the relative clause feedback condition generalized the syntactic structure in the training phase to the new utterances including different verbs in the posttest phase.

6.2 Unique identification of stickers across different age and training groups

As a second analysis, we broadened our question and investigated whether children’s referring expressions became more informative from the pretest to the posttest as a function of the training condition they were assigned to. The results revealed that children in the relative clause feedback condition improved the informativeness of their referring expressions from the pretest to the posttest more

than children in the general feedback condition. The results of the present study support the findings obtained by Matthews, Lieven and Tomasello (2007). In their study, it was shown that children's referring strategies could be improved by exposing them to the adult models showing how adults adequately refer to the stickers.

The question is why children in the relative clause feedback condition improved their referring strategies more than children in the other training conditions. The reason, as Matthews, Lieven and Tomasello (2007) suggested, might be that the age group in our study rarely use relative clauses in their everyday language (Slobin, 1986) just because their input does not include many relative clauses, but instead provides alternative constructions that show avoidance of relative clause such as those surrounded by *hani* and *ya*, Turkish-specific discourse markers. (e.g., Child: *hangi suyu?* 'which water?' Mother: *hani bize pompayla su verecekler ya, hatırlıyor musun?* 'HANI they give us water with a pump YA, do you remember?') (Slobin, 1986). However, children in our relative clause feedback condition had several exposures to a useful construction type to adequately refer to the stickers, which was a relative clause.

Surprisingly, no significant difference in the production of uniquely identified referents from the pretest to the posttest was found between the relative clause feedback condition and the demonstrative-noun phrase feedback condition. The percentage increase in uniquely identified referents from the pretest to the posttest was 29% in the relative clause feedback condition and 14% in the demonstrative-noun phrase feedback condition. It might be because of that although children in the demonstrative noun phrase condition did not hear a perfect description, they improved their referring strategy by integrating the information in the adult's description about the name of the character with their own referring expression.

Our work also revealed that the effect of training condition did not interact with age showing that 3-year-old and 4-year-old children equally benefited from the training in the relative clause feedback condition. As the previous studies (Matthews, Lieven & Tomasello, 2007; Matthews, Lieven & Tomasello, 2008) highlighted, with adequate training children as young as 2 can learn from feedback to be more specific in their referring expressions.

Although the effect of the training did not differ with respect to the age of the children, the increment in uniquely identifying responses from the pretest to the posttest showed differentiation across the age groups. Although both 3-year-old and 4-year-old children learnt to produce more informative referring expressions between the pretest to the posttest, 4-year-old children showed greater improvement in their referring expressions compared to the younger group of 3-year-old children. This result implies that the ability to use adequate referring expressions and opportunities to benefit from exposure to models develop with age.

As suggested by Matthews, Lieven and Tomasello (2007), children in the current study not only learnt to be more informative in their referring expressions but also might improve their ability to take the listener's perspective into account. In the pretest, some of the children were biased by their own knowledge which is termed as 'curse of knowledge' by Birch and Bloom (2003). After unsuccessful referential attempts, children understood the rules of the game and began to describe the sticker instead of showing the picture books. This observation suggests that those children might understand the knowledge state of the second experimenter and designed their speech based on the level of shared knowledge between them.

6.3 Total speech disfluencies and speech disfluency types

We also wanted to explore whether children in the current study became more disfluent when they tried to provide an accurate description of stickers. Previous studies demonstrated that speakers become more disfluent when they are experiencing high amounts of cognitive load in their speech planning system (Bortfeld, Leon, Bloom, Schober, & Brennan, 2001; Siegman, 1979). Although earlier studies revealed that speakers experience speech production difficulties (i.e., disfluency) when they are producing long and syntactically complex utterances (Oviatt, 1995; Yaruss et al. 1999), we could not find any increments in the rates of total speech disfluencies when children produced relatively more informative or syntactically complex referring expressions (i.e., relative clauses).

The reason might be that we analyzed the first referential attempts of the children when requesting a target sticker, which is a limited speech sample. As Bernstein Ratner and Sih (1987) suggested that in order to understand the relationship between syntactic complexity of the utterance and speech disfluency, it is essential to analyze a broad range of sentence structures.

Although the results do not reveal any increments in the frequency of total disfluencies, we found that relative clause production in the pretest and uniquely identifying referential forms both in the pretest and the posttest were correlated to the amount of restarts. That means, children tended to restart their referential expressions when they used high rates of relative clause forms and uniquely identifying referential forms (e.g., *ablayı, abla resim çiziyor-* ‘the girl, the girl is drawing’). Similarly, the study conducted by Bortfeld et al (2001) on young, middle aged and older people revealed that the rate of restarts increased when the planning demands of the task were heavy. In the current study, the demands of the task were also heavy for the children because they not only had to select the target sticker among 14 non-target

stickers but also tried to describe it adequately. After saying their first words, the children must have realized that they had to describe the sticker adequately in order to be able to retrieve and restarted their referring expressions to make the construction more informative.

We also did not find any differences between 3-year-old and 4-year-old children in their frequencies of total disfluencies. This finding is not parallel with the findings of studies conducted on English-speaking children revealing that the frequencies of total disfluencies decrease with an increase in chronological age (DeJoy & Gregory, 1985; Yairi, 1997). Unlike reports of English-speaking children, we found similar results with Carlo and Watson (2003) studying with 3- and 5-year-old Spanish-speaking children. As Carlo and Watson (2003) suggested, the reason might be that the link between speech disfluency and age is different for languages other than English.

6.4 Limitations and Future Research

Our study was not conducted in a naturalistic setting that includes interactive dialogues between children and caregivers. Although our referential communication task motivates the children to describe the sticker adequately compared to the other referential communication tasks, it is still difficult to generalize our results to naturalistic communicative situations. As Bishop and Adams (1991) suggested that these tasks do not reflect the types of pragmatic difficulties that children experience in daily open-ended conversations. Thus, using referential communication tasks which are sensitive to pragmatic difficulties in naturalistic communicative situations would show more accurate results.

Although the results of the current study revealed that children's referring expressions can be improved if they are modeled by an adult experimenter in a training phase, it is still unclear whether children can transfer their knowledge to other

communicative settings and whether children's knowledge that they developed in the current study persists over time. Therefore, further research investigating the children's performance over time and using transfer tasks is essentially needed.

In the present study, it was shown that 32% of the referential expressions in the pretest phase and 34% of the referential expressions in the posttest phase were disfluent. These percentages are higher than the reported average frequency range of 5.22- 6.96 per 100 syllables for English speaking preschool children (Yairi, 1997). These increased percentages might be due to higher loads of processing that children experienced during the task. Thus, it is not plausible to compare the percentages of disfluency found in the current study with the findings of the studies using spontaneous speech samples.

CHAPTER 7

Conclusion

The present study was conducted to investigate the extent to which Turkish speaking children between the ages of 2 and 4 learn to use more referential forms including relative clauses and adequate referring expressions. Because children are expected to experience a high amount of cognitive load in their speech planning system during the task (Bortfield, Leon, Bloom, Schober, & Brennan, 2001; Siegman, 1979), we also examined the relationship between using informative and syntactically complex referential expressions (e.g., relative clauses) and the rate and type of disfluencies children produced when requesting a target sticker. Our results showed that children as young as 3 can learn to produce relative clauses in their referring expressions when they were modeled by an adult experimenter about relative clause constructions in a training session. Similarly, it was found that children in the relative clause feedback condition improved their referring strategy by using more informative messages from the pretest to the posttest more than children in the general feedback condition. Although the effect of the training did not differ with respect to the age of the children, the increment in uniquely identifying responses from the pretest to the posttest was higher for 4-year-old children when compared to the younger group of 3-year-old children. Most of the previous studies showed that speakers encounter with speech production difficulties (i.e., disfluency) when they are using syntactically complex utterances. Our results do not concur with the previous studies. We could not find any increment in the rate of total speech disfluencies when children produced informative and syntactic complex referring expressions (i.e., relative clauses). However, it was revealed that children used the disfluency type “restart”

more often when they were producing informative and syntactically complex referring expressions (i.e., relative clauses).

Although this is an experimental study, similar types of feedback to the ones found in our experimental conditions can also be attested in naturalistic child-adult conversations. Our results show that the nature of the feedback matters. Children who keep hearing the actual linguistic construction to be used in an entity selection task learn to use more adequate referring expressions when they are by themselves later compared to children whose selections are just generally ratified. This suggests that the linguistic specificity in the modeling of actual constructions is crucial for children to build up effective referential communication skills.

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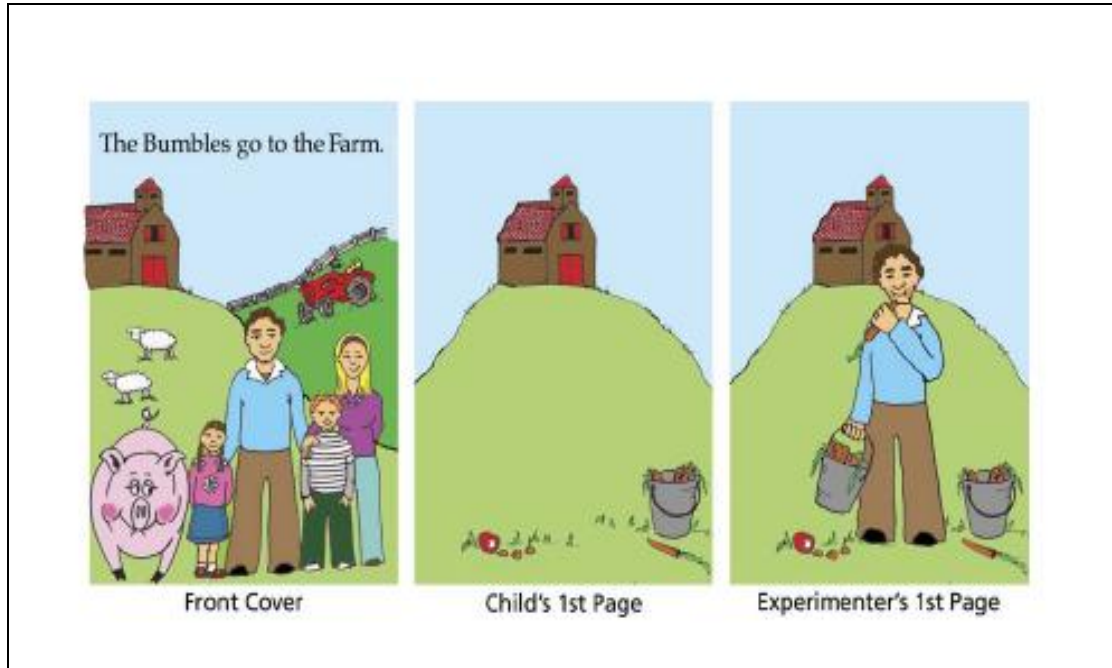
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APPENDIX A

Example pages from the child's and experimenter's picture books



APPENDIX B

Target stickers in the five picture books

Picture Books	Target Stickers
The Mutlus have a Party	Dad dancing, girl eating cake, clown crying, boy stroking dog, mum singing, dog chasing clown
The Mutlus go to the Zoo	Dad drawing, girl feeding monkey, boy crying, mum eating bananas, elephant sleeping, giraffe licking mum
The Mutlus go to the Farm	Sheep jumping, dad eating carrots, girl crying, mum sleeping, dog chasing dad, boy driving tractor
The Mutlus go on Holiday	Dad eating ice-cream, boy riding donkey, mum reading, dog sleeping, girl swimming, donkey chasing dad
The Mutlus stay at Home	Dad reading, mum washing dog, girl drawing, cat sleeping, boy eating, dog licking mum

APPENDIX C

C.1.1. Turkish instructions to be used before the pretest

Bak masanın üzerinde birbiriyle aynı olan iki tane resimli kitap var. Bu ailenin adı Mutlu ailesi. Bana kitabın üzerinde neler var söyler misin? Bu resimli kitaplardan biri benim kitabım diğeri ise senin kitabın. Ben resimli kitabımı bu sabah tamamladım fakat senin resimli kitabında eksik resimler var. Anladın mı? Bak Gökçe ablada senin kitabında eksik olan resimler var. Gökçe abladan doğru çıkartmaları alarak, kitabını aynı benim kitabım gibi yapabilirsin. Fakat Gökçe abla masanın üstündeki kitapları göremiyor. Masanın diğer tarafına geç. Sen görebiliyor musun masanın üstündeki kitapları? Göremiyorsun evet. Gökçe abla da göremeyecek kitapları. O yüzden Gökçe ablanın yanına giderek hangi çıkartmayı istediğini söylemen gerekiyor. Gökçe abla bütün çıkartmaları senin görebilmen için duvara koymuş. Anlaştık mı?

Gökçe abladan istediğin çıkartmayı alınca yanıma geleceksin. Aldığın çıkartmayı kitabına yapıştıracağız ve ikimizin kitabı aynı olacak. İstersen bitirince kitabını eve götürebilirsin. Anlaştık mı? Hadi başlayalım.

C.1.2. Turkish instructions when the child is in front of the sticker board

Lütfen, çıkartmayı istemeden önce buradaki dairenin içinde bekle. Tamam. Şimdi söyle bakalım hangi çıkartmayı istiyorsun.

*C.1.3. Turkish instructions when the child retrieves the wrong sticker from**Experimenter 2*

Bu yanlış çıkartma ve yanlış çıkartmayı alırsan bizim kitaplarımız aynı olmaz. Gökçe ablanın yanına geri dönmelisin ve doğru yapıştırmayı istemelisin. Hadi bakalım.

APPENDIX D

Turkish instructions during the training sessions

Şimdi seninle biraz önce oynadığımız oyuna benzeyen yeni bir oyun oynayalım mı? Ben şimdi sana oyunumuzu anlatacağım. Bak yine masamızın üstünde iki tane kitap var. Ailemizin ismini hatırlıyor musun? Evet, Mutlu ailesi. Bana kitabın üzerinde neler var söyler misin? Bak bu benim kitabım, diğeri ise senin kitabın. Ben resimli kitaplarımı sabahtan tamamladığım için kitabımda hiç eksik resim yok. Ama senin resimli kitabında eksik resimler var. Doğru çıkartmaları yapıştırarak kitabını aynı benim kitabım gibi yapabilirsin. Ama bu seferki oyunumuzda çıkartmaları Gökçe abladan istemeyeceksin. Çıkartmalar masanın üzerinde olacak. Sen kitabını aynı benim kitabım gibi yapan çıkartmaları seçeceksin. Anladın mı?

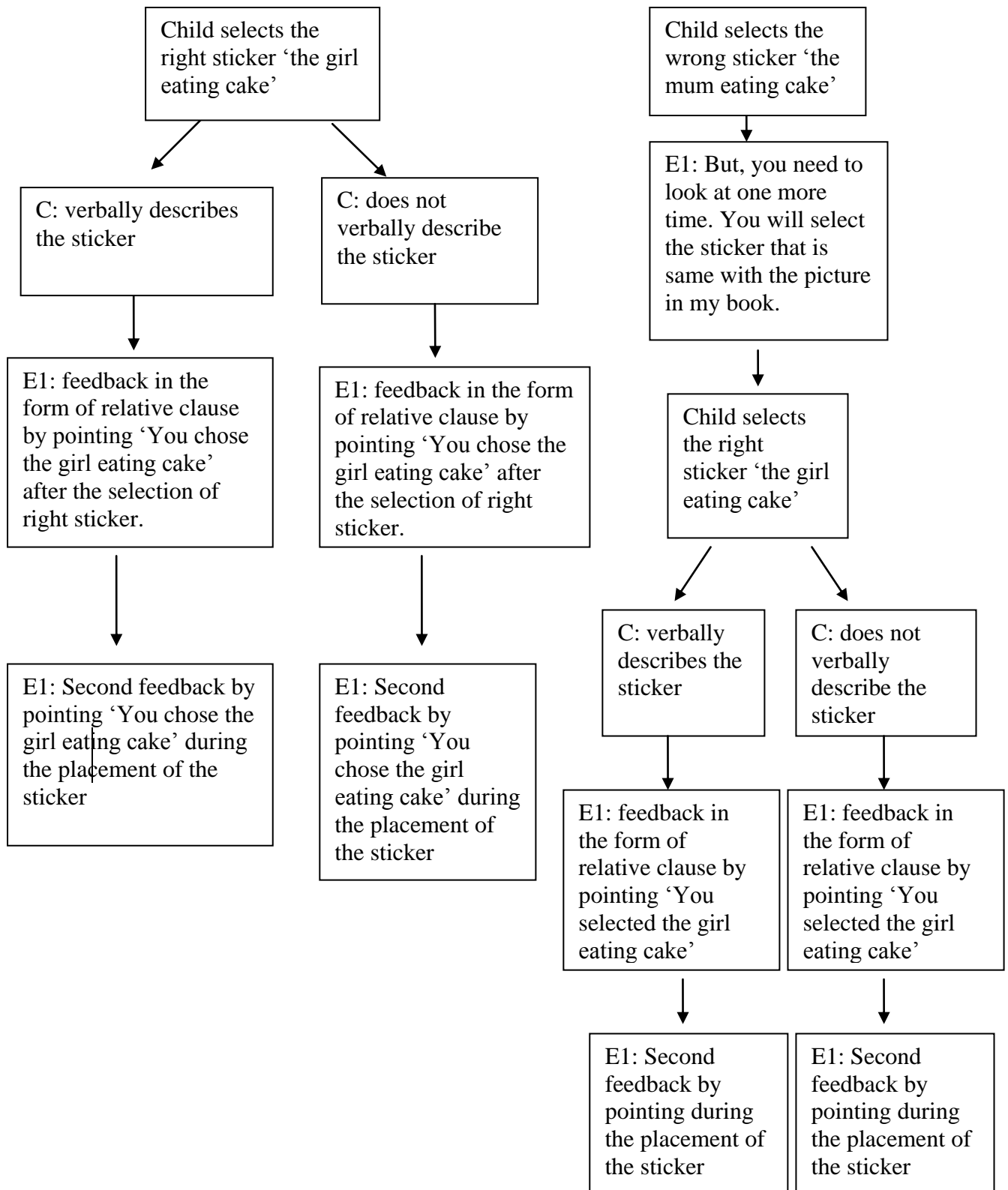
Çıkartmayı seçtikten sonra bana hangi çıkartmayı seçtiğini söylemen gerekiyor. Böylece bende hangi çıkartmayı seçtiğini anlayabileceğim. Eğer doğru çıkartmayı seçtiysen çıkartmayı birlikte kitaba yapıştıracağız. Anlaştık mı?

Tamam, o zaman benim kitabımın ilk sayfasına göz atalım. Bakalım kitabını aynı benim kitabım gibi yapabilecek miyiz?

APPENDIX E

The child and Experimenter 1's responses for the target sticker 'the girl eating cake'

in the 'relative clause' feedback condition



APPENDIX F

Experimenter 1's feedbacks in English for the book 'The Mutlus Have a Party' in each feedback condition

Feedback Conditions

	'Relative Clause'	'Demonstrative-noun Phrase'	General
Stickers			
1.Sticker	You selected the dad dancing	You selected that man	You did a nice selection
2.Sticker	You selected the girl eating cake	You selected that man	You did a nice selection
3.Sticker	You selected the clown crying	You selected that clown	You did a nice selection
4.Sticker	You selected the boy stroking dog	You selected that boy	You did a nice selection
5.Sticker	You selected the mum singing	You selected that woman	You did a nice selection
6.Sticker	You selected the dog chasing clown	You selected that dog	You did a nice selection

APPENDIX G

Experimenter 1's feedbacks in Turkish for the book 'The Mutlus Have a Party' in each feedback condition

Feedback Conditions			
	'Relative Clause'	'Demonstrative-noun Phrase'	General
Stickers			
1.Sticker	Dans eden adamı seçtin	O adamı seçtin.	Güzel seçtin
2.Sticker	Pasta yiyen kızı seçtin	O kızı seçtin.	Güzel seçtin
3.Sticker	Ağlayan palyaçoğu seçtin	O palyaçoğu seçtin	Güzel Seçtin
4.Sticker	Köpeği seven çocuğu seçtin	O çocuğu seçtin	Güzel seçtin
5.Sticker	Şarkı söyleyen kadını seçtin	O kadını seçtin	Güzel seçtin
6.Sticker	Palyaçoğu kovalayan köpeği seçtin	O köpeği seçtin	Güzel seçtin

APPENDIX H

Experimenter 1's feedbacks in Turkish for the book 'The Mutlus go on Holiday' in each feedback condition

Feedback Conditions

	'Relative Clause'	'Demonstrative Phrase'	General
Stickers			
1.Sticker	Dondurma yiyen adamı seçtin	O adamı seçtin.	Güzel seçtin
2.Sticker	Eşeğe binen çocuğu seçtin	O çocuğu seçtin.	Güzel seçtin
3.Sticker	Kitap okuyan kadını seçtin	O kadını seçtin	Güzel Seçtin
4.Sticker	Uyuyan köpeği seçtin	O köpeği seçtin	Güzel seçtin
5.Sticker	Yüzen kızı seçtin	O kızı seçtin	Güzel seçtin
6.Sticker	Adamı kovalayan eşeği seçtin	O eşeği seçtin	Güzel seçtin