

TURKISH MOTHERS' USE OF COMPLEMENT CLAUSES IN STORYTELLING IN
RELATION TO CHILDREN'S COMPREHENSION OF COMPLEMENT CLAUSES AND
THEORY OF MIND ABILITIES

A Master's Thesis

by

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Department of Psychology
İhsan Doğramacı Bilkent University
Ankara
April, 2022





To My Mother, Aysel Bodur

The Graduate School of Economics and Social Sciences
of
İhsan Doğramacı Bilkent University



by
ESİN BODUR

In Partial Fulfillment of the Requirements for the Degree of
MASTER OF ARTS IN PSYCHOLOGY

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By Esin Bodur

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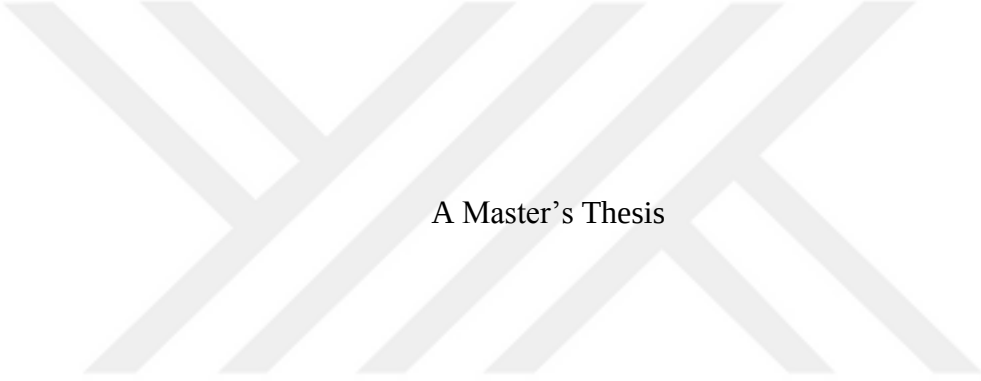
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ABSTRACT

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MA. Department of Psychology

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April, 2022

This study investigates mothers' use of complement clauses in relation to children's comprehension of complement clauses and theory of mind among 3-to 5-year-old Turkish speaking children. 114 children were given comprehension of complement clauses task, expressive and receptive language tasks, and three ToM tasks. Wordless storybook was used to collect maternal language data during storytelling. Three forms of complement clause structures (nonfinite, finite, and bare finite) were analyzed. Three complement clause structures were analyzed in two main categories. The categories were classified according to their inclusion of

mental state verbs (i.e., physiological, desire, motivation, emotion, and cognitive) and nonmental state verbs. Three mental state combinations (MSCs) were also classified according to their use of mental state verb as main verb or complement verb in three complement clause structures. In first MSC, the complement verb is mental state verb. In second MSC, main verb and complement verb are mental state verbs. In third MSC, main verb is mental state verb. The results showed that the frequency of complement clause structures was not significantly related to children's comprehension of complement clauses. Mothers' use of third MSC in nonfinite complement clauses was significantly related to children's comprehension of double complement clauses and their receptive language. The frequency of complement clauses that include mental state verbs was not significantly related to ToM. Children's comprehension of double complement clauses was significantly related to ToM whereas the correlation was not significant after controlling for children's expressive and receptive language.

Key words: Maternal Language, Complement Clauses, Theory of Mind, Turkish Language

ÖZET

TÜRK ANNELERİNİN ÖYKÜ ANLATILARINDA KULLANDIKLARI YANTÜMCE YAPILARININ ÇOCUKLARININ YANTÜMCE MUHAKEMESİ VE ZİHİN KURAMI BECERİLERİ İLE İLİŞKİSİ

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Bu çalışma 3-5 yaş arasındaki çocuklarda annelerin yan tümce kullanımının çocukların yan tümceleri anlama becerileriyle zihin kuramı becerileri arasındaki ilişkisini araştırmaktadır. 114 çocuğa yan tümce anlama becerisi testi, ifade edici ve alıcı dil becerisi testleri ve üç zihin kuramı testi verildi. Anne dili verisi toplamak için kelimesiz hikaye kitabı kullanıldı. Türkçedeki üç farklı yan tümce yapısı (bitimli, bitimsiz ve yalın) analiz edildi. Yan tümce yapıları durum belirten fiiller (fizyolojik, istek, motivasyon, duygu, ve zihin durumu) ve durum belirtmeyen fiiller içerip içermediklerine göre iki ana kategoride analiz edildi. Bu kategoriler durum ifadeleri içeren yan tümce yapıları ve durum ifadeleri içermeyen yan tümce yapıları olarak adlandırıldı. Ana fiil ve yan tümce fiilinin durum ifadesi belirten bir fiil olup olmadığına bağlı olarak üç farklı durum

ifadesi kombinasyonu oluşturuldu. Birinci durum ifadesi kombinasyonunda yan tümce fiilidurum ifadesi belirten bir fiildir. İkinci durum ifadesi kombinasyonunda ana tümce ve yan tümce fiilleri durum ifadesi belirten fiillerdir. Üçüncü durum ifadesi kombinasyonunda ana tümce fiili durum ifadesi belirten bir fiildir. Anne dilindeki yan tümce yapılarıyla çocukların yan tümceleri anlama becerisi arasında önemli bir ilişki bulunmamıştır. Bitimli yan tümce yapısındaki üçüncü durum ifadesi kombinasyonu, çocukların ikili yan tümceleri anlama becerileri ve alıcı dil beceriyle ilişkili bulunmuştur. Durum ifadeleri içeren yan tümce yapılarıyla çocukların zihin kuramı becerileri arasında bir ilişki bulunmamıştır. Çocukların yan tümce anlama becerileri, zihinkuramı becerileriyle ilişkili bulunmuştur ancak çocukların alıcı ve ifade edici dil becerileri kontrol edildiğinde aradaki önemli ilişki kaybolmuştur.

Anahtar Kelimeler: Anne Dili, Yan Tümceler, Zihin Kuramı, Türk Dili

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CHAPTER I

INTRODUCTION

Maternal language plays an important role in children's acquisition of language (Lieven & Tomasello, 2008; Tomasello, 2003) and children's theory of mind (ToM) (Devine & Hughes, 2018; Tompkins, Benigno, Lee, & Wright, 2018). ToM is the socio-cognitive ability of understanding that other people are mental agents with their beliefs, desires, intentions and emotions (Juan & Astington, 2012; Wellman, 2002). False-belief understanding (FBU) is the understanding that people can have false belief that conflicts with the actual reality (Wellman, Cross, & Watson, 2001). Several accounts found that the frequency of mothers' use of syntactic structures facilitates children's acquisition of these structures (Lieven & Tomasello, 2008; Tomasello, 2003). Mothers' use of mental state verbs was also significantly related to children's development of mental state language (Taumoepeau & Ruffman, 2006). Children's linguistic environment plays an important role in their development of ToM (Harris, 1996). Several longitudinal and cross-sectional studies found the role of maternal mental state language in children's development of ToM (Ruffman, Slade, & Crowe, 2002; Slaughter, Peterson, & Mackintosh, 2007).

ToM studies focused on children's language competency (Astington & Jenkins, 1999). Considering the correlation between children's language development and ToM, complementation hypothesis argues that children's acquisition of complement clauses is necessary for the development of their understanding of mental state (de Villiers & Pyers, 1997). Complement clauses are special form of complex syntax that allows the representation of mental states (de Villiers, 1998). According to this hypothesis, semantic

knowledge of mental state verbs is not enough itself because children have to develop the grammatical structures to represent these mental state verbs. Consistently, several studies found a significant correlation between children's comprehension of complement clauses and their ToM (for meta-analysis, see Farrar, Benigno, Tompkins, & Gage, 2017).

In the literature, there are two gaps regarding the characteristics of maternal language in relation to children's language and children's ToM. Firstly, there is no study that investigated the correlation between mothers' use of nonfinite, finite, and bare finite complement clauses and children's comprehension of complement clauses. Secondly, there is no study that investigated mothers' use of nonfinite, finite, and bare finite complement clauses that include mental state verbs and children's ToM abilities.

The current study aimed to investigate the frequency of mothers' use of complement clauses in relation to children's comprehension of complement clauses and their ToM abilities among 3-to 5 year-olds. The current study was the first that investigated the correlation between mothers' use of nonfinite, finite, and bare finite complement clauses and children's comprehension of complement clauses. Three complement clause structures were investigated – nonfinite, finite, and bare finite complement clauses. These three different complement clause structures give the same meaning while they differ in terms of their grammatical structure. The purpose of analyzing three complement clauses was to investigate whether structure or meaning is important.

Non-finite complement clauses are formed with special nominalizing suffixes - mAK, mA, -DIK, -AcAK, and Iş. Complement clauses are nominalized with these suffixes and become subject or object of the embedded sentence.

(1) Nonfinite complement clause with –DIK nominalizing suffix:

(a) Ayşe, Ahmet-in [gel-**diğ**-i-ni] anla-dı.

Ayşe Ahmet-GEN come-**GER**-3SG.POSS-ACC understand-PAST-3SG.

‘Ayşe understood that Ahmet came.’

(2) Finite complement clauses are produced with diye-complementizer and ki-complementizer that link main clause to complement clause:

(a) [Ayşe, Ahmet gel-di] **diye** anla-dı.

Ayşe Ahmet come-PAST-3SG **SUB** understand-PAST-3SG.

‘Ayşe understood that Ahmet came.’

(b) Ayşe, anla-dı **ki** [Ahmet gel-di].

Ayşe understand-PAST-3SG **SUB** Ahmet come-PAST-3SG.

‘Ayşe understood that Ahmet came.’

(3) In bare finite complement clauses, main clause and complement clause stand as two independent sentences:

(a) [Ayşe, Ahmet gel-di] anla-dı.

Ayşe Ahmet come-PAST-3SG understand-PAST-3SG.

‘Ayşe understood that Ahmet came.’

The current study was the first study that examined nonfinite, finite, and bare finite complement clauses that include mental state verbs (i.e., total number of MS & NMS, MS & MS, and NMS & MS combination) and children's ToM. Mental state combination (MSC) category schema was used to analyze mental state combinations (Ilgaz, Altan, & Haşimoğlu-Ertaş, 2021). According to this MSCs schema, two main categories were considered as mental state category and nonmental state category. Mental state category includes three MSCs (i.e., MS & NMS, MS & MS, and NMS & NMS combination). MSCs were determined according to whether mental state verb is used as main verb or complement verb. The function of the mental state verbs changed when they are used as main verbs or complement verbs. Non-mental state category includes NMS & NMS combination that only include nonmental state verbs.

The current study investigated mothers' use of nonfinite, finite, and bare finite complement clauses, mothers' use of nonfinite, finite, and bare finite complement clauses that include mental state verbs (i.e., total number of MS & NMS, MS & MS, and NMS & MS combination) and nonmental state verbs (i.e., NMS & NMS combination) and mothers' use of three MSCs according to child age and gender groups. Moreover, the current study investigated children's comprehension of complement clauses and children's ToM according to child age and gender groups.

1.1 Maternal Language

1.1.1 Maternal Language and Children's Acquisition of Syntax

Several accounts argued that children's early language acquisition is based on imitation of adult speech (Bloom, Hood, & Lightbown, 1974; Bloom, Rocissano, & Hood, 1976; Brooks & Tomasello, 1999; Tomasello, 2000). Young children's earliest language structures are composed

of item-based structures such as particular words and simple structures and they acquire these structures from adult language through imitation. Later, children progress through producing different levels of complex and abstract linguistic structures and reach adult-like competence (Tomasello, 2000). This developmental process also accounts for children's production of complex syntactic structures (Bloom, et al., 1974; Bloom, et al., 1976). Usage based model of language development argues that the frequency and the consistency of syntactic structures have significant role in children's acquisition sequence and rates of the syntactic structure (Lieven & Tomasello, 2008; Tomasello, 2003). Previous studies showed that mothers produced more complex syntax when they interact with their older children compared to their younger children (Fraser & Roberts, 1975; Furrow, Nelson, & Benedict, 1979; Huttenlocher, Vasilyeva, Waterfall, Vevea, & Hedges, 2007). In the longitudinal study, Huttenlocher et al., (2007) investigated the syntactic characteristics of caregiver speech that included complement clauses (*e.g.*, '*I thought that_*'). The syntactic complexity of the caregiver speech increased over time as children were getting older.

Empirical studies mostly investigated the variations in caregiver speech and its relation to children's language outcome to determine how input affects children's language development (Huttenlocher, Waterfall, Vasilyeva, Vevea, & Hedges, 2010; Huttenlocher, Vasilyeva, Cymerman, & Levine, 2002). Huttenlocher et al., (2002) found that the proportion of multiclausal sentences (*e.g.*, '*He thought_*') in caregiver speech was significant predictor of such multiclausal sentences in child speech. In the more recent study, Huttenlocher et al., (2010) revealed the significant role of mothers' clausal diversity on child growth. The frequency of clausal structures mothers produced in their speech correlated with the age of acquisition of those structures.

1.1.2 Children's Acquisition of Mental State Language

Internal state words were described as the words that refer to internal states (Beeghly, Bretherton, & Mervis, 1986). Bretherton and Beeghly (1982) investigated children's mental state verbs including six categories of internal state words (e.g., words referring to physiological states, affection, and moral conformity) collected by the maternal report and obtained from children.

Children developed the ability to reason about others' goals and motivations at around 3 years of age. At around 28-months of age, children have ability to use internal state words that referred to their own and others' mental states including perceptions, physiological states, and emotions.

However, few children explicitly discussed cognitions. Beeghly et al., (1986) focused on mothers' production of mental state language and reported and observed child language at 13-, 20-and 28-months of age. Mothers' mental state language significantly increased with children's age. Mothers' production of mental state verbs was significantly correlated to children's use of mental state verbs at 28 months. Similarly, Taumoepeau and Ruffman (2006) showed that the mothers desire talks (*e.g., love, want, like, hope*) directed to children at 15 months of age significantly correlated with children's mental state language at later stages.

1.1.3 Children's Acquisition of Complement Clauses

Development of complement clauses in child language is a special focus of interest because these are the first complex grammatical structure children produce (Bloom, Rispoli, Gartner & Hafitz, 1989). Diesel and Tomasello (2001) suggested that children's early finite complement constructions are based on simplified structures with particular matrix verbs including epistemic verbs (*e.g., think and know*) and attention-getting verbs (*e.g., look and see*). For instance, the earliest use of '*I think*' is in first-person and present-tense form without *that* complementizer. Although they produce the embedded structure, it has been argued that they are simple utterances

because main verb of mental state '*think*' does not express full proposition toward subordinate clause, rather the main verb functions as epistemic marker, attention-getting device (Diesel & Tomasello, 2001). It has been argued that children's earliest production of mental state verbs in embedded clauses does not reflect mental attitude because they do not know the accurate meaning of mental state verbs (Ruffman et al., 2002).

1.1.3.1 Children's Comprehension of Complement Clauses

In the literature, Farrant, Maybery, and Fletcher (2012) investigated the relation between maternal mental state language and children's comprehension of complement clauses among children between 48 and 74 months of age. Children's complement comprehension was measured by the modified version of memory for complement task (de Villiers & Pyers, 2002). Maternal language input was assessed by mental state input inventory (MMSII) developed by Peterson and Slaughter (2003). Mothers were asked to rank four responses to each of 12 vignettes consisting of an everyday interaction between mother and a child. Through MMSII, mothers' use of mental state language directed to children was measured with their rankings for elaborated mental state option to each of 12 vignettes. Their results showed the correlation between comprehension of complement clauses and maternal mental state language. The results are consistent with the claim that children's exposure to mental state verbs might improve their grammatical knowledge of tensed complements with the main verb of mental state (*e.g., I know that*) (de Villiers & de Villiers, 2000).

1.2 Theory of Mind (ToM)

ToM is a socio-cognitive ability of reasoning about your own and other's mental state (Premack & Woodruff, 1978). The socio-cognitive skill brings the ability of seeing others as mental agents

with their beliefs, emotions, and intentions (Juan & Astington, 2012; Wellman, 2002). Several studies showed that desire understanding develops before belief understanding (Bartsch & Wellman, 1995; Gopnik & Slaughter, 1991). Various studies focused on children's false belief understanding (FBU) because the development of FBU shows children's developing understanding that people may have false belief and behave in accordance with their false belief (for meta-analysis, see Wellman, Cross, & Watson, 2001). In the literature, various ToM research focused on children's FBU (Perner, Leekam, & Wimmer, 1987; Wimmer & Perner, 1983). Wimmer and Perner (1983) designed a classic FBU task. In the task, children were introduced a story in which the first character had a false belief about the location of an object because another character put the object in another location in the absence of the first character. Children were asked to infer the first character's false knowledge about the location of the object and asked to point where the story character will look for the object. Children's pointing to the correct location appeared at 4 years of age. In a study of Perner et al., (1987), a similar task was designed where children were asked to predict the subsequent action of the story character based on his false belief. In the experiment 2, another person was not shown what was inside the candy box while children knew that the box contained pencils. Children were expected to predict what another person will say about the content of the closed candy box based on the person's false knowledge. Overall results showed that FBU developed at around 3 years of age. Astington, Pelletier, and Homer, (2002) stated that children's understanding that other people have beliefs (e.g., true or false-beliefs) refers to their first-order FBU. Double embedded representations mean that children hold beliefs about the third persons' mental states about another person's mental state (e.g., beliefs, knowledge states). This double mental representation is referred to as second-order FBU. In the second-order FBU task developed by Perner and Wimmer (1985), an object was transferred to a new location. The story character independently informed two story characters

about the new location of the object. These two characters had true knowledge about the location of the object but, one character thought that other character still thought that the object was in the old location. The experimenter was asked children to answer the story character's belief about other character's belief about the location of the object. Children had to engage in second-order belief reasoning to give the correct answer. According to the results, second-order FBU first appeared at around the age of 6 and 7 years.

1.2.1 Theories of Development of ToM

1.2.1.1 Theory theory: TT approach argues that children's understanding of the mind is structured in several different domains and these domains are based on children's pre-existing theories that are innate (Gopnik, 1996). TT approach argues that these pre-existing theories are open to qualitative changes as a result of children's interaction with the outside world (Gopnik, 2003). Children's understanding of the mind happens as a result of the process of supporting or changing their existing theories (Gopnik & Wellman, 1994). Several empirical findings supported the basic assumption of TT approach by showing that the development of different component of ToM (desire, emotion, belief understanding) does not happen simultaneously (Gopnik & Slaughter, 1991).

1.2.1.2 Socio-cultural approaches: Social-cultural (SC) approaches argue that culture shapes children's developing understanding of mind (Carpendale & Lewis, 2006; Nelson, 1996; Tomasello, 2019). According to SC approach, children's social interaction with others in a meaningful social context plays significant role in their social understanding (Astington & Baird, 2005).

TT approach and socio-cultural approach give different emphasis on social interaction and culture but, both of the theories argue that children's linguistic environment plays important role in the development of their ToM (for a comparative review, see Ilgaz & Allen, 2021).

Meta-analysis studies showed that the frequency of mental state language in maternal speech is related to children's ToM (Devine & Hughes, 2018; Tompkins et al., 2018). Several studies investigated maternal language and children's ToM during shared book reading context with wordless storybooks through correlational (Slaughter et al., 2007) and longitudinal studies (Adrian, Clemente, & Villanueva, 2007; Ruffman et al., 2002). In the longitudinal study, Ruffman et al., (2002) showed that mothers' mental state talk directed to 3-year-olds significantly correlated with their performance on ToM task 12 months later. Adrian et al., (2007) showed that mothers' production of cognitive verbs (e.g., *know* and *think*) directed to 3-to-5-year-olds were correlated to their mental state understanding later.

1.3 Language Development and ToM

Some researchers argued that language ability provides explicit expression of mental state understanding and this conceptual understanding of mind develops before language development (Chandler, Fritz, & Hala, 1989; Frye, Zelazo, & Palfai, 1995). Therefore, these accounts suggested that children's successful performance in ToM tasks might be the result of children's developing language ability (Chandler et al., 1989; Frye et al., 1995). Other accounts argued that children's unsuccessful performance in ToM tasks is not related to their linguistic incompetency (Call & Tomasello, 1999; Plaut & Karmiloff-Smith, 1993). For instance, Povinelli and deBlois (1992) could not find the evidence of children's belief understanding before they develop language to express their mental state representation.

1.3.1 General Language Hypothesis

The studies among both typically and atypically developing children found the significant correlation between children's language and their ToM scores (Astington & Jenkins, 1999). There are different component of language including syntax, semantics, and general language ability (Astington & Baird, 2005). In the literature, several studies showed the significant relationbetween specific component of language and ToM (Brown, Donelan-McCall, & Dunn, 1996; Hughes & Dunn, 1997; Moore, Pure, & Furrow, 1990). For instance, correlational studies showed a significant correlation between children's FBU task performance and their production of mental state verbs (Hughes & Dunn, 1997) and their comprehension of their mental state verbs (Brown et al., 1996; Moore et al., 1990). Milligan, Astington, and Dack (2007) suggested that the children's performance in general language task, semantic, syntactic, and receptive language scores separately account for the variance in children's explicit FBU task performance. On the other hand, general language hypothesis claims that the development of FBU depends on development of overall linguistic capacity, rather than the development of specific language components (for a meta-analysis, see Milligan et al., 2007).

1.3.2 Linguistic Determinism Theory

Linguistic determinism theory argued that the acquisition of linguistic forms provides the representational understanding about mental states (de Villiers & Pyers, 1997). De Villiers and Pyers (1997) supported the complementation hypothesis. According to the complementation hypothesis, understanding of mental states might be acquired through the development of complement clauses. Consistent with this hypothesis, several studies showed that acquisition of complement clauses with mental state verbs is related to development of FBU (Astington & Jenkins, 1995; de Villiers, 1995). De Villiers (1998) argues that complement clauses are a special

form of complex syntax that allows representation of mental state verbs toward a proposition. These structures allow someone to express what is true in her mind referring to her mental state and this mental representation might differ from actual reality (de Villiers, 1998). '*She thinks that the child will come*' expresses a false proposition '*the child will come*' in the complement clause but the truth value of the whole sentence is not influenced by that false proposition. It is true that '*She thinks that the child will come*' (de Villiers & de Villiers, 2000). It has been suggested that the acquisition of complement clauses is crucial for children's explicit FBU (De Villiers, 2005; De Villiers, 2007). De Villiers (2005) argued that the role of complement clauses on explicit FBU starts with the acquisition of these grammatical structures because when children learn embedded structures, they realize the function of the main verbs from the structural similarities between complement clauses. The main verb '*say*' and '*think*' can be used to express a false proposition.

1.3.2.1 The Comprehension of Complement Clauses and ToM among English-speaking Children

De Villiers (1995) developed the memory for complements task to measure children's comprehension of complement clauses. In this task, a scenario was introduced about the story character who is making a mistake, telling a lie, or having a false belief. The complement clause is false since it expresses a false proposition. In the first part of the task, the story character's false belief was introduced in the complement clause with the main verb of '*think*.' Then, children were asked to answer a question about what the story character believes. In the second part of the task, the character's false proposition was introduced in the complement clause with the main verb of '*say*' (de Villiers & Pyers, 2002).

The memory for complements task has been used in the several empirical studies among English-speaking children (de Villiers & Pyers, 1997; de Villiers, 1998; de Villiers & Pyers, 2002). De

Villiers (1999) found that children's comprehension of complement clauses predicted their successful performance in FBU tasks after controlling for other measures of syntactic complexity – MLU and IPSYN (Index of Productive Syntax) among the children at around the age of 3 in her longitudinal analysis. In another longitudinal study, De Villiers and Pyers (2002) found that memory for complements significantly predicted FBU after controlling for the other measures of syntax. Importantly, the children's mastery of complements with the communication verb 'say' has the most significant role.

Ruffman, Slade, Rowlandson, Rumsey, and Garnham (2003) argued that memory for complement task requires children to make FB reasoning to understand the story characters' mistakes, lies, and false-beliefs. Therefore, they developed an embedded syntax item task. In the task, the experimenter read the embedded clause that described the properties/location of the objects. Then, children were asked to point the correct picture out of the four options. The comprehension of embedded syntax was found to be a predictor of FBU after the other measures of syntax and semantics among English-speaking children between 3 to 5 years of age.

Comprehension of complement clauses were examined with tensed complements with 'that' structures and infinitival complement with 'to' structure in English-speaking children (Cheung, Hsuan-Chih, Creed, Ng, Ping Wang, & Mo, 2004; Ng, Cheung, & Xiao, 2010). Cheung et al., (2004) examined the tensed complement and infinitival complement structures among 4-year-olds at three time points. In the first study, they used the main verb of 'promise' in the tensed complement and the infinitival complement. In this way, the effect of the syntactic structure of the complement clauses was measured while holding the semantic of the embedded clause constant. In the two stories, children were told a story in which the story character who made a mistake. Then, children were told what the story character promised to do and what did he

actually did in the infinitival version. In the task question, children were asked what the story character promised to do with infinitival structure. For the tensed version, the same story and the test questions were introduced with tensed structure. According to the results, neither type of complement structure was a significant predictor of ToM. Ng et al., (2010) studied the relation between complementation and FBU by focusing on the infinitival complements with the main verb of desire '*want*' among 4-year-olds. They suggested that the significant correlation between infinitival complement with '*want*' and FBU showed the importance of complement meaning rather than the specific importance of tensed complements with that structure. In their task, the children were told three stories with the infinitival complements with '*want*' and three stories with the tensed complements with '*say*.' The results showed that children's performance on tensed complements with nonmental state verb and infinitival complement with desire verb did not differ. After controlling for other language measures, children's FBU was found to be significant with the infinitival complements with the main verb of '*want*.'

Overall results revealed that the majority of empirical studies among English-speaking children supported complementation hypothesis (Farrar et al., 2017). There are two studies that investigated the children's comprehension of complement clauses in relation to their FBU with '*to*' structure among English-speaking children (Cheung et al., 2004; Ng et al., 2010). The only one study revealed the significant correlation between complement comprehension and ToM with different syntactic structure - '*to*' structure other than '*that*' structure in English (Ng et al., 2010).

Farrar, Lee, Cho, Tamargo, and Seung (2013) used the different version of memory for complement task developed by de Villiers and Pyers (2002) among Korean-speaking and English-speaking children at around 3 years of age with the three-time points. The task includes two characters who are talking about the action of the third character in his absence. In the

absence of the third character, the other two characters were talking about the character's current action (e.g., they wanted him to do his homework but he was performing another action). After the presentation of each story, the children were asked three questions using complement clauses with '*think*', '*say*', and '*want*' about the story. The results revealed that the comprehension of the complement clauses was not significant predictor of FBU.

1.3.2.2 The Comprehension of Complement Clauses and ToM among Non-English-speaking Children

Children's complement comprehension abilities have been studied with the several complementation tasks among non-English speaking children (Farrar et al., 2017). Tardif, So, and Kaciroti (2007) adopted memory for complement task developed by de Villiers (1995) for native Cantonese-speaking preschoolers between 3, 4, and 5 years of age. Half of the scenarios included a false complement with '*think*' and the remaining included false complement with '*tell*.' For each of the scenarios, children were asked about the true (reality/control) component of the sentence or the false component of the sentence. Children performed better on answering the true component of complements than the false component. Cantonese-speaking children had better performance on the '*think*' false complements than '*say*' false complements but both types of complement clauses have comparable correlations with FBU. However, Tardif et al., (2007) found that the memory for the complements did not significantly predict FBU after controlling for children's general language ability.

Similarly, Farrar et al., (2013) did not find a predictor role of the ability to comprehend complement clauses for FBU after accounting for general language ability among Korean-speaking children. Several studies focused on the syntactic structures and the semantic categories measured the complement comprehension (Cheung et al., 2004; Cheung, 2006; Cheung, Chen, &

Yeung, 2009). Cheung et al., (2004) designed the study 2 among Cantonese-speaking children between 3 and 5 years of age. The syntactic structure of complement clause was held constant while the semantic category of the complement clause changes with the main verb of 'want' and 'say.' The children were told the story character who made a mistake. In the want-infinitival version, the children were told what he actually desired to do with infinitival complement 'to' structure (*He said "I want to_"*). In the say-version, children were told what he actually did with reported speech (*He said "I bought_"*). It has been found that complementation did not significantly predict ToM scores after controlling for other language measures. Cheung et al., (2009) examined the semantic category of the verbs and the comprehension of the complement clauses with the nonmental state verb 'say' among Cantonese-speaking children between 4 and 5 years of age. The mental verb category has one factive verb 'know' and one strong nonfactive verb 'falsely think.' The nonmental verb category has one factive verb 'discover' and one nonfactive verb 'lie.' The results indicated that the total score of the strong nonfactive verbs 'falsely think' and 'lie' significantly predicted FBU after controlling for general language and the complement comprehension. 'Falsely think' alone was found to significantly predict FBU after controlling for the other variables whereas 'lie' was not. The most recent study that measured the comprehension of the complement clauses came from De Mulder, Wijnen, & Coopmans, 2019). The study developed a novel task that does not require the understanding of the character's false-belief, mistakes, or lies for Dutch-speaking kindergartners. The study includes 6 different stories in which the two characters who is talking about the three objects. According to the results, there is no significant relation between ToM and comprehension of complement clauses.

1.3.2.3 The Training Studies

Several training studies supported the predictive role of comprehension of complement clauses (Hale & Tager-Flusberg, 2003; Lohmann & Tomasello, 2003; Mo, Su, Sabbagh & Jiaming, 2014). For instance, Lohmann and Tomasello (2003) used comprehension of complement clause task that was adapted from the memory for complement task (de Villiers, 1995; de Villiers & Pyers, 2002). In their study, the training of false tensed complements with the main verb of mental and communication verbs was related to the improved scores in FBU posttest among 3- year-old German-speaking children. Hale and Tager-Flusberg (2003) found that training with false tensed complements with the main verb of communication 'say' facilitate children's both syntax and their performance on ToM measures among English-speaking children between 3 and 5 years of age. Mo et al., (2014) used the same training method with Lohmann and Tomasello (2003) among Mandarin –speaking children at around 4 years of age. They found that the training of false tensed complements with communication verbs was related to the improvement in FBU posttest performance.

Overall results showed the positive effect of training of false-tensed complements on children's FBU among both German-speaking children, English-speaking and Mandarin-speaking children (Hale & Tager-Flusberg, 2003; Lohmann & Tomasello, 2003; Mo et al., 2014).

1.3.2.4 The Comprehension of Complement Clauses and ToM among Atypically Developing Children

The correlation between the comprehension of complement clauses and FBU have been investigated among atypically developing children including children with autism (Durrleman & Franck, 2015; Lind & Bowler, 2009; Tager-Flusberg & Joseph, 2005), children with hearing

impairments (de Villiers & de Villiers, 2012; Schick, de Villiers, de Villiers, & Hoffmeister, 2007). Among children with autism, several studies found support for the predictor role of memory for complements with communication verbs after controlling for PPVT and expressive grammar (Durrleman & Franck, 2015) and with mental state verb *'think'* after controlling for IPSyn (Tager-Flusberg & Joseph, 2005). In addition, de Villiers and de Villiers (2012) found that complement comprehension with *'say'* was a significant predictor of FBU among both hearing and deaf children.

1.4 Nonfinite Complement Clauses in Turkish

Turkish is an agglutinative language that provides verb affixation through suffixes (Ketrez, 1999). The suffixes include inflectional suffixes (e.g., tense, number, negation, and person suffixes) and derivational suffixes (e.g., passive and causatives) (Ketrez, 1999).

Turkish language has nominalizing suffixes (-DIK, -mA, -mAK, (y)AcAK and -İş) that form nonfinite complement clauses (Coskun, 2019; Johanson, 2013; Kornfilt, 1996; Kural, 1994; Slodowicz, 2007; Taylan, 1998; Underhill, 1976).

(a) Ali [git-**tiğ**-i-ni] itiraf et-ti.

Ali go-**GER**-3SG.POSS-ACC admit-PAST-3SG.

'Ali admitted that he went (there).' (Aksu-Koç & Erguvanlı-Taylan, 1998).

Nominalizing suffixes that are attached to the verbs are followed by person and number suffixes (Ögel-Balaban & Aksu-Koç, 2020). The nominalizing suffixes were analyzed separately because they differ in terms of their syntactic properties (Underhill, 1976) and semantic properties (Taylan, 1998). From syntactic structure, Kornfilt (1996) suggested that -mA nominalizer is an action nominalizer while -DIK and -(y)AcAK are factive nominals. The other accounts suggested

that –mA complements are constructed with subject-verb agreement (Kural, 1994; Slodowicz, 2007). From semantic approach, Taylan (1998) argues that there is a relation between the semantic properties of nominalizing suffixes and the semantic category of matrix verbs. For instance, semantic properties of the nominalizing suffix –DIK, -(y)AcAK and –mA determine the meaning of the complement verb (Altan, 2007). Johanson (2013) suggested that –DIK nominalizer is required by the matrix predicate with the verb of ‘*san-*’, ‘falsely think’, ‘*tahmin et*’, ‘suppose’ that express the truth value of the complement clause.

1.4.1 The Acquisition of Complement Clauses in Turkish

In Turkish literature, complement clauses were observed between the ages of 2- to 5 in children’s narrative productions (Altan, 2005; Altan, 2007). Aksu-Koc (1994) examined the speech of preschoolers (age 3 to 5), 9-year-olds and adults through the wordless picture book ‘Frog, where are you?’ (Meyer, 1969). Nominalizing suffix -mAK was the most frequently used suffix in children’s speech. Second most frequent nominalizing suffix used in children’s complementation was -DIK and this suffix was mostly used with complement verb taking cognitive and perceptual matrix verb such as ‘*bil-*’, ‘know’, ‘*anla-*’, ‘understand’ and ‘*gör-*’, ‘see.’ The nominalizing suffixes -mA and -(y)AcAK were the least frequently used suffixes in children’s complementation. Altan (2005) investigated the complement clauses from the naturalistic data. She has found that the -mAK nominalizing suffix with the complement taking verb ‘*iste*’, ‘want’ was the first complement construction that was observed at 2- to 3-years of age. -mA has been found to be the second nominalizing suffixes that children acquired at around 3 years of age. Later, -AcAK nominalizer was observed with the main verb of ‘tell’ at around 3 years of age. -DIK was observed with the main verb of ‘*gör*’ at around the age of 4. Considering the frequency

of nominalizers, -DIK nominalizer was found to be less frequent than -mA nominalizer. -AcAK nominalizer was found to be least frequent structure compared to the other nominalizers.

Altan (2007) investigated the comprehension and production of the nonfinite complement clauses among 3 to 6 years of age. She found an important developmental shift in the comprehension of complement clauses between the ages of 4 and 5. Among different age groups, the scores for the comprehension of -mAK complements were higher than -mA and -DIK complements.

Compared to -mA complements, children got higher scores for the -DIK complements. In the production task, the children were expected to transform the direct speech to the indirect speech in a given scenario presented with the pictures. For instance, the children were asked '*Edi ne yaptığını söyledi?*', 'What did Edi say he had done?' The children were expected to answer '*Edi banyo yaptığını söyledi*', 'He said he had a bath.' In the comprehension task, the children were expected to understand the question in indirect embedded structure and produce direct form of that structure. The single embedding questions '*Fareye ne yemek yediğini sorar mısın?*', 'Could you ask the mouse what he wants to eat?' and double embedding questions '*Kutuda ne olduğunu sandığını sorar mısın?*', 'Can you ask the mouse what he thinks there is in the box?' were directed to the children. Children's correct answers for -(y)AcAK complements were lowest compared to -mA, -DIK with the main verb of 'tell.' For the comprehension task, there is a developmental shift in the comprehension of single and double embedding structures between the ages of 4 and 5.

Overall results showed that children's comprehension and production of nonfinite complement clauses occurred at different developmental stages according to mental state verb category and the type of nominalizing suffixes (Aksu-Koc, 1994; Altan, 2005; Altan, 2007).

1.4.2 The Comprehension of Complement Clauses and ToM among Turkish-speaking Children

Ögel Balaban (2015) designed a longitudinal study that investigated the relation between comprehension of complement clauses and ToM among Turkish-speaking children and adults. In her study, comprehension of nonfinite complement clauses was assessed with the comprehension task Altan (2007) created in her study. In the task, children's comprehension of nonfinite complement clauses was measured with nonfinite complement clauses formed with nominalizing suffixes (-mA, -mAK, -DIK, -(y)AcAK). According to Fitch (2005), the comprehension of complement clauses is facilitated by ToM because the representation of others' mental state with the embedded structures requires the development of mental state understanding. Ögel Balaban (2015) did not find support for this argument since she did not find that ToM predicted children's comprehension of syntactic complexity. She found that there is a significant correlation between complement comprehension and ToM and the significant correlation remains after age was controlled among Turkish-speaking children.

1.5. Finite Subordinate Clauses in Turkish

Subordinate clause is linked to the matrix predicate with diye and ki-complementizers or without being nominalized in Turkish language (Gündoğdu, 2017; Kornfilt, 1996). Finiteness represents a clause that functions as syntactically-independent clause without taking nominalizing suffix so that complement clause is not nominalized (Aksu-Koç & Erguvanlı-Taylan, 1998). Diye and ki subordinator links subordinate clauses to matrix predicate, and it is always used before the matrix predicate (Göksel & Kerslake, 2005).

Diye-complementizer is used to express action, perception, cognition, and emotion (Göksel & Kerslake, 2005):

(a) [Ayşe, Ali-nin bir torun-u ol-acak] **diye** sevin-di.

Ayşe, Ali-GEN one grandchild-3SG.POSS be-FUT-3SG **SUB** be happy-PAST-3SG.

‘Ayşe was happy that Ali will have a grandchild.’

Ki-clauses that are embedded by complementizer ki is a subject in the nominative and finite verbal forms and they exhibit the regular Turkish SOV pattern (Kesici, 2013; Predolac, 2017):

(a) Teoman duy-du **ki** [çocuk okul-a git-miş].

Teoman hear-PAST-3SG **SUB** the child the school-DAT go-PRF-3SG.

‘Teoman heard that the child went to the school.’

Ki- clauses can be used for expressing thoughts and wishes, emotions, cognition (Göksel & Kerslake, 2005):

(b) Teoman san-dı **ki** [çocuk okul-a git-miş].

Teoman suppose-PAST-3SG **SUB** the child the school-DAT go-PRF-3SG.

‘Teoman believed that the child went to the school.’

Göksel and Kerslake (2005) stated that bare finite subordinate clauses are considered as a different form of finite subordinate clauses in terms of their syntactic structures. The matrix predicate and subordinate clause create a whole sentence without having a subordinator:

(a) [Çocuk okul-dan gel-di] duy-du-n mu?

The child the school-ABL come-PAST-3SG hear-PAST-2SG QUE.

‘Is it known where the child is?’

Dietrich (1995) stated that these structures are classified as finite direct complements by George and Kornfilt (1981).

1.6 The Current Study

The current study aimed to examine Turkish mothers' use of nonfinite, finite, and bare finite complement clauses directed to their 3-, 4-, and 5-year-old children during storytelling. The aim was to investigate mothers' use of nonfinite, finite, and bare finite complement clauses in relation to children's comprehension of complement clauses and their ToM. The current study emphasized three important correlations: (i) the correlation between mothers' use of complement clauses and children's comprehension of complement clauses (ii) the correlation between mothers' use of complement clauses that include mental state verbs and children's ToM (iii) the correlation between children's comprehension of complement clauses and their ToM.

Previous studies showed that the frequency of syntactic structures in maternal language plays significant role in children's acquisition of syntactic structures (Tomasello, 2008; Tomasello, 2003). The proportion of mothers' use of mult clause sentences significantly predicted children's production of mult clause sentences (Huttenlocher et al., 2002). Similarly, previous studies showed that mothers' use of mental state verbs had significant correlation with children's comprehension and production of mental state verbs (Beeghly et al., 1986; Taumoepeau & Ruffman, 2006). Importantly, Farrant et al., (2012) showed that maternal mental state language has significant correlation with children's comprehension of complement clauses.

Children's linguistic environment have important role in children's development of ToM (Astington & Baird, 2005). Previous studies showed that maternal mental state language during book reading context have significant correlation with children's ToM through cross-sectional

study (Slaughter et al., 2007) and longitudinal studies (Adrian et al., 2007; Ruffman et al., 2003). Considering the correlation between children's language ability and their ToM, several studies found that children's ToM was significantly related to their language ability (Astington & Jenkins, 1999). General language hypothesis put emphasis on the development of overall linguistic capacity (i.e., syntax, semantics, and receptive language) in children's development of ToM (Milligan et al., 2007). Similarly, linguistic determinism theory put emphasis on children's language development in their development of ToM. However, linguistic determinism theory put emphasis on children's acquisition of specific linguistic structure rather than their overall language ability. De Villiers and Pyers (1997) proposed complementation hypothesis. According to this hypothesis, children's acquisition of complement clauses enables representation of mental states, and this linguistic representation facilitates the development of ToM. Complementation hypothesis focused on the unique role of tensed complements formed with *that* structure (e.g., *I think he will come*). Previous studies supported complementation hypothesis among English-speaking children (Farrar et al., 2017) and Turkish-speaking children (Ögel Balaban, 2015). It means that children's comprehension of tensed complements was positively related to their ToM scores. Infinitival complement clauses (e.g., *He wants to buy milk*) is also used to express a mental attitude toward a proposition similar to tensed complements (Cheung et al., 2004; Ng et al., 2010). In the literature, children's comprehension of infinitival complement clauses with *-to* structure (e.g., *He wants to buy milk*) in its relation to children's ToM (Cheung et al., 2004; Ng et al., 2010). Ng et al., (2010) found that infinitival complement clauses were significantly related to children's ToM among English-speaking children (Ng et al., 2010). The Results supported their claim that complement meaning plays an important role in children's ToM.

Based on the previous studies, there are two gaps in the literature regarding the characteristics of maternal language in relation to children's language and children's ToM. There is no study that investigated the correlation between mothers' use of three complement clause structures – nonfinite, finite, and bare finite complement clauses and children's comprehension of complement clauses. There is no study that investigated mothers' use nonfinite, finite, and bare finite complement clauses that include mental state verbs and children's ToM.

Firstly, the current is the first study that investigated the correlation between mothers' use of nonfinite, finite, and bare finite complement clauses and children's comprehension of complement clauses. For this purpose, three complement clause structures were analyzed separately. Three complement clauses have different grammatical structures, but they give the same meaning. The purpose of investigating the three complement clauses is to analyze complement clauses in terms of their complement meaning.

Non-finite complement clauses are formed with special nominalizing suffixes - mA, mAK, -DIK, -(y)AcAK, and -Iş. Turkish nonfinite complement clauses are produced with nominalizing suffixes that are attached to the complement verb and link main clause to complement clause. In nonfinite complement clauses, complement verb is nominalized with nonfinite nominalizing suffixes.

(a) Hakan [Ahmet'in gel-**me**-si-ne] sevin-di.

Hakan Ahmet-GEN come-**GER**-3SG.POSS-DAT happy-PAST-3SG.

'Hakan was happy that Ahmet came from the school.'

In Turkish, finite and bare finite complement clauses are another grammatical structure that form complement clause structures. In finite complement clauses, main clause is linked to complement clauses with *diye* complementizer and *ki* complementizers. These special complementizers do not nominalize complement verb. In bare finite complement clauses, main clause and complement clause are not linked with using nominalizing suffixes and complementizers. Main clause and complement clause stand as two independent sentences. Bare finite complement clauses are embedded structures in terms of their meaning.

The current study analyzed nonfinite complement clauses and the total frequency of nominalizing suffixes was considered. Finite complement clauses and bare finite complement clauses were analyzed based on the semantic similarities with nonfinite complement clauses.

For subordinate clauses with *ki*-complementizer, Kesici (2013) claimed that some form of nominalized embedded clause and *ki*-embedded clauses have the same meaning. In the following example, finite complement clause that was formed with *ki* complementizer was expressed with nonfinite complement clause that was formed with –*DIK* nominalizing suffix by holding its meaning constant.

(a) Hakan inan-ıyor **ki** [Ahmet okul-dan gel-di].

Hakan believe-PROG-3SG **SUB** Ahmet the school-ABL come-PAST-3SG.

‘Hakan believes that Ahmet came from the school.’

(b) Hakan [Ahmet-in okul-dan gel-**diğ**-i-ne] inan-ıyor.

Hakan Ahmet-GEN the school-ABL come-**GER**-3SG.POSS-DAT believe-PROG-3SG.

‘Hakan believes that Ahmet came from the school.’

In the following example, finite complement clause that was formed with *diye* complementizer was expressed with nonfinite complement clause structure that was formed –AcAK nominalizing suffix by holding its meaning constant.

(a) [Ayşe o gel-ecek] **diye** sevin-di.

Ayşe 3SG come-FUT **SUB** be happy-PAST-3SG

‘Ayşe was happy that s/he will come.’

(b) [Ayşe onun gel-**eceğ-i-ne**] sevin-di.

Ayşe 3SG-GEN come-**GER**-3SG.POSS-DAT be happy-PAST-3SG.

‘Ayşe was happy that s/he will come.’

In the following example, bare finite complement clause structure was expressed with nonfinite complement clause structure that was formed with –DIK nominalizing suffix by holding its meaning constant.

(a) Zanned-iyor-um [Ahmet okul-dan gel-di].

Suppose-PROG-1SG Ahmet the school-ABL come-PAST-3SG.

‘I suppose (that) Ahmet came from the school.’

(b) [Ahmet-in okul-dan gel-**diğ-i-ni**] zanned-iyor-um.

Ahmet-GEN the school-ABL come-**GER**-3SG.POSS-ACC suppose-PROG-1SG.

‘I suppose (that) Ahmet came from the school.’

Secondly, the current study was the first study that investigated the correlation between mothers’ use of nonfinite, finite, and bare finite complement clauses that include mental state verbs (i.e., total number of MS & NMS, MS & MS, and NMS & MS combination) and children’s ToM.

To investigate the frequency of complement clauses that include mental state verbs and nonmental state verbs, the current study adapted MSCs schema based on the previous study of Ilgaz et al., (2021). There are three MSC categories and one non-MSC category. MSCs (MS & NMS, MS & MS, and NMS & MS combination) include mental state verbs. The current study considered mental state combination category that includes the total number of three MSCs. Moreover, the current study analyzed three MSCs separately because the function of mental state verbs differs according to their position in the complement clause. The current study also considered mental state combination category that include one non-MSC category (i.e., NMS & NMS combination).

(1) MS & NMS Combination Category: The category includes complement clauses with the main verb of nonmental state verb and mental state complement verb. Main verb of nonmental state '*başla*', 'start' allows someone to report another person's mental state.

(a) Kurbağa [çocuğ-a bak-**ma**-ya] başla-dı.

The frog the child-DAT look-**INF**-DAT start-PAST-3SG.

'The frog started to look at the child.'

(2) MS & MS Combination Category: The category includes complement clauses with the main verb of mental state and mental state complement verb. Main verb of mental state '*karar vermek*', 'decide' allows someone to express a mental attitude toward another person's mental state.

(b) Kurbağa [çocuğ-u izle-**me**-ye] karar ver-di.

The frog the child-ACC watch-**INF**-DAT decide-PAST-3SG.

'The frog decided to watch the frog.'

(3) NMS & MS Combination Category: The category includes complement clauses with the main verb of mental state and nonmental state complement verb. Main verb of mental state '*düşün*', 'think' allows someone to express a mental attitude toward a proposition.

(c) Çocuk [yağmur yağ-**acağ**-ı-nı] düşün-üyor.

The child rain-**GER**-3SG.POSS-ACC think-PROG-3SG.

'The child thinks that the rain will come.'

(4) NMS & NMS Combination Category: The category includes complement clauses with the main verb of nonmental state and nonmental state complement verb. Main verb of nonmental state '*söyle*', 'say' expresses a proposition toward another proposition.

(d) Ayşe [çocuğ-un gel-**eceğ**-i-ni] söyle-di.

Ayşe the child-GEN come-**GER**-3SG.POSS-ACC say-PAST-3SG.

'S/he said that the child will come.'

To investigate children's ToM, three FBU tasks were applied (Astington et al., 2002; Flavell et al, 1983; Perner & Wimmer, 1985). In unexpected location task (Perner & Wimmer, 1985), children were expected to predict the story character's subsequent action based on his false belief. In Appearance and Reality Task (Flavell et al., 1983), children were given the two objects that look like different objects (e.g., a box that looks like a book). In the first part, the two objects were shown to the children. After children gave the answer, they were shown the real identity of the objects. Later, children were asked to infer their initial false belief about the identity of objects before they were shown the real identity of the objects. In first-order and second-order ToM Task (Astington et al., 2002), children were expected to have reasoning about the story character's mental state in first-order FBU question. In second-order FBU question, children were expected to have reasoning about the story character's false belief about the another story character's mental

state.

Thirdly, the current study investigated the correlation between children's comprehension of complement clauses and their ToM. For this purpose, comprehension of single- and double-embedded clauses on comprehension of complement clauses task developed by Ögel-Balaban (2015) was applied to investigate children's comprehension of single complement clauses (*e.g.*, *Çocuk kurbağanın kaçtığını söyledi*, 'The child said that the frog escaped'), double complement clauses (*e.g.*, *Çocuk kurbağanın kaçtığını düşündüğünü söyledi*, 'The child said that he thinks that the frog escaped'), and their total scores on comprehension of complement clauses task (i.e., total scores of children's comprehension of single- and double-embedded clauses on comprehension of complement clauses task).

This study had three research questions: (1) whether the frequency of mothers' use of the different types of the complement clause structures is related to children's comprehension of the complement clauses even when children's expressive and receptive language, the frequency of mothers' use of C-Units as well as the complexity of mothers' talk (MLU) are controlled, (2) whether the frequency of mothers' use of the different types of complement clause structures that include mental state verbs (i.e., the total number of MS & NMS, MS & MS, and NMS & MS combination) is related to children's ToM when children's expressive and receptive language as well as C-Units and MLU are controlled, (3) whether or not children's comprehension of nonfinite complement clauses will be related to children's ToM after controlling for children's expressive and receptive language as well as, C-Units, and MLU.

Accordingly, the hypothesis are as follows:

(1) The frequency of both nonfinite, finite, and bare finite complement clauses will be related to children's comprehension of nonfinite complement clauses after controlling for children's expressive and receptive language, C-Units, and MLU.

(2) The frequency of both nonfinite, finite, and bare finite complement clauses that include mental state verbs (i.e., total number of MS & NMS, MS & MS, and NMS & MS combination) will be related to children's ToM after controlling for children's expressive and receptive language, C-Units and MLU.

(3) Children's comprehension of nonfinite complement clauses will be related to children's ToM after controlling for children's expressive and receptive language, C-Units and MLU.

CHAPTER II

METHOD

2.1 Participants

125 Turkish-speaking mothers and their children between the ages of 3 and 5 participated in the current study. Child gender has near perfect equal distribution (67 girls and 58 boys). There are 45 3-year-olds ($M = 40.09$ months, $SD = 3.69$), 42 4-year-olds ($M = 52.19$ months, $SD = 3.62$), and 38 5-year-olds ($M = 65.71$ months, $SD = 3.49$) in the study.

The education level of the mothers ranged from primary school to PhD degree. Based on the mothers' report, 2.4 % of the mothers had education level lower than high school, 12.9% the mothers who h high school, 49.2% had a university, 23.4% had a master and 10.5% had a PhD degree.

Based on the mothers' report, 58.5% has full-time job, 4.9% has part-time job, 4.9% is working from home, and 30.9% is not working whereas 0.8% continues their education in school.

The participants were recruited through announcements to a large Holding Group, University's Alumni Association and preschools in Ankara serving middle-class families. Before participating in the study, both parents signed the consent form that was approved by Bilkent University Ethics Committee and the Turkish Ministry of Education.

2.2 Materials

2.2.1 Demographic Form

Demographic form was used to collect information about the children and their parents. The form included the questions about the child's birth date, the parents' age, education, job, number of children in the family, and perception of income.

2.2.2 Book Reading Habits Form

Book reading habits form was used to collect information about the parents' storytelling habits to their children in the home setting. The questions consisted of the frequency of parents' storytelling to their children, the most frequently told story books including wordless and written books, as well as the parents' reading habits.

2.2.3 Wordless Story Book

The 24-page wordless picture book "Frog, where are you?" developed by Mercer (1969) was used to elicit the narrative. The book includes the pictures of a story about a boy, his dog, and a lost frog. The narrators have to create the connections between the characters' subsequent actions and facial expressions to infer their mental states, emotions, desires, and goals. The narrator's references that describe the cause of the event and actions create a meaningful story (Küntay & Nakamura, 2004). This book has been frequently used in the studies to collect language data in Turkish narrative studies (Aksu-Koc, 1994; Küntay & Nakamura, 2004; Özçalışkan & Slobin, 1999; Özyürek & Özcaliskan, 2000).

In the current study, the experimenter introduced the book to the mothers before the storytelling session. The mothers were told that the book was depicting a story of a boy, a dog, and a frog with the subsequent pictures of the characters. The mothers were asked to look at all of the pages

in the following order to create a story in their own words. The experimenter emphasized that the narrative should describe the emotions, thoughts, and actions of the story characters. The experimenter welcomed parents' questions but emphasized that there was no correct way of constructing the story, and they should make meaning of the pictures as they see fit. The storytelling session was video recorded, but emphasized that there was no correct way of constructing the story, and they should make meaning of the pictures as they see fit. The storytelling session was the video-recorded session that ended when the mother stated that she finished the book.

2.2.4 ToM Inventories

2.2.4.1 Unexpected Location Task

Unexpected location task was inspired by second-order FBU task developed by Perner and Wimmer (1985). In this task, the child's first-order FBU was measured with a short story about the two story characters. The story was presented with pictures. In the first version of the task, the child was told that Özge's mother gave Özge a chocolate and then went outside. Her mother changed the location of the chocolate from the drawer to the refrigerator in the absence of Özge. Later, she left the room. After the child was told the story, the two control questions were asked:

1- *'Where did Özge put her chocolate before she went to outside?'*

2- *'Where is the chocolate now?'*

Later, the test question was asked:

'Where will Özge firstly look for her chocolate when she came back into the kitchen to eat her chocolate?'

2.2.4.2 Appearance and Reality Task

Appearance and reality task was adapted from appearance and reality distinction task developed by Flavell et al, (1983). The child was presented with two items – a box that looked like a book and a silicone pencil pouch that looks like a banana. In the first part of the task, the box that looked like a book was shown to the children by asking what the item is. After the child gave the correct answer, the experimenter showed that it was not actually a book. Later, the child was asked three task questions:

- 1- *‘Does it looks like a book or a box?’ (Symbolic identityof the item).*
- 2- *‘What is this actually, a book or a box?’ (Real identity of the item).*
- 3- *‘What did you think it was before I showed you this and before touched it?’*

In the second part of the task, the same task procedure was applied to the child with the pencil box that looks like a banana.

2.2.4.3 First Order and Second Order ToM Task

The task was adapted from the first and second-order ToM task that was developed by (Astington et al., 2002). A short story about the two story characters was presented to the child with the pictures. The child was told that Burak wanted to look at the picture that Özge drew for her brother, but Özge did not want Burak to look at the picture. Özge put the picture under the quilt and left the room. Later, Burak looked at the picture and then put it in the drawer. Özge came back early, and saw Burak as he was hiding the picture in the drawer but, Burak did not see that Özge was watching him. Three control questions were asked to the child:

- 1- *‘Where did Özge put the picture before she left the room?’*

2- *'Where did Burak put the picture after looking at it?'*

3- *'Did Özge know the correct location of the picture?'*

First-order FBU question was asked: *'Did Burak know Özge saw him?'*

Later, the story continued: Özge told Burak *'I will show you the picture'* and went to take the picture.

Second-order FBU question was asked: *'Where does Burak think Özge will look for the picture?'*

Final question was asked *'Why does Burak think this way?'*

2.2.5 TİFALDİ (Turkish Expressive and Receptive Language Test)

TİFALDİ was designed by Berument and Güven (2013) to measure general language ability including expressive and receptive language among 2-to-12-year-olds.

2.2.5.1 Expressive Language Sub-scale

Expressive language sub-scale included 80 pictures that were divided according to the different categories (e.g., animals, clothes, food, household items, occupations, body parts, math terms, toys, vehicles, emotions, actions). The child was presented with one picture on each page and asked to tell the name of the item. Similar to the receptive language task, the test started with a group of items that were appropriate to the child's age. The difficulty of the consecutive age-appropriate task items was determined according to the child's successful performance. Base performance was determined when the child gave 8 correct answers consecutively. When the child gave 6 incorrect answers out of 8 consecutive items within the same age category, the task was terminated. The raw score was determined according to the child's successful answers. The standard score was calculated according to Turkish Expressive Language Test Booklet.

2.2.5.2 Receptive Language Sub-scale

Receptive language sub-scale included 516 pictures were divided in terms of the categories of the items shown in the pictures (e.g., animals, clothes, food, household items, occupations, body parts, math terms, toys, vehicles, emotions, actions). In the task, children were presented with four pictures of the same category and asked to find the target object among the three alternatives. The task items were age-appropriate and the starting item of the task was determined according to the child's age. The more difficult test items were presented according to the child's successful performance with age-appropriate items. If the child could not answer age-appropriate questions correctly, items for younger age groups were administered. Base performance was determined when the child answered 8 consecutive items correctly. The ceiling was reached and the task terminated, when a child gave 8 incorrect answers out of 10 consecutive items, within items that belonged to the same age category. The child successful answers determined the raw score. Later, raw score was transformed to a standard score based on Turkish Receptive Language Test Booklet.

2.2.6 Single-And Double-Embedded Clauses on The Comprehension of Complement Clauses Task

The current study used the comprehension task to measure the children's comprehension of single and double complement clauses. Ögel-Balaban (2015) develop this task by adapting from the task developed by Crain and Nakayama (1987). The task was revised by Thornton (1996). On the task, the complement clauses were introduced in the nonfinite forms with nominalizing suffixes –mA, -mAK, -DIK, and -(y)AcAK. In the experiment, children were introduced with a mouse puppet who is too shy to talk with the experimenter. Children were asked to direct the experimenter's questions to the puppet. The experimenter asks the child to direct the following

question to the puppet '*Fareye dün okula gidip gitmediğini sor*' ('Ask the mouse whether he went to the school yesterday.'). Children were expected to ask the puppet '*Dün okula gittin mi?*', 'Did you go to the school yesterday?' Children have to make the transition from the indirect forms of the complement clauses formed by the experimenter into direct forms. To be able to make this transition, children have to understand the syntactic and semantic properties of these complement clauses.

In the task, there were 7 questions that are formed with single nominalization suffixes. Three questions are syntactically more complex because they are double embedding structures (e.g., '*Kutuda ne olduğunu sandığını sorar mısın?*' ('Can you ask the mouse what he thinks there is in the box?')). In the task, the child can get maximum 13 points. For the seven single embedding structures, the scoring of each question depended whether or not the child gave the correct answer to the question. If the child gave incorrect answer or repeated what the experimenter said, the child took 0 point. The child correct answer was counted 1 point. For three double embedding structures, the child answer was scored over 2 points. If the child showed that s/he understood the question, but did not produce double embedding structures, s/he got 1 point. The example was illustrated, '*Fareye ne yaptığını sana anlatmasını söyle*', ('Tell the mouse to tell you what he has done.'). If the child's answer was formed with the embedding structure '*Ne yaptığını anlat*', ('Tell me what you have done'), the child got 2 points. If the answer was not an embedded structure '*Ne yaptın?*' ('What did you do?'), the child got only 1 point because the answer showed some understanding of the experiment question.

2.3 Procedure

The data were collected at Bilkent University Developmental Psychology Research Center (Bil-Ge: Bilkent Gelişim Psikolojisi Araştırmaları Merkezi). The data collected from mothers and

children started when the experimenter started warmup sessions with the children into the playroom. The experimenter played with the child during the warmup session. Later, ToM inventories and comprehension of complement clause tasks were presented to the child. During the experiment session in the playroom, another experimenter stayed with the mother in the waiting room. First, the experimenter asked the questions in the demographic and book reading habit forms. Later, the experimenter asked the mother to look at the wordless storybook. When the mother finished looking at the storybook and the other experimenter finished the experimenter session with the child, the mother was invited to the playroom and the experimenter left the playroom. The mother and the child had a warm-up play session for 10 minutes. After 10 minutes of a play session, the storytelling session started. The storytelling session started when the experimenter entered the room and give the wordless book to the mother.

2.4 Transcription and Language Coding

All storytelling sessions were video recorded. These sessions were later transcribed verbatim for coding. The transcripts of the story-related talk were coded within four different categories – Communication Units (C-units), mean length of utterances (MLU), mental state language, and complement clauses.

2.4.1. Communication Units (C-Units): They were selected based on the relevance of the talk to the content of the book. Firstly, the talk that is related to the book reading situation (e.g., where to sit, how to hold the book) was not included in C-units analysis. Similarly, mothers' talk that is related to the events outside of the story content (e.g., the real-life events, the talk about the past memories, the events that mothers were inspired by the story content) was not included in the analysis. Some part of the talk that is not directly related to the content of the book was included in the analysis because of their relevance to book reading context. For example, the talk that

initiates the child to listen to the story (e.g., let's start to read, let's look at the pictures) at the beginning was included in the analysis. Similarly, the mothers' initiative talks to continue to the storytelling (e.g., let's turn the pages) during the book reading was included.

Communication units (C-units) were analyzed based on the study of Ögel Balaban (2015). In the literature, C-unit is described as a meaningful communication unit. They can be a completed sentence, an independent sentence with one or more subordinate clause, or a linguistic expression.

2.4.1.1 The subordinate sentence has to be the part of the main sentence to be included within one separate C-unit as a whole.

(a) Çocuk düşmemek için ağacın dalına sıkı sıkı tutunmuş.

‘The child held onto the tree branch real tight in order not to fall.’

(b) Kurbağa suyun içine zıpladı, gördün mü?

‘Did you see (that), the frog jumped into the water?’

2.4.1.2 There are important details for separating two sentences as two separate C-units. For example, two sentences are considered two separate C-units when they are linked via suffixes (e.g., but, and, because, then, etc.)

(a) Kurbağa tuzaktan kurtuldu [C-Unit 1] ve çocuk sinirlendi [C-Unit 2].

‘The frog escaped from the trap’ [C-Unit 1] ‘and the child became angry’ [C-Unit2].

2.4.1.3 The direct speech that is expressed by quotative marker is separated according to the number of the meaningful communication units.

(a) Kurbağacık neredesin? [C-Unit 1]. Seni bulamıyoruz [C-Unit 2]. Lütfen, sesver bize diye söylemişler. [C-Unit 3].

‘Frog, where are you?’ [C-Unit 1]. ‘We cannot find you’ [C-Unit 2]. ‘Please, make a sound they said’ [C-Unit 3].

2.4.1.4 Interrupted speech is not counted as C-Units since they are not meaningful communication structures.

2.4.1.5 Incomplete sentences can be counted as C-Unit when the incomplete sentence is produced to give response to the previous sentence.

Mother: Kurbağa nerede?

‘Where is the frog?’

Child: Ağaçların arkasında.

‘Behind the trees.’

2.4.1.6 Adverbs used to constitute sentence words such as ‘*Tamam*’, ‘*Okay*’, ‘*Evet*’, ‘*Yes*’, ‘*Hayır*’, ‘*No*’, and ‘*Belki*’, ‘*Maybe*’ were frequently produced linguistic expressions during the storytelling.

They are counted as separate C-units when they are produced to give response to the previous talk.

Child: Burada 8 tane kurbağa varmış.

‘There are 8 frogs there.’

Mother: Evet. ‘Yes.’

Mother: Bakalım kurbağayı bulabilecekler mi?

‘Let’s see whether or not they can find the frog.’

2.4.2 Mean Length of Utterances: Morpheme is the smallest meaningful unit in a language. The number of morphemes in a given speech is analyzed to measure the syntactic complexity of the speech. In the book reading session, the initial talk includes the specific expressions that show similarities between each other. The initial talks include; the name of the book mothers introduces to the children, or the initiative talks to begin the storytelling; (e.g., '*hadi bakalım*', 'let's start', '*hadi hikayeye başlayalım*', 'let's start the story'). The speech that was taken from the middle of the storytelling better represented the complexity of the talk. In this way, the individual differences in terms of language complexity were analyzed more accurately. For this reason, MLU was measured based on the number of morphemes in 100 utterances of the speech in the middle of the storytelling. The calculation of the length of the storytelling was analyzed according to the number of C-Units.

MLU was coded according to the study of Yüksel (2002) in the Turkish literature. In Turkish, MLU can be in two forms – dependent and independent morphemes. Independent morphemes (nouns) do not need another morpheme to express their content whereas dependent morphemes (verbs) need another morpheme to be expressed. For instance, the verb root '*gel*', 'come' takes infinitive suffix '*mek*', create verb structure. The same pattern is applied to all verb roots in Turkish. Dependent morpheme structures can be in three forms.

2.4.2.1 The verb roots that need to take infinitive suffixes (*-mak*, *-mek*) to be expressed.

(a) Git. *mek* (MLU: 2)

'To go.'

2.4.2.2 The morphemes that give the word a new meaning when they are attached to the word root. They are called derivational suffixes in Turkish (*e.g. -kı, -cü, -lı, -lık, -la*).

2.4.2.3 The morphemes determine the function of the words when they are attached to verb roots and nouns.

The verb roots can take dependent morpheme forms including verb person suffixes (*-um, -sun, -uz, -sun. uz*), tense suffixes (*-dı, -mış, -acak- ıyor*).

(a) Ben gid. ıyor. um. (MLU: 4)

‘I am going.’

(b) Sen okul. a git. miş. sin. (MLU: 6)

‘You went to the school.’

The nouns can take dependent morphemes including case suffixes (*-a/-e, -da/-de; -ta/-te, -dan/-den; -tan/-ten, -ı/-i/-u/-ü*), possessive suffixes (*-ı*), relative pronoun (*-ki*), plurals (*-lar*), determinative suffixes (*-ca*).

(a) O okul. a git. ti. (MLU: 5)

‘S/he went to her/his school.’

2.4.2.4 The verbs take auxiliary verbs, moods, gerundials, passive suffixes, nonfinite adverbial and adjective clauses in the suffix forms.

(a) Soru sor. ul. du. (MLU: 4)

‘The question was asked.’

2.4.2.5 The verbs take nominalizing suffixes (*-ma, -mak, -dik, -acak, -ış*) that determine the function of the verb.

- (a) O git. me. ye çalış. tı. (MLU: 6)
'S/he tried to go.'

2.4.3 Mental State Language: The current study used mental state coding schema that was developed by Ilgaz et al (under review) study. The coding schema used the sources of the more comprehensive mental state coding schemas in the literature (Bretherton & Beeghly, 1982; Ruffman et al., 2002; Ruffman, Slade, Devitt, & Crowe, 2006; Taumoepeau & Ruffman, 2006). The mental state coding schema includes the mental states verbs that the mothers produced to refer to the mental states. The mental states involved the verbs that describe the cognitive states (*e.g., know*), and mental activity (*e.g., think*). The internal states that are related to the cognitive processes are included in this category. These verbs refer to the physiological state, desire, motivation, and emotion. The specific suffixes that attached to the verbs express mental states similar to the mental state verbs in Turkish. The suffixes are also included to the coding schema. The current study only included the mental state verbs that are used as main verbs or complement verbs.

2.4.3.1 Perception Verbs

Perception verbs describe the cognitive processes of receiving information from the sensory organs (*e.g., 'bak-', 'look', 'duy-', 'hear', 'gör-', 'see', 'hisset-', 'touch', 'kokla-', 'smell'*).

- (a) Kurbağa-nın gel-diğ-i-ni **gör-üyor** musun?

The frog-GEN come-GER-3SG.POSS-ACC **see-PROG** QUE-2SG?

'Do you **see** what is happening there?'

(b) Çocuk kurbağa-sı-nı **dinle-me-ye** başla-dı.

The child the frog-3SG.POSS-ACC **listen-INF-DAT** start-PAST-3SG.

‘The child started to **listen** to his/her frog.’

2.4.3.2 Physiological Verbs

Physiological verbs are included as mental state verbs because the reference to the physiological states requires the cognitive process (e.g., ‘*acık-*’, ‘be hungry’, ‘*canı acı-*’, ‘feel pain’, ‘*dinlen-*’, ‘to rest’, ‘*uykusu gel-*’, ‘be sleepy’, ‘*yorgun ol-*’, ‘be tired’).

(a) Köpeğ-in **uyu-duğ-u-nu** gör-dü-n mü?

The dog-GEN **sleep-GER-3SG.POSS-ACC** see-PAST-2SG QUE?

‘Do you see that he is **sleeping** with his dog?’

(b) Köpek **acık-tığ-ı-nı** söyle-di.

The dog **gets hungry-GER-3SG.POSS-ACC** say-PAST-3SG.

‘The dog said that it is hungry.’

2.4.3.3 Desire Verbs

2.4.3.3.1 These verbs include the verbs that expresses desire, wish, and request (e.g., ‘*dile-*’, ‘wish’, ‘*izin al-*’, ‘request’, ‘*um-*’, ‘expect’, ‘*yalvar-*’, ‘beg’, ‘*umut et-*’, ‘hope’).

(a) Ben sen-i kaybet-mek **iste-m-iyor-um**.

1SG 2SG-ACC lose-INF **want-NEG-PROG-1SG**.

‘I don’t **want** to lose you.’

(b) Onlar de-miş-ler ki Ali arkadaş-ı-na git-mek **ist-iyor**.

3PL say-PRF-3PL SUB Ali friend-3SG.POSS-DAT go-INF **want-PROG-3SG**.

‘They said that s/he **wants** to stay with his/her friend.’

2.4.3.3.2 The specific moods that are attached to the verbs as suffix forms can also express desire, wish and request. The optative moods are attached to the verbs as suffix forms (*i.e.*, *-e*, *-a*) to express desire and intention. The subjunctive moods are attached to the verbs as suffix forms (*i.e.*, *-se*, *-sa*) to express desire, wish, and intention.

(a) Hikâyemiz-e **bak-ma-sı-nı** söyle-di.

The story-1PL.POSS-DAT **look-INF-3SG.POSS-ACC** say-PAST-3SG.

‘Let’s start to **look** at our story.’

(b) Beraber yürü-me-**ye** gid-elim.

Together walk-INF-**OPT** go-PAST-1PL.

‘Let’s take for a walk together.’

2.4.3.4 Motivation Verbs

The motivation verbs describe the action & internal states that are performed to achieve the specific goals (e.g., ‘*çalış-*’, ‘make an effort’, ‘*kalk-*’, ‘attemp’, ‘*kalkış-*’, ‘attemp’, ‘*uğraş-*’, ‘strive’, ‘*yardım et-*’, ‘help’).

(a) Çocuk ve köpek kaç-ma-ya **yelten-miş-ler**.

The child and the dog escape-INF-DAT **attempt-PRF-1PL**.

‘The child and the dog **attempted** to escape.’

(b) Çocuk köpeğ-e **yardım et-me-ye** gel-di.

The child the dog-DAT **help-INF-DAT** come-PAST-3SG.

‘The child came to **help** to the dog.’

2.4.3.5 Emotion Verbs

The emotion verbs describe emotional states including simple emotion states (e.g., ‘gül-’, ‘smile’, ‘kız-’, ‘get angry’, ‘kork-’, ‘be scared’, ‘sev-’, ‘love’, ‘üzgün ol-’, ‘be sad’).

More complicated emotion states that rely on cognitive processing (e.g., ‘affet-’, ‘forgive’, ‘barış’, ‘peace’, ‘dayan-’, ‘handle’, ‘gönül al-’, ‘please’, ‘güven-’, ‘trust’).

(a) Çocuk, kurbağa-sı kaybol-du diye **üzül-müş**.

The child the frog-3SG.POSS disappear-PAST-3SG SUB **get sad-PRF-3SG**.

‘The child was **sad** because his frog disappeared.’

(b) Çocuk, kurbağa-ya **sinirlen-miş**.

The child the frog-DAT **get angry-PRF-3SG**.

‘The child **got angry** at the frog.’

2.4.3.6 Cognitive verbs

Cognitive verbs describe cognitive processes (e.g., ‘düşün-’, ‘think’, ‘hatırla-’, ‘remember’, ‘öğren-’, ‘learn’, ‘tahmin et-’, ‘guess’, ‘bil-’, ‘know’).

The auxiliary verbs that are attached to the verbs give the degree of the cognitive certainty toward an event, situation, or a proposition.

(a) **Zannet-miş-ler** ki kavanoz-da dur-acak bu kurbağa.

Falsely assume-PRF-3PL SUB the jar-LOC stay-GER-3SG the frog.

‘They falsely **assumed** that the frog stayed in the jar.’

(b) Çocuk kurbağa-yı **düşün-düğ-ü-nü** söyle-di.

The child the frog-ACC **think-GER-3SG.POSS-ACC** say-PAST-3SG.

‘The child said that he thought about the frog.’

2.4.3.6.1 Auxiliary verbs that express the degree of the certainty have suffix forms (*i.e.*, *-malı*, *-meli*) and (*i.e.*, *-(a)bilir*, *-(e)bilir*).

(a) Kurbağa aile-si-ni özle-miş ol-**malı** diye düşün-üyor-um.

The frog family-3SG.POSS-ACC miss-PRF-3SG **be-AUX** SUB think-PROG-1SG.

‘I thought that the frog **must have** missed his frog.’

(b) Kurbağa buraya gel-miş ol-**(a)bilir** diye düşün-dü.

The frog here come-PRF-3SG **be-AUX** SUB think-PAST-3SG.

‘S/he thought that the frog **might** come here.’

2.4.4 Turkish Complement Clauses

Three complement clause structures including nonfinite, finite, and bare finite complement clauses were classified separately.

In the current study, nonfinite, finite, and bare finite complement clauses were classified in 3 MSC categories (*i.e.*, total number of MS & NMS, MS & MS, and NMS & MS combination) and 1 non-MSC category (*i.e.*, NMS & NMS combination). According to 3 MSC categories and 1 non-MSC category, the current study considered 2 main categories. Mental state category includes the total

number of 3 MSC categories. Non-mental state category includes 1 non-MSC category.

2.4.4.1 Nonfinite Complement Clauses: This category has nonfinite complement clause structures. Nonfinite complement clauses were coded within 5 nominalizing suffix categories (i.e., -mA, -mAK, -DIK, -AcAK, and Iş). The current study considered the total frequency of nonfinite complement clauses that were formed with 5 nominalizing suffixes.

Nonfinite complement clauses were classified in 4 main categories based on 5 different nominalizing suffixes, 3 MSC categories and 1 non-MSC category.

Nonfinite complement clauses with -Iş nominalizing suffix were observed two times out of 125 transcripts.

2.4.4.1.1 MS & NMS Combination Category: Complement verbs are mental state verbs and main verbs are nonmental state verbs.

mAK: Biz-i [gör-**me**-ye] gel-di.

1PL-ACC see-**INF**-DAT come-PAST-3SG.

‘S/he came to see us.’

mA: Benim şu ağac-a [bak-**ma**-m] gerek-iyor.

1SG-GEN that tree-DAT look-**INF**-1SG need-PROG-1SG.

‘I need to look under that tree.’

DIK: Çocuk kurbağa-sı-nı çok [sev-**diğ**-i-ni] göster-iyor.

The child the frog-3SG.POSS-ACC so much love-**GER**-3SG.POSS-ACC show-PROG-3SG.

‘S/he is showing that she loves her/his frog so much.’

AcAK: Kurbağa-nın dışarı [çık-acağ-ı-nı] söyle-di.

The frog-GEN out go-**GER**-3SG.POSS-ACC say-PAST-3SG.

‘S/he said that the frog might go out.’

Iş: In the current study, MS & NMS combination in nonfinite complement clauses with - İş nominalizing suffix was not observed.

2.4.4.1.2 MS & MS Combination Category: Both complement verbs and main verbs are mental state verbs.

mAK: Kitab-ın kapağ-ı-nı [incele-mek] ist-iyor-um.

The book-GEN the cover-POSS-ACC look-**INF** want-PROG-1SG.

‘I want to look at the book cover.’

mA: Kurbağa-nın [üzül-me-sin-den] kork-uyor-du.

The frog-GEN get sad-**INF**-3SG.POSS-ABL be afraid-PROG-PAST-3SG.

‘S/he is afraid of her/his frog getting sad.’

DIK: Kurbağa-nın orada [mutlu ol-duğ-u-nu] düşün-üyor.

The frog-GEN there happy-**GER**-3SG.POSS-ACC think-PROG-3SG.

‘S/he thinks that the frog might be there’

AcAK: Kurbağa-nın kavanoz-un içinde [ol-abil-eceğ-i-ni] düşün-müş.

The frog-GEN the jar-GEN into be-PSB-**GER**-3SG.POSS-ACC think-PRF-3SG.

‘S/he thought that s/he could keep the frog into the jar.’

Iş: In the current study, MS & MS combination in nonfinite complement clauses with - İş nominalizing suffix was not observed.

2.4.4.1.3 NMS & MS Combination Category: Complement verbs are nonmental state verbs and main verbs are mental state verbs.

mAK: Meraklı kurbağa Dünya-yı [dolaş-**mak**] ist-iyor.

Curious frog the world-ACC travel-**INF** want-PROG-3SG.

‘The curious frog wanted to travel the world.’

mA: Ali, kurbağa-lar-ın [git-**me**-ler-i-ni] merak et-miş.

Ali the frog-PL-GEN go-**INF**-PL-3SG.POSS-ACC wonder-PRF-3SG.

‘Ali wondered that the frogs had gone.’

DIK: Çocuk kurbağa-nın iyi [ol-**duğ**-u-na] çok sevin-iyor.

The child the frog-GEN fine be-**GER**-3SG.POSS-DAT so get happy-PROG-3SG.

‘The child was so happy that the frogs were fine.’

AcAK: Onun köpeğ-i [kurtar-**acağ**-ı-nı] san-ıyor-um.

3SG-GEN the dog-ACC save-**GER**-3SG.POSS-ACC suppose-PROG-1SG.

‘I suppose that s/he can save the dog.’

Iş: Çocuk, kurbağa-nın [gel-**iş**-i-ne] çok şaşır-mış.

The child the frog-GEN come-**GER**-3SG.POSS-DAT so surprise-PRF-3SG.

‘S/he was so surprised with the frog’s coming.’

2.4.4.1.4 NMS & NMS Combination Category: Both complement verbs and main verbs are nonmental state verbs.

mAK: Kurbağa-yı [ara-**ma**-ya] devam et-miş-ler.

The frog-ACC search-**INF**-DAT keep-PRF-3PL.

‘They keep searching for their frog.’

mA: Onun [gez-**me**-si-ni] kısıtla-ma-dı-m.

3SG-GEN travel-**INF**-3SG.POSS-ACC stop-NEG-PAST-1SG.

‘I won’t stop her/him from traveling.’

DIK: Eşya-lar-ım-ı nereye [koy-**duğ**-u-mu] bul-a-m-ıyor-um.

Ware-PL-1SG.POSS-ACC where put-**GER**-1SG.POSS-ACC find-able-NEG-
PROG-1SG.

‘I cannot find where I put my wares.’

AcAK: Çocuk ne zaman gez-me-ye [gid-**eceğ**-i-ni] sor-du.

The child when travel-**INF**-DAT go-**GER**-3SG.POSS-ACC ask-PAST-3SG.

‘The child asked when they will go to travel.’

Iş: Çocuk bu sert [düş-**üş**-e] dayan-a-m-ıyor.

The child the hard fall-**GER**-DAT handle-able-NEG-PROG-3SG.

‘When s/he fell into the place, s/he cannot stand to the hard fall.’

2.4.4.2 Finite Complement Clauses with diye & ki complementizers: This category has finite complement clauses that were formed with diye complementizer and ki complementizer. The total frequency of finite complement clauses that were formed with 2 complementizers were considered.

Finite complement clauses were classified in 4 main categories based on 2 complementizers, 3 MSC categories and 1 non MSC category.

2.4.4.2.1 MS & NMS Combination Category: Complement verbs are mental verbs and main verbs are nonmental state verbs.

In the current study, MS & NMS combination category in finite complement clause was not observed.

2.4.4.2.2 MS & MS Combination Category: Both complement verbs and main verbs are mental state verbs.

Diye: [Nereye git-tiğ-i-ne dikkat ed-iyor] **diye** düşün-üyor-um.

Where go-GER-3SG.POSS-DAT pay attention-PROG-3SG **SUB** think-PROG-1SG.

‘I think that s/he pay attention to where s/he is going.’

Ki: Hala gör-üyor-sun **ki** [bizim köpeğ-imiz arı kovanı-nı kovala-ma-ya çalış-ıyor].

Still see-PROG-2SG **SUB** 3PL-GEN dog-3PL.POSS beehive-ACC catch-INF-DAT try-PROG-3SG.

‘You see that our dog is still trying to catch the beehive.’

2.4.4.2.3 NMS & MS Combination Category: Complement verbs are nonmental state verbs and main verbs are mental verbs.

Diye: [Kurbağa ev-i-ne git-ti] **diye** düşün-üyor.

The frog home-3SG.POSS-DAT go-PAST-3SG **SUB** think-PROG-3SG.

‘S/he thinks that the frog went to home.’

Ki: Alp düşün-müş **ki** [onun kurbağa-sı kaybol-du].

Alp think-PRF-3SG **SUB** 3SG-GEN the frog-3SG.POSS lost-PAST-3SG.

‘Alp thought that his frog was lost.’

2.4.4.2.4 NMS & NMS Combination Category: Both complement verbs and main verbs are nonmental state verbs.

Diye: Sana [ben onu bir şey-e benzet-ti-m] **diye** de-miş-ti-m.

2SG-DAT 1SG 3SG-ACC something-DAT liken-PAST-1SG **SUB** say-PRF-PAST-1SG.

‘I told you that I likened it to something.’

Ki: D(e)-iyor-um **ki** [gör-düğ-ümüz kurbağa bu kurbağa-yı ar-ıyor-du].

Say-PROG-1SG **SUB** see-PAST-3PL.POSS frog the frog search-PROG-PAST-3SG.

‘I told you that the frog we saw is also looking for this frog.’

2.4.4.3 Bare Finite Complement Clauses: Bare finite complement clauses were classified in 4 main categories based on 3 MSC categories and 1 non-MSC category.

2.4.4.3.1 MS & NMS Combination Category: Complement verbs are mental state verbs and main verbs are nonmental state verbs.

[Orada ne gör-üyor-sun] anlat.

There what see-PROG-2SG tell-2SG

‘Tell me now what are you seeing there.’

2.4.4.3.2 MS & MS Combination Category: Both complement verbs and main verbs are mental state verbs.

Tahmin et [ne ol-abilir].

Guess-2SG what be-PSB-3SG.

‘Guess what might be happen there.’

[Burada kurbağa ol-abilir], bil-iyor musun?

Here the frog be-PSB-3SG know-PROG QUE-2SG.

‘Do you know, the frog might be here?’

2.4.4.3.3 NMS & MS Combination Category: Complement verbs are nonmental state verbs and main verbs are mental state verbs.

Zanned-iyor-um [kurbağa kaç-tı].

Suppose-PROG-1SG the frog escape-PAST-3SG.

‘I suppose that the frog escaped.’

[Bu kitab-ın ad-ı ne], bil-iyor musun?

The book-GEN the name-ACC what know-PROG QUE-2SG.

‘Do you know what is the name of the book?’

[Kitab-ın ad-ı ne] sen bil-iyor-sun.

The book-GEN the name-ACC what 2SG know-PROG-2SG.

‘You know what the name of the book is.’

2.4.4.3.4 NMS & NMS Combination Category: Both complement verbs and main verbs are nonmental state verbs.

[Nasıl yap-mış] bir daha göster.

How make-PRF-3SG again show-2SG.

‘Show me how did s/he do that.’

[Burada ne ol-muş] anlat bana.

Here what happen-PRF tell-2SG 1SG-DAT.

‘Tell me what happened here.’

2.5 Reliability

The frequency and types (i.e., nominalizing suffixes and suffix categories) of nonfinite, finite and bare finite complement clauses were coded with two groups. Each group included the researcher and a trained undergraduate student. Each category of complement clauses was coded in different phases. Finite complement clauses were coded based on the finite subordinators whereas bare finite complement clauses were examined and coded at sentence level. At the beginning of the coding, five randomly selected transcriptions were distributed to each group. Each group coded and reached an agreement. Later, the disagreements and questions were discussed and resolved at discussion sessions. Inter-rater reliability was calculated based on the ten randomly selected transcriptions distributed to each group at the beginning of the coding for each complement clause structures. After inter-rater reliability was calculated, three groups continued for coding separately. Later, discussion sessions were held to resolve the disagreements. For nonfinite complement clauses, Cronbach alpha for total number of nominalizing suffixes was .96 in the first group and .92 in the second group. For nonfinite suffix categories, Cronbach alpha was .94 in the first group and .97 in the second group. For finite complement clauses, Cronbach alpha was .61 in the first group and .83 in the second group. For bare finite complement clauses, Cronbachalpha was .90 in the first group and .64 in the second group. For both high and low numbers, discussion sessions were held to solve the disagreements.

CHAPTER III

RESULTS

The current study aimed to investigate the frequency of mothers' use of nonfinite, finite, and bare finite complement clause structures in the relation to children's comprehension of complement clauses and their ToM. (i) Firstly, preliminary results will present group comparison analysis that seeks the effects of children's age and gender on the frequency of mothers' use of C-Units, the complexity of mothers' talk (MLU) and nonfinite, finite, and bare finite complement clause structures. (ii) Preliminary results will present the frequency of nonfinite, finite, and bare finite complement clause structures according to their inclusion of mental state verbs (i.e., total number of MS & NMS, MS & MS and NMS & MS combination) and nonmental state verbs (i.e., NMS & NMS combination) by age and gender groups. (iii) Preliminary results will present the frequency of MSCs (i.e., MS & NMS, MS & MS, and NMS & MS combination) in three complement clause structures by age and gender groups. (iv) Similarly, age and gender group comparison analysis will be presented on children's comprehension of complement clauses task performance, their expressive and receptive language scores, and ToM scores.

Secondly, the results of correlational analyses will be presented. These analyses will investigate the possible correlations within mothers' language features. Mothers' language features include (i) control variables (i.e., C-Units and MLU), (ii) nonfinite, finite, and bare finite complement clause structures, (iii) nonfinite, finite, and bare finite complement clause structures that include

mental state verbs (i.e., total number of MS & NMS, MS & MS, and NMS & MS combination) and nonmental state verbs (i.e., NMS & NMS combination) and (iv) three MSCs in nonfinite, finite, and bare finite complement clause structures. The correlation analyses will investigate the possible correlations within children's language abilities. Children's language abilities include (i) general language ability (i.e., expressive and receptive language) and (ii) comprehension of nonfinite complement clauses. The correlation analyses will investigate the possible correlations between mothers' language features and children's language scores, the correlations between mothers' language features and children's ToM and the correlations between children's language scores and their ToM.

Finally, hierarchical regression analyses will be applied to investigate (i) whether the frequency of mothers' use of nonfinite, finite and bare finite complement clauses predicts children's language abilities, and (ii) whether the frequency of mothers' use of nonfinite finite, and bare finite complement clauses predicts children's ToM, and (iii) whether children's comprehension of complement clauses predicts children's ToM.

3.1. Preliminary Analysis: Group comparisons by age and gender

3.1.1 Does the frequency of mothers' use of C-Units and the syntactic complexity of mothers' talk (MLU) vary by age and gender groups?

Univariate ANOVA analysis was carried out with age and gender as the independent variables and the number of C-units as the dependent variable to examine the effect of child age and gender groups on the number of C-units. Table 1 shows the descriptive values for mothers' C-Units and MLU by age and gender groups.

Univariate ANOVA analysis showed that there was no significant main effect of child age group on the number of C-units mothers produced, $F(2,119) = .18, p > .05$. However, there was a significant main effect of child gender on the number of C-units mothers produced, $F(1,119) = 4.77, p < .05$. Descriptive statistics revealed that mothers' produce more C-Units when they talked to their boys, $p < .05$. There was no significant interaction effect of age and gender groupson the number of C-units mothers produced during storytelling, $F(2, 119) = .18, p > .05$.

Similarly, Univariate ANOVA analysis was conducted as age and gender as the independent variables and MLU as the dependent variable. Univariate ANOVA analysis showed that there was no main effect of age groups, $F(2, 119) = 1.5, p > .05$. There was also no main effect of gender, $F(1, 119) = 1.10, p > .05$. There was no significant interaction effect of age and gender groups on MLU, $F(2, 119) = .94, p > .05$.

Table 1. Means and standard deviations of mothers' use of C-Units and MLU by age and gender groups

	3-year-olds			4-year-olds			5-year-olds		
	Girls	Boys	Total	Girls	Boys	Total	Girls	Boys	Total
C-Units	147.96 (34.80)	179 (75.30)	163.13 (59.65)	156.32 (46.07)	171.90 (79.65)	163.74 (63.95)	144.18 (50.93)	168.56 (65.61)	154.45 (58.02)
MLU	1.85 (.12)	1.82 (.10)	1.84 (.11)	1.84 (.12)	1.86 (.13)	1.85 (.12)	1.9 (.13)	1.85 (.06)	1.88 (.11)

C-Units: The number of communication units; MLU: Mean Length of Utterances

3.1.2 Do mothers' production of three types of complement clause structures (i.e., nonfinite, finite, and bare finite complement clauses) vary in frequency by age and gender groups?

Separate Univariate ANOVA analyses were carried out with age and gender as the independent variables and the three types of complement clause structures as three dependent variables (i.e., nonfinite complement clauses, finite complement clauses, and bare finite complement clauses). Table 2 shows the descriptive values for mothers' use of complement clause structures by age and gender groups.

The analysis on mothers' use of nonfinite complement clauses revealed no significant main effect of age $F(2, 119) = .01, p > .05$. There was no significant main effect of gender $F(1, 119) = .80, p > .05$. The analysis also revealed no significant interaction effect of age and gender groups on mothers' use of nonfinite complement clauses, $F(2, 119) = .71, p > .05$.

The analysis on mothers' use of finite complement clauses revealed no main effect of age $F(2, 119) = .38, p > .05$. There was no significant main effect of gender $F(1, 119) = 1.76, p > .05$. There was also no significant interaction effects of age and gender $F(2, 119) = .94, p > .05$.

The analysis on mothers' use of bare finite complement clauses revealed significant effect of age on mothers' use of bare finite complement clauses, $F(2, 119) = 3.88, p < .05$. Mothers of 3-year-olds used more bare finite complements compared to mothers of 5-year-olds, $p < .05$.

There was also a significant effect of gender on bare finite complement clauses, $F(1, 119) = 4.37, p < .05$. Mothers of boys used more bare finite complement clauses compared to mothers of girls, $p < .05$. However, there was no significant interaction effect of age and gender, $F(2, 119) = .07, p > .05$.

Table 2. Means and standard deviations of mothers' use of three types of complement clause structures by age and gender groups

	3-year-olds			4-year-olds			5-year-olds		
	Girls	Boys	Total	Girls	Boys	Total	Girls	Boys	Total
Nonfinite	8.13 (5.0)	11.68 (10.10)	9.87 (8.56)	10 (6.02)	10.35 (9.69)	10.17 (7.88)	10.14 (6.24)	10 (6.96)	10.08 (6.46)
Finite (Diye & ki)	.13 (.46)	.32 (.10)	.22 (.52)	14 (.35)	.35 (.59)	.24 (.48)	.18 (.50)	.13 (.34)	.16 (.44)
Bare Finite	3.7 (2.62)	5.45 (4.44)	4.56 (3.69)	3.64 (4.30)	4.75 (4.27)	4.17 (4.27)	1.73 (1.91)	3.06 (4.09)	2.29 (3.04)

3.1.3 Do the frequency of nonfinite complement clauses that include mental state verbs (i.e., total number of MS & NMS, MS & MS, and NMS & MS combination) and the frequency of nonfinite complement clauses that only include nonmental state verbs (i.e., NMS & NMS combination) vary by age and gender groups?

Separate Univariate ANOVA analyses were carried out with age and gender as two independent variables and the frequency of nonfinite complement clauses that include mental state verbs and the frequency of nonfinite complement clauses that only include nonmental state verbs as two dependent variables. Table 3 shows the descriptive values for the frequency of nonfinite complement clauses that include mental state verbs and nonmental state verbs by age and gender groups.

The analysis on mothers' use of nonfinite complement clauses that include mental state verbs revealed no significant main effect of age, $F(2, 119) = .58, p > .05$. There was no significant main effect of gender, $F(1, 119) = .54, p > .10$. There was also no significant interaction effect of age and gender, $F(2, 119) = 1.58, p > .05$.

The analysis on mothers' use of nonfinite complement clauses that only include nonmental state verbs revealed no significant main effect of age, $F(2, 119) = .52, p > .05$. There was no significant main effect of gender, $F(1, 119) = .53, p > .05$. There was also no significant interaction effect of age and gender, $F(2, 119) = .14, p > .05$.

Table 3. Means and standard deviations of nonfinite complement clauses that include mental state verbs and nonmental state verbs by age and gender groups

	3-year-olds			4-year-olds			5-year-olds		
	Girls	Boys	Total	Girls	Boys	Total	Girls	Boys	Total
Mental State Total	3.26 (2.63)	5.77 (5.87)	4.49 (4.64)	5.32 (2.98)	4.80 (4.94)	5.07 (3.99)	5.68 (4.26)	5.44 (5.06)	5.58 (4.55)
Nonmental State	4.83 (3.69)	5.77 (5.7)	5.29 (4.75)	4.59 (3.4)	5.25 (4.45)	4.90 (3.9)	4.36 (3.22)	4.38 (3.56)	4.37 (3.32)

3.1.3.1 Do the frequency of MSCs (i.e., MS & NMS, MS & MS, and NMS & MS combination) in nonfinite complement clauses vary by age and gender groups?

Separate Univariate ANOVA analyses were carried out with age and gender as two independent variables and the frequency of MSCs in nonfinite complement clauses as three dependent

variables. Table 4 shows the descriptive values for the frequency of MSCs in nonfinite complement clauses by age and gender groups.

The analysis on mothers' use of MS & NMS combination in nonfinite complement clauses revealed no significant main effect of age, $F(2, 119) = .18, p > .05$. There was no significant main effect of gender, $F(1, 119) = .68, p > .05$. There was also no significant interaction effect of age and gender, $F(2, 119) = 2.0, p > .05$.

The analysis on mothers' use of MS & MS combination in nonfinite complement clauses revealed no significant main effect of age, $F(2, 119) = .72, p > .05$. There was no significant main effect of gender, $F(1, 119) = .02, p > .05$. There was also no significant interaction effect of age and gender, $F(2, 119) = 1.72, p > .05$.

The analysis on mothers' use of NMS & MS combination in nonfinite complement clauses revealed no significant main effect of age, $F(2, 119) = 1.18, p > .05$. There was no significant main effect of gender, $F(1, 119) = .92, p > .05$. There was also no significant interaction effect of age and gender, $F(2, 119) = 2.10, p > .05$.

Table 4. Means and standard deviations of MSCs in nonfinite complement clause structures by age and gender groups

	3-year-olds			4-year-olds			5-year-olds		
	Girls	Boys	Total	Girls	Boys	Total	Girls	Boys	Total
MS & NMS	.74 (.96)	.45 (1.1)	.60 (1.03)	.32 (.72)	.90 (1.48)	.60 (1.17)	.41 (.67)	.56 (.96)	.47 (.80)
MS & MS	.65 (1.2)	1.23 (1.67)	.93 (1.45)	.86 (.89)	.55 (1.1)	.71 (1.0)	1.23 (1.72)	.87 (.96)	1.08 (1.44)
NMS & MS	1.91 (2.11)	4.23 (4.33)	3.0 (3.54)	4.23 (2.51)	3.65 (4.15)	3.95 (3.36)	4.14 (2.77)	4.19 (4.56)	4.16 (3.58)

3.1.4 Do the frequency of finite complement clauses that include mental state verbs (i.e., total number of MS & NMS, MS & MS, and NMS & MS combination) and the frequency of finite complement clauses that only include nonmental state verbs (i.e., NMS & NMS combination) vary by age and gender groups?

Separate Univariate ANOVA analyses were carried out with age and gender as two independent variables and the frequency of finite complement clauses that include mental state verbs and the frequency of finite complement clauses that only include nonmental state verbs as two dependent variables. Table 5 shows the descriptive values for the frequency of finite complement clauses that include mental state verbs and nonmental state verbs by age and gender groups.

The analysis on mothers' use of finite complement clauses that include mental state verbs revealed no significant main effect of age, $F(2, 119) = .49, p > .05$. There was significant main

effect of gender, $F(1, 119) = 4.38, p < .05$. Descriptive results showed that mothers of boys produced more finite complement clauses that include mental state verbs compared to mothers of girls, $p < .05$. There was no significant interaction effect of age and gender, $F(2, 119) = 1.20, p > .05$.

The analysis on mothers' use of finite complement clauses that include nonmental state verbs revealed no significant main effect of age, $F(2, 119) = .00, p > .05$. There was no significant main effect of gender, $F(1, 119) = 2.57, p > .05$. There was also no significant interaction effect of age and gender on the total nonmental state verbs, $F(2, 119) = .00, p > .05$.

Table 5. Means and standard deviations of finite complement clauses that include mental state verbs and nonmental state verbs by age and gender groups

	3-year-olds			4-year-olds			5-year-olds		
	Girls	Boys	Total	Girls	Boys	Total	Girls	Boys	Total
Mental State Total	.09 (.29)	.32 (.57)	.20 (.46)	.09 (.29)	.35 (.59)	.21 (.47)	.14 (.35)	.13 (.34)	.13 (.34)
Nonmental State	.04 (.21)	.00 (.00)	.02 (.15)	.05 (.21)	.00 (.00)	.02 (.15)	.05 (.21)	.00 (.00)	.03 (.16)

3.1.4.1 Do the frequency of MSCs (i.e., MS & NMS, MS & MS, and NMS & MS combination) in finite complement clauses vary by age and gender groups?

Separate Univariate ANOVA analyses were carried out with age and gender as two independent variables and the frequency of MSCs in finite complement clauses as three dependent variables.

Table 6 shows the descriptive values for the frequency of MSCs in finite complement clauses by age and gender groups.

The analysis on mothers' use of MS & NMS combination in finite complement clauses revealed no significant main effect of age, $F(2, 119) = .45, p > .05$. There was no significant main effect of gender, $F(1, 119) = .00, p > .05$. There was also no interaction effect of age and gender, $F(2, 119) = 1.31, p > .05$.

The analysis on mothers' use of MS & MS combination in finite complement clauses revealed no significant main effect of age, $F(2, 119) = 1.79, p > .05$. There was no significant main effect of gender, $F(1, 119) = 1.1, p > .05$. There was also no significant interaction effect of age and gender, $F(2, 119) = .27, p > .05$.

The analysis on mothers' use of NMS & MS combination in finite complement clauses revealed no significant main effect of age, $F(2, 119) = .18, p > .05$. There was no significant main effect of gender, $F(1, 119) = 3.25, p > .05$. There was also no significant interaction effect of age and gender, $F(2, 119) = .48, p > .05$.

Table 6. Means and standard deviations of MSCs in finite complement clauses by age and gender groups

	3-year-olds			4-year-olds			5-year-olds		
	Girls	Boys	Total	Girls	Boys	Total	Girls	Boys	Total
MS & NMS	.00 (.00)	.05 (.21)	.02 (.15)	.00 (.00)	.00 (.00)	.00 (.00)	.05 (.21)	.00 (.00)	.03 (.16)
MS & MS	.00 (.00)	.05 (.21)	.02 (.15)	.05 (.21)	.10 (.31)	.07 (.26)	.00 (.00)	.00 (.00)	.00 (.00)
NMS & MS	.09 (.29)	.23 (.53)	.16 (.42)	.05 (.21)	.25 (.55)	.14 (.42)	.09 (.30)	.13 (.34)	.11 (.31)

3.1.5 Do the frequency of bare finite complement clauses that include mental state verbs (i.e., total number of MS & NMS, MS & MS, and NMS & MS combination) and the frequency of bare finite complement clauses that only include nonmental state verbs (i.e., NMS & NMS combination) vary by age and gender groups?

Separate Univariate ANOVA analyses were carried out with age and gender as two independent variables and the frequency of bare finite complement clauses that include mental state verbs and the frequency of bare finite complement clauses that only include nonmental state verbs as two dependent variables. Table 7 shows the descriptive values for the frequency of bare finite complement clauses that include mental state verbs and nonmental state verbs by age and gender groups.

The analysis on mothers' use of bare finite complement clauses that include mental state verbs revealed significant main effect of age, $F(2, 119) = 4.06, p < .05$. Descriptive results showed that mothers of 3-year-olds produced more bare finite complement clauses that include mental state verbs compared to mothers of 5-year-olds, $p < .05$. There was marginally significant main effect of gender, $F(1, 119) = 3.97, p = .05$. Mothers of boys produced more bare finite complement clauses that include mental state verbs compared to mothers of girls, $p = .05$. There was no significant interaction effect of age and gender, $F(2, 119) = .11, p > .05$.

The analysis on mothers' use of bare finite complement clauses that only include nonmental state verbs revealed no significant main effect of age, $F(2, 119) = .20, p > .05$. There was no significant main effect of gender, $F(1, 119) = 2.00, p > .05$. There was no significant interaction effect of age and gender, $F(2, 119) = .45, p > .05$.

Table 7. Means and standard deviations of bare finite complement clauses that include mental state verbs and nonmental state verbs by age and gender groups

	3-year-olds			4-year-olds			5-year-olds		
	Girls	Boys	Total	Girls	Boys	Total	Girls	Boys	Total
Mental State Total	3.65 (2.66)	5.36 (4.38)	4.49 (3.67)	3.64 (4.30)	4.60 (4.26)	4.10 (4.26)	1.64 (1.89)	2.94 (4.12)	2.18 (3.06)
Nonmental State	.04 (.21)	.09 (.29)	.07 (.25)	0.0 (.00)	.15 (.49)	.07 (.34)	.09 (.29)	.13 (.34)	.11 (.31)

3.1.5.1 Do the frequency of MSCs (i.e., MS & NMS, MS & MS, NMS & MS combination) in bare finite complement clauses vary by age and gender groups?

Separate Univariate ANOVA analyses were carried out with age and gender as two independent variables and the frequency of MSCs in bare finite complement clauses as three dependent variables. Table 8 shows the descriptive values for the frequency of MSCs in bare finite complement clauses by age and gender groups.

The analysis on mothers' use of MS & NMS combination in bare finite complement clauses revealed no significant main effect of age, $F(2, 119) = .86, p > .05$. There was no significant main effect of gender, $F(1, 119) = .76, p > .05$. There was no significant interaction effect of age and gender, $F(2, 119) = .35, p > .05$.

The analysis on mothers' use of MS & MS combination in bare finite complement clauses revealed no significant main effect of age, $F(2, 119) = .91, p > .05$. There was no significant main effect of gender, $F(1, 119) = .27, p > .05$. There was no significant interaction effect of age and gender, $F(2, 119) = 2.66, p > .05$.

The analysis on mothers' use of NMS & MS combination in bare finite complement clauses revealed significant main effect of age, $F(2, 119) = 5.09, p < .05$. Mothers of 3-year-olds produced more NMS & MS combination in bare finite complement clauses compared to mothers of 5-year-olds, $p < .05$. There was significant main effect of gender, $F(1, 119) = 5.4, p < .05$. Mothers of boys produced more NMS & MS combination in bare finite complement clauses compared to mothers of girls, $p < .05$. There was no significant interaction effect of age and gender, $F(2, 119) = .01, p > .05$.

Table 8. Means and standard deviations of MSCs in bare finite complement clauses by age and gender groups

	3-year-olds			4-year-olds			5-year-olds		
	Girls	Boys	Total	Girls	Boys	Total	Girls	Boys	Total
MS & NMS	.04 (.21)	.00 (.00)	.02 (.15)	.09 (.29)	.10 (.45)	1.0 (.37)	.09 (.29)	.00 (.00)	.05 (.23)
MS & MS	.17 (.39)	.41 (.67)	.29 (.55)	.82 (1.37)	.25 (.64)	.55 (1.1)	.41 (.73)	.50 (1.03)	.45 (.86)
NMS & MS	3.43 (2.71)	4.96 (4.43)	4.18 (3.7)	2.73 (3.21)	4.25 (4.33)	3.45 (3.81)	1.14 (1.42)	2.44 (3.95)	1.68 (2.81)

3.1.6 Do children's comprehension of single- and double-embedded clauses on the comprehension of complement clauses vary by age and gender groups?

Separate Univariate ANOVA analyses were conducted on children's total scores on comprehension of complement clauses task (i.e., the total scores of children's comprehension of single- and double-embedded clauses on comprehension of complement clauses task), their scores on single complements, and their scores on double complements. In all of these analysis, age and gender were grouping variables. Table 9 shows the descriptive values for children's comprehension of complement clauses by age and gender groups.

The analysis on total scores of children's single complement clauses revealed significant main effect of age, $F(2, 108) = 9.31, p < .001$. Descriptive statistics showed that 5-year-olds had higher scores compared to 3-year-olds, $p < .001$. 4-year-olds had higher scores compared to 3-

year-olds, $p < .01$. However, there was no significant effect of gender, $F(1, 108) = .48, p > .05$.

There was no significant interaction of age and gender, $F(2, 108) = .44, p > .05$.

The analysis on total scores of children's double complement clauses revealed significant main effect of age, $F(2, 119) = 13.44, p < .001$. Follow up analysis showed that 5-year-olds had higher scores compared to 4-year-olds, $p < .05$ and 3-year-olds, $p < .001$. 4-year-olds had higher scores compared to 3-year-olds, $p < .05$. However, there was no significant main effect of gender, $F(1, 119) = .34, p > .05$. There was no significant interaction effect age and gender, $F(2, 119) = 2.09, p > .05$.

The analysis on total scores of children's single and double complement clauses revealed significant main effect of age, $F(2, 119) = 14.47, p < .05$. Follow up analysis showed that 5-year-olds had higher scores compared to 3-year-olds, $p < .001$. However, there was no significant main effect of gender, $F(1, 119) = .07, p > .05$. There was no significant interaction effect of age and gender, $F(2, 119) = 1.39, p > .05$.

Table 9. Means and standard deviations of children's comprehension of complement clauses by age and gender groups

	3-year-olds			4-year-olds			5-year-olds		
	Girls	Boys	Total	Girls	Boys	Total	Girls	Boys	Total
CSC	3.74 (1.89)	3.89 (2.28)	3.82 (2.07)	5.14 (1.53)	4.88 (1.41)	5.03 (1.46)	5.6 (.85)	5.06 (1.34)	5.06 (1.34)
CDC	3.58 (2.61)	4.63 (3.66)	4.11 (3.18)	6.29 (2.45)	5.12 (3.02)	5.76 (2.75)	6.82 (2.20)	7.81 (1.76)	7.24 (2.06)
CCT	7.0 (3.87)	8.58 (5.69)	7.79 (4.87)	11.43 (3.80)	10 (4.15)	10.79 (3.97)	12.45 (2.69)	12.88 (2.83)	12.63 (2.72)

CSC: Comprehension of Single Complement Clauses; CDC: Comprehension of Double; Complement Clauses; CCT: Comprehension of Complement Clauses Total

3.1.7 Do children's expressive and receptive language scores vary by age and gender groups?

Two separate Univariate ANOVA analyses were carried out with age and gender as two independent variables and the expressive and receptive language scores as two dependent variables. Table 10 shows the descriptive values for children's expressive and receptive language scores by age and gender groups.

The analysis on children's expressive language scores revealed significant main effect of age, $F(2, 114) = 32.76, p < .001$. Five-year-olds had higher scores compared to 4-year-olds, $p < .01$ and 3-year-olds, $p < .001$. 4-year-olds had higher scores compared to 3-year-olds, $p < .001$. There was

no significant main effect of gender, $F(1, 114) = 2.42, p > .05$. There was no significant interaction effect of age and gender, $F(2, 114) = 2.40, p > .05$.

The analysis on children's receptive language scores revealed significant main effect of age, $F(2, 114) = 42.14, p < .001$. Follow-up analysis showed that 5-year-olds had higher scores compared to 4-year-olds, $p < .01$ and 3-year-olds, $p < .001$. 4-year-olds had higher scores compared to 3-year-olds, $p < .001$. There was no significant main effect of gender, $F(1, 114) = 2.75, p > .05$.

There was a significant interaction effect of age and gender on children's receptive language scores, $F(2, 114) = 5.26, p < .01$.

Table 10. Means and standard deviations of children's expressive and receptive language scores by age and gender groups

	3-year-olds			4-year-olds			5-year-olds		
	Girls	Boys	Total	Girls	Boys	Total	Girls	Boys	Total
EL	38.22 (11.35)	46.71 (13.45)	42.27 (12.98)	52.60 (9.14)	55.16 (9.89)	53.85 (9.47)	62.52 (6.42)	60.63 (12.53)	61.70 (9.44)
RL	47.96 (17.90)	62.10 (13.05)	54.70 (17.15)	72 (8.64)	69.26 (14.96)	70.67 (12.07)	80.67 (7.95)	80.88 (8.95)	80.76 (8.28)

EL: Expressive Language Scores; RL: Receptive Language Scores

3.1.8 Do children's ToM scores vary by age and gender groups?

Univariate ANOVA analysis was carried out with age and gender as the independent variables and ToM scores as one dependent variable. Table 11 shows the descriptive results for children's ToM scores by age and gender groups.

The analysis on children's ToM scores revealed significant main effect of age, $F(2, 119) = 29.27, p < .001$ where 5-year-olds had higher scores compared to 4-year-olds, $p < .001$ and 3-year-olds, $p < .001$. Four-year-olds had higher scores compared to 3-year-olds, $p < .01$. There was no significant effect of gender, $F(1, 119) = .75, p > .05$. However, there was a significant interaction effect of age and gender, $F(2, 119) = 3.07, p < .001$.

Table 11. Means and standard deviations of ToM scores by age and gender groups

	3-year-olds			4-year-olds			5-year-olds		
	Girls	Boys	Total	Girls	Boys	Total	Girls	Boys	Total
ToM	.91 (1.04)	1.55 (1.34)	1.22 (1.22)	2.36 (1.43)	1.85 (1.53)	2.12 (1.48)	3.95 (1.30)	3.19 (1.72)	3.63 (1.51)

3.2 Bivariate Correlation Analyses

Bivariate correlation analyses were designed in order to investigate simple correlations regarding mothers' language features, children's language, and ToM. Mothers' language features include C-Units, MLU and three types of complement clause structures. Three types of complement clause structures were analyzed according to their inclusion of mental state verbs (i.e., total number of MS & NMS, MS & MS, and NMS & MS combination) and nonmental state verbs

(i.e., NMS & NMS combination). The frequency of each of MSCs in three types of complement clause structures was analyzed as well. Children's language includes expressive and receptive language scores and their comprehension of complement clauses.

3.2.1 Are there correlations between C-Units, MLU and three types of complement clause structures?

Bivariate correlation analyses were carried out to investigate whether there are correlations between C-Units, MLU and three types of complement clause structures. Table 12 shows bivariate correlations between C-Units, MLU and three types of complement clause structures.

Bivariate correlations showed that there was a marginally significant negative correlation between the frequency of mothers' use of C-Units and mothers' syntactic complexity, $r = -.17$, $p = .05$.

Considering the correlation between the frequency of mothers' use of C-Units and their use of complement clause structures, bivariate correlations showed that the frequency of mothers' use of C-Units was significantly related to mothers' use of nonfinite complement clauses, $r = .53$, $p < .01$, finite complement clauses, $r = .18$, $p < .01$, and bare finite complement clauses, $r = .36$, $p < .01$.

Considering the correlation between mothers' syntactic complexity and their use of complement clause structures, bivariate correlation analyses showed that there was a significant correlation between mothers' syntactic complexity and their use of nonfinite complement clauses, $r = .22$, $p < .05$. There was not a significant correlation between mothers' syntactic complexity and their use of finite complement clauses, $r = .05$, $p > .05$. There was a significantly negative correlation between mothers' syntactic complexity and their use of bare finite complement clauses, $r = .26$, $p < .01$.

Table 12. Bivariate correlations between C-Units, MLU and three types of complement clause structure by age and gender

	C-Units	MLU	Nonfinite	Finite	Bare Finite
C-Units	1	-.17 <*>	.53**	.18**	.36 **
MLU		1	.22*	-.05	-.26 **
Nonfinite			1	.19 *	.13
Finite				1	.09
Bare Finite					1

* $p < .05$, ** $p < .01$, *** $p < .001$ <*> marginally significant at $p = .05$.

3.2.2 Are there correlations between C-Units, MLU and three types of complement clause structures that include mental state verbs (i.e., total number of MS & NMS, MS & MS, and NMS & MS combination) and only include nonmental state verbs (i.e., NMS & NMS combination).

Bivariate correlation analyses were carried out to investigate whether there are correlations between these variables. Table 13 shows bivariate correlations between C-Units, MLU and three types of complement clause structures that include mental state verbs and nonmental state verbs. The frequency of mothers' use of C-Units was significantly related to their use of nonfinite complement clauses that include mental state verbs, $r = .51$, $p < .01$ and their use of nonfinite complement clauses that only include nonmental state verbs, $r = .42$, $p < .01$.

However, the frequency of mothers' use of C-Units was not significantly related to their use of finite complement clauses that include mental state verbs, $r = .14, p > .05$, and their use of finite complement clauses that only include nonmental state verbs, $r = .16, p > .05$. There was a significant correlation between the frequency of mothers' use of C-Units and their use of bare finite complement clauses that include mental state verbs, $r = .36, p < .01$ and their use of bare finite complement clauses that only include nonmental state verbs, $r = .00, p > .05$.

There was not a significant correlation between mothers' syntactic complexity and their use of nonfinite complement clauses that include mental state verbs, $r = .13, p > .05$. However, there was a significant correlation between mothers' syntactic complexity and their use of nonfinite complement clauses that only include nonmental state verbs, $r = .26, p < .01$.

Mothers' syntactic complexity was not significantly related to mothers' use of finite complement clauses that include mental state verbs, $r = -.05, p > .05$, and mothers' use of finite complement clauses that only include nonmental state verbs, $r = -.01, p > .05$.

There was a significantly negative correlation between mothers' syntactic complexity and their use of bare finite complement clauses that include mental state verbs, $r = -.26, p < .01$. However, there was not a significant correlation between mothers' syntactic complexity and their use of bare finite complement clauses that only include nonmental state verbs, $r = .01, p > .05$.

Table 13. Bivariate correlations between C-Units, MLU and three types of complement clause structures that include mental state verbs and nonmental state verbs

	C-Units	MLU	Nonfinite MS	Nonfinite NMS	Finite MS	Finite NMS	Bare Finite MS	Bare Finite NMS
C-Units	1	.17<*>	.51**	.42 **	.14	.16	.36 **	.00
MLU		1	.13	.26 **	-.05	-.01	-.26 **	-.01
Nonfinite MS			1	.57 **	.13	.20 *	.13	-.08
Nonfinite NMS				1	.16	.04	.10	.00
Finite MS					1	.18 *	.12	.01
Finite NMS						1	-.04	-.04
Bare Finite MS							1	-.02
Bare Finite NMS								1

*p < .05, **p < .01, ***p < .001 <*> marginally significant at p = .05.

3.2.2.1 Are there correlations between the mothers' use of C-Units, MLU and MSCs in three types of complement clause structures?

Bivariate correlation analyses were carried out to investigate whether there are correlations between C-Units, MLU and MSCs in three types of complement clause structures.

Bivariate correlation analyses on the correlation between C-Units and MSCs in three types of complement clause structures showed that the frequency of mothers' use of C-Units was significantly related to their use of MS & NMS combination in nonfinite complement clauses, $r = .33, p < .01$, their use of MS & MS combination in nonfinite complement clauses, $r = .31, p < .01$, and their use of NMS & MS combination in nonfinite complement clauses, $r = .47, p < .01$. The frequency of mothers' use of C-Units was not significantly related to their use of MS & NMS combination in finite complement clauses, $r = .09, p > .05$. There was a significant correlation between the frequency of mothers' use of C-Units and their use of MS & MS combination in finite complement clauses, $r = .20, p < .05$. However, the frequency of mothers' use of C-Units was not significantly related to their use of NMS & MS combination in finite complement clauses, $r = .04, p > .05$. The frequency of mothers' use of C-Units was not significantly related to their use of MS & NMS combination in bare finite complement clauses, $r = .18, p > .05$, and their use of MS & MS combination in bare finite complement clauses, $r = .07, p > .05$. However, there was a significant correlation between the frequency of mothers' use of C-Units and their use of NMS & MS combination in bare finite complement clauses, $r = .35, p < .01$. Bivariate correlation analyses on the correlation between MLU and MSCs in complement clause structures showed that mothers' syntactic complexity was not significantly related to their use of MS & NMS combination in nonfinite complement clauses, $r = -.02, p > .05$, their use

of MS & MS combination in nonfinite complement clauses, $r = -.06, p > .05$, and their use of NMS & MS combination in nonfinite complement clauses, $r = .20, p > .05$. Mothers' syntactic complexity was not significantly related to their use of MS & NMS combination in finite complement clauses, $r = .13, p > .05$, their use of MS & MS combination in finite complement clauses, $r = -.04, p > .05$, and their use of NMS & MS combination in finite complement clauses, $r = -.08, p > .05$. Mothers' syntactic complexity was not significantly related to their use of MS & NMS combination in bare finite complement clauses, $r = .01, p > .05$ and their use of MS & MS combination in bare finite complement clauses, $r = -.12, p > .05$. However, there was a significantly negative correlation between mothers' syntactic complexity and their use of NMS & MS combination in bare finite complement clauses, $r = -.25, p < .01$.

3.2.3 Are there correlations between children's expressive and receptive language scores and children's comprehension of complement clauses?

Bivariate correlation analyses were carried out to investigate whether there are correlations between children's expressive and receptive language scores and their comprehension of complement clauses. Table 14 shows bivariate correlations between children's expressive and receptive language scores and comprehension of complement clauses.

Bivariate correlation analyses were carried out to investigate whether there are correlations between children's total scores on comprehension of complement clauses (the total scores of children's comprehension of single- and double complement clauses on comprehension of complement clauses task), their scores on single complements, and their scores on double complements. The results showed that there was a significant correlation between children's comprehension of single and double complement clauses, $r = .75, p < .01$. The results showed that children's total scores on comprehension of complement clauses task had significant

correlation with their comprehension of single complement clauses, $r = .89, p < .01$ and their comprehension of double complement clauses, $r = .96, p < .01$.

Bivariate correlation analyses were carried out to investigate whether there are correlations between children's expressive and receptive language scores. The results showed that there was significant correlation between children's expressive and receptive language scores, $r = .79, p < .01$.

Considering the bivariate correlations between children's expressive and receptive language scores and their comprehension of complement clauses, the results showed that children's comprehension of single complement clauses had significant correlation with their expressive language scores, $r = .53, p < .01$, and their receptive language scores, $r = .53, p < .01$. Children's comprehension of double complement clauses had significant correlation with their expressive language scores, $r = .56, p < .01$, and their receptive language scores, $r = .61, p < .01$. Children's total scores on comprehension of complement clauses task had also significant correlation with their expressive language scores, $r = .57, p < .01$, and their receptive language scores, $r = .62, p < .01$.

Table 14. Bivariate correlations between children's expressive and receptive language scores and their comprehension of complement clauses

	EL	RL	CSC	CDC	CCT
EL	1	.79 **	.53 **	.56 **	.57 **
RL		1	.53 **	.61 **	.62 **
CSC			1	.75 **	.89 **
CDC				1	.96 **
CCT					1

*p < .05, **p < .01, ***p < .001 <*> marginally significant at p = .05.

3.2.4 Are there correlations between mothers' language features (i.e., C-Units, MLU, and three types of complement clause structures) and children's language scores?

Bivariate correlation analyses were conducted to examine whether there are significant correlations between mothers' language features (i.e., C-Units, MLU, and three types of complement clause structures) and children's language scores. Table 15 showed bivariate correlations between mothers' language features (i.e., C-Units, MLU and three types of complement clause structures) and children's language scores.

The results showed that mothers' use of nonfinite complement clauses was not significantly related to children's comprehension of single complement clauses, $r = .00, p > .05$, double complement clauses, $r = .10, p > .05$, and their total scores on comprehension of complement clauses task, $r = .09, p > .05$. Mothers' use of nonfinite complement clauses was not significantly related to children's expressive language, $r = .08, p > .05$ and receptive language, $r = .08, p > .05$.

Mothers' use of finite complement clauses was not significantly related to children's comprehension of single complement clauses, $r = .01, p > .05$, children's comprehension of double complement clauses, $r = -.02, p > .05$, and children's total scores on comprehension of complement clauses task, $r = -.00, p > .05$. Mothers' use of finite complement clauses was not significantly related to children's expressive language, $r = -.01, p > .05$ and receptive language, $r = -.08, p > .05$.

Mothers' use of bare finite complement clauses was not significantly related to children's comprehension of single complement clauses, $r = -.16, p > .05$, children's comprehension of double complement clauses, $r = -.17, p > .05$ and children's total scores on comprehension of complement clauses task, $r = -.16, p > .05$. Mothers' use of bare finite complement clauses was not significantly related to children's expressive language, $r = -.12, p > .05$ and receptive language, $r = -.03, p > .05$.

The frequency of mothers' use of C-Units was not significantly related to children's comprehension of single complement clauses, $r = .02, p > .05$, children's comprehension of double complement clauses, $r = .05, p > .05$, and children's total scores on comprehension of complement clauses task, $r = .05, p > .05$. The frequency of mothers' use of C-Units was not also significantly related to children's expressive language, $r = .14, p > .05$ and children's receptive language, $r = .13, p > .05$.

Mothers' syntactic complexity was not significantly related to children's comprehension of single complement clauses, $r = .11, p > .05$, children's comprehension of double complement clauses, $r = .12, p > .05$, and children's total scores on comprehension of complement clauses task, $r = .12, p > .05$. Mothers' syntactic complexity was not also related to children's expressive language, $r = .20, p > .05$ and children's receptive language, $r = .13, p > .05$.

3.2.5 Are there correlations between mothers' language features (i.e., C-Units, MLU and three types of complement clauses that include mental state verbs and nonmental state verbs) and children's language scores?

Bivariate correlations were conducted to examine whether there are significant correlations between mothers' language features (i.e., C-Units, MLU and three types of complement clause structures that include mental state verbs and only include nonmental state verbs) and children's language scores.

The results showed that mothers' use of nonfinite complement clauses that include mental state verbs was not significantly related to children's comprehension of single complement clauses, $r = .02, p > .05$, children's comprehension of double complement clauses, $r = .17, p > .05$, and children's total scores on comprehension of complement clauses task, $r = .14, p > .05$. Similarly, mothers' use of nonfinite complement clauses that include mental state verbs was not significantly related to children's expressive language, $r = .08, p > .05$ and children's receptive language, $r = .08, p > .05$. Mothers' use of nonfinite complement clauses that only include nonmental state verbs was not significantly related to children's comprehension of single complement clauses, $r = -.02, p > .05$, children's comprehension of double complement clauses, $r = .01, p > .05$, and children's total scores on comprehension of complement clauses task, $r = .01, p > .05$. Similarly, mothers' use of nonfinite complement clauses that only include nonmental state verbs was not

significantly related to children's expressive language, $r = .06, p > .05$ and children's receptive language, $r = .02, p > .05$.

Mothers' use of finite complement clauses that include mental state verbs was not significantly related to children's comprehension of single complement clauses, $r = .00, p > .05$, children's comprehension of double complement clauses, $r = -.01, p > .05$, and children's total scores on comprehension of complement clauses task, $r = -.00, p > .05$. Similarly, mothers' use of finite complement clauses that include mental state verbs was not significantly related to children's expressive language, $r = .02, p > .05$ and children's receptive language, $r = -.03, p > .05$.

Mothers' use of finite complement clauses that include nonmental state verbs was not significantly related to children's comprehension of single complement clauses, $r = .03, p > .05$, children's comprehension of double complement clauses, $r = -.02, p > .05$, and children's total scores on comprehension of complement clauses task, $r = -.00, p > .05$. Similarly, mothers' use of finite complement clauses that include nonmental state verbs was not significantly related to children's expressive language, $r = -.08, p > .05$ and children's receptive language, $r = -.16, p > .05$.

Mothers' use of bare finite complement clauses that include mental state verbs was not significantly related to children's comprehension of single complement clauses, $r = -.17, p > .05$, children's comprehension of double complement clauses, $r = -.17, p > .05$, and children's total scores on comprehension of complement clauses task, $r = -.17, p > .05$. Similarly, mothers' use of bare finite complement clauses that include mental state verbs was not significantly related to children's expressive language, $r = -.12, p > .05$ and receptive language, $r = .03, p > .05$.

Mothers' use of bare finite complement clauses that include nonmental state verbs was not significantly related to children's comprehension of single complement clauses, $r = .02, p > .05$,

children's comprehension of double complement clauses, $r = -.01$, $p > .05$, and children's total scores on comprehension of complement clauses task, $r = .00$, $p > .05$. Similarly, mothers' use of bare finite complement clauses that include nonmental state verbs was not significantly related to children's expressive language, $r = -.01$, $p > .05$ and children's receptive language, $r = .06$, $p > .05$.

3.2.5.1 Are there correlations between mothers' language features (i.e., C-Units, MLU and MSCs in three complement clauses) and children's language scores?

Further bivariate correlation analyses were conducted to examine whether there are correlations between MSCs in each complement clause structures and children's language scores.

Bivariate correlation analyses on the correlation between mothers' use of MSCs in nonfinite complement clauses and children's language scores showed that mothers' use of MS & NMS combination was not significantly related to children's comprehension of single complement clauses, $r = -.03$, $p > .05$, children's comprehension of double complement clauses, $r = .03$, $p > .05$, and children's total scores on comprehension of complement clauses task, $r = .01$, $p > .05$. Mothers' use of MS & NMS combination was not also significantly related to children's expressive language, $r = -.12$, $p > .05$ and receptive language, $r = -.16$, $p > .05$.

Mothers' use of MS & MS combination was not significantly related to children's comprehension of single complement clauses, $r = -.03$, $p > .05$, children's comprehension double complement clauses, $r = .06$, $p > .05$, and children's total scores on comprehension of complement clauses task, $r = .04$, $p > .05$. Mothers' use of MS & MS combination was not also significantly related to children's expressive language, $r = .03$, $p > .05$ and receptive language, $r = -.02$, $p > .05$. Mothers' use of NMS & MS combination was not significantly related to children's comprehension of single complement clauses, $r = .05$, $p > .05$. There was a significant correlation between mothers' use of

NMS & MS combination and children's comprehension of double complement clauses, $r = .19$, $p < .05$. However, mothers' use of NMS & MS combination was not significantly related to children's total scores on comprehension of complement clauses task, $r = .16$, $p > .05$. Mothers' use of NMS & MS combination was not significantly related to children's expressive language, $r = .12$, $p > .05$. However, there was a significant correlation between mothers' use of NMS & MS combination and children's receptive language, $r = .19$, $p < .05$.

Bivariate correlation analyses on the correlation between mothers' use of MSCs in finite complement clauses and children's language scores showed that mothers' use of MS & NMS combination was not significantly related to children's comprehension of single complement clauses, $r = .06$, $p > .05$, children's comprehension of double complement clauses, $r = .06$, $p > .05$, and children's total scores on comprehension of complement clauses task, $r = .06$, $p > .05$. The results also showed that mothers' use of MS & NMS combination was not significantly related to children's expressive language, $r = -.02$, $p > .05$ and children's receptive language,

$r = .08$, $p > .05$. Mothers' use of MS & MS combination was not significantly related to children's comprehension of single complement clauses, $r = -.14$, $p > .05$, children's comprehension of double complement clauses, $r = -.10$, $p > .05$, and children's total scores on comprehension of complement clauses task, $r = -.12$, $p > .05$. The results also showed that mothers' use of MS & MS combination was not significantly related to children's expressive language, $r = -.02$, $p > .05$ and children's receptive language, $r = -.04$, $p > .05$. Mothers' use of NMS & MS combination was not significantly related to children's comprehension of single complement clauses, $r = .03$, $p > .05$, children's comprehension of double complement clauses, $r = .00$, $p > .05$, and children's total scores on comprehension of complement clauses task, $r = .02$, $p > .05$.

The results also showed that mothers' use of NMS & MS combination was not significantly related to children's expressive language, $r = .03, p > .05$ and children's receptive language, $r = .01, p > .05$.

Bivariate correlation analyses on the correlation between mothers' use of MSCs in bare finite complement clauses and children's language scores showed that mothers' use of MS & NMS combination was not significantly related to children's comprehension of single complement clauses, $r = -.02, p > .05$, children's comprehension of double complement clauses, $r = -.01, p > .05$, and children's total scores on comprehension of complement clauses task, $r = -.01, p > .05$. Mothers' use of MS & NMS combination was not significantly related to children's expressive language, $r = -.11, p > .05$ and children's receptive language, $r = -.05, p > .05$.

Mothers' use of MS & MS combination was not significantly related to children's comprehension of single complement clauses, $r = -.06, p > .05$, children's comprehension of double complement clauses, $r = -.01, p > .05$, and children's total scores on comprehension of complement clauses task, $r = -.03, p > .05$. Mothers' use of MS & MS combination was not significantly related to children's expressive language, $r = -.01, p > .05$ and children's receptive language, $r = .10, p > .05$.

Mothers' use of NMS & MS combination was not significantly related to children's comprehension of single complement clauses, $r = -.16, p > .05$. There was a marginally negative significance between mothers' use of NMS & MS combination and children's comprehension of double complement clauses, $r = -.18, p = .06$. However, mothers' use of NMS & MS combination was not significantly related to children's total scores on comprehension of complement clauses task, $r = .17, p > .05$. Mothers' use of NMS & MS combination was not also significantly related to children's receptive language, $r = -.06, p > .05$ and children's expressive language, $r = -.12, p > .05$.

Table 15. Bivariate correlations between mothers' language features (i.e., C-Units, MLU and three types of complement clause structures) and children's language score

	C-Units	MLU	Nonfinite	Finite	Bare Finite	EL	RL	CSC	CDC	CCT
C-Units	1	-.17 <*>	.53**	.18**	.36 **	.14	.13	.02	.05	.05
MLU		1	.22*	-.05	-.26 **	.20	.13	.11	.12	.12
Nonfinite			1	.19 *	.13	.08	.08	.00	.10	.09
Finite				1	.09	-.01	-.08	.01	-.02	-.00
Bare Finite					1	-.12	-.03	-.16	-.17	-.16
EL						1	.79 **	.53 **	.56 **	.57 **
RL							1	.53 **	.61 **	.62 **
CSC								1	.75 **	.89 **
CDC									1	.96 **
CCT										1

*p < .05, **p < .01, ***p < .001 <*> marginally significant at p = .05.

3.2.6 Are there correlations between mothers' language features (i.e., C-Units, MLU and three types of complement clause structures) and children's ToM?

Bivariate correlations were conducted to examine whether there are significant correlations between mothers' language features (i.e., C-Units, MLU, and three types of complement clause structures) and ToM. The results showed that the frequency of mothers' use of C-Units was not significantly related to ToM, $r = -.03, p > .05$. Similarly, mothers' syntactic complexity was not significantly related to ToM, $r = .06, p > .05$.

Bivariate correlation analyses on the correlation between mothers' use of complement clause structures and ToM showed that children's ToM was not significantly related to mothers' use of nonfinite complement clauses, $r = -.01, p > .05$, mothers' use of finite complement clauses, $r = -.03, p > .05$, and mothers' use of bare finite complement clauses, $r = -.13, p > .05$.

3.2.7. Are there correlations between mothers' use of three types of complement clause structures that include mental state verbs and nonmental state verbs and children's ToM?

Bivariate correlations were conducted to examine whether there are significant correlations between mothers' use of three types of complement clause structures that include mental state verbs and only include nonmental state verbs and ToM. Table 16 shows bivariate correlations between mothers' use of three types of complement clause structures that include mental state verbs and only include nonmental state verbs.

The results showed that mothers' use of nonfinite complement clauses that include mental state verbs was not significantly related to children's ToM, $r = .04, p > .05$. Mothers' use of nonfinite complement clauses that only include nonmental state verbs was not significantly related to children's ToM, $r = -.06, p > .05$. Mothers' use of finite complement clauses that include mental

state verbs was not significantly related to children's ToM, $r = .00, p > .05$. The results also showed that mothers' use finite complement clauses that only include nonmental state verbs was not significantly related to children's ToM, $r = -.09, p > .05$. Mothers' use of bare finite complement clauses that include mental state verbs was not significantly related to children's ToM, $r = -.13, p > .05$. The results showed that mothers' use bare finite complement clauses that only include nonmental state verbs was not significantly related to children's ToM, $r = .05, p > .05$.

3.2.7.1. Are there correlations between mothers' use of MSCs in three types of complement clause structures and children's ToM?

Bivariate correlations were conducted to examine whether there are significant correlations between mothers' use of MSCs in three types of complement clause structures and ToM.

Bivariate correlation analyses on the correlation between mothers' use of MSCs in nonfinite complement clauses and children's ToM showed that children's ToM was not significantly related to mothers' use of MS & NMS combination, $r = -.12, p > .05$, mothers' use of MS & MS combination, $r = .03, p > .05$, and mothers' use of NMS & MS combination, $r = .06, p > .05$.

Bivariate correlation analyses on the correlation between mothers' use of MSCs in finite complement clauses and children's ToM showed that children's ToM was of significantly related to mothers' use of MS & NMS combination, $r = .06, p > .05$, mothers' use of MS & MS combination, $r = -.05, p > .05$, and mothers' use of NMS & MS combination, $r = .01, p > .05$.

Bivariate correlation analyses on the correlation between mothers' use of MSCs in bare finite complement clauses and children's ToM showed that children's ToM was of significantly related to mothers' use of MS & NMS combination, $r = -.05, p > .05$, mothers' use of MS & MS combination, $r = .02, p > .05$, and mothers' use of NMS & MS combination, $r = -.14, p > .05$.

Table 16. Bivariate correlations between mothers' language and children's ToM

	ToM	C-Units	MLU	Nonfinite MS	Nonfinite NMS	Finite MS	Finite NMS	Bare Finite MS	Bare Finite NMS
ToM	1	.06	-.03	.04	-.06	.00	-.09	-.13	.05
C-Units		1	-.17 <*>	.51**	.42**	.14	.16	.36**	.00
MLU			1	.13	.26**	-.05	-.01	-.26**	-.01
Nonfinite MS				1	.57 **	.13	.20 *	.13	-.08
Nonfinite NMS					1	.16	.04	.10	.00
Finite MS						1	.18 *	.12	.01
Finite NMS							1	-.04	-.04
Bare Finite MS								1	-.02
Bare Finite NMS									1

*p < .05, **p < .01, ***p < .001 <*> marginally significant at p = .05.

3.2.8 Are there correlations between children's language (i.e., expressive and receptive language and comprehension complement clauses) and ToM?

Bivariate correlation analyses were conducted to examine whether there are significant correlations between children's language scores and ToM. Table 17 shows bivariate correlations between children's language scores and ToM.

The results showed that children's ToM was significantly related to their comprehension of single complement clauses, $r = .45, p < .01$, their comprehension of double complement clauses, $r = .50, p < .01$ and their total scores on comprehension of complement clauses task, $r = .51, p < .001$.

The results also showed that children's ToM was significantly related to their expressive language, $r = .61, p < .001$ and receptive language scores, $r = .63, p < .01$.

Table 17. Bivariate correlations between children's language scores and ToM

	ToM	EL	RL	CSC	CDC	CCT
ToM	1	.61 ***	.63 **	.45 **	.50 **	.51 **
EL		1	.79 **	.53 **	.56 **	.57 **
RL			1	.53 **	.61 **	.62 **
CSC				1	.75 **	.89 **
CDC					1	.96 **
CCT						1

* $p < .05$, ** $p < .01$, *** $p < .001$ <*> marginally significant at $p = .05$.

3.3 Partial Correlation Analysis

3.3.1 Are there correlations between children's comprehension of complement clauses and ToM after controlling for children's expressive and receptive language scores?

Bivariate correlations showed that there were significant simple correlations between children's ToM scores and their comprehension of single complement clause, $r = .45$, $p < .01$, double complement clauses, $r = .50$, $p < .01$, and their total score in

comprehension of complement clauses task, $r = .51, p < .001$.

Partial correlation analysis was conducted to test the hypothesis that children's comprehension of complement clauses was significantly related to their ToM after controlling for other language measures. Table 18 revealed partial correlations between children's comprehension of complement clauses and ToM after controlling for children's expressive and receptive language.

Partial correlational results revealed that there was not a significant correlation between children's ToM and their comprehension of single complement clauses, $r = .11, p > .05$, double complement clauses, $r = .13, p > .05$, and their total score in comprehension of complement clauses task, $r = .13, p > .05$ after controlling for their expressive and receptive language scores.

Table 18. Partial correlations between comprehension of complement clauses and ToM aftercontrolling for expressive and receptive language scores

	ToM	CSC	CDC	CCT
ToM	1	.11	.13	.13
CSC		1	.62 ***	.83 ***
CDC			1	.93 ***
CCT				1

*p < .05, **p < .01, ***p < .001 <*> marginally significant at p = .05.

3.4. Hierarchical Regression Analyses

Regarding the first hypothesis, the current study applied bivariate correlation analyses, the results showed that the frequencies of nonfinite, finite, and bare finite complement clauses werenot related to children’s comprehension of nonfinite complement clauses. Consequently, the current study failed to show that the frequency of nonfinite, finite, and bare finite complement clauses were related to children’s comprehension of nonfinite complement clauses after controlling for other language variables. However, further bivariate analyses showed two significant results: (i) The frequency of mothers’ use of NMS & MS combination in nonfinite complement clauses was significantly related to children’s comprehension of double complementclauses. (ii) The frequency of mothers’ use of NMS & MS combination in nonfinite complement clauses was significantly correlated with children’s receptive language. For these reasons, two

hierarchical regression analyses were applied to investigate whether mothers' use of NMS & MS combination in nonfinite complement clauses predicts children's comprehension of double complement clauses and children's receptive language.

3.4.1 Does the frequency of NMS & MS combination in nonfinite complement clauses predict children's comprehension of double nonfinite complement clauses after controlling for children's expressive and receptive language, as well as C-Units and MLU?

Age in months, C-Units, MLU and children's expressive and receptive language scores are control variables. Age in months and children's expressive and receptive language scores were entered at step 1 (Table 19). The first model explained 40.2 % of the variance in children's comprehension of double complements. Regression analysis revealed that children's receptive language significantly predicts children's comprehension of double complement clauses after controlling for age in months and expressive language, $B = .06, p < .05$.

After the entry of C-Units and MLU at step 2, the value for R square increased to 40.3 % (.01 % of the variance in children's comprehension of double complement scores accounted for by the five variables in the model), $F(2, 106) = .05, p > .05$. Two independent variables – C-Units and MLU accounted for .01 % of the additional variance in children's comprehension of double complement clauses.

Regression analysis also revealed that the frequency of mothers' use of C-Units did not significantly predict children's comprehension of double complement clauses after controlling for language measures, $B = .00, p > .05$. Regression analysis revealed that MLU did not significantly predict children's comprehension of double complement clauses after controlling for other language measures, $B = .61, p > .05$.

In the final model, NMS & MS combination in nonfinite complement clauses were entered into step 3. R squared increased to 41.1. The total variance explained by .08 %, $F(1, 105) = 1.49, p > .05$. Regression analysis revealed that children's receptive language predicts children's comprehension of double complement clauses, $B = .06, p < .05$. However, NMS & MS combination in nonfinite complement clauses did not significantly predict children's comprehension of double complement clauses after controlling for other language measures, $B = .10, p > .05$.



Table 19. Summary of Regression Statistics Predicting Children's Comprehension of Double Complement Clauses by Mothers' Use of Total NMS & MS Combination in Nonfinite Complement Clauses

	<i>B</i>	SE <i>B</i>	<i>B</i>	<i>t</i>	Sig
Step 1 (Constant)					
Age in Month	.05	.03	.19	1.92	.06
EL	.04	.03	.16	1.28	.20
RL	.06	.02	.36	2.65	.01*
Step 2 (Constant)					
Age in Month	.05	.03	.18	1.82	.07
EL	.04	.03	.16	1.28	.21
RL	.06	.03	.36	2.58	.01*
C-Units	.00	.00	.00	.04	.97
MLU	.61	2.08	.02	.30	.76
Step 3 (Constant)					
Age in Month	.04	.03	.16	1.57	.12
EL	.04	.03	.18	1.41	.16
RL	.06	.03	.35	2.53	.01*
C-Units	-.00	.00	-.05	-.55	.59
MLU	-.09	2.08	-.00	-.04	.97
Nonfinite NMS & MS	.10	.08	.11	1.22	.23

* $p < .05$, ** $p < .01$, *** $p < .001$ <*> marginally significant at $p = .05$.

3.4.2 Does the frequency of MS & MS combination in nonfinite complement clauses predict children's receptive language after controlling for children's expressive and receptive language as well as C-Units and MLU?

Age in months, C-Units, MLU, children's total scores in comprehension of complement clauses task and expressive language are control variables. Age in months, total scores in comprehension of complement clauses task, and expressive language score were entered at step 1 (Table 20). The first model explained 72 % of the variance in children's receptive language.

In the first model, regression analysis revealed that children's receptive language was predicted by age in month, $B = .34, p < .001$. Regression analysis revealed that children's receptive language was predicted by expressive language, $B = .73, p < .001$. Regression analysis also revealed that children's receptive language was significantly predicted by their total scores on comprehension of complement clauses task after controlling for age in month and expressive language, $B = .64, p < .05$.

In the second model, after the entry of C-Units and MLU at step 2, the value for R square increased to 72.5 (0.4 % of the variance in children's receptive language scores accounted for by the five variables in the model), $F(2, 106) = .80, p > .05$. The two independent variables accounted for additional 0.4 % of the variances in children's receptive language scores.

Regression analysis also revealed that C-Units did not significantly predict children's receptive language after controlling for other language measures, $B = .02, p > .05$.

Regression analyses revealed that MLU did not significantly predict children's receptive language after controlling for other language measures, $B = 4.53, p > .05$.

In the final model, NMS & MS combination in nonfinite complement clauses was entered into step 3. R squared remained constant at 72.5. The total variance explained by the model 0 %, $F(1, 105) = .05$, $p > .05$. Regression analysis revealed that NMS & MS combination in nonfinite complement clauses did not significantly predict children's receptive language after controlling for other language measures, $B = .07$, $p > .05$.



Table 20. Summary of Regression Statistics Predicting Children's Receptive Language by Mothers' Use of Total NMS & MS Combination in Nonfinite Complement Clauses

	<i>B</i>	SE <i>B</i>	<i>B</i>	<i>t</i>	Sig
Step 1 (Constant)					
Age in Month	.34	.09	.23	3.66	.00*
EL	.73	.08	.58	8.66	.00*
SCT	.64	.24	.17	2.64	.01*
Step 2 (Constant)					
Age in Month	.35	.10	.24	3.65	.00*
EL	.71	.09	.57	8.40	.00*
CCT	.63	.24	.17	2.60	.00*
C-Units	.02	.01	.06	1.21	.23
MLU	4.53	7.63	.03	.59	.55
Step 3 (Constant)					
Age in Month	.35	.10	.23	3.53	.00*
EL	.72	.09	.57	8.30	.00*
CCT	.62	.25	.17	2.54	.00*
C-Units	.02	.02	.06	.95	.34
MLU	4.06	7.97	.03	.51	.61
Nonfinite NMS & MS	.07	.30	.01	.21	.83

*p < .05, **p < .01, ***p < .001 <*> marginally significant at p = .05

(1) Regarding the second hypothesis, the current study applied bivariate correlation analyses, the results showed that the frequency of both nonfinite, finite and bare finite complement clauses that include mental state verbs (i.e., total number of MS & NMS, MS & MS, and NMS & MS combination) was not significantly related to children's ToM. According to the results, the current study failed to show that the frequency of both nonfinite, finite and bare finite complement clauses that include mental state verbs will be related to children's ToM after controlling for other language variables.

(2) Regarding the third hypothesis, the current study applied bivariate correlation analysis, the results showed that children's comprehension of complement clauses was significantly related to ToM. Partial correlation analysis was applied for testing the third hypothesis. According to the results, the current study failed to show the third hypothesis that children's comprehension of complement clauses was significantly related to ToM.

CHAPTER IV

DISCUSSION

The present study examined mothers' use of nonfinite, finite, and bare finite complement clauses in storytelling in relation to children's comprehension of complement clauses and their ToM among 3-to 5-year-old children.

The current study was the first study that investigated the correlation between mothers' use of nonfinite, finite, and bare finite complement clauses and children's comprehension of complement clauses. For this purpose, three complement clause structures were analyzed separately. Nonfinite complement clauses were formed with nominalizing suffixes (i.e., -mA, mAK, -DIK, AcAK, and Iş). In nonfinite complement clause structure, nominalizing suffixes link main clause to complement clause by nominalizing complement verb. In finite complement clause structures, special complementizers (i.e., diye complementizer and ki complementizer) link main clause to complement clause and create a complement clause structures without nominalizing complement verb. In bare finite complement clause structures, main clause and complement clause are not embedded with using nominalizing suffixes and complementizers. Although main clause and complement clause are two independent structures in terms of grammatical structures, they are embedded structures in terms of their meaning.

Finite and bare finite complement clauses were analyzed based on their semantic similarities between nonfinite complement clauses. The current study analyzed finite complement clauses that can be expressed in the form of nonfinite complement clauses. These finite complement clauses can be expressed as nonfinite complement clauses by holding their meaning constant. The current study analyzed bare finite complement

clauses that can be expressed in the form of nonfinite complement clauses by holding their meaning constant. In summary, finite and bare finite complement clauses are another way of expressing nonfinite complement clause structures.

It was hypothesized that the frequency of mothers' use of nonfinite, finite, and bare finite complement clauses will be related to children's comprehension of complement clauses after controlling for children's expressive and receptive language, C-Units, and MLU. However, bivariate correlation analyses showed that the frequency of mothers' use of nonfinite, finite, and bare finite complement clauses was not significantly related to children's comprehension of complement clauses. The previous longitudinal studies found the frequency of multiclausal sentences predicts children's production of multiclausal sentences (Huttenlocher et al., 2002; Huttenlocher et al., 2010). However, the current study did not find the significant correlation between mothers' production of complement clause structures and children's comprehension of complement clauses among Turkish-speaking children.

The current study was the first study that examined the correlation between the frequency of nonfinite, finite, and bare finite complement clauses that include mental state verbs (i.e., total number of MS & NMS, MS & MS, and NMS & MS combination) and children's ToM. Based on MSCs schema developed by Ilgaz et al., (2021), the current study considered two main categories as mental state category and nonmental state category. Mental state category includes three MSCs and one nonmental state category. Three MSCs were also analyzed separately because the function of the mental state verbs changed based on their use as main verbs or complement verbs in complement clause structures.

It was hypothesized that mothers' use of nonfinite, finite, and bare finite complement clauses that include mental state verbs (i.e., MS & NMS, MS & MS, and NMS & MS combination) will be related to children's ToM after controlling for children's

expressive and receptive language, C-Units, and MLU. However, bivariate correlation analyses showed that mothers' use of nonfinite, finite, and finite complement clauses that include mental state verbs was not significantly related to children's ToM.

The current study investigated the correlation between children's comprehension of complement clauses and their ToM. There are different theoretical perspectives about the relation between child language and ToM development. According to general language hypothesis, children's overall language capacity has to reach a certain level to represent mental states. According to complementation hypothesis, acquisition of complement clauses allows the mental state representation towards a proposition (de Villiers and Pyers, 1997). Children's acquisition of complement clauses has unique contribution to children's ToM. The majority of the studies that measured the predictor role of language in FBU supported complementation hypothesis among English-speaking, Cantonese-speaking, and Korean-speaking children (Farrar et al., 2017). In Turkish literature, Ögel Balaban (2015) found significant correlation between children's comprehension of complement clauses and ToM. Consistent with the study of Ögel Balaban (2015), the current study also showed the significant correlation between children's comprehension of complement clauses and ToM.

The current study hypothesized that children's comprehension of nonfinite complement clauses will be related to children's ToM after controlling for children's expressive and receptive language, C-Units, and MLU. Bivariate correlation analyses showed that children's comprehension of single complements, double complements, and total scores on comprehension of complement clauses task were significantly related to children's ToM. However, the significant correlation did not remain after controlling for children's expressive and receptive language scores. Therefore, the current study did not support complementation hypothesis. The result is not consistent with previous studies that supported complementation hypothesis among English-speaking children.

4.1. Exploratory Findings

Firstly, the current study found three important exploratory findings about the correlation between mothers' use of NMS & MS combination in nonfinite complement clauses and children's comprehension of double complement clauses and their receptive language scores.

Mothers' use of NMS & MS combination in nonfinite complement clauses was significantly related to children's comprehension of double complement clauses.

However, mothers' use of NMS & MS combination in bare finite complement clauses had marginally significant negative correlation with children's comprehension of double complement clauses.

The first two exploratory findings are important for two reasons. These results show the importance of NMS & MS combination category. Among three MSCs in nonfinite complement clauses, NMS & MS was significantly related to children's comprehension of complement clauses. NMS & MS combination allows someone to express his/her mental attitude toward a proposition. Complement clause structures that include NMS & MS combination express what a person thinks by giving the content of a person's mental state. In this way, main clause and complement clause are embedded. For this reason, NMS & MS combination may be relatively more important for children's comprehension of double complement clause structures. The results also showed the importance of complement clause structures. The direction of the correlation between NMS & MS combination and children's comprehension of double complement clauses changed when NMS & MS combination was used in nonfinite complement clauses and bare finite complement clauses.

The positive correlation between NMS & MS combination in nonfinite complement clauses and children's comprehension of complement clauses may show that mothers are sensitive to their children's language level. Mothers used more complex syntax to

children who have better language competency. Similarly, the negative correlation between NMS & MS combination in bare finite complement clauses is consistent with the previous results. The previous results showed that mothers of 3-year-olds used more bare finite complements compared to mothers of 5-year-olds. The results may also show mothers' sensitivity to children's language level.

Secondly, the current study showed two important exploratory findings. The correlational analyses between mothers' use of C-Units, MLU, and nonfinite, finite, and bare finite complement clause structures showed that mothers who used more complex syntax had shorter talk during storytelling. Mothers who produced more complex syntax used less bare finite complement clauses. However, mothers who used more complex syntax also produced more nonfinite complement clause structures. Overall results showed that mothers had certain speech pattern in terms of the syntactic complexity of their talk during storytelling. The correlational analyses between children's language scores showed that there are significant correlations between children's language scores in all language tasks (i.e., their comprehension of single complement clauses, their comprehension of double complement clauses, and their total scores on comprehension of complement clauses task, their expressive and receptive language scores).

Thirdly, the current study provided important exploratory findings regarding the characteristics of mothers' language. The characteristics of mothers' language were also analyzed by age and gender groups.

The current study analyzed the frequency of mothers' use of C-Units and MLU as control variables. According to the preliminary results, the number of C-Units changed according to child gender. Mothers who told the story to their boys produced more C-Units compared to mothers who told the story to their girls. However, there were no significant differences in the number of C-Units mothers produced by child age groups. The syntactic complexity of mothers' talk did not significantly change by child age and

gender groups.

Preliminary analyses were applied to investigate the general frequency of mothers' use of nonfinite, finite, and bare finite complement clauses during storytelling. The results showed that nonfinite complement structures were the most frequently used complement clauses in maternal speech during storytelling by each age and gender groups. Bare finite complement clauses were second most frequent complement clause structures in maternal language by each age and gender groups.

Preliminary analyses were applied to investigate the main effect of age and gender in the frequency of mothers' use of nonfinite, finite, and bare finite complement clauses by age and gender groups. The results showed the significant main effect of age and gender in the frequency of bare finite complement clauses. For age groups, descriptive results showed that mothers' use of bare finite complement clauses was higher for 3-year-olds than 4-year-olds and 5-year-olds. For gender groups, bare finite complement clauses were more frequent for boys. The results showed that syntactic complexity of mothers' talk changed according to child age groups. For age-related differences, overall results were consistent with previous literature. The previous studies showed that caregivers used simpler language to interact with their younger children than to their older children (Huttenlocher et al., 2007; Newport, Gleitman, & Gleitman, 1977; Snow, 1972). These results showed that caregivers were sensitive to the characteristics of children's language ability. They adjusted their child-directed speech based on children's varying level of language competency. Considering the previous literature, mothers' preference of using more bare finite complement clauses for their younger children may show their sensitivity to children's language level.

Preliminary analyses were applied to investigate the frequency of nonfinite, finite, and bare finite complement clauses that include mental state verbs and nonmental state verbs by age and gender groups. There are significant gender-related differences regarding the

frequency of finite complement clauses that include mental state verbs. Mothers of boys used more finite complement clauses that include mental state verbs compared to mothers of girls. There are significant age-related and gender-related differences regarding the frequency of bare finite complement clauses that include mental state verbs. Mothers of 3-year-olds used more bare finite complement clauses that include mental state verbs compared to mothers of 5-year-olds. Mothers of boys used more bare finite complement clauses that include mental state verbs compared to mothers of girls. There are significant age-related and gender-related differences regarding the frequency of bare finite complement clauses that include mental state verbs. Mothers of 3-year-olds used more bare finite complement clauses that include mental state verbs compared to mothers of 5-year-olds. Mothers of boys used more bare finite complement clauses that include mental state verbs compared to mothers of girls.

The present study showed preliminary findings regarding the frequency of three MSCs (i.e., MS & NMS, MS & MS, and NMS & MS combination) and one non-MSC (i.e., NMS & NMS combination) in nonfinite, finite, and bare finite complement clauses. In the literature, the previous study investigated the frequency of MSCs and non MSC in nonfinite complement clauses (Ilgaz et al., 2021). According to the results, the most frequently used structure was NMS & NMS combination. NMS & MS combination was the next most frequently used structure followed by the MS & NMS and MS & MS combinations. The current study presented the preliminary results regarding the general frequency of MSCs in nonfinite, finite, and bare finite complement clauses. The results were consistent with the previous study (Ilgaz et al., 2021). The present study also found that the most frequently used structure was NMS & NMS combination. NMS & MS combination was the next most frequently used structure followed by MS & MS and MS & NMS combinations.

Ilgaz et al., (2021) found that there was not a significant main effect of age, a significant

main effect of gender, and a significant interaction effect of age and gender on the frequency of mothers' use of nonfinite complement clauses. In the present study, three MSCs including MS & NMS combination, MS & MS combination, and NMS & MS combination were analyzed by age and gender groups. Consistent with the previous study (Ilgaz et al., 2021), the present study did not find the significant main effect of age, gender, and interaction effect of age and gender on the frequency of mothers' use of nonfinite complement clauses. However, it was found that there are significant age-related and gender-related differences regarding the frequency of NMS & MS combination in bare finite complement clauses. The results showed that mothers of 3-year-olds produced more NMS & MS combination in bare finite complement clauses compared to mothers of 5-year-olds. Mothers of boys produced more NMS & MS combination in bare finite complement clauses compared to mothers of girls.

4.2 Limitations & Strengths

The present study had certain limitations and strengths related to research design, method, and language coding.

The biggest limitation of the current study is that the mothers' use of nonfinite, finite, and bare finite complement clauses in relation to children's comprehension of complement clauses and ToM was investigated with cross-sectional design. The cross-sectional design did not give information about how the characteristics of maternal language changed as their children get older.

The current study investigated mothers' language features in shared book reading context. The previous studies showed that children's access to one-to-one interaction with an adult facilitates children's language development (Barnes, Gutfreund, Satterly, & Wells, 1983; Hoff-Ginsberg, 1998; Huttenlocher, Haight, Bryk, Seltzer, & Lyons, 1991). The characteristics of adult speech directed to children might have more influence in children's language development compared to the adult speech children

hear in other contexts. From this point, shared book reading session where the characteristic of maternal language was examined is a good measure of examining the correlation between maternal language and child language. However, maternal language might be different from child-directed language in other contexts including play and reminiscing context. For instance, narrative context might elicit particular linguistic structures more including question forms, attention getting devices to attract children's attention. Therefore, maternal language might not be representative of natural maternal speech. I think this is a limitation in terms of examining the correlation between maternal language and child language.

The previous studies showed that demographic factors such as parents' socioeconomic status (SES) and mothers' education levels have significant correlation with maternal language (Huttenlocher et al., 2007). For example, mothers' education level was significantly related to children's vocabulary abilities (Pan, Rowe, Spier, and Tamis-LeMonda (2004). In the current study, most of the mothers' education level and SES were high. It is one of the limitations of the current study because it does not allow investigating how the characteristics of high-SES and low-SES mothers' language directed to their children vary.

Previous studies measured children's comprehension of complement clauses with several adaption tasks from memory for complements task developed by (de Villiers & Pyers, 1997). Memory for complement task developed by de Villiers and Pyers (1997) included a story in which story characters told a lie, made mistakes, and had false belief. In the story, complement clause with NMS & MS combination with the main verb of '*think*' expressed the story character's mental state that contradicted with actual reality. NMS & NMS with the main verb of '*say*' and '*tell*' expressed the story character's false proposition. Later, children were asked to say what did the story character think and/or say. The task question elicited one word answer. Several adaption studies used the

similar method to measure children's comprehension of complement clauses. In the literature, there are different opinions about memory for complementation task. de Villiers and Pyers (2002) suggested that memory for complement task is used to assess the children's ability of holding the complement clause in their mind and giving the relevant answer for the questions by repeating the correct part of the given speech in the scenario. Children's successful performance does not depend on their ability of the reasoning about the character's mental state. Lohmann and Tomasello (2003) claimed that the comprehension of the stories in the task requires the understanding of the story character's FBU. Similarly, some accounts suggested that the memory for complement task inherently requires children to engage in FB reasoning because the story character was told as having a false belief or false statement and tensed complement had false proposition (De Mulder et al., 2019; Ruffman et al., 2003). From this point, these studies designed different method of measuring children's comprehension of complement clauses. For instance, De Mulder et al., (2019) suggested that children's correct answer depends on the understanding of the content in the embedded clause that is separate from main clause. The story did not include the false component. Children did not have to consider the false content, mistakes or lies. The children's answers represented their understanding of complement clauses without engaging in FB reasoning. In summary, there is a discussion about the measurement of children's comprehension of complement clauses. In the current study, comprehension of complement clauses task does not require children to reason about others' mental states. I think this is a strength of the current study because false proposition that included false content may be confusing for children to understand tensed complements and the task questions. Their inability of understanding false beliefs may hide their language competency. Children's unsuccessful performance in memory for complement task may represent their language comprehension level as well as their FBU. However, comprehension of complement

clauses task that was used in the current study put higher linguistic demand in terms of production compared to memory for complement task. As Altan (2007) suggested, children have to understand the exact meaning of complement clauses and also syntactic properties of complement clauses to make transition from indirect to direct forms. I think this is a limitation of the task because the children's scores in the task may also reflect their sentence production including simple and embedded sentences.

The current study used two first-order tasks including unexpected location, appearance-reality, and one first & second order FBU task. ToM scores showed age-appropriate results between children's age group. The previous results showed that first-order FBU appeared at 5 years of age (Wellman & Liu, 2004). Second-order FBU first appeared at around the age of 6 to 7 years (Perner & Wimmer, 1985). Therefore, total score of first-order and second-order FBU question may not be appropriate for measuring FBU among young children. Second-order FBU question may be analyzed separately. Secondly, there is a general discussion about explicit FBU tasks. Explicit ToM tasks rely heavily on language (Chandler et al., 1989). Therefore, children's language incompetency might hide their ToM performance in explicit ToM assessments.

4.3 Future Studies

Future studies may address the limitations of the current study to investigate the mothers' use of complement clauses in relation to children's comprehension of complement clauses and their ToM.

Future studies may apply a longitudinal design to examine the role of mothers' use of complement clauses in children's comprehension and production of complement clauses and their ToM. Firstly, longitudinal studies give the information about the cause-and-effect relation mothers' use of complement clause structures and children's comprehension of complement clauses and ToM. It is important for investigating whether or not mothers' language plays a significant role in children's comprehension of

complement clause and ToM. Secondly, longitudinal study makes possible to investigate how the same mother's speech changed as child gets older. It is important for analyzing how mothers changed their speech pattern according to children's ages.

Previous study showed that mothers have different narrative styles (Melzi & Caspe, 2005). According to the results of this study, some mothers narrated the story with eliciting minimal child participation whereas some mothers narrated the story with their children so, children actively played role in narrating the story. Mothers who elicited child participation more may attract child's attention to the book. This may positively influence children's benefit from book reading context. Future studies may consider that not just the linguistic characteristics of maternal language but also maternal narrative style might have influence in child language. Secondly, maternal language during storytelling may be different from naturalistic context. Therefore, future studies may analyze maternal language in naturalistic context.

Future studies may collect language data from low-SES and high-SES mothers and children to investigate how SES-related differences affect the characteristics of maternal language and children's language development. Collecting language data from different low-SES groups is also important for investigating how maternal language directed to their children changed in different linguistic contexts. High-educated mothers' speech style can be observed in other linguistic contexts. High-educated mothers can use more complex syntax in both storytelling context and naturalistic contexts when they interact with their children. However, low-educated mothers' speech style can show more variations in storytelling contexts and other linguistic contexts such as free play in terms of its syntactic complexity. Low-educated mothers can use less complex syntax in naturalistic context but they can use more complex syntax during storytelling.

The previous studies found significant role of the frequency of syntactic structures in maternal speech in children's production of syntactic structures for multiclaue

sentences (Huttenlocher et al., 2002; Huttenlocher et al., 2010). In Turkish literature, Altinkamis & Altan (2016) found that children's production rate of relative clauses was related to the frequency of these structures in naturalistic data. Future studies may also focus on Turkish children's production of nonfinite, finite, and bare finite complement clauses in different linguistic contexts.

Future studies may address task-related differences in the measurement of children's comprehension of complement clauses. Future studies may apply comprehension of complement clauses task that do not rely on production of complement clauses similar with memory for complements tasks.

Future studies may analyze Turkish complement clause structures considering the different nominalizing suffixes, mental state verb categories, and reported speech. The frequency of nonfinite, finite, and bare finite complements in a given speech may change according these factors.

Nonfinite Complement Clauses: Non-finite complement clauses are closer to Turkish morphosyntactic structure than finite complement clauses. Turkish nominalizing suffixes that are attached to complement verbs (-mAK, -mA, -DIK, -AcAK, and Iş) have the same function with complementizers used in English (e.g., if, that, whether, because). The current study analyzed -mA and -mAK nominalizing suffixes in terms of their syntactic properties. According to the classification of Kural (1994), -mA and -mAK are classified according to the subject-verb agreement. The examples for -mA and -mAK, which are classified according to subject-verb agreement:

-mAK: Ahmet [düş-mek-ten] kork-uyor-du.

Ahmet fall-**INF**-ABL afraid-**PROG**-**PAST**-3SG.

'Ahmet was afraid to fall.' (Slodowicz, 2007).

-mA: Ahmet [düş-me-sin-den] kork-uyor-du.

Ahmet fall-**INF**-3SG.POSS-ABL afraid-**PROG**-**PAST**-3SG.

‘Ahmet was afraid that s/he would fall.’ (Slodowicz, 2007).

Taylan (1998) argues that semantic properties of matrix predicate and nominalizing suffix determine the type of nominalizing suffix the complement verb takes. Main verbs determine the nominalizing suffixes the complement verb will take. For instance, -DIK, and (y)AcAK are mostly attached to the complement verb when the main verb is cognitive verb whereas nominalizing suffix –mA is attached to the complement verb when the main verb expresses emotion. Speakers have to use particular nominalizing suffixes to produce a main verb of mental state in nonfinite complement clause.

Therefore, future studies that will investigate mental state verbs in nonfinite complement clauses may also consider these differences.

Secondly, semantic properties of the nominalizing suffix –DIK, -(y)AcAK, and –mA determine the meaning of the complement verb (Altan, 2007). For instance, the same complement verb ‘gel’, ‘come’ does not give the same meaning when it is used with the factive nominalizing suffix –DIK, and imperative nominalizing suffix –mA that are attached to the main verb of communication ‘söyle’, ‘say.’ Therefore, the future studies should consider these suffixes in a different category because they give the different meaning.

(a) Çocuk, [kurbağa-nın gel-**me**-si-ni] söyle-di.

The child the frog-GEN come-**INF**-3SG.POSS-ACC say-PAST-3SG.

‘The child said the frog to come.’ (Express desire)

(b) Çocuk, [kurbağa-nın gel-**diğ**-i-ni] söyle-di.

The child the frog-GEN come-**GER**-3SG.POSS-ACC say-PAST-3SG.

‘The child said that the frog came.’

In summary, there is a close relation between main verb and the nominalizing suffix (Taylan, 1998). Particular nominalizing suffixes are required to use main verb of mental & nonmental state. Therefore, future studies may analyze nonfinite complement clauses

and MS combinations in the nonfinite complement clauses at suffix level.

The current study did not exclude nonfinite reported speech because nonfinite complement clauses were examined as a whole. Future studies may also consider reported and not reported speech with separate categories. In the literature, Kornfilt (1996) classified reported speech as direct reported speech that is produced with finite subordinate clauses and indirect reported speech that is produced with nonfinite subordinations.

(a) Selin bana [dün sinema-ya git-**tiğ**-i-ni] söyle-di.

Selin 1SG-DAT yesterday the cinema-DAT go-**GER**-3SG.POSS-ACC say-PAST-3SG.

‘Selin told me that she went to the cinema yesterday.’ (Indirect RS in nonfinite subordinate clause).

Finite Complement Clauses: Finite complement clauses are in two forms as finite complement clauses that are formed with *diye* & *ki* and bare finite complement clauses. The two forms do not have nominalizing suffix so, complement verb is not nominalized. Similar with nonfinite complement clauses, not all mental state and nonmental state verbs can be used as main verb of finite and bare finite complement clauses. For instance, the main verb of mental state ‘*düşün*’, ‘think’ can be used in finite complement clauses, but not used in bare finite complement clauses in general. Main verb think requires to use *diye* and *ki* complementizers that link the main verb of think to the complement verb. Future studies should consider these differences to examine the frequency and consistency of these structures in maternal language.

4.4 Conclusion

This is the first study that investigated the mothers’ use of complement clauses in relation to children’s comprehension of complement clauses and their ToM among the children between the ages of 3 and 5. In the present study, nonfinite, finite, and bare

finite complement clauses were investigated separately in their relation to children's comprehension of complement clauses and ToM. The present study did not support the first hypothesis that mothers' use of nonfinite, finite, and bare finite complement clauses was significantly related to children's comprehension of complement clauses after controlling for children's expressive and receptive language, C-Units, and MLU.

Secondly, the present study did not support the second hypothesis that mothers' use of nonfinite, finite, and bare finite complement clauses that include mental state verbs (i.e., MS & NMS, MS & MS, and NMS & MS combination) was significantly related to children's ToM. Thirdly, the present study did not support the third hypothesis that children's comprehension of complement clauses was significantly related to children's ToM after controlling for children's expressive and receptive language, C-Units and MLU. The present study revealed important exploratory results. NMS & MS combination in nonfinite complement clauses was found to be related to children's comprehension of double complement clauses and their receptive language.

There are important limitations of the current study that limits the accurate interpretation of the present results. Present study applied cross-sectional design that limits the interpretation of the current results. There are task-related issues regarding the measurement of comprehension of complement clauses and ToM among 3-to-5-year-olds. Moreover, mothers' use of complement clauses was analyzed without considering the different nominalizing suffixes and mental state verb categories. Therefore, future research may consider these limitations to investigate the correlation between mothers' use of complement clauses, children's comprehension of complement clauses, and children's ToM.

References

- Adrián, J. E., Clemente, R. A., & Villanueva, L. (2007). Mothers' use of cognitive state verbs in picture-book reading and the development of children's understanding of mind: A longitudinal study. *Child development*, 78(4), 1052-1067.
<https://doi.org/10.1111/j.1467-8624.2007.01052.x>
- Aksu-Koc, A. (1994). Development of linguistic forms: Turkish. In R. Berman & D. I. Slobin (Eds.), *Relating events in narrative: A crosslinguistic developmental study* (pp. 217–255). Hillsdale, NJ: Lawrence, Erlbaum.
- Aksu-Koç, A., & Erguvanlı-Taylan, E. (1998). The functions of relative clauses in narrative discourse. In *The Mainz Meeting Proceedings of the Seventh International Conference on Turkish Linguistics* (pp. 271-284).
- Altan, A. (2005). Türkçede Tümleç Yantümcelerinin Edinimi. In 19. Ulusal Dilbilim Kurultayı Bildirileri Kitabı, M. Sarı, H. Nas (Derleyenler), Harran Üniversitesi, Şanlıurfa.
- Altan, A. (2007). What experimental data tells us about acquisition of complementation in Turkish. *Turkish Languages*, 11.
- Altinkamis, F., & Altan, A. (2016). A usage-based approach into the acquisition of relative clauses. *DILBILIM ARASTIRMALARI*, 1, 69-91.
[DOI:10.18492/dad](https://doi.org/10.18492/dad)
- Astington, J. W., & Baird, J. A. (Eds.). (2005). *Why language matters for theory of mind*. Oxford University Press.
<https://doi.org/10.1093/acprof:oso/9780195159912.001.0001>
- Astington, J. W., & Jenkins, J. M. (1995). Theory of mind development and social understanding. *Cognition & Emotion*, 9(2-3), 151-165.
<https://doi.org/10.1080/02699939508409006>
- Astington, J. W., & Jenkins, J. M. (1999). A longitudinal study of the relation

between language and theory-of-mind development. *Developmental psychology*, 35(5), 1311.

<https://doi.org/10.1037/0012-1649.35.5.1311>

Astington, J. W., Pelletier, J., & Homer, B. (2002). Theory of mind and epistemological development: The relation between children's second-order false-belief understanding and their ability to reason about evidence. *New ideas in Psychology*, 20(2-3), 131-144.

[DOI:10.1016/S0732-118X\(02\)00005-3](https://doi.org/10.1016/S0732-118X(02)00005-3)

Barnes, S., Gutfreund, M., Satterly, D., & Wells, G. (1983). Characteristics of adult speech which predict children's language development. *Journal of child language*, 10(1), 65-84.

<https://doi.org/10.1017/S0305000900005146>

Bartsch, K., & Wellman, H. M. (1995). *Children talk about the mind*. Oxford university press.

[https://doi.org/10.1002/1520-6807\(199601\)33:1<87::AID-PITS2310330105>3.0.CO;2-C](https://doi.org/10.1002/1520-6807(199601)33:1<87::AID-PITS2310330105>3.0.CO;2-C)

Beeghly, M., Bretherton, I., & Mervis, C. B. (1986). Mothers' internal state language to toddlers. *British Journal of Developmental Psychology*, 4(3), 247-261.

<https://doi.org/10.1111/j.2044-835X.1986.tb01016.x>

Berument, S. K., & Güven, A. G. (2013). Türkçe İfade Edici ve Alıcı Dil (TİFALDİ) Testi: I. Alıcı Dil Kelime Alt Testi Standardizasyon ve Güvenilirlik Geçerlik Çalışması. *Türk Psikiyatri Dergisi*, 24(3), 192-201.

Bretherton, I., & Beeghly, M. (1982). Talking about internal states: The acquisition of an explicit theory of mind. *Developmental psychology*, 18(6), 906.

<https://doi.org/10.1037/0012-1649.18.6.906>

Bloom, L., Hood, L., & Lightbown, P. (1974). Imitation in language development: If,

when, and why. *Cognitive psychology*, 6(3), 380-420.

[https://doi.org/10.1016/0010-0285\(74\)90018-8](https://doi.org/10.1016/0010-0285(74)90018-8)

Bloom, L., Rispoli, M., Gartner, B., & Hafitz, J. (1989). Acquisition of complementation. *Journal of Child Language*, 16(1), 101-120.

DOI: [10.1017/s0305000900013465](https://doi.org/10.1017/s0305000900013465)

Bloom, L., Rocissano, L., & Hood, L. (1976). Adult-child discourse: Developmental interaction between information processing and linguistic knowledge. *Cognitive Psychology*, 8(4), 521-552.

[https://doi.org/10.1016/0010-0285\(76\)90017-7](https://doi.org/10.1016/0010-0285(76)90017-7)

Brooks, P. J., & Tomasello, M. (1999). How children constrain their argument structure constructions. *Language*, 720-738.

DOI: [10.2307/417731](https://doi.org/10.2307/417731)

Brown, J. R., Donelan-McCall, N., & Dunn, J. (1996). Why talk about mental states? The significance of children's conversations with friends, siblings, and mothers. *Child development*, 67(3), 836-849.

<https://doi.org/10.2307/1131864>

Call, J., & Tomasello, M. (1999). A nonverbal false belief task: The performance of children and great apes. *Child development*, 70(2), 381-395.

DOI: [10.1111/1467-8624.00028](https://doi.org/10.1111/1467-8624.00028)

Carpendale, J., & Lewis, C. (2006). How children develop social understanding. Blackwell Publishing.

Chandler, M., Fritz, A. S., & Hala, S. (1989). Small-scale deceit: Deception as a marker of two-,three-, and four-year-olds' early theories of mind. *Child development*, 1263-1277.

<https://doi.org/10.2307/1130919>

- Cheung, H. (2006). False belief and language comprehension in Cantonese-speaking children. *Journal of Experimental Child Psychology*, 95(2), 79-98.
<https://doi.org/10.1016/j.jecp.2006.05.002>
- Cheung, H., Chen, H. C., & Yeung, W. (2009). Relations between mental verb and false belief understanding in Cantonese-speaking children. *Journal of Experimental Child Psychology*, 104(2), 141-155.
[DOI: 10.1016/j.jecp.2009.05.004](https://doi.org/10.1016/j.jecp.2009.05.004)
- Cheung, H., Hsuan-Chih, C., Creed, N., Ng, L., Ping Wang, S., & Mo, L. (2004). Relative roles of general and complementation language in theory-of-mind development: Evidence from Cantonese and English. *Child development*, 75(4), 1155-1170.
<https://www.jstor.org/stable/3696532>
- Crain, S., & Nakayama, M. (1987). Structure dependence in grammar formation. *Language*, 522-543.
<https://doi.org/10.2307/415004>
- Coşkun, H. (2019). TÜRKÇE ÇEKİMSİZ TÜMLEÇ YAN CÜMLELERİNDE OLGUSALLIĞIN KAPSAMI. *Türkiyat Mecmuası*, 29(1), 1-25.
[DOI :10.18345/iuturkiyat.560149](https://doi.org/10.18345/iuturkiyat.560149)
- De Mulder, H. N., Wijnen, F., & Coopmans, P. H. (2019). Interrelationships between Theory of Mind and language development: A longitudinal study of Dutch-speaking kindergartners. *Cognitive Development*, 51, 67-82.
[DOI:10.1016/J.COGDEV.2019.03.006](https://doi.org/10.1016/J.COGDEV.2019.03.006)
- de Villiers, J. G. (1995a). Steps in the mastery of sentence complements. Paper presented at the biennial meeting of the Society for Research in Child Development, Indianapolis, IN.
- de Villiers, J. G. (1998). On acquiring the structural representations for false

complements. In B. Hollebrandse (Ed.), *New perspectives on language acquisition*. GLSA, Amherst, MA: University of Massachusetts Occasional Papers in Linguistics.

<https://scholarworks.umass.edu/umop/vol24/iss1/11>

De Villiers, J. G., & de Villiers, P. (2000). Linguistic determinism and the understanding of false beliefs. *Children's reasoning and the mind*.

https://scholarworks.umass.edu/aae_groundwork

De Villiers, J. G. (2005). *IQ Can Language Acquisition Give Children a Point of View*. Why language matters for theory of mind, 186.

[DOI:10.1093/acprof:oso/9780195159912.001.0001](https://doi.org/10.1093/acprof:oso/9780195159912.001.0001)

De Villiers, J. (2007). The interface of language and theory of mind. *Lingua*, 117(11), 1858- 1878.

<https://doi.org/10.1016/j.lingua.2006.11.006>

de Villiers, P. A., & de Villiers, J. G. (2012). Deception dissociates from false belief reasoning in deaf children: Implications for the implicit versus explicit theory of mind distinction. *British Journal of Developmental Psychology*, 30, 188–209.

<https://doi.org/10.1111/j.2044-835X.2011.02072.x>

de Villiers, J. G., & Pyers, J. (1997). Complementing cognition: The relationship between language and theory of mind. In *Proceedings of the 21st Annual Boston Conference on Language Development*.

https://scholarworks.umass.edu/aae_groundwork

De Villiers, J. G., & Pyers, J. E. (2002). Complements to cognition: A longitudinal study of the relationship between complex syntax and false-belief-understanding. *Cognitive development*, 17(1), 1037-1060.

[https://doi.org/10.1016/S0885-2014\(02\)00073-4](https://doi.org/10.1016/S0885-2014(02)00073-4)

- Devine, R. T., & Hughes, C. (2018). Family correlates of false belief understanding in early childhood: A meta-analysis. *Child development*, 89(3), 971-987.
<https://doi.org/10.1111/cdev.12682>
- Diessel, H., & Tomasello, M. (2001). The acquisition of finite complement clauses in English: A corpus-based analysis.
<https://doi.org/10.1515/cogl.12.2.97>
- Dietrich, A. P. (1995). An analysis of subordinate clauses in Turkish. *Dilbilim Araştırmaları Dergisi*, 6, 182-196.
<http://dad.boun.edu.tr/tr/pub/issue/4535/313055>
- Durrleman, S., & Franck, J. (2015). Exploring links between language and cognition in autism spectrum disorders: Complement sentences, false belief, and executive functioning. *Journal of communication disorders*, 54, 15-31.
<https://doi.org/10.1016/j.jcomdis.2014.12.001>
- Farrant, B. M., Maybery, M. T., & Fletcher, J. (2012). Language, cognitive flexibility, and explicit false belief understanding: Longitudinal analysis in typical development and specific language impairment. *Child Development*, 83(1), 223-235.
<https://doi.org/10.1111/j.1467-8624.2011.01681.x>
- Farrar, M. J., Lee, H., Cho, Y. H., Tamargo, J., & Seung, H. (2013). Language and false belief in Korean-speaking and English-speaking children. *Cognitive Development*, 28(3), 209-221.
<https://doi.org/10.1016/j.cogdev.2013.01.010>
- Farrar, M. J., Benigno, J. P., Tompkins, V., & Gage, N. A. (2017). Are there different pathways to explicit false belief understanding? General language and complementation in typical and atypical children. *Cognitive Development*, 43,

49-66.

<https://doi.org/10.1016/j.cogdev.2017.02.005>

Fitch, W.T. (2005). Computation and cognition: Four distinctions and their implications.

In A. Cutler (Ed.), *Twenty-first Century Psycholinguistics: Four cornerstones* (pp. 381-400). Mahwah, NJ: Lawrence Erlbaum.

Flavell, J. H., Flavell, E. R., & Green, F. L. (1983). Development of the appearance-reality distinction. *Cognitive psychology*, 15(1), 95-120.

[https://doi.org/10.1016/0010-0285\(83\)90005-1](https://doi.org/10.1016/0010-0285(83)90005-1)

Frye, D., Zelazo, P. D., & Palfai, T. (1995). Theory of mind and rule-based reasoning.

Cognitive development, 10(4), 483-527.

[https://doi.org/10.1016/0885-2014\(95\)90024-1](https://doi.org/10.1016/0885-2014(95)90024-1)

Fraser, C., & Roberts, N. (1975). Mothers' speech to children of four different ages.

Journal of psycholinguistic research, 4(1), 9-16.

DOI: [10.1007/BF01066986](https://doi.org/10.1007/BF01066986)

Furrow, D., Nelson, K., & Benedict, H. (1979). Mothers' speech to children and

syntactic development: Some simple relationships. *Journal of child language*, 6(3), 423-442.

DOI: <https://doi.org/10.1017/S0305000900002464>

George, L., & Kornfilt, J. (1981). Finiteness and boundedness in Turkish. *Binding and filtering*, 105, 127.

Gopnik, A. (1996). The scientist as child. *Philosophy of science*, 63(4), 485-514.

<https://doi.org/10.1086/289970>

Gopnik, A. (2003). The theory theory as an alternative to the innateness hypothesis.

Chomsky and his critics, 238-254.

DOI: [10.1002/9780470690024.ch10](https://doi.org/10.1002/9780470690024.ch10)

Gopnik, A., & Slaughter, V. (1991). Young children's understanding of changes in their mental states. *Child development*, 62(1), 98-110.

<https://doi.org/10.1111/j.1467-8624.1991.tb01517.x>

Gopnik, A., & Wellman, H. M. (1994). The theory theory. In L. A. Hirschfeld & S. A. Gelman (Eds.), *Mapping the mind: Domain specificity in cognition and culture* (pp.257-293). Cambridge University Press.

<https://doi.org/10.1017/CBO9780511752902.011>

Göksel, A., & Kerslake, C. (2005). Third reprint 2010. *Turkish, a comprehensive grammar*.

<https://doi.org/10.4324/9780203340769>

GÜNDOĞDU, H. Y. (2017). The structure of diye clauses in Turkish (Doctoral dissertation, Master's thesis). Boğaziçi University, İstanbul, Turkey).

Hale, C. M., & Tager-Flusberg, H. (2003). The influence of language on theory of mind: A training study. *Developmental science*, 6(3), 346-359.

<https://doi.org/10.1111/1467-7687.00289>

Harris, P. (1996). 13 Desires, beliefs, and language. *Theories of theories of mind*, 200.

Hoff-Ginsberg, E. (1998). The relation of birth-order and socioeconomic status to children's language experiences and language development. *Applied Psycholinguistics*, 19(4), 603-629.

<https://doi.org/10.1017/S0142716400010389>

Hughes, C., & Dunn, J. (1997). "Pretend you didn't know": Preschoolers' talk about mental states in pretend play. *Cognitive development*, 12(4), 477-497.

[https://doi.org/10.1016/S0885-2014\(97\)90019-8](https://doi.org/10.1016/S0885-2014(97)90019-8)

Huttenlocher, J., Haight, W., Bryk, A., Seltzer, M., & Lyons, T. (1991). Early

vocabulary growth: relation to language input and gender. *Developmental*

psychology, 27(2), 236.

<https://doi.org/10.1037/0012-1649.27.2.236>

Huttenlocher, J., Waterfall, H., Vasilyeva, M., Vevea, J., & Hedges, L. V. (2010).

Sources of variability in children's language growth. *Cognitive psychology*, 61(4), 343-365.

<https://doi.org/10.1016/j.cogpsych.2010.08.002>

Huttenlocher, J., Vasilyeva, M., Cymerman, E., & Levine, S. (2002). Language input and child syntax. *Cognitive psychology*, 45(3), 337-374.

[https://doi.org/10.1016/S0010-0285\(02\)00500-5](https://doi.org/10.1016/S0010-0285(02)00500-5)

Huttenlocher, J., Vasilyeva, M., Waterfall, H. R., Vevea, J. L., & Hedges, L. V. (2007).

The varieties of speech to young children. *Developmental psychology*, 43(5), 1062.

<https://doi.org/10.1037/0012-1649.43.5.1062>

Ilgaz, H., & Allen, J. W. (2021). (Co-) Constructing a theory of mind: From language or through language? *Synthese*, 198(9), 8463-8484.

<http://hdl.handle.net/11693/77251>

Ilgaz, H., Altan, A., & HAŞİMOĞLU-ERTAŞ, S. (2021). Turkish Mothers' Use of Complementation in Storytelling. *Dilbilim Araştırmaları Dergisi*, 32 (3), 43-70.

<https://doi.org/10.18492/dad.762679>

San Juan, V., & Astington, J. W. (2012). Bridging the gap between implicit and explicit understanding: How language development promotes the processing and representation of false belief. *British Journal of Developmental Psychology*, 30(1), 105-122.

<https://doi.org/10.1111/j.2044-835X.2011.02051.x>

Johanson, L. (2013). Selection of subjunctors in Turkic non-finite complement clauses.

bilig, 67, 73.

Kesici, E. (2013). Ki-Clauses in Turkish: A paratactic analysis.

<http://hdl.handle.net/10150/271012>

Ketrez, F. N. (1999). Early verbs and the acquisition of Turkish argument structure. MA Thesis, Boğaziçi University, Istanbul.

Kornfilt, J. (1996). NP-Movement and “restructuring”. In Current issues in comparative grammar. (pp. 121-147). Springer, Dordrecht.

Kural, M. (1994). Yantümcelerde çekim ekleri. Dilbilim Araştırmaları Dergisi, 5, 80 111.

Küntay, A. C., & Nakamura, K. (2004). Linguistic Strategies Serving Evaluative Functions 1: A Comparison between Japanese and Turkish Narratives. In Typological and Contextual Perspectives (pp. 329-358). Psychology Press.

Lieven, E., & Tomasello, M. (2008). Children’s first language acquisition from a usage-based perspective (pp. 178-206). Routledge.

Lind, S. E., & Bowler, D. M. (2009). Language and theory of mind in autism spectrum disorder: The relationship between complement syntax and false belief task performance. Journal of autism and developmental disorders, 39(6), 929-937.

[DOI: 10.1007/s10803-009-0702-y](https://doi.org/10.1007/s10803-009-0702-y)

Lohmann, H., & Tomasello, M. (2003). The role of language in the development of false belief understanding: A training study. Child development, 74(4), 1130-1144.

<https://doi.org/10.1111/1467-8624.00597>

Mayer, Mercer. Frog, Where Are You? New York, NY.: Dial Press, 1969.

Melzi, G., & Caspe, M. (2005). Variations in maternal narrative styles during book reading interactions. Narrative inquiry, 15(1), 101-125.

<https://doi.org/10.1075/ni.15.1.06mel>

- Milligan, K., Astington, J. W., & Dack, L. A. (2007). Language and theory of mind: Meta-analysis of the relation between language ability and false-belief understanding. *Child development*, 78(2), 622-646.
<https://doi.org/10.1111/j.1467-8624.2007.01018.x>
- Mo, S., Su, Y., Sabbagh, M. A., & Jiaming, X. (2014). Sentential complements and false belief understanding in Chinese Mandarin-speaking preschoolers: A training study. *Cognitive Development*, 29, 50-61.
<https://doi.org/10.1016/j.cogdev.2013.11.001>
- Moore, C., Pure, K., & Furrow, D. (1990). Children's understanding of the modal expression of speaker certainty and uncertainty and its relation to the development of a representational theory of mind. *Child development*, 61(3), 722-730.
<https://doi.org/10.1111/j.1467-8624.1990.tb02815.x>
- Nelson, K. (1996). *Language in Cognitive Development: The emergence of the mediated mind*. Cambridge, UK: Cambridge University Press.
- Newport, E. L., Gleitman, H., & Gleitman, L. (1977). Mother, I'd rather do it myself: Some effects and noneffects of maternal speech style. In C. E. Snow & C. A. Ferguson (Eds.), *Talking to children: Language input and acquisition* (pp. 109–150). Cambridge, MA: Cambridge University Press.
- Ng, L., Cheung, H., & Xiao, W. (2010). False belief, complementation language, and contextual bias in preschoolers. *International Journal of Behavioral Development*, 34(2), 168-179.
<https://doi.org/10.1177/0165025409350954>
- Ögel Balaban, H. (2015). The development of narrative skills in Turkish-speaking children: A complexity approach.

<https://doi.org/10.1371/journal.pone.0232579>

Ögel-Balaban, H., & Aksu-Koç, A. (2020). Clause Chaining and Discourse Continuity in Turkish Children's Narratives. *Frontiers in psychology*, 11, 115.

<https://doi.org/10.3389/fpsyg.2020.00115>

Özçalışkan, Ş., & Slobin, D. I. (1999). Learning how to search for the frog: Expression of manner of motion in English, Spanish, and Turkish. In *Proceedings of the 23rd annual Boston University conference on language development* (Vol. 2, pp. 541-552). Somerville, MA: Cascadilla Press.

Özyürek, A., & Ozcaliskan, S. (2000). How do children learn to conflate manner and path in their speech and gestures? Differences in English and Turkish.

<https://hdl.handle.net/2066/159435>

Pan, B. A., Rowe, M. L., Spier, E., & Tamis-LeMonda, C. (2004). Measuring productive vocabulary of toddlers in low-income families: Concurrent and predictive validity of three sources of data. *Journal of child language*, 31(3), 587-608.

<https://doi.org/10.1017/S0305000904006270>

Perner, J., Leekam, S. R., & Wimmer, H. (1987). Three-year-olds' difficulty with false belief: The case for a conceptual deficit. *British journal of developmental psychology*, 5(2), 125-137.

<https://doi.org/10.1111/j.2044-835X.1987.tb01048.x>

Perner, J., & Wimmer, H. (1985). "John thinks that Mary thinks that..." attribution of second-order beliefs by 5-to 10-year-old children. *Journal of experimental child psychology*, 39(3), 437-471.

[https://doi.org/10.1016/0022-0965\(85\)90051-7](https://doi.org/10.1016/0022-0965(85)90051-7)

Peterson, C., & Slaughter, V. (2003). Opening windows into the mind: Mothers' preferences for mental state explanations and children's theory of mind.

Cognitive Development, 18(3), 399-429.

[https://doi.org/10.1016/S0885-2014\(03\)00041-8](https://doi.org/10.1016/S0885-2014(03)00041-8)

Plaut, D. C., & Karmiloff-Smith, A. (1993). Representational development and theory-of-mind computations. *Behavioral and Brain Sciences*, 16(1), 70-71.

<https://doi.org/10.1017/S0140525X0002906X>

Povinelli, D. J., & DeBlois, S. (1992). Young children's (*Homo sapiens*) understanding of knowledge formation in themselves and others. *Journal of Comparative Psychology*, 106(3), 228.

<https://doi.org/10.1037/0735-7036.106.3.228>

Predolac, E. (2017). The Syntax of sentential complementation in Turkish (Doctoral dissertation, Cornell University).

<https://doi.org/10.7298/X4RN361Q>

Premack, D., & Woodruff, G. (1978). Does the chimpanzee have a theory of mind?. *Behavioral and brain sciences*, 1(4), 515-526.

<https://doi.org/10.1017/S0140525X00076512>

Ruffman, T., Slade, L., & Crowe, E. (2002). The relation between children's and mothers' mental state language and theory-of-mind understanding. *Child development*, 73(3), 734-751.

<https://doi.org/10.1111/1467-8624.00435>

Ruffman, T., Slade, L., Devitt, K., & Crowe, E. (2006). What mothers say and what they do: The relation between parenting, theory of mind, language and conflict/cooperation. *British journal of Developmental psychology*, 24(1), 105-124.

<https://doi.org/10.1348/026151005X82848>

Ruffman, T., Slade, L., Rowlandson, K., Rumsey, C., & Garnham, A. (2003). How

language relates to belief, desire, and emotion understanding. *Cognitive Development*, 18(2), 139-158.

[https://doi.org/10.1016/S0885-2014\(03\)00002-9](https://doi.org/10.1016/S0885-2014(03)00002-9)

Schick, B., De Villiers, P., De Villiers, J., & Hoffmeister, R. (2007). Language and theory of mind: A study of deaf children. *Child development*, 78(2), 376-396.

<https://doi.org/10.1111/j.1467-8624.2007.01004.x>

Slaughter, V., Peterson, C. C., & Mackintosh, E. (2007). Mind what mother says: Narrative input and theory of mind in typical children and those on the autism spectrum. *Child development*, 78(3), 839-858.

<https://doi.org/10.1111/j.1467-8624.2007.01036.x>

Słodowicz, S. (2007). Complement control in Turkish. *Zas papers in linguistics*, 47, 125-157.

Snow, C. E. (1972). Mothers' speech to children learning language. *Child Development*, 43, 549-565.

Tager-Flusberg, H., & Joseph, R. M. (2005). How Language Facilitates the Acquisition of False- Belief Understanding in Children with Autism. In *Why Language Matters for Theory of Mind*, Apr, 2002, University of Toronto, Toronto, ON, Canada; This chapter originated from the aforementioned conference. Oxford University Press.

<https://doi.org/10.1093/acprof:oso/9780195159912.003.0014>

Tardif, T., So, C. W. C., & Kaciroti, N. (2007). Language and false belief: Evidence for general, not specific, effects in cantonese-speaking preschoolers. *Developmental Psychology*, 43(2), 318.

<https://doi.org/10.1037/0012-1649.43.2.318>

Taumoepeau, M., & Ruffman, T. (2006). Mother and infant talk about mental states

relate to desire language and emotion understanding. *Child development*, 77(2), 465-481.

<https://doi.org/10.1111/j.1467-8624.2006.00882.x>

Taylan, Eser. (1998). What Determines the Choice of Nominalizer in Turkish Nominalized Complement Clauses. *Proceedings of the 18th International Congress of Linguistics*. Oxford: Pergamon.

Thornton, R. (1996). Elicited production. In *Methods for assessing children's syntax* (pp. 77-102). MIT Press.

Tomasello, M. (2000). Do young children have adult syntactic competence? *Cognition*, 74(3), 209-253.

[https://doi.org/10.1016/S0010-0277\(99\)00069-4](https://doi.org/10.1016/S0010-0277(99)00069-4)

Tomasello, M. (2003). The key is social cognition. *Language in mind: Advances in the study of language and thought*, 47-57.

Tomasello, M. (2019). *Becoming human*. Harvard University Press.

<https://doi.org/10.4159/9780674988651>

Tompkins, V., Benigno, J. P., Kiger Lee, B., & Wright, B. M. (2018). The relation between parents' mental state talk and children's social understanding: A meta-analysis. *Social Development*, 27(2), 223-246.

<https://doi.org/10.1111/sode.12280>

Underhill, R. (1976). *Turkish grammar* (Vol. 460). Cambridge, MA: MIT press.

Wellman, H. M. (2002). Understanding the psychological world: Developing a theory of mind. *Blackwell handbook of childhood cognitive development*, 167-187.

<https://doi.org/10.1002/9780470996652.ch8>

Wellman, H. M., Cross, D., & Watson, J. (2001). Meta-analysis of theory-of-mind

development: The truth about false belief. *Child development*, 72(3), 655- 684.

<https://doi.org/10.1111/1467-8624.00304>

Wellman, H. M., & Liu, D. (2004). Scaling of theory-of-mind tasks. *Child development*, 75(2), 523-541.

<https://doi.org/10.1111/j.1467-8624.2004.00691.x>

Wimmer, H., & Perner, J. (1983). Beliefs about beliefs: Representation and constraining function of wrong beliefs in young children's understanding of deception.

Cognition, 13(1), 103-128.

[https://doi.org/10.1016/0010-0277\(83\)90004-5](https://doi.org/10.1016/0010-0277(83)90004-5)

Yüksel, S. (2002). Türkçede Biçim Birimler. *Türk Dili Araştırmaları Yıllığı-Belleten*, 50 (2002/2), 180-191.

<https://dergipark.org.tr/tr/pub/belleten/issue/45231/566519>

APPENDIX A: EBEVEYN DEMOGRAFİK BİLGİ FORMU

1. Adınız ve soyadınız:

2. Yaşınız:

3. Cinsiyetiniz: ☐ Kadın ☐ Erkek

4. Çocuklarınız/çocuğunuzla olan yakınlığınız:

☐ Anne ☐ Baba

5. Kaç çocuğunuz var:

☐ 1 ☐ 2 ☐ 3 ☐ Diğer:

6. Çocuğunuzun (çocuklarınızın) adı: Çocuğunuzun/çocuklarınızın doğum tarihi:

7. Çalışmamıza katılan çocuğunuz okul öncesi herhangi bir eğitim kurumuna gidiyor mu?

☐ Evet ☐ Hayır

Evet ise;

a) Ne kadar süredir devam ediyor? _____

b) Devam ettiği okulda özel bir eğitim programı uygulanıyor mu? (Örn; montessori vb.)

☐ Evet ☐ Hayır

Evet ise; ne çeşit bir program uygulanıyor? _____

8. Eğitim durumunuz nedir?

☐ Okuryazar değil

☐ İlköğretim

☐ Ortaokul

☐ Lise

☐ Üniversite

☐ Yüksek Lisans

☐ Doktora

☐ Diğer: _____

9. İşiniz:

- ☐ Tam zamanlı çalışmaktayım
- ☐ Yarı zamanlı çalışmaktayım
- ☐ Evden yürütmekteyim
- ☐ Şu anda çalışmamaktayım
- ☐ Okula devam etmekteyim

10. Eşinizin yaşı:

11. Eşinizin eğitim durumu nedir?

- | | |
|--|--|
| ☐ Okuryazar değil | ☐ Üniversite |
| ☐ İlköğretim | ☐ Yüksek Lisans |
| ☐ Ortaokul | ☐ Doktora |
| ☐ Lise | ☐ Diğer: _____ |

12. Eşinizin işi:

- ☐ Tam zamanlı çalışmakta
- ☐ Yarı zamanlı çalışmakta
- ☐ İşlerimi evden yürütmekte
- ☐ Su anda çalışmamakta
- ☐ Okula devam etmekte

13. Evinizin aylık gelir düzeyi:

- ☐ 1.000 TL`den az
- ☐ 1.000 TL- 2.999 TL
- ☐ 3.000 TL-4.999TL
- ☐ 5.000 TL- 6.999 TL
- ☐ 7.000 TL-9.999
- ☐ 10.000 TL`den fazla

13. Evinizin aylık gelir düzeyini nasıl değerlendirirsiniz?

- ☐ Düşük ☐ Orta Seviyede ☐ İyi seviyede ☐ Çok iyi seviyede

14. Toplam olarak evde çocuğunuzla ilgilenen kaç yetişkin yaşamaktadır (siz ve eşiniz ile birlikte)

- ☐ Bir ☐ İki ☐ Üç ☐ Üçten fazla

APPENDIX B: EV İÇİ YAZARLIK FORMU (İlgaz & AKSU-Koç, 2005)

ID:

Formu Dolduran Kişinin Çocuğa Yakınlık Derecesi: ☐ Anne ☐ Baba:

1. Çocuğunuz ilk anlamlı kelimesini kaç aylıkken/kaç yaşında söyledi?

2. Çocuğunuza resimli kitaplar okunur mu?

☐ Evet

☐ Hayır

Cevabınız “hayır” ise lütfen 8. soruya geçerek devam ediniz.

3. Kaç yaşından itibaren çocuğunuza hikaye kitapları okumaya başladınız?

☐ 6 ay- 12 ay

☐ 1 yaş

☐ 2 yaş

☐ 3 yaş

☐ 4 yaş

☐ 5 yaş

4. Çocuğunuza ne sıklıkta hikaye kitabı okursunuz?

☐ Her gün

☐ 1-2 günde bir

☐ 3-4 günde bir

☐ Haftada bir

☐ Ayda bir-iki kere

☐ Diğer

5. Çocuğunuz hikaye kitaplarının resimlerine bakarak kendisi hikaye anlatmaya çalışır mı?

☐ Evet

☐ Hayır

6. Çocuğunuzun çok sevdiği, kendisine okunmasından bıkmadığı, sürekli okunması için ısrar ettiği bir hikaye var mı?

- ☐ Evet Hikayenin adı: _____
- ☐ Hayır

7. Çocuğunuzun ezbere bildiği ve bakarak anlattığı bir hikaye kitabı var mı?

- ☐ Evet Hikayenin adı: _____
- ☐ Hayır

8. Çocuğunuza masal anlatılır mısınız?

- ☐ Evet
- ☐ Hayır

9. Kaç yaşından itibaren çocuğunuza masal anlatılmaya başladınız?

- ☐ 6 ay- 12 ay
- ☐ 1 yaş
- ☐ 2 yaş
- ☐ 3 yaş
- ☐ 4 yaş
- ☐ 5 yaş

10. Çocuğunuza ne sıklıkta masal anlatıyorsunuz?

- ☐ Her gün
- ☐ 1-2 günde bir
- ☐ 3-4 günde bir
- ☐ Haftada bir
- ☐ Ayda bir iki kere
- ☐ Diğer

11. Çocuğunuzun çok sevdiği, kendisine anlatılmasından bıkmadığı, sürekli anlatılması için ısrar ettiği bir masal var mı?

- ☐ Evet Masalın adı: _____
- ☐ Hayır

12. Çocuğunuzun ezbere bildiğı bir masal var mı?

- ☐ Evet Masalın adı: _____
- ☐ Hayır



APPENDIX C: UNEXPECTED LOCATION TASK

Unexpected Location Task

Materyaller: Perner tipi 5 resimli kısa öykü seti

1. Bu hikâye Burak/Özge ve annesi hakkında. Bu Burak/ Özge (göster) ve bu da annesi (göster). Burası ise evlerindeki mutfak. Burak/ Özge'nin annesi, Burak/ Özge'ye bir çikolata verdi.
2. Ama Burak/ Özge dışarı çıkıp oynamak istiyordu, bu yüzden çikolatayı mutfaktaki çekmeceye koydu.
3. Ve sonra Burak/ Özge topuyla oynamak için dışarı çıktı.
4. Burak/ Özge dışarıda oynarken annesi kendi kendine dedi ki: "Hmm, bu çekmecenin içi çok sıcak. En iyisi ben bu çikolatayı buzdolabına koyayım da erimesin!" Sonra çikolatayı çekmecedan alıp buzdolabına koydu.
5. Daha sonra Burak/ Özge'nin annesi odasına gitti ve biraz dinlenmek için yatağına uzandı.

Kontrol soruları (Doğru yanıt veremezse birkaç kez ilgili resmi göster):

→ Burak/ Özge oynamaya çıkmadan önce çikolatasını nereye koymuştu? Buzdolabına mı çekmeceye mi?

- | | | |
|------------------------------------|--------------------------------------|---|
| ☐ Çekmeceye | ☐ Buzdolabına | ☐ Bilmiyorum/Diğer |
| ☐ Çekmeceye | ☐ Buzdolabına | ☐ Bilmiyorum/Diğer |

→ Peki çikolata şimdi nerede? Buzdolabında mı çekmecedeki mi?

- | | | |
|--------------------------------------|---------------------------------------|---|
| ☐ Çekmecedeki | ☐ Buzdolabında | ☐ Bilmiyorum/Diğer |
| ☐ Çekmecedeki | ☐ Buzdolabında | ☐ Bilmiyorum/Diğer |

Test sorusu:

→ Peki Burak/ Özge çikolatasını yemek için içeri geldiğinde, çikolatasını almak için İLK nereye bakacak? Çekmeceye mi buzdolabına mı?

- | | |
|------------------------------------|--------------------------------------|
| ☐ Çekmeceye | ☐ Buzdolabına |
|------------------------------------|--------------------------------------|

APPENDIX D: GÖRÜNÜM-GERÇEKLİK AYRIMI (Flavell et al., 1983)
Bilkent Üniversitesi Gelişim Psikolojisi Laboratuvarı araştırmacıları tarafından
çevrilmiş

ve araştırma amaçlarına uygun olarak sadeleştirilmiştir.

Çocuklara çok gerçekçi görünen iki taklit nesne sunulur (ör. granit parçasına benzeyen, ancak sünger gibi yumuşak bir materyalden yapılmış bir taklit taş ve lastikten yapılmış taklit kalem).

Prosedür:

Katılımcıların tümü, tüm nesneleri öncelikle görünüm formunda görürler. Diğer nesneye geçilmeden önce önceki nesneyle ilgili tüm gösterim ve sorgulamalar tamamlanır.

Soruyla ilgili nesne çocuğun elindeyse, soru sorulmadan önce nesne çocuktan alınır.

Nesnelerin çocuğa gösterilme sırası katılımcılar arasında dengelenecektir.

- 1. Nesne 1:** Nesne yukarı kaldırılarak çocuğa **“Buna şimdi gözünle ilk baktığında neye benzediğini görüyorsun?”** diye sorulur. Doğru cevap alındıktan sonra, nesnenin gerçekte ne olduğu çocuğa söz kullanmadan gösterilir (ör. araştırmacı taklit taşı sıkır ve sıkması için çocuğa uzatır. Daha sonra çocuğa **“Peki bu aslında, gerçekten ne? Aslında, gerçekten bir (taş) mı, yoksa aslında, gerçekten bir (sünger) mi?”**

☐ Taş

☐ Sünger

☐ Taş

☐ Sünger

***3rd question (perceptual change): Peki sen buna gözünle ilk baktığında ne olduğunu düşünmüştün? Taş mı sünger mi?**

☐ Taş

☐ Sünger

- 2. Nesne 2:** Nesne biri yukarı kaldırılarak çocuğa **“Buna şimdi gözünle ilk baktığında neye benzediğini görüyorsun?”** diye sorulur. Doğru cevap alındıktan sonra, nesnenin gerçekte ne olduğu çocuğa söz kullanmadan gösterilir (ör. araştırmacı taklit kalemi bükerek ve bükmesi için çocuğa uzatır. Daha sonra çocuğa **“Peki bu aslında, gerçekten ne? Aslında, gerçekten bir (kalem) mi, yoksa aslında, gerçekten bir (lastik) mi?”**

☐ Kalem

☐ Lastik

☐ Kalem

☐ Lastik

***3rd question (perceptual change): Peki sen buna gözünle ilk baktığında ne olduğunu düşünmüştün? Kalem mi lastik mi?**

☐ Kalem

☐ Lastik

Eğer çocuk ikinci nesnenin ilk sorusunda hata yaparsa ve ilk nesneyi doğru cevaplamışsa, birinci nesne kaldırılarak “Unutma, bu aslında, gerçekten bu bir ____ demiştin, ama bu özlerine ____ gibi görünüyor. Doğru bildin. Aslında, gerçekten bir ____ ama senin gözlerine ____ gibi görünüyor.” denir ve ikinci nesne çocuğa tekrar sunulur.

Alternatif Prosedür

İstanbul Üniversitesi: çikolata-kalem kutusu, balık-çakmak, ruj-kalem

Prosedür:

3 nesne, hepsi “önce görünüm” formunda sunulur, nesneler tek tek gösterilir ve birinin sorgulaması bitmeden diğerine geçilmez.

Nesne gösterilir. “Bu nedir” sorusu sorulup görünümün ne olduğu konusunda cevap alınır. Sonra gerçek işlevi gösterilir ve katılımcının gerçek işlevi isimlendirmesi beklenir. Daha sonra 2 test sorusu sorulur:

1. Temsili kimlik sorusu: Bu X gibi mi görünüyor yoksa Y gibi mi görünüyor?
2. Gerçek kimlik sorusu: Peki aslında tam olarak bu bir X midir yoksa Y midir?

APPENDIX E: BİRİNCİ VE İKİNCİ DÜZEY ZİHİN KURAMI GÖREVİ
(Astington et al., 2005)

Prosedür-5 PHOTOS

1. “Bu hikâye Özge ve Burak adında iki arkadaş hakkında. Bu Özge ve bu da Burak. İki arkadaş Burak’ın/Özge’nin odasında oyun oynuyorlar. Burak’ın/Özge’nin elinde kardeşinin Burak/Özge için çizdiği bir resim var. Özge/Burak, bu resimde ne olduğunu çok merak ediyor, ancak Burak/Özge onun resme bakmasını istemiyor.
2. Tam bu sırada, Burak’ın/Özge’nin annesi onu çağırıyor ve Burak/Özge resmi yorganın altına koyarak odadan ayrılıyor.
3. Burak/Özge gittiğinde Özge/Burak resmi alıyor ve resimde ne olduğuna bakıyor.
4. Daha sonra Özge/Burak resmi Burak’ın/Özge’nin çekmecesine saklıyor. Ancak bu sırada Burak’ın/Özge’nin annesiyle konuşması bitmiş ve odasına geri dönüyor. Özge/Burak resmi çekmeceye saklarken Burak/Özge Özge’yi/Burak’ı görüyor. Ancak Özge/Burak Burak’ı/Özge’yi görmüyor.”

Kontrol soruları:

→ *Burak/Özge annesinin yanına gitmeden önce resmi nereye koymuştu? Yorganın altına mı çekmeceye mi?*

☐ *Yorganın altına*

☐ *Çekmeceye*

→ *Özge/Burak, resme baktıktan sonra onu nereye koydu? Yorganın altına mı çekmeceye mi?*

☐ *Yorganın altına*

☐ *Çekmeceye*

→ *Burak/Özge resmin şu anda nerede olduğunu biliyor mu?*

☐ *Evet*

☐ *Hayır*

Birinci düzey yanlış inanç sorusu:

→ *Özge/Burak, Burak’ın/Özge’nin onu gördüğünü biliyor mu?*

☐ *Evet*

☐ *Hayır*

5. “Hikâye devam ediyor. Daha sonra Burak/Özge, Özge’ye/Burak’a “Tamam, resmi sana göstereceğim” diyor ve resmi almaya gidiyor.”

İkinci düzey yanlış inanç sorusu:

→ *Özge/Burak, Burak’ın/Özge’nin resmi nerede arayacağını düşünüyor? Çekmecedemi yorganın altında mı?*

☐ *Yorganın altında*

☐ *Çekmecedemi*

→ *Özge/Burak neden böyle düşünüyor?*

**APPENDIX F: SINGLE-AND DOUBLE-EMBEDDED CLAUSES ON THE
COMPREHENSION OF COMPLEMENT CLAUSES TASK PROTOCOL (Ögel-
Balaban, 2015)**

Teste başlamadan önce, araştırmacı çocuğa inek kuklasını tanıtarak ona; “İnek arkadaşım çok utangaç, benden çok utanıyor. Ancak kendisiyle oynamak isteyendiği insanlarla konuşmayı çok seviyor. Bu nedenle, benim yerime ona senin bazı sorular sormanı isteyeceğim” der.

Alıştırma aşaması:

Bu aşama 4 soru içerir. Bunlardan ikisi bir fiil gömülü cümleden (single-embedded; S), diğer ikisi ise iki fiil gömülü cümleden oluşmaktadır (double-embedded; D). Alıştırma aşamasında çocuk doğru formda cümleler oluşturamazsa, araştırmacı doğru formu söyler ve 1 kez tekrar eder.

***Sırasıyla sorduğunuz tüm soruların yanındaki kutucuğu işaretleyin.*

- ☐ 1. (S) İnek alışverişe gidecek. Ona ne alacağını sorar mısın?
Doğru Cevap: Alışverişte ne alacaksın?
- ☐ 2. (D) İnek okula gitmek istiyor. Ona okulda ne yapmayı düşündüğünü sorar mısın?
Doğru Cevap: Okulda ne yapmayı düşünüyorsun?
- ☐ 3. (S) İneğin çok güzel oyuncakları var. Ondan oyuncaklarını bizimle paylaşmasını ister misin?
Doğru Cevap: Oyuncaklarını bizimle paylaşır mısın?
- ☐ 4. (D) İnek ailesiyle tatile gitti. Ona tatilde nereye gittiğini sana anlatmasını söyler misin?
Doğru Cevap: Tatilde nereye gittiğini bana anlatır mısın?

Test aşaması:

Bu aşama 12 soru cümlesi içerir. Aynı şekilde, bunlardan altısında bir fiil gömülü olup, diğer altısında iki fiil gömülüdür. Test aşamasında, sorunun sorulmasının ardından çocuğun cevabı kısa bir süre beklenir ve cevap vermezse hiçbir geri dönüş yapılmadan diğer soruya geçilir. Bu aşamada, çocuğun kurduğu yanlış formda cümleler düzeltilmez!

- ☐ 1. İnek aç gibi gözüküyor. Ona ne yemek yiyeceğini sorar mısın?
- ☐ 2. İnek çok güzel bir resim çizdi. Ona ne resmi çizdiğini sana anlatmasını söyler misin?
- ☐ 3. İnek TV seyretmeyi çok seviyor. İneğe dün akşam televizyonda ne seyrettiğini sorar mısın?
- ☐ 4. İnek dün çok eğlenmiş. Ona dün ne yaptığını sana anlatmasını söyler misin? İneğin bir sürü oyun arkadaşı var. Yarın arkadaşlarıyla ne oynayacaklarını düşündüğünü ineye sorar mısın?

- ☐ 5. İnek telefonla konuşmak istiyor. Ona kimi aramayı planladığını sorar mısın?
- ☐ 6. Bak inek şeker yiyor. İnekten bize de şeker vermesini ister misin?
- ☐ 7. İnek anne babası için bir sürpriz hazırlayacak. Nasıl bir sürpriz hazırlamayı istediğini sorar mısın?
- ☐ 8. İneğin sesi çok güzel. Ondan bize şarkı söylemesini ister misin?
- ☐ 9. Bak inek kitap okuyor. Ona kitabın ne anlattığını sorar mısın?
- ☐ 10. (İneğin gözleri kapalı) Bu bir şeker kutusu. Şimdi kutuya bir diş fırçası koydum. İneğe kutuda ne olduğunu sandığını sorar mısın?
- ☐ 11. Oyunumuz bitti. İneğe şimdi ne yapacağını sorar mısın?

