ACQUISITION OF RELATIVE CLAUSES IN TURKISH

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Acquisition of Relative Clauses in Turkish

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Thesis Abstract

Neslihan Yumrutaş, "Acquisition of Relative Clauses in Turkish"

This study analyzes the acquisition of relative clauses in Turkish. Turkish is a language with a dual system of relative clause formation. It differentiates between subject (SR) and nonsubject (NSR) relatives. SR makes use of the nominalizing particle -(y)An and NSR the particle –DIĞ which are selected on the basis of the nature of the relationship of the head noun to the relative clause in Turkish. The choice of correct morphology cannot be an easy task for Turkish-speaking children as they would be challenged by the dual system of relative clause formation in the language.

In the present study, experimental data is used. Using a picture-cued elicitation technique, 48 monolingual Turkish-speaking children in three developmental groups (age range: 3;3-8;2) are tested. The experiment is designed to elicit relative clauses in a relativization site of various syntactic positions: subject; direct/indirect/oblique objects. The semantic (reversibility) and syntactic (transitivity) properties of sentences with RCs as well as the position of the head noun in the main sentence are also diversified to see the role of these variables in children's production of relative clauses.

The findings have revealed a big asymmetry in children's performance of SRCs and NSRCs. Children, regardless of their age groups, performed better on SRCs than NSRCs. The interesting finding of the present study, however, has been that children used subject relativization strategy to avoid nonsubject relativization and this use constituted half of all the nonsubject relative constructions used by each child, regardless of age. A further pattern that emerged has to do with the massive use of resumptives (RP) by children, the use of which is ungrammatical in adult Turkish.

The diverse results of the experimental data found in this study have been explained in an account that considers –(y)An as an unmarked relative clause participle in Turkish-speaking children's early grammar. –(y)An strategy is claimed to be less costly since it requires the least computation both morphologically (no subject-verb agreement) and syntactically (no A-movement). I further claimed that the resumptive pronouns and NPs encountered in the child data can be considered as a device that Turkish speaking children resort to so as to disambiguate nonsubject relative clauses from subject relative clauses. In sum, it has been shown that resumptive use is triggered by children's use of –(y)An participle as an "All-purpose Relativizer" in Turkish.

Tez Özeti

Neslihan Yumrutaş, "Türkçe'de Ortaç Yapılarının Edinimi"

Bu çalışmada Türkçe'yi anadil olarak edinen çocuklarda ortaç yapılarının edinimi incelenmektedir. Türkçe'de ortaç yapıları iki şekilde oluşturulur. Genelde baş ad, ortaç yantümcesinin öznesi ise yantümcenin eylemine –(y)An, özne dışında bir öğe ise de yantümcenin eylemine -DIĞ takısı eklenir. Bu çalışmada ortaç yapılarının sergilediği bu ikili sistemin, bir diğer deyişle –(y)An ve -DIĞ gerektiren farklı yapıların varlığının edinimi zorlaştıran bir durum olduğu/ olacağı ve Türkçe'yi edinen çocuklar için doğru ortaç takısının seçiminin çok da kolay olmayacağı varsayımında bulunulmaktadır.

Çalışmamızda Resim Uyaranlı Ortaya Çıkarma Tekniği kullanılarak, anadili Türkçe olan 48 çocuk (yaş aralığı: 3;3-8;2) üç ayrı gelişimsel süreçte test edilmiştir. Deneydeki test maddeleri, baş adın ortaç yantümcesindeki işlevlerinin -özne, nesne, tümleç ve eğik nesne- farklılaştırılması sonucu oluşturulmuş, ayrıca ortaç yantümcesinin anlamsal (dönüştürülebilirlik) ve sözdizimsel (geçişlilik) özelliklerinin yanı sıra baş adın ana tümcedeki konumu, bu değişkenlerin ortaç yapısının ediniminde bir rol oynayıp oynamadıklarını belirlemek amacıyla çeşitlendirilmiştir.

Elde edilen sonuçlar, özne ortaç yapılarıyla, nesne ortaç yapılarının üretiminde büyük bir asimetri ortaya koymuştur. İçinde bulundukları gelişimsel sürece bakılmaksızın, çocukların özne ortaç yapılarında nesne ortaç yapılarına göre çok daha hatasız ve yetkin bir üretime sahip oldukları saptanmıştır. Çalışmanın en ilginç bulgularından biri Türkçe edinen çocukların nesne ortaç yapısı kullanımından (-DIĞ) kaçınmak için özne ortaç yapısı kullanımına, bir diğer deyişle (-(y)An) takısı kullanımına yönelmeleri olmuştur. Test edilen çocuklar, bu çalışmada üretilmesi hedeflenen nesne ortacı gerektiren yapıların yarıdan fazlasını (-y) An yapısını kullanarak üretmişlerdir. Çalışmayla ortaya çıkan diğer ilginç bir bulgu da yetişkin Türkçe'sinde kullanılmayan fakat çocuk verisinde yaygınca rastlanılan artık adıl kullanımı olmuştur.

Ortaya çıkan deneysel verilerin sonuçları, biçimbirimsel (özne-eylem uyumu gerektirmemesi, Türkçe'de ortaç yapılarına özgü olması) ve sözdizimsel (U©-yer değişimi gerektirmemesi) olarak daha az karmaşık olan –(y)An ortaç takısının Türkçe edinen çocukların dilbilgisi gelişimlerinin ilk zamanlarında varsayılan (default) ortaç takısı olarak kabul edildiğine işaret etmiştir.Çocuk verisinde rastlanan artık adılların ise, çocukların nesne ortaç yapılarını, özne ortaç yapılarından farklılaştırmak için geliştirdikleri bir ayırt etme stratejisi olduğu görüşü üzerinde durulmuş ve bu kullanımın çocukların –(y)An takısını "çok amaçlı ortaç takısı" olarak görmeleri sonucu ortaya çıktığı iddia edilmiştir.

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For my father and mother

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ABBREVIATIONS

1st plr	First person plural
2nd plr	Second person plural
3rd plr	Third person plural
1st sg	First person singular
2nd sg	Second person singular
3rd sg	Third person singular
ABIL	Ability
ABL	Ablative
ACC	Accusative
AGR	Agreement
AOR	Aorist
AUX	Auxiliary
COP	Copular
DAT	Dative
DERV	Derivational Morpheme
DO	Direct Object
FUT	Future
GEN	Genitive
INTRANS	Intransitive
IO	Indirect Object
LOC	Locative
NEG	Negation
NOM	Nominative

NONREVR	Nonreversible
NP	Noun Phrase
NSRC	Nonsubject Relative Clause
PART	Participle
PASS	Passive
PAST	Past
PERF	Perfective
PLR	Plural
POSS	Possessive
PRES	Present Progressive
OBJ	Object
OBL	Oblique Object
OP	Object Participle
OPT	Optative
ORC	Object Relative Clause
PN	Presentational Constructions
REVR	Reversible
RC	Relative Clause
RP	Resumptive Pronoun
SP	Subject Participle
SRC	Subject Relative Clause
SUBJ	Subject
TRANS	Transitive

CHAPTER I

RELATIVE CLAUSE FORMATION IN TURKISH

Definition

Linguistic definitions of the relative clause construction tend to vary in degree of formality of their formulation, depending on the researchers' aims and general orientation. A basic definition of a relative clause (henceforth RCs) that captures general structural and functional features without adopting any particular formal analysis and common to types of relative clauses relevant to this study is that relative clauses are subordinate clauses that modify a referential expression in the matrix clause.

The modified element is called the head (or filler) of the relative clause. The head is coreferential with the gap (i.e. missing element) inside the relative clause. On the whole, relative clauses are construed as expressing some information about a head referent, or nominal category in the main clause. This head referent is co-construed with a relativized element (i.e. gap) in the relative clause. The relative clause is, thus, part of a larger construction consisting of a main clause and a relative clause.

Languages employ different strategies to mark relative clauses. In many Indo-European languages, relative clauses are introduced by a special class of pronouns called relative pronouns as in the case of English, i.e. "that, who, which, whom and

whose” , the choice of which is determined by the syntactic function of the relativized head in the relative clause. Subject relative clauses are usually introduced by the relative pronoun “who” (1a), object relative clauses are introduced by the relative pronoun “which” (1b) in English. French also makes use of relative pronouns, “que” and “qui”, similar in ways to the system in English. That is, when the head noun acts as the direct object of the relative clause, “que” is used (2a) while head noun functions as the subject of the relative clause; “qui” is chosen (2b). In some languages, relative clauses may be marked in different ways. Japanese, for example, does not employ relative pronouns to relate relative clauses to their antecedents. Instead, it relies on the word order (3a & 3b). Lastly, in some other languages, the main verb of the relative clause may have morphological variants as in the case of Turkish (4a & 4b).

(1) a. The woman who loves the man is very attractive.

b. I liked the house which my father bought for my birthday.

(2) a. … la femme que j’ ai vue hier…
the woman that I saw yesterday

‘The woman that I saw yesterday’

b. … la fille qui court
the woman that ran

‘The woman that ran’

(3) a. Kirin-o taoshi-ta zoo-ga
giraffe-ACC knock-down-PAST elephant-NOM

‘The elephant that knocked down the giraffe’

b. Zoo-ga taoshi-ta kirin-ga
elephant-NOM knock-down-PAST giraffe-NOM

'The giraffe that the elephant knocked down'

(4) a. Kitab-ı oku-YAN çocuk-lar
book-ACC read-PART child-PLR

'The children who are reading the book'

b. Çocuk-lar-ın oku-DUĞ-u kitap
child-PLR-GEN read-PART-3rd plrPOSS book

'The book which the children read/ are reading/had read '

Two features are commonly used to characterize the structure of relative clauses: (i) the syntactic role of the matrix clause element functioning as the head of the relative clause; and (ii) the syntactic role of the gap or the element that is relativized inside the relative clause. The antecedent of the relative clause (i.e. head) can in theory be the subject of the main clause, or its object, or any other verb argument. Based on these two features, four types of relative clauses are usually distinguished: (1) SS relatives, in which the main-clause subject is modified by a relative clause in which the subject is relativized; (2) SO relatives, in which the main-clause subject is modified by a relative clause in which the object is relativized; (3) OS relatives, in which the main-clause object is modified by a relative clause in which the subject is relativized; and (4) OO relatives, in which the main-clause object is modified by a relative clause in which the object is relativized (Diessel 2004).

A major distinction is made in linguistic analyses between restrictive and nonrestrictive relatives. In semantic terms, a restrictive relative clause is one that functions to further specify the category designated by the head referent, and so "provides essential information in the identification of the object being referred to" (Fillmore 1987 as cited in Dasinger & Toupin (1994)). Nonrestrictive relative

clauses, in contrast, may serve to further comment on a fully-identified referent. The sentences in (5) & (6) are examples for the restrictive and nonrestrictive relative clauses, respectively.

(5) The man that you have just met is our new director.

(6) My mother, who is very good at cooking, will attend the TV show called *Yemekteyiz* next Tuesday.

Structural Description

Turkish has two relative clause strategies. The one which is the topic of this study is native to the language; the other is borrowed from Persian. The native strategy is pre-nominal in the sense that the modifier clause which contains a gap precedes the nominal that is the head of the clause in the main clause. That is, relative clauses in Turkish precede the noun phrase they modify, in the same way that adjectives precede the noun they modify as illustrated in (7) & (8). The adjective *akıllı* 'smart' and the relative clause *kitabı okuyan* modify the head noun çocuklar 'children' and occupy the same position, i.e. pre-nominal. This is expected as Turkish is a consistently head-final language.

(7) akıllı çocuk-lar
smart child-PLR

'smart children'

(8) [e_i kitab-ı oku-yan] çocuk-lar $_i$
book-ACC read-PART child-PLR

'The children who are reading the book'

This type of relative clauses is participial constructions in which the verb of the relative clause appears in a nonfinite form. There is no relative pronoun and there is always a gap in the position of the relativized element as can be seen in (8). Unlike languages such as Hebrew, Romance and Irish, an overt resumptive pronoun is not usually permitted in the gap site in Turkish.[1]

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[1] A resumptive pronoun (RP) is defined as a pronominal variable that appears in the position from which movement is proposed to occur (Mc Kee & Mc Daniel, 2000:114). The reflexive pronoun *kendi* 'self' can be used as a resumptive pronoun in Turkish, but as pointed out by Kornfilt (1977), the use of it is restricted to the third person singular/plural pronouns. Besides, it must have a human referent.

Meral (2004) states that the resumptive pronouns in Turkish are optional in some syntactic positions and obligatory in some others. RPs in Turkish are optional in complement positions, embedded and highest subject positions. In these positions, they vary freely with gaps as illustrated in the examples (i-iv) respectively:

(i) (kendisi-ni)$_j$ sev-diğ-im kadın$_j$
self-ACC love-PART-1st sg POSS woman

'The woman whom I love (her)'

(ii) (kendisi-ne)$_j$ çiçek gönder-diğ-im kadın$_j$
self-DAT flower send--PART-1st sg POSS woman

'the woman whom I sent flower (to her)'

(iii) ben-im (kendisi-nin)$_j$ yarın gel-eceğ-in-i söyle-diğ-im
I-GEN self-GEN tomorrow come-FUT-3rd sg POSS tell-PART-1st sg POSS

arkadaş-ım$_j$
firiend-1st sg POSS

'my friend who I said he is going to come tomorrow'

(iv) (kendisi)$_i$ Ali-yi sev-en kadın$_j$
self Ali-ACC love-PART woman

'the woman who loves Ali'

RPs, on the other hand, occur obligatorily in certain positions in a Turkish relative clause. These are the positions in which the relativized NP corresponds to the complements of certain postpositional phrases or to certain other adjuncts in the relative clause as illustrated in (v) and (vi), respectively.

(v) kendisi-ne$_i$ / *t$_i$ göre hasta ol-duğ-um kadın$_i$
self-DAT according ill AUX-PART-1st sg POSS woman

'The woman accord ing to whom I am ill'

This nonfinite native relative clauses contrast with the form borrowed from Persian which is post-nominal (i.e. the modifier clause follows the head). This type of relative clause construction employs the general borrowed pattern for subordinated clauses in the sense that the subordinator *ki* functions somewhat like a relative pronoun and this form employs the verbal inflections of matrix sentences. In other words, the relative pronoun *ki* introduces a finite clause. The properties of "*ki-construction*" are illustrated in the example (9) below:

(9) Ayşe, [ki İngilizce-yi iyi bil-ir,] şarkı-nın söz-ler -in -i
Ayşe, ki English-ACC well know-AOR song-GEN lyrics-PLR-3rd sg POSS-ACC

anla-ya-ma-dı.
understand-ABIL-NEG-PAST

'Ayşe, [who knows English well,] could not understand the lyrics of the song.'

Furthermore, whereas the native form is generally a restrictive relative, the relativization with *ki* is mostly used to form non-restrictive (appositive) relative clauses, i.e. simply to add new information about the referent of the head noun.[2] This pattern has fallen into disuse for relative clause use compared to native nonfinite

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(vi) kendisi-nde$_i$ / *t$_i$ uyu-duğ-um kadın$_i$
self-LOC sleep-PART-1st sg POSS woman

' The woman I slept (in her home)'

(Meral, 2004)

[2] Göksel & Kerslake (2005) point out that *ki* may also be used in restrictive relative clauses and parenthetical expressions. In limited usage of *ki* in forming restrictive relative clauses, the head is usually the subject of the relative clause, and the verb of this clause is negative.

i. Bizim okulda hiçbir öğrenci yok [*ki* Bilge Hanım'dan azar işitmemiş olsun].
' There is no student in our school [*who* has not been reprimanded by Bilge Hanım]

Furthermore, *ki* clause often occurs parenthetically within a sentence, following an adverbial clause, on the content of which it provides a comment.

ii. [Ahmet'ler gelinceye kadar,] [*ki* geç gelebilirlermiş,] çıkamayız.
'We won't go out [until Ahmet and his friends come] (and apparently they may be late).'

(Göksel & Kerslake 2005, p. 459)

constructions. In what follows, I turn to an indepth analysis of nonfinite relative clauses since this form is the topic of this study.

Turkish Nonfinite Relative Clauses

The most general native pattern of Turkish relative clauses involves nonfinite, participial modifier clauses that are marked with two different kinds of participial suffixes. One of the participial suffixes is the type illustrated in (8) and repeated in (10) below:

(10) kitab-ı oku-yan çocuk-lar
book-ACC read-PART child-PLR

'The children who are reading the book'

The participial modifier clause in (10) is assumed to be derived from the canonical transitive sentence in (11):

(11) Çocuk-lar kitab-ı oku-yor-Ø
child-PLR book-ACC read-PRES-3rd plr AGR

'The children are reading the book'

As the participle suffix –(y)An[3] occupies the morphological slot for tense in the corresponding finite verb, the tense of such participial clauses is neutralized and is interpreted as nonfuture, without any further differentiation. So, the participle suffix –(y)An does not have a unique time reference. For instance, *kitab-ı oku-yan çocuk-lar* (book-ACC read-PART child-PLR) can mean 'the children who are/were reading the

[3] The capital letters indicate positions that undergo vowel harmony and consonantal assimilation in Turkish.

book', 'the children who read (pres) / read (past) the book'. In order to dissolve the ambiguity, periphrastic constructions with adverbs or auxiliary *ol-* are used as illustarated in examples (12) & (13), respectively:

(12) kitab-ı dün oku-yan çocuk-lar
book-ACC yesterday read-PART child-PLR

'The children who read the book yesterday'

(13) kitab-ı oku-muş ol-an çocuk-lar
book-ACC read-PERF AUX-PART child-PLR

'The children who have read the book'

The other participial relative clause suffixes and the corresponding constructions are exhibited in (14) & (15) which are also derived from (9):

(14) çocuk-lar-ın oku-duğ-u kitap
child-PLR-GEN read-PART-3rd plr POSS book

'The book which the children read/ are reading/had read '

(15) çocuk-lar-ın oku-yacağ-ı kitap
hild-PLR-GEN read-PART-3rd plr POSS book

'The book which the children will read '

As can be seen from the above examples, the participles –DIK and –(y)AcAK have identical structural properties. They just differ in terms of their tense and aspect reference. While –(y)AcAK refers to future situations, -DIK refers to past or ongoing situations.

Unlike –(y)An which does not get inflected for person with the subject of the relative clause, the participles –DIK and –(y)AcAK are followed by a possessive

suffix agreeing in person and number with the subject of the modifier clause which is put into genitive case.[4]

A comparison of the relative clause constructions in (10) and (14)-(15) with the canonical sentence in (11) indicates that when the head noun is the subject of the underlying sentence, a construction of the -(y)An type appears while construction of –DIK/–(y)AcAK type appears if the head noun is not the subject of the underlying sentence. Underhill (1972) was first to seek an explanation for the conditions governing the choice of participle in Turkish nonfinite relative clauses. He formulated the following insightful generalization which has been the basis for accounts in Hankamer and Knecht (1976) and Haig (1996).

> The Primary Principle
>
> The most obvious generalization is that when the head noun is the subject of the underlying sentence, a construction of the *–En* type appears, while if the head noun is not the subject, a construction of the *–DIK* type appears.
>
> (Underhill 1972:88)

As a result, relative clauses constructed with the participle –(y)An are called 'subject participle' (SP) and those formed with –DIK/–(y)AcAK are named as 'object participle' (OP) or 'nonsubject participle (NSP)' in Turkish linguistics. The term 'nonsubject participle' for DIK/–(y)AcAK type construction is more insightful given that the head noun may be the direct object, indirect object, or the oblique object of the underlying sentence, as well as being in a variety of adverbial relations to the

[4] The structure of a relative clause with the participles –DIK and –(y)AcAK is exactly the same as simple genitive-possessive constructions in Turkish. As seen in (iv), the possessor or the subject is marked with the genitive and the possessed is marked with possessive morphology.

(i) çocuk-lar-ın kitab-ı
child-PLR-GEN book-3rd plr POSS

'Children's book'

verb. Examples below illustrate head nouns which function as the direct object (16), indirect object (17), oblique object (18) and adverbial modifier (19) of the relative clause verb.

(16) çocuk-lar-ın oku-duğ-u kitap
child-PLR-GEN read-PART-3rd plrPOSS book

'The book which the children read '

(17) (ben-im) kitab-ı ver-diğ-im çocuk-lar
I-1st sg GEN book-ACC give-PART-1st sg POSS child-PLR

'The children whom I gave the book'

(18) (ben-im) nefret et-tiğ-im kitap
I-1st sg GEN hate- PART-1st sg POSS book

'The book that I hate '

(19) Katil -in çocuğ-u vur-duğ-u silah
killer-3rd sg GEN child-ACC hit-PART-3rd sg POSS gun

'The gun with which the killer shot the child'

As a general observation, we can say that Turkish nonfinite relative clauses display a subject/non-subject asymmetry and the participle suffix is selected on the basis of the nature of the relationship of the head noun to the relative clause. That is, when the target of relativization is the subject of the relative clause, the SP appears and when the target is non-subject, the NSP appears in accordance with the Primary Principle.

Problems with the Primary Principle

Although there is a correlation between subject and nonsubject roles of the target of relativization on the one hand, and the use of subject participle (i.e. –(y)An) and object participle (i.e. -DIK) on the other, there are some cases in which the choice between the two relativization strategies is not straightforward.

The first set of counterexamples involves cases where the head noun is a genitive marked NP in the underlying sentence as exemplified in (22).

SET A

(20) Çocuk-ların-a kitap oku-yan baba
child-3rd GEN-DAT book read-SP father

'The father who is reading book to his children'

(21) Baba-lar-ı kitap oku-yan çocuk-lar
father-3rd plr POSS book read-SP child-PLR

'The children whose father is reading book'

Examples (20) & (21) above are relative clauses assumed to be derived from the underlying transitive sentence in (22):

(22) Çocuk-ların baba-ları çocuk-lar-a kitap oku-yor.
child-3rd GEN father-3rd plr POSS child-PLR-DAT book read-PRES

'Children's father is reading a book'

In example (20), the head noun baba 'father' is the subject of the underlying sentence and hence SP appears in line with the Primary Principle. The head noun *çocuklar* 'children' in (19), on the other hand, is not the subject of the underlying sentence but the possessor of the subject *çocukların babası* 'the children's father'. The Primary Principle predicts object participle –DIK to be used but contrary to the prediction, the genitive-marked NP is relativized with subject participle –(y)An.

A further class of data the Primary Principle fails to correctly account for, comes from passive constructions, particularly, impersonal passives.[5] As can be seen in example (23) which is derived from the underlying sentence in (24), the relative

[5] Turkish allows a subgroup of intransitive verbs (i.e. unergative verbs whose only argument behaves like the external arguments of the transitive verbs) to appear in passive constructions. The construction is called *impersonal passives* since the clause lacks a subject entirely and a by-phrase cannot be supplied without impairing grammaticality.

clause is subjectless. The head noun *kapı* 'door' expresses the location of the activity expressed by the relative clause. Hence, we predict object participle construction rather than subject participle construction. Nonetheless, an OP construction yields ungrammaticality as in (25).

SET B

(23) Sokağ-a çık-ıl-an kapı
street-DAT exit-PASS-SP door

'The door that one exist to the street by'

(24) Bu kapı-dan sokağ-a çık-ıl-ır.
this door-ABL street-DAT exit-PASS-AOR

'One exist to the street by this door'

(25) *Sokağ-a çık-ıl-dığ-ı kapı
Street-DAT exit-PASS-OP-3rd sg POSS door

(Hankamer & Knecht 1976 : 213-214)

Although example (23) is an impersonal passive, we see that the same SP construction appears with other passives, as well. In (26), we observe a relative in which the relative clause verb is the passive form of the transitive verb *yakala-* 'to catch' in (27):

(26) (polis tarafından) yakala-n-an hırsız
policeman by catch-PASS-SP thief

'The thief who was caught (by policeman)'.

(27) Polis-Ø hırsız-ı yakala-dı-Ø.
policeman-NOM thief-ACC catch-PAST-3rd sg AGR

'The policeman had caught the thief'.

(28) *(polis tarafından) yakala-n-dığ-ı hırsız
policeman by caught-PASS-OP-ACC thief

Although the relativized constituent is the direct object of the underlying sentence in (27), object participle is impossible as the ungrammaticality of example (28) illustrates. What the examples in (23) & (26) have in common is that although the target of relativization is not a subject, we see a SP construction. So, the examples (23) & (26) represent exceptions to the Primary Principle.

The final group of exceptions to the generalization comes from examples which appear to be compatible both with a subject participle and a nonsubject participle construction.

SET C

(29) Yüz-ün-ü kedi-nin tırmala-dığ-ı kız
face-3rd sg POSS-ACC cat-GEN scratch-OP-3rd sg POSS girl

'The girl whose face the cat has scratched'

(30) Arka-sın-da kamyon-un dur-duğ-u çocuk
behind-3rd sg POSS-LOC van-GEN stand-OP-3rd sg POSS child

'The child behind whom the van is standing'

Examples (29) & (30) are formed on the direct object and adverbial modifier of the transitive sentences in (31) & (32), respectively. In line with the generalization above, OP construction is used as the head nouns *kız* 'girl' and *çocuk* 'child' are nonsubject constituents.

(31) Kız-ın yüz-ün-ü kedi tırmala-ıyor-Ø.
girl-3rd GEN face-3rd sg POSS-ACC cat scratch-PRES-3rd sg AGR

'A cat is scratching the girl's face'

(32) Çocuğ-un arka-sın-da kamyon dur-uyor-Ø.
child-3rd GEN behind-3rd sg POSS-LOC snake stand-PRES - 3rd sg AGR

'A snake is standing behind the child'

Interestingly, the corresponding SP constructions are also grammatical for the examples in (31) & (32) as illustrated in (33) & (34):

(33) Yüzü-n-ü kedi tırmala-yan kız
face-3rd sg POSS cat scratch-SP girl

'The girl whose face a cat has scratched'

(34) Arka-sın-da kamyon dur-an çocuk
behind-3rd sg POSS-LOC van stand-SP child

'The child behind who a van is standing'

As can be inferred from the discussion presented in this section as well as from the acquisition data which will be introduced in Chapter IV, the so-called subject participle –(y)An is also compatible with relative clauses in which the head noun is a nonsubject constituent. Besides, there are acquisition data in which children use –DIK participle to extract a subject relativization. I will follow the common practice of using the terms 'subject participle' for –(y)An and 'nonsubject participle' for –DIK in this thesis, nonetheless I would like to note that I am well aware of the fact that this dissociation is somewhat misleading. It is, however, out of the scope of this study to offer an analysis of Turkish relative clauses which can account for the distribution of the morphemes in a more insightful fashion.

The shortcomings of the Primary Principle for the participle choice in Turkish nonfinite relative clauses as pointed out with examples in this section have captured the attention of people who work in traditional grammar as well as in the generative framework.[6] In what follows, I will discuss the works that attempt to explain the conditions governing the choice of participle in Turkish nonfinite RCs.

[6] The basic question that people who work in generative framework deal with is which of the two analyses, (empty operator movement of Chomsky (1977) or head raising of Kayne (1994)) can correctly predict the relative clause formation in Turkish. Özsoy (1994; 1998) argues for "empty

Different Approaches to Relative Clause Formation in Turkish

Underhill (1972)

Although originally developed by Underhill in his 1972 paper, he himself abandoned the Primary Principle in favor of another, based on word order and case features from which relative clauses are derived.[7] The assumption behind the analysis is that the factors determining the choice of participial construction are linear position and case marking in Turkish. So, the subject and non-subject distinction which seemed to be the determining factor turns out to be irrelevant under Underhill's later analysis. Underhill's proposal can be summarized as below:

i. Participles are chosen according to the principle:
If the target of relativization is a caseless NP (nominative or genitive) in initial position at the time of RC formation, the SP construction is chosen; otherwise, the OP is chosen. He assumes that genitive marking is assigned to NP's by a transformational rule and therefore these NP's are underlyingly caseless.

ii. He claims that indefinite subjects are displaced from initial position by an obligatory rule of Indefinite Movement[8] which applies before relativization. Indefinite Movement provides the environment for the use

operator raising account" for derivation of Turkish relative clauses. Kornfilt (2000a), adopting Kayne 1994, analyzes Turkish RCs as instances of head movement. See Özsoy (1994; 1998) and Kornfilt (2000a) for relevant discussion.

[7] In Underhill (1976), however, the Primary Principle regains prominence.
[8] *Indefinite Noun Phrase Movement* states that an indefinitine subject NP moves to the position immediately to the left of the verb.

of subject participles. Definite subjects may be displaced by an optional rule of Scrambling which follows relativization.

iii. As a result, the choice of participial construction correlates with the definiteness of the subject. If the subject of the relative clause is indefinite or interpreted as indefinite, we find a subject participle. However, we find an object participle if the subject of the relative clause is definite.

To see how his principle works, Underhill gives examples of three types of construction where subject participles are used. For the sake of convenience, I will adapt his analysis to my examples given in the previous discussions.

(35) Çocuk-lar kitab-ı oku-yor-Ø (cf. (8))⇒ kitab-ı oku-yan çocuk-lar
child-PLR book-ACC read-PRES-3rd plr AGR book-ACC read-PART child-PLR

(36) Çocuk-ların baba-sı kitap oku-yor. (cf. (20-21)) ⇒
child-3rd GEN father-3rd sg POSS book read-PRES

Baba-lar-ı kitap oku-yan çocuk-lar
father-3rd plr POSS book read-SP child-PLR

(37) Çocuğ-un arka-sın-da kamyon dur-uyor-Ø. (cf. (34)) ⇒
child-3rd GEN behind-3rd sg POSS-LOC snake stand-PRES CONT- 3rd sg AGR

Arka-sın-da kamyon dur-an çocuk
behind-3rd sg POSS-LOC van stand-SP child

In each case, the head noun is the first noun in the underlying sentence, after Indefinite Movement has applied. Furthermore, subject NPs are caseless: nominative in (35), genitive in (36) & (37)) given that genitive NP's are underlyingly caseless according to Underhill's assumptions. In line with the predictions, subject participle

is used. So, there are two conditions which specify the choice of subject participle. In (38), for instance, although the head noun is the first noun in the underlying sentence, we cannot derive (39) with a subject participle since the head noun bears cases other than nominative and genitive. Hence, we get the corresponding object participle in (40).

(38) Bostan-a dana-lar gir-iyorØ.
garden-DAT calf-PLR enter-PRES-3rd plr AGR

'Calves are entering the garden.'

(39) *Dana-lar gir-en bostan
calf-PLR enter-SP garden

(40) Dana-lar-ın gir-diğ-i bostan
calf-PLR –GEN enter-SP-3rd sg POSS garden

'The garden which calves are entering'

Although it is not explicitly discussed in Underhill, we can extend his proposal to object participle constructions given in (14) but repeated as (41):

(41) Çocuk-lar kitab-ı oku-yor-Ø ⇒
child-PLR book-ACC read-PRES-3rd plr AGR

Çocuk-lar-ın oku-duğ-u kitap
child-PLR-GEN read-PART-3rd plrPOSS book

The head noun is not the first noun in the underlying sentence and it is inflected with accusative case. In accordance with Underhill's assumptions, object participle is correctly predicted.

Underhill's analysis compensates the shortcomings of the Primary Principle discussed in Section 1.2.2. However, it is still far from providing a complete analysis for the choice of participle constructions in Turkish nonfinite relative clauses since it does not explain why SP construction is used in passive constructions.

Hankamer and Knecht (1976)

Hankamer and Knecht claim that subject and non-subject distinction formulated in the Primary Principle is indispensible for the choice of participial construction in Turkish. In other words, subjects relativize with the SP and nonsubjects relativize with the OP regardless of case or position. However, they present examples as in (42) which can be considered as counterexamples to Underhill's proposal.

(42) Kabağ-ı adam-ın bir yılan-ı ye-di.
squash-ACC man-GEN a snake-3rd sg POSS eat-PAST

'One of the man's snakes ate the squash'

The genitive NP adamın 'the man's' is attached to an indefinite subject which has undergone movement to the immediate pre-verbal position via Indefinite Noun Movement. So, this NP is not clause-initial at the time of relativization. According to Underhill's proposal, we predict object relativization to occur. However, as seen in (43), the OP is impossible while the corresponding SP in construction (44) is acceptable:

(43) *Kabağ-ı bir yılan-ı-nın ye-diğ-i adam
squash-ACC a snake-3rd sg POSS-GEN eat-OP-3rd sg POSS man

(44) Kabağ-ı bir yılan-ı yi-yen adam
squash-ACC a snake-3rd sg POSS eat-SP man

'The man one of whose snakes ate the squash '

(Hankamer & Knecht 1976: 205-206)

Hankamer and Knecht propose a second principle to account for the relativization of non-major constituents which pose problems for the Primary Principle discussed with examples in Section 1.2.2.

The Mother Node Principle (MNP)

If a subconstituent of a major constituent of the RC is relativized, the participle is chosen which would be appropriate for relativization of the major constituent itself. [That is, for the simple cases, if the mother node dominating the target is the subject of the RC, the SP is chosen; otherwise, the OP is chosen.]

(Hankamer & Knecht 1976 : 205)

To illustrate how this principle works, let's take the example in (42). The genitive target NP *adamın* 'the man's' is a subconstituent of a major constituent functioning as the subject of the RC. As implied in the Mother Node Principle, relativization of a genitive NP attached to a subject is done with the SP. So, Unlike Underhill's proposal, the MNP correctly predicts the SP. As can be deduced from the formulation, the MNP requires reference to hierarchical relations rather than the linear relations. As a further example for the validity of this principle, note the following examples:

(45) Kadın-Ø adam-ın boğaz-ın-ı sık-ıyor-Ø.
woman-NOM man-GEN throat-3rd sg POSS-ACC throttle-PRES- 3rd sg AGR

'The woman is throttling the man's throat'

(46) Kadın-ın boğaz-ın-ı sık-tığ-ı adam
woman-GEN throat-3rd sg POSS-ACC throttle-OP-3rd sg POSS man

'The man whose throat the woman is throttling'

The target constituent *adam-ın* 'the man's' in (45) is a subconstituent of the phrase functioning as the object of the RC. As the genitive NP is a subconstituent of a major constituent functioning as the object, relativization is done with the OP. This result is again consistent with the MNP. In sum, in the case of genitive targets, the position of the target is irrelevant in choosing the RC. What is relevant is whether the NP to which the target is a subconstituent of a subject or non-subject in the RC. Hence, the

Mother Node Principle solves one of the problems introduced by the Primary Principle as illustrated with the examples under SET A.

Recall that, there is still another class of data the Primary Principle fails to correctly account for. Underhill (1972) does not offer a solution to these exceptional cases exemplified in SET B and SET C. The examples are repeated below:

(47) Sokağ-a çık-ıl-an kapı
street-DAT exit-PASS-SP door

'The door that one exist to the street by'

(48) Yüzü-n-ü kedi tırmala-yan kız
face-3rd sg POSS cat scratch-SP girl

'The girl whose face a cat has scratched'

Examples (47) & (48) are assumed to be derived from the underlying sentences (49) & (50).

(49) Bu kapı-dan sokağ-a çık-ıl-ır.
this door-ABL street-DAT exit-PASS-AOR

'One exists to the street by this door'

(50) Kız-ın yüz-ün-ü kedi tırmal-ıyor-Ø.
girl-3rd GEN face-3rd sg POSS-ACC cat scratch-PRES CONT-3rd sg AGR

'A cat is scratching the girl's face'

As revealed by the examples, the relativized head is not the subject of the underlying sentences: it is an adverbial modifier (adjunct) in (49) and direct object of the relative clause verb in (50). Yet, they appear in subject participle constructions. Although the relative clause construction in (47) bears passive morphology (particularly, impersonal passive), the one in (48) is a simple transitive sentence. Hankamer and Knecht claim that they have something in common as the sentences are subjectless at the time of RC formation. Nevertheless, the source of subjectlessness is different.

The impersonal passive construction in (47) is genuinely subjectless. Breckenridge (1975 as cited in Hankamer & Knecht) argues that no constituent is promoted to subject status during passivization. The construction in (48), on the other hand, is also subjectless since Hankamer and Knecht assume that the indefinite subjects are demoted from subjecthood.[9] Based on these findings, they posit an additional principle:

> The No-Subject Principle (NSP)
> If there is no subject in the RC at the time of RC formation, the OP construction is impossible and only the SP construction is chosen.
>
> (Hankamer & Knecht 1976: 215)

As can be inferred from the discussion above, Hankamer and Knecht's proposal for the choice of participle construction is based on three principles: The Primary Principle, the Non-Subject Principle and the Mother Node Principle. Their proposal accounts for the choice of participle in Turkish nonfinite relative clauses and brings solution to the problems raised in Section 1.2.2.

Haig (1997)

Both in Underhill (1972) and Hankamer and Knecht (1976), the rules governing participle choice have been stated in positive terms for the subject participle and negative terms for the object participle. That is, -DIK strategy has been assumed to be 'the elsewhere case', hence unmarked member while –(y)An has been the marked member of the opposition. Haig (1997), on the other hand, argues that object

[9] The article *bir* 'a, one' marks a noun indefinite in Turkish. A noun without this article and accusative case is also interpreted as indefinite, generic nouns.

participle (=PP) is the marked member of the participle opposition in relative clauses.[10] He formulates the following basic principle governing participle choice in Turkish nonfinite relative clauses:

> Genitive Subject Condition
>
> When the subject of the relative clause takes genitive marking, the PP (=OP) is used and the FP (=SP) is impossible. Elsewhere, the FP is always possible and vastly preferred.

According to this principle, subject participle (=FP) is the default case. As a result, we expect to find it used in a variety of seemingly disconnected functions. In line with the predictions, the SP occurs with subjectless relative clauses (i.e. passives and indefinite subject constructions) and when the head noun is a subconstituent of the relative clause subject.

As an evidence for his argument in favor of the OP being the more marked member, Haig argues that object participle is morphologically more complex on purely formal grounds, involving two morphemes, participle and possessive rather than one as it is the case with subject participle. There are also further arguments which bring the marked status of the OP to the foreground in relative clause constructions. I will turn to a discussion of these arguments in Section 1.4.

Öztürk (2007)

Having noted the data presented in Section 1.2.2, Öztürk presents an analysis for the choice of different relative clause strategies in Turkish. Unlike the previous accounts

[10] Haig (1997) names constructions with –DIK participle as *Possessed Participle (PP)* since they obligatorily carry possessive marking indicating the person of the subject of the relative clause and constructions with –(y)An participle as *Free Participle (FP)*. I will use the terms subject participle (=FP) and object participle (=PP) in this chapter to avoid terminological confusion.

summarized above, she proposes that the choice of different relative clause strategies does not depend on the grammatical function of the head noun within the relative clause, but is determined based on whether there is a VP-internal or VP-external subject.[11]

The choice of the relative clause morphology depends on whether [Spec, TP] can be projected to host a VP-external subject or not. If it is projected, subject-verb agreement shows up so that we get the –DIK morphology. However, if no subject raises into [Spec, TP], -(y)An morphology is chosen. The analysis especially works well to account for constructions which appear to be compatible both with –(y)An and –DIK morphology as can be seen in (51) & (52).

(51) Yüzü-n-ü kedi tırmala-yan kız
face-3rd sg POSS cat scratch-SP girl

'The girl whose face a cat has scratched'

(52) Yüz-ün-ü kedi-nin tırmala-dığ-ı kız
face-3rd sg POSS-ACC cat-GEN scratch-OP-3rd sg POSS girl

'The girl whose face the cat has scratched'

In (51) there is a VP-internal subject therefore we get –(y)An, whereas in (52) the subject is in [Spec, TP], as a result we get –DIK morphology with verbal agreement.

[11] Öztürk (2005) argues that subjects do not have to raise into [Spec, TP] but can remain in their base-position unlike the case in English by presenting evidence from several sources such as pseudo-incorporation, scope facts and lack of expletives in passive constructions. She concludes that [Spec, TP] is a scope/discourse related position and adopting Rizzi and Shlonsky (2005), Öztürk claims that [Spec, TP] can be considered to be a criterial freezing position for movement in Turkish. According to Rizzi and Shlonsky (2005 as cited in Öztürk (2007)), "a phrase meeting a Criterion" (=reaching a position dedicated to a particular scope-discourse interpretive property) is frozen in place and resists further A-bar movement (p.2). Considering [Spec, TP] as a criterial freezing position in Turkish, Öztürk claims that an element that moves into this position cannot undergo further movement. Relativization of an element in Turkish is only possible if it can avoid [Spec, TP] while moving into the CP domain.

More about Subject Participle (-(y)An) and Object Participle (-DIK) in Turkish

The morphology for 'subject relativization' is not used anywhere else in Turkish with the exception of a very limited adverbial construction as illustrated in (53). The participle –(y)An is, thus, functionally restricted to subject relativization in Turkish.

(53) Sen kitab-ı oku-yan-a kadar, …
you book-ACC read-PART-DAT until

'Until you read the book …'

The morphology for 'object relativization', on the other hand, is the most basic morphology found in the language despite the complexity of the form. The participle shows up in complement and adverbial clauses. In (54), the participle –DIK is a subordination suffix which is attached to the embedded verb in the factive complement clause. In (55), the suffix –DIK is an adverbial marker. As the examples reveal, the subordinator suffix and the adverbial marker –DIK are followed by the possessive morpheme and this possessive agreement suffix has to agree with the subject of the embedded clause which is marked with the genitive morpheme –In. In this respect, complement clauses, adverbial clauses and relative clauses share the same morphological properties.

(54) [Sen-in kitab-ı oku-duğ-un]-u bil-iyor-um.
you-GEN book-ACC read-DIK-2nd sg POSS-ACC know-PRES- 1st sg AGR

'I know that you read the book'

(55) İstanbul-a gel-diğ-in zaman, ben-i ara-Ø.
Istanbul-DAT come-DIK-2nd sg POSS time, I-ACC call-2nd sg AGR

'When you come to Istanbul, call me'

As the discussions above reveal, the sole function of the subject participle –(y)An is relativization in Turkish. Object participle –DIK, however, is multifunctional. Haig (1996) claims that the primary function of the participle is subordination in factive complement clauses and its usage in relative clauses is an intrusion into a functional domain for which it is not suited (p.199).

Conclusion

In this chapter, I have described and explained the distribution of two main types of relativization strategies found in Turkish nonfinite relative clauses. As can be inferred from the discussions of previous works, the debate has centered on the correct generalization that governs the distribution of participle suffixes found in Turkish nonfinite relative clauses. The interest of this theoretical part in terms of the current study is that Turkish speaking children may be challenged by the dual system of relative clause formation in their ambient language and the choice of correct morphemes cannot be an easy task for them.

CHAPTER II

This chapter presents a brief review of background literature on studies done on the acquisition of relative clauses in English and in other languages. It will also present the results of previous acquisition studies done on Turkish.

An Overview of the Research on the Acquisition of Relative Clauses

The acquisition of relative clauses has been investigated in various frameworks over the past thirty years (Slobin 1973; Sheldon 1974; O'Grady 1976 in Processing Oriented Accounts; Labelle 199; Guasti & Shlonsky 1995; Hamburger and Crain 1982 in Modularity Matching Model; Diessel & Tomasello 2000; Diessel 2004 in Usage-based Models) due to the fact that the emergence of RCs is treated as a fundamental process in linguistic development as the recursive rules that generate RCs are claimed to account for the unlimited human capacity of expanding noun phrases (NPs) by means of sentences with an adjectival function.

Early studies on the acquisition of relative clauses focused on the question of whether or not there is a true development in the acquisition of RCs. Researchers like Hamburger and Crain (1982), McKee and McDaniels (1998), Guasti and Shlonsky (1995), Guasti (2002) have argued that children have the structural knowledge for relative clauses from the earliest testable ages. They suggest that incorrect responses by children may result from a burden on their processing system or the violations of felicity conditions of the experiment itself. In other words, children's nonadult responses are performance errors and do not reflect a lack of linguistic competence.

Most of these studies support the Strong Continuity Hypothesis (Lust 1999) according to which the principles of Universal Grammar (UG) will be observed in operation from the earliest testable ages.

Departing from early accounts, some researchers have argued that children and adults assign different syntactic representations to relative clauses. Children's nonadult responses are assumed to result either from (i) the absence of certain rules in their grammars, i.e., lack of movement operators as suggested in Labelle (1990) or (ii) misattachment of the relative clause in the phrase structure that they assign as put forward in Tavakolian (1978; 1981), Goodluck and Tavakolian (1982). Such studies have been criticized on the grounds that the accounts provided were difficult to reconcile with the Modularity Matching Model (Crain & Thornton 1998) which anticipates rapid acquisition of grammatical knowledge without numerous intermediate stages of successive approximation toward the target grammar.

In this chapter, I will discuss the accounts proposed for the acquisition of relative clauses under three general headings: (i) Processing-Oriented Accounts, (ii) (Non)Movement Analysis of Relative Clauses and (iii) Usage-Based Accounts.

Accounts for the Acquisition of Relative Clauses

The fact that children interpret relative clauses differently from adults and children experience difficulties with these structures even after 6 years of age has led different researchers in various frameworks to different conclusions. The relative clause construction that proved to be difficult for children has been typically the object relative clauses. Numerous researches on relative clauses in English showed that

subject relative clauses as in (1) are easier to comprehend and produce than direct object relatives as in (2).

(1) [The man who $_i$ e_i loves the woman] is very happy.

(2) [The man who $_i$ the woman loves] e_i is very happy.

Much work on the observed differences in relative difficulty of processing and acquiring different types of RCs has been influenced by Keenan and Comrie (1977), the first account on the typology of relative clauses. In what follows a discussion of Keenan and Comrie will be given.

Noun Phrase Accessibility Hierarchy Hypothesis (Keenan and Comrie 1977)

Keenan and Comrie have modeled a typology of RCs which is based on the markedness obtained from an extensive comparative study of RC structures in various typologically different languages. It focuses on the positions of the noun phrase (NP) that can be relativized, which vary among different languages of the world in a systematic way.

The relativization hierarchy, from most accessible for relativization to least accessible, is as follows: subject > direct object > indirect object > object of a preposition > genitive > object of comparison. RCs exemplifying each are given below:

(3) a. Subject RC: The man$_i$ who e_i loves the woman

b. Object RC: The man$_i$ who the woman loves e_i

c. Indirect Object RC: The man$_i$ who the woman gave flower to e$_i$

d. Object of a Preposition: The man$_i$ who the woman is talking with e$_i$

e. Genitive RC: The man$_i$ whose house the woman bought e$_i$

f. Object of Comparison: The man$_i$ who the woman is taller than ei

According to this typology, if a language permits relativization of NPs of a particular type, for example indirect object, then those NPs of the type that are located higher in the hierarchy (in this case, direct object and subject) may also undergo relativization. As a result, subject RCs are expected to be more accessible than object RCs regardless of the grammatical role the relative clause has in the matrix clause.

Many studies in L1 (both production and comprehension) found support for the NPAH (Gibson 1998; Keenan and Hawkins 1989) in the sense that children experience difficulties with object relative clauses compared to subject relative clauses in typologically different languages. Nevertheless, two main shortcomings of NPAH have been noted in the literature.

First, it failed to explain why OS (A subject RC that modifies the noun in object position of the main clause) relatives and SO[12] relatives evoked more nonadult responses by children compared to SS and OO relatives. NPAH fails to predict this asymmetry as the grammatical role the relative clause has in the matrix clause is claimed to have no effect in the production and comprehension of RCs. Second, the question of why the acquisition order would follow this pattern has never been fully answered. The Parallel Function Hypothesis (Sheldon 1974), The Conjoined Clause Hypothesis (Tavakolian 1978; 1981) and The Filler-Gap Hypothesis (cf. O'Grady

[12] The first letter indicates the role of the relativized element in the matrix clause and the second letter in the subordinate clause.

1997) are proposed to explain the data left unaccounted by NPAH. Each of these hypotheses will be examined thoroughly in the ensuing sections. Let us first turn to a discussion of the models proposed for RCs.

Processing-Oriented Accounts

The majority of the processing oriented accounts have been concerned with children's comprehension of relative clauses. In most of the experiments carried out experimenters have used the so-called figure manipulation (act-out) tasks. An experimenter, for example, presented the children with a sentence and instructed them to "make it happen" using toys and props that were present in the setting. Depending on children's responses, particularly incorrect interpretations, the researchers formulated a set of hypotheses which are known as parallel-function hypothesis, conjoined-clause hypothesis, filler gap hypothesis and NVN-scheme hypothesis. The parallel-function hypothesis, the conjoined-clause hypothesis, the filler gap hypothesis along with the NVN-scheme hypothesis are among the most frequently discussed hypotheses in the literature on the acquisition of relative clauses.

The Parallel Function Hypothesis (Sheldon 1974)

The Parallel Function (PF) Hypothesis states that children find relative clause constructions in which head and gap have the same syntactic roles (i.e. SS- and OO-relatives) easier to interpret and produce than those in which the roles are different (i.e. SO- and OS-relatives).

Sheldon designed a comprehension experiment in which 3-to 4-year-old English-speaking children had to act out the meanings of SS-, SO-, OS- and OO-relatives as in (4). Children's answers to SS- and OO-relatives included a significantly higher proportion of correct responses (mean scores of 1.58 and 1.52 out of 3) than their answers to SO-and OS-relatives (mean scores of .64 and .88 out of 3) The results provided evidence for PF Hypothesis as children made fewer errors with RCs in which the head and the gap serve the same syntactic roles than with RCs in which the roles of the head and gap are different across all age groups. According to Sheldon (1974), this hierarchy is a natural consequence of the fact that assigning one grammatical role to a noun is more economical, thus easier to process.

(4) a. The dog [that _____ jumps over the pig] bumps into the lion. SS

b. The lion [that the horse bumps into _____] jumps over the giraffe. SO

c. The pig bumps into the horse [that _____ jumps over the giraffe]. OS

d. The dog stands on the horse [that the giraffe jumps over _____]. OO

(Sheldon 1974: 275)

Traxler, Morris and Seely (2002) put forward a perspective-shifting account in spirit with PF Hypothesis. They claimed that in sentences with SS and OO relatives, there is only one constituent serving as subject or object throughout the sentence and no perspective-shifting is required. In sentences with OS and SO relatives, on the other hand, the main clause subject and object is different from the relative clause subject and object. So, children must shift their perspective when they encounter the relative clause subject or object. Perspective-shifting is presumed to be costly and time-consuming.

Cross linguistic evidence supporting PF comes from the study of Clancy, Lee and Zoh (1986) where Japanese and Korean children's comprehension of relative clauses such as the ones in (5) have been looked at. This study concluded that PF works in these languages as well. These languages mark the grammatical function of noun phrases with distinct case markers (-ga: Nominative case and marks the subject; -o: Accusative case and marks the object in Japanese as illustrated below). [13] As a result, in SS- and OO- RCs, the case marking of the noun is the same in both clauses and there is no conflict in terms of case-marking unlike SO- and OS-relatives.

(5) a. [Kirin-o taoshi-ta] zoo-ga shika-o nade-ta SS
giraffe-ACC knock-down-PAST elephant-NOM deer-ACC pat-PAST

'The elephant that knocked down the giraffe patted the deer'

b. [Zoo-ga taoshi-ta] kirin-ga shika-o nade-ta SO
elephant-NOM knock-down-PAST giraffe-NOM deer-ACC pat-PAST

'The giraffe that the elephant knocked down patted the deer'

c. Zoo-ga [kirin-o taoshi-ta] shika-o nade-ta OS
elephant-NOM giraffe-ACC knock-down-PAST deer-ACC pat-PAST

'The elephant patted the deer that knocked down the giraffe'

d. Zoo-ga [kirin-ga taoshi–ta] shika-o nade-ta OO
elephant-NOM giraffe-NOM knock-down-PAST deer-ACC pat-PAST

'The elephant patted the deer that the giraffe knocked down'

One of the crucial findings of the act-out tasks with the paradigms as in (4) is the fact that children interpret sentences including OS-relatives as conjoined clauses. This tendency constituted the core of the conjoined-clause analysis developed by Tavakolian (1978, 1981).

[13] Japanese does not employ relative pronouns to relate relative clauses to their antecedents. Instead, the relative clause directly modifies the noun phrase, occupying the same syntactic space as an adjective (before the noun phrase).

The Conjoined-Clause Analysis of Relative Clauses (Tavakolian 1978; 1981)

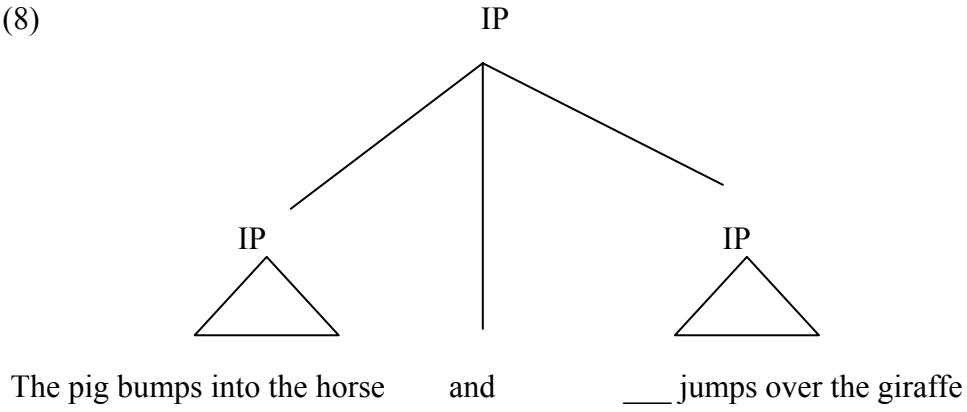
Using the same experimental design as Sheldon (1974), Tavakolian noted an interesting pattern in children's performance on OS-relatives. Many children who asked to act out the meaning of a sentence like (4c), repeated as (6) below, had the pig bump into the horse and then jump into the giraffe. So, children departed from adults in their interpretation of the relative clause.

(6) The pig bumps into the horse that jumps over the giraffe.

(7) The pig bumps into the horse and jumps over the giraffe.

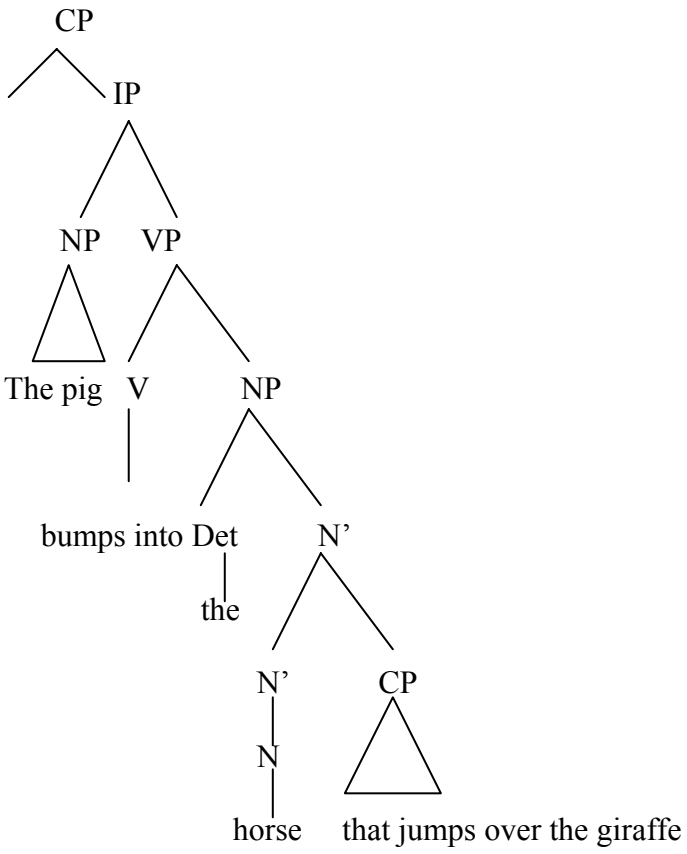
According to Tavakolian's account, the structure that children assigned to (6) closely parallels the structure underlying the sentence in (7), which has two conjoined clauses. She further commented that complex sentences that children cannot successfully process are interpreted as conjoined clauses and any missing noun phrase is treated as the subject of the second clause and interpreted as being coreferential with the subject of the first clause. Specifically, she claimed that children's grammars do not have recursion within the NP. That is, they are unable to generate one NP inside another NP. According to the conjoined-clause analysis, the inability to form recursive NP structures forces children to produce nonhierarchical, "flat" structures as in (8) in interpreting sentences like (6).

(8)



One criticism for conjoined-clause hypothesis comes from advocates of Modularity Matching Hypothesis, since Tavakolian's account results in a learnability problem. Children have to unlearn the conjoined-clause hypothesis to get rid of the wrong interpretation and come up with the representation in (9). That is, children should be provided by negative evidence which is hardly available in linguistic environment since children are never told what a sentence cannot mean.

(9)



The Filler-Gap Hypothesis (cf. O'Grady 1977; Wanner and Maratsos 1978)

Although NPAH has found support in many first language and second language acquisition studies (O'Grady, 1999 for second language acquisition) in that the processing of relative clauses becomes more difficult as one goes down the hierarchy, the question of why the acquisition order follows this pattern has been left unaccounted for. The filler-gap hypothesis is proposed to explain the relative difficulty in the given hierarchy (i.e. NPAH).

The filler-gap hypothesis claims that the processing load of relative clause is determined by the varying distance between the filler (i.e. head noun) and the gap (cf. O'Grady 1977). A number of experimental studies showing that both adults and children have fewer difficulties in interpreting a subject gap than an object gap have provided evidence for the filler-gap hypothesis. The distance between the filler and the gap is minimal in relative clauses including a subject gap as the only element that occurs between them is the relativizer (10). In object relatives, on the other hand, the filler and the gap are separated from each other by the subject and the verb (11); hence there are four words between the filler and the gap.

Although originally proposed to account for the observed difficulty in object relative clauses, we can extend the filler-gap hypothesis to other relative clauses occupying lower position in the NPAH. In relative clauses in which an oblique or an indirect object is relativized, the distance between filler and gap increases: it does not only include the subject and verb as in relative clauses including an object gap, but also a preposition and, in the case of an indirect object, the direct object. Note that as one go downs Keenan and Comrie's (1977) hierarchy, the distance between the filler

and gap increases. So, the filler-gap hypothesis makes the similar prediction with NPAH and provides an explanatory power to Keenan and Comrie's (1977) hierarchy.

(10) the man$_i$ who e_i loves the woman 1- word ($_{SUBJ}$-relative)

(11) the man$_i$ who the woman loves e_i 4-words ($_{OBJ}$-relative)

(12) the man$_i$ who(m) the woman played with e_i 5- words ($_{OBL}$-relative)

(13) the man$_i$ who(m) the woman gave flower to e_i 6-words ($_{IO}$-relative)

Wanner and Maratsos (1978) explained this finding in terms of the difficulty for the human processor to keep the filler in working memory until it encounters the gap, which provides the information necessary to integrate the filler into the relative clause. The longer the processor has to retain the unintegrated information, the harder the relative clause is to parse.

A crucial support for the filler-gap hypothesis also comes from children's use of resumptive pronouns in relative clauses. A number of studies observed that young children insert a resumptive pronoun in the place of the gap from which the relative clause head is assumed to move (cf. Labelle 1990, 1996; Pe⁄roz-Leroux 1995; McKee, McDaniel 2001). Interestingly, the occurrence of the resumptive is found to be in correlation with the distance between the filler and the gap. In other words, the longer the distance between filler and gap, the more likely the occurrence of a resumptive is. An indepth analysis of resumptive pronouns in child grammar is given in Section 2.5.3. The last hypothesis offered on the issue is the NVN-Scheme Hypothesis and in what follows I turn to a brief discussion of that.

The NVN-Scheme Hypothesis (cf. Bever 1970a; Slobin and Bever 1982)

Children's better performance on subject relative clauses compared to object relative clauses have also been attributed to the similarity of the subject relative clauses to the simple transitive clauses in English.

Bever ((1970a) as cited in Diessel (2004)) argued that relative clauses including a subject gap (15) involve a noun-verb-noun sequence so that children have little difficulty in understanding this structure using the canonical sentence strategy whereas relative clauses including an object gap are difficult to interpret as they involve a sequence of nouns and verbs that does not match the NVN-scheme (16). Hakuta ((1981) as cited in Clancy et al. (1986)) has also observed that Japanese-speaking children employ an NNV-scheme in their interpretation of relative clauses, based on the dominant SOV order of Japanese.

(14) [The man]$_{NP1}$ saw the [the boy]$_{NP2}$. (simple sentence)
ACTOR

(15) [The man]$_{NP1}$ who saw the [the boy]$_{NP2}$. ($_{SUBJ}$-relative)
ACTOR

(16) [The man]$_{NP1}$ who the [the boy]$_{NP2}$ saw. ($_{OBJ}$-relative)
ACTOR

As can be seen from the examples above, subject relative clause (15) is similar to the simple sentence in (14) in the sense that the actor is expressed by the first NP (i.e. the head of the relative clause) in the sentence but in object relative clause (16), the actor is expressed by the second NP (i.e. the relative clause subject), while the first NP (i.e. the head of the relative clause) expresses some other semantic role.

Having introduced all the hypotheses offered to account for RC production, in the next section I will look into accounts which assume that there is no movement in RC formation.

(Non) Movement Approaches to Relative Clause Formation

In adult grammar, relative clauses have been argued to be formed by two mechanisms: one is a movement based account, i.e. successive cyclic movement and the other involves nonmovement, i.e. pronominal linkage (see Chomsky, 1977). In successive cyclic movement, the head is displaced from its underlying position to the front of a construction by a series of short distance moves through the structure of the sentence. In pronominal constructions, the head is generated in its surface position and linked to a (overt or null) pronoun elsewhere in the sentence. A range of diagnostics has been used to distinguish the two types of mechanism in the literature such as subjacency effects, the presence or absence of overt pronouns, pied-piping and etc. Yet, an exhaustive account of this issue is beyond the scope of this study.

In an attempt to find evidence from acquisition facts to defend one particular choice over another starting from 1970's until the late nineties most of the studies have investigated the acquisition of RCs in the framework of Generative Grammar. The basic question that the generativists have tried to address has been whether the child's initial grammar of relative clauses involves movement or whether relative clauses are formed by a nonmovement mechanism, i.e. pronominal linkage.

Unlike processing-oriented accounts, most of these studies have been concerned with children's production of relative clauses. Experimenters used elicited production methods in which children were to label the intended object by using

relative clauses (See Crain 1998 for details). In what follows, I will give a brief discussion of relative clause acquisition studies done in this framework.

Movement versus Pronominal Linkage in Child Grammar

Labelle on the basis of a study of French (1990 cited in 1994) was first to claim that children's relatives are not formed by movement. There were two major findings in Labelle's study. First, the children made use of resumptive pronouns and resumptive noun phrases (NPs) in relative clauses both of which are ungrammatical in standard adult French. Examples are given in (17).

(17) a. Sur la balle qu'i (l) l'attrape. (Resumptive Pronoun)
'On the ball that he it catches'

b. Sur la balle qu'i (l) lance la balle. (Resumptive NP)
'On the ball that he throws the ball'

Second, children avoided pied-piping of a preposition in their relative clauses as in (18), although this is required for indirect and oblique object positions in adult French.

(18) Sur la petite fille que le monsieur i(l) montre un dessin.
'On the little girl that the man he is showing a drawing (=to her).'

Adult Form: Sur la petite fille a qui le monsieur montre un dessin.
'On the little girl to whom the man shows a drawing.'

Labelle (1990) proposed that the use of resumptives is incompatible with $_{WH}$-movement and is actually a characteristic of a nonmovement strategy for relative

clause formation. Besides, pied-piping, which is an indicator of use of movement in French relative clauses (Labelle 1991) is not evidenced in children's grammar. These facts led Labelle to claim the absence of movement in children's grammar. Guasti and Shlonsky (1995) are in agreement with Labelle that child relativization does not involve movement but they depart from her approach in arguing that movement is implicated in the derivation of child relatives, namely, the movement of the relative clause head itself by drawing attention to the fact that wh-movement and pied-piping are available in child grammar for the formation of interrogatives. Children's lack of success in relative clauses, on the other hand, is taken to reflect a developmental gap between two types of operators: (i) relative operators versus (ii) interrogative operators.

Relative operators are assumed to have different properties than interrogative wh-expressions. Relative operators are always associated with a relative head, an antecedent, which serve to relate to variable inside CP. These operators are also called linking operators and differ from interrogative operators which never have an antecedent. As pied piping requires the presence of a relative operator and because children lack relative operators, their performance lack pied piping. Yet, there is still movement of the relative clause head. The presence of resumptives is explained by the need to establish a chain between the gap and the head.

Pe(rez-Leroux (1995), however, argues that the absence of pied-piped relatives for children in French data is not necessarily an evidence for a nonmovement analysis as there are languages in which relativization is simply forbidden from indirect and oblique positions (Keenan and Comrie, 1977). Pe(rez-Leroux (1995) along with Goodluck and Stojanovic((1996), further claims that the

use of resumptives in Labelle's data does not conclusively argue for a nonmovement analysis.

As the study of adult grammar has revealed a complex typology of resumptive pronouns and children's massive use of resumptive pronouns in production studies has attracted attention in the acquisition literature, in the next section I will provide some background on resumptives in adult languages.

Resumptive Pronouns and Resumptive Noun Phrases (NPs) in Adult Grammar

A resumptive pronoun is a pronominal variable that appears in a position from which movement is proposed to occur (Mc Kee & Mc Daniel, 2001:114). A cross-linguistic comparison has identified three types of languages with respect to the distribution and interpretation of resumptives in movement constructions. In the first type such as English, resumptives are limited to extractions from syntactic islands or from inaccessible positions. In second type of languages, resumptives freely alternate with traces.[14] In the third type of languages, however, resumptives are obligatory only in some syntactic positions.

English is an example of the first type of language in which the distribution of resumptives is very limited and furthermore it appears that the use of resumption as a strategy is influenced by linear distance, depth and extractability. In a relative clause, the use of resumptive pronouns, hence the reading of the sentence improves as the resumptive pronoun gets farther from the head. As a result, (19b) seems preferable to (19a). Besides, when resumptive pronoun is embedded, a stronger grammaticality is obtained as in (19c).

[14] The accessibility hierarchy of Keenan and Comrie (1977) predicts the availability of resumptives. That is, if a language allows resumptives in a given position in the hierarchy (see below); it also allows resumptives in lower positions.
Subject > Direct Object > Indirect Object > Oblique Object> Genitive > Object of Comparison

(19) a. *This is the camel that he likes Oscar.

b.?? This is the camel that maybe, maybe, maybe he likes Oscar.

c.? This is the camel that I think he likes Oscar.

(examples taken from Mc Kee & Mc Daniel, 2001:114)

Romani exhibits properties which are compatible with second type of languages in that resumptive pronouns and traces seem to alternate relatively freely as the following examples illustrate.

(20) a. Ake i c(h)aj so mangav.
here the girl that I-like
'Here is the girl that I like'

a. Ake i c(h)aj so mangav la.
here the girl that I-like her
'Here is the girl that I like [her]'

Hebrew is a language which exhibits properties of the third type where the use of resumptives is obligatory when the relativized head is the object of a preposition, i.e. Indirect Object and Oblique Object, but is optional as in (21) when the head noun is direct object as in (22) and furthermore is forbidden if the head noun is the subject (Arnon 2004).

(21) Ha-kise, she-ata yoshev alav, shavur.
'The chair, which you are sitting on it, [is] broken.'

(22) Ha-safta she ha-yalda menasheket (ota)
the-granny that the-girl kisses (her)
'The granny that the girl kisses [her]'

As the discussion above suggests, the use of resumptive pronouns is not unique to child language. Yet, the fact that children use resumptive pronouns in structures that adults do not needs explanation.

2.6 Usage-Based Accounts

In the usage-based model, grammar is seen as a dynamic system that is constantly changing by virtue of the psychological processes that are involved in language use. One of the central assumptions of the usage-based approach is that the representations of linguistic elements correlate with the frequency of their occurrence. Linguistic expressions and grammatical patterns that occur in high frequency in language use are more deeply entrenched in a mental grammar than expressions that are infrequent. The usage-based approach challenges the central assumptions of generative grammar which claims that the basic principles of grammar are innate. Instead, it posits that linguistic structure emerges from language use (see Diessel 2004 for more details).

The majority of the studies that have been summarized in the sections above have been concerned with the comprehension and production of relative clauses in experiments. The use, i.e., the production of relative clauses in naturally occurring child speech has been given little attention in the literature. Diessel (2004), Diessel and Tomasello (2000, 2005) provide the first usage-based analysis of the development of relative clauses, in which constructions are the basic elements of the grammar.

Diessel and Tomasello (2000) examine the development of relative clauses in the speech of four English-speaking children between 1;9 and 5;2 years of age based

on observational data.[15] The results have shown that relative clause constructions in spontaneous child speech are less complex (and therefore easier to process) than those that have been used in most comprehension and production experiments. The relative clause constructions that have been used in most experiments consist of two transitive clauses as in (23).

(23) The dog [that _____ jumps over the pig] bumps into the lion.

(Example taken from Sheldon, 1974)

Diessel and Tomasello (2000), on the other hand, observed that only 27% of the items used contain two transitive clauses in their corpus while an average of 47 % of all the relative clauses children produced appear in presentational constructions (PN-relatives). In presentational relative constructions, the relative clause is attached to the predicate nominal of a copular clause as in (24), i.e. the construction consists of a copular clause and a finite or nonfinite relative clause in which the subject is gapped or relativized, as in the examples (24)-(26). An average of 22.5% relatives, on the other hand, is attached to an isolated head noun phrase (NP) as in (27):

(24) Here's a tiger <u>that</u>'s gonna scare him. (Nina 3;1)

(25) It's the wheels go (= It's <u>where</u> the wheels go). (Peter 2;3)

(26) This is my doggy cries (=This is my doggie <u>that</u> cries). (Nina 2;0)

(27) Another picture I made (=Another picture <u>that</u> I made)

(Diessel & Tomasello, 2000: 131, 139)

[15] All data are taken from the CHILDES databasase (cf. MacWhinney and Snow 1990).

Diessel and Tomasello claim that the examples from (24) to (27) express only a single proposition unlike the example in (23) which contain two propositions. Although sentences (24) to (26) consist of two clauses, Diessel and Tomasello still maintain that the sentences describe only a single state of affairs as the copular clause does not denote an independent situation, but functions to focus the interlocutors' attention on a particular referent that is semantically integrated in the relative clause (cf. Lambrecht (1988) as cited in Diessel & Tomasello (2000)). The whole sentence expresses thus a single proposition and can be paraphrased by a single clause.

The mean proportions of Presentational Constructions (PN-), NP-, SUBJ-, OBJ-relatives based on the first ten relative constructions produced by the four children investigated is rather striking. 75% of the earliest relative clauses modify the predicate nominal of a presentational copular clause and another 7.5% are attached to an isolated head noun. There are no SUBJ-relatives and no OBL-relatives among the earliest relative constructions in their data. The other 17.5% are headed by the object of a transitive clause. Diessel and Tomasello claim that the sentences exemplified in (28) & (29) are functionally very similar to PN-relative constructions in the sense that the main verb look does not serve as a perception verb. Rather, it functions as an attention getter focusing the hearer on the entity expressed by the object. They included these sentences in the group of presentational relatives. As a result, 92.5% of the earliest relative clauses occur in constructions that express a single proposition.

(28) Look at dat train (pause) Ursula bought. (Adam 2;10)

(29) Look at all the chairs a Peter's got. (Peter 2;5)

As children grow older, they begin to use relative constructions that are increasingly more complex. The relative clauses of older children are frequently attached to a noun phrase in a common main clause as can be seen in Figure1.

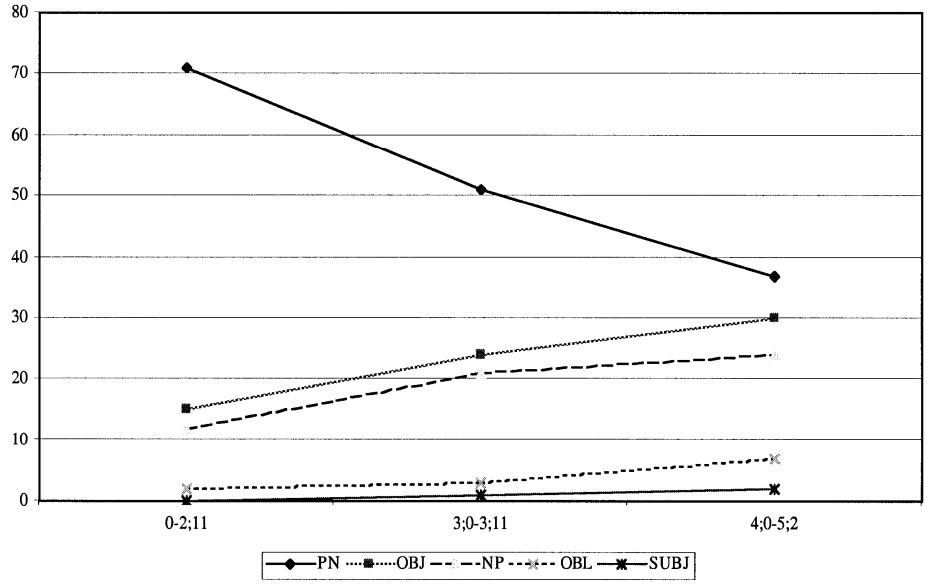


Fig.1 The development of PN-, NP-, SUBJ-, OBJ- and OBL-relative clauses

Figure 1 shows that while the average percentage of PN-relatives falls from 71 to 37, the percentage of all other relative clauses (particularly object relative clauses) shows a steady increase. This indicates that the frequency of mono-propositional relative constructions gradually decreases as the children grow older.

Based on these findings, Diessel and Tomasello (2000) argue that the acquisition of relative clauses in English can be characterized as a process of clause expansion: starting from presentational relatives that are propositionally simple, children gradually learn the use of complex relative constructions that contain two propositions.[16] They further claim that what children learn when they begin to use

[16] There are a number of studies suggesting that the development of relative clauses in other languages takes a similar pathway. For instance, Dasinger and Toupin (1994) noticed the predominance of presentational relative clause constructions in the speech of Spanish- and Hebrew-speaking children

relative clauses are grammatical constructions rather than abstract processing strategies in which a specific form is paired with a specific meaning. They conclude that the acquisition of relative clauses is a gradual process and children cannot be considered as having mastered the full range of relative constructions once the first relative clauses appear in their language.

As is clear from the above discussion, the particular constructions used in most experimental studies emerge very late in the acquisition process and this explains why children perform poorly. In fact, Diessel and Tomasello did not find any evidence for processing strategies suggested in experimental literature in the children's spontaneous production of relative clauses. So, they claim that children do not employ a specific processing strategy; rather, processing plays a more general role in that it restricts children's early production of relative clauses to rather simple constructions.

One crucial finding of the present study is also noteworthy. Diessel and Tomasello witnessed a developmental change in the argument structure of the relative clauses produced by children. Figure 2 provides a graphic representation of the developments. As can be seen in this figure, there are two significant developments in the argument structure of relative clauses. The percentage of subject relatives (S-relatives) decreases from 63% at age three to 26% at age five. The percentage of object relative (O-relatives) increases from 24 to 42 percent during the same time, which indicates that the children use proportionally more transitive clauses as they grow older.

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and Hermon (2005) points out that Indonesian-speaking children begin to produce relative clauses in structures that denote only a single state of affairs, i.e. in presentational constructions. Brandt et al. (2005) for German-speaking children.

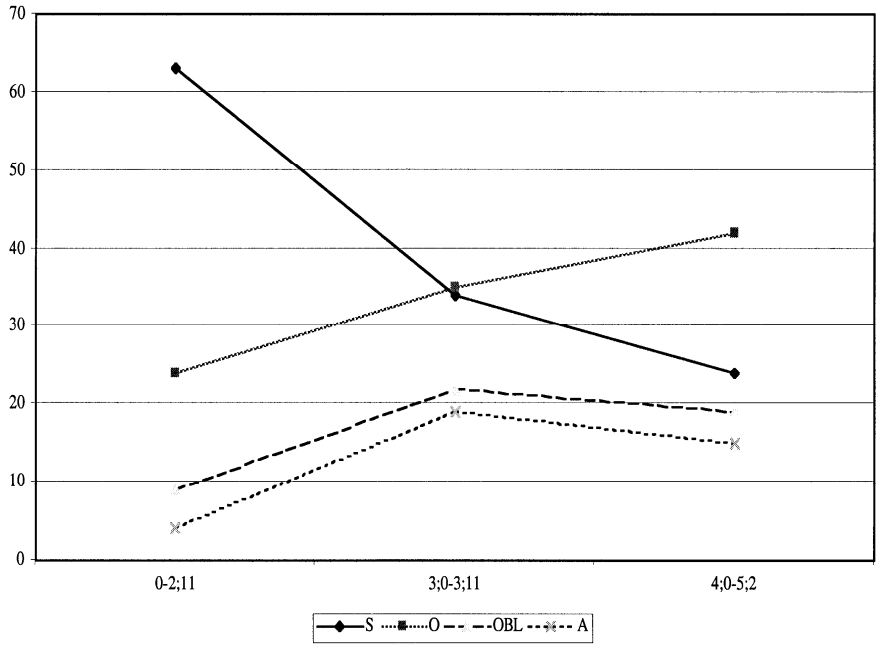


Fig. 2 The development of S-, O-, A- and OBL-relative clauses.[17]

In subsequent work in which they asked four-year-old English- and German-speaking children to repeat different types of relative clauses modeled on the relative constructions of spontaneous child speech, Diessel and Tomasello (2005) found similar results with respect to the development of relative clauses in terms of argument structure. It is the details of this study that I will turn next.

Diessel and Tomasello (2005) designed a study to reexamine children's knowledge of relative clauses using materials that are more natural and realistic in the sense that the test sentences were modeled on the relative clause constructions that children use in spontaneous speech (Diessel and Tomasello, 2000; Diessel, 2004). They conducted two experiments with English- and German-speaking

[17] Classification of relative clause constructions:
S-relative: Subject of intransitive relative clause; *A-relative*: Subject of transitive relative clause; *O-relative*: Object relative clause and *OBL-relative*: oblique relative clause.

children in which language was treated as the between-subject variable and the relativized syntactic role as the within subject variable.

In two consecutive studies, they examined four-year-old English-speaking and German-speaking children using six different types of relative clauses: (i) S-relatives (relative clauses with an intransitive verb and subject gap), (ii) A-relatives (relative clauses with a transitive verb and subject gap), (iii) P-relatives (relative clauses with a direct object gap), (iv) IO-relatives (relative clauses with an indirect object gap), (v) OBL-relatives (relative clauses with an oblique gap) , and (vi) GEN-relatives (relative clauses with a genitive relative pronoun). They distinguished transitive from intransitive subject relative clauses (i.e. S-relatives vs. A-relatives) as previous studies have suggested that children find intransitive subject relatives easier to comprehend than transitive subject relative clauses (cf. Hamburger & Crain, 1982; Goodluck and Tavakolian, 1982).

Table 1 gives an example test sentence for each of the six conditions in English and German, respectively. Note that the relative clauses are attached to the predicate nominal of the copular clause as they are the earliest relative clauses in spontaneous child language as discussed before.

Table 1. Examples of English test sentences

Example	Condition
There's the boy who played in the garden yesterday.	S-relative
This's the man who saw Peter on the bus this morning.	A-relative
This's the girl who the boy teased at school this morning.	P-relative
There's the girl who Peter borrowed a football from.	IO-relative
This's the dog that the cat ran away from this morning.	OBL-relative
This's the woman whose cat caught a mouse yesterday.	GEN-relative

Diessel and Tomasello (2005) found that intransitive subject relatives caused fewer errors than transitive subject relatives and direct object relatives, which in turn caused fewer errors than indirect object relatives and oblique relatives; and finally, genitive relatives caused the biggest problems. Figure 3 shows the percentage of correct responses to the various types of relative clauses.

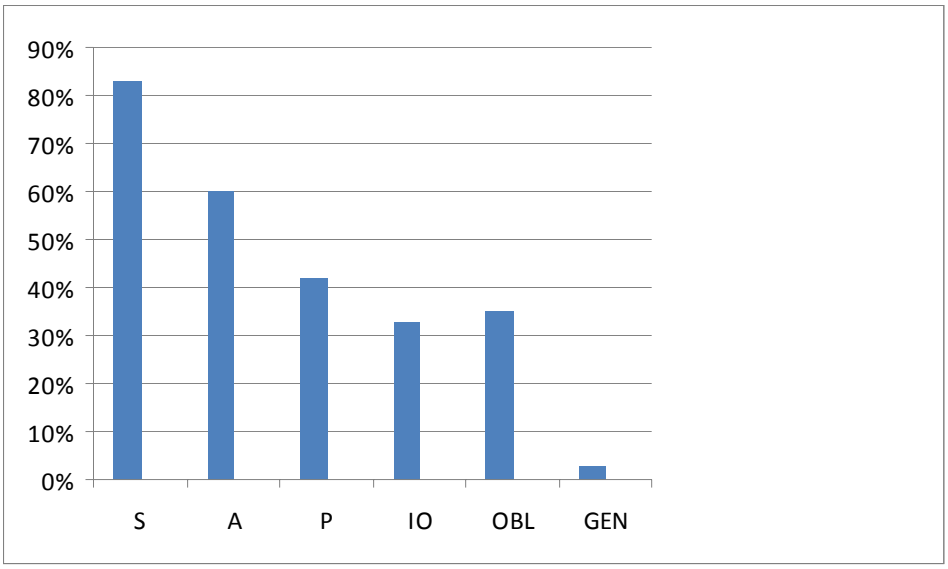


Fig. 3 Percentage of correct responses to different types of relative clauses (English-speaking children)

The results of the German relative clauses which are structurally very different from English relative clauses also revealed the same acquisition pattern in that the percentages of correct responses and the type of errors were basically the same in the German study.[18]

[18] Relative clauses are introduced by a relative pronoun which is marked for gender, number, and case in German. As a result, the relative pronoun plays an important role in the interpretation of German relative clauses. To illustrate the relative pronouns of German:

	Masculine	Feminine	Neutral
Nominative	der	die	das
Accusative	den	die	das
Dative	dem	der	dem

...

A detailed analysis of children's errors in English showed one type of mistake that was particularly frequent and revealing. Children changed the word order in such a way that they produced a relative clause different from the one in the test item. Conversion errors of this type occurred in two directions: A-relatives were converted to P-relatives (i.e., relative clauses with a direct object) (30), and P-, IO-, and OBL-relatives were converted to S/A-relatives (31)-(33).

(30) A→P

Test Item : This is the man who saw Peter on the bus this morning.

Child : This is the man who . . . Peter saw on the bus this morning.

(31) P→A

Test Item : This is the girl who the boy teased at school this morning.

Child : This is the girl that teased . . . the boy . . . at school this morning.

(32) IO→A

Test Item : Is that the boy who the woman sent a letter to?

Child : Is that the boy who sent a letter to the woman?

(33) OBL→A

Test Item : There is the horse that the little cat jumped on yesterday.

Child : There is the horse that jumped on the cat yesterday.

(Diessel & Tomasello, 2005: 888)

In the masculine gender, for instance, each syntactic role is expressed by a different case form. The masculine relative pronoun thus provides all of the information necessary to determine the relativized syntactic role. So, the relativized syntactic function can be identified without recognizing the position of the gap in German relative clauses.

Conversions to S/A-relatives (32 utterances) were significantly more frequent than conversion to P-relatives (6 relatives).[19] The conversion errors exemplified in (30) to (33) can be argued to provide evidence for the filler-gap hypothesis discussed as in Section 2.4.3 according to which the varying distance between the filler and gap determines the relative difficulty of different relative clauses. The distance between the filler and the gap is minimal in relative clauses including a subject gap; the only element that occurs between them is the relativizer (34). In object relatives, on the other hand, filler and gap are separated from each other by the subject and the verb (35).

[19] Similar conversion errors were evidenced in the German study as well. Yet, it involved a change of the relative pronoun and other case-marked elements (i.e. the articles of other arguments). This type of mistake had basically the same effects as the word-order changes in the English study. Overall, there were 79 sentences in German study in which the change of the relative pronoun led to conversion of the relative clause. While only 13 A-relatives were converted to P-relatives, 66 P-, IO-, and OBL-relatives were converted S/A relatives as can be seen in the following examples:

i. A→P

Test Item : Ist das der Mann, der Peter heute Morgen geholfen hat?
Is that the man who **[NOM]** helped Peter this morning?

Child : Ist das der Mann, dem Peter . . . heute geholfen hat?
Is that the manwhom **[DAT]** Peter helped?

ii. P→A

Test Item : Da ist der Mann, den das Ma©dchenim Stall gesehen hat.
There is the man whom **[ACC]** the girl saw in the barn.

Child : Da ist der Mann, der das Ma©dchenim Stall gesehen hat.
There is the man who **[NOM]** saw the girl in the barn.

iii. IO→A

Test Item : Hier ist der Junge, dem die Frau ein Buch vorgelesen hat.
Here is the boy whom **[DAT]** the woman read a book to.

Child : Hier ist der Junge, der der Frau ein Buch vorgelesen hat.
Here is the boy who **[NOM]** read a book to the woman.

iv. OBL→A

Test Item : Hier ist das Schwein, vor dem die Katze weggelaufen ist.
Here is the pig from which the cat ran away.

Child : Hier ist das Schwein, das vor der . . . Katze weggelaufen ist.
Here is the pig which ran away from the cat.

(34) the man who$_i$ e$_i$ loves the woman one word ($_{SUBJ}$-relative)

(35) the man who$_i$ the woman loves e$_i$ four words ($_{OBJ}$-relative)

Diessel and Tomasello (2005) noted that the filler-gap hypothesis is consistent with the fact that subject relatives (i.e. S- (int) and A-(trans) relatives) caused fewer errors than other relative clauses in the data. However, the filler-gap hypothesis fails to explain (i) why S-relatives caused significantly fewer problems than A-relatives although they involve the same distance between filler and gap (ii) why children produce the same number of errors in response to P-, IO-, and OBL-relatives although the distance between filler and gap varies in these three types of relative clauses and lastly, (iii) why children were unable to repeat GEN-relatives although they involve a relatively short distance between filler and gap.[20]

Rejecting the filler-gap hypothesis, Diessel and Tomasello (2005) claim that children have fewer difficulties with S/A-relatives than with all other relative clauses because S/A-relatives are similar to simple nonembedded sentences. As can be seen from the following small paradigm, subject relative clause (37) is similar to simple sentence in the sense that the actor is expressed by the first NP (i.e. the head of the relative clause) in the sentence but in P-, IO-, and OBL-relatives (38-40), the actor is expressed by the second NP (i.e. the relative clause subject), while the first NP (i.e. the head of the relative clause) expresses some other semantic role. According to this proposal named as the NVN-Schema Hypothesis first proposed by Bever ((1970a) as

[20] The filler-gap hypothesis does not account for any of the German data as the relative pronoun provides all of the information necessary to determine the relativized syntactic role at the beginning of the relative clause. That is, the processor does not have to keep unintegrated information in working memory while processing the relative clause. The relative pronoun already signals the relativized syntactic role.

cited in Diessel (2004)), children acquire a construction (relative clauses, in this case) based on a prototypical transitive sentence. [21]

Diessel and Tomasello (2005) further comment that children convert other relative clauses to S/A-relatives (i.e. subject relatives) as S/A-relatives are more easily activated than other types of relative clauses due to their similarity to nonembedded clauses.

(36) [The man]$_{NP1}$ saw the [the boy]$_{NP2}$. (simple sentence)
ACTOR

(37) [The man]$_{NP1}$ who saw the [the boy]$_{NP2}$. (A-relative)
ACTOR

(38) [The man]$_{NP1}$ who the [the boy]$_{NP2}$ saw. (P-relative)
ACTOR

(39) [The man]$_{NP1}$ who the [the boy]$_{NP2}$ sent a letter to. (IO-relative)
ACTOR

(40) [The man]$_{NP1}$ who the [the boy]$_{NP2}$ played with. (OBL-relative)
ACTOR

A similar analysis was proposed by Brandt and et al. (2008) for German relative clauses. They argued that German-speaking children use NVN-schema in their interpretation of all kinds of syntactic structures. Like English subject relative clauses, German subject relatives are similar to simple sentences in that both relative clauses and simple sentences express the actor in the first NP, while all other relative clauses express the actor after some other semantic role. This means that the children of both languages prefer relative clauses in which the actor is expressed by the sentence-initial NP as in the great majority of simple sentences in these languages.

[21] Bever and Slobin ((1982) cited in Diessel (2004)) found that children under the age 5;0 tend to interpret passive sentences as active sentences based on NVN-scheme. It seems that word order (i.e. NP-V-NP) provides a much stronger cue for young English-speaking children than the grammatical morphemes that mark a passive construction.

To sum up this section, in usage-based models grammatical constructions are linguistic signs (or symbols) that are connected in mental grammar by associative links indicating structural and semantic relationships between them in usage-based models. Children acquire this network in a piecemeal bottom-up fashion, starting with constructions that are only minimally different from simple main clause, which they already know. Starting from such simple sentences, children gradually learn the use of more complex constructions.

Previous Relative Clause Acquisition Studies in Turkish

Slobin (1982)

Slobin (1982) was the first study investigating the acquisition of relative clauses in Turkish. Slobin asked 4-year-olds to respond to complex sentences with relative clauses of four types. Each child tested was given three toy animals and was asked to act out sentences exemplified in (41).

(41) a. İneğ-i düşür-en KUŞ ZEBRA-YI OKŞA-SIN.
cow-ACC drop-SR bird zebra-ACC pat-OPT

'The bird that knocks down the cow should pat the zebra.'

b. LAMA zürafa-yı it-en KURT-U ISIR-SIN.
llama giraffe-ACC push-SR wolf-ACC bite-OPT

'The Ilama should bite the wolf that pushes the giraffe.'

c. Lama-nın elle-diğ-i KAZ KEDİ-Yİ ISIR-SIN.
llama-GEN touch-NSR-3rd sg POSS goose cat-ACC bite-OPT

'The goose that the ilama touches should bite the cat.'

d. EŞEK deve-nin sev-diğ-i KOYUN-U İT-SİN.
donkey camel-GEN love-NSR-3rd sg POSS sheep-ACC push-OPT

'The donkey should push the sheep that the camel caresses.'

(Slobin 1982, p. 282)

While these complex sentences can be interpreted by some English-speaking children of that age, Slobin reports that Turkish-speaking children could not fully interpret any of these sentences. They just acted out the portions of the sentences indicated in capitals above, which correspond to canonical SOV simplex sentences in Turkish.

Hamburger and Crain (1982) argue that a restrictive relative clause is felicitously used only if there are at least two entities in the context (person, animal, object etc.). When we look at Slobin's design carefully, we see that there is one entity for each referent in the context. So, it does not satisfy the contextual appropriateness of relative clauses. The results should be considered in the light of these shortcomings.

He attributes this finding to children's failure in identifying the verbs inflected with–(y)An and –DIk participles as interpretable verbs with their appropriate valences and participants in complex sentences.

Slobin further points out that Turkish relative clauses are not constructed in a uniform way across different types of relativization. The child has to distinguish whether the relativized noun functions as subject in the relative clause (-(y)An) or whether it performs a function other than subject (i.e. -DIK). Obviously, this is not an easy task for Turkish speaking children.

Slobin (1986)

Slobin (1986) has compared the use of relative clauses in the matched group of 57 Turkish and 57 American child speech samples between the ages of 1;0 and 4;8, extracting all of the relative clauses spoken by the children and the adult investigators who interacted with the children . Each child was engaged in conversation with a familiar experimenter in which the topics were standard questions about everyday activities and recent events.

He found that utterances with relative clauses are quite rare at these ages. Children even did not produce any relative clauses before 2;4 in either English and Turkish.What was striking in this particular experiment for the purpose of this study is that Turkish children uttered less than half the number of relative clauses their English agemates did. As opposed to the 96 relative clause utterances in English, the Turkish children were observed to produce only 42 utterances. Slobin found the same asymmetry in conversation between adults (118 relative clauses in English and 49 in Turkish) and in adult speech to children in which he found 40 relative clauses in English compared to 22 in Turkish across the whole set of child language transcripts.

It seems that Turkish children have approximately 50% less input than English-speaking children do. In sum, both in child speech and adult conversation, English-speakers used relative clauses more than twice as frequently as Turkish-speakers. Besides, it had been observed that the development of relative clauses showed a more accelerated growth curve by English-speaking children: a major spurt at around age 3-and-a-half. Turkish-speaking children, on the other hand, produced the relative clauses productively later than 4;8. The development of relative clauses seems much faster in English compared to Turkish.

The findings showed a further striking difference in the frequency of the relative clause types (i.e. subject or nonsubject relativization) produced by children in these two language group types. Overall, 56% of child relative clauses were on nonsubject relatives in English, and this tendency is present from the youngest age group onward. Turkish children, however, hardly ever used nonsubject relatives in their speech (12%). That is, Turkish children used subject relatives much more frequently than their English counterparts: 88% in Turkish and 44% in English.

Slobin (1986) explains the mentioned differences between these two languages in terms of relativization strategies based on his "operating principles" for acquisition which are derived from examining data on the course of acquisition of many different types of languages (cf. Slobin 1973; 1985). These principles are part of the basic set of skills that the child applies to arrive at a grammar of his or her native language. Two of these principles which I will discuss below are relevant for explaining the acquisition pattern of relative clauses observed in two studies, i.e. Slobin (1982) and Slobin (1986).

i. Operating Principle in Regard to Analytic Forms

If a semantic configuration can be expressed by a single, unitary form (synthetic expression) or by a combination of several separate forms (analytic expression), prefer the analytic expression.

ii. Operating Principle in Regard to Canonical Forms

If a clause has to be reduced, rearranged, or otherwise deformed when not functioning as a canonical main clause, attempt to use or approximate the full or canonical form of the clause.

According to these principles, there are important differences between English and Turkish in terms of RC formation. First, the Turkish relative clauses have nonfinite verbs in the form of nominalizations or participles, as discussed in Chapter I. So, there is a deformation of the embedded clause in Turkish. Furthermore, different participles are required for subject (i.e. –(y)An participle) and nonsubject (i.e. –DIK participle) relatives in Turkish. In English, however, the relative clauses bear the surface form of the clauses with finite verbs and with a relative pronoun indicating the role of the coreferential noun in the subordinate clause. To illustrate, we observe that an object relative in (42) condenses subject and transitive verb into a single word in Turkish (i.e. *kazandığın*), in comparison with the full form (i.e. you earn) in English (43).

(42) Kazan-dığ-ın para
earn-OP-2nd sg POSS money

'The money that you earn'

(43) The money that you earn

Secondly, canonical subject-verb order is reversed in Turkish: *top oynayan iki çocuk* 'two boys who play football' (object-verb-subject) as opposed to canonical *iki çocuk top oynuyor* 'two boys are playing football' (subject-object-verb). The equivalent English constructions, however, are maximally transparent: two boys who are playing football (Subject-Verb-Object) corresponding to an underlying construction: two boys are playing football (Subject-Verb-Object).

It is evident from the brief description that English relative clauses are more close to these two operating principles than are the corresponding Turkish relative clauses. English forms are more analytic and similar to the canonical form of an

English clause. By contrast, the Turkish forms are synthetic and noncanonical. As a result, English-speaking children have less difficulty since they can apply simple sentence scheme to the relative clause constructions while this strategy fails in the acquisition of Turkish RC.

Evidence for the fact that Turkish children experience difficulties with the relative clauses as they are far from being analytic and noncanonical compared to English relative clause comes from children's tendency to use paraphrases which are more analytic and canonical. Slobin (1986) has found that the child transcripts are full of equivalents of relative clauses, bracketed by particles *hani* and *ya* 'well, after all, or you konw'. These discourse particles are used to emphasize or remind the listener of an item of shared information or common language. The sentence in (44) exemplifies the point:

(44) Adult: O odada yatak var mı?

Child: Var. *Hani* sizin evde büyük yatağınız var *ya*, onun gibi.

RC Equivalent: sizin evde olan büyük yatak gibi

(Slobin 1986, p. 279)

Turkish children also used a locative relativizer –DAki which is frequently used both by adults and children for subject relativizitaion. Slobin claims that children's preference for this form is the result of its analytic nature unlike its participle counterpart (46).

(45) ev - de -ki çocuk
house LOC PART child

'The boy who is in the house'

(46) ev-de ol-an çocuk
house LOC AUX-SP child

'The boy who is in the house'

Slobin claims that children's uses of these elaborated equivalents of relative clauses indicate that they recognized the semantic and pragmatic function of relative clauses: identifying the referent denoted by the head noun (restrictive use) and providing additional information about the referent (nonrestrictive use). The late emergence of relative clauses, on the other hand, is explained by the morphological complexity of the relative clauses in Turkish.

Ekmekçi (1990)

Ekmekci (1990) tested relative clauses via an imitation and a production task. She tested a total of 100 children divided equally into groups of 25 children aged 3, 4, 5, and 6. In the first task, the children were asked to repeat 15 sentences containing an adjectival phrase, 5 sentences with subject relative clauses and 5 sentences with object relative clauses. In the second task, Ekmekçi attempted to elicit adjectival phrases and relative clauses from the children. Each child was asked a total of 14 questions: 4 questions to elicit adjectival, 10 questions to elicit relative clause. She found contradictory results in two kinds of experiments.

She observed that nonsubject relatives were better performed than subject relatives in the imitation task regardless of age. She attributes the relatively easy imitation of nonsubject relative clauses to the similarity of –DIK structures in relative and embedded clauses. As discussed in Chapter I (Section 1.4) –DIK is multifunctional in Turkish in that the structure emerges in complement and adverbial

clauses as well. According to Ekmekçi, this higher exposure results in the higher accuracy in the repetition of the NSR compared to SR. The implication is that children are exposed to the different functions of the same form at a higher frequency than the subject participle which is unique to relative clauses.

The production experiment, on the other hand, revealed that object relative clauses are more difficult than subject relatives for children in similar age groups. Ekmekçi found that children have great difficulty in performing object participle relativization and they try to replace object relative structures with the subject relatives.

Özcan (1997; 2000)

Özcan (1997; 2000) was the first study testing not only the effect of relative clause type but also the role of the relative clause in the matrix clause. More precisely she investigated whether "parallel function hypothesis (PF)" has an effect on the comprehension and production of relative clauses in Turkish.

Özcan (1997) as cited in (2000)) found that parallel function hypothesis is effective in the comprehension of Turkish relative clauses only in the 3-year-old group. In a follow-up production study by using question/answer, picture description and elicited narration task, Özcan (2000) tested 42 monolingual children ranging in between 5, 7 and 9 years. The result of the study is summarized in Table 2 below.

Table 2. The Distribution of SS, OS, SO, OO clause types in all age groups (%)

Age Group	SS	OS	SO	OO
5-year-olds	53%	41%	4%	2%
7-year-olds	52%	38%	4%	6%
9-year-olds	48%	38%	8%	5%

As can be inferred from Table 2, the observed acquisition order of relative clauses in Turkish: SS>OS>SO>OO conflicts with the prediction of parallel function hypothesis which predicts the order as {SS; OO} > {SO; OS}.[22] While PF predicts OO-relatives to be used as frequently as SS-relatives, OO-relatives are less in frequency in all age groups. Based on these results, Özcan (2000) concludes that PF does not have any role in the production of relative clause in Turkish. Although Özcan does not refer to the Accessibility Hierarchy (AH), her results can be argued to present evidence for AH according to which subject relatives are easier to produce and comprehend than object relatives: {SS; OS} >{SO; OO}.

Ketrez (2007)

Ketrez (2007) also examines the acquisition of Turkish relative clauses in relation to the Accessibility Hierarchy (Keenan & Comrie 1977) and the Parallel Function Hypothesis (Sheldon 1974); based on the data that have been reported in Turkish acquisition literature so far (cf. Ekmekçi 1997; Özcan 2000) and new data that she collected from the Frog Story narratives of children. She also included adult narratives and TV news report.

As mentioned before, the results obtained in the experimental studies (Ekmekçi 1990; Özcan 2000) are in line with the predictions of AH. Ketrez, on the other hand, found the influence of PF in frog story of children as the acquisition order can be schematized as {SS; OO} > {OS; SO}. In adult speech, we see a different picture in the sense that OS and SS relative types are the most frequent ones. Thus AH seems to be taking over in adult speech as subject relatives are more

[22] The types given within the same curly brackets are not ordered in relation to one another.

frequent. The results of the TV news reports exhibit the same frequency pattern. Table 3 gives the percentages of adults' and children's responses across four clause types obtained from Frog Story.

Table 3. The responses of children across clause types in Frog Story

Age Group	SS	OS	SO	OO
Adults	8 (23%)	11 (32%)	1 (3%)	6(17%)
3-year-olds	0	0	0	0
5-year-olds	0	0	0	4 (100%)
9-year-olds	5 (33%)	2 (13 %)	1 (6.6%)	5 (33%)
Total (Children's Response)	5 (25%)	2 (10%)	1 (5%)	9 (45%)

Ketrez concludes that children introduce PF strategy in their grammar together with AH and explains the contradictory results by adopting Kirby's (1999) account which is shown in (47).

(47) Hakuta (1981) / Kirby (1999) Model

$S^S > \{O^S; O^O\} > S^O$ (=SS> {OS; OO} > SO)

(Ketrez 2007, p. 6)

Kirby (1990 as cited in Ketrez (2007)) observed that there are some properties that are common to both AH and PF even though two proposals look different: SS-relatives are at the top of both rankings and SO-relatives are always at the end. Based on these observations, he has merged the two hierarchies and come up with the hierarchy above.

Conclusion

This chapter presented a brief review of background literature on studies done on the acquisition of relative clauses crosslinguistically, including Turkish. As the discussion above revealed, the results of the studies carried out on the issue are not uniform and they vary depending on whether the experiment is a production or a comprehension study; whether the data comes from an observational (natural) speech or experimental setting.

This work will be the first of its kind in investigating the production of relative clauses in a typologically different language; i.e. Turkish, an agglutinating language, in an experimental setting which takes all the variables that is found to play a role in the acquisition of relative clauses into consideration. Thus, the present attempts to fill an important gap in the literature.

CHAPTER III

METHODOLOGY

Introduction

In the present study, experimental data was used. Using a picture-cued elicitation task 48 monolingual Turkish-speaking children were tested and the variables that are predicted to affect children's production of relative clauses in Turkish were explored. In what follows I will lay out the design and the procedure of the experiment.

Design

As Turkish differentiates between subject (SR) and nonsubject (NSR) relatives by making use of the particles –yAn and –DIK/-yAcAK respectively, the experiment was designed to elicit relative clauses in a relativization site of various syntactic positions.[23] Relativization sites and syntactic positions explored were i. Subject (19 items), ii. Direct Objects (6 items), iii. Indirect Object (2 items), iv. Passive construction (2 items) and lastly v. genitive-marked NPs (2 items).[24] The examples are given below:

[23] Nonsubject participle suffix with the future reference (i.e. –(y)AcAk) is not included in this study. The findings of the participle suffix -DIK will be generalized to –(y)AcAk as well since they both share the same morphological and syntactic properties.

[24] When relativizing a constituent of a nominal sentence, the auxiliary *ol-* is used as the bearer of the participle suffixes. Nominal sentences are not within the scope of this thesis as they proved to be difficult to elicit from children. Children have a tendency to use ADJ NOUN constructions (şişman çocuk 'fat child', in this particular case) instead of the relative clause construction in (i).

i. şişman ol-an çocuk
fat AUX-PART child
'The child who is fat'

(1) Relativization of Subject Position (i)

adam-ı tekme-le-yen kadın
man-ACC kick-SP woman

'The woman who kicked the man'

(2) Relativization of Direct Object Position (ii)

erkeğ-in öp-tüğ-ü kız
boy-GEN kiss-NSP-3rd sg POSS girl

'The girl whom the boy kissed'

(3) Relativization of Indirect Object Position (iii)

Kadın-ın çiçek ver-diğ-i adam
woman-GEN flower give-NSP-3rd sg POSS man

'The man whom the woman gave flower to'

(4) Passive Construction (iv)

Su-la-n-an çiçek
water-DERV-PASS-SP flower

'The flower which is watered'

(5) Relativization of Genitive-Marked NPs (v)

Baba-ları masal oku-yan çocuk-lar
faher-3rd PLR POSS story read-SP child-PLR

'The children whose father told a story'

The present study has also attempted to investigate the effects of the semantic variables such as reversibility/ nonreversibility (6a & 6b) and syntactic variables such as transitivity/ intransitivity (7a & 7b) on children's production of RCs. To that aim, stimuli were formed by taking these variables into consideration.

(6) a. Kadın-ın tekme-le-diğ-i adam — Reversible RC
woman-GEN kick-DERV-NSP-3rd sg POSS man

'The man whom the woman kicked.'

b. Kız-ın tırman-dığ-ı ağaç — Nonreversible RC
girl-GEN climb- NSP-3rd sg POSS tree

'The tree which the girl climbed'

(7) a. adam-ı tekme-le-yen kadın — Transitive RC
man-ACC kick-SP woman

'The woman who kicked the man'

b. ağla-yan bebek — Intransitive RC
cry-SP baby

'The baby who cries'

Lastly, the function of the relative clause head in the matrix clause, i.e. the position of the N that is modified by the relative clause is diversified in order to see whether there is any effect of it on Turkish children's production of relative clauses. The four types are SS, SO, OS, and OO. The first letter stands for the role of the relative clause in the main clause, i.e. the role of the noun that the relative clause is modifying and the second letter shows the role of the head in the relative clause (that is, the grammatical role that has been extracted). The sentences in (8) exhibit these combinations. In (8a), for instance, the head noun *kadın* 'woman' functions as the subject of the main clause and it has also the subject function in the relative clause. In (8c), however, we see a subject relative clause that appears in an object position.

(8) a. [Adam-ı tekme-le-yen kadın] çok şişman-dı. — SS
man-ACC kick-SP woman very fat-COP

'The woman who kicked the man was very fat.'

b. [Erkeğ-in öp-tüğ-ü kız] gelinlik giy-iyor-du. SO
boy-GEN kiss-NSP-3rd sg POSS girl wedding-dress wear-PRES-COP

'The girl whom the boy kissed was wearing wedding-dress.'

c. Süt-ü [ağla-yan bebeğ-e] ver-e-lim. OS
milk-ACC cry-SP baby-DAT give-OPT-1st plr AGR

'Let's give the milk to the baby who is crying'

d. [Polis-in yakala-dığı-ı hırsız-ı] araba-ya OO
policeman-GEN arrest-NSP-3rd sg POSS thief-ACC car-DAT

koy-acak-lar.
put-FUT-3rd plr AGR

'They will put the thief that the policeman had arrested in the police car'

The four variables employed in the design of the experiment are as follows:

1. The syntactic role of the gap or the element that is relativized inside the relative clause (Subject vs. Nonsubject)
2. The syntactic role of the matrix clause element functioning as the head of the relative clause (Subject vs. Object)
3. The syntactic properties (transitive vs. intransitive) of the sentences with relative clauses
4. The semantic properties (reversible vs. nonreversible) of the sentences with relative clauses

As will be laid out in the next chapter these four variables constitute the *within-subject* variables of the study. A further question that the present experiment has addressed is whether any developmental path can be detected in children's

production of relative clauses. Hence age-related factors constitute the *between-subjects* variable of the study.

Method

Participants

The participants of this study were 48 monolingual Turkish-speaking children (25 boys and 23 girls) aged 3;3 to 8;2 recruited from three middle-class nursery/primary schools in Istanbul. Seven additional children also participated in the experiment but were not included in the analysis as their response rate for items with the target morphology (i.e. relative clause marker) was below 50% which is determined as a cut-off point. The control group of this study consisted of 5 adults, all of whom were university students. The children were equally divided in three age groups. Table 4 gives the profile and the number of the participants.

Table 4. The Profile of the Participants

Age Group	Age Range	Mean	Number
Group 1	3;3-4;6	4;1	16
Group 2	4;7-6;9	5;3	18
Group 3	7;0-8;2	7;5	14
Adults (Control Group)	≥20	-	5

Materials

The materials consisted of 33 pairs of pictures which were presented to the child by using Power Point Presentation (PPP). Thirty three relative clauses, each

corresponding to a unique combination of the four variables : (i) Subject Relative Clause versus Nonsubject Relative Clause; (ii) The Syntactic Function of the Head in the Matrix Clause, i.e. Subject Role versus Object Role; (iii) In/Transitivity and (iv) Non/Reversibility were elicited from each participant. A list of the test items is given in Table 5 below. The stimuli that accompanied these items are given Appendix.

Let us describe a few test items presented in Table 5 across the four variables so that one can read the table. Consider Item 3 below:

Target Item 3: Sahib-i tüm gün [uyu-yan köpeğ-in]-i OS
owner-3rd sg POSS all day sleep- SP dog-3rd sg POSS –ACC

hiç sev-mi-yor-Ø
never love-NEG-PRES-3rd sg AGR

'Its owner does not love the dog which sleeps all day'

The relative clause head *köpek* 'the dog' functions as the direct object of the main clause verb *sev-* 'to love'. Please note that the head noun is marked with the accusative case due to its direct object function. The syntactic function of the relativized head *köpek* 'the dog', however, is the subject of the relative clause; as a result, we have OS type as positively marked in the table. The verb of the relative clause *uyu-* 'to sleep' is intransitive thus the issue of (non)reversibility is inapplicable.

Let us now consider item (22)

Target Item 22: [Kadın-ın tekmele-diğ-i adam] SO
woman-GEN kick-NSP-3rd sg POSS man

çok üzgün-dü-Ø.
very sad-COPULA-PAST-3rd sg AGR

'The man whom the woman kicked was very unhappy'

The relative clause head *adam* 'the man' function as the subject of the main clause. The syntactic function of the relativized head *adam* 'the man' is the direct object of the relative clause; as a result, we end up with SO type. The verb of the relative clause *tekmele-* 'to kick' is transitive so that it is marked under transitive column in the table. The relationship between two noun phrases (NPs) is reversible in the sense that the sentential subject *adam* 'the man' and the NP in the relative clause *kadın* 'the woman' were confusable (e.g. both are animate and human) and both can serve as agents for the action described by the verb in the relative clause. Unlike item (21), in (25) below only one of the two noun-phrases is a plausible agent of the action described by the verb in the relative clause, i.e., it is plausible for a policeman to arrest a thief, but not vice versa., hence the sentence is nonreversible.

Target Item 25: [Polis-in yakala-dığ-ı hırsız]-ı araba-ya
Policeman-GEN arrest-NSP-3rd sg POSS-ACC thief-ACC car-DAT

koy-acak-lar.
put-FUT-3rd plr AGR

'They will put the thief that the policeman had arrested in the police car'

Table 5. Distribution of Subject and Nonsubject Relative Clauses with Proper Case Markers

NO	TARGET ITEMS	SS	OS	OO	SO	INTRANS	TRANS	REVR	NON REVR
1.	Uyuyan bebek		√			√		N.A	
2.	Havlayan köpeğini		√			√		N.A	
3.	Uyuyan köpeğini		√			√		N.A	
4.	Ağlayan bebeğe		√			√		N.A	
5.	Kaçan hırsızı		√			√		N.A	
6.	Merdivenden düşen çocuk		√			√		N.A	
7.	Makasla oynayan çocuğa		√			√		N.A	
8.	Çocuğun yüzünü tırmalayan kız	√					√	√	
9.	Adamın boğazını sıkan kadın	√					√	√	
10.	Çocuğu seven köpek	√					√	√	
11.	Adamı tekmeleyen kadın	√					√	√	
12.	Çocuğun bacağını ısıran köpek	√					√	√	
13.	Süt içen çocukların	√					√		√
14.	Dişlerini fırçalayan çocukların	√					√		√
15.	Yemeğini yiyen çocuk	√					√		√
16.	TV'nu yakından izleyen çocukların	√					√		√
17.	Parmağını kesen çocuğa		√				√		√
18.	Kıza saldıran köpeğe		√				√	√	
19.	Salıncakta sallanan kadın	√					√		√
20.	Kadının bağırdığı adam				√		√	√	
21.	Kadının çiçek verdiği adam				√		√	√	
22.	Kadının tekmelediği adam				√		√	√	
23.	Çocuğun öptüğü kız				√		√	√	
24.	Palyaçonun balon verdiği kız				√		√	√	
25.	Polisin yakaladığı hırsızı			√			√		√
26.	Köpeğin ısırdığı çocuk				√		√		√
27.	Kızın tırmandığı ağaç				√		√		√
28.	Hırsızın girdiği evde			√			√		√

Apart from subject and nonsubject relative clauses given in Table 5, the materials of the study also included structures which have posed problems in the description of Turkish relative clauses with respect to the choice between the two relativization strategies, i.e. subject participle –(y)An and nonsubject participle –DIK as thoroughly discussed in Chapter I, Section 1.2.2 . These are the cases where the genitive-marked target NP is the subject (Item 31) and object (Item 32) of the corresponding underlying sentences and passive-marked verbs as in Items (29) & (30).

Table 6. Distribution of Other Relative Clauses in Turkish

NO	TARGET ITEM	TYPE
29.	Yakalanan hırsızı	Pass RC
30.	Su verilen çiçek	Pass RC
31.	Babaları masal okuyan çocuklar	PossSR
32.	Kadının boğazını sıktığı adam	PossOR
33.	Arkasında yılan olan panda	PostRC-(y)An

Procedure

The stimuli of the picture-cued relative clause elicitation task were presented on a power point. Children were tested individually in an isolated room of the school. Children were shown a pair of pictures on a power point, typically involving two persons or objects which look alike; for example, one picture may depict a boy reading a book and the other a boy cutting papers with a pair of scissors. Relative

clause is the most effective way to describe that particular person or animal because entities were distinguished from each other only by an event.[25]

The child was first shown the pictures and asked to describe them. After the action/person/object in each picture was described, the screen was shut down and the experimenter posed the prompt question to elicit relative clauses from the child (See the example protocol in (1)). To increase the number of relative clauses elicited, the prompt questions are worded carefully. Alternative ways of expressing the same message such as using adjectival and postpositional phrases to describe a person or an animal instead of relative clauses is eliminated since attributive properties (*akıllı* 'smart', *şişman* 'fat', *gözlüklü* 'with glasses') are used in the wording of the questions.

(1) Sample protocols

1. For eliciting subject relative clauses

Scenario:

> Hadi resmi beraber anlatalım. Bu resimde iki bebek var. Bebeklerden biri oyun oynuyor. Diğeri ise ağlıyor çünkü çok acıkmış.
>
> 'Let's describe the pictures together. There are two babies in the picture. One of the babies is playing with his toys and the other one is crying because he is very hungry' (There is a sound file for baby cry)

(The screen that depicts the pictures is shut down and a baby bottle appears on the following slide.)

[25] Restrictive relative clauses are used in the present experiment.

Prompt Question:

Bir biberon sütümüz var. Bu sütü hangi bebeğe verelim?

'We have a baby bottle with milk. Which baby shall we give it to?'

Target Response:

Ağla-yan bebeğ-e verelim.
cry-SP baby-DAT give

'Let's give the milk to the baby who is crying'

2. For eliciting nonsubject relative clauses

Scenario:

Bu resimde çocuklar var. Sanırım bir partideler. Ne kadar güzel kostümleri var değil mi? (Çocukların dikkati kıyafetlere yoğunlaştırılır) Burada bir kız ve bir erkek dans ediyorlar. Burada da başka bir erkek çocuk ve bir kız çocuk var. Erkek çocuk kızı öpüyor.

'There are children in the picture. I think they are at a party. Ohhh, they have very nice dresses, don't they? (Children's attention is drawn to the dresses for the prompt question) In this picture a girl and a boy are dancing. There is another boy and girl in this picture. The boy is kissing the girl. '

Prompt Question:

Hatırlıyor musun, hangi kız gelinlik giymişti?

'Do you remember? Which girl was wearing a wedding-dress at the party?

Target Response:

Erkek-in öp-tüğ-ü kız gelinlik giy-miş-ti.
boy-GEN kiss-NSP-ACC girl wedding-dress wear-EVIDENTIAL-PAST

'The girl whom the boy kissed was wearing wedding-dress.'

The whole session lasted about 10-15 minutes for each child. The order of items in the experiment and the presentation of the test was randomized and counterbalanced across participants. If a child did not respond to a test sentence, the experimenter repeated the prompt question once, waited for a response, and then moved on to the next item. Experimental sessions were audio-taped and the children were rewarded with a colorful sticker regardless of their performance.

Each child responded to 33 pairs of pictures. 19 of these pairs designed to elicit subject relatives, comprising 9 pairs targeting relativization into subject position of intransitive verbs; 10 pairs targeting relativization into subject position of transitive verbs; 6 targeting direct object position, 2 targeting indirect object positions, and lastly 1 item targeting oblique object position. The remaining 5 items are designed to elicit relative clauses with subconstituents of genitive marked NPs and with passive verbs.

Methodological Considerations

Felicity Conditions

As pointed out by Crain (1998), an essential part of designing an elicited production experiment is to understand the pragmatic conditions that are both necessary and sufficient for producing the structure under investigation. This means that in order to successfully elicit a structure from a child, the pragmatics must be exactly right.The target structure under investigation in this study is relative clauses, particularly restrictive relative clauses. Hamburger and Crain (1982) argue that a restrictive relative clause is felicitously used only if there are at least two entities in the context (person, animal, object etc.). Only then the use of restrictive/defining relativization becomes meaningful.

As laid out in Section 3.3.3, the restrictive function of the relative clause is met in the present study since we provided children with two similar entities in the discourse. For example, there are two babies in context: one is crying and the other is playing with his toys. The only way to single out one of these babies from the context is the use of relative clause.

Against this background, we can say that our experimental design meets the condition that underlies restrictive RCs: specifying the category designated by the head referent, and so "provides essential information in the identification of the object being referred to (Fillmore, 1987, as cited in Dasinger & Toupin, (1994)).

Naturalness

Apart from the felicity condition, a further issue for an experimental set-up is the issue of naturalness. The particular function of the target structure we elicit from children in the experimental set-up should correspond to one of the functions of that structure in a natural environment as used by its native speakers.

Dasinger and Toupin (1994) discuss the uses in narrative of relative clauses by children and adults speaking disparate languages (English, German, Spanish, Turkish, and Hebrew). They arrive at a set of four general classes of relative clause functions: (i) Naming referents (NAME), (ii) Situating new referents (SIT NEW), (iii) Situating old referents (SIT OLD) and lastly (iv) Reidentifying old referents (REID).

I direct readers to Dasinger and Toupin (1994) for a detailed discussion of these four discourse functions and focus on the third function "situating old referents (SIT-OLD)" as this is the function that the present experiment employed.

Situating Old Referents (SIT OLD)

A relative clause is used to situate or resituate old, previously mentioned referents, in the ongoing scene of the discourse. This function is typically applied when new information about a previously mentioned referent becomes relevant as it appears or reappears in later scenes. This "situating old referents" function of relative clauses also includes instances of contrastive reference, where one of a set of previously mentioned referents is singled out by means of a distinctive or salient attribute. The rationale behind the present experiment is also the same: new information presented in the prompt question becomes relevant for the previously mentioned and/or described referent in the context.

Dasinger and Toupin (1994) state that SIT-OLD function is one of the latest functions to develop in natural data. Its late emergence, however, does not necessarily reflect a higher cognitive/pragmatic demand. It just shows the relative marginality of its discourse function in natural data. So, we can claim that the way we elicited the structure from children meets the criterion of naturalness as the function of the relative clause exploited in the study has reflexes in natural discourse.

Scoring and Coding

Children's responses were orthographically transcribed and classified by the experimenter. Each response was classified into one of six mutually exclusive response categories as listed below:[26]

[26] I recognize the need for caution when interpreting production data because of the occasional incidence of speech errors, and so I focus here on structures that occurred across participants and across items.

Elicited Answers and Error Types

A. Correct Answer: A well-formed relative clause with correct morphology and syntax as in Example (9) for subject RC and Example (10) for nonsubject RC.

(9) An example for correct answer in subject relative clause (SRC)

Target Item: ağla-yan bebeğ-e
cry-SP baby-DAT

'The baby who is crying'

Correct Answer: ağla-yan bebeğ-e
cry-SP baby-DAT

'The baby who is crying'

(10) An example for correct answer in nonsubject relative clause (NSRC)

Target Item: erkeğ-in öp-tüğ-ü kız
boy-GEN kiss-NSP-3rd sg POSS girl

'The girl whom the boy is kissing'

Correct Answer: erkeğ-in öp-tüğ-ü kız
boy-GEN kiss-NSP-3rd sg POSS girl

'The girl whom the boy is kissing'

Substitutions of *kız* 'girl' or *erkek* 'boy' for *kadın* "woman" or 'child' respectively were permitted. Although they slightly alter the semantics of the relative clauses, the substitution of the relative clause verb with another lexical verb was also scored as a subset of correct RCs on the condition that the elicited verb behaves similarly in terms of the argument structure of the target verb. In Example (11), the relative clause verb *tekmele-* 'to kick' is a transitive verb and it is substituted with another transitive verb *döv-* 'to beat' in the elicited response. Furthermore, *kadın* 'woman' and *adam* 'man' are substituted with *kız* 'girl' and *erkek* 'boy', respectively.

Although the semantics of elicited response differs slightly from the target response, Example (11) was scored as a correct response since the transitivity and reversibility of the item is preserved in child's response.

(11) Target Item: Kadın-ın tekmele-diğ-i adam
woman-GEN kick-NSP-3rd sg POSS man

'The man whom the woman is kicking'

Elicited Answer: Kız-ın döv-düğ-ü erkek
girl-GEN beat-NSP-3rd sg POSS boy

'The boy whom the girl is beating'

B. Reversal Errors: There are three kinds of reversal errors observed in the study.

i. Reversal errors where SRCs are produced as NSRCs: SRC is produced erroneously as an NSRC but the head is correctly identified as in Example (12). Children have replaced –(y)An with –DIk participle in order to extract a subject relative clause.

(12) Target Item: ağla-yan bebeğ-e
cry-SP baby-DAT

'The baby who is crying'

Child Response: *ağla-dığ-ı bebeğ-e
cry-NSP-3rd sg POSS baby-DAT

Intended Meaning: 'The baby who is crying'

ii. Reversal errors where NSRCs are produced as SRCs: NSRC is produced erroneously as an SRC but the head is correctly identified. That is, children use –(y)An strategy to extract a nonsubject relative clause as in the Example (13).

(13) Target Item: erkeğ-in öp-tüğ-ü kız
boy-GEN kiss-NSP-3rd sg POSS girl

'The girl whom the boy is kissing'

Child Response: * erkek öp-en kız
boy kiss-SP girl

Intended Meaning: 'The girl whom the boy is kissing'

iii. Reversal errors where NSRCs are produced as SRCs with a Resumptive Pronoun (RP): A pattern that emerges with the subject relativization strategy is the use of resumptives (Resumptive Pronouns and Resumptive Noun Phrases) by children as illustrated in (14) and (15).[27] That is, the base-generated head position of the head noun is occupied with a pronoun or an NP.

(14) Resumptive Pronoun

Target Item: erkeğ-in öp-tüğ-ü kız
boy-GEN kiss-NSP-3rd sg POSS girl

'The girl whom the boy is kissing'

Child Response: * erkek on-u öp-en kız
boy RP-ACC kiss-SP girl

'The girl whom the boy is kissing her'

Intended Meaning: 'The girl whom the boy is kissing'

(15) Resumptive Noun Phrase

Target Item: erkeğ-in öp-tüğ-ü kız
boy-GEN kiss-NSP-3rd sg POSS girl

'The girl whom the boy is kissing'

[27] The reflexive pronoun *kendi* 'self' is used as a resumptive pronoun in adult Turkish. So, the pronoun *o* 's/he', inflected with proper case markers is a pronoun that is used with fuction of a resumptive pronoun in the present data.

Child Response: * erkek kız-ı öp-en kız
boy girl-ACC kiss-SP girl

'The girl whom the boy is kissing the girl'

Intended Meaning: 'The girl whom the boy is kissing'

C. Head Errors: The head of the relative clause is not identified correctly as in Example (16).

(16) Target Item: erkeğ-in öp-tüğ-ü kız
boy-GEN kiss-NSP-3rd sg POSS girl

'The girl whom the boy is kissing'

Elicited Answer: *kız-ın öp-tüğ-ü erkek
girl-GEN kiss-NSP-3rd sg POSS boy

'The boy whom the girl is kissing'

Intended Meaning: 'The girl whom the boy is kissing'

D. Other Subordinated Structures: Children also had a tendency to use other subordinated structures instead of using relative clauses in the study. More precisely, the relationship between the relative clause and the main clause is expressed by using conditional, reason or cause clauses as exemplified in (17) & (18), respectively.

(17) Target Item: Televizyon-u yakın-dan izle-yen çocuk-lar-ın
television-ACC near-ABL watch-SP child-PLR-3rd plr GEN

göz-ler-i çabuk boz-ul-ur.
Eye-PLR-3rd sg POSS fast go wrong-PASS-AOR

'Children who watch television from a close range incur poor eyesight sooner.'

Elicited Answer: Televizyonu yakından izlerlerse, gözleri çabuk bozulur.

'If children watch television from a close range, they will incur poor eyesight sooner.'

(18) Target Item: Kadın-ın çiçek ver-diğ-i adam
woman-3rd sg GEN flower give-NSP-3rd sg POSS man

çok mutlu-y-du.
very happy-COP-PAST

'The man whom the woman gave flower to was very happy.'

Elicited Answer: Kadın adama çiçek verdiği için adam çok mutluydu.

'The man was very happy because the woman gave flower to him'

E. Passive Convert: As an avoidance of nonsubject relativization in the experiment, children are observed to use passive structures as in (12):[28]

(19) Target Item: Kadın-ın tekme-le-diğ-i adam
woman-GEN kick-NSP-3rd sg POSS man

'The man whom the woman is kicking'

Elicited Answer: tekmele-n-en adam
kick-PASS-SP man

'The man who is kicked'

F. Other Errors: Errors that did not fit into any of the aforementioned categories such as the omission of case-markers (20), relative clause participle-doubling

[28] These conversion errors have not been attested in subject relative clauses.

error (21), and the absence of auxiliary *ol-* 'be' in the compound forms (22) are classified as other errors in the study.

(20) Target Item: Kadın-ın tekme-le-diğ-i adam
woman-GEN kick-NSPP-3rd sg POSS man

'The man whom the woman is kicking'

Elicited Answer: *Kadın tekme-le-diğ-i adam
woman kick-NSP-3rd sg POSS man

Intended Meaning: 'The man whom the woman is kicking'

(21) Target Item: büyü-müş ol-an çocuk
grow-PERF be-SP child

'The child who was grown up'

Elicited Answer: *büyü-yen ol-an çocuk
grow-SP be-SP child

Intended Meaning: 'The child who was grown up'

(22) Target Item: Kafa-sın-ı vur-muş ol-an çocuk için
head- 3rd sg POSS-ACC hit-PERF be-SP child for

'For the child who has hit his head'

Elicited Answer: *Kafa-sın-ı vur-muş çocuk için
head- 3rd sg POSS-ACC hit-PERF child-GEN for

Intended Meaning: 'For the child who has hit his head'

In example (20), genitive case on the NP (possessor) is omitted. In (21), subject participle –yAn is marked both on the lexical verb and auxiliary verb. Lastly, auxiliary *ol-* 'be' which is used for indicating finer specifications of tense and aspect in RCs is missing in (22) which are all unacceptable in adult use.

Table 7 summarizes the elicited answers and error types observed in the present study:

Table 7. Elicited Answers and Error Types

1. Correct Answers	
2. Reversal Errors	i. SRCs are produced as ORCs
	ii.ORCs are produced as SRCs
	iii.ORCs are produced as SRCs with a RP
3. Head Erros	
4. Complex Structures	i. Conditional
	ii.Cause/ Reason
5. Passive Convert	
6. Other Errors	i. The omission of genitive case on the possessor NP
	ii. Double relative clauses
	iii.The absence of auxiliary ol- in compound RCs

Data Analysis

The data collected have been analyzed and evaluated using SPSS 16.0 (Statistical Package for the Social Sciences). In line with the descriptive nature of the study, the means and the standard deviations of all items in the experiment has been calculated and compared to focus on the variables which are considered to be the main factors in the acquisition of Turkish relative clauses.

CHAPTER IV

RESULTS

Introduction

This chapter presents the results and the analysis of the experimental data elicited. As mentioned in the previous section, there are four within-subjects variables that the present experiment employed. They are repeated below:

(1) The syntactic role of the gap or the element that is relativized inside the relative clause (Subject vs. Nonsubject).

(2) The syntactic role of the matrix clause element functioning as the head of the relative clause (Subject vs. Object).

(3) The syntactic properties (transitive vs. intransitive) of the verbs of sentences with relative clauses.

(4) The semantic properties (reversible vs. nonreversible) of the sentences with relative clauses.

The between-subjects factor is age, with the three age groups being identified: Participants were 48 children in three age groups: 3.3-4.5 (4;1), 4.7 - 6.9 (5;3), 7.0 - 8.2 (7;5)

Subject Relative Clauses (SRCs) versus Nonsubject Relative Clauses (NSRCs)

I will first discuss the results of overall production of relative clauses in terms of the target of relativization, i.e. subject relative clauses (SRCs) versus nonsubject relative clauses (NSRCs, henceforth). The results revealed that children in all age groups performed better in the use of SRCs than NSRCs. Table 8 presents the correct and total number of each of the relative clause types (SRCs vs. NSRCs) elicited in the production task from the three age groups of children and the adult group (control group).

Table 8. Correct Use of Relative Clauses by Children and Adults According to the Syntactic Role of the Relativized Element

CHILDREN					ADULTS
	CHILDREN	GROUP1 (M=4;1)	GROUP2 (M=5;3)	GROUP3 (M=7;5)	(>20)
Subject Relative Clauses	97% (792/815)	95% (240/252)	97% (298/307)	99% (254/256)	100% (90/90)
Nonsubject Relative Clauses	27% (79/290)	9, 68% (9/93)	27% (16/92)	51% (54/105)	95% (38/40)

A number of descriptive points can be made with respect to the performance of children. Firstly, a total of 871 relative clauses (792 SRC and 79 ORC) were elicited from Turkish children. As seen in Table 8, a large majority of these were subject relative clauses which resulted in a big asymmetry in children's performance of subject relative clauses vs. nonsubject relative clauses (792 vs. 79, respectively). While the overall error rate is only 3 % in SRCs, it reaches 73% in NSRCs. This

indicates that children experience tremendous difficulties in the use of nonsubject relative clauses.

Furthermore, as illustrated in Figure 4, the effect of age on the production of subject relatives has been very small, i.e., children in all age groups performed well with SRCs. Although there is a decrease in children's error rate (5% in G1; 3 % in G2 and 0, 78% in G3), this decrease in the percentage of error rates with increasing age does not reveal any statistically significant developmental difference across the age groups (1-way ANOVA has been run).

Evidently, children's use of subject relative clauses is well developed from an earlier age and they are cognizant of the structural properties of the construction. Children as young as 3;3 do not appear to have any difficulty in forming subject relative clauses and their performance approximates to adult performance. These results suggest that subject relative clause structure is available to Turkish-speaking children by age 3.

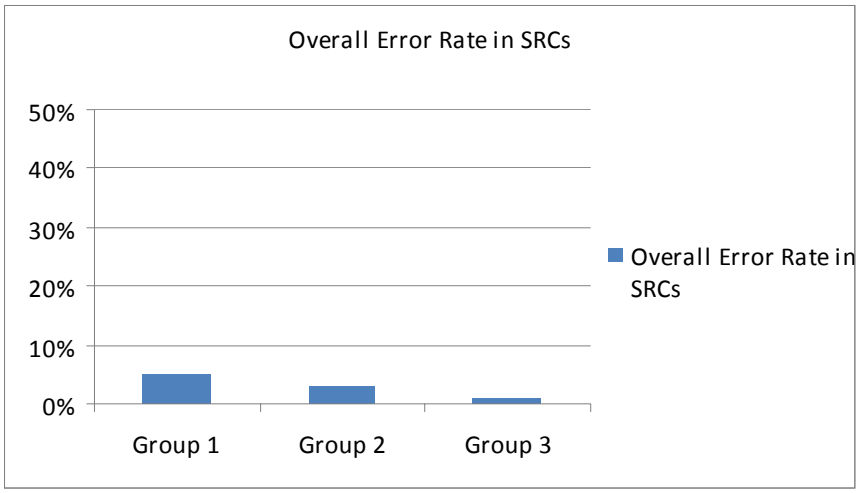


Fig. 4 Overall error rate in production of subject relative clauses per age group

Unlike SRCs, the effect of age on the percentage of correct responses in nonsubject relatives is very significant. As Figure 5 illustrates, children's correct use of NSRCs

increases with age. More precisely, while an error rate of 90% is observed in G1 in the NSRC use, the percentage of errors decreases to 72% in G2 and to 48% in G3. Furthermore, the difference in the error rate observed between G2 and G3 is statistically significant.

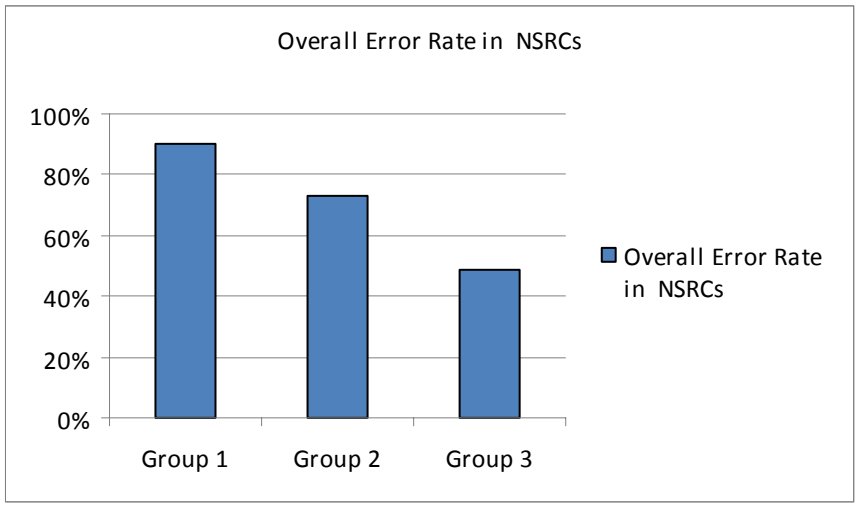


Fig. 5 Overall error rate in production of nonsubject relative clauses per age group

A two-way repeated measure analysis of variance (2-way ANOVA) using an alpha level of .05 revealed that the correct use of nonsubject relative clause construction increases across three age groups. ($F(2, 44) = 11.77$, $p < .001$). Post-hoc comparisons between age groups showed that only the difference between the means for Group 2 and Group 3 is significant ($p < .001$), but not for Group 1 and Group 2 ($p > .05$). Although there is an age-related increase in the correct use of nonsubject relative clauses in the present study, the correct ratio obtained from the oldest group did not even approximate to the adult ratio unlike subject relative clauses.

Two major observations can be made concerning the use of nonsubject relative clause constructions. First, younger children used hardly any nonsubject relatives at 4-years of age (Group 1) and this situation does not significantly change

until the age of 5;3 (Group 2). Second, children's use of nonsubject relative constructions between G2 (5;3) to G3 (7; 5) has more than doubled. Figure 6 summarizes the acquisition path the children follow in the use of subject vs. nonsubject relative clauses for three age groups.

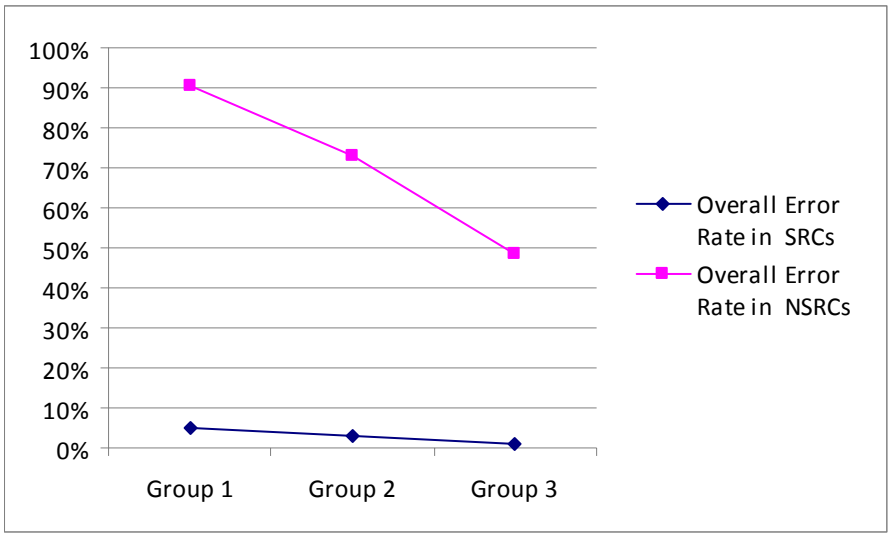


Fig. 6 Comparison of overall error rate in production of subject vs. nonsubject relative clauses across three age groups

While the subject relative clause structure is available to Turkish-speaking children by age 3, the oldest children's correct use of nonsubject relative clause constructions at around age 7 (G3) did not even come close to the correct use of subject relatives by the youngest children at 4 years of age (G1). The motivations behind this finding will be discussed in Chapter 5 in detail.

Analysis of Nonsubject Relative Clause Use

Although children's performance approximate to the adults' performance at an earlier age (3; 3 in this experiment) in the use of subject relative clauses, younger

children hardly ever used nonsubject relative clauses as discussed in Section 4.2. A detailed analysis of the data reveals that there are several strategies used by children to avoid nonsubject relativization in Turkish. Table 9 illustrates the strategies used and the percentage of usage.

Table 9. Distribution of Strategies Used by Children to Avoid Nonsubject Relativization

Answer Types in Nonsubject Relativization	Percentage
Correct Answers (Correct NSRC structure)	20%
Subject Relativization	50,5%
Subordinated Structures (i.e. causal, reason, conditional clauses)	15,5%
Passive Convert	2%
No Response	11.5%

As shown in Table 9 the strategy that the children mostly resorted to to avoid NSRC use has been the use of SRC. As expected, this particular use has given rise to errors. Apart from the use of SRCs in contexts which in fact require NSRCs, children have also used other structures such as passive, causal and conditional clauses which infact have nothing to do with RCs. Only in the so-called passive convert agrammatical use is obtained via a passivized verb which is attached a subject participle.

The most frequently used mechanism to avoid nonsubject relativization has been subject relativization which constituted half of all the responses to nonsubject relative constructions produced by children. Example (1) below gives examples of SRC use in contexts requiring NSRC.

(1) Subject Relativization to Extract Nonsubject Relative Clauses

a. Target Item: kadın-ın bağır-dığ-ı adam
woman-GEN shout-NSP-3rd sg POSS man

'The man whom the woman shouted at'

Child Response: *kadın bağır-an adam
woman shout-SP man

(Subject #10, 4;2)

b. Target Item: erkeğ-in öp-tüğ-ü kız
boy-GEN kiss-NSP-3rd sg POSS girl

'The girl whom the boy kissed'

Child Response: *erkek öp-en kız
boy kiss-SP girl

(Subject #30, 5;7)

There are also a few instances (14 in total) whereby children used NSRCs erroneously in contexts which require SRCs as in (2a&b). Yet, conversion to subject relatives (50,5%) has been observed to be much more frequent than conversion to nonsubject relatives (1,5%) and conversion to nonsubject relatives proved not to be statistically significant.

(2) Nonsubject Relativization to Extract Subject Relative Clauses

a. Target Item: ağla-yan bebeğ-e
cry-SP baby-DAT

'The child who cries'

Child Response: *ağla-dığ-ı bebek-e
cry-NSP-3rd sg POSS baby-DAT

(Subject #4, 3;11)

b. Target Item: merdiven-den düş-en çocuk
ladder-ABL fall-SP child

'The child who fell down the ladder '

Child Response: *merdiven-den düş-tüğ-ü çocuk
ladder-ABL fall-NSP-3rd sg POSS child

(Subject #30, 5;7)

This study also identified general avoidance of nonsubject relativization by other means such as the use of subordinated clauses and passive convert. Children often avoided nonsubject relativization and produced instead relatives with passives as in (3) and subordinated clauses as in (4).

(3) Passive Convert

a. Target Item: polis-in yakala-dığı-ı hırsız-ı
police-GEN arrest-NSP-3rd sg POSS thief-ACC

'The thief whom the police has arrested'

Child Response: yakala-n-an hırsız-ı
arrest-PASS-SP thief-ACC

'The thief who is arrested'

(Subject #32, 5; 1)

b. Target Item: erkek-in öp-tüğ-ü kız
boy-GEN kiss-NSP-3rd sg POSS girl

'The girl whom the boy kissed'

Child Response: öp-ül-en kız
kiss-PASS-SP girl

'The girl who is kissed'

(Subject #37, 7; 0)

(4) Subordinated Structures

a. Target Item: kadın-ın bağır-dığ-ı adam
woman-GEN shout-NSP-3rd sg POSS man

'The man whom the woman shouted at'

Child Response: Kadın bağırdığı için adam kulaklarını tıkamıştı.

'The man covered his ears as the woman shouted at him '

(Subject #21, 4;10)

b. Target Item: Köpeğ-in ısır-dığ-ı çocuğ-un
dog-GEN bite-NSP-3rd sg POSS child-GEN

can-ı (yan-dı-Ø).
body-3rd sg POSS hurt-PAST-3rd AGR

'The child's body who the dog bit hurt'

Child Response: Köpek çocuğun bacağını ısırdığı için çocuğun canı yandı.

'The child's body hurt as the dog bit him'

(Subject #25, 5;1)

Results of the present study have indicated that the strategies children employed to avoid nonsubject relativization have differed in type and frequency across age groups as illustrated in Table 10 and Figure 7.

Table 10. Distribution of Responses in Nonsubject Relative Clauses as a Function of Age and Avoidance Strategies

Answer Types in Nonsubject Relativization	Percentage		
	Group1	Group2	Group3
Correct Answers	7%	11%	45%
Subject Relativization	64%	51%	36%
Subordinate Structures	9%	28,5%	6,5%
Passive Convert	0%	0,7%	5,5%
No Response	19,5%	9%	7%

It is evident that children's correct responses increase as children get older. The most frequent mechanism that children used to avoid nonsubject relativization is subject relativization in all age groups. Yet, this strategy shows a steady decrease as a positive function of age. Subject relativization strategy is followed by the use of subordinated clauses in terms of its frequency. An interesting pattern, however, emerges in the use of subordinated clauses across age groups. While the youngest and oldest groups have used this strategy rarely, we have observed that children in Group2 have used subordinated clauses to retrieve nonsubject relative clauses quite frequently. Lastly, the use of passive constructions in contexts which in fact require NSRCs increases as the children grow older. Figure 7 presents an illustration of these observations.

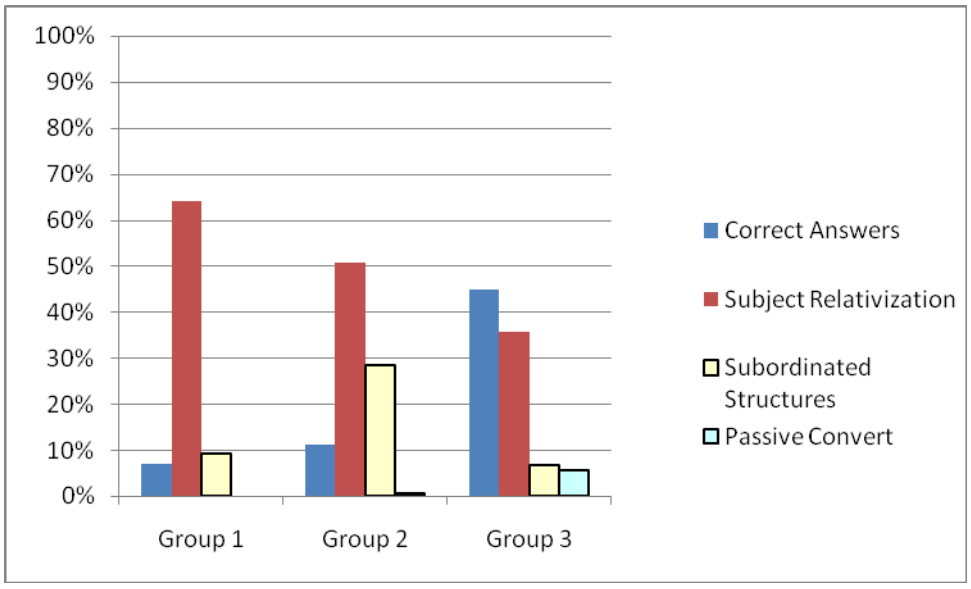


Fig. 7 A comparison of correct responses and strategies used to avoid nonsubject relativization in three age groups

Let us now turn to the specifics of the errors and responses children produced in the NSRC requiring items.

Subject Relativization Strategy

Children used subject relative clauses in contexts which in fact require nonsubject relative clauses. That is, target nonsubject relative clauses are often formed with subject relative clause morphology as in (5) which is named as 'subject relativization strategy' in this study. One point that needs attention is that when I call subject relativization, I just refer to the children's use of –(y)An morphology on the items which in fact require –DIK morphology in adult grammar. So, the operational definition of the term 'subject relativization' does not project to the syntax of these particular items. Actually, as can be observed from the given examples, children have preserved the word order in nonsubject relative clauses although they have preferred subject relative clause morphology on the verb. In sentence (5), for

example, *erkek* 'boy' is the agent and *kız* 'girl' is the theme of the verb in relative clause *öp-* 'to kiss' in the target item. We observe the same word order in the child's response. The only difference in child response is the choice of subject relative clause participle –(y)An over nonsubject participle –DIK.

(5) Target Item: erkeğ-in öp-tüğ-ü kız
boy-GEN kiss-NSP-3rd sg POSS girl

'The girl whom the boy kissed'

Child Response: *erkek öp-en kız
boy kiss-SP girl

(Subject #30, 5;7)

Unfortunately, children occasionally left out the subject of the nonsubject relative clause (e.g. ___ *çiçek ver-en adam* > *kadın-ın çiçek ver-diğ-i adam*), producing utterances with the same order and morphology as in SRs. This omission of the relative clause subject rendered the analysis difficult because whether the children were producing an SRC or NSRC was not clear. Yet, the clarification question as the one given in (6) below shows that children were producing NSRCs with SRC morphology and dropping the relative clause subject in line with the pro-drop nature of the language. Notice that as children use subject relativizer –(y)An, the relative clause subject is in nominative form.

(6)

a. Target Item : Kadın-ın çiçek ver-diğ-i adam
woman-GEN flower give-NSP-3rd sg POSS man

'The man whom the woman gave flower to'

Experimenter : Hangi adam sence çok mutlu olmuştur?

'In your opinion, which man had been very happy? '

Child Response: *çiçek ver-en adam
flower give-SP man

Experimenter : Kim çiçek veriyor?

'Who is giving the flower?'

Child Response: Kadın veriyor.

'The woman is giving (the man the flower).'

(Subject #9, 4; 1)

b. Target Item: erkeğ-in öp-tüğ-ü kız
boy-GEN kiss-NSP-3rd sg POSS girl

'The girl whom the boy kissed'

Child Response: * öp-en kız
boy kiss-SP girl

Experimenter : Kim öpüyor?

'Who is kissing?'

Child Response : Erkek öpüyor.

'The boy is kissing'

(Subject #25, 5; 2)

Children were also observed to have a tendency to drop the subject of the relative clauses when they used nonsubject relative morphology correctly as exemplified in (7a) & (7b)

(7)

a. Target Item : Kadın-ın çiçek ver-diğ-i adam
woman-GEN flower give-NSP-3rd sg POSS man

'The man whom the woman gave flower to'

Experimenter : Hangi adam sence çok mutlu olmuştur?

'In your opinion, which man had been very happy? '

Child Response: çiçek verdiği adam
flower give-NSP-3rd sg POSS man

(Subject #22, 5; 1)

b. Target Item : Palyaço-nun balon verdiğ-i kız
clown-GEN balloon give-NSP-3rd sg POSS girl

'The girl whom the clown gave balloon to'

Experimenter : Hangi kız elbise giymişti?

'Which girl wore a dress?'

Child Response: balon verdiği kız
balloon give-NSP-3rd sg POSS girl

(Subject #4, 3; 11)

An interesting pattern that has emerged with the subject relativization strategy is the massive use of "resumptives" by children.[29] A large proportion of the nonsubject relatives produced by children between the ages of 3 to 7 contained "a resumptive pronoun" as well as "resumptive noun phrases (NPs)" both of which are

[29] Resumptive pronouns or resumptive NPs are never attested in the SRC use in the data of the present study. The term "resumptive" is used in a theory-neutral sense in this chapter.

ungrammatical in standard adult Turkish.[30] Thus, the term resumptive includes both resumptive pronouns and full resumptive noun phrases (NPs) as illustrated in (8) and (9), respectively.

(8) Resumptive Pronouns

a. Target Item: [erkeğ-in öp-tüğ-ü] kız
boy-GEN kiss-NSP-3rd sg POSS girl

'The girl whom the boy kissed'

Child Response: *[[erkek on-u öp-en] kız]
boy RP-ACC kiss-SP girl

(Subject #33, 6;1)

b. Target Item: [Palyaço-nun balon verdiğ-i] kız
clown-GEN balloon give-NSP-3rd sg POSS girl

'The girl whom the clown gave balloon to'
Child Response: *[[Palyaço on-a balon veren] kız]
clown RP-DAT balloon give-SP girl

(Subject #5, 4;0)

[30] One point that needs attention in relation to resumptives is what I named as "restarting strategy". Most of the children gave their responses first without using resumptives when they used subject relativization for nonsubject relativization and then they immediately corrected themselves by inserting a resumptive as illustrated below:

i. Target Item: erkeğ-in öp-tüğ-ü kız
boy-GEN kiss-NSP-3rd sg POSS girl

'The girl whom the boy kissed'

Child Response: *erkek öp-en kız
boy kiss-SP girl
…
*erkek kız-ı öp-en kız
boy girl-ACC kiss-SP girl

(Subject #32, 5; 11)

(9) Resumptive NPs

a. Target Item: [erkeğ-in öp-tüğ-ü] kız
boy-GEN kiss-NSP-3rd sg POSS girl

'The girl whom the boy kissed'

Child Response: *[[erkek kız-ı öp-en] kız]
boy girl-ACC kiss-SP girl

(Subject #32, 5;11)

b. Target Item: [Palyaço-nun balon verdiğ-i] kız
clown-GEN balloon give-NSP-3rd sg POSS girl

'The girl whom the clown gave balloon to'

Child Response: *[[Palyaço kız-a balon veren] kız]
clown girl-DAT balloon give-SP girl

(Subject #17, 4;7)

Resumptive pronoun or resumptive NP strategies of relativization is used both in the relativization of direct (8a & 9a) and indirect objects (8b & 9b). A further point that can be clearly seen from the given examples is that resumptive pronouns or resumptive NPs are inflected with proper case markers, i.e. accusative in the cases of direct objects (8a & 9a) and dative in those of indirect objects (8b & 9b). In other words, resumptives follow the case feature of the noun head in the deep structure as illustrated in (10).

(10)

a. Erkek kız-ı öp-üyor- Ø
boy girl-ACC kiss- PRES-3rd sg AGR

'The boy is kissing the girl.'

b. Palyaço kız-a balon ver-iyor- Ø
clown girl-DAT balloon give- PRES-3rd sg AGR

'The clown is giving balloon to the gir.'

The implications of these case inflected resumptives in relation to children's acquisition of nonsubject relative clauses will be discussed thoroughly in Chapter 5.

Children's use of resumptive pronouns and resumptive NPs in subject relativization strategy for nonsubject extraction is observed to vary based on two factors. Firstly, the semantic properties of the sentences with relative clauses (reversibility vs. nonreversibility) were found to be highly significant in children's use of resumptives. While children produced 41% of all subject relativization instances with resumptives in reversible nonsubject relative clauses, they used only 10% for nonreversible nonsubject relative clauses as can be seen in Table 11. A correlated groups t test compared the mean of resumptive use in reversible and nonreversible NSRCs. The results were found to be statistically significant, $t(47) = 6.00$, $p < .001$, suggesting that children are more in need of resumptives in reversible NSRCs ($M = .54$, $SD = .49$) than in nonreversible NSRCs ($M = .07$, $SD = .22$). The reasons of this distribution will be discussed in the next chapter.

Table 11. Distribution of Resumptive Use in Reversible vs. Nonreversible NSRCs

	Subject Relativization Strategy	Resumptive Use
Reversible Nonsubject Relative Clauses	52,5% (129/245)	41% (54/129)
Nonreversible Nonsubject Relative Clauses	49% (69/141)	10% (7/69)

The second factor that affected the use of resumptives has been observed to be age. As can be seen in Figure 8, the youngest group rarely used resumptives and there is an increase in the use of resumptives in G2 and G3.

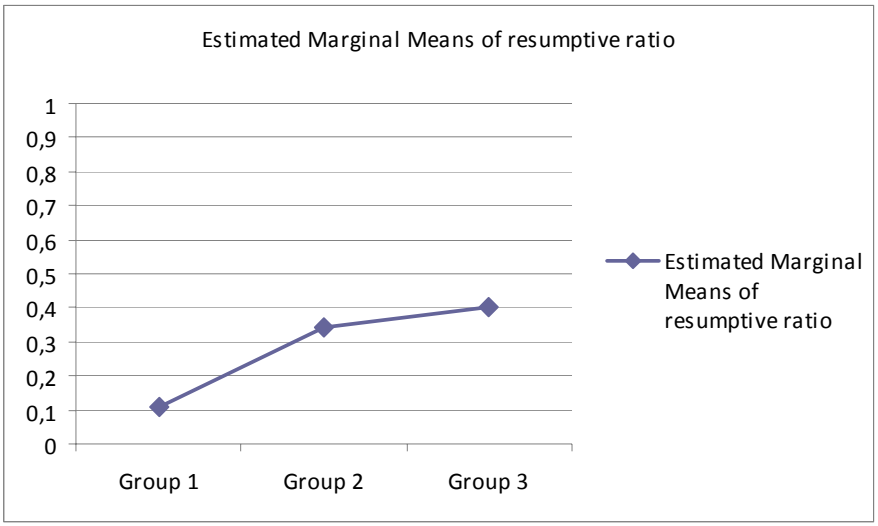


Fig. 8 Distribution of means for resumptive use across age groups

2-way ANOVA using an alpha level of .05 related the use of resumptives to the three age groups. The results revealed that the use of resumptives by G3 was highly statistically significant compared to G1 and G2 ($F(2, 44) = 37$, $p < .001$). Table 12 presents the mean score of resumptive use in three age groups. It seems that children

use more resumptives in their production of nonsubject relativization as their age increases.

Table 12. Mean Score of Resumptive Use as a Function of Age

age	Mean	Std. Deviation	N
1	,1188	,16008	16
2	,3333	,33255	18
3	,4071	,43406	14
Total	,2833	,33917	48

It has been suggested that the use of resumptives in children's relatives is an indication of nonmovement or of an incompletely developed trace theory. According to this theory, resumptives may occur either as trace spell-outs or base-generated pronouns (cf. Safir (1986); Shlonsky (1992)). In either option, resumptive pronoun fills the site of relativization and is interpreted as a variable. Young children insert a resumptive element in the place of the gap since they experience difficulties while processing the gap. So, the presence of the resumptive enables the processor to receive all the information necessary to recognize the relativized syntactic role, i.e. the chain between the gap and the head is easily formed.

The use of resumptive pronouns and their distribution in my data, however, does not necessarily points to an incompletely developed trace theory as widely discussed in the literature but a strategy that I will name as "disambiguating strategy" whose discussion I postpone for the next chapter. For now, I just want to direct the reader's attention to the fact that Turkish children use resumptives much more frequently in reversible NSRCs than nonreversible NSRCs and the resumptive use increases by age.

Use of Subordinated Structures in Place of Relative Clauses

As illustrated in Table 9, another strategy which children resorted to in order to avoid nonsubject relativization is the use of subordinated structures such as cause, reason and conditional clauses. Children responded to *hangi* 'which' question in the experiment by giving subordinated structures which modify the main clauses in terms of reason, cause, and some other logical sense such as conditional. Although these interpretations are implicitly signaled by the relation between relative clause and main clause in some test items (see Example 11), giving a causal, reason or conditional clause as an answer to *hangi* 'which' question is not pragmatically relevant.

(11) Experimenter : Hangi adam sence çok mutlu olmuştur?

'In your opinion, which man had been very happy? '

Target Item : Kadın-ın çiçek ver-diğ-i adam
woman-GEN flower give-NSP-3rd sg POSS man

'The man whom the woman gave flower to'

Child Response: Kadın adama çiçek verdiği için adam çok mutlu olmuştur.

'The man became very happy because the woman gave flower to him.'

(Subject #16, 4;7)

One may attribute this tendency to the difficulty children experience with relative clause construction itself rather than to the difficulty with nonsubject relative clauses *per se*. However, I argue that children's preference stems from the difficulties that they experience with the relativization of nonsubject relative clauses itself. The

evidence comes from the discrepancy in the percentages of complex structures children used in subject and nonsubject relative clauses. While children only answered less than one percent (0,9%) of SRCs with complex clauses, they responded to 15,5% of NSRCs with complex clauses. It is obvious from the given percentages that children do not experience difficulties with the function of the relative clauses, i.e. their being a modifier clause. Instead, the source of the difficulty appears to be resulting from the morphological or syntactic complexity of the nonsubject relative clauses, which will be discussed thoroughly in the next chapter.

A detailed analysis of the subordinated structures use revealed an interesting pattern in the percentage and distribution of the structures used across age groups as illustrated in Figure 9.

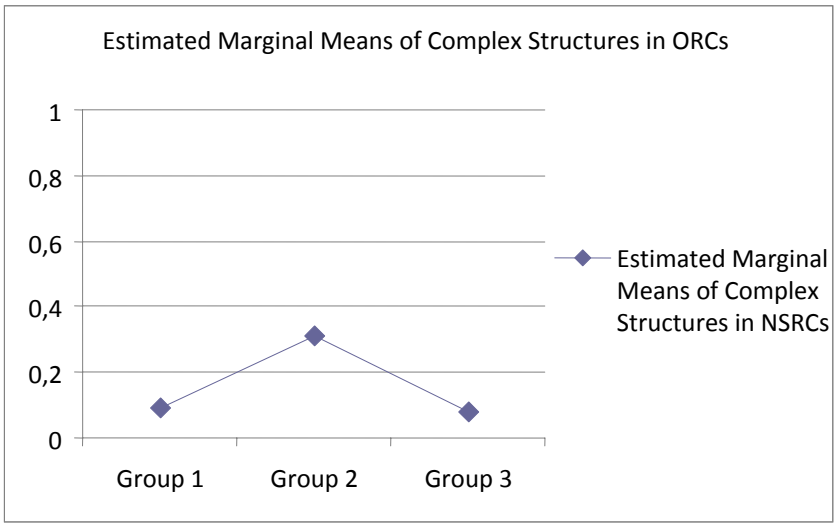


Fig. 9 Means of subordinated structure use strategy across age groups

As Figure 9 illustrates G1 and G3 behave similarly in their use of subordinated structures for nonsubject relativization whereas the usage increases considerably in G2. However, one would expect a higher percentage of this particular use in G1 rather than G2, since the youngest group is predicted to experience more difficulties

with nonsubject relativization. The fact that G1 used this strategy less frequently may signal that these particular subordinated clauses are not fully mastered around the age of 4. When these structures are well established in children's grammar, they make use of them to avoid nonsubject relativization. And lastly, it appears that children give up this use of incompatible structures when they grow older and this may of course be due to their mastery of the nonsubject relative clauses.

Passive Convert

The last strategy identified for an avoidance of nonsubject relativization in the data is passivization, as in (12) and (13). As discussed in Chapter I, subject participle marker –(y)An is used with passive structures in Turkish.

(12) Target Item: Kadın-ın tekme-le-diğ-i adam
woman-GEN kick-DERV-NSP-3rd sg POSS man

'The man whom the woman kicked.'

Child Response: tekme-le-n-en adam
kick-DERV-PASS-SP man

'The man who is kicked'

(Subject #23, 5;1)

(13) Target Item: polis-in yakala-dığı-ı hırsız-ı
police-GEN arrest-NSP-3rd sg POSS thief-ACC

'The thief whom the police has arrested'

Child Response: yakala-n-an hırsız-ı
arrest-PASS-SP thief-ACC

'The thief who is arrested'

(Subject #35, 7;1)

The distribution of passive convert across age groups as can be seen in Figure 10 reveals an interesting pattern. While the youngest group (G1) hardly ever used this strategy, there is a significant increase in the use of passive convert in G3.

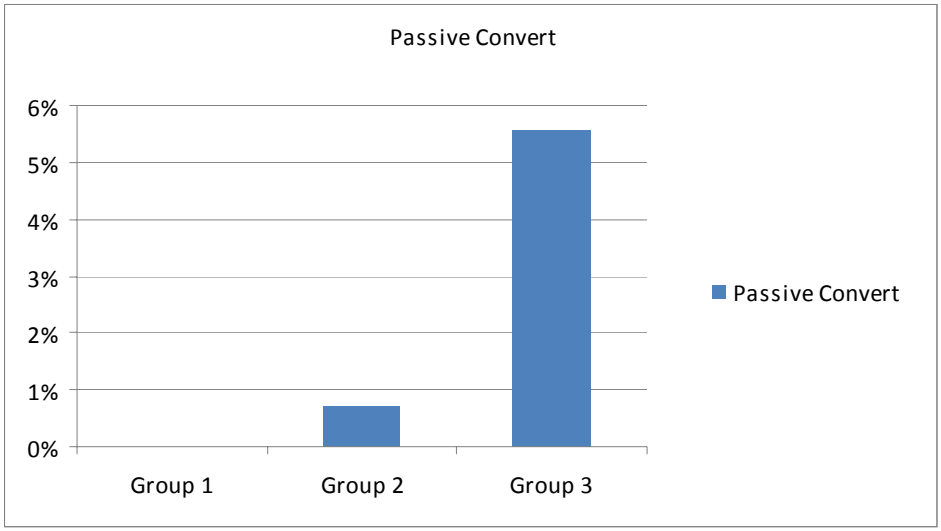


Fig. 10 Percentages of passive convert across age groups

The time at which children use this particular strategy corresponds to the period that children use passive morphology correctly. Children appear to under-mark the passive voice morphology on the verb although they use correct relative clause participle as illustrated in (14) & (15). In the example below, we see that the verb is not inflected with the passive morpheme {-n}, thus, the verb is in active form. Yet, proper relative clause participle –(y)An is selected.

(14) Target Item: Su-la-n-an çiçek
water-DERV-PASS-SP flower

'The flower which is watered'

Child Response: *su-lu-yan çiçek
water-DERV-SP flower

(Subject #3, 3; 9)

(15) Target Item: yakala-n-an hırsız
arrest-PASS-SP thief

'The thief who is arrested'

Child Response: *yakala- yan hırsız
arrest-SP thief

(Subject #20, 4; 10)

When children acquire the morphological properties of passives, i.e. marking the verb with the proper suffixes, the frequency of the use of passivization strategy for nonsubject extraction increases in their responses as can be seen in Figure 10. Unlike conversion to subject relativization and use of subordinated structures, passive convert does not yield ungrammaticality.

Analysis of Correct Answers

Although there are some children who correctly used nonsubject relative clauses in each age group as illustrated by the examples in (19)-(21), the study detected at least four identifiable stages in children's acquisition of nonsubject relative clauses over time:

(i) Subject relative clause morphology on the verb as a nonsubject extraction (Example 16)

(ii) Subject Relativization Strategy with Resumptive Use (Example 17)

(iii) The emergence of nonsubject clause morphology (-DIK) on the relative clause verb (Example 18)

(iv) The emergence of the genitive suffix on the subject of the relative clause along with the nonsubject relative particle on the relative clause verb, i.e. the correct use (Example 19-21)

(16) Target Item: erkeğ-in öp-tüğ-ü kız
boy-GEN kiss-NSP-3rd sg POSS girl

'The girl whom the boy kissed'

Child Response: *erkek öp-en kız
boy kiss-SP girl

(Subject #1, 3;3)

(17) Target Item: erkeğ-in öp-tüğ-ü kız
boy-GEN kiss-NSP-3rd sg POSS girl

'The girl whom the boy kissed'

Child Response: *[[erkek kız-ı öp-en] kız]
boy girl-ACC kiss-SP girl

(Subject #32, 5;11)

(18)

a. Target Item : Kadın-ın bağır-dığ-ı adam
woman-GEN shout-NSP-3rd sg POSS man

'The man whom the woman shouted at'

Child Response: * kadın-Ø bağırdığı adam
woman- Ø shout-NSP-3rd sg POSS man

(Subject #5, 4;0)

b. Target Item : Kadın-ın çiçek ver-diğ-i adam
woman-GEN flower give-NSP-3rd sg POSS man

'The man whom the woman gave flower to'

Child Response: *kadın-Ø çiçek verdiği adam
woman- Ø flower give-NSP-3rd sg POSS man

(Subject #23, 5;2)

(19) Target Item : Polis-in yakala-dığ-ı hırsız-ı
police-GEN arrest-NSP-3rd sg POSS thief-ACC

'The thief whom the police has arrested'

Child Response: Polis-in yakala-dığ-ı hırsız-ı
police-GEN arrest-NSP-3rd sg POSS thief-ACC

'The thief whom the police has arrested'

(Subject #2, 3;5 →Group1)

(20) Target Item : Kız-ın tırman-dığ-ı ağaç
girl-GEN climb- NSP-3rd sg POSS tree

'The tree which the girl climbed'

Child Response: Kız-ın tırman-dığ-ı ağaç
girl-GEN climb- NSP-3rd sg POSS tree

'The tree which the girl climbed'

(Subject #20, 4;8 →Group2)

(21) Target Item : Kadın-ın çiçek ver-diğ-i adam
woman-GEN flower give-NSP-3rd sg POSS man

'The man whom the woman gave flower to'

Child Response: Kadın-ın çiçek ver-diğ-i adam
woman-GEN flower give-NSP-3rd sg POSS man

'The man whom the woman gave flower to'

(Subject #35, 6;9 →Group3)

In (16), we observe subject relative marker –(y)An on the relative clause verb. The child uses subject clause morphology to extract nonsubject relative clause. Following this stage, children start to use resumptives along with the subject relativization

(Example 17). In the third stage, nonsubject particle emerges on the relative clause verb but genitive suffix is missing on the subject of the relative clause as can be clearly seen in (18). An interesting finding is that the nonsubject particle seems to be inflected with the 3rd person singular possessive suffix even in the absence of the 3rd person singular genitive suffix. This brings to mind the idea that children may be regarding the "–dığı" form as a single chunk, i.e., a single morpheme. They may not be decomposing the form as: Verb+ DIk + Possesive but "–dığı" as nonsubject participle on par with –(y)An. Thus, they do not add a genitive marker on NP since there is nothing triggering a genitive in the construction.[31] In the last stage, they overcome the difficulties that the nonsubject relative clause morphology and structure pose and use the construction correctly as exemplified in (19) to (21).

[31] We have also observed utterances in which children add genitive suffix on the subject of the relative clause while still keeping subject particle , i.e. –(y)An on the relative clause verb as in the following examples. It is clear that children are entairtaining different combinations before coming up with the correct morphology.

(ii) a. Target Item : Kadın-ın tekme-le-diğ-i adam
woman-GEN kick-DERV-NSP-3rd sg POSS man

'The man whom the woman kicked.'

Child Response : *Kadın-ın tekme-le-yen adam
woman-GEN kick-DERV-SP man

(Subject #30, 5; 7)

b. Target Item : Kız-ın tırman-dığ-ı ağaç
girl-GEN climb- NSP-3rd sg POSS tree

'The tree which the girl climbed'

Child Response : *Kız-ın tırman-an ağaç
girl-GEN climb-SP tree

(Subject #21, 5; 1)

Although all the intermediate/ intermediary stages of the nonobject relative clause formation mentioned above have not been observed in a single child as this is a cross-sectional study, we can hypothesize that nonsubject relativization in Turkish develops in the manner as suggested in Figure 11.

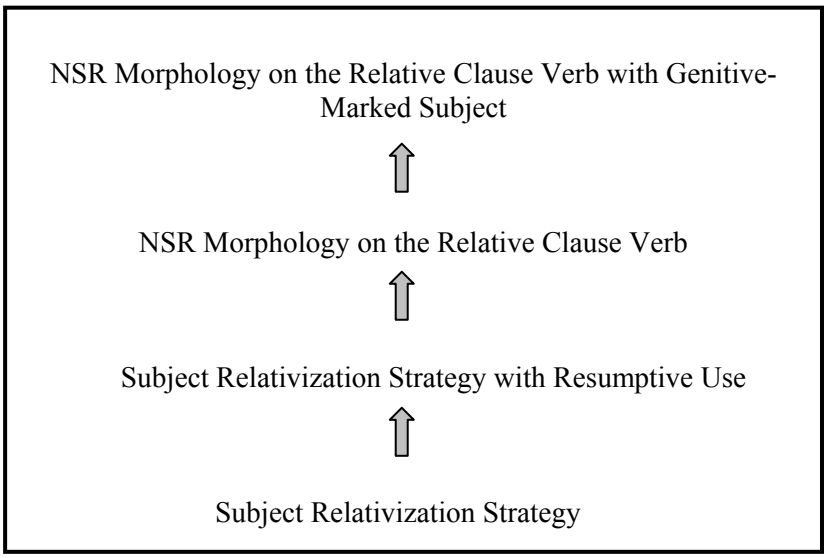


Fig. 11 The history of the nonsubject relative clause formation

The Effect of (In)Transitivity and (Non)Reversibility of the Sentences with Subject and Nonsubject Relative Clauses

The syntactic (in/transitivity) and semantic (non/reversibility) properties of the sentences with relative clauses have been found to be a significant variable in children's comprehension and production of subject and nonsubject relative clauses in the literature (cf. Diessel & Tomasello (2000), Diessel (2004), Diessel & Tomasello (2005), Brandt, Diessel & Tomasello (2008)). There is no prior study that investigated these variables in the acquisition of relative clauses in Turkish. In the present study, I have also taken these variables into consideration and formed the test items accordingly.

Table 13 presents the correct and total number of each of the relative clause types elicited in the production task from the three age groups of children with respect to intransitivity and transitivity in subject relative clauses.[32] A two-way ANOVA did not reveal any statistically significant difference in terms of (in) transitivity in subject relative clauses.

Table 13. Correct Production of Subject Relative Clauses as a Function of Age and In/Transitivity

CHILDREN				ADULTS
	GROUP1	GROUP2	GROUP3	
Intansitive SRCs	96% (88/91)	94% (106/113)	100% (93/93)	100% (35/35)
Transitive SRCs	95% (124/131)	98,7% (157/159)	98,5% (132/134)	100% (50/50)

As can be clearly seen from Figure 12, children's performance did not differ significantly with respect to the different clause types. Contrary to the results of the comprehension studies mentioned earlier, in production subject relatives with transitive verbs do not appear to pose great difficulties to children than subject relative clauses with intransitive verbs.

[32] The variable (in)transitivity is only applicable to subject relative clauses since the relative clause verb in nonsubject relative clauses are by definition either transitive or ditransitive.

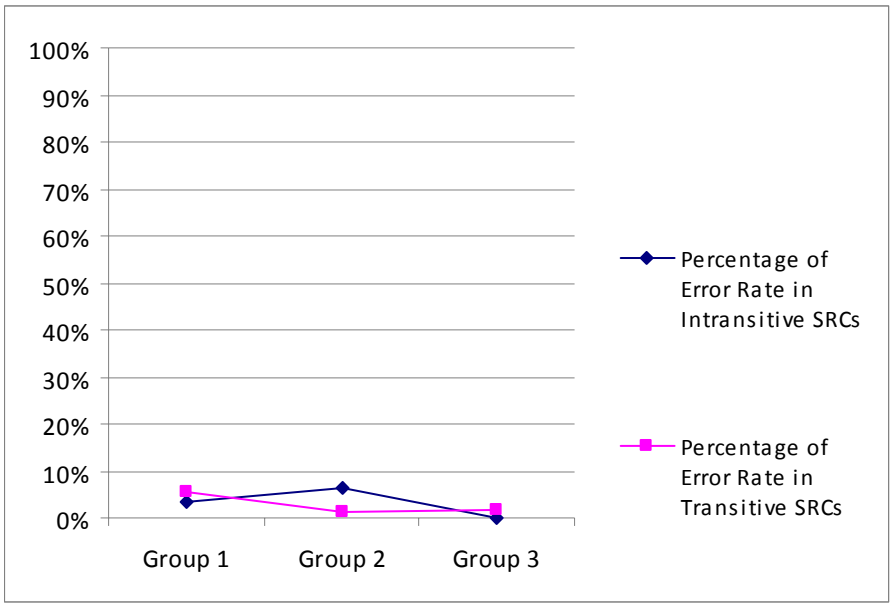


Fig. 12 Comparison of overall error rate in production of intransitive SRCs vs. transitive SRCs across three age groups

In contrast to the syntactic property of (in) transitivity, the semantic property of (non)reversibility has been observed to have an effect on children's production of relative clauses. Table 14 presents both the correct and the total number of each of the relative clause types elicited in the production task from the three age groups of children with respect to the (non)reversibility in subject and nonsubject relative clauses.

Table 14. Correct Production of Subject and Nonsubject Relative Clauses as a Function of Age and Non/Reversibility

	CHILDREN			
	GROUP1	GROUP2	GROUP3	ADULTS
Subject Relative Clauses Reversible SRCs	96,5% (84/87)	99% (104/105)	(99%) (89/90)	100% (30/30)
Nonreversible SRCs	92% (68/74)	98% (88/89)	99% (72/73)	100% (30/30)
Nonsubject Relative Clauses Reversible NSRCs	10% (6/59)	11,% (6/54)	50% (33/66)	96% (24/25) [33]
Nonreversible NSRCs	6% (2/34)	18,5% (7/38)	48,5% (17/35)	93% (14/15)

A correlated group t test compared the mean of reversible and nonreversible subject relative clauses and did not reveal any statistically significant difference between age groups (Figure 13). Thus, we see once again that contrary to comprehension studies, non/reversibility does not play any role in the production of subject relative clauses in Turkish.

[33] One of the participants used *hani* and *ya* 'well, after all or you know' particles which is considered to be the equivalents of relative clauses in Turkish. As the aim of this study is to test nonfinite relative clauses marked with –(y)An and –DIK, I did not include the responses with these particles as correct answers.

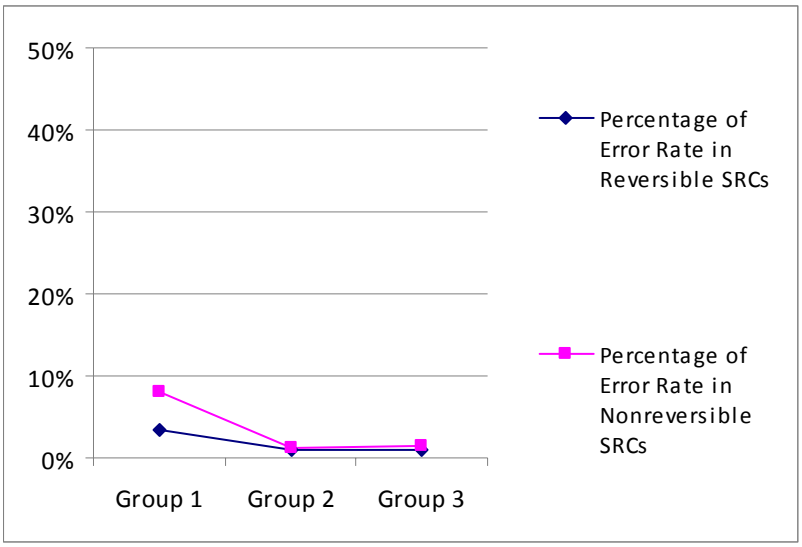


Fig. 13 The rates of errors in the production task from the three age groups of children with respect to the (non)reversibility in subject relative clauses

Unlike subject relative clauses, the semantic property of (non) reversibility was found to have a role in the production of nonsubject relative clauses. The results were found to be statistically significant, t (47) = 6.00, $p < .001$, suggesting that children produce nonreversible NSRCs (M = .23, SD= .31) better than reversible NSRCs (M =. 16, SD=.29). Figure 14 presents the error rate of nonreversible and reversible nonsubject relative clauses across three age groups.

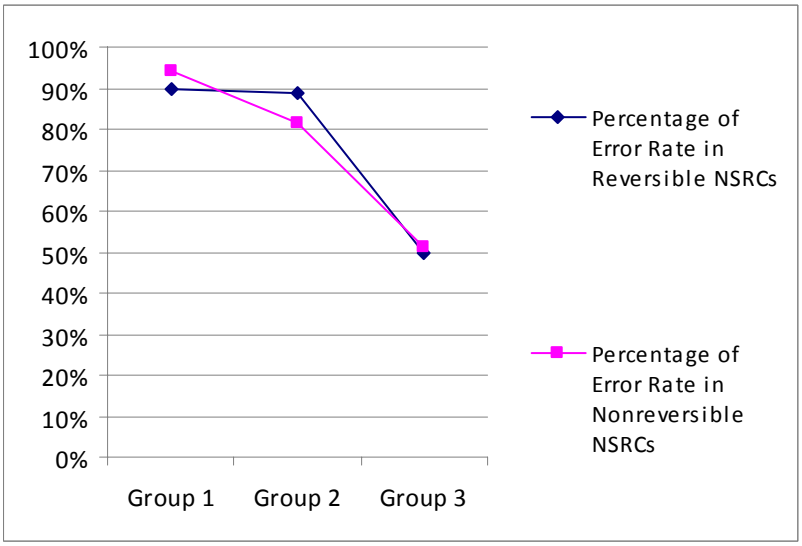


Fig. 14 The rates of errors in the production task from the three age groups of children with respect to the (non)reversibility in nonsubject relative clauses

In sum, the syntactic (in/transitivity) properties of the sentences with relative clauses have been found to be a nonsignificant variable in children's production of relative clauses in Turkish. The semantic (non/reversibility) properties of the sentences with relative clauses, on the other hand, have been found to be sensitive to the syntactic function of the relativized head. That is, while non/reversibility has a significant effect in the production of nonsubject relative clauses, it has no effect in that of subject relative clauses.

The Syntactic Role of the Head in the Matrix Clause

The syntactic role of the relative clause head in the matrix clause has also been found to be a significant variable in children's acquisition of relative clauses, particularly in comprehension (cf. Sheldon (1974), Clancy, Lee and Zoh (1986 as cited in Diessel 2004)). In this study, the test items have been designed to see the effect of this variable in Turkish-speaking children's production of relative clauses. The results indicated that the syntactic role of the relativized head does not play a role in children's production of relative clauses. This may stem from the design of the experiment in the sense that children are provided with the relativized head in the prompt question which indicates its function in the matrix clause as exemplified in (22) and (23).

(22) Experimenter : Hangi adam sence çok mutlu olmuştur?

'In your opinion, which man had been very happy? '

Target Item : Kadın-ın çiçek ver-diğ-i adam çok
woman-GEN flower give-NSP-3rd sg POSS man very

mutlu ol-muş-tur.
happy be-EVIDENT-DIR

'The man whom the woman gave flower to became very happy.'

(23) Experimenter : Bu sütü hangi bebeğe verelim?

'Which baby shall we give baby bottle to?'

Target Item: ağla-yan bebeğ-e
cry-SP baby-DAT

'The baby who cries'

In (22), information-seeking question phrase *hangi adam* 'which man' occupies the subject slot whereas the question phrase in (23) *hangi bebeğe* 'which baby' occupies the indirect object position of the matrix clause. Besides, the head noun in (22) is in nominative form and the one in (23) is in dative form which signal their subject and indirect object functions in the matrix clause. Children were likely to substitute these information-seeking phrases with relevant answers so that their responses do not get affected by the syntactic function of the relativized head in the matrix clause.

Conclusion

In this chapter, the results of the study have been presented in relation to the four within-subjects variables introduced at the beginning of the chapter. Although the results exhibit diversity depending on the variables that they are evaluated from, a pattern reveals itself: children experience great difficulties in the production of nonsubject relative clauses compared to subject relative clauses. It is the aim of the next chapter to bring together the pieces of the puzzle and to postulate an argument that will explain the observed asymmetry and hence the acquisition pattern of relative clauses in Turkish.

CHAPTER V

DISCUSSION and CONCLUSION

Introduction

In this chapter I will discuss the results obtained in the present study in the context of the crosslinguistic typology of relative clauses and the previous studies of the acquisition of relative clauses, arguing that subject relative clause participle –(y)An is the unmarked option for relative clause formation in Turkish. I will further claim that the resumptive pronouns and NPs encountered in the child data can be considered as a device that Turkish speaking children resort to so as to disambiguate nonsubject relative clauses from subject relative clauses. It will be shown that resumptive use is triggered by children's use of –(y)An participle as an "All-purpose Relativizer" in Turkish.

The Participle –(y)An as an 'All-purpose Relativizer' and 'Unmarked Option' for Relative Clause Formation in Early Child Grammar

The fact that Turkish children perform incomparably better in producing subject relative clauses (SR) than nonsubject relative clauses (NSR) along with the children's use of subject relativization strategy to extract nonsubject relative clauses seems to provide evidence for Noun Phrase Accessibility Hierarchy Hypothesis (NPAH) (Keenan & Comrie, 1977) according to which subject relative clauses are

predicted to be more accessible than nonsubject relative clauses, no matter what grammatical role the relative clause has in the matrix clause.

NPAH is a syntax-based model and I claim that the attested asymmetry in Turkish relative clauses cannot be solely regarded to be a function of this hierarchy since it is subject clause morphology preference rather than the subject clause structure that governs Turkish children's production in relative clause acquisition.

In acquisition studies that have provided evidence for NPAH, we witness conversion errors in which children changed the word order of nonsubject relative clauses in a way that they produced a relative clause with subject relative clause word order as exemplified in (1)-(3) below:

(1) DO→ SUBJ

Test Item : This is the girl who the boy teased at school this morning.

Child : This is the girl that teased . . . the boy . . . at school this morning.

(2) IO→ SUBJ

Test Item : Is that the boy who the woman sent a letter to?

Child : Is that the boy who sent a letter to the woman?

(3) OBL→ SUBJ

Test Item : There is the horse that the little cat jumped on yesterday.

Child : There is the horse that jumped on the cat yesterday.

(Diessel & Tomasello 2005)

In Turkish, on the other hand, children produced utterances with the same order as in nonsubject relative clauses despite the subject relative clause morphology on the relative clause verb. In a child's utterance such as (4), for example, *erkek* 'the boy' is the subject and the second NP *kız* 'the girl' is the object of the relative clause verb *öp-* 'to kiss'. In example (1), on the other hand, the child reversed the grammatical function of NPs. Although the NP 'the girl' functions as the object of the relative clause verb 'teased at' in the target item, it functions as the subject in child's utterance, hence we get a subject relative clause reading.

(4) DO→ SUBJ

Target Item:	erkeğ-in öp-tüğ-ü kız boy-GEN kiss-NSP-3rd sg POSS girl 'The girl whom the boy kissed'
Child Response:	*erkek öp-en kız boy kiss-SP girl

(5) IO→ SUBJ

Target Item:	Kadın-ın çiçek ver-diğ-i adam woman-GEN flower give-NSP-3rd sg POSS man 'The man whom the woman gave flower to'
Child Response:	*kadın çiçek ver-en adam woman flower give-SP man

(6) OBL→ SUBJ

Target Item:	kadın-ın bağır-dığ-ı adam woman-GEN shout-NSP-3rd sg POSS man 'The man whom the woman shouted at'
Child Response:	*kadın bağır-an adam woman shout-SP man

In example (5) & (6), we also observe that although the –(y)An strategy appears on the relative clause verb, the NPs preserve the grammatical functions that they would appear if they had been in a nonsubject relativization. *Kadın* 'the woman' is the subject and the NP *adam* 'the man' is the indirect object of the relative clause verb in (5). Lastly, *Kadın* 'the woman' is the subject and the NP *adam* 'the man' is the oblique object of the relative clause verb in (6).[34] Note that they have the same grammatical functions in the corresponding grammatical constructions.

Children's preferences exemplified in (4) through (6) can also be argued to provide evidence for the filler-gap hypothesis which states that the varying distance between the filler and gap determines the relative difficulty of different relative clauses. The linear distance between the head and the gap across relative clause types in English (7) and in Turkish (8) is given below:

(7) ENGLISH

a. the man$_i$ who e$_i$ loves the woman	1- word ($_{SUBJ}$-relative)
b. the man$_i$ who the woman loves e$_i$	4-words ($_{OBJ}$-relative)
c. the man$_i$ who(m) the woman played with e$_i$	5- words ($_{OBL}$-relative)
d. the man$_i$ who(m) the woman gave flower to e$_i$	6-words ($_{IO}$-relative)

As can be seen from the paradigm in (7), there is a shorter distance between the head and the gap in the case of subject relative clauses than in nonsubject relative clauses in English. This yields the prediction in (i):

[34] If we had responses like "Kadın-a çiçek ver-en adam" or "Kadın-a bağır-an adam" in which the first NP is inflected with a dative case marker, then we would argue that NPAH would be a proper analysis for the acquisition of relative clauses in Turkish since the presence of this case-marker would signal that there is a subject-object conversion.

(i) Subject RCs should be easier than nonsubject RCs.

Let us turn to Turkish facts now:

(8) TURKISH

a. e_i uyuyan bebek $_i$	1-word ($_{INTR\text{-}SUBJ}$-relative)
b. e_i kadını seven adam $_i$	2-words ($_{TR\text{-}SUBJ}$-relative)
c. kadının e_i sevdiği $adam_i$	1-word ($_{OBJ}$-relative)
d. kadının e_i bağırdığı $adam_i$	1- word ($_{OBL}$-relative)
e. kadının e_i çiçek verdiği $adam_i$	2-words ($_{IO}$-relative)

As discussed in detail in Chapter II, many studies done in English actually found support for the filler-gap hypothesis in that subject relative clauses are easier to comprehend and produce than direct object relatives (nonsubject relative clauses, in this case). If the distance between the filler and the gap is also crucial in production of Turkish relative clauses as claimed in the filler-gap hypothesis, we can make the following predictions (ii)-(v).

(ii) Turkish children will have more difficulties in the production of transitive subject RCs than intransitive subject RCs as there are two items between the head and the gap in transitive subject RCs while there is only one in the case of intransitive subject RCs.

(iii) Turkish children are expected to have fewer difficulties in producing direct and oblique object RCs than a transitive subject RC.

(iv) Turkish children will experience the same amount of difficulty in the production of intransitive subject RCs and direct/oblique object RCs as the number of words that intervene between the gap and the head is the same in Intr-SRCs and OBJ/OBL RCs.

(v) Turkish children will have more difficulties in the production of indirect object RCs compared to other nonsubject RCs, i.e. direct and oblique objects.

None of the predictions above is borne out by the results of the present study. The syntactic properties of the relative clause verb, i.e. (in) transitivity have been found to have no role in the production of subject relative clauses as children have had great success in the production of all types of subject relative clauses regardless of age. Although there were not many oblique and indirect object relative clauses compared to the direct object relatives in the study, children's production of nonsubject relative clauses was homogenous in the sense that children experienced the same amount of difficulties in their production of direct, oblique and indirect object relative clauses. In sum, the distance between the head and the gap has been found to have no effect in the production of subject relative clauses. Yet, whether the filler-gap hypothesis has any effect in the production of nonsubject relative clauses needs to be tested in a future study by adding more items with indirect and oblique object relative clauses.

A pattern, on the other hand, reveals itself in the results of the study: while the relative clauses which require the participle –(y)An do not pose any difficulties for children, those that necessitate –DIK morphology presents a challenge for Turkish-speaking children. Children's use of passive convert to avoid nonsubject

relativization is also an evidence for this claim in that passive structures are inflected with the –(y)An participle in Turkish. Rather than claiming that children experience difficulties with relative clauses other than subject relative clauses, we can postulate that children either have not acquired the –DIK morphology for relative clause formation or they have avoided it for reasons that need to be clarified.

I claim that the relative clause function of –DIK is not available in children's early grammar. Although Turkish is a language with a dual system of relative clause formation, i.e. –(y)An and –DIK, children appear to associate the relative clause function with the phonological form –(y)An in their early grammar. According to Slobin's ((1985) as cited in Slobin (1986)) Operating Principles (OP's) of "Limited Functions" and "Unifunctionality", children are guided by one form-one function and one function-one form requirement. The late development of the relative clause participle –DIK can be seen as an example of the preference for one form-one function. That is, the Turkish child starts out by using the participle marker –(y)An in the production of relative clauses regardless of the grammatical function of the relativized head, and later they develop a grammar in which they differentiate between –(y)An and -DIK.

This is depicted in Figure 15. Please note that I do not use the terms subject participle and nonsubject participle for –(y)An and –DIK, respectively as I believe that children do not make such a distinction in their early grammar.

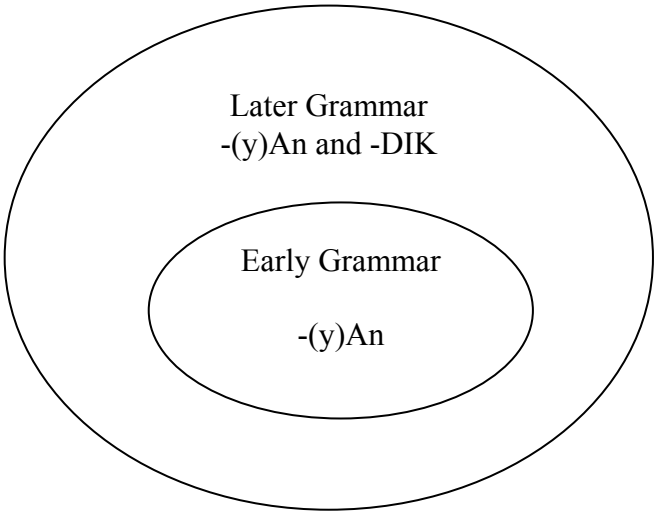


Fig. 15 Early and Later Grammar in the Acquisition of Relative Clauses

This explains why Turkish children display full competence in subject relative clauses and use –(y)An morphology in contexts which in fact require –DIK morphology. Children's success in subject relative clauses is a natural consequence of SR constructions' requiring –(y)An morphology. So, we cannot solely claim that Turkish children have acquired subject relative clauses earlier than nonsubject relative clauses. Instead, we can claim that the phonological form with which they associated the relative clause function, i.e. –(y)An, results in grammatical utterances in subject relative clauses while it yields ungrammaticality in nonsubject relative clauses which require the relative clause participle –DIK.

Despite the fact that Turkish children are exposed to the phonological form –DIK much more frequently than –(y)An as -DIK is found in other structures in the language (complement and adverbial clauses) as discussed in Chapter I, children prefer the participle –(y)An as an "all-purpose relativizer". There are two motivations that may govern Turkish children's preference of –(y)An as a relative clause participle in their early grammar.

First, the relative clause participle –(y)An is functionally restricted to relative clause formation in Turkish compared to the participle -DIK which also shows up in complement and adverbial clauses. The unique function of –(y)An satisfies the "one function-one form requirement" of the Operating Principle "Unifunctionality" that governs children's language acquisition path. So, it is likely that children will accept -(y)An as a relative clause marker.

Second, the morpheme –(y)An is less complex morphosyntactically compared to the participle –DIK which requires conjugation in accordance with subject agreement morphology. Unlike –(y)An which does not require subject-verb agreement, the participles –DIK and –(y)AcAK are proceeded by a possessive suffix agreeing in person and number with the subject of the modifier clause which is put into genitive case. The complexity of –DIK participle may lead children to prefer –(y)An participle as a form that realizes relative clause function in the language. A piece of evidence for this claim comes from one of the stages in children's acquisition of nonsubject relative clauses. As discussed in Chapter IV, although the nonsubject participle emerges on the relative clause verb in Stage 3, it is observed that genitive suffix is missing on the subject of the relative clause. It is evident that children have a tendency to simplify this participle.[35]

Resumptive Pronouns as Disambiguating Strategy

As touched upon very briefly in the previous chapter, I propose that the use of resumptive pronouns and their distribution in my data do not point to an

[35] Please note that childeren use –DIK form correctly in its other functions other than relative clauses, i.e. complement clauses (See Ciğer 2001). The full mastery of this form in relative clause function, however, is a relatively late development. This may show that each function of –DIK are acquired at different times and are encoded seperately in the children's mental grammar.

incompletely developed trace theory as widely discussed in the literature. Instead, I claim that the existence of resumptive pronouns is a natural consequence of overgeneralizing –(y)An morphology to all relative clause types.

Children, as they get older, become more aware of the distinction between subject and nonsubject relative clauses in their ambient language and search for a device for reflecting this asymmetry in their intermediate grammar. In this respect, resumptives may be used as a "disambiguating strategy".

Children use resumptives when they use –(y)An strategy in contexts that require –DIK participle in adult grammar. As the use of –(y)An morphology renders the structure ambiguous in that the structure uttered by the child becomes indistinguishable from a transitive subject relative clauses, the child fills the site of relativization by a resumptive so that the subject relative clause interpretation is blocked.[36] Consider the example in (9):

(9) Target Item: erkek-in öp-tüğ-ü kız
boy-GEN kiss-NSP-3rd sg POSS girl

'The girl whom the boy kissed'

[36] In the presence of immediately preverbal pseudo-incorporated indefinite and/or generic NPs as in the examples below, -(y)An morphology is also grammatical and used frequently in adult grammar.

(i) Köpek ısır-an çocuk
dog bite-SP child

'The child who the dog bites'

(ii) Kedi tırmala-yan kız
cat scratch-SP girl

'The girl who the cat scratches'

Even in such constructions, children feel obliged to insert a resumptive pronoun as in (iii).

(iii) *Köpek on-u ısır-an çocuk
dog girl-ACC bite-SP child

'The child who the dog bites her'

Child Response: *erkek öp-en kız
boy kiss-SP girl

(Subject #30, 5;7)

In example (9), the child uses the relativizer –(y)An for nonsubject relativization. His/her response is ambiguous because it either means (i) "the girl who kisses boys" (SRC) or (ii) "the girl whom the boy is kissing" (NSRC). As the intended meaning is the latter, s/he needs to come up with a device to eliminate the first reading. The resumptive element is used to mark the syntactic function of the relativized NP and to disambiguate the construction. Children's use of the so-called "restarting strategy" as discussed in footnote #30 in the previous chapter also supports this claim. As seen in example (10), the child feels uncomfortable when (s)he uses –(y)An morphology for a nonsubject RC in the absence of a resumptive. As a cooperative speaker, (s)he provides information to convey the intended interpretation to the addressee and (s)he adds a resumptive which is marked with a proper case marker as in (11). In other words, the head noun is interpreted as the direct object thanks to the resumptive pronoun inflected with accusative case.

(10) Target Item: erkeğ-in öp-tüğ-ü kız
boy-GEN kiss-NSP-3rd sg POSS girl

'The girl whom the boy kissed'

(11)

Child Response: erkek öp-en kız
boy kiss-SP girl
…

erkek kız-ı öp-en kız
boy she-ACC kiss-SP girl

(Subject #32, 5; 11)

The distribution and productivity of resumptive elements in Turkish is not qualitatively different from other languages investigated (cf. French, Spanish, Hebrew) as resumptive pronouns are encountered in the relativization of direct, indirect and oblique positions in Turkish as well. Note that they are prohibited from subject relativization site. However, we cannot take the occurrence of resumptives in Turkish relative clauses as evidence for an incompletely developed trace theory for reasons indicated below.

If the motivation behind the use of resumptives by Turkish children were the difficulty with the processing of gaps as postulated in the literature, then we would not find a difference between nonreversible and reversible nonsubject relatives with respect to the frequency of resumptive use. Besides, we would expect younger children to use resumptives more frequently than the older ones contrary to the findings as younger children would experience more difficulties with the traces. The fact that Turkish children use resumptives much more frequently in reversible NSRCs than nonreversible NSRCs and the resumptive use increases by age renders an incompletely developed trace theory untenable for the discussion of Turkish data.

The resumptive data in the study can be interpreted differently, though. Rather than claiming that children insert resumptive elements in the place of the gap to convey the nonsubject relative clause interpretation, one may argue that children are extending the canonical word order of Turkish (i.e. Subject-Object-Verb) to relative clause constructions. According to the NVN-Scheme Hypothesis (cf. Bever 1970a; Slobin and Bever 1982 as cited in Diessel 2004) discussed in Chapter II, children acquire a canonical sentence schema based on a prototypical transitive clause and they extend this scheme to other constructions. The utterances in our data

might be taken as evidence for the fact that children are producing relative clauses using a canonical sentence schema. Consider the following examples below:

(12) Target Item: erkeğ-in öp-tüğ-ü kız
boy-GEN kiss-NSP-3rd sg POSS girl

'The girl whom the boy kissed'

Child Response: *[[erkek kız-ı/on-u öp-en] kız]
boy girl-ACC/she-ACC kiss-SP girl

Canonical Sentence: Erkek kız-ı öpü-yor.
boy. NOM girl-ACC kiss-PRES

'The boy is kissing the girl.'

(13) Target Item: [Palyaço-nun balon verdiğ-i] kız
clown-GEN balloon give-NSP-3rd sg POSS girl

'The girl whom the clown gave balloon to'

Child Response: *[[Palyaço kız-a/on-a balon veren] kız]
clown girl-DAT/she-DAT balloon give-SP girl

Canonical Sentence: Palyaço kız-a balon ver-iyor.
clown.NOM girl-DAT balloon give-PRES

'The clown is giving balloon to the girl.'

Up until we see the relative clause participle marker –(y)An on the relative clause verb, it seems that what the child produces is a canonical simple transitive and/or ditransitive verb. (S)He just adds a relative clause marker on the relative clause verb in order to approximate to the modificational function of relative clauses in his/her structures. (S)He puts the head in a proper place in the construction as this slot is present in the prompt question such as *Hangi kız çok mutluydu*? 'Which girl was very happy?' Such data might be interpreted in two ways. First, the child extends the canonical word order of simple sentences to the relative clauses because Turkish-

speaking children are guided by the canonical word order schema. Second, the morphological properties of relative clauses are available to a child prior to the development of its syntactic properties.

I argue that the NVN-Scheme Hypothesis (NNV-Scheme, in this case) cannot be a proper analysis for explaining the child's utterances as exemplified in (11) & (12). If children were guided by the canonical word order schema, then we would expect them to abide by this principle in their subject relative clauses, as well. In the following examples, the subject relative clauses and the children's utterances are given along with the structures, as expected by the "canonical word order schema". There were not any instances of structures in which children have extended this schema to their subject relative clauses in the data.

(14) Target Item: ağla-yan bebeğ-e
cry-SP baby-DAT
'The baby who is crying'

Child Response: ağla-yan bebeğ-e
cry-SP baby-DAT
'The baby who is crying'

Expected Answer: *bebek ağla-yan (Not attested)
baby cry-SP

(15) Target Item: çocuğ-un yüz-ün-ü tırmala-yan kız
child-GEN face-3rd sg POSS-ACC scratch-SP girl
'The girl who scratches the child's face '

Child Response: çocuğ-un yüz-ün-ü tırmala-yan kız
child-GEN face-3rd sg POSS-ACC scratch-SP girl

'The girl who scratches the child's face '

Expected Answer: *kız çocuğ-un yüz-ün-ü tırmala-yan
girl child-GEN face-3rd sg POSS-ACC scratch-SP

(Not attested)

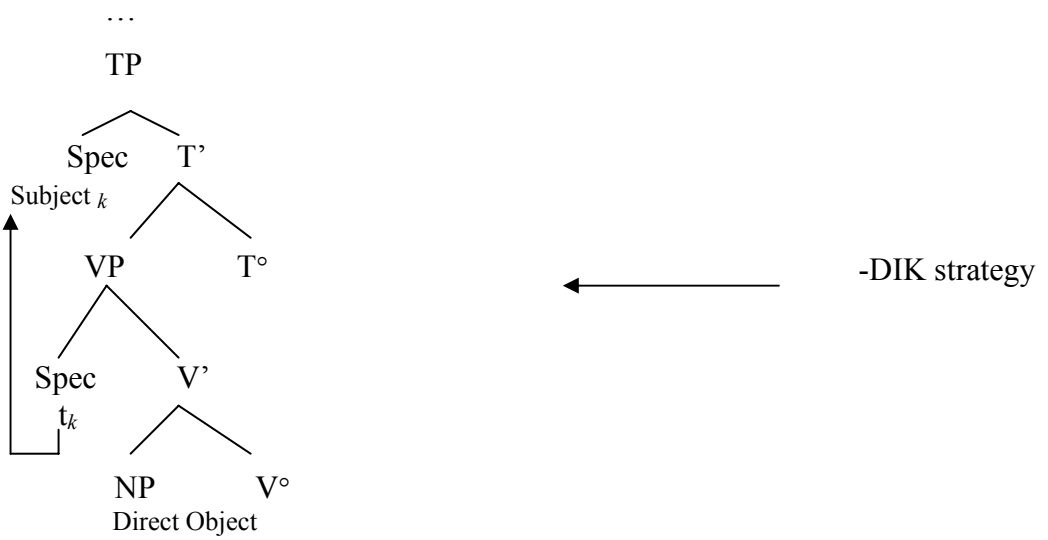
Syntactic Account of the Acquisition of Relative Clauses in Turkish

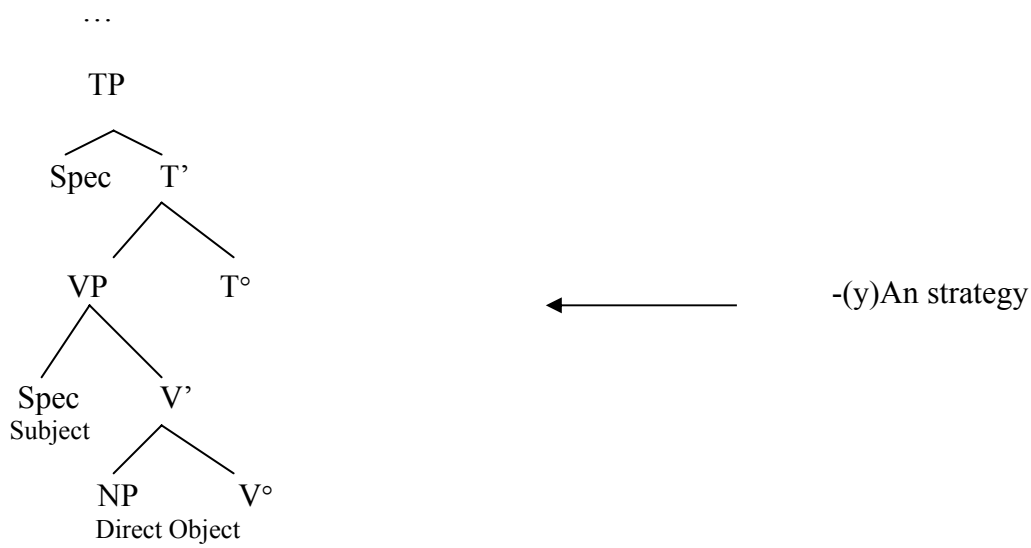
The difficulty that Turkish-speaking children have experienced with nonsubject relative clauses has been attributed to the multifunctionality and morphological complexity of –DIK participle in the study. Apart from the morphological burden of –DIK participle in the acquisition of relative clauses, it is also possible to claim that –DIK strategy is excluded in the early grammar due to non-morphological factors- i.e., structural constraints. A syntactic account as an alternative analysis for the development of Turkish relative clauses is what I will turn to in the ensuing paragraphs.

As dicussed in Chapter I, Öztürk (2007) offers an analysis in which the choice of relative clause strategies is tied to the syntactic position of the subject. The participle is determined based on whether there is a VP-internal or VP-external subject in the structure.[37] She proposes that if [Spec TP] is projected to host a VP-external subject, subject-verb agreement shows up so that we get the –DIK morphology. However, if no subject raises into [Spec, TP], -(y)An morphology is chosen. Actually, the relativization of a subject is only possible if it can avoid [Spec

[37] A proposal along the lines as offered in Öztürk has also been made by Barker, Hankamer & Moore 1990 and Haig 1997 as cited in Öztürk 2007.

TP] on its way to CP domain as Öztürk considers [Spec TP] as a criterial freezing position (Rizzi & Shlonsky 2005) which resists further A-bar movement. In sum, -DIK strategy indicates that there is a high subject in [Spec TP] while –(y)An indicates the presence of a low subject [Spec VP] in the structure. A simplified schematic representation to indicate the position of the subject in the use of –DIK strategy and –(y)An strategy is given below:



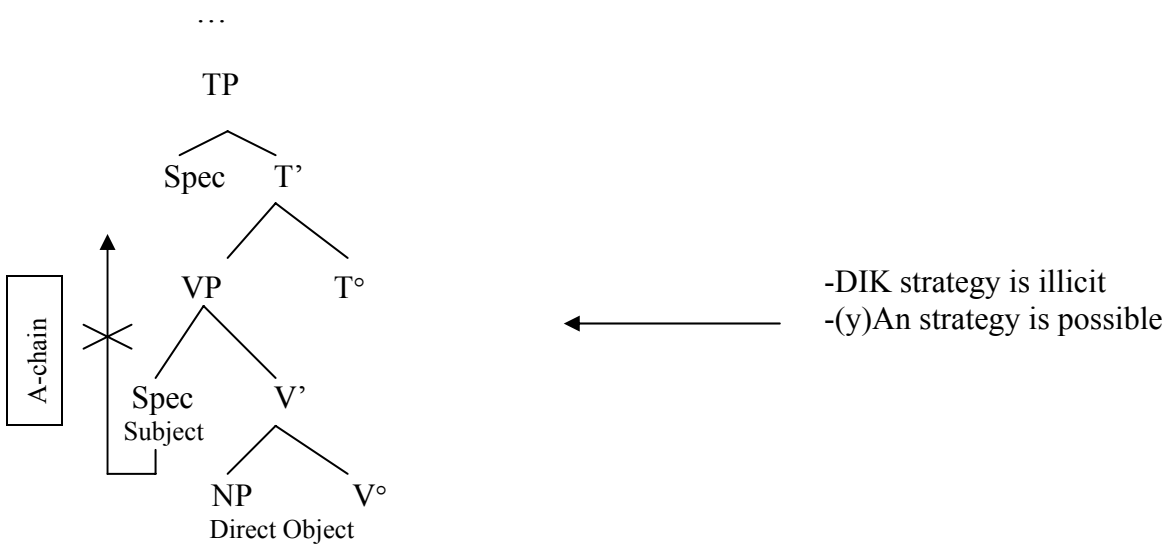


The fact that Turkish-speaking children have performed better in items requiring –(y)An strategy than those requiring –DIK strategy along with children's preference for –(y)An strategy in their production may signal that [Spec TP] is not projected in children's early grammar. In other words, subjects stay in-situ. But then the question is: what blocks the projection of [Spec TP] in children's early grammar and how does one prove that [Spec TP] is not projected in children's grammar? Only when these questions are satisfactorily answered, the syntactic motivations behind children's failure in the use of –DIK strategy and their preference for –(y)An strategy can be accounted for.

Öztürk (2005) claims that unlike English, Turkish is not endowed with an EPP (=Extended Projection Principle) feature. As a result, subjects do not have to raise into [Spec TP] but can remain in their base-positions. Following Kennelly (1997), Aygen (1999), Kelepir (2001), Miyagawa (2004) and Özsoy (2005), she proposes that [Spec TP] is a scope/discourse related position in Turkish. It is projected to host A (=Argument)-scrambled elements, which are interpreted specific/presuppositional along with the subjects which take wide-scope. This implies an optional projection of [Spec TP] in Turkish.

Following the model proposed in Öztürk (2007), it is possible to attribute the absence of –DIK strategy in children's early grammar to their inability to move subjects into [Spec TP] position. That is, children are not equipped with a device that will enable them to assign theta-role non-locally, forming A-chain. As children are not able to combine the moved subject in [Spec TP] position and its trace in [Spec VP] position into an A-chain, the subjects stay in their base-generated position and no movement occurs into [Spec TP]. The lack of movement into [Spec TP] forces –(y)An strategy which is not compatible with agreement at the time of relative clause

formation in children's early productions of relative clauses. In other words, children overgenerate –(y)An strategy in all relative clause types. When an item that requires –DIK strategy is relativized with –(y)An strategy, resumption use follows naturally since it disambiguates a nonsubject relative clause from a subject relative clause. This is depicted in the representation below.



Although this is a well-motivated syntactic analysis for the development of Turkish relative clauses, the hypothesis lacks an explanatory power. Such an account can only be valid if we can test children's ability to apply A-movement in structures such as raising predicates, passive structures and the constructions which have specific/presuppositional subjects that are claimed to involve A-movement in the literature.[38] On the condition that we can provide independent evidence for children's

[38] It is even possible to claim that structures which are assumed to involve movement in the literature are in fact derived by a nonmovement analysis. Öztürk (2005), for example, offers a nonmovement analysis of passive constructions in Turkish. In her account, argument NPs are case-assigned in their base-theta position and there is no obligatory movement to [Spec TP] for case-licensing. In the derivation of a passive construction as in (iv), for example, passive morphology *–ıl* on the verb suppress the case feature on Agent head. The only theta-role related NP *cam* 'the window' merges with the structure at [Spec ThemeP] and is realized as nominative in line with the Mechanical Case Parameter: if one case feature is checked structurally in a clause, it is realized as Nominative (See Harley 1995 for the assumptions of Mechanical Case Parameter). Given these backgrounds, it is possible to derive passive constructions without adapting a movement analysis in Turkish.

lack of A-movement in these particular constructions, too; then we can commit ourselves to the proposal that absence of –DIK strategy in children's early grammar may stem from their inability to move subjects into [Spec TP] position.

Moreover, it must be shown that a Turkish child is sensitive to the dissociation between A-movement and A'-movement in their mental grammar. That is, it should be made clear that the child is capable of executing movement operations if the movement is into an A' (nonargument)-position. If we can provide evidence for children's success at the formation of wh-elements, for instance, we can speculate that the diffuculty that they experience with –DIK strategy results from their inability to form A-chain rather than their failure at executing general movement operations.

As can be inferred from the discussions above, at this point, we do not have satisfactory evidence to commit ourselves to a syntactic analysis which attributes the absence of –DIK structures in children's early grammar to their failure at A-movement/A-chain formation. Instead, we can only assert that the results of the experiment obtained in this study parallel the implications discussed in Öztürk (2007).

A further problem with the syntactic proposal discussed in this section is the implication that when Turkish children acquire A-chain and/or A-movement, they use –DIK strategy correctly and approximate to the adult form. Then the question is

---

iv. Cam kır-ıl-dı.
window break-PASS-PAST

'The window is broken'

(Öztürk 2005: p. 147)

Thus, even though a child experiences difficulties with passive constructions in Turkish, it does not necessarily point out his/her inability in the principle of A-movement and/or A-chain. Such a claim would only be valid in an account of passives which rests on the theoretical assumption that the derivation of passive constructions involves NP-movement and hence the formation of an A-chain.

what does it mean for a particular linguistic ability and/or principle-A-movement, in this case- to develop at a certain time?

Borer and Wexler (1987) propose that the formal principles available to the child are not constant through development. Rather, the principles which are not available at certain stages of a child's development become available at a later stage. In other words, certain principles mature. They further add that maturation does not involve the abandonment of a rule formulated in an earlier stage of the grammar. Instead "there is an extension of an already existing rule, so as to apply it in an additional domain, to a larger set of data" (p. 150)". The maturational theory that Borer and Wexler are proposing is best summarized in the following paragraph:

> … the child can change his or her grammar without going through a correction process based on new data. Suppose that a child has created a grammar at a certain maturational point. At a later point, new linguistic abilities grow. Based on these new linguistic abilities, plus the principles that he or she already has, the child reinterprets the earlier principles, in accordance with the new abilities. This reinterpretation is not a process based upon correction from which external evidence is responsible. The child is not hypothesizing and correcting. Rather, the child's underlying biological program, by bringing forth new principles, is allowing for a process of reinterpretation of already acquired knowledge.
>
> Borer and Wexler (1987: p.132)

Borer and Wexler present data in English and Hebrew which supports aspects of a maturational theory as well as bringing about independent evidence for the maturation of A-chain or A-movement in these languages. One of the constructions that they have analyzed in detail is passive structures. As an observation, they have found that adjectival passives as in (16) precede verbal passives (17) in children speaking typologically different languages such as English and Hebrew.

(16) The island was uninhabited.

(17) The doll was torn.

They first present evidence showing that morphological complexity of adjectival passives and of verbal passives is equal to prove that the delay in verbal passives cannot be attributed to the morphological burden. They then hypothesize that the operation which generates adjectival passives must have been acquired while the operation which generates verbal passives is missing from children's early grammar. To find out this particular linguistic ability/principle, they analyzed the nature of passives in adult grammar.

They have concluded that although there is one passive morpheme, whose affixation to verbal stems yields both verbal and adjectival passives, two passive types differ from each other on the level at which affixation takes place. If affixation takes place in the lexicon, the full range of changes introduced by the passive morpheme (i.e. elimination of subject T-role and externalization of the internal T-role) are projected in Deep Structure (D-structure), resulting in an identical Surface Structure (S-structure) as in (18). If a syntactic affixation took place, on the other hand, the changes conditioned by the passive morpheme are introduced by syntax (19).

(18) The island was uninhabited.

D-structure: The island was uninhabited.

S-structure: The island was uninhabited.

(19) The doll is torn.

D-structure: [e] is torn the doll

S-structure: the doll $_i$ is torn [e] $_i$

(Borer & Wexler 1987)

In adjectival passive in (18), we have an identical D-structure and S-structure while in verbal passive in (19), there is an application of movement and a chain is formed between the antecedent [NP, S] and its trace. In other words, we witness an A-movement and A-chain in verbal passives. Borer and Wexler propose that it is not possible for the child to assign T-role to the moved NP in earlier stages. The child is not capable of forming an argument chain (A-chain), assigning T-roles non-locally. This principle matures at a later stage and the extension of the rule to the syntax enables children to produce verbal passives along with the adjectival passives in their later grammar.

Although the acquisition pattern observed in Turkish relative clauses may benefit from the assumptions of the maturational theory either in the sense that the child first creates a grammar in which –(y)An is the only strategy that they associate the relative clause formation with as the linguistic principle that underlie the –DIK staregy has not developed yet, we are not ready to commit ourselves to maturational theory since we must first provide plausible evidence that would show the absence of A-movement in Turkish child's early grammar.

Conclusion

The diverse results of the experimental data found in this study have been explained in an account that considers –(y)An as an unmarked relative clause participle in

Turkish-speaking children's early grammar. Being an unmarked participle, the subject participle –(y)An shows up in all relative clause types and functions as "all-purpose relativizer" in children's grammar. Please note that –(y)An strategy is less costly rule since it requires the least computation both morphologically (no subject-verb agreement) and syntactically (no A-movement).

As a natural consequence of this overgeneralization, Turkish-speaking children develop a device to reflect subject-nonsubject asymmetry that Turkish exhibits in the form of –(y)An and -DIK. The so-called resumptive pronouns observed in children's utterances are triggered by this need: disambiguating nonsubject relative clauses from subject relative clauses. In sum, Turkish children's early grammar is assumed to comprise a subset of the rules that characterize their later stages. I claim that the acquisition of Turkish relative clauses follows the path presented in Figure 16.

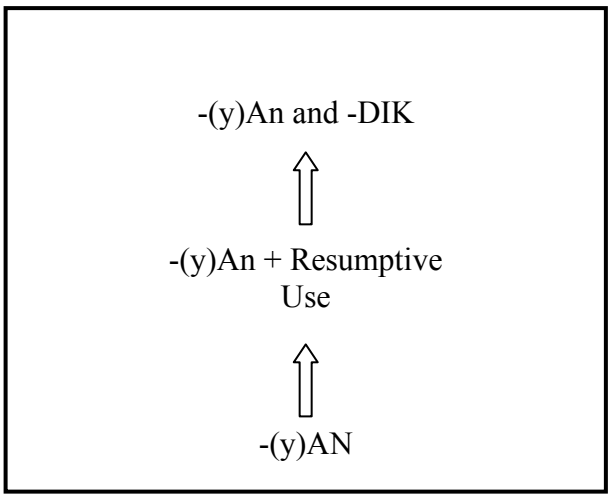


Fig. 16 Schema for the acquisition of Turkish relative clauses

In the first stage, they are not aware of the subject-nonsubject asymmetry in the language and use –(y)An as an "all-purpose relativizer". In the second stage, they become aware of the distinction but prefer the participle –(y)An as an unmarked

option in all clause types and give the nonsubject interpretation with the use of resumptives. In other words, they do not grammaticize the distinction in their intermediate grammar. Finally, they master the nonsubject relativizer –DIK and behave like adults in their relative clause use.

The Importance of the Present Study

There have been a number of studies (Slobin 1982, 1986; Ekmekçi 1990; Özcan 2000) which investigated the production of Turkish relative clauses in the literature. However, none of these studies have provided a systematic analysis of the development of relative clauses in an experimental setting. The current study has been the first of its kind in investigating the production of relative clauses in an experimental setting by taking all variables that have been found to play a role in the development of relative clauses into consideration. In this respect, this study is the first large-scale investigation of the acquisition of Turkish relative clauses based on experimental data.

Being an experimental as well as a production study, the current study has revealed two important findings. First, it has shown that the principles and/or linguistic abilities that underlie the comprehension of relative clauses do not necessarily underlie the production of this particular construction as the effect of syntactic and semantic variables (i.e. (in)transitivity and (non)reversibility) have been found not to play any role in the production of Turkish relative clauses. What is more, contrary to comprehension studies cited in the literature, the distance between the head and the gap as postulated in the filler-gap hypothesis has no effect in the production of Turkish relative clauses.

Second, it can be claimed that the results of the observational or naturalistic data underestimate the capabilities of children in the production of Turkish relative clauses. Although observational data showed that the relative clause production is a late emergence, i.e. productive later than 4;8 (Slobin 1986), the experimental data presented in the current study showed that children as young as 3 do not appear to have any difficulty in forming subject relative clauses. So, the absence of particular constructions in observational data should not be attributed to the lack of linguistic abilities in children's mental grammar. Rather, it reflects that Turkish-speaking children use alternative constructions such as prepositional phrases, adjectives, locative relatives and discourse particles *hani…ya* 'well, after all, or you know' to fulfill the relative clause function.

In sum, apart from filling an important gap in Turkish linguistics, particularly in language acquisiton literature, the current study is important from a crosslinguistic perspective in the sense that it investigates the acquisiton of relative clauses in a typologically different language; i.e. Turkish, an agglutinating language which differentiates between subject and nonsubject relatives by a special marking on the relative clause verb.

Limitations of the Study and Avenues for Future Research

There are certain limitations of this study. First, the number of subject relative clauses and nonsubject relative clauses is not equal. Although the numbers were equal at the outset (20 Subject RCs and 20 NSRCs), we had to take out the items that were not working well upon the conduction of the pilot study. We ended up with 19 SRCs and 8 NSRCs in the experiment. As children did not experience any difficulties with subject relative clauses, we did not decrease their numbers in the

study. The unequal number of items for SRCs and NSRCs may have had an effect of creating a mental set during the experiment, favoring the production of SRCs in place of NSRSs. Thus, the number of subject and nonsubject relative clause items must be made equal for a more conclusive generalization and to test the validity of some hypotheses such as the filler-gap hypothesis.

Second, the frequency of occurrence is an important determinant of language acquisition and language use. This study would benefit considerably from the analysis of adult uses of relative clauses. Is it the case that adults use more subject relative clauses than nonsubject relative clauses in adult-to-adult and adult-to-child speech? If yes, the language provides a rich source of information for the child to acquire the formal properties underlying subject relative clauses compared to those of the nonsubject relative clauses. Thus, the effect of frequency on the use and development of relative clauses should be investigated in a further study. Furthermore, the distribution and the frequency of resumptives in adult speech should be studied in order to reveal whether Turkish adults show a similar pattern to children when they are stressed by length/ complexity in the production of relative clauses.

Lastly, this is an experimental study and some of the results might be the artifact of this design as it is possible for children to be challenged by the experimental setting. The development of this particular construction should also be investigated in natural data (i.e. child corpus) to check whether the experimental and natural data converge. What is more, this is a production study and it would be beneficial to test the same items in a follow up comprehension test so that the nature of the relationship between the production and comprehension would be explored for the development of relative clauses.

APPENDIX: The Test Items & Pictures Used in the Experiment

Test Item 1:

Slide 1





Slide 2



Prompt Question : Battaniyeyi hangi bebeğin üstüne örtelim?
'Which baby shall we put the blanket on?'

Target Item : uyuyan bebeğin
'The baby who is sleeping'

Test Item 2:

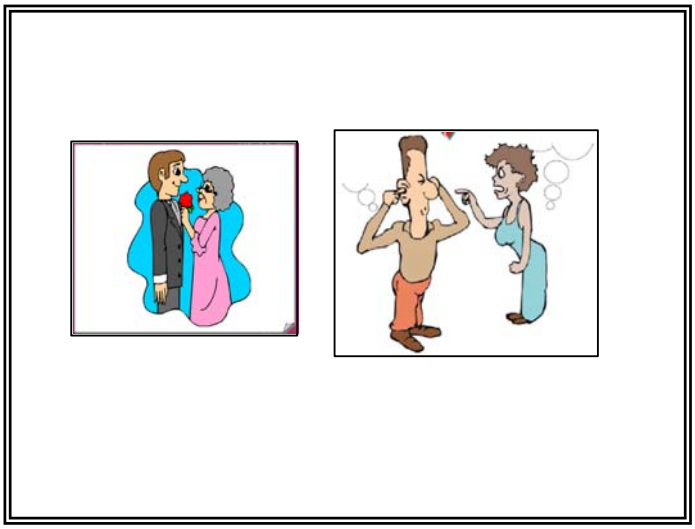




Prompt Question : Hangi kadın daha yaşlıydı?
'Which woman was older?'

Target Item : Salıncakta sallanan kadın
'The woman who was swinging'

Test Item 3:



Prompt Question$_1$: Hangi adam kulaklarını tıkamıştı?
'Which man covered his ears?'

Target Item$_1$: Kadının bağırdığı adam
The man whom the woman shouted at'

Prompt Question$_2$: Hangi adam çok mutluydu?
'Which man was very happy?'

Target Item$_2$: Kadının çiçek verdiği adam
'The man whom the woman gave flower to'

Test Item 4:

Prompt Question : Hangi çocukların boyu çabuk uzar?
'Which children grow faster?'

Target Item: Süt içen çocukların
'The children who drink milk'

Test Item 5:





Prompt Question$_1$: Adam hangi köpeği çok sever?
'Which dog does the man love most?'

Target Item$_1$: Tüm gün uyuyan köpeği
'The dog which sleeps all day '

Prompt Question$_2$: Adam hangi köpekten nefret eder?
'Which dog does the man hate?'

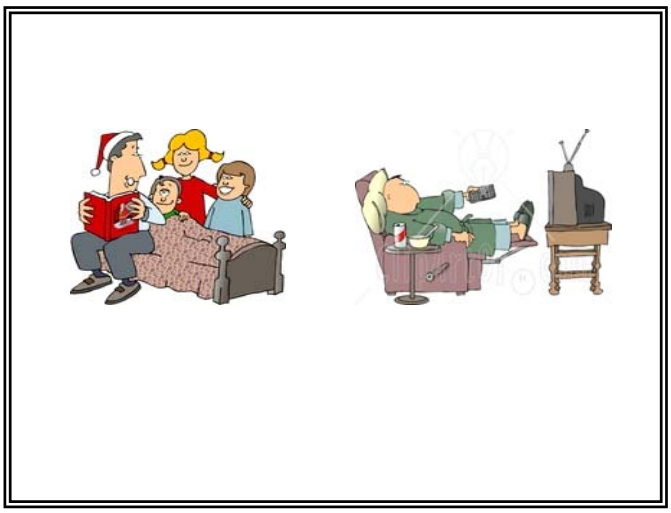
Target Item$_2$: Tüm gün havlayan köpeğini
'The dog which barks all day '

Test Item 6:

Prompt Question : Hangi çocukların dişleri çürümez?
'Which children's teeth do not decay?'

Target Item: Dişlerini fırçalayan çocukların
'The children who brush their teeth regularly'

Test Item 7:



Prompt Question : Hangi çocuklar daha mutlu?

‘Which children are happier?’

Target Item: Babaları masal okuyan çocuklar

‘The children to whom their father is reading a story book’

Test Item 8:





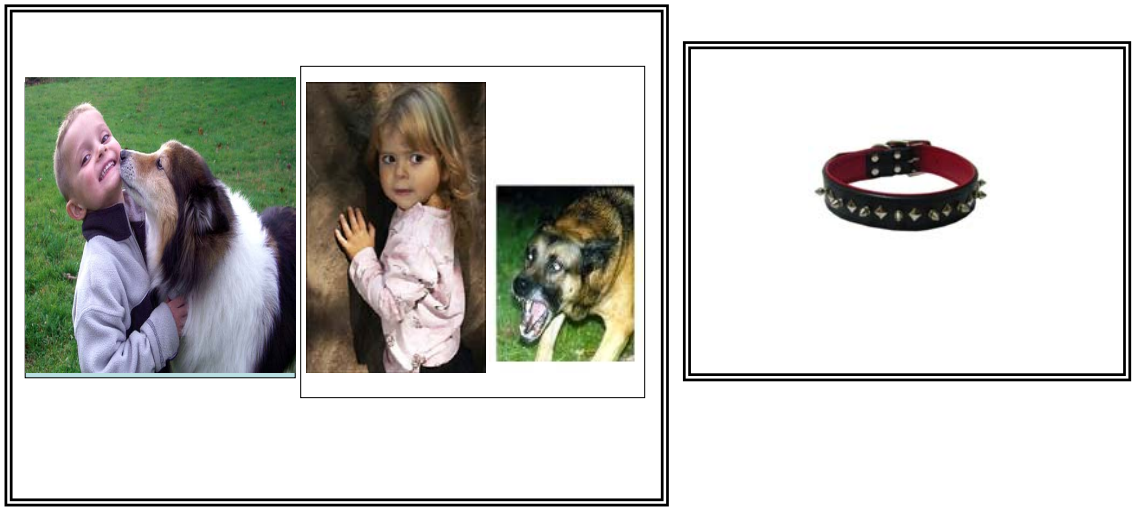
Prompt Question: Bir biberon sütümüz var. Bu sütü hangi bebeğe verelim?

‘We have a baby bottle with milk. Which baby shall we give it to?’

Target Item: Ağlayan bebeğe

‘The baby who is crying’

Test Item 9:



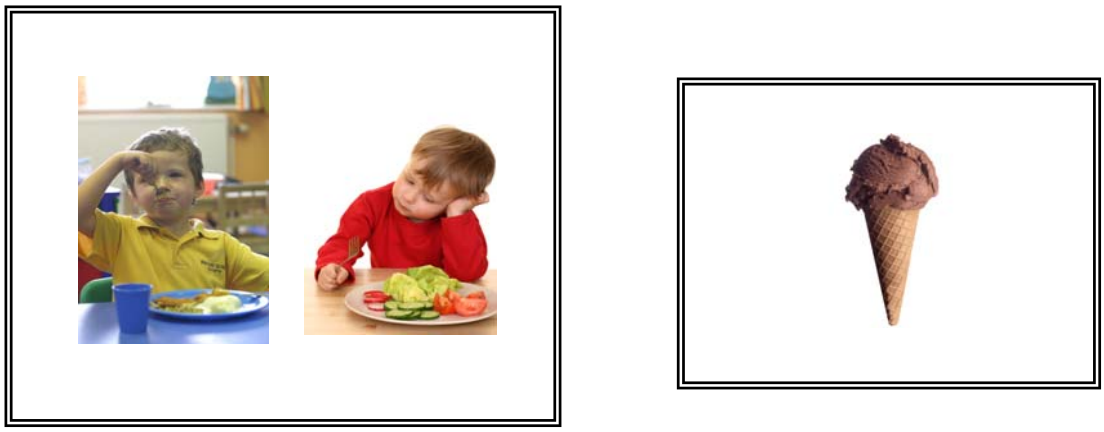
Prompt Question: Bu tasmayı hangi köpeğe takalım?

‘Which dog shall we put this collar on? ’

Target Item: Kıza saldıran köpeğe

‘The dog which is attacking to the girl ’

Test Item 10:



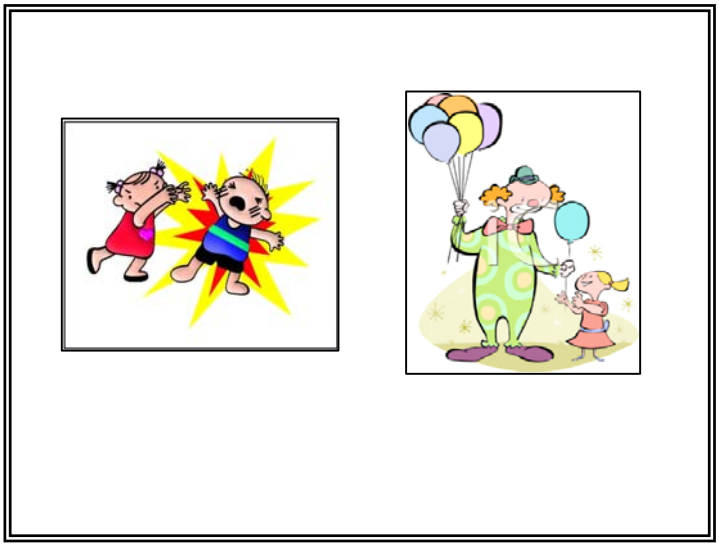
Prompt Question: Bu dondurmayı hangi çocuk haketti?

‘Which boy deserved this ice-cream?’

Target Item: Yemeğini yiyen çocuk

‘The boy who is eating his food ’

Test Item 11:



Prompt Question$_1$: Hangi kız çok yaramazdı?
'Which girl was very naughty?'

Target Item$_1$: Çocuğun yüzünü tırmalayan kız
'The girl who is scratching the boy's face '

Prompt Question$_2$: Hangi kız çok mutluydu?
'Which girl was very happy?'

Target Item$_2$: Palyaçonun balon verdiği kız
'The girl to whom the clown gave balloon'

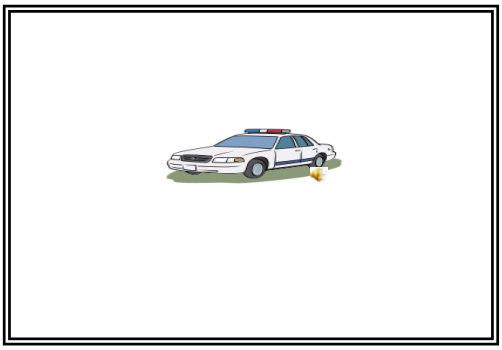
Test Item 12:

Prompt Question: Hangi çocukların gözleri çabuk bozulur?
'Which children will have eye problems soon?'

Target Item: Televizyonu yakından izleyen çocukların
'Children who watch television from a close range'

Test Item 13:





Prompt Question: Polis arabasına hangi hırsızı koyacaklar?

'Which thief will they put into this police car?'

Target Item: Polisin yakaladığı hırsızı

'The thief that the policeman had arrested'

Test Item 14:



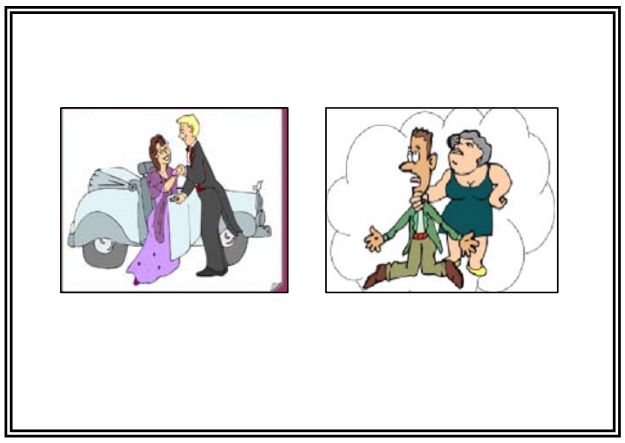
Prompt Question: Annesi hangi çocuğu uyarıyor?

'Which child is the mother warning?'

Target Item: Makasla oynayan çocuğu

'The child who is playing with the scissors'

Test Item 15:



Prompt Question$_1$: Hangi kadın çok şişmandı?

'Which woman was very fat?'

Target Item$_1$: Adamın boğazını sıkan kadın

'The woman who is throttling the man'

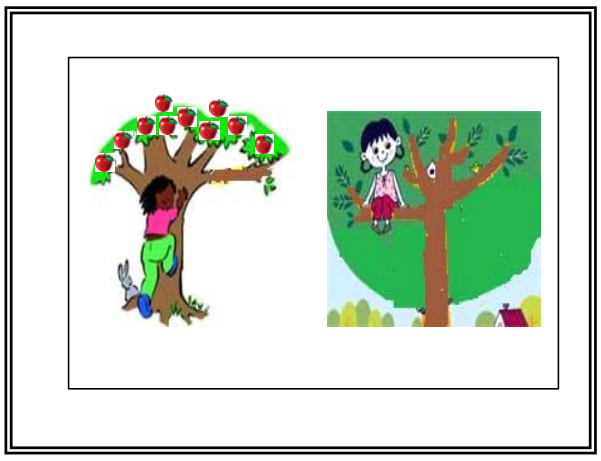
Prompt Question$_2$: Hangi adam boğulma tehlikesi altındaydı?

'Which man was in danger of suffocating?'

Target Item$_2$: Kadının boğazını sıktığı adam

'The man who the woman is throttling'

Test Item 16:



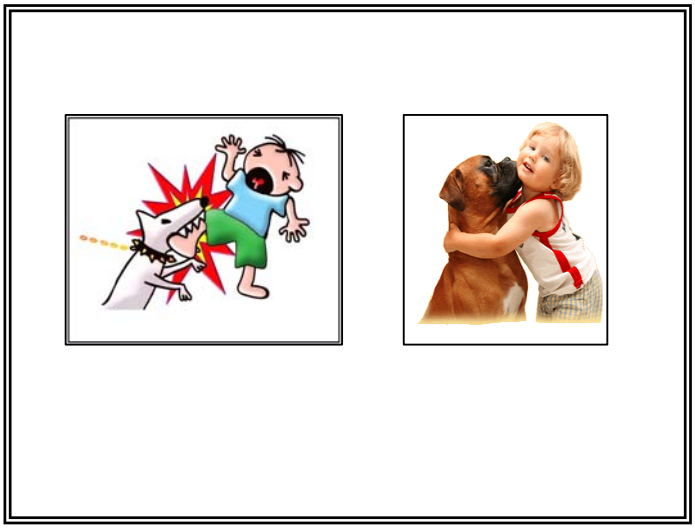
Prompt Question: Hangi ağaç elma ağacıydı?

'Which one was an apple tree?'

Target Item: Kızın tırmandığı ağaç

'The tree which the girl was climbing up'

Test Item 17:



Prompt Question$_1$: Hangi köpek daha akıllı?
'Which dog is smarter?'

Target Item$_1$: Çocuğun sarıldığı köpek
'The dog which the child is hugging'

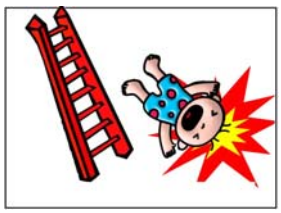
Prompt Question$_2$: Hangi köpek daha tehlikeli?
'Which dog is more dangerous?'

Target Item$_2$: Çocuğun bacağını ısıran köpek
'The dog which bit the child's leg '

Prompt Question$_3$: Hangi çocuğun canı yanmış olabilir?
'Which child was hurt?'

Target Item$_3$: Köpeğin ısırdığı çocuk
'The child whom the dog bit'

Test Item 18:

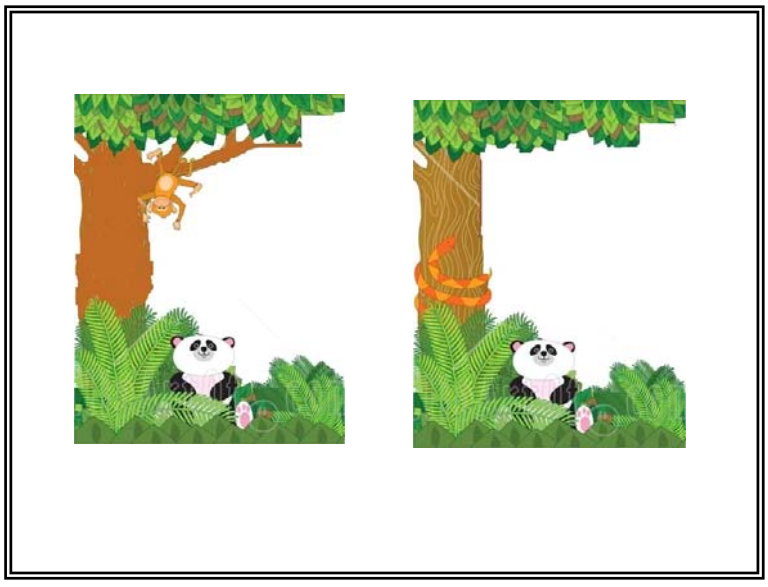






Prompt Question:	Bu ambulans hangi çocuk için geldi?
	‘For which child did this ambulance come?’
Target Item:	Merdivenden düşen çocuk için
	‘For the child who fell down the ladder’

Test Item 19:



Prompt Question:	Hangi panda tehlikede?
	‘Which panda is in danger?’
Target Item:	Arkasında yılan olan panda/Arkasında yılanın olduğu panda
	‘The panda behind which there is a snake’

Test Item 20:



Prompt Question$_1$: Hangi kadın daha güçlüydü?
'Which woman was stronger?'

Target Item$_1$: Adamı tekmeleyen kadın
'The woman who is kicking the man'

Prompt Question$_2$: Hangi adamın canı yanmış olabilir?
'Which man may have been hurt'

Target Item$_2$: Kadının tekmelediği adam
'The man whom the woman kicked'

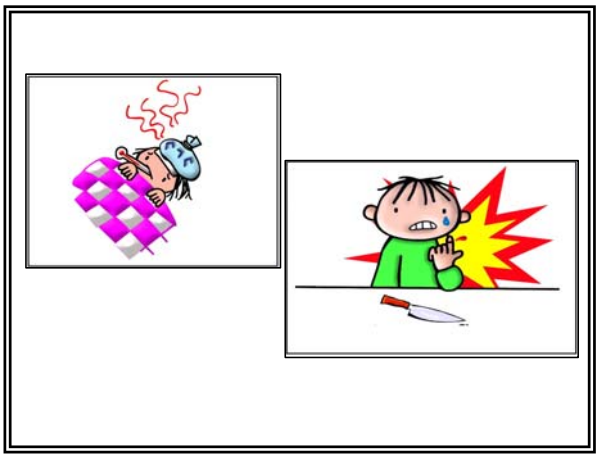
Test Item 21:

İki arkadaş birer tane çiçek dikmişler. Kızlardan biri çiçeğini her gün sulamış. Diğeri ise hiç su vermemiş.
'Two girls planted flowers. One of the girls watered her flower every day while the other did not.'

Prompt Question: Hangi çiçek daha çabuk büyür?
'Which flower grows faster?'

Target Item: Hergün sulanan çiçek
'The flower which was watered every day'

Test Item 22:



Prompt Question: Doktor hangi çocuğa iğne yapar?

‘To which child does the doctor give an injection? ’

Target Item: Parmağını kesen çocuğa

‘The child who cut his finger ’

Test Item 23:



Prompt Question: Polis hangi evde arama yapacak?

‘In which house will the police make a search?’

Target Item: Hırsızın girdiği evde

‘In the house which the thief broke into’

Test Item 24:



Prompt Question:	Hangi kız gelinlik giymişti?
	‘Which girl was wearing a wedding-dress?’
Target Item:	Çocuğun öptüğü kız
	‘The girl whom the boy kissed’

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