ACQUISITION OF COMPLEMENTATION IN TURKISH

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ABSTRACT

This thesis analyzes the acquisition of complement structures in Turkish, concentrating on the acquisition of object complements formed with the nominalizers –mAK, -mA, -DIK and –(y)AcAk.

Both naturalistic and experimental data are analyzed. The naturalistic data consists of longitudinal data collected from four monolingual Turkish children between the ages of 1;1,19 and 3;3,3. and the cross-sectional data of 33 children between 2;0 and 4;8. Comprehension and production of each nominalizing suffix are discussed for the naturalistic data. It is observed that –mAK complements with control verbs are acquired first between the ages 2;0-3;0. There are a few examples of –mA complements only around age 3;0 in the speech of one of the subjects. –DIK complements were not observed either in children's speech and were very rare in the adults' speech directed to children.

Experimental tasks were carried out with 42 children between the ages 3;0-6;5. There were different experiments assessing children's production, comprehension and imitation of complementation. The order of acquisition observed is similar to the one in the naturalistic data. –mAK complements were the earliest followed by –DIK and –mA complements. –(y)AcAK complements appeared to be last to be acquired.

Both syntactic factors such as control structures and semantics of the verb paly a determining role in the order of acquisition. Finally, acquisition of complement structures appears to involve a verb by verb learning process.

ÖZET

Bu çalışmada Türkçe'yi anadil olarak edinen çocuklarda tümleç yantümcelerinin edinimi incelenmektedir, özellikle –mAK, -mA, -DIK ve –(y)AcAk ekleriyle kurulan ve nesne görevinde olan yapılar üzerinde durulacaktır.

Bu çalışmada çocukların hem doğal dil kullanımı sırasında kaydedilmiş verileri incelenmiş hem de deneysel çalışmalar yapılmıştır. Doğal ortamda kaydedilmiş veriler iki çeşittir. Birincisi, 1;1,19 yaşından 3;3,3 yaşına kadar belirli aralıklarla konuşmaları kaydedilmiş dört çocuktan oluşur. İkincisi ise 2;0-4;8 yaşları arası 33 çocuğun verileridir. Her tümleç yantümcesinin anlaşılabilirliği ve kullanımı tartışılmaktadır. –mAK ekiyle kurulan tümleç yantümcelerinin ilk olarak edinildiği ve bu edinimin 2;0-3;0 yaş arasında gerçekleştiği saptanmıştır. 3;0 yaşındaki birkaç çocuk –mA ekiyle kurulmuş tümleç yantümcelerini kontrol eylemleriyle kullanmıştır. –DIK ekiyle kurulmuş tümle yantümceleri ise çocuklar tarafından hiç kullanılmamış, çocuklarla konuşan yetişkinler tarafından da az sayıda kullanılmıştır.

Deneyler 3;0-6;5 yaş arasındaki 42 çocuk ile gerçekleştirilmiştir. Anlama becerisi, kullanma becerisi hem de tekrar becerisi ölçen farklı deneyler yapılmıştır. Deney sonuçları da doğal dil kullanımı sonuçlarına paralel çıkmıştır. –mAK tümleç yantümcelerinin edinimi –mA ve –DIK yapılarının edinimiyle takip kullanılmıştır.

Tümleç yantümcelerinin ediniminde hem kontrol eylemlerinin hem de ana eylemin anlamsal yapısının rolü olduğu görülmüştür. Son olarak da, tümleç yantümcelerinin eylemlerle birlikte öğrenildiği saptanmıştır.

ABBREVIATIONS

1P	first person plural
1S	first person singular
2P	second person plural
2S	second person singular
3P	third person plural
3S	third person singular
ABL	ablative
ABIL	ability/ permission, -AbIl
-(y)ACAK	nominalizing suffix
ACC	accusative
ADVR	adverbializer
ADJE	adjectival
AOR	aorist
BRO	the brother
CAUS	causative
CHI	the child
CM	compound marker
COM	commitative
COMP	complementizer ('ki', 'diye')
CON	conditional, -sE
DAT	dative
-DIK	nominalizing suffix
DIM	dimunitive

DIR	d•r (copula)
D.O	direct object
FATH	the father
FUT	future
GEN	genitive
INJ	interjection
INS	instrumental
LOC	locative
-MA	nominalizing suffix
-MAK	nominalizing suffix
MOT	the mother
STR	stranger
NEG	negative
OPT	optative
PASS	passive
PAST	past
PAST(EV)	evidential past, -mI•
PL	plural
POSS	possesive
PROG	progressive
QUE	question
RECIP	reciprocal
REFL	reflexive
RELR	relativizer

SYMBOLS

%sit	situational information relevant to the utterance
(')	glottal stop sound.
(...)	When between two utterances, indicates omission of irrelevant material.
+	compound marker
+/	interrupted by another person
+//	self interruption
-	suffix boundary
(/2)	repeated twice
:	lengthening
@	different from adult speech/special form
@c	child invented form
@f	family specific form (nicknames etc.)
@i	interjection
@o	onomotopoeia
[*]	error
[?]	best guess
[/]	self correction
[: text]	replacement
[=! text]	paralinguistic events (crying, caughing etc.)
xxx	unintelligible utterance
xx	unintelligible word
www	untranscribed material
Øsuffix	the suffix is not uttered
*Øsuffix	deletion of the suffix is ungrammatical

People mentioned in the examples

AZRA	subject
DENIZ	subject
MINE	subject
TUNA	subject
ALI	brother (Mine)
ARKO	dog (Tuna)
HAZO	bird (Tuna)
MEMO	brother (Tuna)
MEMO	father (Tuna)
NACIYE	baby sitter (Mine)
OLTU	eat (Mine)
OMI/OYI	grandmother (Deniz)
TANTE	aunt (Deniz)

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Introduction

Aim

The aim of this study is to investigate the acquisition of complementation in Turkish. While the properties of complementation in Turkish have been studied within many different frameworks indicating that complementation is both syntactically and semantically a complex structure, its acquisition has not yet been examined in detail. This work will try to show how this complexity is reflected in acquisition. The main emphasis will be on the acquisition of nominalized complement clauses. Acquisition of complementation is interesting since it is the first form of complex sentences in children's speech (Bloom et. al, 1988).

The work that lead the way for the topic of this study was Aksu- Koç's (1994) paper on children's use of complement clauses in Frog Stories[1]. In this study, the subjects were between ages 3-5. She also collected data from 9 year olds and an adult group. She concluded that complement clauses other than infinitival complements with –mAK are late to appear in the children's narratives. She reports that nominal constructions with –mAK are quite frequent in the data and they mostly occur with modal verbs such as *iste-* 'want' and *çalış-* 'try' at age 3. –mAK is used with aspectual verbs such as *başla-* 'start' and *devam et-* 'continue' at age 5. She points out that -DIK complements where the main verb is a cognitive/perceptual verb such as *bil-* 'know', *anla-* 'understand', *gör-* 'see', *farkında ol-* 'be aware of' occur occasionally in the preschool texts. Aksu-Koç (1994:380) asserts that "–DIK constructions appear to pose problems, particularly when the main verb is the irregular verb *ol-* 'be' with its existential form *var/yok* 'exist/not exist." She reports that –mA complementation was only encountered once in the Frog Stories with the main verb *söyle-* 'tell' at age 9. Aksu-Koç points out that the difficulty of

–mA clauses is probably due to conceptual rather than syntactic complexity per se. -(y)AcAK nominalizations are not produced by any of the children, even the 9 year-olds in this particular narrative data. She attributes the scarcity of –mA, -DIK and -(y)AcAK to a rather specialized discourse function[2].

The organization of this work is as follows: Chapter I provides the structural properties of complementation and a literature survey of the previous works on Turkish complementation. Chapter II looks into the works on the acquisition of complementation in English, Korean and Chinese. In Chapter III, the two naturalistic data is explained and the method and the scoring of experiments are provided. Chapter IV presents the results and implications of the naturalistic data and Chapter V the experimental data. Chapter VI includes the concluding remarks, where the results of the naturalistic and experimental data are compared.

[1] In this study children were asked to narrate a story from a wordless picture book "Frog, where are you?" (Mayer, 1969).
[2] See Aksu-Koç (1994) for details.

CHAPTER I

Complementation in Turkish

1.1. Definition

Complementation is a major syntactic process in languages. Several definitions of complementation are available. A basic definition of complementation that will be adopted in this study is given by Bloom and Rispoli (1989:101-102) which states that "complementation is the special instance of complex sentences in which one proposition serves as the argument within another proposition." A complementizer may be a free morpheme, a particle, a clitic or an affix whose function is to identify the entity as a complement. Noonan (1985) adds that "In complementation a predicate is an argument of another predicate since it functions as the object or subject of it" (Noonan,1985: 42).

1.2. Structural Description

In Turkish there are two major types of complementation, the first type being sentential complements and the second type being nominalized complements. In sentential complementation the complement verb is inflected for tense, aspect and person agreement just like the main verb. On the other hand, nominalized complement clauses are marked with a nominalizing suffix, followed by the appropriate nominal inflection morpheme(s).

Sentential complements can be further divided into two: i) those formed without a free complementizer, ii) those that are introduced by a free complementizer. In the first group, there are a limited number of verbs that select sentential complements, these verbs are *zannet-* 'assume', *san-* 'think', *bil-* 'know' and *tahmin et-* 'guess'. As can be seen from example (1), the complement clause is in the form of a simple sentence with the verb inflected for tense, aspect and person.

(1) [Git-ti-n] san-dı-m / zannet-ti-m.

go-PAST-2S think-PAST-1S

'I thought you have left.'

Examples (2) and (3) illustrate complement clauses in which free complementizer such as *ki* 'that' and *diye* 'that' are used.

(2) [Sen sev-er-sin] diye düşün-dü-m.

you like-AOR-2S COMP think-PAST-1S

'I thought that you would like it.'

(3) San-ıyor-um ki [o bu-nu bil-iyor].

assume-PROG-1S COMP s/he this-ACC know-PROG

'I assume that s/he knows this.'

Both types of sentential complements which function as object complements are excluded from the scope of this study since they were not encountered in the naturalistic data.

The syntactic form of Turkish nominalized complement clauses is exactly the same as simple genitive noun phrases. As seen in examples 4 (a) and (b), the possessor or the subject is marked with the genitive and the possessed is marked with nominal agreement in both structures.

(4) a. [Ayşe'nin ses-i-]ni duydum.

Ayşe-GEN voice-POSS3S-ACC hear-PAST-1S

'I heard Ayşe's voice.'

b. [Ayşe'nin gel-diğ-i-]ni duy-du-m.

Ayşe-GEN come-DIK-POSS3S-ACC hear-PAST-1S

'I heard that Ayşe came.'

Nominalized complements may function as the subject, object, matrix predicate or the complement of a noun head as illustrated in examples (5) - (10). In this study only the object complement clauses that are formed with the nominalizing suffixes -mA, -mAK, -DIK and -(y)AcAK[3] will be looked at.[4] Subject complements will be noted if encountered in the naturalistic data.

In object complement clauses in Turkish, the embedded verb is inflected with one of the nominalizing suffixes –DIK, -(y)AcAK, -mAK or –mA, the choice of which is dependent on the semantic features of the verb (Taylan, 1998; Schaaik, 1999). The factors that affect the choice of the nominalizing morpheme will be considered in detail in the next section. In the –DIK, -(y)AcAK and –mA clauses, the nominalizing suffix is followed by the possessive morpheme. This possessive agreement suffix[5] has to agree with the subject of the embedded clause which is marked with the genitive morpheme –(n)In. The subject of the complement clause is usually omitted since it can be recovered from the form of possessive agreement suffix on the complement verb. The embedded verb is then marked with the case suffix assigned by the main verb.

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[3] It should be noted that –DIK and –AcAK suffixes also function in adverbial and relative clauses. To illustrate:

1. Gel-diğ-in zaman ara.
   come-ADVR-POSS2S timA call
   'Call me when you come.'
2. Gid-eceğ-im yer
   go-RELR-POSS1S place
   'The place I will go'

[4] Complement clauses in Turkish may also be formAd with the nominalizer –(y)Iş. But –(y)Iş complementation is excluded in the experiments, since it was not encountered in the naturalistic data.

(5) Ben [(siz-in) dün geç kal-dığ-ınız-] ı duy-du-m. (D.O. complement)

I you(pl)-GEN yesterday late stay-DIK-POSS2P-ACC hear-PAST-1S

'I heard that you were late yesterday'.

(6) Anne-m [(biz-im) geç kal-acağ-ımız-] a üz-ül-dü. (D.O. complement)

mother-POSS1S (we-GEN) late stay-AcAK-POSS1P-DAT be sorry-PASS-PAST

'My mother was sorry that we will be late'.

(7) Ahmet [(o-nun) geç kal-ma-ma-sı-] nı iste-di. (D.O. complement)

Ahmet (s/he-GEN) late stay-NEG-MA-POSS3S-ACC want-PAST

'Ahmet wanted him/her not to be late'

(8) [Hava-lar-ın soğu-duğ-u] doğru. (subject complement)

weather-PL-GEN cool-DIK-POSS3S true

'It is true that the weather got colder.'

(9) [O-nun kaza yap-tığ-ı haber-i] tüm aile-yi yık-tı. (complement to noun)

s/he-GEN accident do-DIK-POSS3S news-POSS3S all family-ACC ruin-PAST

'The news that he had made an accident upset the whole family.'

(10) Üzücü ol-an [o-nun kaza yap-ma-sı]-ydı. (predicate complement)

sad be-REL s/he-GEN accident do-MA-POSS3S-PAST

'What was sad was his/her having an accident.'

As can be seen from example (8) above, subject complements differ from object complements in that they do not have an overt case marking assigned by the matrix verb,

[5] There are two different types of agreement suffixes in Turkish, verbal agreement suffixes and nominal agreement suffixes. Possessive agreement is a nominal agreement marker.

since the subjects in Turkish are marked with the phonologically null nominative case.[6] The object complements are obligatorily marked with the accusative, dative or ablative case, the nature of which is determined by the matrix verb. Complements of nouns also lack genitive suffix. Predicate complements, as can be seen from example (10), structurally differ from object complements in that they are only inflected with the verbal agreement suffixes.

In complement clauses with a non-verbal embedded predicate (i.e. a noun or an adjective) the verb *ol-* 'be' is used for the nominalizer and other suffixes to be attached onto.

(11) (ben) [sınav-ın zor ol-duğ-u-]nu düşün-üyor-um.

(I) exam-GEN hard be-DIK-POSS3S-ACC think-PRES-1S

'I think the exam is/was hard.'

As can be seen from the examples the syntactic structure of the object complement clauses formed with -DIK, -(y)AcAK and -mA is rather complex. However, -mAK complementation is simpler in form since it does not have the possessive agreement morpheme. This is the main difference between -DIK, -(y)AcAK, -mA clauses and –mAK clauses. Most –mAK clauses are control constructions, i.e. the subject of the complement verb is co-referential with the subject of the matrix verb.[7]

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[6] The predicates that take embedded clauses as subjects are i) nouns, ii) adjectives, iii) expressions such as *ortada* 'apparent' and *ne malum* 'who knows' and iv) passive verbs (Özsoy, 1999:73). Since the clause is the subject of the main predicate, it is marked with the phonologically empty nominative suffix.

1. [Hava-nın ısın-dığ-ı] doğru.
   weather-GEN get warm-DIK-POSS3S true
   'It is true that the weather got warmAr'

[7] However, in some cases, the subject of the embedded verb may be co-referential with the direct object or may have a non-specific reading.
An example to the subject of the embedded verb being co-referential with direct object of the main clause:

1. O ben-i [sigara-yı bırak-mağ]-a zorla-dı.

(12) (ben) [Uyu-mak] istiyorum.[8]

(I) sleep-INF want-PRES-1S

'I want to sleep.'

–mA clauses are marked with agreement, whereas –mAK clauses are only inflected with case, as required by the matrix verb, since they are control constructions. On the other hand, in -mA clauses the subject of the embedded verb and the matrix verb are not co-referential.[9] The following examples show the structural and semantic differences between –mA and –mAK very clearly:

(13) Ahmet [Ayşe'ye bağır-mağ-]ı unut-ma-dı.

Ahmet Ayşe-DAT shout-MAK-ACC forget-NEG-PAST

'Ahmet did not forget to shout at Ayşe.'

(14) Ahmet [Mehmet'in Ayşe'ye bağır-ma-sı-]nı unut-ma-dı.

Ahmet Mehmet-GEN Ayşe-DAT shout-MA-POSS3S-ACC forget-NEG-PAST

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he I-ACC cigarette-ACC give up-MAK-DAT force-PAST
'He forced me to give up smoking.'

An example to the subject of the embedded verb having a non-specific reading:

2. [Uyu-mak] zevkli-dir
sleep-MAK fun-DIR
'Sleeping is fun'.

[8] Since the subject of the main clause and the embedded clause are identical there is assumed to be an underlying PRO as the subject of the embedded clause (Chomsky,1981). So the structure is:

(12) (ben) [PRO uyu-mak] isti-yor-um.
I sleep-MAK want-PROG-1S
'I want to sleep.'

[9] There are a limited number of matrix verbs, as *bil-* 'know', *öğren-* 'learn' and *hatırla-* 'remember' which can be used with either –mAK or –mA when the subject of the embedded verb is first person singular and the subject of the matrix verb is co-referential. When such verbs are used with –mA, the possessive suffix is in the form of third person possessive. A detailed analysis of this idiosyncratic behaviour of –sI can be found in Özsoy (1988).

1. Ben yüz-me-ği bil-iyor-um.
I swim-MAK-ACC know-PROG-1S
'I know how to swim.'
2. Ben yüz-me-si-ni bil-iyor-um.
I swim-MA-POSS3S-ACC know-PROG-1S
*Ben yüz-me-m-i biliyorum.
I swim-MA-POSS1S-ACC know-PROG-1S

'Ahmet did not forget Mehmet's shouting at Ayşe.'

(15) Ahmet [Ayşe'ye bağır-ma-sı-]nı unut-ma-dı.

Ahmet Ayşe-DAT shout-MA-POSS3S-ACC forget-NEG-PAST

'Ahmet did not forget his own/his shouting at Ayşe.'

In sentence (14) Ahmet did not forget how Mehmet shouted at Ayşe, that is the details of the event are not forgotten. In sentences (13) and (15) the subject of the main clause is co-referential with the subject of the embedded clause. However, in (13) –mAK is used since it has an action reading, i.e. Ahmet did not forget to shout at Ayşe. In (15) a different meaning is achieved due to the use of –mA instead of –mAK. The sentence is ambiguous since the subject of the embedded clause may either be Ahmet or someone else. In this sentence we get the meaning that *Ahmet did not forget his own/his shouting at Ayşe*, that is, how Ahmet/he shouted. In (13) a possessive suffix is not required in the embedded clause.

–mA or –mAK nominalizing suffixes are a-temporal, that is their temporal reference is mostly dependent on the tense of the matrix verb. When the main verb is in the present tense, then the embedded verb is also interpreted to be either present or future tense as can be seen in example (16). In example (17) the matrix verb is in future tense and thus the event expressed in the embedded verb has a future reading. However, when the main verb is in past tense as in example (18) the –mA clause does not necessarily get a past reading, it may be the case that 'Ali's going' will be some time in the future. The same holds true for example (19) where the main verb is in evidential past tense –mIş. Examples

'I know how to swim.'

(16) - (18) are –mA clauses, only (19) is a –mAK clause. Example (20) shows that –mA clauses may also have a future reading, when there is a time adverbial in the sentence.

(16) Ayşe [Ali'nin git-me-si-]ni istiyor.

Ayşe Ali-GEN go-MA-POSS3S-ACC want-PROG

'Ayşe wants Ali to go.'

(17) Ayşe [Ali'nin git-me-si-]ni isteyAcAK.

Ayşe Ali-GEN go-MA-POSS3S-ACC want-FUT

'Ayşe will want Ali to go.'

(18) Ayşe [Ali'nin git-me-si-]ni istedi.

Ayşe Ali-GEN go-MA-POSS3S-ACC want-PAST

'Ayşe wanted Ali to go.'

(19) Ayşe [git-mek] istemiş.

Ayşe go-MAK want-PAST(EV)

'Ayşe evidently wanted to go.'

(20) Ayşe [Ali'nin yarın yeme-ğe git-me-si-]ni istedi.

Ayşe Ali-GEN tomorrow food-DAT go-MA-POSS3S-ACC want-PAST

'Ayşe wanted Ali to go to the dinner tomorrow.'

The temporal values of –DIK and -(y)AcAK nominalizing suffixes are controversial, which will be discussed in detail in the following section. For some linguists –DIK is restricted to past reference and -(y)AcAK to future reference (Kennely, 1990; Kural, 1992). Some linguists believe that –DIK is not restricted to past reference (Taylan,1998).

1.3. Different Approaches to Complementation in Turkish

In this section, the previous works on complementation in Turkish will be briefly discussed. There are basically two different approaches to complementation in Turkish, one semantically, the other syntactically oriented. The semantic approach is more descriptive, it emphasizes the semantic properties of the verb as the determining factor in the choice of the nominalizing morpheme. The syntactic approach is followed by Underhill (1976), Kornfilt (1984), Kennely (1990), Kural (1992), Göksel (1996) and Tosun (2000). The semantic approach is adopted by Taylan (1998), Özsoy (1999) and Schaaik (1999).

1.3.1. Syntactic Approach

a. Underhill's approach

Underhill (1976) was the first one who found complementation problematic and looked into it. According to Underhill, the main difference between –mA, -DIK and -(y)AcAK is that –mA is an action nominal whereas –DIK and -(y)AcAK are factive nominals. He classifies the nominalizing morphemes in Turkish in the following way:

-(y)Iş	deverbal nominal
-mAK	infinitive
-mA	gerundive (action)
-DIK	gerundive (factive)
-(y)AcAK	gerundive (factive)

This classification of Underhill is not sufficient due to the fact that it does not capture the differences between the morphemes so as to explain when to choose which one.

Kornfilt (1984) follows Underhill and classifies –DIK and –mA as participial forms, a factive nominal and an action nominal respectively. Kennelly (1990) presents a similar view but she mainly deals with the aspectual differences between –DIK and -(y)AcAK according to the feature [±future]. She proposes that –DIK is used when the embedded clause is [-future] and -(y)AcAK used when it is [+future].

b. Kural's approach

Kural (1992) classifies –mA and –mAK as infinitive, -DIK as the past and -(y)AcAK as the future morphemes. He further claims that the final -K in these morphemes belongs to the C° category and it is the complementizer in Turkish. Kural analyzes –DI and -(y)AcAK as the past tense morpheme and the future tense morpheme, respectively. The complementizer -K is overt in –DIK; in -(y)AcAK it has is converged with the final –K. He claims that –DIK, -(y)AcAK and –mA morphemes are gerundive due to the following properties of Turkish complement clauses (Kural, 1992: 3):

a. Subjects bear the genitive case in this context.

b. Subject-verb agreement is in the nominal paradigm.

c. All subordinate clauses are and must be case marked.

Kural accounts for the difference between –mA and –mAK by claiming that –mA is used "in contexts of subject-verb agreement where the subject needs case and –mAK in non-agreement contexts" (1992:9). He further suggests that verbs which select either –mA or –mAK can be taken as verbs of PRO-control and non-control contexts. I do not fully agree with Kural in that the choice between –DIK and -(y)AcAK is only due to the difference between past and future reference since this choice is also determined by the matrix verb, for reasons I will discuss later.

Göksel[10] (1998) and Tosun[11] (1999) also worked on complementation in Turkish but I will not go into the details of their work since they are not directly relevant for my analysis.

1.3.2. Semantic Approach

As mentioned earlier, the main difference between semantic and syntactic approaches to complementation in Turkish is that in semantic approaches it has been claimed that it is the semantic properties of the main verb that play a determining factor in choosing the nominalizer.

a. Taylan's Approach

Taylan (1998) claims that the semantic properties of the main verb plays a major role in determining the nominalizing suffix the complement verb will take together with the semantic properties of the nominalizing suffixes. Taylan classifies the complement taking verbs into the following subcategories according to the nominalizing suffix they choose in their complement clause[12]:

i) Verbs that only allow –DIK/-(y)AcAK as the nominalizing suffix:

sanmek, zannetmek, fark etmek, farkına varmak, inanmak, reddetmek, itiraf etmek, iddia etmek, emin olmak, pişman olmak.

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[10] In Göksel's (1998) analysis there are two slots available on verbs and in embedded verbs; one of these slots is occupied by the complementizer –K. This is why a second T/A marker cannot be attached to embedded verbs, since the slot is already taken by the complementizer –K. However, as has been mentioned before there are certain problems with treating –K as the complementizer in Turkish.

[11] Tosun (1999) analyzes Turkish nominalizing suffixes in the framework of Distributed Morphology. Tosun points out that the –mAK clauses are verbal whereas –mA clauses are nominal. She takes the nature of the inflection as a proof. The –mA clauses have '–sı' as the third person inflection, following the nominal paradigm. She points out that the –DIK and –AcAK clauses also follow the nominal inflection. Tosun analyzes –DIK nominalizing suffix as a factive morpheme which "yields past interpretation unless the predicate is stative or a non-past adverb occurs in the structure." Tosun believes that these nominalizing morphemes are tense morphemes which derive "gerunds", they are semi-inflectional and their contribution to the structure has a "flavour" of tense but this tense is not the "grammetical tense" but it is a semantic tense.

[12] -mAK complements are not included in the classification.

ii) Verbs that take nominalized complement clauses constructed only with –mA:

a. *emretmek, istemek, talep etmek, arzu etmek, dilemek, umut etmek, beklemek.*

b. *lazım, gerek, şart, mecbur olmak, mecbur kalmak, izin vermek, müsaade etmek, yasaklamak, engellemek, önlemek, mümkün, olası.*

c. *beğenmek, sevmek, bayılmak, hoşlanmak, kızmak, nefret etmek, alınmak, eleştirmek, utanmak, canı sıkılmak, övmek, affetmek, öğütlemek, katlanmak, yararlanmak, şikayet etmek.*

iii) Verbs that accept either –DIK/-(y)AcAK or –mA as the nominalizing suffix:

sevinmek, üzülmek, memnun olmek, şaşırmek, bozulmek, içerlemek, ısrar etmek, kabul etmek, hatırlaaek, bilmek, anlamak, bildirmek, korkmak.

Taylan states that this list exhibits a natural classification. It is not random that all the verbs in (i) allow for –DIK/-(y)AcAK nominalization only. All of the verbs in (i) express the speaker's epistemic attitude, that is his/her commitment to the truth of the statement. According to some previous analyzes in the literature the factivity of –DIK is due to the fact that it is derived from the past participle (Kural, 1992). However, since –DIK is not restricted to past factivity, it is a different morpheme than the past tense morpheme –DI. When the sentence does not have a time adverbial then the clause with –DIK is interpreted as having non-future reference. But when there is a non-past time adverbial in the sentence, the -DIK clause can also be interpreted as referring to a present or future event, which shows –DIK is not restricted to past reference (Taylan, 1998). To give an example:

(21) Sen-in bu iş-i [yap-tığ-ı-]na inan-ıyor-um. (past/present reference)

You-GEN this work-ACC do-DIK-POSS3S-DAT believe-PROG-1S

'I believe you did/have done/ are doing this work.'

(22) Ayşe orada [çalış-tığ-ı-]nı itiraf et-ti. (present/past reference)

Ayşe there-DAT work-DIK-POSS3S-ACC confess do-PAST

'Ayşe confessed that she was/is working there.'

(23) Ahmet [yarın Antalya'ya git-me-diğ-i-]ni açıkla-dı. (future reference)

Ahmet tomorrow Antalya-DAT go-NEG-DIK-POSS3S-ACC state-PAST

'Ahmet stated that he is not going to Antalya tomorrow.'

The verbs in the second class (ii,a) all express modal notions like command, request, wish, desire.

(24) [Git-me-si-]ni dile-di-m.

go-MA-POSS3S-ACC wish do-PAST-1S

'I wished that he would go'

The verbs in (ii,b) also express modal notions, but this time obligation, necessity, permission and probability.

(25) [Ders çalış-ma-sı] şart.

lesson study-MA-POSS3S requirement

'It is required that he study.'

The predicates in (ii,c) reflect the speaker's emotional reaction or personal attitute to the event.

(26) [Ara-ma-sı-]na kız-dı-m.

call-MA-POSS3S-DAT angry-PAST-1S

'I was angry that he called.'

The verbs that take either –DIK/ -(y)AcAK or –mA can be divided into two classes:

1. those main verbs expressing the speaker's personal reaction to the event and show a meaning difference
2. cognitive/ perceptual verbs that do not bring about a meaning difference whether they are used with –DIK/-(y)AcAK or –mA.

The following example shows the meaning difference caused by the use of different nominalizing suffixes with the same matrix verb:

(27) [Tanı-ş-tığ-ımız-]ı hatırla-dı-m.

know-RECIP-DIK-POSS1P-ACC remember-PAST-1S

'I remembered that we have met.'

(28) [Tanı-ş-ma-mız-]ı hatırla-dı-m.

know-RECIP-MA-POSS1P-ACC remember-PAST-1S

'I remember our meeting.'

Whereas in the first sentence the speaker remembers the fact that they met, in the second sentence s/he remembers how they met, that is the details of their meeting. The verb *söyle-* 'tell' also exhibits a meaning difference when used with different nominalizers:

(29) [Ahmet'in git-tiğ-in-]i söyle-di.

Ahmet-GEN go-DIK-POSS3S-ACC tell-PAST

'He told that Ahmet left.'

(30) [Ahmet'in git-me-sin-]i söyle-di.

Ahmet-GEN go-MA-POSS3S-ACC tell-PAST

'He told Ahmet to leave.'

As can be seen from the examples above, *söyle-* 'tell' gets an imperative interpretation when used with –mA but it gets a past tense interpretation when it is used with –DIK nominalizer. Taylan analyzes this by saying that "–DIK does not express past or non-future temporal reference but it reflects the modal notion of certainity" (1997:9). However, this basic modal notion may give way to temporal interpretations, influenced by the lexical semantics of both the complement verb and/or the main verb and adverbials if any in the complement.

Taylan also claims that the factive versus active nominal distinction falls short for Turkish since the factive nominals are not always used with factive main verbs. She states that the choice between –DIK/-(y)AcAK and –mA is based on a modal opposition. –mA is often used with clauses that express agent oriented modality, that is modal notions like obligation, necessity, permission etc. These clauses reflect the speaker's personal reaction or evaluation with respect to the proposition of the complement. –DIK and -(y)AcAK is used with main verbs that carry an epistemic judgement, they are used to express the speaker's degree of commitment to truth of the event.[13] As can be seen from the following example since the verb expresses 'an agent oriented' notion it is not possible to use the nominalizer –DIK.

(31) [Ali'nin okul-a git-me-me-si-]ni iste-di-m.

[13] Taylan adopts Palmer's definition of epistemic modality "the status of the speaker's understanding or knowledge" (Palmer, 1986: 51-52).

Ali-GEN school-DAT go-NEG-MA-POSS3S-ACC want-PAST-1S

'I did not want Ali to go to school.'

(32) * [Ali'nin okul-a git-me-diğ-i-]ni iste-di-m.

However, some verbs as *sevin-* 'be happy' show no meaning difference with either suffix:

(33) [Gel-diğ-i-]ne sevin-di-k.

come-DIK-POSS3S-DAT happy-PAST-1P

'We are happy that you have come.'

(34) [Gel-me-]ne sevin-di-k.

come-MA-DAT happy-PAST-1P

'We are happy that you have come.'

To sum up, this approach shows that the nominalizers have their own meaning and the meaning of the nominalizer plus the matrix verb gives the full meaning of the utterance.

b. Özsoy's Approach

Özsoy (1999) states that the main verb subcategorizes the nominalizing affix it will assign to its complement verb. She makes a distinction between verbs that take –DIK and –(y)AcAK as expressing factivity and verbs with –mA[14] and –mAK as expressing non factivity, such as wish, manner, appreciation (Özsoy 1999:156). The difference between –DIK and –(y)AcAK is captured by the fact that –DIK expresses an action (i) that has occurred in the past with respect to the time of speaking or (ii) that it is simultaneous with

or has preceded the situation referred to in the main clause. Özsoy provides the following examples for the different temporal interpretations of -DIK (Özsoy, 1999:56):

(35) Ben [Ayşe'nin şimdi kitap oku-duğ-u-]nu bil-iyor-um. (present reference)

I Ayşe-GEN now book read-DIK-POSS3S-ACC know-PROG-1S

'I know that Ayşe is reading a book now'

(36) Ben [Ayşe'nin dün git-tiğ-i-]ni bil-iyor-um. (past reference)

I Ayşe-GEN yesterday go-DIK-POSS3S-ACC know-PROG-1S

'I know that Ayşe left yesterday'

The usage of -(y)AcAK is given as expressing an action that will occur in the future with respect (i) to the moment of utterance and/or (ii) to the time of the action indicated by the main verb. To quote her own examples (Özsoy, 1999:56):

(37) Ben [seçim-ler-in gelecek yıl yap-ıl-acağ-ı-]nı san-ıyor-um.

I election-PL-GEN next year do-PASS-(y)AcAK-POSS3S-ACC guess-PROG-1S

'I guess the elections will be held next year'

(38) Biz [kantin-in dün kapa-n-acağ-ı-]nı unut-muş-tu-k.

we canteen-GEN yesterday close-PASS-(y)AcAK-POSS3S-ACC forget-PAST(ev)-PAST-1P

'We forgot that the canteen would close yesterday'

c. Schaaik's Approach

[14] Özsoy accounts for the possessive marker on the possessed impersonal infinitive as being base generated. It is distinct form the possessive marker assigned by the genitive marker on the embedded subject, which is in accordance with the predictions of Government and Binding theory. (Özsoy, 1988)

Schaaik (1999) looks at nominalizations from the viewpoint of Functional Grammar and he also concludes that it is according to the main verb type that the embedded clause is nominalized. Schaaik provides the following chart where he classifies verbs in terms of semantic properties like verdictive, expositive, etc. (Schaaik 1999: 97)

Verb type	**verb**	**-DIK/-(y)AcAK**		**–mA illocution**
verdictive	san-	+	-	fact
	zannet-	+	-	
expositive	söyle-	+	+	fact vs act 'imperative'
	açıkla-	+	+	
apprehensive	anla-	+	+	fact vs act 'reason'
	inan-	+	+	
putative	bil-	+	+	fact vs act 'manner'
	hatırla-	+	+	
emotive	üzül-	+	+	no difference in meaning
	kız-	+	+	
remissive	affet-	-	+	act
	beğen-	-	+	
conative	iste-	-	+	act
	planla-	-	+	
exercitive	emret-	-	+	act 'imperative'
	buyur-	-	+	

Verdictive verbs only express facts, remissive conative and execitive verbs express acts only, whereas the choice of the suffix determines the meaning in the expositives, apprehensives and putative verbs. Emotive verbs show no meaning difference according to the nominalizing suffix.

Schaaik distinguishes –DIK and -(y)AcAK by the [±future] feature, where –DIK is [-future] and -(y)AcAK is [+future]. He claims that –DIK is restricted to [-future] and -(y)AcAK is restricted to [+future]. The difference can be seen from verbs where the speaker is unintentionally involved such as *duy-* 'hear'. (Schaaik, 1999: 93)

(39) Murat [Berna-nın ev-den çık-tığ-ı-] nı duy-du.

Murat Berna-GEN house-ABL leave-DIK-POSS3S-ACC hear-PAST

'Murat heard that Berna (has) left the house.'

(40) Murat [Berna-nın ev-den çık-acağ-ı-]nı duy-du.

Murat Berna-GEN house-ABL leave-(y)AcAK-POSS3S-ACC hear-PAST

'Murat heard that Berna will leave the house.'

In the example above, both complement clauses express factivity and the only difference is that the complement clauses are located in time in different ways in relation to the matrix verb *duy-* 'hear'.

Schaaik classifies –mA as giving an event reading. According to him, the "controlled" (i.e. the verbs where the speaker is intentionally involved) counterparts of the verb *duy-* 'hear', i.e. *izle-* 'watch' and *seyret-* 'watch', are subcategorized only for –mA nominalizer. To give his own examples (Schaaik, 1999: 94):

(41) [Murat'ın tenis oyna-ma-sı-]nı izle-di-m /seyr-et-ti-m.

Murat-GEN tennis play-MA-POSS3S-ACC watch-PAST-1S

'I watched Murat playing tennis.'

(42) [Murat'ın piyano çal-ma-sı-]nı dinle-di-m.

Murat-GEN piano play-MA-POSS3S-ACC listen-PAST-1S

'I listened Murat playing the piano.'

To sum up, the semantic analysis appears to be a better account for Turkish complementation since it is the semantic properties of the complement taking predicates that play an important role in the choice of the nominalizing suffix rather than the temporal

values of the nominalizing suffixes. There are certain inherent semantic properties of nominalizing suffixes, but it is mainly the matrix verb which selects the nominalizing suffix.

CHAPTER II

Acquisition of Complementation in different languages

2.0.

The aim of this chapter is to review the works on the acquisition of complementation in languages such as English, Korean and Chinese.[15] The similarities and differences between these languages will be discussed.

2.1. Acquisition of Complementation from a Crosslinguistic Perspective

2.1.1. Acquisition of Complementation in English

Some studies on English complementation and its acquisition will be discussed in this section.

Jesperson (1964:346), one of the first linguists who looked into infinitival clauses, suggested that *'to'* is "often felt as belonging more closely to the preceding verb than to the infinitive." (cited in Bloom et al., 1984).

[15] Similar acquisition studies were done by Hollebrandse et al. (2001) for Italian complementation and by Pérez-Leroux (2001) for Spanish complementation. I will not review them since they were not rellevant for this study.

Fodor, Garrett and Bever (1968) made some psycholinguistic studies of sentence processing and found that complement taking verbs are inherently more difficult than simple transitive verbs even for adults to process.

Limber (1973) studied 12 children under three years of age. He found that *want*-type verbs were one of the first verbs children used in infinitive structures. Limber argued that these verbs might constitute a pattern for the structure of the child's early first verb phrase complements. He observed that English-speaking children acquire wh-complement constructions such as *'I will show you how to do it'* at around 2;5 and sentential complements with finite morphology at 3;6. Limber also noted that complex sentences are formed from the child's repertoire of simple sentences (1973; 84). He gives this as the reason why complements are acquired rather late in language development.

Chomsky (1981), within the framework of Government and Binding Theory proposed that 'control' construction is the unmarked case for infinitives, having a lexical subject is the marked case. In the GB theory, language acquisition is seen as the process of setting the values of 'parameters'. The parameters are innate and they are initially set to unmarked values. If the language has the marked values then the language learner will re-set the parameters. The marked case must be learned, whereas the unmarked case is what the language learner will assume to be in effect in the absence of evidence to the contrary. (Chomsky 1981:8). Since marked constructions are added on the basis of direct evidence they are acquired later and slower. (Chomsky 1981:11)

Pinker (1984) proposes a rough ordering of acquisition of complement structures in English:

1. control verbs such as *want, like, try, forget* at around 2;0 (MLU 1.3- 2.6)

   ex: I want to sit down.

2. object-equi verbs such as *see, watch, help, tell*

   ex: I helped him leave.

3. verbs taking full sentential complements such as *think, know, see, look, show, watch, tell, ask, teach, explain*

   ex: I think she is sick.

4. raising-to-object verbs such as *want* (want NP VP) at around 3;0 (MLU 4.0-4.5)

   ex: I want Mommy get it.

Pinker (1984) points out that English-speaking children also use bare verbs in their first complement structures, which is grammatical with some verbs. But it is often ungrammatical when they omit *'to'* in infinitival complement constructions. English-speaking children acquire finite sentential complement structures considerably later than equi type infinitival complements. Pinker further proposed that what children learn is that matrix predicates specify the formal properties of their complements, such as being finite or infinitival and whether and which complement must be present in the complement structures.

Bloom et al. (1984) studied the spontaneous speech samples of four children under the age of three and they reported the production of two other verbs in addition to *want.* They noted that *like* and *need* also take infinitives with lexical subjects. They set the productivity criterion as four instances of a given form in one sample. The aim of their study was to find out whether children learned *'to'* as a meaningless syntactic marker or with a particular meaning, such as the prepositional meaning 'direction towards'. In all four children in the study *'to'* emerged with complement verbs when MLU was about 2;5. The children initially used a small group of matrix verbs, particularly *'want'* and *'go'* less often *'got'* and *'have'*. These verbs functioned as expressing the child's mood or intention. When these matrix verbs emerged they were used without the connective *'to'*. Non-modal

matrix forms *'try'* and *'ready'* appeared after the modals and they were used more often with *'to'* than without it. So, *'to'* first emerged with non-modal matrix forms in the speech of English children. Bloom et al. argue that the matrix forms and not the complement verbs controlled the emergence of *'to'*. *'To'* was acquired differently with different matrix verbs and it was more likely to occur with new than old matrix forms. It appears that the use of complementizers was lexically specific rather than the result of a generalized syntactic rule for complementation when it first appeared in these children's speech. The majority of the matrix forms that provided the complement verb contexts for *'to'* shared an element of meaning that was best characterized as indicating direction or movement towards the activity named by the complement verb. This semantic consistency, meaning 'direction towards' was prefigured by the meaning of the first modals *'want'* and *'go'*. The next most frequent forms *'like','suppose','it's time','try','ready'* and *'about'* also indicated direction towards the activity or state of affairs named by the complement verb. The main result of their study was that children learned *'to'* in the basic structure verb + to. The complementizer connectives that children learned were specific to individual verbs. The first verb in a sentence governed whether a connective occurred and if so which one. Children learned to use *'to'* more easily with new forms.

In another study Bloom et al. (1989) worked on the acquisition of complex sentences with perception and epistemic verbs that take another verb as their complements. The acquisition of complementation began between 2 and 3 years in the four children's spontaneous speech. The results were that complement types, complementizer connectives and discourse contexts in which complementation occurred were specific to individual matrix verbs. The most frequent verbs acquired were the perception verbs *'see'* and *'look'* and the epistemic verbs *'think'* and *'know'*. These verbs expressed certainty versus uncertainty toward the content expressed in their complements. The productivity criterion

was the usage of at least three different sentences with a particular matrix verb. They provided the following table (Bloom et. al.,1989:102) for the categorization of complement taking verbs.

Table 1- Lexical Categorization of Complement-taking Verbs.

Number of children	**Perception**	**Epistemic**	**Volition/ intention**	**Communication**	**Causative**
4 children	see look (at)	think know	want, like go, have	____	____
2 children	watch show	____	got try	say tell	let make
1 child	____	forget, wonder remember, bet mean, afraid	need	____	help get

Bloom et al. examined naturalistic data for evidence of developing productivity of complement taking verbs, their discourse contexts and surface structures of sentences with matrix verbs including complement verbs. Their conclusion was that perception verbs occurred with complements about 42% less than epistemic verbs. They observed that the acquisition was verb by verb after working on the acquisition of complementizers such as *'what, how, if, where, why'*. *'What'* was acquired with the verb *'look'* only after it became productive with 'know' and 'see'. Similarly, *'where'* was productive with *'know'* before *'see'*. These results mean that children learned lexically specific rules rather than learning a general rule for complementation per se. They also concluded that "The plurifunctionality of *'that'* may have inhibited its acquisition as a complementizer, since an item with more

than one function within a sentence presumably increases perceptual difficulty" (Bever,1970 cited in Bloom et al., 1989). Another factor they propose that may have affected children's rather late acquisition of *'that'* may be the input frequency, since it may be the case that *'that'* is often omitted. In the data they worked on, complementation with subject coreference occurred before complementation with non-referent subjects. Bloom et al. argue that the earlier learned volition/intention verbs have the inherent meaning 'direction toward' and they take complements with *'to'*. Epistemic and perception verbs take sentential and wh-complements. They conclude that "the matrix verb determined whether a complementizer occurred and if so which one. In the period studied children learned this for each matrix verb separately" (Bloom et el., 1989: 118). They also suggest that the acquisition of complementation depends on "the child being able to hold in mind two propositions, where one of the propositions is expressible in a simple sentence format and the other is the mental attitude directed towards the contents of that proposition" (1989: 119).

L. Bloom (1991) suggests that there is a clear sequence in children's ability to produce verb complements. She concluded from the naturalistic data that children begin with simple object complements then progress to infinitival complements and only after that do they acquire finite complement structures.

Eisenberg & Cairns (1994) worked on the production of infinitival structures of children between 3;7 to 5;4. They concluded that adult-like command of the infinitival form was not complete even with five-year-olds.

DeVilliers and Roeper (1994) argued that 4 and 5-year-old English children cannot differentiate between the finite complement clauses which are marked with 'that' and infinitive *'to'* complements. As a result of the experiment they conducted they showed that 4 and 5 year old children were not able to distinguish between the sentences *'Who did Big*

Bird forget to invite?' and *'Who did Big Bird forget that he invited?'*. DeVilliers (1995) argued that the children cannot make this distinction because they develop the syntactic rules for embedded clauses late. However, the children were able to understand the infinitival *'to'* complementation before they could understand tensed complements marked with *'that'*. Since they know the infinitival construction they answered the tensed complement clauses as they would answer the infinitival complements.

Bartsch and Wellman (1995), who worked with ten English children, claimed that English-speaking children acquire mental state verbs much later than verbs of desire and emotion. One of their findings was that English parents talk about beliefs with their children less than they talk about desires. The talk about beliefs requires a more complex syntax which was also pointed out as a cause for the rather late acquisition for belief verbs. One major claim is that children develop from a "desire psychology" to a "belief psychology" as they are developing a "theory of mind"[16] (Tardif & Wellman, 2000). Children first understand simple wants and needs before understanding others' representations of the world.

2.1.2. Acquisition of Complementation in Korean

Young-Joo Kim's (1989) work is one of the first detailed accounts of the acquisition of complement structures in Korean, a language typologically different from English [17].

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[16] Theory of Mind can be defined as a framework which studies people's capacity to form representations of other's mental states and processes.

[17] The characteristics of Korean embedded clauses as listed by Young-Joo Kim are as follows:

a. Nominal modifiers such as genitives and relative clauses precede the head noun.
b. Subordinate predicate forms precede matrix predicates.
c. Interrogative structures are expressed by placing question particles in sentence final position and wh-words do not have to be moved to sentence final position.
d. Predicates (verbs, adjectives and copula) do not show agreement in person, gender or number.

Young-Joo Kim worked on the spontaneous speech data of two children observed from 1;5 to 3;0 years. He compares the results of his study to previous research on the acquisition of English complement clauses.

There are six different types of complementizers in Korean, an SOV language with a relatively free word order. For most cases, complementizers in Korean are bound morphemes suffixed to the embedded verb or for some matrix verbs null morphemes. Kim notes that the first complement clause was produced at 1;9 by both of the subjects. He considers a complement taking predicate as productive if it occurs with at least three complements cumulatively across all samples. Kim provides a chronology of the acquisition of complement taking predicates in his two subjects which are presented in Appendix II.

As a result of this study Kim reached the conclusion that control verbs are the first to be acquired in Korean as in English. One language specific factor that might contribute to the early acquisition of control verbs is that many of these verbs take –a/-e as complementizer. This suffix is exactly the same morphological form as the most widely used informal sentence ending. –a/-e suffix is used to express declarative, interrogative or imperative with different intonations and it is one of the first ending that Korean children acquire. Kim gives the following example for the complementizer *–ko* and *–e*.

a. Cenhwa kunh-e peli-ess-e. (Polam 1;10)

telephone hang up-COMP end up-PAST-DEC

'I ended up hanging up the phone'

b. Khun imo po-ko siph-e, imopu-to. (Polam 2;5)

Elder aunt see-COMP want-DEC uncle-also

'(I) want to see elder aunt, and uncle, too.'

Korean data also show that sentential complements such as wh- complements and indirect quotatives emerge almost one year later (about 2;10) than the first infinitival complements. The similarities between the acquisition of Korean complementation and acquisition of complementation in English are summarized by Kim as follows: (Kim, 1989: 576)

1. Control constructions are the first to be acquired in both languages.
2. Tensed complements are acquired considerably later than control type infinitival complements.
3. Both English and Korean-speaking children initially used a small group of matrix verbs to express moods, wishes or intentions in complex sentences.

Korean-speaking children never omit complementizers from their very earliest complement structures -even though they sometimes omit matrix predicates. In contrast, English-speaking children at first omit complementizers in obligatory contexts and then begin to provide them gradually. Pinker asserts that the observed difference between two languages is due to the fact that "English complementizers are perceptually non-salient, they are not uttered in isolation or sentence initial or sentence final position" (Pinker: 1984, 224). However, Korean complementizers do occur in salient positions, being sentence final or clause final. Complementizers in Korean are actualized as bound morphemes affixed to complement predicates; whereas in English complementizers are unbound or morphologically independent syntactic markers. Moreover, complementizers in Korean are more finely divided than in English. In English verbs like *'want, try, like'* take the same complementizer but in Korean the counterparts of these verbs take different complementizers. Kim also points out that "Although in Korean, as in English, complementizers are devoid of semantic content, the fact that some complementizers form tighter complement plus matrix units than others suggests that Korean complementizers

reflect relevant semantic information more transparently than their equivalents in English"[18] (Kim: 1989, 596).

2.1.3. Acquisition of Complementation in Chinese

Tardif and Wellman (2000) worked on the acquisition of verbs denoting mental states for Mandarin and Cantonese speaking children. They wanted to test whether Bartsch and Wellman's conclusions about children's Theory of Mind were also valid for Chinese speaking children. Tardif & Wellman claim that the data suggests a link between the syntax necessary for understanding verb complementation and the propositional distinction for understanding false belief. According to them this leads to deVilliers' radical hypothesis that the complex syntax used in describing mental events makes possible the representational changes that allow for understanding false beliefs. However, there is one thing that is very interesting in Chinese, there is no obligatory marking of the complement clauses as infinitival or finite. Both of the features that mark English finite complement clauses, that is tense marking and the complementizer, is missing in Mandarin and Cantonese Chinese. Most of the verbs that are used to code mental states in Chinese are polysemous; that is, they can be used both to indicate desires or to indicate beliefs. Chinese children acquired the verb *yao4* 'want' before mental state verbs. They used the same verb to refer to mental states like thought, belief or ability later than they used it to refer desire. Tardif & Wellman also looked at whether children used mental verbs to refer to themselves or to other people's desires, knowledge, thoughts. They found that the children used them to refer to their own beliefs first, which is compatible with the theory of mind. Since there is no syntactic complexity involved with the mental state verbs in Chinese as in English[19],

[18] Kim (1989) points out that Korean data poses problems for Lexical Functional Grammar and GovernmAnt and Binding Theory.

[19] In English the syntax required for desire verbs in simpler than that required for mental verbs since mental verbs require a finite embedded verb introduced by the optional complementizer 'that'.

the late acquisition of mental state verbs in Chinese show that it is the psychological load that makes it difficult for children to acquire mental verbs in complement structures. In short, in their work Tardif & Wellman found that both Mandarin and Cantonese speaking children acquire verbs of desire and their complements earlier than mental verbs, which is quite similar to the acquisition pattern of English speaking children.

2.2. Differences and Similarities

Works on the acquisition of English and Korean complementation showed that control constructions are the first constructions that are acquired. Korean children never omit complementizers, whereas English children first start with omitting complementizers in obligatory contexts. When we compare Chinese and English, we see that *want*-type complementation is acquired first in both languages. Tensed complements are acquired later than infinitival complements by both English and Korean-speaking children. English children learn lexically specific rules for complementation (Bloom, 1989). These results follow children's developments in 'Theory of Mind' since it seems that in all these languages children acquire verbs of desire before mental verbs. The age children acquire their first complement structures is about 2;0 in the three languages studied.

CHAPTER III

Method

3.0. Overview of the Database

In the present study, both naturalistic and experimental data were used. There are two sets of naturalistic data; one set is longitudinal data[20], which consists of the spontaneous speech samples of four monolingual Turkish children. The recordings were made between the ages 1;1,19 and 3;3,3. The second naturalistic data set is made up of 33 children's free speech samples collected within a cross-sectional longitudinal design by Slobin (1972) as a part of the Berkeley Crosslinguistic Acquisition Project. (CHILDES) The data were collected at the children's own residence and come from children between the ages 2;0 and 4;8.

3.1. Samples for the Naturalistic Data

3.1.1. The Longitudinal Sample

[20] The data analyzed in this study comes from Prof. Dr. A. Aksu-Koç's research "A Longitudinal Study of the Acquisition of Turkish" (project no: 96S0017) supported by Boğaziçi University Research Fund.

All four of the subjects in the database are the daughters of university-educated parents residing in Istanbul. The families belong to middle or upper middle class and all parents speak standard modern Turkish.

The first subject Azra is the only child of her family. Her mother is an English literature professor and her father is a finance director. Both of her parents work during the daytime and she attends a kindergarten. She was taken care of by a baby-sitter during the daytime until she was 1;3. She is monolingual but both at home and at the kindergarten she occasionally hears English as well. The recordings of Azra were done by one of the parents, mostly by the mother at their own residence. Her recordings start when she was 1;1,19 and her speech was recorded once every month until she was 1;3,6. Then, there is a three month interval and at 1;6,11 she was recorded again. Between that age and 1;10,4 and between 2;1,29 and 2,9,25 there are two big intervals. Despite the gaps in her data collection, her samples are considered to be representative of the grammatical development of a Turkish child at these ages and hence they are included into the study. Azra is not a very talkative child. She does not speak much during the recording sessions and she rarely produces ungrammatical utterances.

Deniz, the second subject of this study, is the only child of her family. Her mother is a psychologist and her father a medical doctor. She does not attend kindergarten. Her grandmothers take care of her when her mother goes to work. One of her grandmothers is German and speaks Turkish with a slight German accent. Although Turkish is spoken at home, she hears her relatives speaking in German, too. She does not speak or understand German; however, in her speech there are some German words like *omi* 'grandmother' or *tante* 'aunt'. Deniz treats these words as Turkish words. Deniz's recordings, which were done by the mother, start when she was 1;3.3 and end at 2;0,4. The recordings were done about twice a month. Her father and her grandmother whom she calls '*oyi*' or '*omi*'

occasionally take part in the recording sessions. She is a very talkative and a competent speaker. She rarely produces errors.

Mine is the second child of the family, she has a brother. She has a psychologist mother, a mechanical engineer father. Mine's brother, Ali, is two and a half years older than Mine. Her parents both work and she is taken care of by a baby sitter. Mine's recordings start when she was 1;6,21. She was recorded until 2;10, about once a month either by the mother or by her baby sitter, Naciye. Her father and brother, too, take part in the first recordings. She is very talkative. She speaks a lot and tries to use complex structures that very frequently result in errors, which are interesting to analyze.

Tuna's mother is a graduate student in psychology and her father is a businessman. She lives with her parents and baby-sitters in a crowded and noisy home environment. When Tuna was 1;4,26, her baby brother was born. She also has an elder stepsister who occasionally visits them. The stepsister is very fluent in French and she is encouraged to speak in French with Tuna. Tuna's recordings start at 1;3,20 when she was the only child of the family. Then at 1;4,26, her baby brother was born. At the beginning of the data collection she was recorded everyday by the mother but then the interval between the sessions were expanded. Her last recording was done at 1;7,15. She does not talk much during the recordings. Most of her speech consists of one-word utterances.

3.1.2 Language development

The complete list of the recordings which show each child's age, MLU, total number of morphemes and total number of utterances on each session are presented in Appendix III.

Azra's recordings start from the prelinguistic stage and her MLU is accepted to be 0.00 at the first session. The highest MLU is 5.13 which is recorded at 2;11,14. Deniz's MLU is 1.26 at the first session and it rises up to 4.32 at 2;0,4. Mine's recordings start

when her MLU is 1.49 and the highest MLU in her speech is 5.75, which is recorded at 2;7. The MLU of Azra, Mine, Deniz and Tuna are almost the same especially during the first months of the recordings. Around 1;6, an increase is observed in the MLU of Azra, Deniz and Mine. Tuna's MLU, however, remains the same until the last recording at 1;7.

In terms of the development of the grammatical processes and certain morphemes, Tuna, is again observed to be considerably slow in development when compared with the other subjects and her samples are considered to be representative of only the first phases of development. Deniz, in the course of development goes ahead of the other three subjects and is observed to be going through the developmental stages earlier than the others (Ketrez, 1999).

Besides these individual differences observed in Deniz and Tuna, all of the subjects go through similar developmental phases.

3.1.3. The Berkeley Cross-sectional Sample

This database is made up of free speech recordings of 33 children ranging in age between 2;0 and 4;8. Each child was recorded twice, with a four month interval in between. A child who was 2;0 years when first visited, was 2;4 on the second visit; a child who was 4;4 years on the first visit was 4;8 on the second visit. In each age group there are 3-5 children. I will treat this data as cross-sectional data.

3.2. Sample for the Experimental Data

Naturalistic data was not sufficient to analyze the production and comprehension of complement clauses. It may be that the child does not use complement clauses not because s/he does not know the structure, but because there is no context for that use. Both the longitudinal data and the cross-sectional data were limited in terms of the number and age of children. Therefore, in addition to examining naturalistic data four experiments were

carried out. Not only the production but also the comprehension of complement clauses were tested in these experiments. There were two production experiments, one comprehension experiment and one imitation experiment. The main verbs used in the experiments were selected from the verbs that children most frequently used, as given in the list of verbs children use between the ages 2-4 (Ketrez,1999).

12 children from every age group between 3 to 6;0 and 6 children from 6;0- 6;6 years were tested. In selecting the children care was taken to have equal number of children to represent the younger and the older halves of each age group. There were equal numbers of males and females in each group. The sample was limited to pre-school period. A total of 42 children were included in the study. The age groups are as follows:

Group 1: 3;0- 3;11,30 (12 children)

Group 2: 4;0- 4;11,30 (12 children)

Group 3: 5;0- 5;11,30 (12 children)

Group 4: 6;0- 6;5,30 (6 children)

3.3. Experimental Tasks

Four different experiments were conducted (see Appendix I).

3.3.1. Production Task 1: Picture description using different matrix verbs

This experiment aims to assess children's productive capacity for complement clauses. The experimenter puts two pictures, face down on the table, between herself and the child. She instructs the child to listen to her carefully. Then she turns over her picture and describes what it depicts using a complex sentence with a complement clause.

Then the child turns over his/ her picture and s/he is asked to describe it in the exact same way the experimenter described her own. There are two pictures for each item, both

of which are similar and describable by using the same matrix verb. Both the embedded verb and the object of the embedded verb are different in the child's picture.

This experiment has two training sentences and seven main items. Two of the items had - mA, two –mAK and three –DIK nominalizers. The main verbs that were used are *iste-* 'want', *çalış-* 'try', *bil-* 'know', *sevin-* 'be pleased', *söyle-* 'tell', *gör-* 'see', *şaşır-*'be surprised'.

3.3.2. Production Task 2: Changing to indirect speech

This task was designed to test children's capacity to produce complement constructions by asking the child to transform the direct speech clause into indirect speech. The items of the task consisted of brief episodes of cartoon characters, Ernie and Bernie, represented with two or three pictures. For example, one item consisted of a picture showing Ernie taking a bath in a bathtub full of bubbles, and a second picture showing him standing in his bathrobe and saying something to Bernie. The experimenter first puts the pictures in sequence in front of the child narrating what she sees in the picture. Then she quotes what one of the characters says to the other. She asks the child to complete the story by asking *"Edi Büdü'ye ne yapmasını söyledi?"* 'What did Ernie tell Bernie to do?', guiding the child to answer the question by transforming the direct speech into indirect speech form. In order to make sure the child produces a complement construction, the experimenter provides one of the frames *"Edi ne yaptığını/ yapacağını/ yapmasını söyledi?"* 'What did Ernie say he had done/ will do/ to do?' in her question. Here since the framing question contains a complement, this may be seen as a clue but a correct answer requires productive knowledge since the child has to answer by using a different verb in the embedded clause, choosing the appropriate nominalizing suffix and the correct form of the possessive suffix. This procedure, as it is assumed, taps the child's competence over

the structure. Pilot testing showed that eliciting the target forms was not possible otherwise, since children tended to repeat the direct speech sentence. The framing question used the verb *yap-* 'do' for the embedded clause, and the verb *söyle-* 'tell' for the matrix verb in each item.

The task included six items plus two warm-up items to allow the child to get used to the "game". The warm-up sentences were formed with the main verb *iste-* 'want'. The child was given Ernie's actual utterance while being shown the related picture; then s/he was asked to tell what Ernie wanted to do. When it was made sure that the child understood the task, s/he was given the test items with the main verb *söyle-* 'tell'. The embedded verbs were chosen from a list of verbs children of this age range know; these are *uyu-* 'sleep', *bul-* 'find', *banyo yap-* 'have a bath', *yıka-* 'wash', *hediye al-* 'buy a present', *kaybol-* 'get lost'.

Two –DIK, two -(y)AcAK and two –mA nominalization sentences were tested in this experiment. The –DIK and -(y)AcAK clauses have a factive reading with the main verb *söyle-*'tell'; however, -mA clauses have an imperative reading when used with the verb *söyle-*'tell'. In this way, the child's knowledge of different nominalizers carrying different meanings with the same matrix verb was also tested. The child was evaluated according to whether s/he was able to change the sentence into indirect speech or not.

3.3.3. Comprehension Task

The comprehension task tests whether the child understands the embedded structure and can produce the direct speech counterpart of it. The basic outline of this experiment was first made by Clain and Nakayama (1987) and then revised by Thornton (1996). The child is presented with a mouse puppet who is too shy to speak with grown-ups, so the child should help her by asking some questions on the experimenter's behalf. Then the

child is given indirect speech sentences with complement structures like *"Fareye ne yemek istediğini sorar mısın?"* 'Could you ask the mouse what he wants to eat?' and asked to talk to the mouse. Only if the child understands the syntax and semantics of the complement structure can he produce the simple, direct question counterpart *"Ne yemek istersin?"* 'What would you like to eat?'.

There were 7 items that involved single nominalization constructions. In addition, 3 syntactically more complex sentences, that is, the sentences that involve double nominalizations such as *"Kutuda ne olduğunu sandığını sorar mısın?"* 'Can you ask the mouse what he thinks there is in the box?' were also tested. The yes-no question forms that are constructed by using complement clauses were also tested in this experiment by such sentences as *"Fareye dün okula gidip gitmediğini sor"* 'Ask the mouse whether he went to school yesterday or not'. Both –DIK, -(y)AcAK and –mA clauses were used in the experiment so that the comprehension of all can be tested and compared.

3.3.4. Imitation Task

The fourth experiment consists of an imitation task with the assumption that imitation of a structure is a proof that the structure is part of the child's grammatical competence.

Each child was given 12 complex sentences with complement taking verbs and was asked to repeat them immediately after the experimenter. The length of the sentences varies from 7 to 11 syllables approximately 4-5 words. Negative and question forms were excluded. Several training sentences were given to ensure the child fully understood the task.

As Lust, Flynn and Foley (1996:56) put it "imitation is not a passive copy, but a reconstruction of the stimulus". Or in Chomsky's words "the child's ability to repeat

sentences and nonsentences might provide some evidence as to the underlying system that he is using" (Chomsky 1964:39). Thus, the child's ability to correctly reproduce a given sentence can be taken as an evidence for his/her comprehension as well as a certain level of productive control over the sentence.

3.4. Procedure for the Experimental Tasks

The experiments were carried out in four different kindergartens, Boğaziçi, Koza, Ayışığı and Happy Kids, where children of middle and upper-middle class families attend. In order to familiarize herself with the children, the experimenter spent some time in the class playing, talking with the kids and also participated in games. Then each child was invited to the room to play. Each child was seen individually and the testing session was recorded. The recorded material was transcribed and then analyzed. Each child was praised regardless of his/her performance. The children were told they were free to stop playing and go back to their classroom if they did not like the game. After each experiment stickers were given to the child as a reward. Both the order of experiments and the order of items in each task were randomized. That is, each child was presented a different order of experiments and within each experiment the order of items was different.

3.5. Scoring

3.5.1. Production Task 1: Picture description using different matrix verbs

In this test there were seven items, therefore the maximum score was seven. There were three –DIK, two –mA and two –mAK complements, for which the scores were calculated. If children made any alternations in the main verb or in the nominalizer that was noted. The verb *bil-* 'know' can be used with both –mAK and –mA. However, since the model item of the experimenter was with -mA, the child was also expected to use –mA

and thus –mAK was not the correct answer. All responses other than the expected were considered incorrect. The main verb *sevin-* 'be happy' can be used either with –DIK or –mA in Turkish without any meaning difference. But similarly since the child was given –DIK in the model sentence, –mA was not considered correct. If the child did not use any complementizer or s/he deleted the main verb s/he did not get any points.

3.5.2. Production Task 2: Changing to indirect speech

There were 6 items on this task. Converting the direct speech sentence into the indirect counterpart as the framing question suggests was counted as correct performance. Full points were given to answers with the matrix verb *söyle-* 'tell', correct embedded verb with the appropriate nominalizing suffix and the correct form of the possessive suffix. Correct performance on each item received 1 point. Thus, a maximum total score that could be obtained was 6 points.

In addition to the total score different scores were calculated for –mA, -DIK and -(y)AcAK items. There were two items for each nominalizer. Each item was one point. If the child did not change the clause into indirect speech but just repeated what the experimenter said s/he did not get any points for that. For the fifth item, if the child said '*Banyo yaptığını söyledi*' 'He said he had a bath' instead of '*banyodan çıktığını söyledi*' 'He finished his bath' then that was also considered correct since that is a common expression in Turkish. If the child changed the main verb into *iste-* 'want' but used the correct nominalizer that was also considered correct. If the child used the wrong nominalizer then s/he did not get any points, since the verb *söyle-* 'tell' leads to a different interpretation with different nominalizers. The instances the child used different nominalizers with verbs that result in different meanings were noted. The errors will be examined qualitatively in order to understand children's preferred strategies.

3.5.3. Comprehension Task

In this task, the maximum total score is 13 points. Seven of the questions were scored as either 1 or 0 depending on whether the child gave correct or incorrect answers. If the child repeated the experimenter's sentence then s/he did not get any points. Three of the questions were given 2 points since they included double nominalizations and therefore were syntactically more difficult than the other items. In these items, if the child comprehended the structure but did not produce double nominalizations then s/he got only 1 point. If s/he did not provide any answer then s/he got zero points. To illustrate, for the third item *'fareye ne yaptığını sana anlatmasını söyle'* 'tell the mouse to tell you what he has done' if the child's answer is *'ne yaptığını anlat'* 'tell me what you have done' then s/he got full points, that is 2 points. But if s/he said *'ne yaptın?'* 'What did you do?' then the child got only 1 point since it is assumed that s/he understood the construction.

3.5.3. Imitation Task

In this task, the maximum score was 12, correct repetition of each item was given one point. The children were evaluated according to whether they gave no response, correct response or modified response. The alterations children make to the sentence while repeating were recorded and noted. If the child modified the nominalizer or the matrix verb that was considered incorrect. If the child deleted the embedded clause or the main verb that was again considered incorrect. If the child made any modification to the case of any constituent or changed the word order of the sentence that was noted but s/he got the same points as for a correct response.

CHAPTER IV

Results of Naturalistic Data

4.1. Introduction

This chapter presents an analysis of naturalistic data with the aim of tracing the stages in the acquisition of complementation. In the following section, children's production and comprehension as well as mother's use of complement clauses when talking to children will be investigated.

All the complement constructions, involving the comprehension and production, will be examined. The data will be presented child by child, beginning with Azra. Within each child's data, I will proceed to examine the data construction by construction.

4.2. Criterion of Productivity

It is rather difficult to talk about the comprehension of nominalized clauses in the naturalistic data, since we cannot know the nature or the extent of comprehension. However, the examples where children respond to the mother's utterance will be noted as an indication of comprehension.

Bloom at al. (1984) set their productivity criterion as four instances of a complement taking verb in one child. Kim (1989) considers a complement-taking predicate as productive if it occurs with at least three complements in a child's data. The productivity criterion adopted in this study is the occurrence of a nominalizing morpheme, that is –mAK, -mA, -DIK and -(y)AcAK with at least two different complement-taking verbs within the data of a single child. That is, if a child has produced a nominalizing morpheme with the same matrix verb twice that will not be considered productive. The basic reason for setting the productivity criterion as such in this work is that the speech samples

available were collected with one to maximum eight months time in between sessions and were about one hour long. Bloom et al.'s samples were separated by one and a half to four months and were on the average six to seven hours long for three children and four hours long for the fourth child. Kim's data sample was collected every month and was one or one and a half hours long. Therefore, their productivity criterion was judged to be too strict for this study.

4.3. Longitudinal Data

4.3.1. Azra's Data

As has been mentioned in the third chapter, Azra was recorded between ages 1;1,19 and 3;3,3. When Azra was 1;1,19, she did not provide an answer to the questions her mother asked using –mAK complements. Although this cannot be an evidence for lack of comprehension of complements, it should still be noted.[21]

(43) MOT: lego-yla **oyna-mak iste-mi-yo mu-yuz**? (Azra 1;1,19)
lego-COM play-MAK want-NEG-PROG QUE-1P
'Don't you want to play with legos?'
CHI: xxx.
MOT: lego.
'lego'
CHI: xxx.
CHI: xxx.

Again Azra did not respond to her mother's utterances using the –mA construction when she was 1;10,4 and 1;11.

[21] The complement clauses that parents use are typed in **bold**. The complement clauses that children used are in ***bold*** and ***italic***.

(44) MOT: nay nay nay kaseti mi **koy-ma-mı isti-yo-sun**? (Azra 1;10,4)

@i nay nay nay cassette-ACC QUE put-MA-POSS1S want-PROG-2S

'Do you want me to put the nay nay nay cassette?'

MOT: ama bu kaset-te bu teyp-te şimdi nay nay çal-mı-yo.

but this casette-LOC this tape-LOC now @i nay nay play-NEG-PROG

'But there is no song palying in this tape now'

(Azra 1;11)

(45) MOT: hayır bil-iyo-sun telefon-na **oyna-ma-n-ı iste-mi-yor-um**.

no know-PROG-2S telephone-COM play-MA-POSS2S-ACC want-NEG-PROG-1S

'No you know I don't want you to play with the phone.'

CHI: bu-nu vey çimdi.

this-ACC @give now

'Give this now'

MOT: al canım.

take honey

'Take it honey'

At the age of 2;0,10 there is an instance where Azra answered a question with a –mAK complementizer providing evidence that she understood the construction.

(46) MOT: televizyon **seyret-mek mi isti-yo-sun**? (Azra 2;0,10)

television watch-MAK QUE want-PROG-1S

'Do you want to watch television?'

CHI: evet.

yes

'Yes'

In the same session, Azra responds to her mother's request with a –mAK complement clause which has case marking and the matrix verb is *devam et-* 'continue' as illustrated in example (47). Her mother asked her to continue telling a story and Azra starts telling a story, showing that she has comprehended the construction:

(47) MOT: sen şimdi masal **annat-ma-ya devam et-sen-e** ban-a (Azra 2;0,10)
you now story tell-MAK-DAT continue-OPT-DAT me-DAT
'Now continue to tell me a story'
CHI: biy gü:n.
@one day
'one day'

Another instance which constitutes evidence for Azra's comprehension of –mAK complements is in a context where her mother asks Azra how she wants to sit down.

(48) MOT: nasıl **otur-mak isti-yo-sun**? (Azra 2;1,29)
how sit-MAK want-PROG-2S
'How do you want to sit?'
CHI: bu:-da.
here- LOC
'Here.'
MOT: bur-da.
here-LOC
'Here'

It was in this session, when Azra was 2;1,29, that she first produced –mAK nominalizations. In this context they were talking about what to eat for lunch and Azra asks her mother if she would like to have pasta. She produced –mAK with the main verb *iste-* 'want'.

(49) MOT: bu öğlen yemeğ-in-de biz ne yi-ce-z Azra? (Azra 2;1,29)
this noon food-CM-LOC we what eat-FUT-1P Azra
'What are we going to eat for lunch Azra?'
CHI: xxx.
MOT: makarna:.
pasta
'Pasta'
CHI: 0 [=! laughs].

MOT: iste-r misin?

want-AOR QUE-2S

'Do you want?'

CHI: sen de ***ye-met itte-e mi-sin makana***?

you too eat-@MAK @want-AOR QUE-2S pasta

'Do you want to eat pasta as well?'

MOT: evet.

yes

'Yes'

Between 2;1,29 and 2;9,25 there were no instances of Azra producing any –mAK constructions. The second time she used a clause with the nominalizer –mAK was when she was 2;9,25. She again used it with the main verb *iste-* 'want'. It is interesting to note that she uses the main verb *bak-* 'look' with the noun *kitap* 'book'. She did not use *oku-* 'read' as the verb for *kitap* 'book'. This is probably what her mother uses, since in fact Azra can only "look" at books. It can be observed that she has done noun incorporation since *kitap* 'book' is inflected with the phonologically null nominative case, rather than the dative case.

(Azra 2;9,25)

(50) MOT: haftasonu öğretmen-in gel-diğ-i zaman on-la ne **yap-ma-yı planlı-yo-sun**?

weekend teacher-POSS come-ADJE-GEN time her-COM what do-MAK-ACC plan-PROG-2S

'What do you plan to do when your teacher comes this weekend?'

CHI: kitap ***bak-ma-yı isti-yor-um*** on-na.

book look-MAK-ACC want-PROG-1S her-COM

'I want to look at books with her'

MOT: kitap **bakmayı istiyosun** peki.

'ok, you want to look at books'

Azra produced a –mAK nominalization with a different verb than *iste-* when she was 2;11,14. She used the construction with the modal verb *zorunda kal-* 'have to'.

(51) MOT: arkadaş-lar-ım-a zarar ver-ir-se-m no:lur? (Azra 2;11,14)
friend-PL-POSS1S-DAT harm give-AOR-CON-1S what-happen-AOR
'If I harm my friends what will happen?'
CHI: hastane-ye ***git-mek zorunda+kal-ır-ız.***
hospital-DAT go-MAK have to-AOR-1P
'We will have to go to the hospital.'

In the same recording session Azra also produced a –mAK nominalization with the main verb *çalış-* 'try'. In this context, her mother and Azra are playing some sort of a game. Azra pretends to be the mother, while the mother pretends to be Azra.

(Azra 2;11,14)

(52) MOT: ama anne-ci-m annı-ya-mı-yor-um ban-a güzel anlat-ır mı-sın?
But mother-DIM-POSS1S understand-ABIL-NEG-PROG-1S I-DAT nice tell-AOR QUE-2S
'I can not understand mom, can you tell me nicely?'
CHI: şey-ler.
thing-PL
'things'
CHI: peyi+anne-ler bur-da ***yap-ma-ğa çalış-ıyo-lar-mış.***
fairy-mother-PL here-LOC do-MAK-DAT try-PROG-3P-PAST
'The mother fairies are trying to do something here.'
MOT: hıh.

The first time Azra produced –mA nominalizations was when she was 2;9,25. She did not use the matrix verb *iste-* 'want' since she is answering her mother's question.

(53) MOT: peki **na:p-mak iste-r-sin**? (Azra 2;9,25)
OK what-MAK want-AOR-2S
'What would you like to do?'
CHI: ***yata:-m-a yat-ma-n-ı*** *xx.*
Go to bed-POSS1S-DAT go to bed-MA-POSS2S-ACC
'For you to sleep in my bed.'

Azra used the –mA nominalization again with the matrix verb *iste-* 'want' in the same recording session. She used the copula *ol-* 'be' to attach the nominalizer in the structure, since the complement is a noun. In this dialogue, they are talking about clowns.

(54) MOT: bunnar kim? (Azra 2;9,25)

'Who are they?'

CHI: palla:ço.

'@clowns'

MOT: palyaçolar gibi.

'like clowns'

CHI: biy-i kıs biy-i eykek mi?

'Is one of them a girl and the other a boy?'

MOT: bilmem sence fark var mı aralarında?

'I don't know, do you think there is a difference between them?'

CHI: *bu-nun **kız ol-ma-sı-nı isti-yor-um.***

this-GEN girl be-MA-POSS3S-ACC want-PROG-1S

'I want this to be a girl'

CHI: *bu-nun **erkek ol-ma-sı-nı isti-yor-um.***

this-GEN boy be-MA-POSS3S-ACC want-PROG-1S

'I want this to be a boy'

MOT: tamam bu kız olsun bu erkek.

ok this girl be-OPT this boy

'OK this is the girl and this is the boy'

Other than with the main verb *iste-* 'want', Azra used the –mA nominalizations once with the verb *gerek* 'necessary'. It is significant that Azra used a 'normative verb', since she must be hearing normative statements rather frequently. It is also worth noting that the complement clause is a subject complement in this utterance.

(55) MOT: gerçekten mi? (Azra 3;3,3)

'really?'

CHI: evet.

'yes'

CHI: düş-me-sin diye ***al-ma-n gerek.***

fall-NEG-OPT so that take-MA-POSS2S necessary

'You have to take it so that it won't fall.'

Azra provided evidence for understanding a –DIK complement in her mother's speech when she was 2;1,29. They were talking about the birthday party Azra attended at the kindergarten. Azra's mother tells her that she does not know how they sing and Azra starts to sing.

(56) MOT: neler oldu şu doğum gününde. (Azra 2;1,29)

'What happened at the birthday party?'

MOT: nası şarkı **söyle-diğ-iniz-i bil-mi-yor-um** ben.

how song sing-DIK-POSS2P-ACC know-NEG-PROG-1S I

'I do not know how you (all) sing'

CHI: iy ki do:dun A:nıl.

good COMP born-PAST-2S Anıl

'Happy birthday Anıl'

The first attempt to use a –DIK nominalization was observed at the age of 3;3,3 in Azra's speech. However, this resulted in an ungrammatical sentence. This construction is ungrammatical because instead of the nominalizer –DIK which is what the verb *bil-* 'know' selects, Azra used the definite past tense inflection –DI, which is similar to the nominalizer in form. She also failed to use the required possessive and accusative endings.

(57) CHI: kepçe ama. (Azra 3;3,3)

CHI: *Aslı ben-im ***ol-ma-dı bil-me-den*** Edis-e ver-di.

Aslı mA-POSS *be-NEG-DIK know-NEG-ABL Edis-DAT give-PAST

'Aslı gave it to Enis without knowing it was mine'

MOT: anlamadım kim neyi?

'I could not undertsand, who and what?'

CHI: Aslı (/2).
'Aslı.'

Azra produced a nominalized structure with the suffix -(y)AcAK with the matrix verb *söyle-* 'tell' when she was 3;1,26. But, in this utterance she has an agreement error. She attempts a complex sentence but she can not produce it. Though the subject is singular in the context (*öğretmenim* 'my teacher'), the verb is inflected with third person plural agreement. She also failed to use the locative case with *okul* 'school'.

(58) MOT: şimdi sen anlat bak-alım ne-ler yap-tı-n. (Azra 3;1,26)
now you tell look-OPT what-PL do-PAST-2S
'Now you tell what you did.'
CHI: *okul-a: çarşamba gün-ü hepsi-ni ***yap-ca:-m-ı söyle-di-ler*** öğretmen-im ban-a.
*school-DAT wednesday day-CM all-ACC do-(y)AcAK-POSS1S-ACC *tell-PAST-3P teacher-POSS1S I-DAT
'My teacher told me that I will do all of it on Wednesday'
MOT: neyin hepsini?
what-GEN all-ACC
'All of what?'

To sum up, Azra's data showed that she understands –mAK nominalizations by the age of 2,0. She produced –mAK complements not only with the main verb *iste-* 'want' but also with the main verb *çalış-* 'try' and *zorunda kal-* 'have to'. She produced her first nominalized structure with the nominalizer –mAK at the age of 2;1,29. She first produced a complement clause with the nominalizer –mA when she was 2;9,25 with the main verb *iste-* 'want'. In the recordings, when she was 3;3,3 she used the –mA nominalized structure with the matrix verb *gerek* 'necessary'. It is interesting to note that she used nominalizations with the two normative verbs *zorunda kal-* 'have to' and *gerek* 'necessary'. It is also significant that it was a subject complement that Azra used with the

main verb *gerek* 'necessary'. At 3;3,3, she tried to use a –DIK structure but she failed. In 3;1,26, Azra produced an -(y)AcAK nominalization with the main verb *söyle-* 'tell'. However, only the nominalizing morpheme –mAK and –mA met the productivity criterion set for this research, since Azra used them with at least two different main verbs.

4.3.2. Deniz's Data

Deniz was recorded between 1;3,3 to 2;0,4. As early as 1;3,3, Deniz responded appropriately to her mother's utterance which contained a –mAK complement, suggesting comprehension. In her mother's question that Deniz answered the –mAK complement was used with the main verb *iste-* 'want'.

(59) MOT: nereye **git-mek isti-yo-sun?** (Deniz 1;3,3)
where-DAT go-MAK want-PROG-2P
'Where do you want to go?'
CHI: a:bi-ye.
brother-DAT
'to my brother'
MOT: abiye mi gitçeksin?
'Are you going to your brother?'
CHI: a:bi (/2).
'Brother'

Deniz made mistakes in her attempts to use –mAK complements as can be seen in (60). This ungrammaticality is due to the fact that there is no main verb in the sentence, although she used a nominalized embedded verb. Deniz was probably trying to say *uf oldu* 'it hurt' and *bak ne oldu* 'look what has happened'. However, she should have used the past tense morpheme –DI, but instead she used the nominalizing morpheme –mAK. This suggests that in this utterance she treated –mAK as a tense suffix. It is also interesting that

there is the main verb *bak-* 'look' in both errors. This is the first time in Deniz's recordings that two verbs appeared together in the same construction.

(60) MOT: ağzında yaptın. (Deniz 1;9,01)
'you made it in your mouth'
CHI: *bak ***uf+ol-mak.***
look *@harm-MAK
'look it hurts'
CHI: ****bak ol-mak.***
look *be-MAK
'look at what had happened'

Another example of her comprehension of –mAK complements comes from when she was 1;10,03. Deniz again comprehended a sentence her mother uttered which was nominalized with –mAK.

(61) MOT: ya ama ben el-im-e **al-mak itti-yo-m.** (Deniz 1;10,03)
INJ but I hand-POSS1S-DAT take-MAK @want-PROG-1S
'But I want to hold it.'
CHI: dan-a ve:-mi-ce-m.
@you-DAT give-NEG-FUT-1S
'I will not give it to you'

Deniz also produced –mAK clauses in the same recording session, that is when she was 1;10,03. However, here she imitates her mother's utterance which contains a -mAK complement.

(62) MOT: deniz kenarına plaja **git-mek isti-yo-muş.** (Deniz 1;10,03)
sea side-DAT beach-DAT go-MAK want-PROG-PAST(EV)
'She wants to go to the beach at the seaside.'
CHI: denişkelal-ı ***git-mek itti-yo-muş***.

@sea side-ACC go-MAK @want-PROG-PAST(EV)

'She wants to go to the beach at the seaside.'

About five weeks later, Deniz produced a –mAK complement with the embedded verb *bak-* 'look' and the matrix verb *iste-* 'want'. Here, too, she seems to imitate her mother's utterance, but she adjusts the agreement marker correctly, which shows that she has competence over the structure. Thus this will be considered productive.

(63) MOT: sen ayı-lı kitab-a mı **bak-mak isti-yo-sun**? (Deniz 1;11,10)

you bear-COM book-DAT QUE look-MAK want-PROG-2S

'Do you want to look at the book about bears?'

CHI: evet.

yes

'yes'

CHI: ayı-lı kitab-a ***bak-mak itto-m.***

bear-COM book-DAT look-MAK @want-PROG-1S

'Iwant to look at the book about bears'

MOT: ayı-lı kitab-a mı **bak-mak isti-yo-sun**?

bear-COM book-DAT QUE look-MAK want-PROG-2S

'Do you want to look at the book about bears?'

MOT: no:luyo ayılı kitapta Deniz hatırlıyo musun?

Deniz, do you remember what was going on in the bear story?'

MOT: al gel.

'get it and come'

CHI: ayı-lı kitab-a ***bak-mak itti-yoy-um.***

bear-COM book-DAT look-MAK @want-PROG-1S

'Iwant to look at the book about bears'

During the same recording session, Deniz uses –mAK nominalizations productively for the first time. She uses –mAK with the main verb *iste-* 'want' and the embedded verb *anlat-* 'tell'. In this context her mother asks Deniz to tell her a story and Deniz says that she does not want to tell a story.

(64) MOT: sen bana annat şimdi burda no:luyo (Deniz 1;11,10)
'Now you tell me what is going on here.'
CHI: ***annat-mak itte-mi-yoy-um.***
@tell-MAK @want-NEG-PROG-1S
'I do not want to tell'

In the very same session, however, Deniz also has the ungrammatical utterance (65). The ungrammaticality is due to the lack of agreement suffix on the main verb. However, she did mark the first person singular in her preceding sentence which is given in (64). This shows that she is not yet in full control of the use of this structure. The reason she produced the embedded verb twice is that she made a mistake and then corrected herself in the second one.

(65) CHI: ****anna-ma annat-mak itte-mi-yoy.*** (Deniz 1;11,10)
tell-MAK want-NEG-PROG-*1S
'I do not want to tell'
MOT: öyle mi?

During the same recording, she responded to her mother who used a –mA complement indicating that she understood her mother's statement.

(66) MOT: ama ben-im di:l sen-in **oku-ma-n gerek-iyo** (Deniz 1;11,10)
but my-POSS1S not you-POSS1S read-MA-POSS2S necessary-PROG
'But you need to read not me'
CHI: xx den oku.
@you read.
'You read it'

When it comes to –DIK and -(y)AcAK complements, Deniz did not produce any utterances using these suffixes. It is worth noting that her mother used only a single

embedded clause nominalized with –DIK. During the free speech samples recorded, other than this instance, neither the mother nor the grandmother produced a single –DIK or -(y)AcAK complement though the context for such use was present:

(67) MOT: sen bu-nu mendil mi zannet-ti-n? (Deniz1;6,9)
you this–ACC tissue-QUE think-PAST-2S
'Did you think this was a tissue?'
MOT: Deniz valla telefon-u boz-du-n bil-iyo mu-sun?
Deniz I swear phone-ACC break down-PAST-2S know-PROG-QUE-2S
'Do you know that you broke up the phone?'
MOT: garip garip birşeyler oldu.
'Something strange happened to it'

As can be seen in (67), the mother used simple clauses instead of complex complement clauses. She could possibly have said *"mendil mi olduğunu zannettin?"* 'Did you think of this as a tissue?' instead of *"sen bunu mendil mi zannettin?"* 'Did you think that this was a tissue?' since the verb *zannet-* 'think' chooses –DIK as the nominalizing morpheme on the embedded verb. Also instead of *"Deniz valla telefonu bozdun biliyor musun?"* 'Deniz you have broken the phone, do you know that?' the mother could have said *"bozduğunu biliyor musun?"* 'Deniz do you know that you have broken the phone?'. This example indicates that complementation may be avoided in certain contexts allowing the use of simple clauses that convey the same meaning and such clauses are also common in adult language.

The only instance Deniz's mother produced a complement structure with –DIK was with the main verb *bil-*. In that instance Deniz did not give any response showing that she has understood the structure.

(68) MOT: yap-tığ-ın-ın tehlike-li **ol-duğ-u-nu bil-iyo-sun** heralde. (Deniz 1;11,21)
do-ADV-POSS2S-ACC danger-COM be-DIK-GEN-ACC know-PROG-2S probably.
'You probably know how dangerous what you have done is.'

CHI: ayı-yı unut-mut-lay yap.
bear-ACC @forget-PAST-3P do.
'Do that they forget the bear thing'

In Deniz's data none of the complementizers met the productivity criterion. She used –mAK a few times with *iste-* 'want' but she did not use it with any other verb. When it comes to –mA, -DIK and -(y)AcAK, she did not use any of them at all. It can be said that she comprehended the –mA structure her mother used, however, nothing certain can be said about comprehension. It should be noted that her recordings ended when she was 2;0,4.

4.3.3. Tuna's Data

Tuna did not produce any complement clauses in her recordings that were done between ages 1;2,20 and 1;7,15. During these five months of recording sessions Tuna's mother did use numerous complement clauses with –mAK and -mA nominalizing suffixes when addressing her. However, Tuna did not respond to her in such a meaningful way, as (69) and (70) illustrate:

(69) MOT: düşün-ce no:lur? (Tuna 1;4,2)
fall-ADV what-be-AOR
'What will happen when s/he falls?'

MOT: **kalk-ma-sı mı gerek-iyor**?
stand up-MA-POSS3S QUE necessary-PROG-3S
'Does s/he need to stand up?'

CHI: anni.
@mother
'mom'

(70) MOT: sen **unut-tu-n bak de-me-yi.** (Tuna 1;6,23)

you forget-PAST-3S look say-MAK-ACC

'You forgot to say look'

CHI: xxx.

MOT: bak-ıyim.

look-OPT

'Let me look'

MOT: sen **unut-tu-n bak de-me-yi.**

you forget-PAST-3S look say-MAK-ACC

'You forgot to say look'

CHI: xxx.

As can be seen in (70) above, although the mother repeated her utterance Tuna still did not answer.

In the very limited data of Tuna, there is only one instance where she clearly appears to have understood her mother's utterance which had a –mAK complement.

(71) MOT: **gel-mek iste-r mi-sin**? (Tuna 1;5,23)

come-MAK want-AOR QUE-2S

'Would you like to come?'

CHI: @a'ah.

INJ (meaning no)

'no'

MOT: nede:n?

why

'Why?'

As other mothers, Tuna's mother also preferred simplified constructions to complement clauses when talking to her.

(72) MOT: helikopter-in amin-le ne ilgi-si var hiç anla-ya-ma-dı-m. (Tuna 1;7,5)
helicopter-GEN amen-COM what relation-CM exist none understand-ABIL-NEG-PAST-1S
'I could not understand what amen has to do with helicopter'
CHI: a:min.
amen
'Amen'

(73) MOT: bil-iyo mu-sun bu-nun adı-nı ne koy-muş-lar?
know-PROG QUE-2S this-GEN name-CM what put-PAST(EV)-3P
'Do you know what they named this?'
MOT: Can koy-muş-lar.
Can put-PAST(EV)-3P
'They named it Can.'

Although in Turkish it is possible to express these propositions using the simple structure as the mother used above, it is also possible to use the embedded structures with the main verbs *anla-* 'know' and *bil-* 'know'. Actually, Tuna's mother could have used *"ne ilgisi olduğunu anlayamadım"* rather than *"ne ilgisi var hiç anlayamadım"* 'I did not understand what it has to do with it'. Similarly, she could have said *"adını ne koyduklarını biliyor musun?"* 'Do you know what they named it?' rather than saying *"biliyo musun bunun adını ne koymuşlar?"*. It is interesting to note that simple structures were preferred in question forms.

Tuna did not use any nominalizations productively. It can be said that she understood –mAK complementation her mother used.

4.3.4. Mine's Data

Mine's data covers ages 1;6,21 to 2;10. She produced –mAK nominalizations productively. In the first recordings, when her mother, father or brother produced complement clauses nominalized with –mA, –mAK and –DIK, Mine did not say anything to show that she has understood the structure.

(74) BRO: çok kalın **giy-in-me-si lazım** di mi? (Mine 1;6,21)

very thick wear-REFL-MA-POSS3S necessary not QUE

'She has to be dressed well, doesn't she?'

FATH: kar mı yağ-ıyo?

'Is it snowing?'

BRO: çok kalın **giy-in-mek lazım.**

very thick wear-REFL-MAK necessary

'It is required that one dresses well.'

BRO: dimi baba?

'Isn't it?'

BRO: xx üst-ü-ne **çık-mak zoru-nda kal-ıyo-sunuz** xx.

xx top-POSS3S-DAT go-MAK obliged-DAT stay-PROG-2P

'You are obliged to climb to the top'

BRO: xx dimi baba [=! shouts].

'Isn't it?'

BRO: zaten xx xx ne **ol-duğ-un-u bil-mez** ki di mi baba?

in any case xx xx what be-DIK-POSS3S-ACC know-AOR-NEG COMP not QUE dad

'He would not know what that is, would he?'

CHI: dü:t-tü [:düştü].

fall-PAST-3S

'It fell'

When Mine was 1;10,21, she answered the question in which her mother used a –mAK nominalizer with the main verb *iste-* 'want'. This is the first example in the recordings of Mine that shows she has understood complement clauses with –mAK.

(75) MOT: **uyu-mak isti-yo mu-sun**? (Mine 1;10,21)

sleep-MAK want-PROG-QUE-2S

'Do you want to sleep?'

CHI: hayı:.

no

'No'

When she was 2;1,0 Mine responded to the sentence her mother formed with a –mA complement.

(76) MOT: annesi onu yıkıyo güzel güzel giydiriyo (Mine 2;1,0)

'Her mother washes her and dresses her nicely'

MOT: elbiselerini.

'her clothes'

MOT: ama küçük ayı-cığ-ın böyle **yıka-n-ma-sı gerek-mi-yo.**

but little bear-DIM-POSS2S this wash-PASS-MA-POSS3S need-NEG-PROG-3S

'But the little bear does not have to be washed like this'

CHI: evet.

Yes

'Yes'

The first time Mine produced –mAK nominalizations was also during this recording, when she was 2;1,0. In this context, the child is telling a story where a bear is caught in the rain. She used a –mAK complement with the main verb *başla-* 'begin'.

(77) CHI: yağmu: yağ-yo [:yağmur yağıyor]. (Mine 2;1,10)

'It's raining'

CHI: ama xx diymişlel.

'But they were wearing xxx'

CHI: bak bu kadiş xx.

'look at this brother'

CHI: yağmu ***yağ-ma-ya başla-dı.***

@rain rain-MAK-DAT begin-PAST

'It started to rain'

CHI: ama xx xx ayı-cığ-ı.

'But the bear'

. CHI: xxx.

Later in the recordings, when Mine is 2;5,12 she produced another –mAK structure with the main verb *iste-* 'want', this time as an answer to Naciye, her babysitter. It is an answer to the babysitter who asks Mine to tell the story of Açıkgöz.

(78) NAC: yoruldun? (Mine 2;5,12)

'tired?'

CHI: evet yoludum.

'yes I am@tired'

NAC: peki Açıkgöz-ü **anlat-mak iste-mi-yo** mu-sun?

ok Açıkgöz-ACC tell-MAK want-NEG-PROG QUE-2S

'OK don't you want to tell the story of Açıkgöz?'

CHI: evet.

yes

'Yes'

NAC: niçin?

why

'Why?'

CHI: çe [:işte] ***anlat-tak icte-mi-yol-um.***

@ just because @tell-MAK @want-NEG-PROG-1S

'Because I do not want to tell.'

CHI: ook (/4).

no

'No'

Another usage of the –mAK nominalization with the matrix verb *iste-* 'want' was observed when Mine was 2;6,20. In this context, while they are recording their dialogue, Mine wants to play with the tape. This is is another instance of usage since her mother's utterance does not necessarily lead to her answer.

(79) MOT: hiç **yap-mak iste-mi-yo-sun**. (Mine 2;6,20)

never do-MAK want-NEG-PROG-2S

'You never want to do it'

CHI: bin bir-da ***oyna-mak isti-yor-um***.

I @here-LOC play-MAK want-PROG-1S

'I want to play here.'

MOT: nerde **oyna-mak isti-yo-sun** bi tanem?

where play-MAK want-PROG-2S honey

'Where do you want to play honey?'

CHI: ses-i-ni at-ta-m.

'I will turn on the volume'

CHI: ses-i-ni.

'the volume of it'

MOT: hayır ses-ler-i-yle **oyna-ma-mız yasak.**

no sound-PL-ACC-COM play-MA-POSS1P forbidden

'No our playing with sounds is forbidden.'

MOT: yoksa bozulur.

'or it will break down'

Mine used the nominalizing suffix –mAK in place of the relativizing suffix –En when she was 2;6,20. This is an interesting error to analyze. She probably has not acquired the relative constructions yet. She used a suffix she already knows instead of the relativizing suffix. Her mother immediately corrected her.

(80) MOT: bu kadın kim? (Mine 2;6,20)

this woman who

'Who is this woman?'

CHI: kadeş-i ***giy-diy-mey-i kadın.***

brother-ACC *wear-CAUS-MA-ACC woman

'the woman who dresses the brother'

MOT: kardeş-i **giy-dir-en kadın** peki kim o yani kardeş-in anne-si mi?

brother-ACC wear-CAUS-REL woman ok who that I mean brother-GEN mother-POSS3S QUE

'the woman who dresses the brother so is she the mother of him?'

CHI: evet kadeş-in anne-(si).

'yes she is his mother

At age 3;7,5, Mine made another mistake. This time she forgot the person agreement suffix on the main verb. As can be predicted from the context, she most probably meant to say *"Kardeşe söylemek istiyorum"* 'I want to tell to the child.' This is probably a performance error since she has been using this form for more than a year by this time.

(81) CHI: çocuğ-a söyle çocuğ-a. (Mine 3;7,5)
'tell it to the child'
MOT: çocuğa.
'to the child'
CHI: işte.
'here it is'
CHI: @bırbık çocuğ-a işte.
@bırbık child-DAT here
'to the child here'
CHI: kardeş-e ***söyle-mek isti-yo.***
brother-DAT tell-MAK *want-PROG
'I want to tell to the child.'

Mine used –mA nominalizer productively with the main verb *lazım* 'necessary' when she was 3;8,10. It is interesting to note that this structure she uses is a subject nominalization. She is talking to her babysitter about finding what is in the box.

(82) CHI: bak bu-nu ***bul-ma-n la:zım*** (/2). (Mine 3;8,10)
look this-ACC find-MA-POSS2S necessary
'Look it is necessary for you to find this.'
CHI: şu-nu ***bul-ma-n lazım*** (/8).
that-ACC find-MA-POSS2S necessary.
'Look it is necessary for you to find that.'
NAC: tamam başka bişey yap.
'ok do something else'
NAC: başka.
'what else'
CHI: bu-nu ***bul-ma-n lazım*** (/6).
this-ACC find-MA-POSS2S necessary.
'Look it is necessary for you to find this.'
CHI: başka bir+şey ***bul-ma-n lazım değil.***
another thing find-MA-POSS2S necessary not.
'It is necessary for you to find something else.'
NAC: başka **bi-şey bul-ma-n lazım** değil.
another onething find-MA-POSS2S necessary not.

'It is necessary for you to find something else.'

CHI: o-nu bula biyi-le:-ni ***bul-ma-n lazım şimdi.***

that-ACC @find-REL @someone-PL-ACC find-MA-POSS2S necessary now

'You have to find someone who has found that now'

The only instance Mine answered a question with a –DIK construction was when she was 2;1,10.

(83) MOT: siz kozalak buldunuz abinle topladınız unuttun mu? (Mine 2;1,0)

'Did you forget that you found cones and collected them with your brother?'

CHI: (h)ayı(r) [=! whispers].

'no'

MOT: bunun **n-o:l-duğ-un-u bil-iyo mu-sun**?

this-GEN what-be-DIK-POSS3S-ACC know-PROG QUE-2S

'Do you know what this is?'

CHI: bii-mi-yo-um.

@know-NEG-PROG-1S

'I do no know'

To sum up, in Mine's data –mAK is considered productive since Mine used it with two different verbs, *iste-* 'want' and *başla-* 'begin'. However, -mA did not meet the productivity criterion since Mine used it with only one verb. Mine never used –DIK although it can be said that she probably comprehended the structure.

4.4. Comparison of four subjects

All of the subjects understood the clauses that are nominalized with the –mAK suffix. However, –mAK nominalization met the productivity criterion only in Azra's and Mine's data. –mA nominalization was productive Only Azra. Deniz was the child who produced –mAK clauses before others, when she was 1;11,10. However, neither –mAK

nor –mA met the productivity criterion for Deniz. –DIK and -(y)AcAK did not meet the productivity criterion for any of the subjects.

What is more surprising is the fact that in the parents' and babysitters' data –DIK and -(y)AcAK clauses appear very rarely, almost never. The nominalized complement clauses encountered were mainly affirmative structures often expressing factual information or assertion. It seems that complement clauses were not preferred in negative and question forms. To illustrate, when Deniz's mother was talking about a fact she used a –DIK nominalization.

(68) MOT: yap-tığ-ın-ın tehlike-li **ol-duğ-u-nu bil-iyo-sun** heralde. (Deniz 1;11,21)
do-ADV-POSS2S-ACC danger-COM be-DIK-GEN-ACC know-PROG-2S probably.
'You probably know how dangerous what you have done is.'

On the other hand, when she was talking about a prediction or a supposition, in other words nonfactual situations, she did not use complement clauses.

(67) MOT: sen bu-nu mendil mi zannet-ti-n? (Deniz 1;6,9)
you this–ACC tissue QUE think-PAST-2S
'Did you think this was a tissue?'
MOT: Deniz valla telefon-u boz-du-n bil-iyo mus-un?
Deniz I swear phone-ACC break down-PAST-2S know-PROG QUE-2S
'Do you know that you broke up the phone?'
MOT: garip garip birseyler oldu.
'Something strange happened to it.'

(67) shows that the mother prefers simple clauses to complex complement clauses. She could have possibly said *"mendil mi olduğunu zannettin?"* rather than *"sen bunu mendil mi zannettin?"* since the matrix verb *zannet-* 'think' chooses –DIK nominalizing morpheme for its embedded verb.

The parents' data is not sufficient to reach a conclusion about the use of complementation by parents. It may be the case that parents are simplifying the language they use. It can also be the case that complement clauses are not frequent in conversational discourse, or there may be a meaning difference between the complement clause and the simple clause counterpart of it. It is interesting to note that simple clauses were preferred in question and negative forms. However, the scarcity of input may be one of the reasons complementation is acquired late. The reasons parents used only a few complement clauses, the effect of input on complement acquisition and the discourse function of complement clauses are left for future research.

With respect to the order of acquisition of the nominalizing suffixes, this data suggests that the acquisition of –mAK comes first among all the nominalizing suffixes. When we compare the acquisition of –mA and –DIK we see that –mA precedes the acquisition of –DIK at least in the context of the recordings. –mA was used with the desire verb *iste-* 'want' with the verb *gerek* 'need' and *lazım* 'necessary'. This finding is compatible with those studies on the acquisition of mental state verbs which shows that desire verbs and their complement clauses are acquired earlier than other complement taking verbs. (Bartsch & Wellman, 1995). The desire verb *iste-* 'want' was the first verb that occurred with both the nominalizer –mAK and with –mA. This shows that desire verbs and their complements are the first verbs acquired by Turkish children. This data also shows that -(y)AcAK is probably the last nominalizing suffix acquired since it was observed in the data only once, with a verb of saying *söyle-* 'tell'.

As can be observed from Table 2, -DIK and -(y)AcAK nominalizations did not meet the productivity criterion for any of the four subjects. However, it should be kept in mind that the data was limited. Except for Azra, the recordings did not go beyond 2;10 and

complement clauses are complex structures that are acquired slightly later in language development.

Three of the subjects used the verb *iste-* 'want' as their first or second complement taking verb. It is also interesting to note that two subjects used subject complements with the normative verbs *gerek* 'necessary' and *lazım* 'necessary' at around 3;5. However, object nominalizations with the main verbs *iste-* 'want' and *başla-* 'begin' were acquired earlier than subject complements.

Table 2- All the matrix verbs and nominalizing suffixes used by four subjects by age

	-mAK	**-mA**	**-DIK**	**-(y)AcAK**
AZRA	2;1,29 iste- 2;9,25 iste- 2;11,14 zorunda kal- 2;11,14 çalış-	2;9,25 (iste-) 2;9,25 iste- 3;3,3 gerek	3;3,3 *bil-	3;1,26 söyle-
DENİZ	1;9,01 *uf ol- (1;10,3 iste-) 1;11,10 iste- 1;11,10 iste-			
TUNA				
MINE	2;1,10 başla- 2;5,12 iste- 2;6,20 iste- 3;7,5 *iste-	3;8,10 lazım		

*indicates an ungrammatical usage of the form. Parentheses indicate that the form was not fully productive.

4.4. The Cross-sectional Berkeley Data

The Berkeley cross-sectional data is analyzed not by child by child, but by age. It is a cross-sectional data of 33 children ranging in age between 2;0 and 4;8. It should be noted that there were some structures the experimenter had to use, which may be the reason of some similarities. I will report the earliest age at which each complementizer was observed in the data.

None of the 2 and 2;4 year-old subjects produced complements, nor did they seem to understand these structures.

First observation of the –mAK nominalizations in the data was at 2;8, with the main verb *getir-* 'bring'. Although she meant to use the main verb *git-* 'go', she used *getir-* 'bring'. The choice of the main verb was thus ungrammatical.

(84) EXP: nereye gidiyorsun? (Burçak 2;8)
'Where are you going?'
CHI: davul-um-u al-***ma-ğa getir-iyor-um [= gidiyorum].***
drum-POSS1S-ACC get-MAK-DAT *bring-PROG-1S
'I am going to get my drum.'

–mAK nominalizations were present in Tan's speech with the main verb *iste-* 'want' who was seen at the age of 2;8. Subjects older than 2;8 each had at least one example of a –mAK complement with the matrix verb *iste-* 'want'. Thus, I will not report all the examples of –mAK complement with *iste-* 'want'.[22]

(85) CHI: hadi. (Tan 2;8)
'come on'
CHI: aç-***mak iste-mi-yor-um.***
Open-MAK want-NEG-PROG-1S
'I do not want to open it.'

[22] Table 3 provides an exhaustive list of all the matrix verbs and the nominalizing suffixes subjects produced.

CHI: bebek var.

'There is a baby'

CHI: ***oyna-mak iste-r mi-sin***?

play-MAK want-AOR QUE-2S

'Would you like to play?'

CHI: o şeker istiyor.

'S/he wants candy'

Another child, Burçak, used the nominalizer –mAK with the main verb *git-* 'go'.

(86) EXP: niye düdük çalar vapurlar biliyor musun? (Burçak 2;8)

'Do you know why ferries whistle?'

CHI: anne-yi al-***ma-ya gid-iyor-uz.***

mother-ACC get-MAK-DAT go-PROG-1P

'We are going to get our mother.'

FAT: nerden alıyoruz anneyi?

'Where are we going to get her from?'

One of the children produced a complement structure with the nominalizing suffix –mAK at the age of 3;4 with a normative verb *lazım* 'necessary'. It is interesting to note that this –mAK complement is a subject complement.

(87) EXP: çocuklar niye koşar? (Nağme 3;4)

'Why do children run?'

CHI: şey için.

'for hmmm'

CHI: kuvvet getir-mek için.

'To get power'

CHI: yani böyle çok hız-lı ***ol-mak lazım.***

I mean like this very speed-with be-MAK necessary

'I mean one has to be very fast like this'

At the age of 3;8, Murat used two verbs instead of combining them with the complementizer –DIK. Instead of saying *"ne biliyor musun?"* he could have said *"ne*

olduğunu biliyor musun?" 'Do you know how that happened?' Similarly, he could have said *"nereye tırmandığını biliyor musun?"* instead of *"büyük hayvan nereye tırmandı biliyor musun?"* 'Do you know where the big animal climbed?' He also preferred to say "maymunun kafası ne oldu biliyor musun?" rather than *"ne olduğunu biliyor musun?"* 'Do you know what happened to the monkey's head?' Of course, his sentences are also grammatical but he has preferred the simple to the more complex structures.

(88) CHI: büyük hayvan nereye tırman-dı bil-iyor mu-sun? (Murat 3;8)
big animal where climb-PAST know-PROG QUE-2S
'Do you know where the big animal climbed?'
EXP: nereye tırmandı canım?
'Where did he climb honey?'
CHI: maymun-un kafa-sı ne ol-du bil-iyor mu-sun?
monkey-GEN head-POSS3S what exist-PAST know-PROG QUE-2S
'Do you know whar happened to the monkey's head?'

At the age of 4;0, Selim produced –mA complements. This is considered fully productive since it is not an imitation of the adult's utterance.

(89) EXP: sen resim mi **yap-mak isti-yor-sun**, evet. (Selim 4;0)
you picture QUE do-MAKwant-PROG-2S, yes
'Yes, do you want to draw some pictures?'
CHI: ev ***yap-ma-sı-nı bil-iyor-um.***
house make-MA-POSS3S-ACC know-PROG-1S
'I know how to draw a house.'

Many of the children used –mA complements in the recordings when they were 4;4. Selim used a wrong verb with *yazı* 'writing', he should have used *yaz-* 'write' instead. But later, he corrects himself.

(90) EXP: Selimcim sen resim yapar mısın bazen? (Selim 4;4)
'Do you sometimes draw pictures?'
CHI: kalem-le yaz-ı ***yap-ma-sı-nı bil-ir-im.***
pencil-COM write-NOM *do-MA-POSS3S-ACC know-AOR-1S
'I know writing with pencil.'
CHI: ben yazı ***yaz-ma-sı-nı öğren-di-m.***
I write-NOM write-MA-POSS3S-ACC learn-PAST-1S
'I learnt to write'

The only instance of a –DIK complement was produced by Ömer at the age of 4;4. He also used –mA in the same recording. He made the same mistake as Selim by using the wrong verb with *yazı* 'writing'.

(91) CHI: kalem-le yaz-ı ***yap-ma-sı-nı bil-ir-im.*** (Ömer 4;4)
pencil-COM write-NOM *do-MA-POSS3S-ACC know-AOR-1S
'I know writing with pencil.'
EXP: ben **görmek istiyorum**, lütfen.
'I would like to see, please'
CHI: küçük ama konuş-***ma-sı-nı bil-iyor***. (/2)
small but talk-MA-POSS3S-ACC know-PROG-3S
'He is small but he knows how to talk.'
CHI: ***gör-üyor-sun işte nasıl ol-duğ-u-nu.***
see-PROG-2S here how be-DIK-POSS3S-ACC
'You see how it is'
CHI: havuz yaprak-lı ol-du-ğu zaman deniz-e gir-iyor-uz.
'When there are leaves in the pool we swim in the sea'

To sum up, in the Berkeley data only one of the children produced a structure nominalized with –DIK and none of the children produced the nominalizer -(y)AcAK. It is not possible to say anything definite about the comprehension of –DIK or -(y)AcAK. However, as can be observed from Table 3, -mAK and –mA nominalizations can be considered fully productive since the use of these nominalizers met our productivity

criterion; that is, they were used with more than two different matrix verbs. However, it is not possible to apply the productivity criterion to each child since we have one or at most two recordings of the same child. This data shows that the acquisition of –mA precedes the acquisition of –DIK. –mA was used with the mental verbs *bil-* 'know' and *öğren-* 'learn'. –DIK was used with the perception verb *gör-* 'see'. This data also shows that -(y)AcAK is probably the last nominalizing suffix acquired since it was not used in the data even once.

Table 3- All the matrix verbs and nominalizing suffixes used by the subjects by age

Age	**-mAK**	**-mA**	**-DIK**	**-(y)AcAK**
2;0				
2;4				
2;8	-mAK *getir- (Burçak) –mAK iste- (Tan) -mAK git- (Burçak)			
3;0	-mAK iste- (Özlem)			
3;4	-mAK lazım (Nağme)			
3;8	-mAK iste- (Levent) -mAK iste- (Reyhan)			
4;0	-mAK ayıp (Elvan) -mAK iste- (Elvan)	-mA bil- (Selim) -mA öğren- (Selim)		
4;4		-mA bil- (Ömer)	-DIK gör-(Ömer)	
4;8				

When the longitudinal data is compared with the cross-sectional data, some similarities are observed. In both, the first nominalizing suffix used by children is –mAK. The first complement taking predicate in either data is *iste-* 'want', with the exception of one child. Around age 4;0, -mA and –DIK complementation are acquired. However, since the longitudinal data did not go until 4;0, a generalization about the acquisition of

complements other than –mAK is not possible. The fact that -(y)AcAK complements were not encountered in the cross-sectional data as well, implies that their acquisition is later than other nominalizing suffixes. The normative verb *lazım* 'necessary' used with a subject complement was observed in both data sets around 3;5.

CHAPTER V

Results- Experimental Data

5.1. Analysis of the data

In this section results obtained from the analysis of experimental data will be presented. A total of 42 children from four different age groups were tested. Three of the age groups, 3, 4 and 5 year-olds were made up of 12 children[23]. The fourth group, 6 year-olds, consisted of 6 children. The age groups and their scores on nominalizations were compared. Analysis of variance (ANOVA) was carried out to see how children of different age groups performed on different tasks assessing their knowledge of complement structures.

5.1.1. Production Task 1: Picture description using different matrix verbs

The first production task involved a total of 7 items, 1 point each. In this task there were two –mAK complements, two -mA and three – DIK complements. A one-way analysis of variance (ANOVA) with age as the independent variable was carried out on total scores. This analysis yielded significant effects of age [$F(3,38)=4.09$, $p<.013$]. Table 4 presents the means for the analysis. It can be seen from this table that the 5-year-olds scored higher than other age groups and the 3-year-olds scored the lowest. The crucial difference between 4- and 5-year-olds suggests that there is a jump in children's understanding of complementation between ages 4 and 5. The fact that 6-year-olds scored lower than 5-year-olds may be due to factors like their lack of attention or because they found the task easy.

[23] Analyzes with breakdown of age groups into 6-month periods such as 3;0-3;6 and 3;6-4;0 did not reveal any significant results.

Table 4- Distribution of Means of the total scores by Age

	Age	N	Mean	Std. Deviation
Total points	3;00	12	3.50	2.28
	4;00	12	4.17	1.59
	5;00	12	5.83	.94
	6;00	6	4.67	1.63
Total		42	4.52	1.86

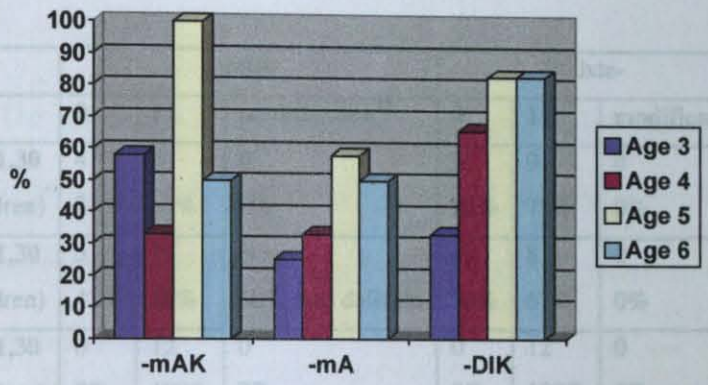
Another ANOVA was carried out to see whether the children's performance on different complementizers varied significantly by age. The analysis revealed a significant effect of age on the production of –mAK nominalizations [F (3,38)=4.09, p<.025]. However, –mA scores showed no significant effect of age [F (3,38)=2.25, p<.098] and neither did –DIK scores [F (3,38)=2.44, p<.079]. Although the results were not significant, inspection of Table 5 shows that the means for the items that involved –mA and –DIK nominalization of 3 and 4-year-olds were different than that of 5- and 6-year-olds, suggesting that age has a role in their acquisition.

Table 5- The means of Total Scores, -mAK, -mA and –DIK scores by Age

	Age	Number	Mean	Std. Deviation
-mAK items	3;00	12	1.42	.79
	4;00	12	1.25	.62
	5;00	12	2.00	.00
	6;00	6	1.33	.82
Total		42	1.52	.67
-mA items	3;00	12	.83	.83
	4;00	12	1.17	.72
	5;00	12	1.58	.51
	6;00	6	1.33	.82
Total		42	1.21	.75
-DIK items	3;00	12	1.25	1.06
	4;00	12	1.75	.87
	5;00	12	2.25	.75
	6;00	6	2.00	1.10
Total		42	1.79	.98

When the scores obtained from –mAK, -mA and –DIK items by different age groups are compared by mean, it is observed that the percentage of correct responses to -mAK complements is higher than –mA and –DIK for all age groups. When –mA and –DIK scores are compared, it is seen that children's scores are higher for the –DIK items.

Graph 1- Comparison of –mAK, -mA and –DIK items by age



It is seen from Graph 1 that 3 and 5-year-olds performed better in –mAK nominalizations when compared to –mA and -DIK. It is also interesting to note that all 5-year-olds correctly produced –mAK nominalizations, which indicates that –mAK nominalization is fully acquired by that age. The fact that 6-year-olds did not perform as well as 5-year-olds was due to their lack of attention, they were more interested in details like the clothes of the depicted characters. In all age groups, –mAK and –DIK scores are very close to each other. The fact that 5 and 6-year-old children were able to do 82-83% of the -DIK items suggests that by this age children have acquired –DIK nominalizations. It can also be observed from this graph that –mA items are difficult even for 5 and 6-year-olds who could only do 50-55% of all –mA items.

The use of different matrix verbs that may have an effect on the children's scores was also analyzed. There were seven different matrix verbs in this task. Tables 6-7-8

present each matrix verb and the complementizer it was used with. The number of children who passed, failed or made a modification if any are also reported.

Table 6 shows the number and the percentage of children who produced both of the –mAK items correctly in different age groups. The modification column shows the reason of their errors.

Table 6- Number and percentage of children who correctly produced –mAK complements with the matrix verb *çalış-* 'try' and *iste-* 'want'.

-mAK	**çalış-**			**iste-**		
	0	**1**	**modification**[24]	**0**	**1**	**modification**
3;0- 3;11,30 (12 children)	4 33%	8 67%	0 0%	3 25%	9 75%	0 0%
4;0- 4;11,30 (12 children)	5 42%	7 58%	3 60% case deletion	4 33%	8 67%	0 0%
5;0- 5;11,30 (12 children)	0 0%	12 100%	0 0%	0 0%	12 100%	0 0%
6;0 – 6;5,30 (6 children)	6 50%	6 50%	0 0%	1 17%	5 83%	0 0%

The percentage of children who correctly produced –mAK with the main verb *iste-* 'want' is higher for all age groups than the percentage of children who correctly produced –mAK with the main verb *çalış-* 'try' as shown in Table 6. Since the nominalizer is –mAK for both matrix verbs the difference in performance may be due to the type of the main verb. There are two reasons that come to mind when we analyze why children performed better with the main verb *iste-* 'want'. First, *çalış-* 'try' assigns dative case, which makes the structure grammatically more complex. As can be observed from the table, the reason why 4 year-olds made mistakes was due to this grammatical complexity. 60% of the

[24] The percentage in the modification column shows the number of children was calculated out of the percentage of the children who made mistakes.

children who made errors with the verb *çalış-* 'try' failed to use the dative suffix which resulted in errors. To illustrate:

(92) EXP: Çocuk ağac-a çıkmağ-a çalış-ıyor.
child tree-DAT climb-MAK-DAT try-PROG
'The child is trying to climb the tree.'
CHI: *Çocuk bisiklete binmek çalışıyor. (Yasemin 4;3,15)
child bicycle-DAT *ride-MAK try-PROG
'The child is trying to ride the bicycle.'

The second reason for the errors of the children may be due to the semantic difference between these two verbs. *Çalış-* 'try' is an aspectual verb, the action has started but it is not finished yet at the time of speaking. *iste-* 'want' is a desire verb that children acquire rather early.

Table 7- Number and percentage of children who correctly produced –mA complements with the matrix verb *bil-*'know' and *şaşır-*'be surprised'

-mA	**bil-**			**şaşır-**		
	0	**1**	**-mAK mod.**	**0**	**1**	**-DIK mod.**
3;0- 3;11,30 (12 children)	8 67%	4 33%	5 62%	6 50%	6 50%	1 16%
4;0- 4;11,30 (12 children)	6 50%	6 50%	2 33%	4 33%	8 67%	1 25%
5;0- 5;11,30 (12 children)	4 33%	8 67%	4 100%	0 0%	6 100%	1 0%
6;0 – 6;5,30 (6 children)	3 50%	3 50%	3 100%	1 16%	5 84%	0 0%

Table 7 illustrates that most of the children preferred –mAK rather than -mA with the main verb *bil-* 'know'. This preference is important to analyze. *bil-* 'know' has an

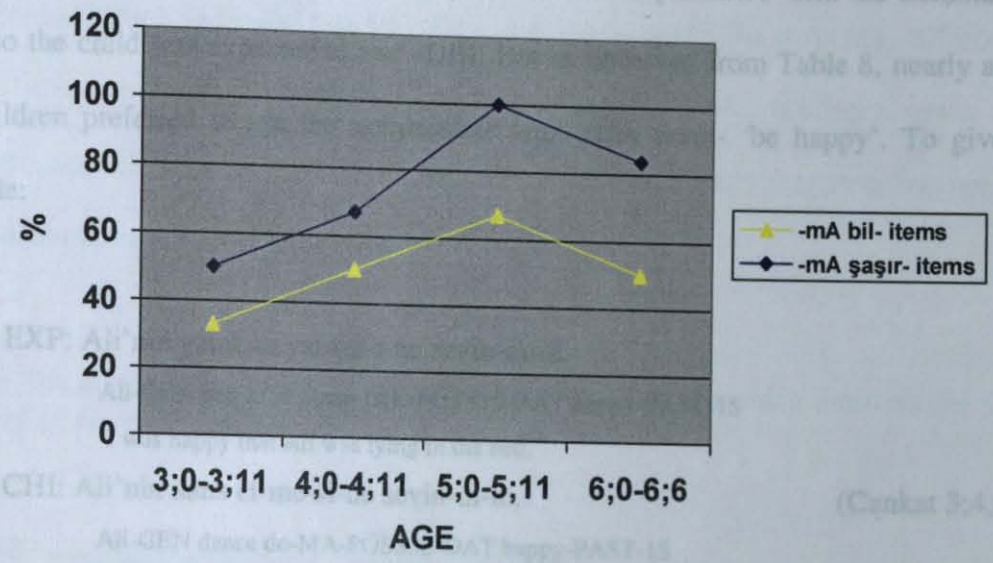
idiosyncratic property since it allows for a complement that can be nominalized with either –mA or –mAK when it is a control structure. In the task the child was given an instance where *bil-* 'know' was used in such a control structure with the nominalizer –mA. The children probably preferred the –mAK nominalization since it is simpler and since they have formed the rule that control structures are expressed by –mAK complements. The children probably have not yet acquired this idiosyncratic property of *bil-* 'know'. To give an example of a child who has prefered to use –mAK:

(93) EXP: Ahmet yüz-me-si-ni bil-iyor.
Ahmet swim-MA-POSS3S-ACC know-PROG
'Ahmet knows how to swim.'
CHI: Ahmet balık tut-ma-yı bil-iyor. (Can 6;0,18)
Ahmet fish catch-MA-ACC know-PROG
'Ahmet knows how to fish.'

When we look at the performance of children on the main verb *şaşır-* 'be surprised', we see that only two children among all subjects chose the wrong complementizer, prefering –DIK complements rather than –mA. Actually, there is no particular meaning difference caused by using –DIK rather than –mA complement clause with the main verb *şaşır-* 'be surprised'. To give an example to this preference:

(94) EXP: Ayşe'nin kayığ-a bin-me-si-ne şaşır-dı-m.
Ayşe-GEN boat-DAT get on-MA-POSS3S surprise-PAST-1S
'I was surprised that Ayşe got on the boat'
CHI: Ayşe'nin merdiven-e çık-dığ-ı-na şaşır-dı-m. (Ali K 4;2,5)
Ayşe-GEN stairs-DAT get on-DIK-POSS3S surprise-PAST-1S
'I was surprised that Ayşe climbed the stairs.'

Graph 2- Percentage of correct answer to –mA *bil-* 'know' and –mA şaşır- 'be suprised' by age



When we look at the graph above, we observe that there is an increase in performance by age in the production of –mA complement clauses with the main verbs *bil-* 'know' and *şaşır-* 'be surprised', except for the 6-year-olds. When performance in terms of the main verbs is compared, it is seen that all age groups performed better with the main verb *şaşır-* 'be surprised'. This may also be due to the type of the complement taking verbs, *şaşır-* 'be surprised' is an emotion verb but *bil-* 'know' is a mental verb.

Table 8- Number and percentage of children who correctly produced –DIK complements with the matrix verb *sevin-* 'be happy', *söyle-* 'tell' and *gör-* 'see'.

-DIK	**sevin-**			**söyle-**			**gör-**		
	0	**1**	**-mA mod.**	**0**	**1**	**-mA mod.**	**0**	**1**	**Mod.**
3;0- 3;11,30	7	5	5	10	2	1	5	7	0
(12 children)	58%	42%	71%	83%	17%	10%	42%	58%	0%
4;0- 4;11,30	5	7	3	9	3	3	2	10	0
(12 children)	42%	58%	60%	75%	25%	33%	17%	83%	0%
5;0- 5;11,30	4	8	3	5	7	1	1	11	0
(12 children)	33%	67%	75%	42%	58%	20%	8%	92%	0%
6;0– 6;5,30	4	2	4	1	5	0	1	5	1
(6 children)	67%	33%	100%	17%	83%	0%	17%	83%	0%

The main verb *sevin-* 'be happy' can either be nominalized with –DIK or –mA, without any meaning difference. In the experiment it was presented with the nominalizer -DIK so the child was expected to use –DIK. But as observed from Table 8, nearly all of the children preferred to use the nominalizer –mA with *sevin-* 'be happy'. To give an example:

(95) EXP: Ali'nin yatak-ta yat-tığ-ı-na sevin-di-m.
Ali-GEN bed-LOC sleep-DIK-POSS3S-DAT happy-PAST-1S
'I was happy that Ali was lying in the bed.'
CHI: Ali'nin dans et-me-si-ne sevin-di-m. (Cankat 3;4,6)
Ali-GEN dance do-MA-POSS3S-DAT happy-PAST-1S
'I was happy that Ali was dancing.'

None of the children from any age group substituted another nominalizer instead of –DIK for the main verb *gör-* 'see'. These findings show that they learn each verb with the nominalizer it selects and in their mind the main verb *sevin-* 'be happy' is matched with –mA, while *gör-* 'see' is matched with –DIK nominalizer.

The main verbs that take both –mAK and -DIK/–(y)AcAK complements were also tested. To illustrate, *söyle-* 'tell' takes both –mA and –DIK/-(y)AcAK nominalizers in Turkish. When *söyle-* 'tell' takes a –mA complement, it gets an imperative meaning. When it takes a –DIK complement, it gets a factive meaning. Thus, this experiment also aimed to see whether the child is able to distinguish the factive versus non-factive interpretation of such sentences. The framing sentence *"Ayşe kardeşinin uyuduğunu söyledi"* 'Ayşe told that her brother was sleeping' is given to the child who is then asked to describe his/ her picture. In the child's picture a girl who is telling that her sister was jumping rope is depicted, thus the child is expected to say *"Ayşe kardeşinin ip atladığını söyledi"* 'Ayşe said that her sister was jumping rope'. If the child chooses –mA instead of –DIK for

his/her sentence than the sentence gets an imperative meaning as 'Ayşe told her sister to jump rope'. As can be observed from Table 8, some of the children chose –mA nominalization which indicates that they have not yet acquired the meaning difference caused. The reason for this modification can also be that imperative reading is easier for children to comprehend than the factive interpretation, since probably they hear imperative statements more than factive statements.

Graph 3- The correct answer percentage of –DIK items with the main verbs *sevin-* 'be happy' and *söyle-* 'tell' and *gör-* 'see'

As shown in Graph 3 above, children's performance on the production of –DIK nominalizations with the main verbs increases with age, except for 6 year-olds, who show a decrease in performance with the main verb *sevin-* 'be happy'. However, as seen in Table 8, the reason for the errors of 6 year-olds was that they preferred –mA complements with *sevin-* 'be happy'. The reason for this preference may be that *sevin-* 'be happy' is an emotion verb and most emotion verbs in Turkish are nominalized with –mA. There are also differences in the performance of children with respect to the choice of the main verb. The correct answer percentage was higher for all age groups with the main verb *gör-* 'see',

which is a perception verb, when compared to the emotion verb *sevin-* 'be happy' and *söyle-* 'tell' a verb expressing indirect speech.

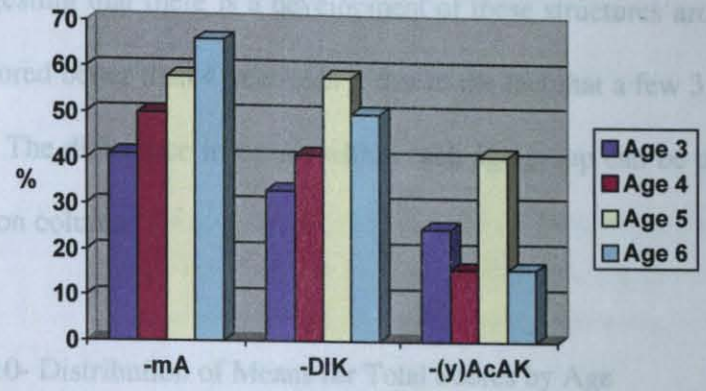
5.1.3. Production Experiment 2 : Changing to Indirect Speech

In this experiment the maximum score that could be obtained was 6, there were 2 –mA, 2 –DIK and 2 –(y)AcAK items, the main verb was *söyle-* 'tell'. A one-way analysis of variance (ANOVA) with age as the independent variable was carried out on total scores. The analysis did not yield significant effects of age on the total score [F (3,38)=.903, p<.443]. No significant effect of age was found in the analysis carried out for –mA, -DIK and –(y)AcAK items separately, either. But the means for –(y)AcAK nominalization was the lowest for all age groups. Table 9 presents the means for the analysis.

Table 9- The means of Total Scores, -mA, -DIK and –(y)AcAK scores by Age

	Age	N	Mean	Std. Deviation
Total Points	3;00	12	2.75	2.42
	4;00	12	3.08	1.98
	5;00	12	4.08	1.93
	6;00	6	3.67	2.16
Total		42	3.36	2.12
-mA items	3;00	12	1.08	.90
	4;00	12	1.25	.87
	5;00	12	1.50	.67
	6;00	6	1.67	.52
Total		42	1.33	.79
-DIK items	3;00	12	.83	.94
	4;00	12	1.33	.65
	5;00	12	1.42	.79
	6;00	6	1.17	.98
Total		42	1.19	.83
-(y)AcAK items	3;00	12	.83	.83
	4;00	12	.58	.79
	5;00	12	1.17	.83
	6;00	6	.83	.75
Total		42	.86	.81

Graph 4- The correct answer percentage of –mA, -DIK and –(y)AcAK items with the main verb *söyle-* 'tell'.



As stated earlier, the matrix verb in this task, *söyle-* 'tell', gets an imperative interpretation with –mA complements whereas, when used with a –DIK or –(y)AcAK complement, it gets a factive interpretation. Graph 4 illustrates that 3 and 4-year-old children performed better with the –mA nominalizer, that is, the imperative reading. 5-year-olds showed nearly no difference between –DIK and –mA nominalizers. When producing –(y)AcAK complements both the younger and the older children made more mistakes in comparison to –mA and –DIK complements. From a pragmatic point of view, *söyle-* 'tell' with –mA complements is probably more common in children's everyday conversations since parents usually request actions from children rather than reporting facts to them.

5.1.3. The Comprehension Task

The comprehension experiment involved a total of 10 items. 3 of these items involved double embeddings and they were scored out of 2 points. The other 7 items were single embedding items, which were 1 point each. The maximum total score that could be obtained was 13. A one-way analysis of variance (ANOVA) with age as the independent variable was carried out on total comprehension scores. The analysis yielded significant effects of age [$F(3,38)=3.99$, $p<.014$]. Table 10 presents the means for the analysis. As can

be seen, the total scores obtained by the 3 and 4 year-olds are very close to one another and so are the means for the 5 and 6 year olds. The difference appears between the ages 4 and 5, suggesting that there is a development of these structures around this age. That 3 year-olds scored better than 4 year-olds is due to the fact that a few 3 year old children had high scores. The difference in scores within each age group can be observed from the standard deviation column.

Table 10- Distribution of Means for Total Scores by Age

	Age	N	Mean	Std. Deviation
Total score	3;00	12	7.83	2.29
	4;00	12	7.25	1.82
	5;00	12	9.75	1.06
	6;00	6	9.17	2.71
Total		42	8.40	2.14

Another analysis with age as the independent variable was carried out for the scores of the items with double embeddings. There was no significant effect of age on children's performance on double embedding items [$F(3,38)=2.33$, $p<.090$]. The means for the items with double embeddings can be observed from Table 11. As can be seen, the 6 year-olds scored better than the other groups, but since there is no significant difference between the age groups it can be concluded that the double embedding items were difficult for every age group. Some children comprehended the construction but preferred not to use a double embedding in their answer. To give an example:

(96) EXP: Fare-ye dün ne yap-tığ-ı-nı san-a anlat-ma-sı-nı söyle.
mouse-DAT yesterday what do-DIK-POSS3S-ACC you-DAT tell-MA-POSS3S tell
'Tell the mouse to tell you what he has done yesterday.'
CHI: Fare dün ne yap-tı-n? (Lal 3;10,16)

Mouse yesterday what do-PAST-2S

'What did you do yesterday?'

However, some of the older children not only comprehended the double embedding items but also provided a double embedding in their answer:

(97) EXP: Fare-ye dün ne yap-tığ-ı-nı san-a anlat-ma-sı-nı söyle.

mouse-DAT yesterday what do-DIK-POSS3S-ACC you-DAT tell-MA-POSS3S tell

'Tell the mouse to tell you what he has done yesterday.'

CHI: Fare dün ne yap-tığ-ı-nı biz-e anlat-ır mısın? (Alp 6;1,9)

Mouse yesterday what do-DIK-POSS3S-ACC we-DAT tell-AOR QUE-2S

'Can you tell us what you did yesterday?'

Table 11- Distribution of Means obtained from items that involved double embedding by Age.

	Age	N	Mean	Std. Deviation
Double embedding	3,00	12	2,50	.80
	4,00	12	1,92	1.08
	5,00	12	2,83	.94
	6,00	6	3,00	1.26
Total		42	2,50	1.04

Another ANOVA was carried out with single embedding nominalizations. This revealed a significant effect of age [$F(3,38)=3.52$, $p<.024$]. Table 12 shows the means for scores of the items that involved single embeddings. 5 year-olds scored higher than other groups in the single embedding items while 3 and 4 year-olds scored lower than other age groups.

Most of the children preferred negative question when they were given yes-no question embeddings:

(98) EXP: Hadi fareye dün okula gidip git-me-diğ-i-ni sor.

Come on mouse-DAT yesterday school-DAT go-IP go-NEG-DIK-POSS3S-ACC ask

'Ask the mouse whether he went to school yesterday or not.'

CHI: Fare dün okul-a git-me-di-n mi? (İrem 5;3,8)

mouse yesterday school-DAT go-NEG-PAST-2S QUE

'Didn't you go to school yesterday?'

Table 12- Distribution of Means obtained from items that involved single embedding by Age.

	Age	N	Mean	Std. Deviation
Single embedding	3;00	12	5.41	1.50
	4;00	12	5.33	1.30
	5;00	12	6.75	.45
	6;00	6	6.33	1.63
Total		42	5.90	1.35

Tables 10 and 12 indicate that scores obtained by 6-year-olds is lower than 5-year-olds. There may be different reasons for this observation. It was evident that they found the task easy and lost their concentration very easily. Their errors were mostly due to the fact that they did not follow the instruction of the task, they did not take the task seriously and they answered the question they were supposed to ask the mouse. Moreover, it may be that this older group looked for other things in the experiment and got lost in the details. In this experiment, when 6-year-olds were asked to talk to the mouse they objected to a mouse speaking.

When the scores of 3-4 and 5 year olds are compared, on the other hand, it is observed that there is an increase in their comprehension level as they get older.

5.1.4. Imitation Experiment

In the fourth task, which was an imitation task, there were a total of 12 items, 3 items of each complementizer: 3 –mAK, 3 –mA, 3 –DIK and 3 -(y)AcAK items. A one-way analysis of variance (ANOVA) with age as the independent variable was carried out on total scores. The analysis did not yield significant effects of age on the total score [$F(3,38)=1.42$, $p<.251$]. There was also no significance of age when we look at the

nominalizers –mAK, -mA and -(y)AcAK. However, there was a significant effect of age in –DIK nominalizations [F(3,38)=2.95, p<.045]. As can be seen from the following means Table 13, there is an increase in performance by age.

Table 13- The means of Total Scores, -mAK scores, -mA scores, –DIK scores and -(y)AcAK scores.

	Age	N	Mean	Std. Deviation
Total Scores	3;00	12	9.92	3.45
	4;00	12	11.00	2.00
	5;00	12	11.67	.49
	6;00	6	11.50	1.22
Total		42	10.95	2.24
-mAK items	3;00	12	2.83	.58
	4;00	12	2.92	.29
	5;00	12	2.92	.29
	6;00	6	3.00	.00
Total		42	2.90	.37
-mA items	3;00	12	2.58	.90
	4;00	12	2.83	.58
	5;00	12	3.00	.00
	6;00	6	2.83	.41
Total		42	2.81	.59
-DIK items	3;00	12	2.17	1.19
	4;00	12	2.83	.58
	5;00	12	2.92	.29
	6;00	6	3.00	.00
Total		42	2.69	.78
-(y)AcAK items	3;00	12	2.33	1.15
	4;00	12	2.42	1.00
	5;00	12	2.83	.39
	6;00	6	2.67	.82
Total		42	2.55	.89

-(y)AcAK nominalizations were difficult to imitate for all age groups when compared to the scores of other complementizers (Table 13). Most of the subjects deleted

the main verb and trasformed the embedded verb into infinitive form, when imitating the structure:

(99) EXP: Bu hediye-yi beğen-eceğ-i-ni düşün-üyor-um.
this present-ACC like-ACAK-POSS3S-ACC think-PROG-1S
'I think you will like this present.'
CHI: Bu hediye-yi beğen-eceğ-im. (Rahika 3;3,1)
this present-ACC like-FUT-1S
'I will like this present.'

The scores of –mA and -(y)AcAK items obtained by 6 year-olds is lower than 5 year-olds. There may be different reasons for this observation. However, it was observed that they found the task very easy and they lost their concentration very easily.

Table 14- Comparison of experiments (children data)

		Production Task 1						Production Task 2						Imitation Task						
		-mAK	-mA	-DIK	case	main verb del.	other	-mA	-DIK	-(y)AcAK	direct speech	case	other	-mAK	-mA	-DIK	-(y)AcAK	case	main verb del.	other
mental verbs	bil- (-mA)	%33	%50	-	%9	%2	%6													
	san- (-DIK)													%4	-	%85	-	%2	%9	-
	emin ol- (-AcAK)													%11	-	-	%83	%4	%2	-
	hatırla- (-DIK)													%4	-	%92	-	-	%4	-
	anla- (-DIK)													-	%4	%88	-	%5	%5	-
	düşün- (-AcAK)													%7	-	-	%83	%4	%7	-
emotion verbs	sevin- (-DIK)	-	%35	%52	-	-	%13													
	sevin- (-AcAK)													%2	-	-	%90	%2	%7	-
	zevkli (-mAK)													%97	-	-	-	-	%3	-
	sev- (-mA)													%2	%95	-	-	%2	-	-
	şaşır- (-mA)	-	%59	%7	%9	-	%25													
desire verbs	iste- (-mAK)	%80	-	-	-	%4	%16							%95	-	-	-	-	%2	%4
	iste- (mA)													-	%98	-	-	-	%2	
perception verbs	gör- (-DIK)	%4	%2	%78	-	%4	%12													
verbs of saying	söyle- (-mA)							%80	%4	-	%14	%2	-							
	söyle- (-DIK)	-	%11	%40	%9	%7	%33	%21	%73	-	%4	%2	-							
	söyle- (-AcAK)							%7	%4	%59	%21	%7	%2							
modal verbs	lazım (-mAK)													%95	-	-	-	-	%5	-
	izin ver- (-mA)													%2	%90	-	-	%8	-	-
aspectual verbs	çalış- (-mAK)	%78	-	-	%7	%4	%11													

The 'other' column represents the percentage of children who could not answer the item correctly or used a wrong main verb.

5.5.5. Qualitative Analysis of Errors and Comparison of Children's Performance on Different Tasks

Children's performance with respect to different main verbs is compared in Table 14. In the first Production Experiment, when we compare the performance of children in terms of the type of the main verb we observe that children performed better on desire and perception verbs. They also performed well on the aspectual verb *çalış-* 'try'. However, children's performance on emotion verbs, mental verbs and verbs of saying was rather low when compared to desire and perception verbs.

When we analyze the performance on the verbs that take two different nominalizers without any meaning difference such as *sevin-* 'be happy', we see that children have different preferences in the choice of the nominalizer as has been mentioned before. This implies that children learn complementizers verb by verb and some verbs are matched with different nominalizers for different children. Between four to nine percent of children made case errors, that is they either used a wrong case or did not use any case. Between two to seven percent children deleted the main verb and used the embedded verb in finite form.

In the second Production Task, between four to 21 percent of all children failed to change the utterance into indirect speech and instead repeated the direct speech version as given by the experimenter. Between two to nine percent of children omitted the case or produced an ungrammatical case. It is interesting to note that 21% of the subjects modified the –DIK nominalizer and used –mA instead. This implies that they have not acquired the meaning difference that is caused by the use of –mA versus –DIK with the main verb *söyle-* 'tell'. But when they were given –mA nominalizer only four percent of children changed it to –DIK, which shows that the imperative interpretation is easier for children. It

is also worth noting that only 11% of children modified the nominalizer in the –(y)AcAK items.

When children's performance in the Imitation Task is analyzed, it is observed that between two to nine percent of all children deleted the main verb and between two to nine percent of children made case errors. There seems to be no difference when we compare their performance with respect to different main verbs. Between nine to 11 percent of subjects made modification in the complementizer.

Table 15 - Comparison of experiments (adult data)

		Production Task 1						Production Task 2					
		-mAK	-mA	-DIK	case del.	main verb del.	other	-mA	-DIK	-(y)AcAK	direct speech	case	other
mental verbs	bil- (-mA)	%17	%83	-	-	-	-						
	san- (-DIK)												
	emin ol- (-AcAK)												
	hatırla- (-DIK)												
	anla- (-DIK)												
	düşün- (-AcAK)												
emotion verbs	sevin- (-DIK)	-	%17	%83	-	-	-						
	sevin- (-AcAK)												
	zevkli (-mAK)												
	sev- (-mA)												
	şaşır- (-mA)	-	%100	-	-	-	-						
desire verbs	iste- (-mAK)	%100	-	-	-	-	-						
	iste- (mA)												
perception verbs	gör- (-DIK)	-	-	%100	-	-	-						
verbs of saying	söyle- (-mA)							%100	-	-	-	-	-
	söyle- (-DIK)	-	-	%100	-	-	-	-	-	%83	%17	-	-
	iste- (-mA)												
modal verbs	lazım (-mAK)												
	izin ver- (-mA)												
aspectual verbs	çalış- (-mAK)	%100	-	-	-	-	-						

5.5.6. Adult's Data

The same tasks were also carried out with 6 university educated adults as a control group. As can be seen from Table 15, it was observed that in some items the adults did not answer as expected but preferred other structures.

In the first production task that involved different matrix verbs, all 6 adults answered –mAK items as expected. Only one of the adult subjects preferred a –mAK complement with the main verb *bil-* 'know' rather than –mA complement. When it comes to –DIK items again only one subject did not answer as expected, prefering –mA to –DIK complement with the main verb *sevin-* 'be happy'. Although the number of adult subjects was limited, this implies that adults also have a verb by verb notion of complementation.

In the second production task, one of the subjects preferred to use –DIK rather than in the –mA item with the main verb *söyle-* 'tell', leading to a factive interpretation instead of the imperative interpretation expected. One of the subjects did not change the structure into indirect speech in the -(y)AcAK item. What was interesting was that one of the subjects failed to change the utterance into indirect speech in both of the –DIK items.

In the comprehension task, half of the adults did not answer the double embedding items as expected, they preferred not to use a double nominalization in their answer. In the imitation task, all of the subjects imitated all items as expected.

The data collected from adults imply that the tasks worked fine, since most adults answered as expected. However, it was observed that adults also have different preferences with respect to the complementizer they use with the main verb *bil-* 'know' and *sevin-* 'be happy'. Children similarly, preferred to use –mAK with the main verb *bil-* 'know' and some children preferred to use –mA with *sevin-* 'be happy'. This supports the view that complementizers are learned by the main verbs.

CHAPTER VI

CONCLUSION and IMPLICATIONS

6.1. Discussion

The conclusion drawn from the results of this study and recommendations for future studies on the subject are summarized below.

This study aimed to analyze the acquisition of complementation in Turkish. The analysis is based on both the spontaneous speech samples of four Turkish children's longitudinal data, the cross-sectional data of 33 children and the experimental data collected from 42 children. Findings provide suggestions regarding the order in which nominalizing suffixes are acquired. Secondly, that complement taking verbs have a crucial role in the acquisition of the nominalizing suffixes is observed.

Both sets of naturalistic data analyzed in this study showed that –mAK complements with the complement taking verb *iste-* 'want' are the first to appear in the child's speech. Children acquire –mAK nominalizations in the period 2;0-3;0. -mAK nominalization met the productivity criterion set for this study only for one child, Azra. In the naturalistic data the second nominalizing suffix acquired by children was –mA. The –mA nominalizer was used with the main verbs *iste-* 'want', *gerek* 'necessary', *bil-* 'know', *öğren-* 'learn' and *lazım* 'necessary'. This data suggests that children start acquiring –mA nominalization at about 3;0. However, only one of the children in the naturalistic data met the productivity criterion. The complement clauses nominalized with –DIK appeared less frequently than –mA nominalizations, only one of the subjects produced –DIK at the age of 4;4 with the matrix verb *gör-* 'see'. Among the children studied only one of the children, Azra, produced -(y)AcAK nominalized complements with

the main verb *söyle-* 'tell' at 3;1. Object complements emerged before subject complements in the naturalistic data.

These findings are compatible with the results of the studies done for the acquisition of complementation in English and Korean. Pinker (1984) reported that control verbs such as *want, like, try, forget* were the first complement verbs that were acquired by English-speaking children, they were acquired at around 2;0. As in Turkish and English also in Korean control constructions are acquired before tensed complements. Studies on acquisition of complementation in Chinese is also parallel to Turkish data in that emotion verbs and their complements are acquired before mental state verbs. These results imply a universal pattern in the acquisition of mental verbs and their complements, at least for the languages studied.

Since the naturalistic data was a limited set of data in terms of the age of the subjects, experiments were done to trace the acquisition pattern better. Children between 3;0-6;5 were included in the experiments.

The first production task showed that the scores of –mAK nominalizations when compared to –DIK nominalizations were higher for the 3 year olds. The production of –mAK and –DIK nominalizations was close to each other for 4, 5 and 6-year-olds, suggesting that this nominalized structure is acquired between the ages of 4 and 5. On the other hand, –mA nominalizations were more difficult than –DIK nominalizations for all age groups. This finding may seem contradictory to the results of the naturalistic data, but the main verbs were also analyzed to see if the type of verb has an effect on the performance. When –mAK items were compared in terms of the main verbs they were used with, the percentage of children who correctly answered –mAK items with the desire verb *iste-* 'want' was observed to be higher than those children who answered –mAK items with the aspectual verb *çalış-* 'try'. These findings are compatible with the results of the

acquisition study done for Chinese and English, in that children acquire verbs of desire and their complements earlier than other complement-taking verbs (Tardif & Wellman, 2000).

If we compare the use of –mA nominalizations with the main verbs *bil-* 'know' and *şaşır-* 'be surprised', we see that children of all age groups performed better with the emotion verb *şaşır-* 'be surprised' than they performed on the mental verb *bil-* 'know'. The fact that *bil-* 'know' is a mental verb, which is acquired later than verbs of emotion, is probably the reason for the difference in performance.

When the verbs selecting the –DIK nominalizer as their complements are compared, it is observed that the percentage was higher for all age groups with the perception verb *gör-* 'see', as opposed to the emotion verbs and the verb expressing indirect speech *söyle-* 'tell'. This finding is again compatible with the findings of those studies on the internal state verbs that perception verbs and their complement clauses are acquired earlier than emotion verbs (Bartsch & Wellman, 1995). When two emotion verbs *sevin-* 'be happy' and *şaşır-* 'be surprised' are compared, it can be observed that children performed better on the –mA nominalized items. The fact that 35% of the children preferred –mA complements rather than –DIK with the main verb *sevin-* 'be happy' implies that they have generalized the rule that emotion verbs choose –mA complements.

The second production experiment expected the children to change the given direct speech utterance into indirect speech. All the items in this task used the same main verb *söyle-*'tell', which can be nominalized with either –mA, -DIK and -(y)AcAK resulting in different meanings. When the performances of different age groups in this experiment were compared, it was found that both younger and older children performed better on the –mA nominalized items. The reason for this may be that when the main verb *söyle-* 'tell' is used with –mA nominalization, an imperative meaning is conveyed. It may be the case that

children find the imperative interpretation of the main verb easier than the factive interpretation.

In the comprehension task, the children were expected to understand the complement clause and change it into a simple clause. The total scores obtained by the 3 and 4 year-olds were very close to one another and so were the means for the 5 and 6 year olds. The difference appears between the ages 4 and 5, suggesting that there is a development of these structures around this age. Both the younger and the older children had difficulty in the items involving double nominalizations.

There appeared to be no significant development as a function of age in terms of the imitation of complement clauses but -(y)AcAK complements were difficult even for imitation for all age groups suggesting that they are more complex than other complements.

When we compare the results of the naturalistic data with the results of experimental data we observe that –mAK nominalizations are the first form of nominalized structures to appear in the children's speech. The reason for this may be that –mAK nominalizations are grammatically simpler in that they do not require a possessive suffix as the other nominalizing suffixes do. Children mostly use the desire verb *iste-* 'want' as their first complement structure. The fact that –(y)AcAK nominalizations are acquired the last in both the naturalistic and the experimental data may be due to the fact that they refer to a state that is not actualized at the time of speaking. They are syntactically more complex than –mAK complements since they are not control structures and thus require a possessive suffix and a case suffix. It is also worth noting that –(y)AcAK nominalizations were infrequent in adults' speech.

The order in which–mA and –DIK nominalizations are acquired may be due to the verbs they are used with, since both of these nominalizers are grammatically of the same

complexity in terms of the suffixes attached. The fact that –DIK is used with main verbs that express the speaker's epistemic attitude, that is, his/her commitment to the truth of the statement, may make it easier for children to comprehend. Since –DIK suffix is also used in adverbial clauses and relative clauses, it may be easier for children to acquire it when compared with –mA. However, since –DIK clauses can be simplified they were less encountered in the mothers' and children's speech. The pragmatic function of –DIK nominalizations and the use of –DIK nominalizations in mother's speech needs further study. It seems that complement clauses are avoided in everyday speech. The main verbs that are nominalized with –mA are mostly verbs that express a modal notion, like command, wish or obligation. It may be the case that children hear such –mA clauses with the main verbs *lazım* 'necessary' and *gerek* 'necessary' frequently since this is the type of complement structure mothers' use when regulating children's behaviour. It may also be the case that children find modal notions harder to understand.

Since the reason for most errors in Production Experiment 2 was children's choice of the wrong nominalizing suffix with the main verb, it can be argued that children learn verbs by the complementizers they take. Acquisition of complemetation in English was also reported to be verb by verb. (Bloom et al.,1984)

Adults' data and their preferences also suggest that complement-taking verbs are learnt by the complementizers as suggested in Taylan (1998), Özsoy (1999) and Schaaik (1999).

To sum up, it seems that –mAK nominalizations are the first to be acquired and the first to be comprehended. –DIK is the second nominalizer that is acquired, followed by –mA nominalizer. -(y)AcAK is the nominalizer that is acquired the last. The reasons for the observed acquisition order have to do both with the type of main verbs, its semnatic complexity and pragatic function, as well as the syntactic complexity of the structure.

6.2. Limitations of the study

There are certain limitations of this study. The fact that the longitudinal data showed the language development of children studied only until 3;3 may be seen as an important limitation. It is also questionable whether the recordings were able to capture all the structures the child knows since the sessions were short with sometimes long intervals in between them. The experiments may be conducted with more children; drawings may also be more professional.

The recommendations and limitations of this study for future work on the subject are summarized above. I hope this work will open the way for more work on the acquisition of complementation in Turkish.

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APPENDIX I

The Experimental Tasks

1. Production Task 1: Picture description using different matrix verbs

Şimdi beraber resimlere bakacağız. Onlar senin resimlerin, bunlar da benim. Ben kendi resmimi anlatacağım sen de aynı benim gibi kendi resmini anlatacaksın.

'Now we will look at pictures together. Those are you pictures and these are mine. I will describe my own pictures and you will describe your own picture the same way I did mine.'

Training Sentences:

1. **EXP:** *Masanın üzerinde armut var.* 'There is pear on the table.'

   CHI: *Masanın üzerinde kiraz var.* 'There is cherry on the table.'

2. **EXP:** *Niye güldüğünü sordum.* 'I asked her why she is laughing.'

   CHI: *Niye ağladığını sordum.* 'I asked her why she is crying.'

Sentences:

1.EXP: *Ayşe kardeşinin uyuduğunu söyledi.* 'Ayşe said that her sister was sleeping'

CHI: *Ayşe kardeşinin ip atladığını söyledi.* 'Ayşe said that her sister was jumping rope'

2. EXP: *Ali'nin kediyi sevdiğini gördüm.* 'I saw that Ali was stroking the cat.'

CHI: *Ali'nin köpeği sevdiğini gördüm.* 'I saw that Ali was stroking the dog.'

3. EXP: *Çocuk ağaca çıkmağa çalışıyor.* 'The child is trying to climb the tree'

CHI: *Çocuk bisiklete binmeğe çalışıyor.* 'The child is trying to ride a bicycle.'

4. EXP: *Ahmet yüzmesini biliyor.* 'Ahmet knows how to swim.'

CHI: *Ahmet balık tutmasını biliyor.* 'Ahmet knows how to catch fish.'

5. EXP: *Kedi ağaçtan inmek istiyor.* 'The cat wants to climb down the tree.'

CHI: *Kedi duvara tırmanmak istiyor.* 'The cat wants to climb the wall.'

6. EXP: *Ali'nin yatakta yattığına sevindim.* 'I am happy that Ali is lying in the bed.'

CHI: *Ali'nin dans ettiğine sevindim.* 'I am happy that Ali is dancing.'

7. EXP: *Ayşe'nin kayığa binmesine şaşırdım.* ' I am surprised that Ayşe got on the boat.'

CHI: *Ayşe'nin merdivene çıkmasına şaşırdım.* 'I am surprised that Ayşe climbed the stairs.'

2. Production Task 2: Changing to Indirect speech

Bak bu resimlerde güzel bir hikaye var. Beraber bakacağız, ben sana başını anlatacağım. Sonunu da beraber bitirelim, olur mu? 'Look there is a nice story in these pictures. We will look at them together, I will tell the beginning of the story and we'll end it together, ok?'

Training sentences:

T1. Edi ayağa kalkmak istiyor. 'Edi wants to stand up.'

Resim 1 *Bak, Edi, Miki ve Büdü okulculuk oynuyorlar. Edi ve Miki sıralarına oturmuşlar, Büdü de öğretmen.* 'Look. Ernie, Mickey and Bernie are playing a school game. Ernie and Mickey are sitting at their desk. Bernie is the teacher.'

Resim 2 *Bak, Edi elini kaldırıyor, Büdü'ye "öğretmenim, ayağa kalkabilir miyim?" diyor. Şimdi söyle bakalım, Edi ne yapmak istiyor?* 'Look Ernie raises his hand, tells Bernie "teacher, may I stand up?". Now you tell me, what does Ernie want to do?'

T2. Öğretmen Edi'nin şarkı söylemesini istiyor. 'The teacher wants Ernie to sing.'

Resim 1 *Aaa, bak Edi ile Büdü müzik dersindeler. Edi'den başka herkes şarkı söylüyor. Edi söylemiyor çünkü şarkı söylemeyi sevmiyor.* 'Look, Ernie and Bernie are at music class.Everyone is singing but Ernie. Because Ernie does not like singing.'

Resim 2 *Öğretmen Edi'ye "hadi Edi sen de şarkı söyle" diyor.* 'The teacher tells Ernie 'come on Ernie sing with your friends.'

Şimdi sen söyle bakalım, Öğretmen Edi'nin ne yapmasını istiyor? Now you tell me, what does the teacher want Ernie to do?

Sentences:

1. Büdü Miki'nin Edi'yi bulmasını söylüyor. 'Bernie tells Mickey to find Ernie.'

Resim 1 *Aaaa, bak Edi Büdü'den saklanıyor.* 'Ernie is hiding from Bernie.'

Resim 2 *Burda da Büdü Edi'yi arıyor ama bulamıyor.* 'Bernie is looking for Ernie but cannot find him.'

Resim 3 *Bak Büdü Miki'ye "bana Edi'yi bul" diyor.* 'Bernie tells Mickey "find Ernie for me".

Şimdi sen söyle bakalım, Büdü Miki'nin ne yapmasını söylüyor? 'Now you tell me, what does Bernie want Mickey to do?'

2. Edi üstündeki kazağını yıkayacağını söyledi. 'Ernie tells he will wash his sweater.'

Resim 1 *Bak Edi resim yapıyor. Ama üstündeki kazağı da boyamış.* 'Look, Ernie is painting. But he painted his sweater as well.'

Resim 2 *Büdü Edi'ye kazağını boyadığı için kızıyor. Edi diyor ki "Büdü kızma, ben hemen kazağımı yıkayacağım."* 'Bernie gets angry at Ernie since he painted his sweater. Ernie says "Do not get angry Bernie, I will immediately wash my sweater.'

Edi Büdü'ye ne yapacağını söyledi? 'What did Ernie tell Bernie he would do?'

3. Büdü kalemlerinin kaybolduğunu söylüyor. 'Bernie tells his pencils got lost.'

Resim 1 *Bak Edi ile Büdü dersteler. Edi Büdü'nün kalemlerini alıyor.* 'Look Ernie and Bernie are at class. Ernie takes Bernie's pencils.'

Resim 2 *Herkes resim yapıyor derste, ama Büdü kalemlerini arıyor. "Kalemlerim kayboldu" diyor.* 'Everyone is painting but Bernie is looking for his pencils.'

Hadi şimdi sen söyle, Büdü ne olduğunu söylüyor? 'Now you tell me, what does Bernie tell has happened?'

4. Büdü Edi'ye hediye alacağını söylüyor. 'Bernie tells he will buy a present for Ernie.'

Resim 1 *Bak, bugün Edi'nin doğumgünü. Heryeri süslemişler.* 'Look today is Ernie's birthday. They have decorated everywhere.'

Resim 2 *Ama Büdü ona hediye almayı unutmuş. Edi'ye diyor ki "sana hediyeni yarın alacağım."* 'But Bernie has forgotten to buy a present for him. He tells Ernie "I will give your present tomorrow.'

Hadi şimdi sen söyle, Büdü Edi'ye ne yapacağını söyledi? 'Now you tell me, what does Bernie tell Ernie he will do?'

5. Edi Büdü'ye banyodan çıktığını söyledi. 'Ernie tells Bernie he has taken a bath.'

Resim 1 *Bak Edi ne kadar mutlu, banyoda köpüklerin içinde oynuyor.* 'Look how happy Ernie is, he is playing with bubbles in the bath.'

Resim 2 *Bak burda Büdü'nün yanına gelmiş "Ben banyodan çıktım" diyor.* 'Here he comes to Bernie and says "I had a bath"

Hadi şimdi sen söyle, Edi Büdü'ye ne yaptığını söyledi? 'Now you tell me, what does Ernie tell Bernie he did?'

6. Büdü Edi'ye uyumasını söyledi. 'Bernie told Ernie to sleep.'

Resim 1 *Bak Edi yatağına yatmış. Büdü de ona kitap okuyor.* 'Here Ernie is lying in his bed adn Bernie is reading a book to him.'

Resim 2 *Burda da kitap bitmiş, Büdü "Hadi Edi artık uyu" diyor.* 'Here the book is finished. Bernie says "Sleep now Ernie."

Hadi şimdi sen söyle, Büdü Edi'ye ne yapmasını söyledi? 'Now you tell me, what does Bernie tell Ernie to do?'

3. Comprehension Task

Eve bir fare geldi. Bundan sonra benimle yaşayacak. Ama bu fare büyüklerle konuşmak istemiyor, çok utangaç bir fare. O yüzden onunla sen konuşacaksın. 'A mouse came to my house. He will live with me from now on. But this mouse does not speak with grown-ups, he is very shy. So, you will speak to him.'

Training Sentences

1. Oyun oynamayı istiyor mu sorar mısın? 'Can you ask him whether he wants to play?'

2. *Fareye zıplamayı biliyor mu sorar mısın?* 'Can you ask him whether he knows how to jump?'

3. *Fare yemek yemek istiyor mu sorsana.* 'Ask him if he wants to eat.'

Sentences

1. Aç gibi gözüküyor. Ona ne yemek istediğini sorar mısın?'He seems to be hungry. Can you ask him what he wants to eat?'

2. Fareye hiç zürafa görüp görmediğini sorar mısın?'Can you ask him whether he has ever seen a giraffe?'

3. Fare dün çok eğlenmiş. Fareye ne yaptığını sana anlatmasını söyle. 'He had a lot of fun yesterday. Ask him to tell you what he did.'

4. Farenin kaç yaşında olduğunu sorar mısın? 'Can you ask him how old is he?'

5. Hadi fareye dün okula gidip gitmediğini sor. 'Ask him whether he goes/ went to school or not?'

6. Bir kutuya şeker koyulur. Farenin gözü kapatılır. Biz bu kutuda şeker olduğunu biliyoruz. Fareye kutuda ne olduğunu bilip bilmediğini sor. 'Candies are hid in a box. The eyes of the mouse are closed. We know there are candies in the box. Ask the mouse whether he knows what is in the box.'

7. *Bak, fare peynir yiyor. Fareden bize de peynir vermesini iste.* 'Look the mouse is eating candy. Ask him to give some candy to us.'

8. *Şimdi kutuya başka birşey koydum. Fareye kutuda ne olduğunu sandığını sor.* 'Now I put something else in the box. Ask the mouse what he think is in the box.'

9. *Bu farenin sesi çok güzel. Ondan bize şarkı söylemesini istiyorsun. Hadi istesene?* 'This mouse has a great voice. You want him to sing. Ask him.'

10. *Oyunumuz bitti. Fareye şimdi ne yapacağını sorar mısın?* 'Our game is finished. Can you ask the mouse what he will do now?'

4. Imitation Task

Training sentences:

1. *Çocuk yemeğinin hepsini yedi.* 'The child ate all his dish.'

2. *Kediler fareyi kovaladılar.* 'The cat chased the mouse.'

3. *Babam eve geç geldi.* 'My father came home late.'

Sentences:

1. *Dün senin okula gittiğini sandım.* (-DIK) 'I thought you went to school yesterday.'

2. *Bu gece erken yatacağından eminim.* (-(y)AcAK) 'I am sure you will go to bed early tonight.'

3. *Bir köpeğim olmasını istiyorum.* (-mA) 'I want to have a dog.'

4. Babamın erken geleceğine sevindim. (-(y)AcAK) 'I am pleased that my father will come early.'

5. *Bugün sinemaya gitmek istiyorum.* (-mAK) 'I want to go to a movie tonight.'

6. *Köpeğimin evde olduğunu hatırladım.* (-DIK) 'I remembered that my dog is at home.'

7. *Resim yapmak çok zevkli.* (-mAK) 'Painting is fun.'

8. *Şarkı söylemeyi çok seviyorum.* (-mA) 'I love singing.'

9. *Bu hediyeyi beğeneceğini düşünüyorum.* (-(y)AcAK) 'I think you will like this present.'

10. *Şimdi eve gitmek lazım.* (-mAK) 'It's time to go home.'

11. *Eda'nın beni sevdiğini anladım.* (-DIK) 'I realized that Eda loves me.'

12. *Annesi çocuğun oynamasına izin verecek.* (-mA) 'His mother will let the child play.'

Table 16- The chronology of acquisition of complement taking predicates in two Korean-speaking children (Kim, 1989:579)

Complementizer	**Matrix V**	**Meaning as complement V**	**Meaning as main V**	**Morphology of complement**	**Age acquired**	
					Wenceng	**Polam**
-a/ -e	cwu-	do something for someone	give	infinitive	1; 9	1; 10
-a/ -e	po-	try	see/ look	infi.	1; 9	1; 11
-ko	siph-	want	-	inf.	1; 9	2; 5
-a/ -e	peli-	finish	throw away	inf.	1; 10	2; 4
-a/ -e	iss-	resultative	exist	inf.	1; 10	2; 5
-ko	iss-	progressive	exist	inf.	1; 11	2; 2
kes	i-	future	copula	finite	2; 0	2; 0
-a/ -e		event description			1; 10	2; 2
-a/ -e		should			2; 3	2; 2
-a/ -e	ya toy-	must	become	inf.	2; 3	2; 1
-ci	noh-	get it done for later use	put	inf.	2; 3	2; 2
-key	twu-	get it done	leave	inf.	2; 3*	1; 9*
∅	mal-	don't	-	inf.	2; 6	2; 2
(swu)	ha-	causative	do	inf.	2; 5*	2; 2
∅	po-	I guess	see/ look	fin. (int)	2; 3*	2; 2
∅	iss-	can	exist	fin. (future)	2; 6	2; 3
(cwul)	siph-	I guess	-	fin. (int)	2; 7	-
-ko	po-	see whether	see/ look	fin. (int)	-	2; 7
kes	al-	know WH	know	fin.	2; 7*	2; 9
	kule-	indirect quotation	do so	fin.	2; 10	2; 10
	kath-	seem	resemble	fin.	2; 5*	2; 3*

* indicates that the matrix predicate did not reach the productivity cirterion; in this case the date indicates the time of the first use of the pattern.

APPENDIX III

THE DATA

Following are the ages of the subjects, the MLU of the subjects at each recording, the total number of the morphemes produced and the total number of the utterances. (Ketrez, 1999)

AZRA

Sess	Age	MLU (morph)	total no of mor.	total no. of utter.
1.	1;1,19	0.00	0	0
2.	1;2,10	1.00	8	8
3.	1;3,6	1.00	43	43
4.	1;6,11	1.29	168	130
5.	1;10,4	1.70	269	158
6.	1;11	2.52	354	140
7.	2;0,10	1.97	469	170
8.	2;1,29	3.14	484	137
9.	2;9,25	2.82	994	276
10.	2;10,26	4.27	303	50
11.	2;11,14	5.13	1124	219
12.	3;1,26	3.83	703	162
13.	3;3,3	3.31	1108	294

DEN•Z

Sess	Age	MLU (morph)	total no of mor.	total no. of utter.
1	1;3.3	1.94	117	98
2.	1;3.12	1.34	101	75
3.	1;3.27	1.24	96	77
4.	1;5.9	1.20	105	87
5.	1;5.28	1.58	217	137
6.	1;6.9	1.73	192	111
7.	1;7.3	2.53	639	252
8.	1;7.8	1.95	317	162
9.	1;7.23	2.74	548	200
10.	1;8.11	2.93	838	286
11.	1;8.14	3.03	570	188
12.	1;8.27	3.42	938	274
13.	1;9.1	3.35	443	132
14.	1;9.2	3.35	188	56
15.	1;9.19	2.01	517	148
16.	1;10.3	3.81	1339	351
17.	1;10.19	3.52	448	127
18.	1;11.10	3.67	397	108
19.	1;11.10	2.29	1057	277
20.	1;11,21	3.20	1306	408
21.	2;0,4	4.32	1121	259

M•NE

Sess	Age	MLU (morph)	total no of mor.	total no. of utter.
1.	1;6,21	1.49	73	49
2.	1;7	1.69	56	33
3.	1;8	2.40	60	25
4.	1;9	3.05	159	52
5.	1;10,9	2.21	264	119
6.	1;10,21	2.45	455	185
7.	1;11,23	3.51	815	232
8.	2;1	3.30	462	140
9.	2;1	3.20	414	129
10.	2;3	2.94	681	231
11.	2;4	2.86	149	52
12.	2;5	2.60	245	94
13.	2;5	3.36	84	25
14.	2;6	4.76	990	208
15.	2;7	5.75	259	45
16.	2;8	4.39	554	126
17.	2;10	3.45	724	499

TUNA

Sess	Age	MLU (morph)	total no of mor.	total no. of utter.
1.	1;3	1.13	190	167
2.	1;4	1.29	74	57
3.	1;5	1.33	265	187
4.	1;6	1.14	147	128
5.	1;7	1.10	77	70

APPENDIX IV

Table 17 - Main verbs and their complements*

Verbs that take nominalized complement clauses with –ME	**Verbs that take nominalized complement clauses with –DIK/-EcEK**	**Verbs that take nominalized complement clauses with either –DIK/-EcEK or –mE**	**Verbs that take nominalized complement clauses with –DIK/-EcEK or –mE with a difference in meaning**
affet-	emin ol-	açıkla-	söyle-
alın-	fark et-	bozul-	anla-
arzu et-	farkına var-	içerle-	bil-
bayıl-	iddia et-	inan-	öğren-
beğen-	inan-	kabul et-	hatırla-
bekle-	itiraf et-	kız-	ısrar et-
buyur-	pişman ol-	memnun ol-	
dile-	reddet-	şaşır-	
eleştir-	san-	sevin-	
emret-	zannet-	üzül-	
engelle-			
gerek			
hoşlan-			
iste-			
izin ver-			
katlan-			
kız-			
lazım			
mecbur kal-			
mecbur ol-			
mümkün			
müsaade et-			
nefret et-			
öğütle-			
olası			
önle-			
planla-			
şart			
sev-			
şikayet et-			
talep et-			
umut et-			
utan-			
yasakla-			

* This is only a list of the verbs used in the experiments and in the naturalistic data.