Grammatical Features and the Acquisition of Reference

A Comparative Study of Dutch and Spanish
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Introduction

This thesis investigates the acquisition of definite articles and pronouns in two languages, Dutch and Spanish. Concretely, we will be concerned with the interpretations Dutch and Spanish speaking children in the age range 4.5 - 7.5 assign to these lexical elements.

Definite articles and pronouns have in common that they are functional elements related to the nominal domain: they are either combined with an NP, like definite articles (e.g. *the man*), or substitute for an NP, like pronouns (e.g. *I met Mary. She wasn’t pleased to see me*). The interpretation of pronouns and definite articles depends both on syntactic and pragmatic factors. In this thesis we will mainly focus on the syntactic factors that constrain the interpretation of definite articles and pronouns. We will present experimental evidence from Spanish and Dutch showing that children’s interpretation of definite articles and pronouns is non-adultlike in some respects, but that this is not due to lack of knowledge of the relevant syntactic principles. Instead, we will argue that the reason for children’s non-adultlike interpretation of these elements is twofold.

On the one hand we will follow previous research which indicates that children have problems with the pragmatic aspects of the use of pronouns and definite articles. This leads them to use pronouns and NPs introduced by definite articles in an infelicitous way, for instance, to introduce new referents. It also leads them to allow pronouns to corefer with local antecedents, in contexts such as (1). Unlike adults, 5 and 6 year old children often allow an object pronoun to have the same reference as a local subject NP, a phenomenon that has come to be known as the *Delay of Principle B Effect (DPBE)*.

(1) *The boy touched him. (him = the boy)*

On the other hand, we will provide evidence showing that children’s interpretation of pronouns and definite articles is also affected by their incomplete acquisition of the morphosyntactic properties of these elements. This will lead children to misclassify definite articles as *expletive determiners*, i.e. determiners without semantic content, and to analyze third person pronouns as so-called *SE-anaphors*, like Dutch *zich* or Spanish *se*. This entails that the claim made by many researchers during the last decade that syntax is early and that language acquisition after the age of three basically involves the mastery of pragmatics, must be modified.

The approach that we follow in this dissertation is comparative in nature. We will show that the different morphological properties of Dutch and Spanish definite articles and pronouns affect the way children acquire the interpretative properties that these elements have in the adult language. In particular, we will highlight the importance of “rich” Determiner-Noun agreement morphology in the interpretation and acquisition of definite articles, and the relevance of the full pronoun/clitic-
pronoun distinction in the acquisition of pronominal anaphora, which will be seen to give rise to cross-linguistic differences in the strength of the DPBE.

The structure of this dissertation is as follows. In the first chapter we will discuss our assumptions about the human language faculty and language acquisition. We will also briefly discuss the syntactic and semantic aspects of definite articles and pronouns, and some previous research on their acquisition.

The second chapter of the thesis will be concerned with the interpretation of definite articles in child Dutch and child Spanish. We will present experimental evidence on the interpretation of definite articles in complex-NP constructions, which shows that Spanish speaking children interpret definite articles as expletives, i.e., as semantically empty functional elements, in contexts where adults interpret them as “referential” definite articles. We will also present experimental evidence on the interpretation of definite articles in constructions of inalienable possession, which shows that incomplete lexical feature acquisition of the D-position leads Dutch children, unlike Dutch adults, to allow the definite article to be interpreted as an expletive. We will further argue that the “rich” Determiner-Noun agreement morphology that licenses expletive determiners in adult Spanish is acquired early by Spanish children, which explains the early mastery of constructions of inalienable possession by Spanish children.

The third chapter is devoted to the interpretation of pronouns in child Dutch and child Spanish. It consists of two parts. In the first part we will discuss the pragmatic nature of the DPBE and provide an account of the observed absence of this delay in the acquisition of the Romance languages, something that we will relate to movement properties of syntactic clitic pronouns. We will present further experimental evidence that Dutch children do not analyze weak pronouns in this language as “syntactic” clitics. Finally we show that the DPBE does not show up with Spanish strong pronouns, and provide an account for it. The second part of this chapter will be devoted to the role of underspecification, resulting from incomplete morphosyntactic feature acquisition, in the interpretation of third person (clitic) pronouns. We will provide experimental evidence showing that in some syntactic contexts Spanish speaking children do show a DPBE. We will argue that this DPBE is not pragmatic in nature, but is the result of children’s misanalysis of third person (clitic) pronouns as SE anaphors.

This dissertation closes with a general conclusion. Appendices are included presenting the details of the experiments that are discussed.
CHAPTER 1

The acquisition of pronouns and definite articles
Pragmatic and syntactic aspects

1.1. Universal Grammar, modularity and acquisition

It is a commonplace and yet remarkable fact that children acquire their native language in a relatively short period of time without any formal instruction. The question how it is possible that young children acquire the full complexity of the adult language so quickly and effortlessly is closely related to the main objective of generative linguistics: to acquire insight into the structure of the human language faculty and the way it is embedded in the general cognitive capacity of human beings.

The problem in language acquisition that generative linguistics tries to solve is the so-called “projection problem”: how do children acquire their native language so quickly and effortlessly in spite of the fact that the language input is deficient in a number of ways (Baker 1979; Lightfoot & Hornstein 1981)? The language input is far too impoverished to explain the richness and complexity of the linguistic knowledge children acquire. An important aspect of this “poverty of stimulus” argument is the fact that children are mainly exposed to “positive evidence”. Language input of this sort does not tell children what is ungrammatical.

Generative linguistics offers a solution to the projection problem: an innate language faculty, Universal Grammar (UG), provides children with the necessary linguistic knowledge that they cannot infer from the linguistic input. UG limits the class of humanly possible grammars the child can choose from. UG can be viewed as a set of principles, applying to all human languages. Part of these principles allow for a limited number of parametric options, which the child needs to set on the basis of the positive language input she is exposed to. The parametric space offered by UG accounts for the grammatical variation we find across different human languages. This means that children do not have to learn grammatical rules or principles. All they have to do is learn lexical items and set the parameters. In fact, if parametric variation between languages is encoded in the feature composition of lexical items, as argued by Wexler & Manzini (1987), or more concretely, in functional elements (like Complementizers, Inflection, or Determiners), children’s task may be limited to acquiring the morphosynactict properties of functional heads (Chomsky 1995). According to this view, parameter setting basically involves “lexical learning”.

Although the existence of a specialized innate language faculty may explain why children acquire their native language, it does not explain why acquisition takes some time. It does not explain why children make certain errors at a given developmental stage. The key to the explanation of this fact is provided by “modularity”.

CHAPTER 1

The generative approach adopts a modular view on the mind and the language faculty. This means that the language faculty is taken to be an autonomous system, governed by its own principles. This system interacts with other systems in the mind. Moreover, the language faculty itself is also modular in nature. It consists of several sub-modules that interact with each other. The sub-modules that are relevant to the research reported on in this thesis are the syntax module, the lexicon and the pragmatics module. The two sub-modules (or principles) of the syntactic module that are relevant to our research are the Binding Theory and the A-Chain Condition.

If the language faculty is modular, it is possible that different modules "grow" independently of each other, leading to acquisitional delays in some areas of the linguistic system. Some authors have claimed that not all principles of syntax are available from the outset of language acquisition. According to this view, syntactic (and other principles) mature during the development of a child (cf. Boror & Wexler 1987; Felix 1992). Note that this implies that child-grammars fall outside the set of possible adult-grammars established by UG, since at certain stages the child’s grammar may violate some principles of UG. However, in this thesis we will not adopt such a “maturational hypothesis”. Instead, we will argue that all principles of UG are present from the outset of language acquisition. This view has come to be known as the “continuity hypothesis” (Goodluck 1991). Unlike the maturational hypothesis, this view implies that child-grammars are fully constrained by UG, at all stages of development, just like adult-grammars. If children have access to all principles of UG, how do we account for the errors children make? We propose that there are two factors that lead children to show non-adultlike performance in the production and interpretation of language.

On the one hand, the fact that UG allows children to construct a certain sentence or allow a certain interpretation of a sentence does not imply that they are able to process it. To take a simple example: very young children do not produce embedded sentences. However, this need not be explained in terms of syntactic maturation. Children may simply lack the memory space that is required to process such constructions. We will show that the more limited processing capacity of young children can effectively account for some aspects of children’s non-adultlike interpretation of pronouns and definite articles.

A second factor may be responsible for children’s errors. This factor relates to the “lexical learning hypothesis” (Wexler & Manzini 1987). In order to perform like adults, children need to have fully acquired the feature content of lexical items. Children may initially misclassify certain lexical items. Let us illustrate this with a small example. Children may know that UG forbids the coreference of an object pronoun with a local subject in sentences such as “John likes him”. However, suppose the child does not know that him is a pronoun, but thinks it is a reflexive anaphor (like himself). In this case, she may be expected to accept the reflexive interpretation of "John likes him" without violating any principle of UG. In this thesis we will show that in addition to their more limited processing capacity, children’s non-adultlike interpretation of definite articles and pronouns is due to
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underspecification of functional categories, in particular the incomplete acquisition of the feature content of pronouns and definite articles.

1.2. The syntax of definite articles and pronouns

1.2.1. Definite articles and pronouns as instantiations of D

Following Abney (1987), and many studies since then, we will adopt a DP analysis of noun phrases. This means that the determiner is viewed as a functional element generated in the topmost head position in the functional domain of NPs:

(1) a. DP
    /|
   D'  
  /   
 D   NP
 /   |
 el   N
    |   hombre

Just as there may be several functional projections between CP and VP at the clausal level, several functional projections may also intervene between DP and NP, e.g. Number Phrase, Possessor Phrase (see Cinque 1993a, Picallo 1991, Bernstein 1993, for different proposals along these lines). In this thesis we will not be concerned with functional projections between DP and NP, but mainly with the role of D in determining the reference of the whole DP.

Our view on the role of D will be largely based on the proposals of Longobardi (1994) and subsequent work, and in some respects on those of Zubizarreta & Vergnaud (1992). Longobardi (1994) argues that the role of D is to enable the noun to be interpreted as an argument. He argues, following Stowell (1991), that NPs are predicative. Nouns like cow or man do not refer to a single or a specific set of cows or men, but rather to kinds. Determiners, according to Longobardi, are operators that bind a variable whose range is the extension of the kind referred to by the head noun.¹ This means that while cow refers to the kind 'cow', the cow refers to a specific cow, mentioned in the discourse, i.e. a "familiar" cow. Technically this can be viewed as a type-shifting operation, in which the definite article in D transforms an object of type <e,t> into an object of type <e>. This is very much in the spirit of Higginbotham (1987), although the technical aspects of his analysis are different.

¹ However, see Chierchia (1998) for an alternative view, according to which the argumenthood of NPs is parametrized. Chierchia argues that in languages like Chinese (which has no articles), NPs can be arguments, while in Romance only DPs can be arguments. The Germanic languages are argued to represent an intermediate case.
Higginbotham argues that common nouns have an open position, called the R-variable. This variable, which corresponds to the reference of the common noun, needs to be bound by the determiner, in order for the noun to be interpreted referentially (= as an argument) (see also Grimshaw 1990).

The fact that NPs are never arguments explains why they can show up in predicative structures in Dutch and Spanish (but not in English, however):

(2) a. Jan is arts.
   b. Juan es médico.
   ‘John is a doctor.’

In Higginbotham’s terms, in (2) the R-variable of the NP predicate arts/médico ‘doctor’ is bound by the subject of the clause, instead of by the determiner.

If arguments are DPs, this means that “bare nouns”, like bare plurals and mass nouns in Germanic and Romance are not really “bare” when they appear in argument position, as in (3).

(3) a. Yesterday John ate potatoes.
    b. Ayer Juan comió patatas.
    c. Today John will only drink water.
    d. Hoy Juan sólo beberá agua.

Longobardi argues that in (3) the D position of the object is filled by an operator. This operator is responsible for the existential interpretation of the object NPs in (3) (potatoes/water = some water/potatoes). The existence of a phonologically empty D position accounts for the limited distribution of bare nouns in Romance. As was shown by Contreras (1986) and Delfitto & Schrote (1991), Spanish (and Italian) bare nouns are limited to the object position of verbs (4a) and prepositions (4b) and the postverbal subject position of unaccusative verbs (4c). They cannot appear in the preverbal subject position (4d).

(4) a. He visto estudiantes en el edificio.
    have-I seen students in the building
    ‘I saw students in the building.’
    b. Hablamos con amigos.
    talked-we with friends
    ‘We talked with friends.’
    c. Cae agua.
    falls water
    ‘Water is falling.’
    d. *Estudiantes han ocupado el edificio.
    students have occupied the building
    ‘Students occupied the building.’
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Following Contreras (1986), Longobardi (1994) argues that the empty D position is subject to a generalized version of the Empty Category Principle (ECP). This principle requires that empty categories be in a position where they can be head-governed by a lexical category, such as verbs or prepositions. The preverbal subject, which is in a functional projection outside the VP, is not head-governed. Alternatively, it could be argued that the empty D of an object noun incorporates into the verb in order to satisfy the ECP (Delfitto & Schrotten 1991; Delfitto 1998).

However, there is a class of bare nouns that is allowed to appear in the preverbal subject position, namely proper names, like Juan or Maria.

(5) Juan compró un periódico.
'John bought a newspaper.'

Longobardi argues that proper names may appear in non-governed position because they move to the D-position, as can be seen in (6).

(6) a. *vecchio Gianni.
   b. Gianni vecchio t.
   'old John'

This movement prevents proper names from being in the scope of the existential operator in D. As is well-known, proper names normally function as rigid designators. Normally, they do not refer to a kind and so provide a range to a variable bound by the operator in D. This means that movement of proper names to D enables them to have an inherently referential interpretation.² Stated differently, it could be argued that movement of N to D involves a type-shifting operation, which changes an object of type <e,t> into an object of type <e> (Delfitto 1998).

However, overt movement of N to D is not the only option for proper names in Romance to be interpreted referentially. An alternative is the insertion of a definite article, as in (7).

(7) a. Allí viene la María. (sub-standard Spanish)
   there comes the Mary
   b. Il Gianni mi ha telefonato. (Italian)
   the John me has phoned

² In Longobardi (1996) N-to-D movement of proper names is technically executed as an operation triggered by the need to check a [+R] (referential) feature located in the D selecting a proper name.

Note that in addition to proper names a limited group of other nouns can be argued to move overtly to D, e.g. some kinship terms and nouns like casa 'home' (see Logobardi 1996). Note also that it is not completely impossible for proper names to remain in N. In that case however, they are interpreted as common nouns, as in (i).

(i) John would like to marry a Mary. (= a woman with the name Mary)
Although the definite article in (7) is not phonologically distinct from the definite article used in combination with common nouns, like libro ‘book’ in (8), its interpretation is clearly different.

(8) Juan me ha dado el libro.
   John has given me the book

In (8) el libro ‘the book’ refers to a specific book previously introduced in the discourse. In (7), on the other hand, the definite article does not have any semantic content: la María does not refer to a specific Mary (out of the set of women called “Mary”) that was mentioned before in the discourse. La María has exactly the same meaning as Maria without the definite article. According to Longobardi, the definite article that combines with proper names is an expletive determiner.

Expletive determiners can be viewed as determiners that do not contain an operator. They are just bundles of φ-features. Although the proper name in (7) is in N position, we assume that at LF, N will raise to D, as an instance of “expletive replacement” (Chomsky 1986, 1995), with the effect that (5) and (7) will have the same LF. Like overt movement to D, expletive insertion (and subsequent LF movement of N to D) will have the semantic effect of a type shifting operation, changing an object of type <e,t> into an object of type <e>. The fact that the proper name remains in N in the overt syntax when an expletive is inserted explains the word order in (9).

(9) Il vecchio Gianni.
    the old     John

Another context in Romance in which expletive determiners are argued to show up in Romance are “plural generics”:

(10)a. Los leones son carnivoros.
      the lions are carnivors
      ‘Lions are carnivors.’
      b. María odia a los perros.
         Mary hates acc. the dogs
      ‘Mary hates dogs.’

In (10) the NPs leones ‘lions’ and perros ‘dogs’ retain their “kind” readings. This means that the definite article cannot be semantically “active”. Again, as in the case of proper names, the presence of an expletive prevents the noun from being interpreted existentially. At LF, the noun will move to the expletive. As in the case of proper names, we will assume that this movement instantiates a type-shifting operation converting an object of type <e,t> into an object of type <e>. This means that we will take plural generics to be proper names for kinds (Delfitto 1998).
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However, as is well-known, in English and many other Germanic languages, no expletive is used in combinations with proper names (11) or plural generics (12). In these languages bare plurals can have a generic meaning.

(11)a. *Daar komt de Maria.
   b. *There comes the Maria.

(12)a. (*De) leeuwen zijn vleeseters. (leeuwen = lions in general)
   b. (*The) lions are carnivors. (lions = lions in general)

How do these languages prevent the noun from being interpreted existentially? Longobardi argues that in Germanic the noun raises to D at LF. This applies both to proper names and (generically interpreted) common nouns. No expletive insertion takes place. Covert N to D movement also explains why the Germanic languages allow bare nouns in subject position: no empty D that needs to be head governed is present at LF.3

According to Zubizarreta & Vergnaud (1992), there is a third context where expletive determiners show up, constructions of inalienable possession (CIP).

(13)a. Maria lesv las manos a los niños.
   Mary cl.dat.pl washed the hands dat. the children
   ‘Mary washed the children’s hands.’
   b. Pedro y Marta abrieron los ojos.
   Peter and Martha opened the eyes
   ‘Peter and Martha opened their eyes.’

In (13) las manos ‘the hands’ and los ojos ‘the eyes’ do not refer to a specific set of eyes or hands previously mentioned in the discourse, as would be the case if the definite article were denoting instead of expletive: los ojos and las manos are interpreted distributively with respect to the dative in (13a) and the subject in (13b) respectively. CIPs are possible in the Romance languages and some Germanic languages (like German), but not in English and standard Dutch.

(14) a. ??Jan en Peter draaiden het hoofd om.
   b. *John and Peter turned the head.
   ‘John and Peter turned their heads.’

The differences between Romance and Germanic with respect to the presence of expletive articles raises the question what licenses expletive determiners.

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3 Longobardi (1999) points out that the value of empty Ds is parameterized, and that constraints governing the interpretation and syntactic distribution of bare nouns in Romance and Germanic do not apply to languages that do not have indefinite articles, like Hebrew, or that do not have articles at all, like Russian.
Zubizarreta & Vergnaud (1992) argue that expletive determiners are licensed by “strong”, i.e. morphologically rich Determiner-Noun agreement. English D-N agreement is morphologically poor, since the English definite article only has one form, namely the. Romance D-N agreement on the other hand, is morphologically “rich”: the Spanish and Italian definite articles distinguish four different forms, and the French definite article three. Therefore French, Spanish and other Romance languages have definite articles with generically interpreted nouns, allow CIPs, and allow definite articles to combine with proper names, while this is impossible in Dutch and English.

However, expletive articles are not completely absent in English and Dutch. The definite article in so-called “light-verb constructions” may be argued to be an expletive.

(15)a. Jan en Peter namen de beslissing een huis te bouwen.
   b.John and Peter made the decision to build a house.

The decision/de beslissing in (15) does not refer to a specific decision mentioned in the discourse. In fact, it can be interpreted distributively with respect to the subject of the construction. This means that “rich” D-N agreement morphology is not the only way in which expletive determiners can be licensed. We propose that in (15) expletive determiners are licensed by lexical selection.⁴

Complex NP constructions, of which light-verb constructions are a sub-case, and CIPs will play a central role in chapter 2 of this thesis, where we will investigates Spanish and Dutch children’s interpretation of definite articles. We will show that children may interpret definite articles as expletives in contexts where the adult language does not allow them.

Before closing this section, let us briefly discuss the status of pronouns. According to Abney (1987) pronouns are generated in the D position, like definite articles. We will further assume that pronouns are transitive determiners, normally selecting a pro as NP complement. This analysis is in line with their interpretation and syntax. Like nouns introduced by definite articles, pronouns normally do not introduce new discourse topics. They are interpreted “specifically”, in the sense that they refer to a specific individual or object mentioned in the discourse.⁵ Like nouns introduced by definite articles and proper names, pronouns are of type <e>.

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⁴ It could be argued that English allows expletive determiners in singular generic nouns, like in (i).
(i) The tiger has stripes.
However, Zubizarreta & Vergnaud argue that the definite article in (i) is not an expletive, but denotes a prototype of a kind. Note that singular generics are much more restricted than plural generics: they are only possible if the noun represents a well-established kind, as shown in (ii), which is does not have a generic reading.
(ii) ??The wounded tiger is not capable of hunting.
For a different view on singular generics, see Longobardi (1994) and Zwarts (1992).

⁵ Pronouns can also be bound variables, as in (i).
(i) Every boy thinks he is intelligent.
Their syntax also provides evidence for their location in D, as shown in (16), where the pronoun selects a noun.

(16)a. we linguists (English)
   b. noi linguisti (Italian)

This means that in Romance, pronouns, definite articles and proper names are the only elements that appear in the D position in overt syntax. However, according to Longobardi (1994), definite articles and pronouns are base generated in D position, while proper names are head-moving to this position. This explains the contrast between (17a) and (17b):

(17)a. Noi ricchi.
    we rich
   b. *I ricchi noi.
      the rich we

Finally, note that many languages distinguish two types of pronouns: strong pronouns (like ella ‘her/she’ and él ‘him/he’ in Spanish) and weak pronouns, or clitic pronouns (like la ‘her’ and lo ‘him’ in Spanish). Many scholars have argued that strong pronouns and clitic pronouns are generated in different structural positions. According to some, only clitic pronouns, like lo and la are base generated in D, while strong pronouns are either in [Spec, DP] (Uriagereka 1995), or head-moved from N to D (Cardinaletti 1994). Others have argued that clitic pronouns are base generated in the functional domain, outside the VP (Sportiche 1992) (see chapter 3).

Chapter 3 will be devoted to the acquisition of pronominal anaphora. We will present experimental evidence showing that the distinction between full pronouns and clitic pronouns is relevant to the way children acquire the adult restrictions on the anaphoric interpretations of these elements.

1.2.2. Syntactic constraints on the interpretation of pronouns and DPs: the Binding Theory

Pronouns and DPs can be anaphoric with respect to elements in the same sentence. However, this possibility is not unlimited. Chomsky (1981) argues that the possibility for pronouns, reflexive pronouns (anaphors) and DPs (R-expressions) to
find their antecedent in the same clause is constrained by three binding principles, provided by UG. In (19) we will present two of the three Binding Principles.

(19) Standard Binding Theory (Chomsky 1981: 188)

Principle A: An anaphor is bound within its governing category.
Principle B: A pronoun is free in its governing category.

In this theory an element A binds an element B if A c-commands B and A and B have the same referential index. The governing category corresponds with the minimal IP or NP containing the anaphor or pronoun, a governor and a subject.

The SBT accounts for the English constructions in (20):

(20) a. Johni said that [IP Peteri shaved himself[5j him[6j]]
    b. [DP The mani [PP next to Peterj]], shaved himselfi[7j] /him[8j]

In (20a) himself must be bound by Peter, and cannot be bound by John, because only Peter is inside the IP, the governing category of himself. Him, on the other hand, cannot be bound by Peter which is inside the IP, but may be bound by John. (20b) illustrates the requirement of c-command. Himself cannot be bound by Peter, because Peter does not c-command himself. Him in (20b) cannot be bound by [the man next to Peter], since this DP c-commands him, and him and the DP are in the same governing category. Note, however, that nothing prevents him from referring to a non c-commanding DP. In fact, him may even refer to a DP in another sentence. Therefore him is allowed to refer back to Peter. No binding relation is involved between these two elements, hence no binding violation.

However, as is well-known the SBT runs into difficulties when it has to account for binding facts in languages other than English (Everaert 1986; Koster & Reuland 1991, among many others). One of the problems is that many languages have two types of reflexive pronouns, SE anaphors, like sich in Dutch and se in Spanish, and SELF anaphors, like Dutch zichzelf, English himself and Spanish sí mismo. As we will see, the distribution of SE anaphors is different from the distribution of SELF anaphors, which is better captured by Reinhart & Reuland’s (1993) alternative binding theory, which we will adopt in this study. We will briefly discuss the most important aspects of this alternative approach to binding.

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7 C-command:
A node A c-commands a node B, iff:
(i) A does not dominate B, and B does not dominate A.
(ii) the first branching node that dominates A, also dominates B.

8 We ignore Principle C of the SBT, which states that R-expressions must be free. This principle was meant to account for the ungrammaticality of (i).

(i)*He; said that Mary loves John.

According to Reinhart (1983) Principle C is not a syntactic principle at all. The effects of this principle follow from discourse factors.
According to Reinhart & Reuland, the distribution of pronouns and reflexives is regulated by two different modules of UG: the Binding Theory, and the generalized A-chain Condition. Let us start with the binding theory.

(21) Binding Theory (Reinhart & Reuland 1993)
Principle A: A reflexive-marked syntactic predicate must be reflexive
Principle B: A reflexive semantic predicate must be reflexive-marked

Reinhart & Reuland state that a predicate is reflexive if and only if two arguments are co-indexed. (21) accounts for the grammaticality differences in (22).

(22) a. *Jan, haatte hem,
    John hated him
b. ??Jan, haatte zich,
    John hated SE
c. Jan, haatte zichzelf,
    John hated SELF
d. Jan, vergiste zich.
    John was-mistaken
e. *Jan, haatte zichzelf*
    John hated SELF

In (22a,b) the subject and the object of the predicate haten are co-indexed, hence the predicate is reflexive. However, Principle B states that a predicate can only be interpreted reflexively if it is reflexive-marked, i.e. if something in the semantics or morphology of the predicate licenses the reflexive interpretation. Since the predicate in (22a,b) is not reflexive-marked, Principle B is violated. (22c,d) are grammatical. The reason is that in both cases the reflexive predicate is reflexive-marked. Reinhart & Reuland argue that in (22d) reflexive-marking takes place in the lexicon: vergissen ‘be mistaken’ belongs to a limited group of verbs that are inherently reflexive. In (22c), reflexive-marking takes place in syntax, by means of a SELF-anaphor. According to Reinhart & Reuland, (22b,c) illustrate an important difference between SE-anaphors and SELF anaphors in Dutch: only the latter are reflexive-markers. (22e) illustrates a Principle A violation: the predicate is reflexive-marked by zichzelf, but it is not reflexive, since the two arguments are not co-indexed.

However, (21) cannot account for the ungrammaticality contrasts in (23):

(23) a. *Jan, vergiste hem.
    John was-mistaken him
b. Jan, vergiste zich.
    John was-mistaken SE
c. *Jan, hoorde [hem, zingen].
    John heared him sing
In (23a), Principle B is satisfied, because *vergissen* is inherently reflexive, yet it is ungrammatical. In (23c) Principle B is irrelevant. The reason is that Principle B is defined over (reflexive) predicates. The matrix subject *Jan* and the embedded subject *hem* are theta-marked by different predicates (*horen* and *zingen*, respectively): they are not co-arguments, hence there is no reflexive predicate. Nevertheless, (23c) is ungrammatical. Reinhart & Reuland propose that the ungrammaticality of (23a,c) is due to a different module of UG, the generalized A-Chain Condition.

(24)\textit{A-Chain Condition}

A maximal A-Chain (a1,...,an) contains exactly one link -a1- that is both [+R] and case-marked.

Reinhart & Reuland argue that an A-Chain is formed between two elements that are in a local binding configuration, like between the object and the subject of a reflexive predicate, or between the matrix subject and the embedded ECM subject. The A-Chain condition states that the foot of this Chain must be [-R], i.e. referentially defective. Pronouns and R-expressions are argued to be [+R], while SE-anaphors and SELF anaphors are [-R].\footnote{The motivation for this classification will be discussed in detail in chapter 3.} This means that the ungrammaticality of (23a,c) is due to a violation of the A-Chain Condition: both *Jan* and *hem* are [+R].

Summarizing, we can say that three different cases of ungrammatical binding can be distinguished: cases where only Principle B is violated (22b), cases where only the A-Chain Condition is violated (23a,c), and cases where both are violated (22a).

The alternative binding theory as formulated by Reinhart & Reuland will play an important role in chapter 2, in our account of constructions of inalienable possession, and especially in chapter 3, where we will discuss the acquisition of pronominal anaphora. However, some refinements will be added to the original reflexivity framework of Reinhart & Reuland (1993), most of them inspired by Reuland (1996, 1998).

1.3. The acquisition of D: the role of underspecification, "rich" morphology, and pragmatics

1.3.1. Underspecification of functional categories

One of the phenomena that have received considerable amount of attention in acquisition research is children's frequent omission of functional elements. Roughly
till the age of three, children are often found to omit verbal inflection (25), complementizers (26) and, most importantly for this study, (definite) articles (27) in contexts where they are obligatory in the adult language (Radford 1988; Clahsen, Eisenbeisz & Vainikka 1994; Müller & Penner 1996).  

(25)a. That go there English
   b. Hayley want that English

(26)a. Apfelsaft getrunken hab. German
   apple-juice drunk have
   ‘Because I drank apple juice.’
   b. Ich geburtstag hab. German
   I birthday have
   ‘Because it is my birthday.’

(27)a. Wayne in garden English
   b. Daddy got golf ball. English
   c. Juan tiene pipa. Spanish
   (Juan tiene una pipa - ‘John has a pipe.’)
   d. Tiene camelo. Spanish
   (Tiene un caramelo - ‘(S)he has a candy’)

Young children may also produce so-called “dummy placeholders”, in positions where adults have full-fledged complementizers or articles (see Clahsen, Kursawe, Penke 1995; Lleó 1997; Hernández Pina 1984; Müller 1994; Müller & Penner 1996).

(28)a. eh umfallen sollst
   fall-over should
   ‘Because you should fall over.’
   b. eh da die rennauto fahrn
   there the racing-car drive
   ‘I see that the racing cars are driving there.’

(29)a. e moto (la moto - ‘the motorcycle’) Spanish
   b. e fah (el flan - ‘the pudding’) Spanish
   c. d bome (die Blume - ‘the flower’) German
   d. m bett (das Bett - ‘the bed’) German

10 However, Bohnacker (1997) challenges the claim that children often omit articles. She shows that Swedish children omit articles in only 10% of the cases. She also shows that many instances of non-adultlike article drop reported by Radford (1988) and Clahsen et al. may not be non-adultlike at all.
There are several explanations of this phenomenon in the literature. According to some researchers the dropping of functional elements and the production of protomorphemes or "dummy placeholders" (including "proto-articles") are basically a phonological or a prosodic phenomenon (Lleó 1997; Demuth 1994). Others have argued that the source of these types of deletion is grammatical. According to some researchers, children go through a prefunctional state, in the sense that at some stage child languages only contain lexical categories (Radford 1988, a.o.). For the nominal domain this means that young children only have NPs, and no DPs. Others, like Hoekstra & Hyams (1995) and Deprez (1994b), have argued that children do have DPs and IPs from the outset of language acquisition, but leave the D position and INFL underspecified for \( \phi \) features. In Hoekstra & Hyams’s framework it is underspecification for number that is responsible for article drop, and root infinitives in the verbal domain.

In this dissertation we will argue, following Hoekstra & Hyams (1995), that children do have functional projections from very early on, including DPs, but that these projections may remain underspecified for (several) \( \phi \) features. We take the omission of articles to be one of the consequences of underspecification. There are some arguments in favor of this view.

In the first place, we believe that article drop, or more generally the omission of functional categories, cannot be explained in prosodic or phonological terms only. The reason is that the omission of functional categories appears to have syntactic effects. Clahsen, Kursawe & Penke (1995) have shown with respect to the omission of complementizers in child German, that children omit subjects in embedded clauses significantly less often when the embedded clause is introduced by a complementizer (or proto-complementizer), than when the complementizer is absent. 11

On the other hand, there is evidence that non-phonologically expressed functional categories may be syntactically present in the sense that the corresponding syntactic position is available (Hyams 1992b). This has been shown with respect to the presence of INFL and C in child language: As shown in (30a), French speaking children know that finite verbs move to INFL in French, although they will often use root infinitives (30b), and German (and Dutch) speaking children move finite verbs to C in root clauses, as in (31) (Verrips & Weißenborn 1992; Pierce 1989), in spite of the fact that overt complementizers are omitted at this stage.

\[(30a). \quad [_{IP} \text{Veux}, \quad [_{Neg} \text{pas} \quad [_{VP} \text{t}, \text{lolo}]]) \quad \text{(French)}\]
\[\text{want} \quad \text{not} \quad \text{water}\]

\[b. \quad [_{Neg} \text{Pas} \quad [_{VP} \text{tomber bebé}] \quad \text{not} \quad \text{fall} \quad \text{baby}\]

---

11 Clahsen et al. accounted for this by arguing, following Rizzi's (1992) "Truncation Hypothesis", that when the CP is absent, the null subject can be identified by discourse. However, as we will see below, there is evidence that in early German the C projection is in fact present, although underspecified.
THE ACQUISITION OF PRONOUNS AND DEFINITE ARTICLES

(31) \[ \text{CP} \ 	ext{ein e}_i [\text{CP} \text{ mal}_i [\text{IP} \text{ der t}_i \ t_j] \ (\text{German: 1;10,28 years}) \]

\[ \text{an egg paints he} \]

'He is painting an egg.'

Interestingly, there is evidence from the nominal domain showing that the absence of determiners in child production does not necessarily point at the absence of functional categories in the noun phrase. Aldridge, Borsley, Clack, Creunant & Jones (1997) argue that in Welsh N moves to Number phrase, one of the functional categories between D and N. This is evidenced by the post-nominal position of adjectives, which are argued to be adjoined to the NP and, possessors, which are argued to be in [Spec, NP].

(32) \[ \text{DP}^0 \text{[NumP Car, Num}^0 \text{[NP newydd [NP Dafydd t] ]} \]

\[ \text{car new David} \]

'David's new car.'

They show that children never produce possessor + noun or adjective + noun orders, in spite of the fact that they hardly produce function words like definite articles.

We conclude that children have functional categories, including DPs from early on. Determiners and other functional heads may remain unexpressed, though, as a result of the underspecification of D in child language. The acquisition process comprises the acquisition by the child of the feature content of a given functional head, by adding features to it, till the adult feature composition of a head is reached (cf. Roeper 1996). Of course, as long as this process is not completed, it may be argued that in some sense the adult functional category is not present, given that the nature of a given functional head is determined by its feature content (Chomsky 1995). In fact, there is no universal inventory of functional heads, but only of morphosyntactic features. However, this is not relevant to what we want to claim, namely that children do have a functional structure from very early on, also in the nominal domain, but that the feature content of these different functional heads may be different from that in the adult language. As we will see in chapter 2, this process of feature acquisition is not completed when the child reaches the age of 3 or 4, and no longer omits determiners. Incomplete feature acquisition appears to determine the interpretation children assign to definite articles and pronouns.

\[ \text{Moreover, as Giorgi & Pianesi (1998) have argued, languages may differ with respect to the way these features are "scattered" over different functional heads, in the sense that a given selection of morphosyntactic features may be realized as different functional heads in one language, and as a single functional head in another language.} \]
1.3.2. Richness of inflectional morphology and acquisition.

The claim we want to defend in this thesis is that children are sensitive to inflectional morphology, and that "rich" inflectional morphology may help children in acquiring certain properties of the adult grammar relatively early.

It is well known that ("rich") inflectional morphology determines certain aspects of syntax. Examples of this are the correlation between the presence of case morphology on nouns and word order freedom of a language (see Neeleman & Weerman 1987, for evidence from language change), the correlation between subject-verb morphology and V-to-I movement (see Vikner 1995; Koeueman 2000, among many others), and the correlation between adjective agreement and noun drop (Kester 1996).

Another example of this is the null-subject phenomenon. Languages like English and Dutch do not allow null-subjects, while many Romance languages, like Spanish and Italian, do.

(33)a. Maria zei dat *(hij) haar broer heeft geslagen
   b. Mary said that *(he) hit her brother.

(34)a. María ha dicho que (él) pegó a su hermano.
   b. Maria ha detto che (lui) ha picchiato suo fratello.

The possibility for a language to have null subjects has often been related to the richness of the verbal agreement paradigm (going back to Taraldsen 1981). As is well-known, Spanish and Italian have a morphologically rich verbal agreement paradigm, while in Dutch and English subject-verb agreement is morphologically poor.\(^{13}\)

(35) Subject-verb agreement morphology

<table>
<thead>
<tr>
<th></th>
<th>Spanish</th>
<th>English</th>
<th>Dutch</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st sg.</td>
<td>hablo</td>
<td>speak</td>
<td>spreek</td>
</tr>
<tr>
<td>2nd sg.</td>
<td>hablas</td>
<td>speak</td>
<td>spreekt</td>
</tr>
<tr>
<td>3rd sg.</td>
<td>habla</td>
<td>speaks</td>
<td>spreekt</td>
</tr>
<tr>
<td>1st pl.</td>
<td>hablamos</td>
<td>speak</td>
<td>spreken</td>
</tr>
<tr>
<td>2nd pl.</td>
<td>habilais</td>
<td>speak</td>
<td>spreken</td>
</tr>
<tr>
<td>3rd pl.</td>
<td>hablan</td>
<td>speak</td>
<td>spreken</td>
</tr>
<tr>
<td>total</td>
<td>6 forms</td>
<td>2 forms</td>
<td>3 forms</td>
</tr>
</tbody>
</table>

\(^{13}\) As we will see in chapter 2, rich agreement is not only way to license null subjects. This explains why Chinese licenses null subjects without having a rich verbal agreement paradigm.
It has been argued that rich morphology licenses and identifies an empty argument located in [Spec, IP], usually identified as pro. In languages that lack rich agreement morphology, an overt subject must be located in [Spec, IP]. A strong piece of evidence in support of the relation between rich morphology and the null subject possibility is provided by Hebrew. Hebrew is a “mixed” pro-drop/non pro-drop language. In this language a null subject is possible in (36a), where the first person singular past tense is overtly inflected for person, number and gender. It is impossible, though, in (36b), where the first person singular present tense marking on the verb carries gender and number marking, but no person marking (Borer 1984).

(36)a. (‘Ani) ‘axalti ‘et ha-banana.
   I ate acc. the-banana
   ‘I ate the banana.’

This illustrates that the presence of “rich” agreement morphology licenses null-subjects, while the presence of “poor” agreement morphology does not license null-subjects (Jaeggli & Safir 1989).

Important for our purposes is that children appear to be sensitive to the inflectional morphology of the language they are acquiring. Evidence for this is the cross-linguistic variation with respect to “root infinitives”. It is well known that children acquiring languages like Dutch, German, English and French often produce non-embedded clauses with a single non-finite verb, such as (37) (Rizzi 1992; Poeppel & Wexler 1993, among others).

(37)a. Papa schoenen wassen (Dutch)
    daddy shoes wash

b. Hayley want that. (English)

(37) c. Pas manger la poupée. (French)
    not eat the doll

However, these “root infinitives” are not a universal feature of child language. They are hardly found in the acquisition of languages such as Italian, Spanish or Basque (Guasti 1994; Ezeizabarrena Segurola 1996). Children acquiring these languages almost consistently inflect their verbs, and most of the times they do correctly. As Phillips (1995) shows, the extent to which children show root infinitives correlates

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14 Spanish children may sometimes use a singular verb form with a plural subject (Johnson 1995; Ezeizabarrena Segurola 1996). In fact, there is a more general tendency in young children (two year olds) to avoid plural verb forms, although most of the times there is no mismatch between subject and verb form (see Grinstead 1995). Similar findings are reported for French and Italian (Hoekstra & Hyams 1995).
with the morphological richness of the agreement paradigm. Children acquiring English or Swedish, languages with verbal agreement paradigms that do not distinguish more than two forms, show more root infinitives in their production, and for a longer time, than children acquiring Dutch, German or French, languages that show up to three or four different forms for regular main verbs in any tense. Children acquiring languages with morphologically rich agreement paradigms, on the other hand, like Italian and Spanish, hardly show any root infinitives.

The early acquisition of rich verbal agreement has another consequence for language acquisition. It is well known that English and Dutch speaking children often omit subjects.

(38)a. Want to get it. (= I want to get it off)
   b. Mag niet voor de vrouw (van Kampen 1997)
      may not for the woman
      ‘The woman does not allow it.’

This has been taken as evidence for an initial missetting of the null subject parameter by young English children (Hyams 1986). Hyams proposed that children mistakenly set this parameter at the “Italian” value. However, as Hyams & Wexler (1993) have shown, following Valian (1990), Italian speaking children omit subjects much more often than English speaking children. In fact, Grinstead (1995) shows that in the first stages of the acquisition, Spanish speaking children hardly use overt subjects. This clearly indicates that Spanish and Italian children have acquired the pro-drop property of their language from the beginning, together with the subject-verb agreement paradigm, and that subject omission by English children must have a different source.15

The early acquisition of “rich” morphology is also observed in the nominal domain. As we will see in chapter 2, early acquisition of “rich” D-N agreement of Spanish affects children’s interpretation of definite articles. In chapter 3 we will see how the presence of a pronominal clitic system in Spanish, which we consider to be a piece of inflectional morphology, gives children acquiring this language a head-start. We will show that the presence of a pronominal clitic system helps Spanish

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15 Subject drop in child English and child Dutch may in fact involve some version of topic drop (de Haan & Tuinman 1988). Topic drop is also possible in (informal) adult Dutch (ia,b) and English (ic). Note that topic drop in Dutch is not limited to subjects (ia). Topicalized objects (ib) drop too.

(i)a. Is gevallen. (= it fell)
   b. Heb ik al.
      have I already (= I already have this)
   c. Gotta go.

The “dropped” topic needs to be recovered from the contexts. Since not every context provides a clear discourse topic, this explains the lower rate of subject omissions in child English and Dutch (see also Austin, Blume, Lust, Núñez del Prado, Parkinson & Proman 1995, for context constraints on English null-subjects).
children in avoiding errors in the interpretation of pronouns that are found in the acquisition of languages without such a system, like Dutch and English. These findings also stress the merits of the comparative approach we follow in this study.

1.3.3. The acquisition of reference

Several studies have shown that children between 4 and 7 years old have difficulties with the proper use of determiners and pronouns. In the adult language definite DPs and pronouns refer to "familiar" or presupposed objects or individuals. In order to introduce new discourse referents indefinites must be used.\(^{16}\) Therefore (39b) will be infelicitous if it is uttered in an out-of-the-blue context, but fully felicitous if it is preceded by (39a).

(39)a. Yesterday I met a man.
   b. The man had a mustache.

Experimental evidence shows that children apparently violate this constraint on the use of definite expressions.

An example of this is provided by one of the experiments carried out by Karmiloff-Smith (1979; 1980). She carried out a "story telling" experiment with French children and English children. In the experiment children were shown a picture book with six pictures. The children had to tell what happened in the book. The results show that under 6-year olds introduce new referents and switch reference using pronouns, like in the English example in (40).

(40)\(B = \) the boy
   \(M = \) the balloon man
   \(GB = \) green balloon

"He’s (B) walking along…and he (B) sees a balloon man…and he (M) gives him (B) a green one…and he (B) walks off home…and it (GB) flies away into the sky. So he (B) cries."

\(^{16}\) Note that in some cases definite DPs are "familiar" without being introduced by an indefinite in the previous discourse. This is the case with "unique descriptions", i.e. DPs like the sun, the moon, or (if you live in a monarchy) the queen. Another case is (i), where cultural knowledge related to weddings makes it possible for the bride to be identified, a psychological mechanism called "bridging" (Clark 1977).

(i)a. Yesterday I was at a wedding.
   b. The bride was nervous.

Finally, definite DPs and pronouns can be used "deictically", i.e. they can refer directly to the visual contexts. However, deictic reference requires the use of additional contextual clues such as pointing.
The infelicitous use of definite expressions is not limited to pronouns. Maratsos (1976) showed in one of his experiments (the “Down the hill” experiment, Maratsos 1976: 80-81) that 4 year old children used definite DPs 50% of the time in order to refer to an object that was one of many similar objects presented to the child, in which case an indefinite NP would have been more appropriate.

(41) Context: several boy toys, and several girl toys are presented to the child. A toy car was sent down a hill with one of the toys in it. The child had to decide which toy.
  Question experimenter: Who shall we give a ride now?
  Response child: the boy/the girl
  Response adult: a boy/a girl

They used definite DPs without making sure that the listener knew what they were talking about. Similar results on the infelicitous use of definite DPs and pronouns by young children have been reported for other languages, like German. Bamberg (1987) reports that in a “story telling” experiment, German children mainly used definite DPs and pronouns in order to introduce new referents (75% definite DPs and 16% pronouns). Moreover, the 3.5 to 4 year olds did not use indefinite NPs at all to introduce new referents.

Recent experimental research shows that children use definite articles and pronouns infelicitously because they have problems with the notion of “familiarity” (Schafer & DeVilliers 1999; Schaeffer & Matthewson 1999). As we argued at the beginning of this section, definite articles and pronouns can only be used to refer to “familiar” entities. The difficulty with the notion of familiarity is that in order for it to license the use of a definite article, the object referred to should not only be familiar to the speaker, but also to the hearer. It is well known that children before the age of 4 do not realize that the point of view of the hearer may be different from that of the speaker (= the child herself), i.e. they lack a “theory of mind” (Wimmer & Perner 1983). However, it is conceivable that even a five or six-year-old, although she is aware of the relevance of the hearer in establishing “familiarity”, she is still not very good at determining whether an object or individual she is referring to is not only familiar to herself but also to the hearer. As a result a child may often erroneously believe that a DP is as familiar to the speaker as to herself, and license the use of a definite article (or pronoun). 17 Note that this does not necessarily imply that the infelicitous use of definite expressions is due to a lack of knowledge of what can be assumed to be “familiar” to the hearer. It may well be that children fail when they try to compute this knowledge, due to their more limited processing capacity (see Avrutin 1994).

17 Note that children’s difficulties with the integration of discourse information also affects their interpretation of so-called “specific indefinites”, as shown by Krämer (1999) in an experiment with Dutch speaking children.
Note that children’s non-adultlike performance on pronouns does not only show up in contexts of reference to an extra-sentential referent. It is well known that children also perform non-adultlike on intra-sentential coreference. Several studies have shown that 4 to 6 year olds allow pronouns to corefer with a local c-commanding antecedent in roughly 50% of the cases (42) (Chien & Wexler 1990 among others).

(42) The boy pointed at him. (John = him) (50% adultlike performance)

On the face of it, this phenomenon, which has come to be known as the “Delay of Principle B Effect” (DPBE) does not have much in common with children’s infelicitous use of definite articles and pronouns in discourse. However, as we will see in chapter 3, there is strong evidence that children showing a DPBE do not violate Principle B or any other syntactic principle at all. Rather, they appear to be violating a pragmatic principle that constrains the possibility of intrasentential coreference to special contexts like (43).

(43) Everybody hates Oscar. Even Oscar (himself) hates him. (Oscar = him)

This means that the DPBE constitutes another case in which children violate pragmatic/discourse principles that determine the use of definite expressions like pronouns and definite DPs in the adult language. Again, like in the case of children’s infelicitous use of pronouns and definite DPs in discourse, children’s violation of a pragmatic principle does not imply that they do not know it, as suggested by Chien & Wexler (1990) and more recently by Thornton & Wexler (1999). Instead, in chapter 3 we will adopt Grodzinsky & Reinhart (1993) proposal, and argue that children know the relevant pragmatic constraint regulating intrasentential coreference, but have problems with the computation of this constraint.

However, in the next two chapters we will provide experimental evidence from Dutch and Spanish that points to the existence of a syntactic factor affecting children’s interpretation of definite articles and pronouns, in addition to the problems at the syntax/pragmatics interface that we briefly discussed in this section. We will show that the semantic properties of definite articles and pronouns are determined by their feature content, and that the incomplete acquisition of this feature content affects children’s interpretation of these elements. Concretely, we will argue that incomplete feature acquisition leads children to interpret definite articles as expletive determiners and third person pronouns as SE anaphors in some syntactic contexts.
CHAPTER 2
Underspecification of the D-position
Evidence for expletive determiners in child language

2.1. Introduction

In the previous chapter we showed that children’s use and interpretation of definite articles (and pronouns) is not like that of adults in certain respects. Children often use definite articles and pronouns in contexts that require the use of an indefinite article in the adult language. We argued that the cause of this phenomenon is cognitive/pragmatic in nature. Children often fail to make correct inferences about the discourse representation of the hearer, which leads them to use definite articles to refer to objects that are “familiar” to the speaker, but not to the hearer.

The aim of this chapter is twofold. First, we will present experimental results from Dutch showing that in addition to a cognitive/pragmatic delay, children’s interpretation of DPs is affected by a syntactic delay. This delay is manifested by what we may call the “non-referential” or “transparent” interpretation of DPs in child language. Non-referential DPs are DPs that do not refer to a discourse antecedent, i.e. they lack independent reference. It has been argued that this delay reflects children’s tendency to project NPs instead of DPs. We argue instead that this delay reflects children’s incomplete acquisition of the feature composition of the Determiner position. We will further argue that children’s incomplete feature acquisition will result in underspecification of the D position, and that underspecified Ds are interpreted as expletive determiners.

Secondly, we present experimental results from Spanish showing that children are sensitive to “rich” D-N agreement morphology, and that the early acquisition of this morphology helps children to master early certain properties of the adult syntax of the language they are acquiring, such as the licensing of expletive determiners (see chapter 1). However, as we will see, this does not necessarily mean that children respect the selectional restrictions that partly determine the use of expletive determiners in the adult language.

The structure of this chapter is as follows. First we will present results from previous studies by Roeper and his colleagues on the non-referential interpretation of DPs in child language. Then we will present an experimental study on the interpretation of complex NPs in light-verb and “heavy-verb” constructions in child Spanish (similar to Roeper & DeVilliers’ 1995 study). Next we will present a study on the interpretation of definite articles in Constructions of Inalienable Possession in child Dutch and Spanish. We will end this chapter with a summary of the conclusions.
2.2. Non-referential NPs in adult and child languages: previous research

2.2.1. Introduction

Several experimental studies have shown that children that already use definite articles consistently in their production often seem to interpret them as referentially inactive. This has been taken as evidence in favor of the hypothesis that children often project a NP instead of a DP, even when the noun is marked with a definite article. In fact, it has been argued that even in the adult language, nouns marked with definite articles should be analyzed as NPs, instead of DPs, when they are interpreted non-referentially. In the sections 2.2.2. to 2.2.4. we will briefly discuss some studies that show that children often interpret NPs non-referentially in contexts that require a referential (= context related) interpretation in the adult language. In section 2.3. we will argue that non-specific nouns introduced by definite articles are not NPs, but DPs with an underspecified D position. We argue that underspecified determiners are interpreted as expletive determiners, similar to expletive determiners that exist in many adult languages (Zubizarreta & Vergnaud 1992; Longobardi 1994).

2.2.2. Children's interpretation of "home"

In Pérez-Leroux & Roeper (1996, 1998), 3 to 6 years old children were tested on their interpretation of home and similar words like work and school in constructions like (1a) and (1b).

(1) a. Everybody went home/to school/to work.
   b. Everybody went to his home/to his school/to his work.

(1a) only has one interpretation in the adult language, namely that everybody went to his/her own home/school/work. This reading is called the distributive reading. (1b), on the other hand, is ambiguous: his home/school/work can refer to everybody's own home/school/work, but also to one specific home, school or work. The latter reading is referred to as the "deictic" or "specific" reading. Pérez-Leroux & Roeper argue that in (1a), where home/school/work is interpreted distributively, i.e. as a bound variable, it is a NP with an anaphoric null pronominal PRO in [Spec, NP]. The PRO needs to be bound inside the first clause containing home, which in the case of (1a) is everybody, the subject of the sentence. In (1b), home/school/work is a DP with a possessive pronoun in [Spec, DP], which binds the PRO in [Spec, NP]. The possessive pronoun may, but need not be bound by the subject of the sentence. In the latter case, the noun has a specific reading. In the former case, it has a bound-variable reading. Since DPs are argued to be separate binding domains, unlike NPs, a binding relation between the possessive pronoun and the subject of the sentence does not violate Principle B.
Pérez-Leroux & Roeper (1996) show that English speaking children start using *home* in constructions like (1a) even before they start using determiners. Pérez-Leroux & Roeper (1996, 1998) also present results from an experiment using an act-out task, showing that children between 3 and 6 years old know that bare *home/school/work* needs a (local) binder: they gave distributive responses 67% to 89% of the time in constructions with a bare noun, like (1a), but only 22% to 33% of the time in constructions containing a possessive pronoun, like (1b). However, contrary to what is claimed by Pérez-Leroux & Roeper (1996), Pérez-Leroux & Roeper (1998) show that children did not prefer the “deictic” reading of *his home/his school/his work* significantly more often than adults did. Adults gave distributive responses 94% of the time in constructions with a bare noun and 47% of the time in constructions containing a possessive pronoun.

Pérez-Leroux & Roeper (1998) conclude that the results are compatible with the hypothesis that children start out with NPs, to the effect that they allow binding of the null possessive inside the NP from the outset of language acquisition. However, since they do not reject the deictic reading of the DP more often than adults did, they conclude that children are able to project a DP too.

### 2.2.3. VP/IP ellipsis in child language

In Abdulkarim & Roeper (1997) 35 Arabic speaking children between 3 and 7 years old and 13 English speaking children between 3 and 5 years old were tested on their interpretation of VP/IP ellipsis.

In the adult language (2) can have two readings, a sloppy one, according to which the dog and the cat each hit a different tree, and a strict reading, in which the cat and the dog hit the same tree. In (3a,b), on the other hand, only the strict reading is available to adults. (3a) can only mean that the giraffe hit the same bear as the elephant (not that both hit a different bear), and (3b) can only mean that Bill lifted John’s jeep (not his own jeep).

(2) The cat hit a tree, and the dog did too.

(3) a. The elephant hit the bear, and the giraffe did too.

   b. Tom lifted John’s jeep, and Bill did too.

Abdulkarim & Roeper found that English speaking children and Arabic speaking children, who were tested using an act-out test, showed a strong preference for the sloppy reading, not only in (2), but also in (3a,b). Since the strict reading results from a specific interpretation of the noun, it follows that children allow nouns to be interpreted non-specifically, even when they are introduced by definite articles or proper noun possessors, such as in (3). Since according to Abdulkarim & Roeper specifically interpreted nouns are DPs, while non-specific nouns are NPs, they interpret these results as indicating that children often project NPs when adults project DPs.


2.2.4. Light verb constructions in children and adults.

Roeper & De Villiers (1995) argue that children’s interpretation of (4) and (5) provides evidence for the claim that children often project an NP instead of a DP.

(4) a. Bert made the decision to shave him. (him = John/Bert)
   b. Bert liked the decision to shave him. (him = John/Bert)

(5) a. When did the girl make the decision to play.
   (=when make the decision/when play)
   b. When did the girl like the decision to play.
   (= when make the decision/*when play)

In the (a) examples [the decision to shave him/play] is the complement of a “light-verb”. In the (b) examples it is the complement of a “heavy-verb”. The nature of the matrix verb affects the interpretation of [the decision to shave him/play]. When it is a heavy-verb, the interpretation of [the decision to shave him/play] is “specific”, in the sense that it refers to a specific decision that has already been introduced in the discourse. When the matrix verb is a light-verb, on the other hand, the complex NP is not specific: make the decision to play just means decide to play.¹

Interestingly, this difference between light-verb complements and heavy-verb complements correlates with some syntactic effects. First, it affects the binding possibilities of NP internal pronouns. When the matrix verb is a heavy-verb, as in (4b), the pronoun (him) can be bound by the subject (Bert). When the matrix predicate is a light-verb, as in (4a), the pronoun cannot be bound by the subject. Second, the difference between light-verb complements and heavy-verb complements also affects the wh-extraction possibilities. As can be seen in (5b), when cannot be extracted out of a complex NP that is the complement of a heavy-verb, but it can when the complex NP is selected by a light-verb, as shown in (5a).

In sum, specific NPs appear to constitute a barrier for wh-extraction, and a binding domain for pronouns. This is confirmed by data like (6) (Hestvik 1990):

(6) a. *John, stole a picture of him.
   b. John, stole the picture of him.

(7) a. What did John steal a picture of?
   b. ??What did John steal the picture of?

¹ Note that when the subject is plural, the complex NP can be interpreted distributively in (ia), a light-verb construction, but not in (ib), a heavy-verb construction.

(i) a. John and Peter made the decision to leave. (each one makes his own decision = two decisions)
   b. John and Peter liked the decision to leave. (each one liked a specific decision = one decision)
Roep & DeVilliers argue that nouns with a specific interpretation are DPs, while non-specific nouns are NPs. This means that in light-verb constructions like (4a) and (5a) the decision to play is a NP, while in the heavy-verb constructions like (4b) and (5b) it is a DP. Roep & DeVilliers argue that when the decision is a DP, there is a PROarb in [Spec, DP]. They argue that the arbitrary reference of PRO in this position is linked to the fact that all DP features lead to discourse reference. When the decision is a NP, no PROarb is present. This leads to the following configuration of (8a,b).

(8) a. *Bert, made [NP the decision [PRO, to shave him,]]
    b. Bert, liked [DP PROarb-k the decision [PROarb-l to shave him,]]

In (8a) Principle B is violated, since him is locally bound by PRO, which inherits its index from Bert by obligatory control. In (8b) on the other hand, the PROarb of the decision controls the PRO of to shave, which will also become arbitrary. Since this latter PROarb does not bind him, Principle B is respected.

Roep & DeVilliers further argue that wh-extraction is possible across an NP, but not across a DP, because DPs are barriers, NPs are not. This explains why (9a) is grammatical, but (9b) is not (Chomsky 1986).

(9) a. When, did the girl make [NP the decision to play t,].
    b. *When, did the girl like [DP the decision to play t,].

Although both the light-verb construction and the heavy-verb construction contain a definite article, Roep & DeVilliers claim that in (8a) and (9a) the definite article is generated in an NP adjoined position, cliticized to N.

Roep & DeVilliers tested English speaking children of 4 and 5 years on their interpretation of pronouns and their possibilities of wh-extraction in both constructions containing light-verbs and constructions containing heavy-verbs. The experiment consisted of a task in which the child had to point at the picture that corresponded with the target input. The results revealed two main patterns with respect to the interpretation of pronouns: some children allowed coreference between the matrix subject and the pronominal object of the embedded verb in both light-verb constructions and heavy-verb constructions. This is expected, since children of 4 and 5 are known to show a so-called Delay of Principle B Effect (see chapter 3). Other children, on the other hand, rejected coreference in the light-verb constructions, but accepted it in the heavy-verb constructions. Interestingly, Roep & DeVilliers found that the children who differentiated between the verb types on the binding task also discriminated between the verbs as far as wh-extraction is concerned, allowing long distance wh-extraction more with light-verb constructions than heavy-verb constructions. The children who failed to differentiate the verbs as far as binding is concerned, preferred long-distance wh-movement for all sentence types.
Roeper & DeVilliers conclude that the results indicate that children initially assume that all complex nominals are NPs. These children will not differentiate between verb types, allowing wh-extraction and pronominal coreference across the board. Children who distinguish between verb type as far as pronominal coreference and wh-extraction is concerned, have learned that some complex nominals are NPs, while others are DPs.

### 2.3. “Non-specific NPs” are DPs with expletive Determiners

As we saw in the previous sections, Roeper and his colleagues take the “non-specific” or “non-discourse-directed” reading of noun phrases in child language to be evidence for the claim that children often project NP instead of DP. This reflects an acquisition strategy of children, in which the child starts out with a minimal structure, and only adds additional projections if there is evidence in the input that forces her to do so (Grimshaw 1994). Roeper & DeVilliers (1995) further claim that not only in child language, but also in the adult language nouns are NPs in contexts where they are not “specific”, even when they are introduced by a definite article, such as in (4a) and (5a).

There is, however, an alternative explanation of the existence of non-specific NPs introduced by definite articles. As we saw in section 1.2.1., Zubizarreta & Vergnaud (1992) and Longobardi (1994) argue that definite articles may be expletives in many languages. Expletive articles are generated in D position, but are devoid of any denotational content (they are just bundles of $\phi$ features). We may extend this analysis to non-specific NPs introduced by definite articles in child language, and argue that they are DPs with an expletive article in the D position. We propose that the reason why children do so is basically the same as the reason why under three years olds often omit definite articles: the D position may remain underspecified for $\phi$ features. This reflects an acquisition strategy according to which children start out with underspecified functional heads. The acquisition process consists in determining the feature content of these heads in the language they are acquiring, which may differ from language to language. This is in line with ideas expressed by Chomsky (1995), who argues that parametric differences between languages are determined by the feature content of functional categories, and that parameter setting boils down to lexical feature acquisition.

Is there any advantage to assuming a DP structure instead of a NP structure for non-specific NPs introduced by definite articles? We think that there are two main reasons to adopt a DP analysis for at least those instances of non-specific NPs that are introduced by definite articles. First, a DP analysis solves the problem of where the non-denotational definite article is located, namely in D, like other definite articles. Roeper & DeVilliers argue that non-denotational definite articles may be generated in a position adjoined to the NP. However, if this is correct it is predicted that non-denotational definite articles, like in constructions of inalienable possession (see sections 1.2.1. and 2.5.),
give rise to different word orders than denoting determiners in languages such as Italian and Spanish. Since nouns in Spanish and Italian are argued to move to NumP (Picallo 1991), skipping over adjectives, it is expected that the definite article will end up to the right of the noun, contrary to fact (10b).

(10) a. Los niños abrieron el ojo izquierdo.
    the boys opened the eye left

b. *Los niños abrieron [NumP ojo izquierdo [NP el t]]
    the boys opened eye left the
    ‘The boys opened there left eyes.’

It could be objected that (10b) is ungrammatical, because the non-denoting definite article cliticizes to N (Roeper & De Villiers 1995). However, in that case Italian (11a) should be ungrammatical, contrary to fact: the non-denoting determiner il is separated from the noun, but the construction is grammatical.

(11) a. il vecchio Gianni
    the old John

b. Gianni vecchio
    John old
    ‘old John’

A second argument against NP internal determiners is that it cannot account for the different distribution of “bare” NPs and NPs that are preceded by a non-denoting determiner. Recall that in section 1.2.1. we assumed that the definite article in Romance generics is non-denoting (Zubizarreta & Vergnaud 1992; Longobardi 1994). If nouns headed by non-denoting articles are in fact NPs, it is unexpected that they may show up in subject position, while bare plurals, which show less evidence for a DP level, may not (Longobardi 1994; Contreras 1986; Delfitto & Schroten 1991).

(12) a. Los leones son carnívoros.
    the lions are carnivores

b. *Leones son carnívoros
    lions are carnivores
    ‘Lions are carnivores.’

c. *Estudiantes ocuparon el edificio.
    Students occupied the building
    ‘Students occupied the building.’

The different distribution of bare plurals and plural generics can be accounted for if we assume, following Longobardi (1994), that both are DPs. The more limited distribution of bare nouns can be derived from the need of empty Ds to be in a
position where they can be properly head-governed by a lexical head (a verb, for instance), as we argued in section 1.2.1.

However, we do not claim that nouns may never be NPs in natural languages. In section 1.2.1. we showed that they may be "bare" NPs in some languages (but not in English) when they are predicative (Longobardi 1994; Stowell 1991) (13a). Interestingly, if nouns introduced by non-denoting definite articles are NPs too, it is expected that they may show up in the same position, contrary to fact (13c).

(13) a. María es periodista.
   Mary is reporter
b. María y Marta son periodistas.
   Mary and Martha are reporters
c. *María y Marta son las periodistas.
   Mary and Martha are the reporters
   'Mary and Martha are reporters.'

Again, the ungrammaticality of (13c) can be explained if we assume that las in (13c) is in D position, so that las periodistas is a DP and not an NP, in spite of its "generic" interpretation. As Longobardi (1994) argues, NPs are predicates (objects of type <e,t>), while DPs are arguments (objects of type <e>).

A further argument against a DP/NP dichotomy in terms of specific/non-specific reference is provided by examples like (14), in which the PP complement is interpreted distributively.

(14) a. Las niñas han ido a *(la) cama. (each to her own bed/all to the same bed)
   b. The girls went to bed. (each to her own bed/*all to the same bed)
   c. The girls went to the bed. (*each to her own bed/all to the same bed)

In (14b,c), when the article is present, the distributive reading is not available (14c). When it is absent, the distributive reading is obligatory (14b). This was used by Pérez-Leroux & Roeper (1998) as an argument in favor of a DP/NP dichotomy in terms of specific/non-specific reference: when the definite article is present, the noun is a DP, when it is absent, it is an NP. However, in (14a) the presence of a definite article is obligatory, irrespective of whether the noun is interpreted distributively or not.² This shows that the presence versus absence of the definite article, which according to Pérez-Leroux & Roeper indicates a distinction between DP and NP, does not seem to correlate across languages with the presence or absence of a distributive reading. It could of course be argued that in Spanish (14a), the definite article is not in D, but somewhere under NP, as Roeper & DeVilliers

² There is actually some dialectal variation with respect to the use of definite articles in this type of constructions. In some dialects of Spanish (ia) is grammatical with a distributive meaning, as pointed out by (l. Bosque, pc).
(i) Las niñas han ido a cama.
   the girls have gone to bed
have argued for complex nominals under light-verbs. However, this is not only stipulative and problematic for the reasons mentioned above, but it also undermines their argumentation with respect to examples like (14b,c). In our approach (14b,c) are both DPs.

Finally, even articleless nouns like bed in (14b) or home in “The boys went home” are most likely DPs. Pérez-Leroux & Roeper argue that home in “The boys went home” or bed in (14b) are NPs with a PRO-like element, corresponding to the “possessor”, in [Spec, NP]. This PRO is anaphoric in nature and requires a local binder. Since the NP is not a binding domain, the local binder corresponds to the subject of the sentence. However, bed and home do not always need a local binder. Consider (15).

(15) a. Home is the best place to relax.
   b. Bed is the best place to sleep.

In (15), bed and home imply a “possessor” (the bed or home of someone), but the possessor is not a local c-commanding element. In fact, the possessor is not present at all. This indicates that the possessive argument selected by the noun is not anaphoric, but rather pronominal. But if it is pronominal, (standard) Principle B would be violated in (14b). If bed in (14b) and home in “The boys went home” are DPs, on the other hand, Principle B is respected. This is in line what Longobardi (1996) claims about words like home in English and casa in Romance. Longobardi argues that casa/home is a DP that is able to project a null genitive pronoun “Pro” (to remain neutral between PRO and pro) in the Spec of a functional head associated with the “possessor”. He further argues that this Pro is licensed by moving casa/home to the D position, overtly in Romance, and at LF in English.3

Of course, the fact that NPs introduced by non-denoting determiners are DPs in the adult languages does not force us to assume the same for child languages (Roeper & Pérez-Leroux 1998). It may be the case that in child language “non-specific” NPs are indeed NPs. In fact, it is also possible that in adult English non-specific nouns are NPs, while in Romance they may be DPs. However, this would force us to assume different mechanisms for the interpretation of NPs in different languages. As we saw in section 1.2.1., a theory that universally assumes a DP analysis for all argument nouns can nicely account for the different interpretations of nouns in both Germanic and Romance languages. We will therefore adopt the

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3 Overt raising of N-to-D in Romance raising gives rise to “construct state” genitive constructions like (ib) in Italian, (Longobardi 1996).

(i) a. la casa nuova di Rossi
    the house new of Rossi

b. casa Rossi nuova
   house Rossi new
   ‘Rossi’s new house’
position that "non-specific" NPs headed by definite articles in both (child) Germanic and Romance are DPs with an expletive determiner in the D position.

This leaves us with the question why children analyze definite articles as expletives in syntactic contexts that do not license expletives in the adult language. Before we answer this question let us first briefly discuss how expletive articles are licensed in the adult language.

In chapter 1 we suggested, following Zubizarreta & Vergnaud (1992) and Longobardi (1994), that expletive articles that co-occur with proper names and plural generics, and expletive articles in constructions of inalienable possession are licensed by "rich" D-N agreement morphology (see section 2.5.4. for a discussion of "morphological richness"). However, since we claim that the definite article in English light-verb complements (4a) and (5a) is an expletive too, there must be an additional mechanism to license expletive determiners. As we argued in chapter 1, English D-N agreement morphology is too poor to license expletives. We must conclude, then, that expletive determiners in light-verb constructions are licensed by means of lexical selection.\(^4\)

Why do English speaking children often allow expletive determiners in positions where they are not possible in the adult language (i.e. not lexically selected)? Recall that in section 1.3.1. we argued that article omission in early child language is due to the fact that the D position in child language may remain underspecified for φ features. We propose that underspecification of the D position may not only lead to omission of the definite article in early child language, but it also enables it to be interpreted as an expletive in the language of 5 year olds. This means that the effect of underspecification lingers on in children's interpretation of definite articles well beyond the age at which they drop them in their production. Moreover, as we will see in sections 2.5.4., underspecification of the D position affects the morphological properties of determiners, to the effect that they license expletive determiners.\(^5\) If children often leave the D position underspecified, they are expected to allow expletive determiners in contexts where they are not lexically selected, such as in the complement position of verbs other than light-verbs (16a), but also in ellipsis constructions (16b) and constructions of inalienable possession (16c).

(16) a. When did John hear about the decision to shave him?
   b. The giraffe hit the bear, and so did the elephant.
   c. The boys opened the eyes.

\(^4\) We suggest that the same applies to the use of expletive determiners in PP contexts like (i), in which hospital can have a distributive meaning.

(i) The boys went to the hospital.

\(^5\) Note that expletive articles appear to show up very early in language production (at least in languages where they are part of the adult-grammar). Penner & Weißborn (1996) show that in expletive determiners are the first definite articles that both High German speaking children and Bernese Swiss German speaking children use productively.
This explains why in the Roeper & DeVilliers experiment English speaking children often rejected coreference between the pronoun and the subject and accepted long distance wh-extraction in (16a), and why they accepted the sloppy reading of (16b) (Abdulkarim & Roeper 1997). It also predicts that children will accept the possessive/distributive reading of *the eyes* in (16c). This latter prediction has been tested for Dutch speaking children (see section 2.6.1). As we saw in section 1.2., adult Dutch generally does not allow CIPs, like adult English.

Finally, what do we predict for Romance children? As we saw in chapter 1, Romance D-N agreement licenses expletive articles. This means that independently of whether the D position is underspecified in child Romance or not, a Romance speaking child is predicted to license expletive determiners. In fact, in section 2.5.5. it will be argued that Romance D-N agreement morphology is acquired very early, to the effect that it will qualify as “rich” from very early on. This predicts that Romance children will allow CIPs. In section 2.6.2. we will test this hypothesis. But what does this predict for heavy-verb constructions like (16a)? As we will see in the next section, Spanish complex NPs in heavy-verb constructions are barriers for wh-extraction and are binding domains. This means that in spite of the fact that Spanish D-N morphology licenses expletive determiners, there are selectional criteria that delimit their use. As we saw, English children violate the constraints on the use of DPs containing expletives. We assume that, like English children, Spanish children will violate these constraints, hence they are expected to allow them in heavy-verb constructions. In the next section we will test this hypothesis.

### 2.4. Light Verb Constructions in child Spanish

#### 2.4.1. Introduction

Unlike Roeper & DeVilliers (see section 2.2.4.), we propose that both light-verb and heavy-verb complements are DPs. In light-verb complements, the D position is filled with an expletive determiner, while in DPs selected by heavy-verbs the D position is denoting. We assume that in both cases PRO is in [Spec, NP]. How do we derive the fact that this PRO is arbitrary in heavy-verb complements (8b) but controlled in light-verb constructions (8a)?

The account that we adopt is an adapted version of a proposal developed by Coopmans, Hyams & Philip (1995). First of all, we assume that PRO is controlled when governed by a lexical category, otherwise it is interpreted as arbitrary (cf. Hornstein & Lightfoot 1987; Koster 1987). In light-verb complements the D hosts an expletive determiner. However, if we follow Longobardi (1994), expletive Ds are substituted for by N at LF. This means that at LF N head-governs NP. According to

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6 We assume that after landing in D, N moves on and incorporates into the light-verb, as Roeper & DeVilliers (1995) suggest.
Chomsky (1986), lexical categories void the barrierhood of maximal projections they govern, by L-marking them. If NP is no longer a barrier for government, since it is governed by N, PRO in [Spec, NP] also ends up governed by N. As a result, PRO is interpreted as controlled by the subject of the structure (17a). When the determiner is denoting, as in heavy-verb complements, no such N to D movement takes place; N will not be governed by a lexical category, hence PRO will receive an arbitrary interpretation (17b). 7

(17) a. John made [DP [D decisionk [NP PROi [N t_k [PRO; to shave him]]]]]. LF
b. John liked [DP [D the [NP PROarb [N decision [PROarb shave him]]]]]. LF

It is clear that when him in (17a) is coindexed with PRO in [Spec, NP], this will lead to a violation of Principle B, since the subject PRO of shave is controlled by controlled PRO of decision. In (17b) subject PRO of shave is arbitrary, since it is controlled by PROarb of decision. As a result, coindexation of him and John does not violate Principle B.

N-to-D movement also explains why the DP of light-verb complements does not constitute a barrier for long distance wh-movement. To show this, let us first discuss why wh-extraction out of heavy-verb complements is blocked. If we turn to (18b), we see that like L-marks the DP. This means that DP is not an inherent barrier. However, since the D is not a lexical category, the NP is not L-marked, hence it is a barrier. As a matter of fact, this turns DP into a barrier by inheritance. This entails that even if [Spec, DP] is a landing site for wh-movement, the NP will block the trace in [Spec, CP] from being antecedent-governed, a requirement that applies to adjunct traces.

Let us now turn to light-verb constructions (18a). Again, like in the case of heavy-verb constructions, the DP is L-marked by the main clause verb. Since N moves to D at LF, N governs and L-marks the NP. As a result, neither DP, nor NP is a barrier, so that the wh-adjunct can freely leave the DP, since its intermediate trace in [Spec, CP] can be antecedent-governed.

(18) a. When, did the boy make [DP [D decisionk [NP PRO [N t_k [CP t_1 [IP to run t_1]]]]]].
   b. When, did the boy like [DP [D the [NP PRO [N decision [CP t_1 [IP to run t_1]]]]]].
   "#  "#

The predictions for language acquisition are clear. If English children are able to generate expletive determiners in contexts that are illegitimate in the adult language, they are predicted to allow expletive determiners with complex NPs selected by heavy-verbs (18b), to the effect that they will reject a bound variable reading of the pronoun inside the complex NP in both light-verb and heavy-verb contexts, and allow long-distance wh-movement with both kind of verbs. At this point, we have no reason to predict anything else for Romance children. Romance children will

7 We define government in terms of c-command. This means that the N decision in (17b) does not govern the PRO in its Spec.
license expletive determiners due to the early acquired “rich” Determiner-Noun agreement morphology. Like English children, they are expected to use expletive determiners in contexts that do not license expletive determiners in the adult language, such as complex NPs in heavy-verb constructions.

Interestingly, Spanish children allow us to make a stronger prediction than Roeper & DeVilliers. Roeper & DeVilliers compared two groups of children with respect to their performance on wh-extraction, namely children that rejected coreference between the object pronoun and the matrix subject in light-verb constructions (17a), but accepted it in heavy-verb constructions (17b) on the one hand, and children that did not distinguish between the two types of complex NP constructions on the other hand. The children that did discriminate between the two verb types in the pronominal coreference task, appeared to discriminate between the two verb types on the wh-extraction task. The group of children that did not discriminate between the two verb types in the pronominal coreference task, did not discriminate between the verb types in the wh-extraction task either.

However, the group of children that did not discriminate between the two kinds of verbs generally accepted coreference with both verb types. This is not surprising, since English speaking children are known often to accept coreference between a pronoun and a local c-commanding antecedent, a phenomenon which has come to be known as the Delay of Principle B Effect (DPBE) (Chien & Wexler 1990, a.o.) (see chapter 3). This makes the group of children that do not discriminate between the two verb types with respect to pronominal coreference very heterogeneous: Some of these children may project a DP with a denoting determiner and accept coreference, because principle B allows them to do so. Others, on the other hand, may project a DP with an expletive determiner and still accept coreference because of the DPBE. This means that performance in the pronominal coreference task is not a good indication of the kind of DP (with an expletive determiner or with a denoting determiner) English children project. Consequently, this task does not constitute a reliable predictor of what kind of DP these children project in the wh-extraction task.

Stated differently, what Roeper & DeVilliers should have compared is a group of children that rejected coreference in both light-verb constructions and heavy-verb constructions, and a group of children that accepted coreference in heavy-verb constructions, but rejected it in light-verb constructions.\(^8\) The former group of children is predicted to accept long-distance wh-movement independently of verb type, while the latter group of children is expected to accept long distance movement much more often in light-verb constructions than in heavy-verb constructions. This prediction can only be tested if one neutralizes the DPBE. This can be done by performing the experiment in a language in which the DPBE is

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\(^8\) Roeper & DeVilliers only found one child that rejected coreference with both verb types. Interestingly, this child allowed long-distance wh-movement in heavy-verb constructions 100% of the time (Roeper & DeVilliers 1995: 97).
known not to show up in acquisition, such as Spanish (Padilla 1990; Baauw, Escobar & Philip 1997) (see chapter 3). In the next section we will present an experiment conducted with Spanish speaking children that tested this prediction.

2.4.2. The Experiment

2.4.2.1. Goal of the experiment

The goal of the experiment was threefold. In the first place we wanted to test whether Spanish speaking children allowed the pronoun inside the complex NP to be bound by the subject in sentences containing a light-verb (19a) and sentences containing a heavy-verb (19b). In the adult language the object pronoun can be bound by the matrix subject in (19b), but not in (19a). If Spanish speaking children are able to interpret the definite article of la decisión as an expletive not only in (19a), but also in (19b), it is predicted that they will reject binding of the pronoun in both (19a) and (19b).

(19) a. La niña tomó la decisión de dibujarla. (LITE-N)
   the girl took the decision to draw-her
   ‘The girl made the decision to draw her.’
  b. La niña se enteró de la decisión de dibujarla. (HEAVY-B)
   the girl SE found-out of the decision to draw-her
   ‘The girl found out about the decision to draw her.’

The second goal of the experiment was to test whether children accept long distance wh-extraction of cuándo out of the complex NP in (20b), in addition to (20a). In adult Spanish this is only possible in (20a). If Spanish speaking children are able to interpret the definite article in (20b) as an expletive, just like in (20a), it is predicted that they will allow long distance extraction of cuándo in both (20a) and (20b).

(20) a. ¿Cuándo, tomó Carlos [la decisión de escribir una carta tij]? (WLiteL-Y)
   when took Charles the decision to write a letter
   ‘When did Charles make the decision to write a letter?’
  b. ¿Cuándo, se enteró María de [la decisión de tejer
   when SE find-out Mary of the decision to knit
   calcetines tij]? (Wheav-N)
   socks
   ‘When did Mary find out about the decision to knit socks?’

---

9 Alternatively, one could test children on constructions containing quantified subjects, since children do not show a DPBE in constructions containing quantified antecedents (Chien & Wexler 1990; Grodzinsky & Reinhart 1993, for English; Philip & Coopmans 1996b, for Dutch). This was done by Coopmans, Hyams & Philip (1995), in an experiment testing Dutch speaking children.
The third goal was to test whether there is a correlation between the acceptance of long distance wh-extraction in (20b) and the rejection of pronominal binding in (19b). It is predicted that there will be a correlation between acceptance of pronominal binding in (19b) and rejection of long distance wh-extraction in (20b) on the one hand, and rejection of pronominal binding in (20b) and acceptance of long distance wh-extraction in (20b) on the other hand.

2.4.2.2. Procedure and design
The experimental design that we used was a Truth Value Judgment Task (Crain & Thornton 1998). The task was presented to the children by two experimenters as a "guessing game", in which a blindfolded Bert (manipulated by one of the experimenters) had to guess what happened in the pictures presented to the child by the second experimenter. The child's task was to look at the pictures and judge whether or not the guesses were correct.

The experiment contained two kinds of conditions, (i) conditions that tested children's interpretation of pronouns in light-verb constructions and heavy-verb constructions, and (ii) constructions testing wh-extraction.

The procedure for the "pronoun conditions" was as follows. If the condition involved a light-verb, children were presented two pictures, introduced by a little story. The pictures showed a situation in which one of the two individuals had to decide on whom he would perform an action. In the last picture the decision that was finally made is depicted. In the LITE-N "no" condition the action was performed on the agent himself/herself. In the corresponding "yes" condition, LITE-Y, the action was performed on the second individual. Bert was asked what was the decision the first individual made. Bert's answer is the target input. In (21) we give an example of a LITE-N trial.
Había una princesa en un jardín de un castillo. La reina también estaba. La princesa se aburría mucho. "¿Qué te gustaría hacer?", preguntó la reina. "¿Te gustaría nadar, o jugar en los columpios, o quizás dibujar?" La princesa gritó "Síii, dibujar!". La princesa rápidamente cogió sus cosas de dibujar. Pero ¿qué dibujaría? Como quería hacer un dibujo bonito, se puso a pensar lo bien. Después de habérselo pensado, la princesa tomó una decisión. Mira lo que la princesa decidió.

[One day there was a princess in the garden of a castle. The queen was there too. The princess was very bored. "What do you want to do?", the queen asked her. "Would you like to swim, or play at the slide, or perhaps draw?" The princess screamed "yes, let's draw!". The princess rapidly got her drawing stuff. But what was she going to draw? Since she wanted to make a really beautiful picture, she started thinking it over. After she had thought about it, she made a decision. Look what she decided.]
Vamos a ver si Blas puede adivinar lo que la princesa decidió.

[Let's see if Bert can guess what the princess decided.]

Question to Bert: ¿Puedes adivinar qué decidió la princesa?

[Could you guess what the princess decided?]

Answer: Mmm...una princesa y una reina.
Ya lo sé: la princesa tomó la decisión de dibujarla.

[Mmm...a princess and a queen.
I know what happened: the princess made the decision to draw her.]

Adult response: NO

If the condition involved a heavy-verb, three pictures were used. The story and the picture presented a situation involving three individuals in which an individual (A) overhears the decision made by a second individual (B) to perform an action on some individual. In the case of the test condition HEAVY-B, B’s action applies to A. In the case of the control condition (HEAVY-R), B’s action applies to another individual (C). The first individual starts giggling, and Bert was asked to guess why. Bert’s response is the target input. The expected adult response is “yes” in both the HEAVY-B (the bound variable reading) and HEAVY-R condition (the “referential” reading). In (22) we give an example of a HEAVY-B trial.
Un niño estaba de visitas con su abuelito y abuelita. Los abuelos tenían muchos dibujos en la pared. A la abuelita le gustaba mucho dibujar, y por eso cada día hacía un dibujo nuevo. Mientras el niño estaba mirando a su abuelita, pensaba que sería una buena idea que se hiciera un dibujo de todos. Pero la abuelita dijo entonces: “No sé si se podrá dibujar a ti y al abuelito. Tenemos que cenar dentro de nada, así que no tenemos mucho tiempo. Tendré que pensarlo antes.” Cuando el niño pasó al jardín, donde el abuelito estaba regando las flores, la abuelita tomó una decisión. Y esto es lo que decidió.

[A boy was visiting his grandfather and his grandmother. His grandparents had lots of pictures on the wall. The grandmother was very fond of drawing, and therefore she made a new picture every day. While the boy was looking at his grandmother, he thought that it would be a good idea if a picture was made of all of them. But the grandmother then thought: “I don’t know if a picture can be made of you and grandfather. We have to eat soon, so I should think about it first”. When the boy went to the garden and the grandfather was watering the plants, the grandmother made a decision. And this is what she decided.]
Cuando el abuelito volvió adentro, la abuelita le contó su decisión. Pero el niño, que era muy curioso, estaba escondido detrás de la puerta para escucharles. Por eso oyó qué decisión había tomado la abuelita.

[When the grandfather went inside, the grandmother told him her decision. But the boy, who was very curious, was hiding behind the door, so that he could hear them. Therefore he heard the decision his grandmother made.]

Cuando el niño entró, estaba riéndose por lo bajo. La abuelita no lo comprendía en absoluto. "¿Por qué se está riendo el niño?", se preguntaba. Vamos a ver si Blas puede adivinar por qué el niño estaba riéndose.
When the boy went inside, he started giggling. The grandmother did not understand why. "Why is this boy giggling?", she asked. Let us see if Bert can guess why the boy was giggling.

Question to Bert: ¿Puedes adivinar por qué el niño estaba riéndose?

[Could you guess why the boy was laughing?]

Answer: Mmm...un niño, una abuelita y un abuelito.
Ya lo sé: el niño se enteró de la decisión de dibujarle.

[Mmm...a boy, a grandmother and a grandfather.
I know what happened: the boy found out about the decision to draw him.]

Adult response: YES

The wh-extraction conditions all involved three picture trials. When the conditions involved light-verbs, the pictures showed an individual that at a given moment wants to perform an action, and finally decides on when to perform it. Then Bert was asked a wh-question with cuándo ‘when’. Bert’s response (target input) refers to the moment when the decision to perform the action was made in the WLiteS-Y condition (short distance wh-extraction), or to the moment when the action was going to be performed in the WLiteL-Y condition (long distance wh-extraction). In (23) we give an example of a WLiteL-Y trial.

(23) WLiteL-Y.1 (version A/C)

A Carlos le regalaron un balón. Tenía muchas ganas de contarselo a su abuelita. Pero no sabía cómo iba a contárselo: ¿escribiría una carta o la llamaría por teléfono? Se puso a pensarlo bien, pero no sabía decidirse. Pero por fin se decidió.

A Carlos were given a ball. He had many desires to tell it to his grandmother. But he didn’t know how he would tell her: would he write a letter or call her by phone? He thought it well, but he didn’t know how to decide. But finally he decided.
Carlos got a football as a present. He really wanted to tell his grandmother about it. But he did not know how he would tell her about it: should he write her a letter or phone her? He started to think about it, but he did not know what to do. But finally he made up his mind.

Tomó la decisión de escribir una carta cuando se hiciera de noche

[He made the decision to write her a letter as soon as it would get dark.]

Carlos tomó la decisión de escribir una carta cuando estaba comiendo. Bueno, vamos a hacerle una pregunta a Blas.
Carlos made the decision to write a letter when he was eating. Well, let’s put a question to Bert

Question to Bert: Blas, ¿cuándo tomó Carlos la decisión de escribir una carta?

[Bert, when did Carlos make the decision to write a letter?]

Answer: Cuando se hiciera de noche.

[When it would get dark]

Adult response: YES

When the condition involved a heavy-verb, the pictures show an individual that asks a second individual to perform an action with him/her. This second individual decides to do it, and at a given moment tells the first individual when he/she will perform the action. Then Bert was asked a wh-question with cuándo. Under the test condition WheavL-N, Bert’s response (target input) refers to the moment when the action will be performed. Since this involves assignment of an ungrammatical long distance wh-extraction, the expected adult response is “no”. The experiment also included a control condition WheavS-Y eliciting an adult “yes” response. In this condition Bert’s response refers to the moment when the receiver of the request tells his/her decision, involving a grammatical short distance wh-extraction.

(24) WheavL-N.1 (version -A/C)

Elisa quería hacer algo divertido. Por eso preguntó a su abuelito si podían pintar su habitación. El abuelito le dijo que lo pensaría. Elisa se puso a esperar hasta que su abuelito tomara una decisión. Por fin se decidió. Estaba de acuerdo. El abuelito le contó su decisión a Elisa cuando estaba saltando a la comba.
Elisa wanted to do something fun. Therefore she asked her grandfather whether they could paint her room. The grandfather told her that he would think about it. Elisa waited till her grandfather had made a decision. Finally he made up his mind. He agreed. The grandfather told his decision to Elisa when she was jump roping.

El abuelito decidió que iban a pintar la habitación cuando el papá de Elisa llegara a casa con brochas nuevas.

The grandfather decided that they would paint her room as soon Elisa’s father would come home with new brushes.
“Qué bien”, dijo Elisa. Bueno, ¿le haremos ahora una pregunta a Blas?

[“Great!”, said Elisa. Well, shall we put a question to Bert?]

Question to Bert: Blas, ¿cuándo se enteró Elisa de la decisión de pintar su habitación?

[Bert, when did Elisa find out about the decision to paint her room?]

Answer: Cuando su papá llegara a casa con brochas nuevas.

[When her father would come home with new brushes].

Adult response: NO

In addition to the test conditions exemplified by (19) and (20), several control conditions were added. As far as the interpretation of pronouns is concerned, two control conditions eliciting negative responses in adults were added (“No Control condition”), and three Yes Control conditions, testing the referential interpretation of pronouns in heavy-verb and light-verb constructions and the anaphoric interpretation of reflexive pronouns in light-verb constructions. The No Control conditions tested the referential interpretation of reflexive pronouns and the anaphoric interpretation of pronouns in light-verb constructions. In addition, the CON-N condition tested children’s understanding of control and of post-verbal clitics (El niño trató de dibujarle - ‘The boy tried to draw him’).

As far as children’s understanding of wh-movement is concerned, in addition to the two test conditions, two Yes Control conditions were added, testing children’s understanding of short distance wh-movement in heavy-verb constructions and light-verb constructions.

The experiment had a Latin Square design, and consisted of 4 different versions (A, B, C, D). The different versions varied with respect to the order in which the last two pictures and corresponding events in the wh-extraction conditions were presented, and with respect to the gender of the subjects/pronouns in the LITE-N and LITE-Y conditions (see Appendix II).\(^\text{10}\)

Every condition consisted of three trials, except the CON-N condition, which contained 4 trials. The test and control conditions were intermingled with 6 filler items. The total number of trials was 40 (10 x 3 trials + 4 CON-N trials + 6 fillers), presented to the child in two sessions of approximately 30 minutes each. Roughly half of the children did the test in the normal order, and the other half in the inverted order. At the beginning of the first session, some practice items were administered to the child. For more details about design and a complete list of experimental items, see Appendix I.

\(^{10}\) Note that we used *le* instead of *lo*, Madrid Spanish being a “leista” dialect. See chapter 3.
2.5.2.3. Subjects
35 Spanish speaking children ranging from 4.50 to 7.33 years old (mean age 5.98) participated in this study. In addition 17 adults were tested collectively. The children were divided over three age groups whose cut-off points corresponded with the cut-off points of the Spanish school system:

(25) • Group 1: n = 11; age range 4.50 - 5.33; mean age 4.90  
• Group 2: n = 11; age range 5.42 - 6.25; mean age 5.91  
• Group 3: n = 13; age range 6.42 - 7.33; mean age 6.93

The 17 adult speakers were all graduate students of the Universidad Autónoma de Madrid.

2.5.2.4. Results
The results on the pronominal anaphora task show that children performed highly adultlike on the Yes Control and No Control condition testing reflexive pronouns in light-verb constructions (roughly 90% adultlike) (*El niño tomó la decisión de pintarse* - ‘The boy made the decision to paint himself’).

Children’s performance on the pronominal Yes Conditions was highly adultlike for the LITE-Y condition across all age groups. This was not the case for the HEAVY-R condition, testing the “referential” interpretation of pronouns in heavy-verb constructions. The children from group 1 appeared to reject the referential reading of the pronoun in 58% of the cases. Note, however, that the adults also rejected this reading in roughly 20% of the cases.

(26) Percent correct “yes” responses on pronominal Yes Control Conditions

<table>
<thead>
<tr>
<th>group</th>
<th>n</th>
<th>age range</th>
<th>mean age</th>
<th>HEAVY-R</th>
<th>LITE-Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>11</td>
<td>4.50-5.33</td>
<td>4.90</td>
<td>42 (9)</td>
<td>88 (5)</td>
</tr>
<tr>
<td>2</td>
<td>11</td>
<td>5.42-6.25</td>
<td>5.91</td>
<td>73 (8)</td>
<td>85 (5)</td>
</tr>
<tr>
<td>3</td>
<td>13</td>
<td>6.42-7.33</td>
<td>6.93</td>
<td>77 (10)</td>
<td>95 (5)</td>
</tr>
<tr>
<td>4</td>
<td>17</td>
<td>adults</td>
<td>-</td>
<td>80 (6)</td>
<td>100</td>
</tr>
</tbody>
</table>

(27) shows that children’s performance on the CON-N control condition, testing children’s performance on control (and post-verbal clitics) is highly adultlike, although there is a slight drop in adultlike performance in the children of group 3.
(27) Percent correct “no” responses on pronominal No Control Conditions

<table>
<thead>
<tr>
<th>group</th>
<th>n</th>
<th>age range</th>
<th>mean age</th>
<th>CON-N</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>11</td>
<td>4.50-5.33</td>
<td>4.90</td>
<td>80 (11)</td>
</tr>
<tr>
<td>2</td>
<td>11</td>
<td>5.42-6.25</td>
<td>5.91</td>
<td>84 (8)</td>
</tr>
<tr>
<td>3</td>
<td>13</td>
<td>6.42-7.33</td>
<td>6.93</td>
<td>75 (7)</td>
</tr>
<tr>
<td>4</td>
<td>17</td>
<td>adults</td>
<td>-</td>
<td>94 (3)</td>
</tr>
</tbody>
</table>

Unexpectedly, children’s performance on LITE-N was not adultlike, but above chance in the group 2 and 3 children. Children’s performance on HEAVY-B test condition was adultlike for group 3, but not for the other two age groups: the children of group 1 and 2 rejected the anaphoric or “bound” reading of the pronoun more than 50% of the time. Note, however, that adults too rejected this reading almost 20% of the time.

(28) Percent “no” responses on Test Conditions

<table>
<thead>
<tr>
<th>group</th>
<th>n</th>
<th>age range</th>
<th>mean age</th>
<th>HEAVY-B</th>
<th>LITE-N</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>11</td>
<td>4.50-5.33</td>
<td>4.90</td>
<td>61 (11)</td>
<td>64 (9)</td>
</tr>
<tr>
<td>2</td>
<td>11</td>
<td>5.42-6.25</td>
<td>5.91</td>
<td>55 (9)</td>
<td>76 (8)</td>
</tr>
<tr>
<td>3</td>
<td>13</td>
<td>6.42-7.33</td>
<td>6.93</td>
<td>10 (4)</td>
<td>69 (9)</td>
</tr>
<tr>
<td>4</td>
<td>17</td>
<td>adults</td>
<td>-</td>
<td>18 (4)</td>
<td>100</td>
</tr>
</tbody>
</table>

The results on the HEAVY-B condition indicate that our first prediction is borne out: Spanish 4 and 5 year olds often reject coreference between the pronoun and a local c-commanding antecedent. The fact that adults too rejected the bound reading of the pronoun in almost 20% of the cases indicates that the percentage non-adultlike responses is actually somewhat lower, around 40%.

11 We believe that this is mainly an experimental artifact, since there was a strong order effect. The 19 children tested in the first order gave adultlike negative responses on LITE-N 86% of the time, while the 16 children tested in the reverse order did so only 50% of the time. An ANOVA shows that this difference was significant (p = 0.000). It is tempting to attribute the extremely low performance of the children tested in the reverse order to the possibility that children generally performed worse at the beginning of a test session. Indeed, for the children that received the test in the reverse order, trials LITE-N.1 and LITE-N.3. were the first items presented. However, although the latter group of children performed worse on LITE-N.1 (31% “no”) and LITE-N.3 (50% “no”) than on LITE-N.2 (69% “no”), a Friedman test shows that the difference in performance between the three trials was not significant (p = 0.125).

12 We suggest that the reason why the adults’ performance on the HEAVY-B condition did not reach the 100% adultlike responses (= 0% “no” responses) is due to two factors. One factor may be the inherent ambiguity of the target input. Constructions like (i) are ambiguous in principle: the pronoun can be interpreted anaphorically or referentially.

(i) El niño se enteró de la decisión de dibujarle. (le = el niño/le = some other male individual) The boy found out about the decision to draw him.”
With respect to the extraction task, children's performance appeared to be highly adultlike in both the WHeavS-Y and WLiteS-Y control conditions. This means that they freely allowed short distance wh-extraction (i.e. wh-extraction from the main clause) in heavy-verb and light-verb constructions.

(29) Percent correct "yes" responses on Yes Control Conditions

<table>
<thead>
<tr>
<th>group</th>
<th>n</th>
<th>age range</th>
<th>mean age</th>
<th>WHeavS-Y</th>
<th>WLiteS-Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>11</td>
<td>4.50-5.33</td>
<td>4.90</td>
<td>73 (11)</td>
<td>76 (6)</td>
</tr>
<tr>
<td>2</td>
<td>11</td>
<td>5.42-6.25</td>
<td>5.91</td>
<td>85 (7)</td>
<td>67 (6)</td>
</tr>
<tr>
<td>3</td>
<td>13</td>
<td>6.42-7.33</td>
<td>6.93</td>
<td>92 (6)</td>
<td>72 (7)</td>
</tr>
<tr>
<td>4</td>
<td>17</td>
<td>adults</td>
<td>-</td>
<td>96 (3)</td>
<td>96 (4)</td>
</tr>
</tbody>
</table>

Children's performance on the WHeavL-N condition, on the other hand, was far from adultlike for the group 1 children, and, though better, still did not reach adultlike performance for the group 2 and 3 children. The adults, however, did not reach 100% "no" responses either. We assume that this is an experimental artifact, which means that that the "real" percentage of adultlike "no" responses may actually be around 50% for group 1 and around 70% for group 2 and 3.\(^{13}\)

Finally, children gave more expected "yes" responses on the WLiteL-Y condition.

The rationale behind the Truth Value Judgment Task is that a subject will try to find a grammatical analysis of the target sentence that allows her to say "yes". This means that when target input like (i) is matched with a picture showing a boy putting up a picture of himself drawn by some other individual, the response on the target input should be "yes", since the interpretation in which the pronoun is "anaphoric" is one of the grammatical interpretations of the target sentence. However, the evidence suggests that subjects often consider only one of the possible readings of a sentence, and overlook the other grammatical possibility. This explanation also accounts for the 20% adult rejections of the "referential" reading in the HEAVY-R condition, and as we will see in chapter 3, for some of the adult results on the interpretation of pronominal PP complements.

A second factor that may have influenced the performance of the subjects in general, and particularly the performance of the youngest age group, can be attributed to the design of the scenarios of the HEAVY-B and HEAVY-R conditions. Concretely, some children may have had difficulties in making the inference that the reason why a boy or girl in the third picture of the HEAVY-B and HEAVY-R condition starts giggling is because he or she overhears the decision made by some other individual in the second picture. If one considers the scenario illustrated in (22), for example, it can be observed that this connection between the giggling and the action depicted in the second picture is not made explicit (although it is implicit). It could not have been made explicit, however, since then the content of the decision would have been revealed too.

\(^{13}\) Notice that in the heavy conditions involving wh-extractions, the subject was presented three pictures. One provided the subject with information about the moment at which a decision to perform a certain action was taken, and the other provided the information about when this action was going to be realized (see procedures WHeavL-N). This means that the subject had to keep in memory two events/pictures, and relate the wh-element to either the moment at which the decision was taken, or the moment at which the content of the decision was going to be realized, which is not an easy task, especially for a young child. We assume that this factor contributed to the (unexpectedly) high rate of inaccurate responses on the WHeavL-N condition by both children and adults.
than adults. Apparently they accepted long distance wh-movement in light-verb constructions more often than adults.¹⁴

(30) Percent "no" responses on Test Conditions.

<table>
<thead>
<tr>
<th>group</th>
<th>n</th>
<th>age range</th>
<th>mean age</th>
<th>WHeavL-N</th>
<th>WLiteL-Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>11</td>
<td>4.50-5.33</td>
<td>4.90</td>
<td>27 (9)</td>
<td>21 (8)</td>
</tr>
<tr>
<td>2</td>
<td>11</td>
<td>5.42-6.25</td>
<td>5.91</td>
<td>55 (12)</td>
<td>33 (8)</td>
</tr>
<tr>
<td>3</td>
<td>13</td>
<td>6.42-7.33</td>
<td>6.93</td>
<td>54 (12)</td>
<td>18 (5)</td>
</tr>
<tr>
<td>4</td>
<td>17</td>
<td>adults</td>
<td>-</td>
<td>78 (6)</td>
<td>41 (8)</td>
</tr>
</tbody>
</table>

This result corroborates our second prediction: Spanish speaking children often allow long distance wh-movement in heavy-verb constructions.

In order to test our third prediction we compared two groups of children on their performance on the WHeavL-N condition (heavy-verb, long distance) and the WLiteL-Y condition (light-verb, long distance). The first group of children (HEAVY-B: NO) consisted of children who rejected coreference in the HEAVY-B condition (pronominal coreference heavy-verb) in at least 2 of the 3 trials. The second group of children (HEAVY-B: YES) consisted of children who accepted coreference in the HEAVY-B condition in at least 2 of the 3 trials. Children who accepted coreference in more than 1 of the 4 trials of the CON-N control condition were excluded (n = 7). Children who accepted coreference in the LITE-N condition in more than 1 of the 3 trials were also excluded (n = 8). The total number of children left was 26 (13 per group).¹⁵

The results show that both groups of children accepted short distance wh-movement in most cases for both type of verbs, although they had a stronger preference for this reading in the heavy-verb condition (WHeavS-Y).

(31) Percent short distance readings

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>age range</th>
<th>mean age</th>
<th>WLiteS-Y</th>
<th>WHeavS-Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>HEAVY-B: NO</td>
<td>13</td>
<td>4.67-6.25</td>
<td>5.33</td>
<td>67</td>
<td>79</td>
</tr>
<tr>
<td>HEAVY-B: YES</td>
<td>13</td>
<td>5.33-7.33</td>
<td>6.62</td>
<td>67</td>
<td>85</td>
</tr>
</tbody>
</table>

¹⁴ Native speaker grammaticality judgments indicate that many speakers considered the long distance reading in light-verb constructions to be marginal/marked. My own judgments on adjunct wh-movement in Dutch light-verb constructions indicate the same. All speakers, though, considered the long distance reading much more acceptable in the light-verb constructions than in the heavy-verb constructions.

¹⁵ The children who failed on the LITE-N condition all failed on the CON-N condition too, with the exception of two children who failed on LITE-N but did not on CON-N. There was one child who failed on CON-N but did not on LITE-N.
Children accepted the long distance reading of the wh-word more often in the light-verb condition (WLiteL-Y) than in the heavy-verb condition (WHeavL-N). This contrast was stronger in the HEAVY-B: YES children than in the HEAVY-B: NO children, as predicted.

(32) Percent long-distance readings

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>age range</th>
<th>mean age</th>
<th>WLiteL-Y</th>
<th>WHeavL-N</th>
</tr>
</thead>
<tbody>
<tr>
<td>HEAVYB-NO</td>
<td>13</td>
<td>4.67-6.25</td>
<td>5.33</td>
<td>72</td>
<td>51</td>
</tr>
<tr>
<td>HEAVYB-YES</td>
<td>13</td>
<td>5.33-7.33</td>
<td>6.62</td>
<td>77</td>
<td>38</td>
</tr>
</tbody>
</table>

In order to find out whether there was a statistically significant interaction between group and verb type with respect to long distance extraction, we conducted a 2 (Group: HEAVY-B: NO vs. HEAVY-B: YES) x 2 (Verb Type: heavy-verb vs. light-verb) analysis of variance on the dependent measure percentage of long distance interpretations, with verb type as within-subject variable. The Group x Verb Type interaction turned out not to be significant $F(1, 24) = 1.230, \ p = 0.278$.

This means that our third prediction is not borne out: children’s performance on pronominal coreference task did not predict their performance on the wh-extraction task, i.e., the HEAVY-B: YES children did not distinguish more strongly, in a statistically significant way, between the two verb types in the wh-movement task than the HEAVY-B: NO children.

2.4.3. Discussion

The results show that there was no statistically significant correlation between Spanish children’s performance on the pronominal coreference task and the wh-movement task with respect to the distinction between light-verb constructions and heavy-verb constructions. In fact, if we look at the results on the test conditions of the pronominal coreference task in (28) and the results on the test conditions of wh-extraction task in (30), we observe that while children perform highly adultlike on the pronominal coreference task from the age of 6.42 on (group 3), accepting coreference 90% of the time in the heavy-verb condition, they still accept long distance wh-movement in heavy-verb constructions considerably more often than adults do.

Although neither we nor Roeper & De Villiers (1995) predicted this result, we believe that it can be interpreted as an argument in favor of our account and against that of Roeper & De Villiers. To see this, let us first have a closer look at Roeper & De Villiers’ account. Roeper & De Villiers state that DPs are barriers for movement, while NPs are not. However, they do not explain why DPs are barriers. They refer to Chomsky (1986) and argue that the barrierhood of DPs replaces the barrierhood of NPs in Chomsky’s theory, but without making explicit how barriers are derived in their system. Nonetheless, we believe that the barrierhood of DPs in heavy-verb constructions can easily be derived from Chomsky (1986), as we showed in section
2.4.1: the NP becomes a barrier because the D, as a functional head, is not able to L-mark the NP. As a result of this, DP becomes a barrier by inheritance. The non-barrierhood of bare NPs in light-verb constructions can also be derived from Chomsky (1986): NP is not a barrier, because it is governed by the main verb, which L-marks it. As far as the PRO is considered, Roeper & DeVilliers argue that it is in [Spec, DP] in the heavy-verb constructions.16

(33) a. *Wheni ...... heard about $[\text{DP PRO}_{\text{arb}} [\text{D the } [\text{NP decision } [\text{CP t', '[ip...t, ]}]]]$ 
   #
   #

   b. Wheni ...... make $[\text{NP the } [\text{N decision } [\text{CP t', '[ip...t, ]}]]$

Note now that their claim that PRO in (33a) is in [Spec, DP] is not a minor detail. In (33a) PRO is arbitrary. Roeper & DeVilliers argue that PRO$_{arb}$ is in [Spec, DP] because PRO$_{arb}$, like other DP features lead to discourse reference. Compare now Roeper & DeVilliers' analysis of wh-extraction in heavy-verb constructions with our analysis of this construction in (34).

(34) *Cuándoi ...... se enteró de $[\text{DP t,''} [\text{D la } [\text{NP PRO}_{\text{arb}} [\text{N decisão } [\text{CP t', '[ip...t, ]}]]]]$ 
   #
   #

In (33a) the wh-adjunct has to cross two barriers when it is moved out of the DP. In (34), however, unlike in Roeper & DeVilliers' analysis, the wh-element can avoid crossing two barriers. If we assume that [Spec, DP] is an A' position, at least in Romance (Zubizarreta 1979), it can serve as an intermediate landing site for the moved wh-element, since it is empty. By doing so, only one barrier at a time is crossed. Note that if the moved wh-element is an adjunct, such as cuándo 'when', this will lead to ungrammaticality, since the NP in (34) will remain a barrier for government of t'.17 If, on the other hand, the wh-element is an argument, the result will become relatively grammatical, since movement across one barrier is licit (Chomsky 1986). This explains the contrast in grammaticality between (35a), where an argument wh-element has been extracted, and (35b) in which a wh-adjunct has been extracted.18

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16 Roeper & De Villiers do not discuss the position of the subject PRO of decision.

17 Note that by adopting a DP analysis of noun phrases we no longer need to assume that government of t' is blocked by N acting as a "minimality barrier", as in Chomsky (1986).

18 (35a) is still marginal. This suggests that the wh-element must have crossed an additional barrier. Chomsky (1986) suggests that the embedded CP in complex nouns may be an additional barrier. Note also that to many speakers even wh-extraction out of complex NPs in light-verb constructions is not fully grammatical (see the results on W Lite-L-Y test condition).
(35) a. **A qué chico, crees que María se enteró de [la decisión de afeitar t]?**
   ‘Which boy do you think Mary found out about [the decision to shave t]?’

   b. *Cuándo, crees que María se enteró de [la decisión de afeitar a Pedro t]?*
   ‘When do you think Mary found out about [the decision to shave Peter t]?’

This means that the difference between Roeper & DeVilliers’ approach and our approach can be summarized as follows: while in Roeper & DeVilliers’ approach wh-movement out of DPs in heavy-verb constructions constitutes a “strong” island violation (since two barriers are crossed at a time), in our approach it is a “weak” island violation (since only one barrier is crossed at a time). 19 20

We believe that the weak island status of DPs in heavy-verb constructions is exactly what we need to explain the lack of correlation between Spanish children’s performance on the pronominal coreference task and the wh-extraction task. Recall that the older Spanish children (group 3) accepted coreference between the embedded object pronoun and the main clause subject in heavy-verb constructions, just like adults, which indicates that they no longer analyze the definite article as an expletive in this type of construction.

(36) El niño, se enteró de [la decisión de dibujarte,]
   ‘The boy found out about [the decision to draw him.]’

If the definite article is not an expletive, decisión will remain in N, and the NP becomes a barrier. As a result, movement of a wh-adjunct out of the DP will lead to a weak island violation, as illustrated in (34). Although this leads to ungrammaticality in adults, there is evidence that weak island violations are acceptable to young children. Philip & DeVilliers (1992) provided experimental evidence showing that 4 and 5 year old English speaking children often accept weak island violations like (37), in which a wh-adjunct is moved across the adverb always. 21

(37) *Why, did Nick always say [he loved the seashore t]?

19 Note that (35a) also contrasts with (i), a typical case of a strong island violation.

(i) *A qué chico, (crees que) María se marchó [antes de saludar t]?*
   ‘Which boy (do you think) Mary left [before greeting t]?’

20 It should be stressed that Roeper & DeVilliers do not explicitly argue that wh-movement out of DPs in heavy-verb constructions constitutes a strong island violation. However, it is an inevitable consequence of their implicit assumptions about barrierhood and their explicit assumption about the position of PRO_{wh} within the DP structure.

21 Note that (i), with an argument wh-word, is perfectly acceptable (W. Philip, p.c.).

(i) What did Nick always [say [he loved t]?”
It is clear that if children are insensitive to weak island violations, their acceptance of wh-extraction in heavy-verb constructions is quite independent from their capacity to analyze definite articles as expletives. As a result, the absence of a statistically significant correlation between adultlike performance on the pronominal coreference task and the wh-extraction task is not unexpected.

Note that the absence of a correlation between children’s performance on the two experimental tasks cannot be explained if one adopts Roeper & DeVilliers’ analysis of complex nominals. The reason is that in their analysis, wh-extraction out of the DP in heavy-verb constructions would amount to a strong island violation, as shown in (33a), and experimental evidence indicates that children generally obey strong island constraints, such as the adjunct island in (38) (Goodluck, Sedivy & Foley 1989).

(38) *Who, did the elephant ask [before helping t]?

Roeper & DeVilliers’ analysis therefore predicts that children that analyze the definite article in an adultlike way (and hence accept coreference in (36)) will block long distance wh-movement in heavy-verb constructions, a prediction that is falsified by our Spanish results.

However, this conclusion raises the question why Roeper & DeVilliers found a significant correlation between English children’s performance on the pronominal coreference task and the wh-extraction task. We suggest that two factors may have played a role.

In the first place, the experimental paradigm used by Roeper & DeVilliers was different from ours. In Roeper & DeVilliers’ experiment children’s performance on wh-extraction was tested by having them answer wh-questions about stories that were presented to them. In the stories, presented together with a picture sequence, the two potential readings (long-distance, short-distance) of the wh-word were made equally salient. This means that in this experiment children were not “forced” to evaluate a particular reading of a wh-question, as was the case in our experiment. This has the disadvantage that children’s responses may not be an indication of their grammatical competence, but instead may simply show their preferences for a certain interpretation. It allows children to avoid an interpretation that, perhaps for parsing reasons, may be more difficult to construct. This possibility may have the positive effect of reducing the number of performance errors.22

Secondly, the results may have also been affected by the way Roeper & DeVilliers split up the children they tested. Recall that Roeper & DeVilliers compared children that distinguished between heavy-verbs and light-verbs with respect to pronominal

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22 Interestingly, Sigurjónsdóttir’s (1992) study on the acquisition of pronominal coreference in Icelandic showed that children performed more adultlike when an act-out-task was used than when a Truth Value Judgment Task was used. The task used by Roeper & DeVilliers is in fact a variety of the act-out-task (the main difference being that in Roeper & DeVilliers’ experiment children indicated their interpretation of a sentence verbally, or by pointing, instead of actually acting it out).
coreference, and children that did not distinguish between the two verb types. We argued that this latter group of children may in fact have been rather heterogeneous, since it could contain both children that allowed coreference as a result of a DPBE, and children that allowed coreference because they selected a DP with a denoting D. In fact, this group may have even contained children that did not fully understand the task and gave positive responses just by default. It is reasonable to assume that the latter type of children also responded positively (= non-adultlike) on the long distance wh-movement task, contributing positively to the correlation between the results on the pronominal coreference task and the wh-extraction task, found by Roeper & DeVilliers. Interestingly, a 2 (Group) x 2 (Verb Type) analysis of variance shows that the Group x Verb Type interaction gets closer to significance if we split the Spanish children up into two groups following Roeper & DeVilliers’ criteria (Differentiated vs. Did Not Differentiate on Pronominal Coreference Task), instead of the criteria we used in the previous section; F(1, 32) = 2.489, p. = 0.124.23

2.4.4. Conclusion

We conclude that Spanish speaking children can project a DP with an expletive determiner in syntactic contexts that require a denoting determiner, such as complex NPs introduced by “heavy-verbs” (= non-light-verbs) like enterarse de ‘find out about’. This leads them to reject the bound-variable reading of pronouns in complex NP constructions containing heavy-verbs, and to accept long-distance wh-movement readings in these constructions. We did not find a statistically significant correlation between children’s performance on pronominal coreference and long-distance wh-movement, but we argued that this is mainly due to the insensitivity of children to weak island violations. This leads them to allow wh-extraction out of complex nominals selected by heavy-verbs, even if they already analyze the definite article as “denoting”. This explanation is compatible with an analysis in which [Spec, DP] is able to serve as an intermediate landing site for wh-elements, like the one we propose, but crucially not with an analysis in which [Spec, DP] is occupied by PRO\text{arb}, as in Roeper & DeVilliers’ analysis.

In the next sections we will test Spanish and Dutch children’s interpretations of definite articles in Constructions of Inalienable Possession (CIP). CIPs allow us to test the hypothesis that both morphologically “rich” D-N agreement and underspecification of the D position are able to license expletive determiners. As we will see, CIPs also provide evidence for the claim that children are sensitive to “rich” inflectional morphology, and that its early acquisition helps children in mastering certain aspects of the syntax of the language they are acquiring.

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23 The Differentiated group consisted of 14 children, the Did Not Differentiate group contained 20 children. One child was excluded because she differentiated the two verb types by allowing coreference in the light-verb condition (LITE-N), and rejecting it in the heavy-verb condition (HEAVY-B). This child accepted wh-extractions in heavy-verb constructions 100% of the time.
2.5. Constructions of Inalienable Possession (CIP)

2.5.1. Introduction

CIPs are constructions in which DPs, headed by definite articles can receive a possessive interpretation, which is anaphoric with respect to some other DP in the same clause. They are an interesting testing ground for the hypothesis developed in this chapter that determiners in child language can be expletives. As we already showed in section 1.2.1., whether a language allows CIPs is largely dependent on its capacity to license expletive determiners. Generally, expletive determiners require the presence of rich Determiner-Noun agreement morphology. If, however, underspecification of the D-position also leads to the licensing of expletive determiners, it is predicted that even children acquiring languages that do not have CIPs will nonetheless allow them. On the other hand, since rich inflectional morphology tends to be acquired early, it is predicted that children acquiring languages with rich Determiner-Noun agreement too will allow CIPs from early on.

CIPs are typically found in the Romance languages, such as Spanish, French, and Italian, but also in some Germanic languages, such as German. They are absent, though, in (Standard) Dutch and English.

(39) a. El médico les examinó el estómago (a las niñas).
   the doctor them examined the stomach (to the girls)
   'The doctor examined their/the girls' stomachs.'
   b. Los niños levantaron la mano.
      the children raised the hand
      'The children raised their hands.'
   c. *Los niños lavaron la cara.
      the children washed the face
      'The children washed their faces.'

(40) a. *De arts onderzocht hun/ de kinderen de maag.
      the doctor examined them/the children the stomach
      'The doctor examined their/the children's stomachs.'

---

24 Some eastern Dutch dialects allow CIPs (van Bree 1981). In standard Dutch CIPs are found in fixed expressions like (i):

(i) a. Jan drukte hem de hand.
     John pressed him the hand
     'John shook hands with him.'
   b. De ziekte stak de kop weer op
      the disease put the head again up (put up = raise)
      'The disease reappeared.'

Occasionally, constructions like (40) are also found in formal written Dutch.
b. ??De kinderen staken de hand op.
   the children put the hand up (‘put up’ = raise)
   ‘The children raised their hands.’
c. ??De kinderen wasten het gezicht.
   the children washed the face
   ‘The children washed their faces.’

(41) a. *The doctor examined them/the children the stomach. (= children’s stomachs)
   b. *The children raised the hand. (= children’s hands)
   c. *The children washed the face. (= children’s faces)

As shown in (39a,b), the possessor DP in CIPs can be either an indirect object (39a),
or a subject (39b).25 The ungrammaticality of (39c) illustrates that CIPs with
possessor subjects impose lexical restrictions on the verb.

CIPs are characterized by several other properties that distinguish them from
ordinary constructions in which possession is expressed overtly by means of a
possessive pronoun. In the first place, the class of nouns that can receive a
“possessive” reading is highly restricted. They basically include body-part nouns,
although, a restricted class of other nouns qualify as “extended inalienables”.
Examples of extended inalienables are nouns for clothing, kinship terms and,
depending on one’s idiolect, other nouns that refer to objects that are somehow felt
to be an “extension” or part of their possessor, such as computer, or umbrella
(Zubizarreta & Vergnaud 1992; Tellier 1990). Nouns such as book, on the other
hand, do not qualify as extended inalienables:26

(42) a.*Juan les ha quemado el libro (a María y a Teresa)
   John them has burned the book (to Mary and Teresa )
   ‘John has burned their/Mary and Teresa’s books.’
   b. Pedro les ha quitado los zapatos (a sus hijos).
      Peter them has taken-off the shoes (to his sons)
      ‘Peter has taken of their/his sons’ shoes.’

25 In Spanish the indirect object “possessor” can be either a dative clitic (les) or a full DP (las niñas).
However, if a full DP is used as possessor, clitic-doubling by a dative clitic is obligatory (Jaeggli 1982):
   (i) Juan *(le) lavó las manos a María.
       John *(her) washed the hands to Mary
       ‘John washed Mary’s hands.’

26 (42a) is grammatical with a non-distributive interpretation of the direct object noun and a
“benefactive” interpretation of the indirect object.
As has been argued in Baauw (1995), this indicates that the relation between “inalienable nouns” and their “possessors” does not involve real “possession”, but is in fact a case of meronimy (part-whole relation) (Cruse 1986), the relation between the body-part and the body being a core case.

A second property that characterizes CIPs is the fact that the inalienable noun gets a plural/distributive reading if the “possessor” is plural, as evidenced by (39), where singular estómago ‘stomach’ and mano ‘hand’ are interpreted respectively as each girl’s own stomach and each boy’s own hand, and (42b), where plural zapatos ‘shoes’ is interpreted as each son’s own pair of shoes (Zubizarreta & Vergnaud 1992).

Finally, CIPs are subject to locality restrictions. Unlike DPs containing overt possessive pronouns, the inalienable noun in CIPs can only be anaphoric with respect to a local c-commanding antecedent (Zubizarreta & Vergnaud 1992; Guéron 1992).

(43) a. María dijo que la hermana de Pedro cerró los ojos.
   Mary said that the sister of Peter closed the eyes

   b. María dijo que la hermana de Pedro cerró su ojos.
   Mary said that the sister of Peter closed his/her eyes

The latter two properties form a strong indication that the relation between the inalienable noun and the “possessor” DP involves binding. Concretely, inalienable nouns appear to be subject to the same constraints as reflexive pronouns.

In the following section we will present an analysis of CIPs that accounts for the properties described in this section: distributivity, locality, subject/dative asymmetry and cross-linguistic variation.

2.5.2. Binding, incorporation and the role of expletive determiners

2.5.2.1. Introduction

As shown in the previous section, two types of CIP should be distinguished: CIPs in which the inalienable noun is anaphoric with respect to the indirect object, and CIPs in which the inalienable noun is anaphoric with respect to the subject. The former type of construction, which we will call the Dative CIP (D-CIP), is lexically less restricted with respect to kind of verb that can be used than the latter type, which we will call the Subject CIP (S-CIP). 27 Although we will briefly discuss the D-CIP, our main emphasis will be on the S-CIP, since this is the construction that we tested in

27 D-CIPs are not completely unrestricted with respect to verb type. Stative verbs are excluded (Guéron 1992):

(i) *Juan le odia los ojos a María.
   John her hate the eyes to Mary
   ‘John hates her eyes.’
the experiments that we will present in section 2.6. In both constructions, though, expletive determiners play a central role.

In this section we will propose, following Zubizarreta & Vergnaud (1992) and Baauw (1996), a predication analysis of D-CIPs, according to which the indirect object binds the inalienable noun, under predication, in order to saturate the variable corresponding to the "possessor" role. For S-CIPs we will follow Delfitto & D’Hulst (1995) and Baauw (1995), who argue that S-CIPs involve abstract incorporation of N into V, licensed by a reflexive interpretation of the complex (N + V) predicate.

### 2.5.2.2. D-CIPS: predication and expletive determiners

Zubizarreta & Vergnaud argue that the anaphoric interpretation of inalienable NPs in CIPs is due to the argument structure of inalienable nouns. They argue that the "possessed" NP in CIPs contains an unsaturated argument variable. This argument variable corresponds with the so-called "possessor" role. Following Tellier (1990), Zubizarreta & Vergnaud assume that "relational" nouns, like nouns referring to body-parts and other meronyms, optionally project such an argument (44a). In constructions like (44b), this argument is projected DP internally.28

\[(44) \begin{align*}
  a. \text{arm}(x) \\
  b. \text{the arm of the child}
\end{align*}\]

In CIPs, however, this position remains open at the DP level. In order for the argument variable to be saturated, the NP-predicate has to be bound by a DP-external constituent under predication (Williams 1981). This is done by the dative phrase. The structure of the D-CIP is given in (45):

---

28 Zubizarreta & Vergnaud explicitly argue that the "possessor" role never surfaces as the internal argument of inalienable nouns (Zubizarreta & Vergnaud 1992: 624) (against Higginbotham 1987 and Grimshaw 1990 who argue that the external argument of (non-deverbal) nouns is R, the "referential" argument). On the other hand, Zubizarreta & Vergnaud argue that genitive case can be assigned by Spec-head agreement in [Spec, DP] (ia), or under government by a lexical category, N, as in (ib).

(i) \begin{align*}
  a. \text{John’s arm} \\
  b. \text{the arm of John}
\end{align*}\]

It is hard to understand, though, how an XP which is the complement of a N is not an internal argument. However, see Baauw (1996) for some evidence that even in post-nominal position "possessors" can be interpreted NP-externally.
The distributive reading of the “possessed” NP that is so typical of CIPs is the result of this binding relation (under a configuration of “predication”).

As a matter of definition, predication involves mutual m-command between the binder (Pedro, in this case) and the bindee (the NP containing pelo ‘hair’). On the face of it, mutual m-command seems to be blocked by both the PP and the DP. As far as the PP is concerned, we will argue, following Zubizarreta & Vergnaud’s argumentation for French, that dative a in Spanish is not a real preposition, hence does not block mutual m-command (Demonte 1987). With respect to the DP, Zubizarreta & Vergnaud argue that in English (and arguably Dutch), the DP blocks mutual m-command between the dative and the NP. This means that the “possessor” variable inside the inalienable NP remains unsaturated. As expected, the D-CIP is excluded in English and Dutch, as became clear in (40a) and (41a). Zubizarreta & Vergnaud argue that Romance DPs do not block mutual m-command, which enables the dative to bind the “possessed” NP and saturate the “possessor” argument variable. The reason why Romance DPs do not block mutual m-command is due to properties of Romance definite articles: as we saw in section 1.2.1., Romance definite articles can be expletives, i.e. semantically empty, in a much broader range of constructions than in Dutch and English (they can combine with proper names and are compatible with a generic interpretation of the DP). According to Zubizarreta & Vergnaud, DPs headed by expletive articles are not barriers to mutual m-command.29

---

29 English and Dutch do allow CIPs in prepositional (locative) contexts like (i) (see Zubizarreta & Vergnaud 1992; Guéron 1992):

(i) a. Jan kuste Maria op het hoofd.
   b. John kissed Mary on the head.

Zubizarreta & Vergnaud note that the verbs that allow this construction are verbs that license metonymy: kissing the head of Mary implies kissing Mary. They argue that the relation of metonymy that exists between the direct object and the DP inside the PP allows the D to be bound by the direct
Although we agree with Zubizarreta & Vergnaud on the relevance of the expletive status of definite articles in CIPs, their account is problematic for the following reason. Zubizarreta & Vergnaud argue that in CIPs the DP contains a NP with an unsaturated possessor variable. This means that the DP is predicative in CIPs, and not an argument. This gives rise to two questions. First, what is the status of the DP in Romance plural generics and of proper names preceded by definite articles? In spite of the fact that these DPs are headed by expletive determiners, they are arguments (see section 1.2.1.). Second, what is the status of the SC in D-CIPs (45)? Zubizarreta & Vergnaud are not very explicit about it, but if the inalienable DP is a predicate, i.e. an object of type <e,t>, and the dative, which acts as the subject of the DP-predicate, is of type <e>, the SC will be an object of type <t>, clearly the wrong result.

In order to solve these two problems we propose to modify Zubizarreta & Vergnaud’s approach by adopting the following two claims: (i) DPs headed by expletive determiners are arguments (i.e., of type <e>) if the D position is interpreted, but predicative if the D-position is not interpreted, and (ii) regular NPs are one place predicates (i.e., of type <e,t>) - they only have an R-variable (see section 1.2.1.) - while inalienable NPs are two-place predicates (i.e., of type <e, <e,t>>, since in addition to the R-variable they have a “possessor” variable.

In section 1.2.1. we argued that DPs become arguments in basically two ways: they are either headed by a denoting determiner (e.g. the, this in English), or they involve N-to-D movement. In Romance this can involve the generation of an expletive determiner, which is substituted for by N at LF. Importantly, in either case the D position is filled by an element with semantic content. What we suggest is that not in every DP headed by an expletive determiner N moves to D. Concretely, we propose that in CIPs the N remains in its base position. In fact, expletive substitution can be argued to be impossible for inalienable nouns. The reason is that inalienable nouns, being two place predicates (<e, <e,t>>, cannot undergo the type-shifting operation involved in N-to-D movement, since this movement, which converts an object of type <e,t> into an object of type <e> cannot have an object of type <e, <e,t>> as input. As a result, the DP containing an inalienable noun remains a two place predicate, which is a desirable result.

However, when the dative binds the possessor variable, the SC in (45) will be a one-place predicate (type <e,t>). On the face of it this is problematic, since the SC needs to be combined with the (transitive) verb, which is of type <e,<e,t>>. We propose the following solution, inspired by van Geenhoven’s (1998) treatment of indefinites in West Greenlandic. This solution involves two operations. First the verb in D-CIPs undergoes the lexical operation of internal Θ role reduction. This converts the transitive verb in a one-place predicate (type <e,t>). Following van Geenhoven, we assume that the reduced Θ role is existentially bound. Second, the SC (type <e,t>) undergoes “semantic incorporation” into the intransitivized verb object, making it non-referential. See also Broekhuis, Cornips & de Wind (1996) for some differences between Dutch and English in this respect.
Semantic incorporation allows the SC to be linked to the reduced internal Θ role of the verb, in the same way as a by-phrase is linked to the reduced external Θ role in passives. As a final step the Verb + SC complex (type <e,t>) is combined with the subject of the sentence, leading to an object of type <t>, the correct result.

Note that this modification of Zubizarreta & Vergnaud's proposal still enables us to account for two important observations of Zubizarreta & Vergnaud. It accounts for the requirement that the definite article in CIPs must be an expletive, since denoting Ds are interpreted Ds, and interpreted Ds can only select NPs of type <e,t> (to convert them into objects of type <e>). And it accounts for the strict locality effects (the mutual m-command relation): in order to undergo semantic incorporation the constituent containing the inalienable noun must be of type <e,t>, which can only be achieved if the possessor role is saturated by the dative before incorporation in the semantics applies.

Finally, note that although Zubizarreta & Vergnaud can account for the D-CIP construction, they need an additional hypothesis in order to account for the S-CIP construction, which we will repeat here in (46).

\[
(46) \quad \text{[Spec, IP] \text{Las niñas} [han [VP levantado [DP la mano]].]}
\]

‘The girls raised their hands.’

Las niñas in [Spec, IP] m-commands the object DP la mano, but the intervening VP blocks m-command of las niñas by la mano. In order to account for constructions like (46), Zubizarreta & Vergnaud propose that verbs like levantar ‘raise’ and abrir ‘open’ trigger reanalysis, to the effect that the verb and the noun form a complex (levantar la mano ‘raise the hand’, abrir los ojos ‘open the eyes’). However, the conditions under which reanalysis becomes possible remain unclarified in this approach.

Nonetheless, we believe that an account of (46) in terms of reanalysis is basically on the right track. In the next section we will present an account according to which S-CIPs involve abstract incorporation of N into V (Delfitto & D'Hulst 1995). We will show that the lexical constraints to which this process appears to be subject follow naturally from constraints on the reflexive interpretation of predicates, as formulated by Reinhart & Reuland (1993).

2.5.2.3. S-CIPs: incorporation and reflexivity

Delfitto & D'Hulst's (1995) proposal is concerned with the contrast in grammaticality between (47a) and (48a). They also try to explain why Dutch and English do not accept any kind of S-CIPs (47b,c), (48b,c):

\[
(47) \quad a. \quad \text{Juan y María volvieron la cabeza.}
\quad \text{John and Mary turned the head}
\]

\[
(48) \quad a. \quad \text{Ida y Víctor miraron la casa.}
\quad \text{Ida and Victor looked at the house}
\]
b. ?Jan en Maria draaiden het hoofd om.
   John and Mary turned the head round

c. *John and Mary turned the head.
   ‘John and Mary turned their heads.’ (= each his/her own head)

(48) a. *Juan y María lavaron la cara.
   John and Mary washed the face
b. ??Jan en Maria wasten het gezicht.
   John and Mary washed the face
c. *John and Mary washed the face.
   ‘John and Mary washed their faces.’ (= each his/her own face)

Following Delfitto & D’Hulst (1995), we will propose that S-CIPs like (47a) are formed by abstract incorporation of the inalienable noun into the verb (N-to-V-movement). As a result of this process, the “possessor” argument of the inalienable noun is interpreted at LF as the direct object of the verb + noun complex.

(49) [Las niñas vuelven [la cabeza [Poss]]] → [Las niñas cabeza-vuelven [Poss]]
   the girls turn the head Poss the girls head-turn Poss

This process corresponds to one of the cases of “possessor raising” or “possessor stranding” found in polysynthetic languages, as discussed by Baker (1988).

(50) a. Wa-hi-nuhs-ahni: nu: John
    AOR-1sS/3M-house-buy John
    ‘I bought John’s house.’

b. Fisi a-na-dy-er-a kalulu nsomba
   hyena SP-PAST-eat-ASP hare fish
   ‘The hyena ate the hare’s fish.’

(50a) and (50b) represent two types of “possessor stranding”. The first is a case of overt incorporation of the noun into the verb. The second involves abstract “reanalysis” of the noun into the N + V predicate. In both cases, though, grammatical tests such as case, object agreement and binding effects indicate that the “possessor” argument is interpreted as the direct object of the complex predicate. This analysis raises two questions: (i) why does this operation show lexical restrictions in Romance, and (ii) why do languages such as Dutch and English generally not allow any S-CIP.

Let us first try to answer the question why S-CIPs show lexical restrictions in those languages that accept them (French, Italian, Spanish etc.), i.e. why for example is (48a) ungrammatical with the plural/distributive interpretation of cara ‘face’? Delfitto & d’ Hulst propose that the lexical restrictions follow from the interaction of two factors: (i) conditions on incorporation, and (ii) conditions on the
licensing of reflexive predicates. The interaction between these two factors explains why (47a) is grammatical and (48a) not.

Let us start with the first factor. Delfitto & d' Hulst propose that abstract incorporation in non-polysynthetic languages needs a semantic trigger. They propose the following trigger:

(51) Incorporation is only possible if this leads to the creation of a reflexive predicate.

The complex predicate created by incorporation should have a reflexive interpretation, which means, following Reinhart & Reuland (1993), that it should have an interpretation that corresponds to the coindexation of the internal and external argument. However, we wish to dispense with indices (Chomsky 1995). We will therefore define “reflexive predicate”, instead, as a predicate whose two argument variables are bound by the same \( \lambda \) operator, i.e., an object of the form: \( \lambda x \) \( (xRx) \) (Baauw & Delfitto 1999a), although for the sake of convenience, we will continue often to express binding in terms of coindexation. It is evident that (47a) obeys this constraint. The “possessor” argument, which becomes the direct object of the complex predicate after N-to-V movement, is interpreted as bound by the subject: \( \lambda x [x \text{ cabeza-vuelve } x] \) (Juan y María). The fact that a reflexive predicate is created explains the locality effects illustrated in (43): if the possessor argument were bound by the subject of a higher clause, incorporation into the verb of the higher clause would violate the locality constraints on head-movement.

The second factor is linked to the first. As Reinhart & Reuland (1993) have shown, natural languages impose constraints on the well-formedness and interpretation of reflexive predicates. Reinhart & Reuland propose that the following two constraints apply, revising Chomsky’s (1981) original binding theory:

(52) Reinhart & Reuland’s Revised Binding Theory (Reinhart & Reuland 1993).

Principle A: A reflexive-marked predicate must be interpreted reflexively
Principle B: A reflexively interpreted predicate must be reflexive marked

In particular Principle B is relevant to our discussion. Principle B constrains the possibility to interpret predicates reflexively. Following Reuland (1998) and Baauw & Delfitto (1999a) we propose to reinterpret Principle B as an interface filter that prohibits arity reduction in the syntax. This boils down to establishing that a relation cannot be reduced to a property as a result of operations performed within the computational system, or in the course of the interpretation process, unless it is already marked as a property in the lexicon: \( * \lambda x \lambda y (xRy) \rightarrow \lambda x (xRx) \). From this it follows that (53) is excluded under the interpretation "[\( \lambda x (xLx) \)] (John)", since the relation ‘love’ (\( \lambda x \lambda y (xLy) \)) would have to be converted into a property.

(53) John loves him
However, verbs can get a reflexive interpretation if they are marked as such in the lexicon. In some languages, like Dutch and English, verbs like *wassen/wash* and *scheren/shave* can be interpreted as inherently reflexive, i.e. reflexive marked in the lexicon (Everaert 1986). This process can be viewed as a case of valency-reduction, an operation that applies to relations \((\lambda x \lambda y (xRy))\) to yield properties \((\lambda x (xRx))\), by reducing the internal role, identifying it with the external role (Reinhart 1996). After reduction, the internal argument remains syntactically unexpressed in English, but must often surface as the SE anaphor *zich* in Dutch (54), although even in Dutch it may remain unexpressed in some contexts (55).

\[(54)\]
\[
\begin{align*}
    \text{a. } & \text{Jan wast zich.} \\
    & \text{John washes SE} \\
    \text{b. } & \text{John is washing. (= washing himself)} \\
    \text{c. } & \text{Peter scheert zich} \\
    & \text{Peter shaves SE} \\
    \text{d. } & \text{Peter is shaving (= shaving himself)}
\end{align*}
\]

\[(55)\]
\[
\begin{align*}
    \text{a. } & \text{Wassen is gezond.} \\
    & \text{wash is healthy} \\
    & \text{‘Washing oneself is healthy.’} \\
    & \text{‘Washing somebody is healthy.’} \\
    \text{b. } & \text{Scheren is noodzakelijk} \\
    & \text{shave is necessary} \\
    & \text{‘Shaving oneself is necessary.’} \\
    & \text{‘Shaving somebody is necessary.’}
\end{align*}
\]

Importantly, though, this process is lexically restricted. Not every transitive verb is allowed to undergo reflexive marking in the lexicon:

\[(56)\]
\[
\begin{align*}
    \text{a. } & \text{*Jan ziet zich} \\
    & \text{John sees SE} \\
    \text{b. } & \text{??Jan aait zich.} \\
    & \text{John is petting SE} \\
    \text{c. } & \text{??Jan raakt zich aan.} \\
    & \text{John touches SE} \\
    \text{d. } & \text{??Peter haatte zich} \\
    & \text{Peter hated SE}
\end{align*}
\]

\[30\] Reinhart (1996) suggests that *zich* is generated in object position to check an accusative case feature. The reason why only *zich* is allowed to surface in this position, and not *hem* ‘him’ is due to Reinhart & Reuland’s (1993) A-Chain Condition. See section 1.2.2. and 3.5. for a discussion.
Verbs need the right lexical semantics in order to be interpreted as inherently reflexive (see König & Siemund 1999; Kemmer 1993). In the spirit of Delfitto & d’ Hulst, we will propose that the ungrammaticality of (48a) should be explained in a similar way as the ungrammaticality of (56) and of the reflexive interpretation of (57). First of all, Delfitto & d’ Hulst argue that complex predicate formation in (47a) takes place in the lexicon. This is compatible with a “syntactic” view on the lexicon, according to which the proper representation of predicate argument structure involves a system of structural relations which is essentially syntactic in nature (Hale & Kayser 1993), which in turn entails that processes that take place in the syntax may have a parallel in the lexicon. This is compatible with a “syntactic” view on the lexicon, according to which the proper representation of predicate argument structure involves a system of structural relations which is essentially syntactic in nature (Hale & Kayser 1993), which in turn entails that processes that take place in the syntax may have a parallel in the lexicon. According to (51), incorporation of N into V is only possible if the complex predicate has a reflexive interpretation. Since Principle B states that reflexive predicates should be reflexive marked, it follows that the complex predicate should be able to be interpreted as inherently reflexive, i.e. reflexive marked in the lexicon.

However, since reflexive-marking in the lexicon is lexically restricted, as shown in (56) and (57), it follows that lexical restrictions are also expected with complex V+N predicates. We propose, following Delfitto & d’ Hulst, the following restriction on inherently reflexive complex V+N predicates in Romance:

\[(58)\]

A complex V+N predicate is inherently reflexive if its lexical meaning is exclusively associated with a reflexive lexical meaning (Delfitto & d’ Hulst 1995: 35).

(58) explains the ungrammaticality of (48a) and the grammaticality of (47a). The lexical meaning associated with the reflexive interpretation of *lavar la cara* (41a) “x washes the face of x” is not essentially different from the non-reflexive interpretation “x washes the face of y”, apart from the different nature of the

---

31 Transitive verbs (relations) like *hate* or *pet* can get a reflexive-like interpretation with the help of SELF anaphors.

(i) Jan haatte zichzelf.

‘John hate himself.’

However, as we will argue in chapter 3, the reflexive interpretation involved here is in fact a kind of pseudo-reflexivity (Reuland 1998).
participant involved in the hair washing event. This is radically different in the case
of *volver la cabeza* 'turn the head.' *Volver la cabeza* under its reflexive
interpretation is a completely different action than the same predicate with a non-
reflexive meaning. While under its reflexive interpretation the action involves a
movement of a body part by "internal control" (a signal from the nervous system),
its non-reflexive interpretation involves movement of a body-part as a result of
manipulation ("external control"), for example, by using one's hands. It is of course
possible to turn one's own head by using one's hands, but this interpretation
corresponds to the reflexive representation of a distinct lexical meaning of the
predicate, namely the same lexical meaning as when the predicate has no reflexive
interpretation. Importantly, this latter reflexive representation is not available in
(47a), since, due to the similarity with the non-reflexive meaning, it does not license
inherent reflexivity.32

However, note that the possessive/distributive reading is not completely excluded
with predicates like (48a), in both Spanish/Italian and French. Importantly, though,
the possessive reading requires that the complex predicate be overtly marked as
"reflexive". This can be done by means of a reflexive morpheme, which is *se* in
Spanish and French, and *si* in Italian:33

---

32 Some predicates, like *levantar la voz* 'raise the voice' are exclusively compatible with a reflexive
reading. This is due to the fact that raising a voice is only compatible with an action that involves
"internal control".

(i) a. Juan levantó la voz.
   John raised the voice
b. 'John raised his voice.'
c. *'John raised the voice of another person.'

(ii) a. Juan volvió la cabeza.
    John turned the head
b. 'John turned his (own) head
   c. John turned the head of some other person.'

33 Note that predicates like *volver la cabeza* 'turn the head' or *abrir los ojos* 'open the eyes' can also be
reflexivized by means of SE:

(i) a. Juan se volvió la cabeza.
   John SE turned the head
b. María se abrió los ojos.
   Mary SE opened the eyes

However, the meaning of (i) is different from their counterparts without SE: (ia) could refer to a
situation in which Juan turns his head by taking it between his hands. (ib) could refer to a situation in
which María opens her eyes with her fingers. This shows that the lexical meaning of *volver la cabeza*
'turn the head' and *abrir los ojos* 'open the eyes' on which (i) is based, is the one in which movement by
"external control" is involved, as noted by Delfitto & d' Hulst. This meaning is not different from the
meaning of these predicates in their non-reflexive interpretation, which by definition involves "external
control". Note that predicates like *levantar la voz* are predicted not to allow reflexivisation by SE. As
can be seen in (ii), this is correct.

(ii) *Juan se levantó la voz.
   (ii) is only acceptable in a science fiction contexts in which some race of humanoids or robots raise their voices by pressing a button.
(59) a. Los niños se lavaron la cara.
    the children SE washed the face
b. Les enfants se sont lavé la face.
    the children SE are washed the face
‘The children washed their faces.’

We assume, following Baauw & Delfitto (1999b), that SE anaphors in Romance are the morphosyntactic manifestation of the reflexive interpretation of a verb. Concretely, we assume that SE anaphors are functional heads that contain an uninterruptable morphosyntactic feature, informally a “reflexive feature”, which expresses the information that the verbal predicate has undergone valency reduction in the lexicon. The uninterruptable feature located in SE is checked by an interpretable reflexive feature on the verb. In the case of S-CIPs the reflexive feature is assigned to the complex N+V verb. Checking of this feature licenses the reflexive interpretation of the complex verb, and given (51), the incorporation of N into V itself.

Note that with respect to its reflexive-marking property, Romance SE differs from Dutch SE anaphors (zich). As far as zich is concerned we follow Reinhart & Reuland (1993) and Reinhart (1996) (see note 30), and take it to be a referentially deficient pronoun (a [-R] pronoun in Reinhart & Reuland’s (1993) framework), which occupies the object position of inherently reflexive verbs for independent reasons. It is crucially not the manifestation of a morphosyntactic feature realized on the verbal predicate. Informally, it does not reflexive-mark the predicate. The different nature of Romance SE explains why it does not show the lexical restrictions that are characteristic of Dutch zich. As shown in (54) and (56), zich is only allowed to show up if the verb is inherently reflexive, i.e. if the lexical semantics of the verb allows it to undergo reflexive marking in the lexicon. Romance SE, on the other hand, is (almost) unrestricted:

(60) a. Juan se acaricia.
    John SE pets
    ‘John is petting himself.’

34 Note that there is wide consensus in the literature on the inflectional status of reflexive clitic morphology (cf. Cinque 1988; Dobrovie-Sorin 1998)

35 There appear to be some (weak) restrictions on reflexive marking with SE in Spanish. Some speakers dislike SE with perception verbs:
(i) ?Juan se vio.
    John SE saw
b. María se tocó.
   Mary SE touched
   'Mary touched herself.'

Romance SE's status as a reflexive-marker also explains why the predicate lacks a reflexive interpretation when SE is absent, as shown in Spanish (61) and (62). Recall that Dutch *zich* can be absent in similar contexts (55).

(61) a. Lavar es saludable.
   wash is healthy
   *'Washing oneself is healthy.'
   'Washing somebody is healthy.'

b. Afeitar es necesario.
   shave is necessary
   *'Shaving oneself is necessary.'
   'Shaving somebody is necessary.'

(62) a. Lavarse es saludable.
   wash-SE is healthy
   'Washing oneself is healthy.'

b. Afeitarse es necesario.
   shave-SE is necessary
   'Shaving oneself is necessary.'

This clearly shows that, unlike Dutch *zich*, Romance *se/si* is required in order to encode the reflexive interpretation of the verb. But since we assume that any verb can be assigned a reflexive feature, checking by SE will always be possible, which explains the lack of lexical restrictions.

Note that there is an interesting parallel between Dutch inherently reflexive verbs and Spanish complex predicates formed by incorporation of N into V. Dutch inherently reflexive verbs are not assigned any reflexive feature, but owe their reflexive interpretation to their lexical semantics, which allows these verbs to be reflexive-marked in the lexicon. The same applies to Spanish complex predicates like *abrir los ojos* 'open the eyes' and *volver la cabeza* 'turn the head': their reflexive meaning is not licensed by a checking procedure in which a reflexive feature assigned to the predicate is checked against a similar feature of a functional head (*se/si* in Spanish, French/Italian). Instead, it is licensed by lexical semantic properties of the predicate.

Finally, why do languages like English and Dutch not allow S-CIPs of any kind (see (47b,c)/(48b,c)? We suggest, following Delfitto & d’ Hulst, that the impossibility of English and Dutch to allow S-CIPs is due to the following constraint on incorporation:
Abstract incorporation of N into V is only possible if the definite article is interpreted as an expletive.\(^{36}\)

When the N incorporates into V, it does so by successive cyclic movement of the noun, with substitution into D. Following Delfitto \& d' Hulst, we suggest that non-expletive determiners block this movement. In section 2.5.2.2. we saw that English and standard Dutch do not allow D-CIPs because they cannot license expletive determiners. In section 1.2.1. we saw that Dutch and English do not allow other instances of non-lexically selected expletive determiners (definite articles do not combine with proper names, they are not compatible with generic NPs etc.). Since incorporation requires the determiner to be expletive, S-CIPs are correctly predicted not to be possible in these languages.

2.5.3. Summary

In the previous sections we have given an analysis of two types of CIPs that not only accounts for the lexical constraints on S-CIPs, but also for the cross-linguistic variation that these constructions show. We have argued that whether a language allows CIPs, depends on its possibility to license expletive determiners. Expletive determiners allow the possessor role to be bound by the possessor argument. The possessor argument can be a dative, or a subject. In the latter case a reflexive complex predicate is created by incorporation of the noun into the verb. The capacity to license expletive determiners distinguishes the Romance languages, which allow CIPs, from Dutch and English, which do not allow them.

2.5.4. “Rich” agreement and the licensing of expletive determiners

In section 1.2.1. it has been argued that expletive determiners are licensed by morphologically “rich” or “strong” Determiner-Noun agreement. In Spanish and Italian, Determiner-Noun agreement is considered “rich”, since the definite article distinguishes four different forms, while in English the Determiner-Noun agreement is considered “poor”, since the English definite article has only one form. However, this raises the question how rich inflection must be in order to qualify as such. As an answer to this question one could think of an approach in which the concept of rich inflection is defined in terms of a minimal number of different forms. Such an approach, however, is not very principled. It raises the question why the three different forms of the French definite article are enough to qualify its Determiner-Noun agreement as “strong”, while the two forms of the Dutch definite article fail to

\(^{36}\) Note that for polysynthetic languages it has been argued that incorporating nouns leave NPs, not DPs (see Nichols 1997, for a discussion). We suggest that the requirement of D to be an expletive in S-CIPs follows from the same universal constraint on noun-incorporation that, in a reformulated form, comes down to a ban on the presence of a denoting/referential D in noun-incorporation structures.
do the same. Therefore, in this section, we will develop an alternative view of the concept of "rich inflection". In this view, inflectional paradigms play a crucial role. The proposal that we will present in this section combines ideas on morphological "richness" of determiners presented in Baauw (1996) with Jaeggli & Safir's (1989) proposal about morphological richness with respect to the licensing of null subjects.

In Baauw (1996), I argued that in order to qualify as "strong", i.e. a licenser of expletive determiners, the Determiner-Noun agreement morphology must qualify as the unambiguous expression of at least one of the features expressed by the noun. What this means will be illustrated by comparing the Dutch determiner system with Romance determiner systems.

The Dutch nominal system distinguishes two genders, neuter and common gender. The Dutch definite article has two forms, *de* and *het*, whose distribution is as follows:

<table>
<thead>
<tr>
<th></th>
<th>common gender</th>
<th>neuter</th>
</tr>
</thead>
<tbody>
<tr>
<td>plural</td>
<td><em>de</em></td>
<td><em>de</em></td>
</tr>
<tr>
<td>singular</td>
<td><em>de</em></td>
<td><em>het</em></td>
</tr>
</tbody>
</table>

What is striking about the Dutch determiner paradigm is that most combinations of gender and number are expressed by the definite article *de*. Only when the noun is neuter and singular, must *het* be chosen. This affects the status of *de* and *het* as the expression of \( \emptyset \) features. Although *het* represents a combination of features, namely \([+\text{neuter}]/[+\text{singular}]\), due to its distributional properties, it cannot be seen as the expression of one of them. It cannot be seen as the expression of neuter gender, since *het* only marks singular nouns. On the other hand, it cannot be considered the expression of singularity either, since only neuter nouns are marked this way. Stated differently, *het* marks \([+\text{neuter}]\), but not in a system that consistently marks \([+\text{neuter}]\) (since plural nouns are always marked with *de*). *Het* also marks singularity, but not in a system that consistently marks singularity (since common gender nouns are always marked with *de*). As can be easily checked, the same kind of reasoning can be applied to *de*. Following Baauw (1996), we argue that it is this property of the Dutch determiner paradigm that qualifies its Determiner-Noun agreement paradigm as "weak" or morphologically "poor".

Compare now the Dutch determiner paradigm with Spanish, which also has a two gender system, but whose definite article shows four different forms:
In the Spanish determiner system all four possible feature combinations are marked differently, which means that both dimensions of the determiner paradigm, number and gender are reflected in every single form. We argue that that this qualifies the Spanish Determiner-Noun agreement as strong.

Let us now turn to French. French distinguishes two genders, and has a determiner paradigm that distinguishes three different forms:

<table>
<thead>
<tr>
<th></th>
<th>masculine</th>
<th>feminine</th>
</tr>
</thead>
<tbody>
<tr>
<td>plural</td>
<td>los</td>
<td>las</td>
</tr>
<tr>
<td>singular</td>
<td>el</td>
<td>la</td>
</tr>
</tbody>
</table>

In this paradigm *le* and *la* cannot be seen as the expression of masculinity and femininity respectively, because the French determiner paradigm only marks singular nouns for gender. However, they can be seen as expressions of singularity, since plurality is consistently realized in a different way, namely as *les*. This property of the French determiner paradigm makes the Determiner-Noun agreement "strong", in spite of the fact that it only has one form more than the Dutch determiner paradigm.37

The system proposed above is in some sense related to what has been proposed by Jaeggli & Safir (1989) in their account of null subjects in different languages. They argued that morphologically rich subject-verb agreement can only license null subjects if the paradigm is "uniform". By this they mean a paradigm in which every person/number combination is marked by some inflectional ending. According to this criterion, the English inflectional paradigm is not uniform, since in English only the third person singular has an ending, while the other person/number combinations correspond to the root form of the verb. Accordingly, English does not license null subjects. In Spanish, on the other hand, all person/number combinations are marked by a (different) ending. This makes the Spanish agreement paradigm uniform. Spanish licenses null subjects.

37 Note that these observations are somehow reminiscent of Roberts' characterization of "rich" Agr (triggering overt verb movement in languages such as French and German) as crucially based on "equivalent marking" of the singular/plural distinction (cf. Roberts 1993: 267). Although the notion of morphological richness developed here does not argue in favor of the exclusive relevance of the number, it is certainly compatible with such an hypothesis.
Note that in some sense the licensing conditions on expletive determiners also require some form of morphological uniformity or consistency. Our condition can be expressed in the following way:

\[(67) \text{Determiner-Noun agreement qualifies as “strong” if at least one of the features of the noun (gender or number) is uniformly expressed in the paradigm.}\]

\[(67)\] means that different determiner forms make the Determiner-Noun agreement paradigm strong if at least one of the φ features they represent is consistently (i.e. “uniformly”) marked in some way across the paradigm. As shown, in the Dutch Determiner-Noun agreement paradigm neither number nor gender is consistently marked. The French paradigm, on the other hand, consistently marks number, while the Spanish paradigm consistently marks both number and gender.

Note also that our proposal is not only empirically adequate. It is also in line with the essence of what expletive determiners are. In Baauw (1996) it is argued that expletive determiners are nothing more than a bundle of φ features. Denoting determiners, on the other hand, contain an operator, in addition to the φ features. Following Zubizarreta & Vergnaud, we claim that when the determiner does not contain an operator, it can only be licensed if it qualifies as the expression of the φ features of the noun. It makes sense that this condition is only satisfied if the different forms of the determiner express feature oppositions that are morphologically encoded in the agreement paradigm as a whole.

Interestingly, Jaeggli & Safir argue that null subjects are not only licensed by uniformly rich subject-verb agreement. They argue that uniformly poor agreement paradigms also license null subjects. This is the case in Chinese, which has null subjects and does not mark verbs with agreement affixes at all. Suppose now that expletive determiners can also be licensed by the complete absence of different determiner forms, i.e. if the D position is radically underspecified for φ features. On the face of it, English falsifies this prediction. The English definite article has only one form, the, yet it does not license expletive articles. However, if not only definite articles but also demonstratives are taken into account, the English Determiner-Noun agreement does not appear to be underspecified for φ features.

\[(68) \text{English}\]

<table>
<thead>
<tr>
<th>plural</th>
<th>the/this/that</th>
</tr>
</thead>
<tbody>
<tr>
<td>singular</td>
<td>the/these/those</td>
</tr>
</tbody>
</table>

The English D-N agreement is not “uniform”, though, since the feature opposition expressed by this/these and that/those (singular/plural), is not reflected by the definite article, which is invariant. This correctly predicts that expletive determiners
are not licensed in English.\textsuperscript{38} It also predicts that a language will allow expletive determiners if all definite determiners (definite articles + demonstratives) are invariant. In sum, this means that expletive determiners are licensed in the following two ways:

\begin{enumerate}
\item The Determiner-Noun agreement is uniformly rich: the different forms of the determiner express feature oppositions reflected in the agreement paradigm as a whole.
\item The Determiner-Noun agreement is uniformly poor: the determiner is underspecified for $\emptyset$ features, i.e., it is invariant.
\end{enumerate}

In the next section we will see that this has interesting consequences for the interpretation of definite determiners in child language.

\subsection*{2.5.5. Predictions for language acquisition}

What does the analysis outlined in the previous section predict for language acquisition? The way children interpret definite articles depends on the way they acquire the Determiner-Noun agreement paradigm of their language. Let us see what the acquisition facts are for the two types of languages, the Romance languages, and Dutch and English.

It is well known that "rich" agreement paradigms are acquired at a very early stage. This is shown, among others, by Hyams (1986; 1992a) for Italian verbal agreement and by Ezeizabarrena Segurola (1996) for Spanish and Basque verbal subject and object agreement (see chapter 1). Hyams shows that English children take more time in acquiring the third person $-s$ ending than Italian children need in acquiring the 6 different forms of the Italian verbal inflectional paradigm.

Let us turn to the Determiner-Noun agreement pattern. Several studies have shown that Spanish children hardly make any mistakes in article choice and adjective agreement already before they reach the age of 3 (see Hernández Pina 1984; Mariscal 1996; Snyder, Senghas & Inman 1999). This confirms the claim that "rich" morphology is acquired early. Dutch speaking children, on the other hand, often overgeneralize the form \textit{de} (common gender/plural) to singular neuter nouns, which require \textit{het} in adult Dutch. In fact, before the age of three, Dutch children hardly use \textit{het} (Don, Zonneveld, Drijkoningen, Everaert, Trommelen & Zwanenburg 1994). We hypothesize that the poor and non-uniform Determiner-Noun agreement paradigm of Dutch prevents Dutch children from acquiring it at an early age, to the effect that they will use \textit{de} as a default definite article. In fact, we will argue that this

\begin{footnotesize}
\textsuperscript{38} Note that the same conclusions with respect to the morphological strength of the Determiner-Noun agreement are reached for Dutch and Spanish if demonstrative pronouns are taken into account. In Dutch the form \textit{deze/die} pattern with \textit{de}, and \textit{dit/dat} pattern with \textit{het}. In Spanish \textit{esta/esa} pattern with \textit{la}, \textit{este/ese} pattern with \textit{el}, \textit{estas/eses} with \textit{las} and \textit{estos/eses} with \textit{los}. In spoken French, the same applies: \textit{ces} (pl. masc.) and \textit{cettes} (pl. fem.), which are both pronounced as /sɛ/ pattern with \textit{les}, \textit{ce} patterns with \textit{le} and \textit{cette} patterns with \textit{la}.
\end{footnotesize}
phenomenon is the direct consequence of the incomplete acquisition of the feature constellation related to the D position. Dutch speaking children keep the D position underspecified for morphologically expressed Ø features for a long time.

This has the following consequences for the status of Determiner-Noun agreement in child Spanish and child Dutch. In child Spanish the Determiner-Noun agreement morphology is rich and uniform, just like in adult Spanish. In child Dutch, on the other hand, due to the underspecification of the D position, the Determiner-Noun agreement paradigm must be considered not only poor, but also uniform, unlike the Determiner-Noun agreement in adult Dutch. As we saw, in child Dutch, de is used for all nouns, independently of their gender or number. This has important consequences for the licensing of expletive determiners in child language. Since we argued that expletive determiners are licensed by uniform Determiner-Noun agreement paradigms, we expect that not only Spanish speaking children will be able to license them, just like Spanish speaking adults, but Dutch children will too, unlike their parents. The predictions for S-CIPs are clear: both Spanish children and Dutch children are expected to allow the distributive reading of the inalienable noun in S-CIPs like (70), while Dutch adults will reject them.

(70) a. De jongetjes draaiden het hoofd om.
    the boys turned the head round
b. Los nifios volvieron la cabeza.
    the boys turned the head
    'The boys turned their heads.'

In the next two sections we will present an experimental study that tested this prediction for Dutch and Spanish children.

2.6. CIPs in child Dutch and Spanish: experimental evidence

2.6.1. The Dutch experiment

2.6.1.1. Goal of the experiment
The aim of the experiment was to test whether Dutch speaking children allow a distributive reading of the body-part noun in the following two kind of constructions.

(71) a. De drie jongetjes raakten de neus aan. (Dist-N)
    the three boys touched the nose
    'The three boys touched their noses.'
b. De drie jongetjes draaiden het hoofd om (DistB-N)
    the three boys turned the head round
    'The three boys turned their heads.'
The DistB-N (Distributive-Body-No) condition represents the kind of S-CIP that involves body movement by "internal control". The Dist-N (Distributive-No) condition represents the kind of S-CIP that implies body movement by "external control". This construction requires the presence of a SE anaphor in Spanish in order for the inalienable noun to be interpreted possessively/distributively. In adult standard Dutch, both constructions are ungrammatical, i.e. they are expected to trigger a "no" response in adults. This is due to the fact that adults will not be able to interpret the definite article as an expletive. If Dutch children allow definite articles to be interpreted as expletives, it is predicted that they will allow the distributive meaning of the inalienable noun in at least the DistB-N condition. The Dist-N condition was included in order to explore the question whether Dutch children apply the same lexical restrictions to S-CIPs as adult Romance speakers. If they do, they will reject the distributive reading of the inalienable noun in this construction. As we will see, the results on this condition provide (unexpected) additional evidence in favor of the important role that "rich" inflectional morphology place in the acquisition of syntax.

2.6.1.2. Procedure and design
The experimental design that we used was a Truth Value Judgment Task. The task was presented to the children by two experimenters as a "guessing game", in which a blindfolded hand puppet Kermit (manipulated by one of the experimenters) had to guess what happened in the pictures presented to the child by the second experimenter. The child's task was to look at the pictures and judge whether or not the guesses were correct. Each trial consisted of two pictures, which were introduced by a little story. In the first picture the participants of the action were presented to the child. This first picture was crucial in order to present all the potential antecedents of the body-part DP contained in the target input. In the second picture the actual action was depicted. After the second picture, Kermit was asked to guess what happened in the picture. Before making his guess, Kermit always listed the participants of the depicted action. The target input, i.e. "the guess", was administered with normal intonation. In (72) we give an example of a trial:

[Three boys were at a fair. There they saw a strange woman with big teeth and big ears. Brr, how scary. “I am not afraid”, said one of the boys. I’m sure those ears are not real. I’ll touch one.” And he took one ear of the woman. “Hey, leave alone!”, said the scary woman. “If you enjoy touching ears, why don’t you touch your own ears!”]
Let's see what the other two boys then did.

Question to Kermit: Kun je raden wat er gebeurde?

[Could you guess what happened?]

Answer:  Mmm... jongetjes en een enge vreemde vrouw. (Context Setting Input)
        Ik weet het: de twee jongetjes raakten het oor aan. (Target Input)

[Mmm... boys, and a strange scary woman.
I know what happened: the two boys touched the ear.]

Adult response: NO

Note that in the first picture both the ear of the woman and the ears of the children are introduced, hence both can in principle be understood as the antecedent of het oor 'the ear' in the target input. Whether het oor in the target input can have a distributive meaning (referring to the ears of the children), in addition to its "deictic" or "referential" meaning (referring to the ear of the woman) completely depends on grammatical factors, in particular the nature of the definite article: the distributive reading of the body-part noun is only compatible with an expletive interpretation of the definite article. The expected adult response to this particular trial is "no" since adults are not expected to allow a distributive interpretation of the body-part noun.

In addition to the two test conditions Dist-N and DistB-N (71), which were both meant to elicit a "no" response in adults, the experiment contained two control conditions testing the non-distributive or "referential" interpretation of the inalienable noun, Ref-Y and RefB-Y. These two conditions were expected to elicit a "yes" response in adults. Finally 24 filler items were added. In (73) we give an example of a RefB-Y trial.
Drie meisjes waren op het strand. Daar zagen ze een hele grote meneer liggen met hele lange armen. Een van de meisjes zei toe: "Wat een grote meneer is dat, en wat heeft hij lange armen." "Weet je wat: ik ga proberen een van zijn armen te buigen, hij slaapt toch". En het meisje pakte een arm van de grote man vast en ging die buigen. "Komen jullie me helpen?", vroeg ze aan de twee andere meisjes. Plotseling werd de man wakker, en zei: "Hee, hee, blijf van mijn arm af." Jullie hebben zelf toch ook armen: buigen jullie die maar!"
Laten we een kijken wat die twee andere meisjes toen deden.

[Let's see what these two other girls then did]

Question to Kermit: Kun je raden wat er gebeurde?

[Could you guess what happened?]

Answer: Mmm...meisjes en een man.

Ik weet het: de twee meisjes bogen de arm.

[Mmm...girls and a man.

I know what happened: the two girls bent the arm.]

Adult response: YES

There were three different trials for each condition. The verbs that we used in the Dist-N and Ref-Y trials were aanraken 'touch', wassen 'wash' and afdrogen 'dry'. The verbs + noun pairs that we used in the DistB-N and RefB-Y trials were het hoofd omdraaien 'turn the head', de arm buigen 'bend the arm' and de voet optillen 'raise the foot.'

The total number of trials was 36 (4 x 3 trials + 24 fillers), presented in two sessions of 30 minutes each, spaced at least one day apart. Before each first session, some practice items were administered to the child. In order to control for order effects, half of the children did the experiment in the normal order (beginning with the first trial of each session), and the other half in the reverse order (beginning with the last trial of each session). For more information about design, and a complete list of the experimental items, see Appendix I.
2.6.1.3. Subjects
The experiment was carried out with 47 Dutch speaking children, ranging from 4.17 to 8.00 years old (mean age 6.03). In addition 22 adult speakers of Dutch were tested collectively. The children were divided over the following 3 different age groups with cut-off points that roughly correspond to the cut-off points of the Dutch school system:

(74) • Group 1: n = 15; age range 4.17 - 5.25; mean age 4.84.
• Group 2: n = 13; age range 5.67 - 6.42; mean age 5.96
• Group 3: n = 19; age range 6.50 - 8.00; mean age 7.04

The 22 adults were undergraduate students of Dutch Language and Literature, with only some basic knowledge of linguistics.

2.6.1.4. Results
Since an ANOVA showed no significant age effect for any of the conditions among the children of groups 2 and 3 (p > 0.203), we decided to collapse these two groups into one.

The results show that children’s performance across both age groups is highly adultlike on the two control conditions:

(75) Percent “yes” responses on Yes Control Conditions

<table>
<thead>
<tr>
<th>group</th>
<th>n</th>
<th>age range</th>
<th>mean age</th>
<th>Ref-Y</th>
<th>RefB-Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>15</td>
<td>4.17-5.25</td>
<td>4.83</td>
<td>93 (4)</td>
<td>96 (3)</td>
</tr>
<tr>
<td>2 + 3</td>
<td>32</td>
<td>5.67-8.00</td>
<td>6.60</td>
<td>90 (3)</td>
<td>92 (4)</td>
</tr>
<tr>
<td>4</td>
<td>22</td>
<td>adult</td>
<td>-</td>
<td>95 (2)</td>
<td>91 (5)</td>
</tr>
</tbody>
</table>

Performance on the test conditions appears to be highly adultlike for the children of group 2 + 3, but not so for the children of group 1.

(76) Percent “no” responses on Test Conditions

<table>
<thead>
<tr>
<th>group</th>
<th>n</th>
<th>age range</th>
<th>mean age</th>
<th>Dist-N</th>
<th>DistB-N</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>15</td>
<td>4.17-5.25</td>
<td>4.83</td>
<td>29 (10)</td>
<td>31 (9)</td>
</tr>
<tr>
<td>2 + 3</td>
<td>32</td>
<td>5.67-8.00</td>
<td>6.60</td>
<td>69 (7)</td>
<td>69 (7)</td>
</tr>
<tr>
<td>4</td>
<td>22</td>
<td>adult</td>
<td>-</td>
<td>71 (9)</td>
<td>70 (7)</td>
</tr>
</tbody>
</table>

A Kruskal-Wallis test shows the group 1 children to differ significantly from the group 2 + 3 children on the Dist-N condition (p = 0.003) and the DistB-N condition (p = 0.004). The results also show that children (and adults) do not make any distinction between the two test conditions.
Notice, finally, that although the group 1 children accepted the distributive reading almost twice as often as adults do, the adults and the group 2 + 3 children still accepted this reading in 30% of the cases. This is not completely unexpected, though. As shown in section 2.5.2.3., the distributive interpretation of (40ab,c) does not yield sharp ungrammaticality: they are rather somewhat marginal or very marked (??, but not *). Recall also from section 2.5.1. that in standard Dutch CIPs are not completely absent: they still show up in fixed expressions, and will occasionally appear in formal, literary texts. Moreover, in some dialects they are still fully productive.

Summarizing, we can conclude that young Dutch speaking children are able to interpret definite articles as expletives. They stop doing so when they are almost 6. Dutch speaking children do not appear to show any sensitivity, though, to the difference between the verb types of the Dist-N condition and the DistB-N condition.

2.6.2. The Spanish experiment

2.6.2.1. Goal of the experiment

The aim of our experiment was to test whether Spanish speaking children allow a distributive reading of the body-part noun in the following two kind of constructions.

(77) a. Los niños tocaron la oreja. (Dist-N)
    the boys touched the ear
    'The boys touched their ears.'

b. Los niños volvieron la cabeza. (DistB-Y)
    the boys turned the head
    'The boys turned their heads.'

Like in the Dutch experiment, the Dist-N condition (77a) represents the kind of S-CIP that involves body movement with "external control", while the DistB-Y condition (77b) represents the kind of S-CIP that involves body movement realized with "internal control". Unlike in standard Dutch, in Spanish this latter construction is grammatical with the distributive reading of the body-part noun, since Spanish is able to license expletive determiners. The constructions of the Dist-N condition, on the other hand, do not allow a distributive reading of the inalienable noun in Spanish. As we have seen in section 2.5.2.3., S-CIPs involving actions realized by "external control" require the use of SE anaphors in order to reflexive-mark the complex predicate formed by abstract incorporation of N into V.

Since in Spanish expletive determiners are licensed by its rich and uniform D-N agreement (see section 2.5.4.), and since rich agreement morphology is early acquired, it is predicted that Spanish children will allow the distributive reading of the body-part noun in the DistB-Y condition from early on. The Dist-N condition was included in order to test whether children's performance on S-CIPs is really
adultlike in all respects. If they rejected the distributive reading of the inalienable noun in this condition, this would mean that they had acquired the lexical restrictions on incorporation that apply in the adult language. As we will see, the results on this condition appear to provide additional evidence in favor of the important role that "rich" morphology plays in the acquisition of syntax.

2.6.2.2. Procedure and design

For this experiment exactly the same design and materials were used as for the Dutch CIP experiment (Truth Value Judgment Task, see section 2.6.1). Like in the Dutch experiment, in addition to the two test conditions, two control conditions were included (Ref-Y and RefB-Y), both testing the deictic or referential interpretation of the body-part noun. Note however, that one of the two test conditions was a No Condition in the Dutch experiment (DistB-N), but was a Yes Condition in the Spanish experiment (DistB-Y). The 4 experimental conditions were intermingled with 30 filler items.

The verbs that we used in the trials testing the Dist-N and Ref-Y conditions were tocar 'touch', lavar 'wash' and secar 'dry'. In the DistB-Y and RefB-Y conditions the following verb + noun pairs were used: volver la cabeza 'turn the head', doblar el brazo 'bend the arm' and levantar el pie 'lift the foot.'

The total number of trials was 42 (4 x 3 trials + 30 fillers), presented in two sessions of approximately 30 minutes each, spaced at least one day apart. Before each first session, some practice items were presented to the child. We controlled for order effects by varying the order of presentation in the way we did in the Dutch experiment. For more detailed information about design and a complete list of the experimental items, see Appendix I.

2.6.2.3. Subjects

The experiment was carried out with 32 Spanish speaking children, ranging from 4.33 to 7.17 years old (mean age 5.9). In addition, 13 adults were tested, some of them collectively, others individually.

The children were divided over three age groups, whose cut-off points corresponded with the cut-off points used by the Spanish school system:

(78) • Group 1: n = 9; age range 4.33 - 5.25; mean age 4.82
  • Group 2: n = 12; age range 5.33 - 6.25; mean age 5.93
  • Group 3: n = 11; age range 6.33 - 7.17; mean age 6.75

The 13 adults were speakers of Peninsular Spanish. Most of them did not have an academic background. None of them had any background in linguistics.

2.6.2.4. Results

Since an ANOVA showed no effect of age for any of the conditions between the children of group 1 and 2 (p ≥ 0.207), we decided to collapse these two age groups.
The results show that both children and adults allow the referential interpretation of definite articles in the Ref-Y condition most of the time. The children, though, appear to accept this reading more often than adults do.

The results on the RefB-Y condition are even more striking. Although the children of group 1 + 2 accept the "referential" reading of the inalienable noun most of the time, the children of group 3 and the adults reject this reading almost half of the time. A Kruskal-Wallis test shows that the difference between group 1 + 2 and group 3 is significant (p = 0.016). It appears that the older children and the adults develop a strong preference to analyze [verb + inalienable noun] pairs as complex predicates, as long as the reflexive interpretation of this predicate can be licensed. A sign-test shows that the difference between Ref-Y and RefB-Y is significant for the group 3 children (p = 0.031), but not for the adults (p = 0.289).

(79) Percent "yes" responses on Yes Control Conditions

<table>
<thead>
<tr>
<th>group</th>
<th>n</th>
<th>age range</th>
<th>mean age</th>
<th>Ref-Y</th>
<th>RefB-Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 + 2</td>
<td>21</td>
<td>4.33-6.25</td>
<td>5.46</td>
<td>94(5)</td>
<td>89(5)</td>
</tr>
<tr>
<td>3</td>
<td>11</td>
<td>6.33-7.17</td>
<td>6.75</td>
<td>91(5)</td>
<td>64(9)</td>
</tr>
<tr>
<td>4</td>
<td>13</td>
<td>adult</td>
<td>-</td>
<td>74(8)</td>
<td>56(12)</td>
</tr>
</tbody>
</table>

As far as the Dist-N condition is concerned, children appear to perform highly adultlike across all age groups. Strikingly though, the percentage of "yes" answers by the adult speakers is much higher than expected: in 44% of the cases adults accepted the possessive/distributive reading of the body-part noun in this condition. Recall that in the absence of SE, constructions like (77a) are supposed to be ungrammatical with a possessive/distributive interpretation of the body-part noun.

(80) Percent "no" responses on No Test Condition

<table>
<thead>
<tr>
<th>group</th>
<th>n</th>
<th>age range</th>
<th>mean age</th>
<th>Dist-N</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 + 2</td>
<td>21</td>
<td>4.33-6.25</td>
<td>5.46</td>
<td>63(9)</td>
</tr>
<tr>
<td>3</td>
<td>11</td>
<td>6.33-7.17</td>
<td>6.75</td>
<td>48(10)</td>
</tr>
<tr>
<td>4</td>
<td>13</td>
<td>adult</td>
<td>-</td>
<td>56(12)</td>
</tr>
</tbody>
</table>

The results on the DistB-Y condition show that children allow the distributive reading of the inalienable noun in roughly two thirds of the cases. A t-test shows that there is no significant difference between the groups 1 + 2 and 3 (p = 0.155). Adults accept the distributive reading more often than children, but a t-test comparing adult performance with the performance of all children (69% "yes" responses) shows that this difference does not reach significance (p = 0.067).
Finally, note that in spite of the high number of “yes” responses on the Dist-N condition across all ages, children and adults show sensitivity to the grammatical difference between Dist-N constructions and Dist-B-Y constructions, allowing the distributive reading of the body-part noun much more often in the Dist-B-Y condition than in the Dist-N condition. A sign-test shows that this difference is significant for the adults (p = 0.008), and for the children of group 1 + 2 (p = 0.002) and 3 (p = 0.008).39

Summarizing, we conclude that Spanish speaking children know that definite articles can be expletives from early on. They also show sensitivity to the lexical restrictions on S-CIPs, since they accept the distributive reading of the noun more often in the Dist-B-Y condition than in the Dist-N condition.

2.6.3. Discussion

The results of the experiments show that our predictions with regard to the interpretation of definite articles are borne out. Young Dutch speaking children allow expletive articles in their comprehension till they are almost 6, as evidenced by the fact that they accept the distributive reading of the inalienable noun in roughly two thirds of the cases. This is predicted given the fact that the D position may remain underspecified in child Dutch. As soon as the feature content of D is fully acquired, they will no longer be able to generate expletive determiners, since the “weak” Determiner-Noun agreement morphology of Dutch is unable to license them. Spanish children, on the other hand, allow expletive determiners across all age groups, like the adult speakers, since expletive determiners are licensed by the early-acquired rich Determiner-Noun agreement morphology of Spanish determiners.

39 Note that, although we did not test in the present experiment S-CIPs containing SE, like (i), we included this condition as the fillers of an other experiment (the light-verb experiment, see section 2.4.2.), carried out with 35 Spanish speaking children between 4.50 and 7.33 years old (mean age 5.98) and 17 adults.

(i) Los niños se lavaron la cara.

the children washed the face

The results show that Spanish speaking children rejected the non-possessive/distributive (“referential”) reading of (i) in 94% of the cases, and accepted the possessive/distributive reading 95% of the time. Similar results were found in adults: 100% rejections of the ungrammatical referential reading and 92% acceptance of the possessive/ distributive reading. No differences between different age groups were found. This finding contradicts Barrière (1995), who argues that what she calls “extra-dative SE” is acquired relatively late by French speaking children. However, the experimental paradigm she used, a grammaticality judgment task, was different from ours.
However, the results also raise some questions. The first, and most important question, concerns the Dutch results. Dutch children do not show sensitivity to the lexical restrictions that apply to S-CIPs in Romance, i.e., they allow the distributive interpretation of the body-part noun in both (82a) (DistB-N condition) and (82b) (Dist-N condition). Spanish children, on the other hand, did distinguish between the two conditions. This raises the question of how child Dutch fits in the theory on abstract incorporation presented in section 2.5.2.3.

(82) a. De twee jongetjes draaiden het hoofd om.
    the two boys turned the head around
    'The boys turned their heads.'

b. De twee jongetjes droogden het gezicht af.
    the two boys dried the face off
    'The two boys dried their faces.'

A minor question concerns the unexpected adult results on the Dist-N condition and the RefB-Y condition in Spanish. Spanish adults and children unexpectedly accepted the distributive reading of the inalienable noun almost half of the time, while at the same time adults and the older children (roughly the 6½ - 7½ year olds) rejected the referential reading of definite determiners in the RefB-Y condition almost half of the time.

Let us start with the first question. In section 2.5.2.3. we argued that the lexical restrictions that apply to S-CIP support an analysis of this construction in terms of abstract incorporation of N into V. Concretely, we argued that the lexical restrictions that explain the grammaticality of (83a) and the ungrammaticality of (83b) derive from the interaction of three syntactic factors: (i) abstract incorporation is licensed by the reflexive interpretation of the complex V+N predicate, (ii) abstract incorporation in (83a) takes place in the lexicon, and (iii) reflexive predicates created in the lexicon must be reflexive-marked, in conformity with Reinhart & Reuland's (1993) Principle B.

(83) a. Los dos niños volvieron la cabeza
    the two boys turned the head
    'The two boys turned their heads.'

b. *Los dos niños lavaron la cara.
    the two boys washed the face
    'The two boys washed their faces.'

In (83a) the reflexive predicate created after incorporation of N into V is reflexive marked by its special lexical semantics, very much in same way as Dutch inherently reflexive verbs are inherently reflexive-marked by virtue of their lexical semantic properties. As we saw in section 2.5.2.3, the lexical semantic property of the complex predicate in (83a) that licenses its reflexive interpretation is the fact that its reflexive interpretation corresponds to what we called a body-movement by internal
control, i.e. moving a body-part as a reaction to a signal from the nervous system, which is a different action than turning somebody else’s head, by taking it between one’s hands. Since washing one’s own face does not involve a very different action than washing somebody else’s face, the reflexive interpretation of the complex predicate in (83b) violates principle B. In order to rescue the construction, the predicate must be reflexive marked by SE (84a), in the same way as SE licenses the reflexive interpretation of non-complex predicates (84b).

(84) a. Los dos niños se lavaron la cara.
    the two boys SE washed the face
    ‘The two boys washed their faces.’

b. María se odia.
    Mary SE hates
    ‘Mary hates herself.’

The question we have to answer is then: how is the reflexive interpretation of the complex predicate formed in (82b) licensed in child Dutch? The complex predicate is not reflexive marked by a SE anaphor. In fact, as we argued in section 2.5.2.3, Dutch does not even have a reflexive-marking element like Romance SE: Dutch SE-anaphors are [-R] pronouns, instead of reflexive-markers. In order to account for the distributive reading of (82b) we will explore two possible solutions.

The first possible solution is inspired by some remarks about S-CIPs in Norwegian made by Zubizarreta & Vergnaud (1992) in note 37, and by the data presented in Lédru (1999). Zubizarreta & Vergnaud and Lédru show that Norwegian S-CIPs are also subject to lexical restrictions on the predicate, but apparently to different ones than those in the Romance languages. S-CIPs appear to be possible with verbs that allow the object to be expressed by the SE-anaphor seg when they are interpreted reflexively (85). As shown by Hestvik (1990) and others, Norwegian is like Dutch in the sense that not all verbs allow seg/zich. It follows that not all verbs allow S-CIPs (86).

(85) a. De vasket seg.
    they washed SE

b. De vasket ansiktet.
    they washed face-the
    ‘They washed their faces.’

c. De reiste seg
    they raised SE

d. De reiste hodet.
    they raised head (Zubizarreta & Vergnaud 1992: note 37)
    ‘They raised their heads.’

(86) a. ??Han beroerte seg
    he touched SE
b. ??Han beroerte nesen.
   he touched nose-the (H. Lødrup, p.c.)
   ‘He touched his nose.’

As we argued in section 2.5.2.3. seg/zich can only occupy the object position of verbs that are reflexive-marked in the lexicon. This operation is dependent on lexical semantic properties of the verb.

This allows us to explain the contrast between (85b,d) and (86b) in the following way: the S-CIPs in (85b,d) are licensed by the fact that the lexical semantic property that is responsible for the reflexive marking of inherently reflexive verbs such as vasket ‘washed’ and reiste ‘raised’ is transferred to the complex predicate vasket ansiktet ‘washed the face’ and reiste hodet ‘raised the head.’ This means that the reflexive interpretation of the complex predicate formed in (85b,d) is licensed in the same way as the reflexive interpretation of the simple predicates vasket and reiste in (85a,c): they are inherently reflexive-marked due to their lexical semantic properties. Since verbs like beroerte ‘touched’ cannot be reflexive marked in the lexicon, it follows that a complex predicate like beroerte nesen ‘touched the nose’ cannot either (to the effect that Principle B is violated if it is assigned a reflexive interpretation).  

Let us now turn to the results of the Dutch experiment. Suppose that child Dutch is like Norwegian. In that case it is expected that Dutch children will accept the distributive reading of the body-part noun in (82b), since wassen ‘wash’ can be reflexive-marked in the lexicon:

(87) Jan waste zich.
   John washed SE

On the other hand, it is expected that Dutch children will not accept (88a), since aanraken ‘touch’ cannot be reflexive-marked in the lexicon (88b):

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40 Obviously, it must be assumed that Norwegian licenses explicative determiners. Otherwise movement of N to V would be blocked irrespective of whether the reflexive interpretation of the complex predicate can be licensed. According to Longobardi (1994), this is indeed the case. Norwegian allows the use of definite articles in plural generics and some varieties also allow definite articles to combine with proper names.

41 One could wonder why the direct object of the complex predicate created by N-to-V movement (the possessor argument) need not surface as seg, leading to forms like (i), which are ungrammatical:
   (i) *De vasket seg ansiktet
      they washed SE face-the
We will limit ourselves to remarking that zich can be absent in some grammatical contexts too, as we showed in section 2.5.2.3. (examples (55)). An extensive discussion of the exact conditions under which the internal argument of reflexive predicates may remain unexpressed is outside the scope of this thesis.
(88) a. De twee jongetjes hebben de neus aangeraakt.
   ‘The two boys touched their (own) noses.’

b. Jan heeft zich aangeraakt.
   John has SE touched

Interestingly, the hypothesis that child Dutch is like Norwegian with respect to the licensing of S-CIPs can be tested. The Dist-N condition consisted of three trials. Two of the trials consisted of input sentences containing the potentially “inherently reflexive” verbs wassen ‘wash’ and afdrogen ‘dry’, and one trial consisted of an input sentence containing the non-inherently reflexive verb aanraken ‘touch’. If child Dutch is like Norwegian, it is predicted that Dutch children accept the distributive reading of the inalienable noun more often in the trials with wassen and afdrogen than in the trial with aanraken. Unfortunately, the results show that this prediction is not borne out, as can be seen in (89):

(89) Number + (%) of “no” responses to the three trials of the Dist-N condition in Dutch group 1 children.

<table>
<thead>
<tr>
<th>n</th>
<th>age range</th>
<th>mean age</th>
<th>Dist-N.1</th>
<th>Dist-N.2</th>
<th>Dist-N.3</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>4.17-5.25</td>
<td>4.83</td>
<td>4 (27%)</td>
<td>3 (20%)</td>
<td>6 (40%)</td>
</tr>
</tbody>
</table>

Dist-N.1: De twee jongetjes raakten het oor aan
   the two boys touched the ear

Dist-N.2: De twee jongetjes wassen het hoofd.
   the two boys washed the head

Dist-N.3: De twee jongetjes droogden het gezicht af.
   the two boys dried the face

As can be seen in (89), the number of “no” responses in trial Dist-N.1 is not higher than in Dist-N.2 and Dist-N.3. In fact, a Friedman test shows that the differences between the three trials are not significant (p = 0.247). This means that the hypothesis that in child Dutch S-CIPs are licensed in the same way as in Norwegian should be given up.

However, there is another solution. Delfitto & d’Hulst discuss S-CIPs like (90), which are possible in Italian and Spanish, but not in French.

(90) a. Juan y María perdieron el paraguas.
   John and Mary lost the umbrella

b. *Jean et Marie ont perdu le parapluie.
   John and Mary have lost the umbrella
   ‘John and Mary lost their umbrellas.’
What is interesting about this construction is that the reflexive reading of the complex predicates *perder el paraguas* ‘lose the umbrella’ is not licensed by SE. Delfitto & d’Hulst argue that the absence of SE is due to the fact that the reflexive complex predicate in (90) is created by abstract incorporation in the syntax instead of in the lexicon. Since reflexive SE encodes the fact that the verb has undergone valency reduction in the lexicon, the complex predicate formed in the syntax cannot be reflexive-marked by it. In fact, since the complex predicate did not exist before it was created in the syntax, assigning it a reflexive interpretation (i.e. interpreting it as a property) does not violate Principle B, since no valency reduction has taken place (the predicate did not exist as a two place predicate (a relation) in the lexicon).

Delfitto & d’Hulst argue that the contrast between Italian/Spanish and French shown in (91) is due to the more limited application of syntactic incorporation in French. As is well known, French does not show the massive restructuring effects of Italian and Spanish (related to phenomena like clitic-climbing, long NP movement, etc.). Another striking difference between French and Italian/Spanish is that French, unlike Italian/Spanish, does not allow bare plurals in object position.

(91) a. Ayer comí zanahorias.    yesterday ate-I carrots
   b. *Hier, j’ai mangé carottes. yesterday I have eaten carrots

If we adopt the view that bare plurals are licensed by incorporation of the empty D into V (Delfitto & Schrotten 1991; Delfitto 1998), this could be interpreted as additional evidence in favor of the absence of syntactic incorporation in French.

What we want to propose now is that Dutch speaking children allow (82a,b) to be analyzed as involving syntactic incorporation. However, Delfitto & d’Hulst show that syntactic incorporation in Spanish and Italian is only possible with extended inalienables. Otherwise S-CIPs like (83b) should be grammatical. In fact, incorporation in the syntax is the only option for extended inalienables. Otherwise French (92) could be saved in French by incorporating the extended inalienable in the lexicon, contrary to fact.

(92) *Charles s’est retrouvé le portefeuille.
   Charles SE is found-back the wallet
   ‘Charles found his wallet back.’

Delfitto & d’Hulst argue that the process of incorporation and “possessor raising” is highly constrained when it applies in the lexicon, presumably because it affects the thematic structure of the verbs involved in this process. They therefore propose that incorporation in the lexicon is only possible if the incorporating noun is referentially non-distinct from the possessor argument. When the incorporating noun is a body-part, this condition is satisfied: the body-part and its “possessor” form one individual.
However, this does not explain why body-part nouns cannot incorporate in the syntax in languages like Italian and Spanish. Although Delfitto & d’ Hulst do not address this question, we suggest that incorporation of body-part nouns in the syntax is blocked by economy. We propose that if in a given language a complex predicate can be formed through abstract incorporation of N into V in the lexicon, this should be preferred to incorporation in the syntax. Our guess is that this is due to the fact that the incorporation process is not triggered by feature checking, but is semantically motivated instead. It could be argued that operations that lead to the creation of new lexical-semantic units are more appropriately done in the lexicon, the component of our language faculty specialized in the creation and storage of (new) lexical items.

But suppose now that Dutch children are not exposed to clear evidence that tells them that abstract incorporation in the lexicon is an option in Dutch (if it is an option at all in Dutch). In that case nothing blocks body-part nouns from being incorporated in the syntax. As a result, the distributive reading of the inalienable noun in both (82a) (DistB-N) and (82b) (Dist-N) becomes available, as indicated by the experimental results. Note that Dutch speaking children have plenty of evidence for abstract incorporation in the syntax. If we follow Delfitto & Schroten (1991) and Delfitto (1998), who claim that existentially interpreted bare object nouns involve incorporation of D into V, than (93) provides evidence for incorporation of D into V in Dutch.

(93) Jan heeft gisteren bonen gegeten.
   ‘John has yesterday beans eaten’

In addition, Dutch allows phenomena that are related to restructuring in Romance, such as V-to-V- raising (see Evers 1975; Roberts 1997). It is unclear, on the other hand, what could count as evidence for abstract incorporation in the lexicon.

Note on the other hand, that Spanish children do have evidence for incorporation in the lexicon, in addition to incorporation in the syntax. Spanish speaking children are exposed to constructions like (94).

(94) La niñas se lavaron la cara.
   ‘The girls washed their faces.’

(94) is only compatible with incorporation in the lexicon, as we extensively argued: the complex predicate is reflexive-marked by SE, which indicates that the verb has

It could be argued that laten ‘let’ causatives in Dutch may involve incorporation in the lexicon (Coopmans & Everaert 1988). However, according to this analysis, laten is an affix-like element affecting the Θ structure of the complement verb. The incorporation of the inalienable noun into the governing verb is of a different nature.
undergone valency reduction in the lexicon. If abstract incorporation in the lexicon is possible, economy will block incorporation of body-part nouns in the syntax. As a result, they will rule out the distributive interpretation of the body-part noun in (83b), since no grammatical derivation is compatible with it. The experimental results corroborate this prediction, since both adults and children accepted the distributive reading of the inalienable noun much more often in constructions like (83a) (Dist-B-Y condition) than in constructions like (83b) (Dist-N condition).

This result provides additional evidence for the major claim that we want to put forward in this thesis, namely that children are sensitive to “rich” inflectional morphology, and that “rich” morphology helps children to discover important properties of the language they are acquiring. The presence in Spanish of the reflexive-marker SE, which we consider a piece of inflectional morphology, makes them sensitive to the lexical restrictions that govern the creation of complex predicates in the lexicon. The absence of this type of morphology in Dutch strongly reduces the possibility for the Dutch child to acquire any kind of lexical restriction, since the child will create the complex predicate in the syntax, where no lexical restrictions with respect to verb type apply (except that the lexical semantics of the verb must be compatible with an interpretation according to which the subject is the possessor of the inalienable). This means that the Spanish child has an advantage over the Dutch child, in the sense that the presence of SE in Spanish prevents her from accepting the distributive interpretation of the inalienable noun in the Dist-N condition, which is ungrammatical in both adult Dutch and adult Spanish.

Let us now briefly address the two remaining questions that we mentioned at the beginning of this section. The first concerns the unexpectedly high percentage of “yes” responses in the Dist-N condition, in both adults and children. This is surprising, since native speaker judgments generally indicate that (83b) is ungrammatical with the possessive/distributive reading of the inalienable noun. It is very well possible that a carry-over effect is responsible for this effect. It may be the case that in some subjects, the responses on the Dist-N condition have been influenced by the responses on the structurally highly similar Dist-B-Y condition (which is designed to elicit a “yes” response). However, there may be an additional factor. Given our incorporation analysis, a construction like (83b) involves a Principle B violation: the complex predicate has a reflexive interpretation, but is not reflexive-marked. Interestingly, Reinhart & Reuland (1993) argue that pure Principle B violations lead to a relatively mild form of ungrammaticality, as shown in (95a):

(95) a. ??Jan haatte zich.
   John hatet SE

43 Carry-over effects are the result of a response strategy in which the subject tries to respond to a trial in the same way as he or she responded in a previous trial that looks similar, according to the subject, even if this violates his/her grammatical intuitions.
In (95a), Principle B is violated, since *haten ‘hate’ is interpreted reflexively, but is not reflexive-marked (it is not “inherently reflexive”). The ungrammaticality of (95a) is much milder than the ungrammaticality of (95b), which according to Reinhart & Reuland does not only involve a Principle B violation, but also a violation of the generalized A-Chain Condition. This condition requires that the bindee in a local binding relation be referentially deficient, i.e. underspecified for number (see section 3.5. for a detailed discussion of the A-Chain Condition): *zich is, but *hem is not. We speculate that the relative mildness of pure Principle B violations, in addition to the carry-over effect, explains the high percentage of “yes” responses in the Dist-N condition.

Let us finally address the last question that we mentioned at the beginning of this section: why do Spanish speaking adults and the older children often give a “no” response in the RefB-Y condition? According to native speaker judgments, (96) can refer to a situation in which the boys turn the head of another individual, as long as this head is properly introduced in the context. As we showed in the previous two sections (and in Appendix I), this requirement was satisfied in all trials. Yet, adults and older children often rejected the “referential” reading of the body-part noun. 44

(96) Los niños volvieron la cabeza.

the boys turned the head

We suggest that the reason why many adults and the older children often reject the referential or deictic reading of the body-part noun is due to their richer linguistic experience. 45 This may lead them to store complex predicates like volver la cabeza ‘turn the head’ as units in the lexicon. The existence of such a unit may blind them for the other possible analysis of (96), in which the body-part noun does not form a complex predicate with the verb at all, and should be interpreted referentially. This explanation is confirmed by the fact that both adults and children did not often reject the referential interpretation of the body-part noun in the Ref-Y condition, since no complex predicate can be formed in this case. 46

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44 Interestingly, the same was found by Berger (1999), in a study on the acquisition of S-CIPs in Italian.


46 However, the adults rejected the “referential” reading of the body-part noun more often than the children in the Ref-Y condition. We suggest that this may due to a carry over-effect.
2.7. Summary and conclusion

In this chapter we have argued that "non-referential" NPs in child language provide evidence for the existence of a syntactic source affecting children's interpretation of DPs, in addition to a cognitive/pragmatic factor, mentioned in section 1.3.3. Concretely, we argued that "non-referential" NPs headed by definite articles are DPs with an expletive determiner in the D position.

We have shown experimentally that Spanish speaking children often disallowed pronouns in complex NPs selected by heavy-verbs to be bound by the matrix subject (97a), and often allowed long distance wh-movement out of complex NPs selected by heavy-verbs.

(97) a. El niño se enteró de [la decisión de pintarle].
   ‘The boy found out about the decision to paint him.’
   b. *Cuándo se enteró el niño de [la decisión de arreglar la bicicleta]? 
   ‘When did the boy find out about the decision to repair the bicycle?’

We have proposed that Spanish speaking children initially assume that all complex NPs are DPs with expletive determiners in D. We argued that DPs with expletive Ds are not barriers to long distance wh-movement and do not constitute binding domains for pronouns.

We have also presented experimental evidence showing that Dutch children accept the distributive reading of the direct object in constructions of inalienable possession (98a), which is grammatical in languages that license expletive determiners, like Spanish (98b), but not in adult Dutch, which does not license expletive determiners in this position.

(98) a. ??De jongetjes draaiden het hoofd om
   the boys turned the head
   b. Los niños volvieron la cabeza.
   the boys turned the head
   ‘The boys turned their heads.’

We have argued that expletive articles in child Dutch reflect the incomplete feature acquisition of the D position. Incomplete lexical feature acquisition leaves the D position underspecified, and underspecified Ds are argued to be interpreted as expletives. This account of "non-referential" DPs in child language is in line with the more general view that the acquisition of syntax consists largely of determining the morpho-syntactic feature composition of functional heads.

We further argued that children are sensitive to "rich" inflectional morphology. In adult Spanish expletive determiners are licensed by "rich" (and "uniform") Determiner-Noun agreement morphology. Since "rich" inflectional morphology is acquired early, Spanish children were expected to license expletive determiners from early on. Experimental evidence has corroborated this prediction: Spanish
speaking children across all ages accepted the distributive reading of the direct object in (98b).

Finally we showed that children acquiring a language with "rich" inflectional morphology may have an advantage over children acquiring languages with little inflectional morphology, in the sense that "rich" inflectional morphology may prevent children from accepting constructions that are ungrammatical in the adult language. We argued that the presence in Spanish of the lexical reflexive-marker SE, which we consider to be a piece of inflectional morphology, makes Spanish children sensitive to the lexical restrictions governing S-CIPs, leading them to reject (99b) much more often than (98b).

(99) a. ??De jongetjes wasten het gezicht
    the boys washed the face
b. *Los niños lavaron la cara.
    the boys washed the face
    'The boys washed their faces.'

Since Dutch lacks a reflexive-marker like SE, Dutch children accepted the distributive interpretation of the inalienable noun equally often in (99a) and in (98a).

In the next chapter we will show that underspecification of the D position also affects children's interpretation of pronouns. We will argue on the basis of evidence from Dutch speaking children and Spanish speaking children that also in the case of pronouns, the presence of "rich" morphology helps children in acquiring certain aspects of the adult grammar relatively early.
CHAPTER 3

The acquisition of pronominal anaphora in Spanish and Dutch

3.1. Introduction

In the previous chapter we showed that part of children's non-adultlike interpretation of definite articles is due to the incomplete acquisition of morphosyntactic features of the D position. The aim of this chapter is twofold: First we will show that lexical feature acquisition also accounts for some aspects of the acquisition of pronominal anaphora. We will argue, on the basis of experimental evidence from the acquisition of Dutch and Spanish, that the so-called Delay of Principle B Effect (DPBE), the phenomenon that children often incorrectly allow pronouns to refer to local c-commanding antecedents, is not a unified phenomenon. We will show that, like children's non-adultlike interpretation of definite articles, the DPBE is partly due to problems at the syntax/pragmatics interface, and partly to the incomplete lexical feature acquisition of pronouns. The second aim of this chapter is to show that "rich" inflectional morphology, in the form of the presence of pronominal clitics, may prevent children from showing this delay in certain constructions.

The structure of this chapter is as follows. First we will discuss the DPBE in child Dutch and English. We will argue that children showing a DPBE in simple sentences do not violate Principle B, allowing pronouns to be locally bound, but allow local coreference in an non-adultlike way. We will argue that this delay is due to their inability to process a constraint that regulates intrasentential coreference. Then we will discuss the absence of the DPBE in the Romance languages. We will show that the absence of the DPBE in Romance is due to the fact that Romance weak pronouns are syntactic clitics. This then raises the question about the clitic status of weak pronouns in Dutch. We will adduce experimental evidence that Dutch weak pronouns are not clitics in the Romance sense of the word (section 3.3.4.). In section 3.4.2. we will present experimental evidence showing that Spanish speaking children do not exhibit a DPBE in constructions containing strong pronouns. We will argue that when the strong pronoun is a direct object, this is due to the fact that in Spanish clitic doubling is obligatory in this construction. In section 3.4.4. we will also show that Spanish speaking children allow coreference more often than adults when the strong pronoun is the complement of a (non-locative) preposition. However, we will argue that this does not indicate a "real" DPBE. In sections 3.5.3. and 3.5.5. we will present experimental evidence showing that Spanish speaking children do show a DPBE in ECM constructions. We will argue that this DPBE, which has also been found in Dutch and other languages, is caused by the incomplete feature acquisition of pronouns in child Spanish, which leads children to
treat third person pronouns as SE-anaphors. We will show that these results provide additional evidence for a modular approach to binding.

3.2. DPBE as a pragmatics/syntax interface problem

3.2.1. Introduction

It is a well-established fact that children between 3 and 7 often allow third person pronouns to corefer with a local c-commanding antecedent, while they do not seem to have too much trouble with the correct interpretation of reflexive pronouns.

(1) a. John pointed at him.  
    (around 50% adultlike performance)

b. John pointed at himself.  
    (almost 100% adultlike performance)

This phenomenon has been found in a variety of languages, including English (Jakubowicz 1984; Chien & Wexler 1990; Grimshaw & Rosen 1990, among others), Dutch (Koster 1993; Philip & Coopmans 1996a,b; Sigurjónsdóttir & Coopmans 1996), Icelandic (Sigurjónsdóttir 1992) and Russian (Avrutin & Wexler 1992).

This has lead some researchers to argue that Principle B may be subject to maturation (unlike Principle A) (Chien & Wexler 1987). Others have argued that although Principle B is available from early on, the binding domains for Principle B may be parameterized, and that children initially choose the wrong parameter value (Wexler & Manzini 1987; McKee 1992) (see section 3.3.2.). However, as shown by Chien & Wexler (1990) for English and Philip & Coopmans (1996b) for Dutch, children appear to perform much more adultlike if the local antecedent is quantified, like in (2).  

(2)  

Every boy touched him.  
(85% adultlike performance)

This strongly suggests that the DPBE does not involve a problem with binding, but rather with coreference (Grodzinsky & Reinhart 1993). Children know and obey the binding principles, but allow coreference between co-arguments much more often than adults do. In the adult language, coreference between co-arguments is not completely excluded, but limited to specific discourse contexts, like the ones in (3).  

1 As Drozd & Koster (1999) note, Dutch speaking children do not perform as adultlike as English speaking children on constructions containing quantifiers. In fact, their own results did not show any inhibition of the DPBE at all in constructions like (i).  

(i)  

iedere cowboy knijpt hem.  
Every cowboy pinches him

They suggest that this may be (partly) due to language particular properties of the Dutch quantifier iedere.
(3) a. Do you know what Mary and John have in common? Mary admires him and John admires him too.

b. Zelda's husband is him (pointing context).

c. A. Is this speaker Zelda? B. How can you doubt it? She praises her into the sky. No competing candidate would do that.

d. Everybody hates Lucifer. Only he (himself) pities him / Even he (himself) hates him.

In section 3.2.2.2. we will deal with the question why Dutch and English speaking children show a DPBE in constructions like (1a), i.e. why children often allow coreference in contexts others than the ones in (3). In order to answer this question we will first have to be more specific about what we understand by binding and coreference. This will be the focus of discussion in the sections 3.2.2.1. and 3.2.2.2.

3.2.2. Binding and coreference

3.2.2.1. Binding and the creation of reflexive predicates

Traditionally, a binding relation between two elements has been expressed by means of co-indexation. However, if we wish to follow (Chomsky 1995) in dispensing with indices, we can adopt the following assumptions about binding (cf. Baauw & Delfitto 1999a):

(4) a. A NP α semantically binds pronoun β iff β and the trace of α are bound by the same λ operator (Heim & Kratzer 1998).

b. When binding holds between two arguments of a predicate, a reflexive predicate will be created.

The role of indices will be taken over by agreement, which is understood as "feature sharing". (4a) implies that the binder is interpreted as a generalized quantifier, which undergoes QR at LF, leaving behind a trace. If QR applies to the subject she (5b), the result will be an object of the form (5c).

(5) a. She praises her to the sky.

b. She [ t praises her to the sky] (agreement: t\textsubscript{3rd\ fem\ sg} = her\textsubscript{3rd\ fem\ sg})

\[\]  

c. \[\lambda x: x\ praises x\ to\ the\ sky\] (she)

However, the interpretation of (5a) as a reflexive predicate (5c), leads to ungrammaticality. Recall from sections 1.2.2. and 2.5.2.3 that natural languages impose restrictions on the realization of reflexive predicates. This restriction was formulated by Reinhart & Reuland (1993) in terms of two Binding Principles:
(6) *Reinhart & Reuland’s Binding Theory* (Reinhart & Reuland 1993)

Principle A: A reflexive-marked syntactic predicate must be interpreted reflexively.

Principle B: A reflexively interpreted semantic predicate must be reflexive-marked.

(6) partially replaces Chomsky’s (1981) original binding principles. Especially Principle B is relevant for our discussion. In section 2.5.2.3. we proposed to reinterpret Principle B as an interface filter that prohibits arity reduction in syntax. We argued that this comes down to state that a relation cannot be reduced to a property as a result of operations performed in the computational system or in the course of the interpretation process, i.e. \( \lambda x \lambda y (xRy) \rightarrow \lambda x (xRx) \). Since *praise* in (5a) is a two-place predicate, i.e. a relation \( \lambda x \lambda y (xPy) \), it cannot be interpreted reflexively, since this would convert it into a property \( \lambda x (xPx) \), leading to a violation of principle B. However, as we saw in section 2.5.2.3. a reflexive interpretation can be obtained in a way that does not violate Principle B: a predicate can be reflexive-marked in the lexicon, as a function of its lexical semantics, as in Dutch (7a) and English (7b), or by assigning it a reflexive feature which is checked against a functional head se, as in Romance (7c):

(7) a. Jan heeft zich gewassen.
   John has SE washed
   ‘John washed himself.’

b. John is washing (= washing himself)

c. María se señaló.
   Mary SE pointed-at
   ‘Mary pointed at herself.’

Alternatively, a reflexive-like interpretation can be obtained with the help of SELF-anaphors or body-part reflexives. However, unlike Reinhart & Reuland (1993) (see section 1.2.2.), we adopt the view that SELF and body-part reflexives do not reflexive-mark the predicate, but are used in order to prevent a full reflexive predicate from being created in the syntax (cf. Reuland 1998).

(8) John loves himself.

(8) is grammatical because the predicate has the form ‘\( x R f(x) \)’, with the referent of \( f(x) \) quite close to, but not identified with the referent of \( x \) (see also Postma 1997; Lidz 1997).

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2 Another way is reflexive-marking by means of a verbal affix, as in Kannada (Lidz 1997).
3.2.2.2. Coreference and the DPBE
In the case of coreference between an object pronoun and a local subject, the object pronoun is interpreted as a free variable. Free variables are interpreted by means of assignment functions whose value is determined by discourse and pragmatic factors. If the referent of the object and the referent of the subject turn out to be the same individual, we say that the subject and the object corefer. We can say then that while binding is a syntactic way of realizing codetermination between two lexical items, coreference is a pragmatic way of doing this.3

However, coreference between co-arguments is generally excluded, except in the sort of contexts mentioned in (3). This means that adults cannot use coreference as an escape hatch in order to establish a referential dependency between a pronoun and a c-commanding local antecedent without violating Principle B. There are several proposals in the literature that try to account for this constraint on coreference, but we will adopt Grodzinsky & Reinhart's (1993) proposal.4

According to Grodzinsky & Reinhart, the impossibility of coreference, except in cases like (3), is due to the working of a constraint at the syntax/pragmatics interface, called Rule I.

(9) Rule I: Intrasentential Coreference
NP A cannot corefer with NP B if replacing A with C, C a variable A-bound by B, yields an indistinguishable interpretation.

Rule I is a cross-modular economy condition that states that establishing a referential dependency in the syntax, i.e. by means of binding, is more economical than doing this in the pragmatics, i.e. by means of coreference, unless coreference yields an interpretation that is distinguishable from the interpretation obtained by binding. The latter is clearly the case in (3). The second sentence of (3a), for instance, is not about self-admiration (bound variable reading of him), but about the property "\(\exists x (x \text{ admires John})\)" (coreference of John and him). When binding and coreference do not yield different interpretations, like in (1a), coreference is ruled

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3 Henceforth we will use codetermination as a collective term for binding and coreference.

4 This means that we will diverge from the proposal offered by Baauw & Delfitto (1999a,b). Baauw & Delfitto propose to derive the constraints on coreference from Principle B of Reinhard & Reuland's (1993) binding theory. They argue, inspired by Heim (1998) and Avrutin (1994), that coreference between co-arguments leads to the creation of a reflexive predicate, but that this is tolerated as long as the reflexivity is "weak", i.e., if the co-arguments of a predicate refer to the same individual through different "guises" (like in (3c), where Zelda appears under two guises, one provided by the visual context (pointing to the speaker), and one by the information related to the memory entry Zelda). The DPBE is due to children's difficulties with the pragmatic constraints on the realization of guises, which leads them to accept two guise construals in contexts that are not acceptable in the adult language (Avrutin 1994). This account solves some of the problems of Grodzinsky & Reinhart's Rule I, discussed in Heim (1998) and Reinhart (1997) but fails to account for the impossibility of coreference in (i), where the embedded subject pronoun and the matrix subject are not co-arguments, and where binding is ruled out by the A-Chain Condition (see section 3.5.2.), rather than Principle B.

(i) John sees [him dance].
out, and binding must be chosen. Since binding yields a Principle B violation, disjoint reference of the pronoun and the subject is forced.

The question arises, then, why do children not obey the constraints imposed by Rule I? Reinhart & Grodzinsky argue that it is not because children do not know Rule I. Unlike Chien & Wexler (1990), who argued that the DPBE is due to the absence of a pragmatic principle, called “P”, constraining coreference, Grodzinsky & Reinhart claim that Rule I is innate, but that children often fail to apply it correctly. Grodzinsky & Reinhart note that the Rule I implies that two alternative construals (two different LFs) of a syntactic construction (10a) should be compared with respect to their difference in meaning, namely the coreference representation (10b) and the binding representation (10c).

(10) a. The girl is pointing at her.
   b. *The girl is pointing at her.  
   | G             | G 
   Coreference: the girl and her happen to have the same semantic value (= refer to the same individual in the world: “G”)
   c. λx (x is pointing at x) (the girl)  
       | G 

They argue that this evaluation procedure exceeds the processing capacity of young children: their short-term memory is too limited to carry out this operation. As a result, Rule I “breaks down” in young children when they try to process it, and they resort to a guessing strategy in order to determine the reference of the pronoun. This leads them to allowing coreference roughly 50% of the time.\(^5\)\(^6\)

Note that Rule I predicts much higher adultlike performance on constructions containing quantified antecedents. Since quantified NPs do not refer to a fixed antecedent, they cannot enter into coreference with a pronoun. Since binding does not hold across sentence boundaries (due to the lack of c-command), (12b) is excluded.

(11) a. John thinks that he is clever.          (binding/coreference)
    b. John lost his umbrella. He left it at home.  (*binding/coreference)

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\(^5\) As Grodzinsky & Reinhart note, not only children show a DPBE, but aphasic adults do too. This suggests that the DPBE is not due to the incomplete acquisition of some (pragmatic) principle.

\(^6\) See Reinhart (1999) for other areas in which children’s 50% adultlike performance can be explained in terms of problems with the application of global economy constraints ("reference set economy").
THE ACQUISITION OF PRONOMINAL ANAPHORA

(12) a. Every boy thinks that he is clever. (binding/\*coreference)

b. *Every boy lost his umbrella. He left it at home. (*binding/\*coreference)

Since coreference is not an option with quantified antecedents, Rule 1 is not invoked in constructions like (2), hence it cannot break down in young children. Since binding leads to a Principle B violation, children will have no option but rejecting a reading according to which the pronoun is identified with the subject in constructions like (2). 7

Summarizing, children’s failure to reject coreference between a pronoun and a local c-commanding antecedent is not due to the incomplete acquisition of a syntactic or pragmatic principle, but is due to difficulties children have in the processing of a constraint regulating intrasentential coreference. As a consequence, in those cases where coreference is not an option, children are predicted to perform like adults.

3.3. The “Clitic Exemption Effect” (CEE): the role of inflectional morphology

3.3.1. Introduction

Several studies have shown that the DPBE is not universal. It does not show up in the acquisition of the Romance languages, such as Italian (McKee 1992; Berger 1999), French (Jakubowicz 1993; Hamann, Kowalski & Philip 1997), Catalan (Escobar & Gavarró 1999) and Spanish (Padilla 1990; Bauuw, Escobar & Philip 1997; see also section 3.5.3.). 8 It does not show up in Greek either (Varlokosta 1999), or in a Germanic language like Norwegian (Hestvik & Philip 1996), at least in constructions like Spanish (13). 9

7 (2) would be interpreted as “∀x (x touched x) (boy)”, which amounts to a Principle B violation.

8 Jakubowicz (1993) argues that French speaking children do exhibit a DPBE. However, a DPBE was only found in 3 - 3.5 year olds, who allowed coreference between a weak object pronoun and a local c-commanding antecedent 40% of the time. French 3.6 - 4.0 year olds already performed adultlike 80% of the time, while 5 and 6 years olds reached 90% adultlike performance. This result contrasts sharply with what has been found for Dutch and English children, whose adultlike performance is still around 50% when they are 5 years old, and even below 50% for younger children (Chien & Wexler 1990; Philip & Coopmans 1996a). This indicates that the properties of the French pronominal system responsible for the absence of a DPBE in 4 - 7 year olds have already been acquired largely by 3 year olds, although some details of the system may still not be in place. In this thesis, though, we will limit our discussion to the performance of children between 4 and 7 years old.

9 Romance and Norwegian speaking children do show a DPBE in ECM constructions, as we will see in section 3.5..
(13) La niña la señala.  (90% adultlike performance; Baauw et al. 1997)
     the girl her points-at
     'The girl is pointing at her.'

The absence of a DPBE in the acquisition of the Romance languages has often been related to the fact that Romance weak pronouns, like Spanish la in (13) are clitics, unlike English pronouns such as him in (1a). Therefore we will call this absence of a DPBE the Clitic Exemption Effect (CEE). In the next section we will discuss some proposals that have been made in order to account for this CEE. Some of the predictions following from these theories will be tested experimentally in section 3.3.4. In section 3.3.5. will present our own account of the CEE.

3.3.2. Previous accounts

In this section we will discuss two kind of accounts of the CEE. One account capitalizes on the movement properties of (Italian) clitics (McKee 1992), while the other accounts capitalize on the referential properties of clitics (McDaniel & Maxfield 1992; Avrutin & Wexler 1992; Avrutin 1994; Baauw, Escobar & Philip 1997; Thornton & Wexler 1999).

Let us start with the movement account. Such an account was proposed by McKee (1992). McKee argues that the developmental difference between English and Italian results from the fact that Romance clitic pronouns end up VP-external, attached to INFL (14a), while pronouns in languages like English remain in the VP (14b).

(14) a. [IP Lo gnomolo [lo INFL [VP lava t]]
     the gnome him washes

b. [IP The gnome [VP washed him]]

McKee argues that English children initially misconstrue the VP as the minimal governing category for the pronoun in object position, thereby allowing it to corefer freely with the subject in [Spec, IP]. For the clitic pronoun attached to INFL, Italian children automatically extend the binding domain to IP and correctly rule out binding between the pronoun and the subject (14a). Although McKee' account seems adequate from a cross-linguistic point of view, her solution is problematic for basically two reasons. In the first place, it does not account for the absence of a DPBE in English in constructions containing quantified antecedents, such as (2). Second, in section 3.5. we will see that the DPBE does show up in Romance ECM constructions.

The second group of explanations of the CEE capitalizes on the fact that clitics are somehow referentially deficient (Cardinaletti & Starke 1995, 1996). The idea is that clitics do not give rise to a DPBE because (like quantifiers) they cannot corefer. The most interesting of these accounts is the one developed by Avrutin (1994) and Thornton & Wexler (1999). Avrutin argues that clitics, unlike strong pronouns,
cannot refer deictically, i.e., they cannot refer directly to objects or individuals in the world, as can be seen in (15) (expressed in a pointing context):

   I her_{clinic} kissed
   b. Yo la besé a ella.
   I cl. kissed acc. her_{strong}

(16) pointing: I kissed her.

Avrutin, following Heim (1982), argues that NPs refer by means of a definite description, called a "guise". He further argues that coreference always involves a two-guise construal, i.e., a construal in which two lexical elements are represented by two different guises that nonetheless refer to the same individual in the "real world". Pronouns, however, do not introduce (new) guises, unless they refer deictically. This means that only deictically used pronouns can corefer. Avrutin argues that the DPBE results from the fact that children often use pronouns deictically without pointing, as a result of their failure to take into account the discourse representation of the hearer, who requires pointing in order to know that a pronoun (or definite DP) is used deictically. Since clitics cannot refer deictically, they cannot introduce new guises, hence they cannot corefer. As a result no DPBE will show up in constructions containing clitics.10

Interestingly, Avrutin and McKee make very different cross-linguistic prediction with respect to the CEE. In fact, both approaches reflect different views on what counts as a clitic pronoun. Avrutin's account implies that all weak pronouns qualify as clitics, and should be treated alike as far as the DPBE is concerned, since no weak pronoun can be used deictically. Concretely, Avrutin would predict that a DPBE will be absent in English (17)

(17) John likes 'm.

In McKee's account, on the other hand, only head-moved clitics qualify as clitics in a sense relevant to the CEE. McKee will therefore predict that the DPBE will show up in (17), just like in (1a).

The difference between Avrutin's and McKee's notions of "clitic" is reminiscent of the distinction often made between what Zwicky (1977) calls simple clitics and

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10 A related proposal comes from McDaniel & Maxfield (1992), who argue that only pronouns that can be stressed are allowed to establish coreference relations with a local c-commanding antecedent, as in (i).

(i) When John looks in the mirror, he doesn't see me, he sees him.
Since clitics cannot receive focal stress, they cannot corefer locally, to the effect that children will not show a DPBE. However, most of the examples of intrasentential coreference exemplified in (3) involve non-stressed pronouns. This means that stress on the pronoun is not the only way to obtain intrasentential coreference.
special clitics, or what sometimes is referred to as a distinction between phonological clitics (or PF clitics) and syntactic clitics.\textsuperscript{11} Simple clitics are unstressed, morphologically light (often phonologically reduced) pronouns that form a phonological unit with some head (verb or preposition). Special or syntactic clitics, on the other hand, in addition to being morphologically "light" and unstressed, display syntactic and semantic properties that distinguish them from strong pronouns. One of the characteristic syntactic properties of syntactic clitics in many languages is that they appear in a VP external head position.\textsuperscript{12} Many linguists have argued that this indicates that clitics undergo head movement to the functional domain. Another property of syntactic clitics is that they are interpreted as [+/-human]. As shown by Delfitto & Corver (1993), strong pronouns, unlike clitics, syntactically behave as regular DPs and are interpreted as [+human]. While English clitics like ‘m display the properties of simple clitics (20), Spanish clitics like lo and la clearly are special clitics, which behave differently from strong pronouns like ella ‘her’ (18)-(19), both syntactically and semantically.

(18) a. María lo ha visitado.
   Mary him has visited
b. *María ha visitado lo.
   Mary has visited him
c. María ha visitado a su hermano.
   Mary has visited acc. her brother
d. *María a su hermano ha visitado.
   Mary acc. her brother has visited

(19) a. Juan la visitó. (la = Mary/a church)
   John her visited
b. Juan la visitó a ella. (ella = Mary/*a church)
   John cl. visited acc. her

(20) a. *Mary ‘m loves.
   b. Mary loves ‘m.
   c. Mary loves John.
   d. John visited ‘m. (‘em = John/*a car)
   e. John visited him. (‘em = John/*a car)

Note, finally, that Kayne’s (1975) criteria for cliticoid do not distinguish between syntactic clitics and regular weak pronouns. Kayne argues that clitics,

\textsuperscript{11} Similar (but not identical) distinctions have been made by Rizzi (1986), who distinguishes between PF clitization and clitization in syntax, and Cardinaletti (1994) and Cardinaletti & Starke (1995), who distinguish between weak pronouns (deficient XP pronouns) and clitics (deficient X\textsuperscript{P} pronouns).

\textsuperscript{12} Languages may differ with respect to the location of this clitic position (see Rivero 1997).
unlike strong pronouns cannot be modified, contrastively stressed, conjoined or used in isolation. As shown in (21) English 'm would qualify as a clitic, according to these criteria (Zwart 1992):

(21) a. Kill him/*'m over there. [= that man over there]
    b. Mary loved HIM/*'M.
    c. Mary loves her mother and him/*'m.
    d. A. Who did you see? B. him/*'m.

Another test for clitichood, mentioned in Everaert (1986), also fails to distinguish between simple clitics and special clitics. Clitics cannot be topicalized. As shown in (22), English 'm cannot be topicalized.

(22) Him/*'em Mary loves.

Summarizing, we can say that according to Avrutin the CEE will show up with all sorts of pronominal clitics, while McKee predicts that the CEE will only show up with head-moved clitics (i.e. special clitics). The empirical question that we have to answer first is therefore:

(23) Does the CEE show up with all weak pronouns or only with syntactic clitics?

In section 3.3.4. we will present experimental evidence from Dutch that will be helpful in answering (23). The reason why Dutch is so interesting is that it can be shown to possess two different kind of weak (reduced) pronouns. When the weak pronoun is the complement of a preposition, it must be considered a non-syntactic, regular weak pronoun. When it is a direct object (DO) or an indirect object (IO), it is supposed to be a syntactic clitic according to some authors (Zwart 1992; Cardinaletti 1992; Cardinaletti 1994; Delfitto & Corver 1993), while others treat it as a regular weak pronoun (Schwartz & Vikner 1996; Cardinaletti & Starke 1996). The controversial status of Dutch DO/IO pronouns is due to the fact that, although they show some of the properties generally attributed to syntactic clitics, they appear to behave like regular weak pronouns in some other respects.

This means that in order to answer (23), we first need to answer (24):

(24) Do children analyze Dutch weak pronouns as syntactic clitics in a sense relevant to the DPBE (i.e. do they show a DPBE with these elements)?

The answer to(24) will also be helpful in deciding which property of syntactic clitics is responsible for the CEE.

In the next section we will review the evidence both in favor of as well as against treating Dutch weak pronouns as syntactic clitics. In section 3.3.4. we will present the experimental results. In 3.3.5. we will present our alternative account of the CEE, which combines aspects of both McKee’s and Avrutin’s proposals.
3.3.3. Dutch weak pronouns

3.3.3.1. Clitic-like behavior of Dutch weak DO pronouns

Morphologically, Dutch weak pronouns resemble their strong counterparts. In fact, on the face of it, Dutch weak pronouns are just destressed, morphologically reduced full pronouns. For instance, 'm appears to be the reduced variant of hem 'him', and 'r of haar 'her'. In this respect they contrast with Romance object clitics, which clearly differ from their strong counterparts. Compare Spanish la (clitic) and ella (strong) ‘her’, and lo (clitic) and él (strong) ‘him’. However, although historically Dutch weak pronouns were indeed derived from their strong counterparts, synchronically they should be considered different lexical items, since there is no productive phonological rule that derives the weak form from the strong form (Berendsen 1986).

Moreover, weak pronouns appear to differ from strong pronouns and DPs with respect to their syntactic distribution and semantic properties, in a way that resembles the syntactic and semantic behavior of Romance clitic pronouns. The evidence in favor of considering Dutch weak (reduced) pronouns syntactic clitics capitalizes on three properties that are often attributed to syntactic clitics: (i) that they are VP external, (ii) that they are heads, and (iii) that they have a [± human] interpretation.

Evidence in favor of (i) is provided by (25). If we assume that sentence adverbs like waarschijnlijk ‘probably’ or the negation niet are generated in fixed positions (adjoined to VP, to some other functional projection, or in the Spec of a functional head (Cinque 1999)), (25a) could be analyzed as involving movement of the pronoun out of the VP to a position beyond the sentence adverb or negation.

(25) a. Ik heb 'm [waarschijnlijk [niet [*m gezien]]].
   I have him probably not seen

b. ??Ik heb [waarschijnlijk [*m gezien]].
   I have probably him seen

c. *Ik heb [niet [*m gezien]].
   I have not him seen

Evidence in favor of (ii) is provided by (26) and (27): Dutch weak DO pronouns scramble over IOs in double object constructions (26a), and weak DO pronouns in ECM constructions scramble over the embedded subject, as shown in (27a). Since these positions are inaccessible to DPs, as shown by (26c) and (27c), this may be interpreted as evidence for head movement to a functional head to the left of respectively the IO and the embedded subject of the ECM construction.
(26) a. Ik heb 'm [Jan ‚t voorgesteld].
   I have him John introduced
   'I introduced him to John.'
 b. Ik heb [Jan Peter voorgesteld].
   I have John Peter introduced
 c. *Ik heb Peter [Jan ‚t voorgesteld].
   I have Peter John introduced
   'I introduced Peter to John.'
 a.' [CP XP SU AUX [IP [F0 ‘m [VP XP10 tDO V]]]]

(27) a. Ik zag ‚t [Jan ‚t lezen].
   I saw it John read
   'I saw John read it.'
 b. Ik zag [IP Jan het boek lezen].
   I saw John the book read
 c. *Ik zag het boek [Jan ‚t lezen].
   I saw the book John read
   'I saw John read the book.'
 a.' [CP XP SU Vfin [IP F0 ‚t [IP XPsu [VP tDO V]]]]

A final feature of Dutch weak pronouns like 'm that they share with Romance clitic pronouns is that they are [+/-human], unlike the full form hem, which is [+human].\(^{13}\)

(28) a. Ik heb 'm naar de reparateur gebracht. ('m = John/the television)
   I have him to the repairman taken
   'I took him/it to the repairman.'
 b. Ik heb hem naar de reparateur gebracht. (hem = John/*the television)
   I have him to the repairman taken
   'I took him/it to the repairman.'

3.3.3.2. Unclitic-like behavior of Dutch weak DO pronouns
According to Cardinaletti (1994), clitic pronouns differ from regular weak pronouns and strong pronouns in that syntactic clitics are (head-moving) Ds, while regular weak pronouns and strong pronouns are DPs. In this section we will provide

\(^{13}\) In standard Dutch 'm may refer to human and non-human objects that correspond with a common-gender noun. The weak pronoun 't refers to neuter nouns.

(i) a. De zon is net ondergegaan. Vijf minuten geleden zag ik 'm nog.
   the sun is just under-gone five minutes ago saw I 'm still
   b. Gelukkig heeft het huis de storm overleefd. Anders konden we 't opnieuw opbouwen.
      fortunately has the house the storm survived otherwise could we 't again up-build
      In those dialects that distinguish between feminine and masculine nouns 'r 'her' may refer to feminine nouns and 'm to masculine nouns (with either human or non-human reference).
evidence that weakens the claim made by many authors that Dutch weak pronouns are in a head position.

Our first piece of evidence concerns (25). In the previous section we showed that weak pronouns obligatorily appear to the left of the sentence adverbs, which could be interpreted as the result of head movement to the functional domain. However, as (29) shows this movement does not appear to be limited to weak pronouns only. DPs with a "specific" interpretation also scramble over sentence adverbs and negation.\(^{14}\) This indicates that scrambling of weak pronouns in Dutch does not necessarily involve head movement. What could be moved is a DP with the weak pronoun in its D position.

\[
(29) \quad \text{Jan heeft het boek [waarschijnlijk [niet [t gelezen]]]}. \quad \text{John has the book probably not read}
\]

A second argument that questions the X\(^0\) status of Dutch weak pronouns, and in particular of 'm concerns (27). In this construction the weak ECM object pronoun 't 'it' appears in a position to the left of the embedded subject, a position not accessible to DPs. However, if 't is replaced by 'm, the construction becomes unacceptable to many speakers of Dutch:

\[
(30) \quad \text{a. I saw him repair [Jan [t repareren] (*m = the car)]} \\
    \text{b. I saw John repair [Jan [m repareren] (*m = the car)]}
\]

This may indicate that there is more than one clitic position in Dutch, one which is accessible to both 'm and 't, and one which is only accessible to 't.\(^{15}\) Alternatively, 'm may not be a real clitic and the position to the left of the IO in double object constructions may not be a clitic position. However, if the latter holds, it should be explained why full pronouns and DPs are marginal in the position to the left of the IO.

Our final argument that weakens the claim that Dutch weak pronouns are syntactic clitics concerns both (26) and (27). (26a) shows that 'm can appear to the left of the IO, a position inaccessible to DPs. However, many speakers of Dutch also accept (31a), with 'm to the right of the IO, an XP position. This indicates that even if one wishes to accept (26a) as evidence for X\(^0\) movement, (31a) shows that 'm can also

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\(^{14}\) Note that not only definite DPs scramble. So-called "specific indefinites" scramble too (de Hoop 1992).

\(^{15}\) See Haegeman (1992) for different clitic positions in West Flemish.
be an XP, which means that it has an ambiguous X\textsuperscript{0}/XP status.\textsuperscript{16} The same argument can be applied to 't. While (27a) may show that 't is a head, (31b) shows that it may also remain in a XP position.

(31) a. Ik heb Jan 'm voorgesteld.
I have John him introduced
'I introduced him to John.'

b. Ik zag Jan 't lezen.
I saw John it read
'I saw John read it.'

3.3.3.3. Non-clitic weak pronouns in Dutch: PP complements
There is one syntactic context in which Dutch weak pronouns like 'm are uncontroversially non-syntactic clitics. When they are the complement of a preposition, they cannot scramble beyond sentence adverbs.

(32) a. Maria heeft waarschijnlijk aan 'm gedacht.
Mary has probably about him thought
'Mary probably thought about him.'

b. *Maria heeft aan t gedacht.
Mary has him probably about thought
'Mary has probably thought about him.'

In addition, weak pronouns like 'm are interpreted as [+human] in this position, just like strong pronouns (33).

(33) Jan heeft naar 'm gewezen.('m = Peter/*the tree)
John has to him pointed
'John has pointed at him.'

3.3.3.4. Conclusions and predictions for acquisition
With respect to the status of Dutch weak pronouns the following can be concluded:

(34) a. Dutch weak DO pronouns behave like syntactic clitics with respect to their underspecification of the [human] feature.

b. They show some weak evidence for head-movement (see (26a) and (27a)), but this movement appears to be optional for many speakers.

c. Dutch weak pronouns that are PP complements are not syntactic clitics.\textsuperscript{17}

\textsuperscript{16}Note that this notion of ambiguity should be distinguished from the underspecified XP/X\textsuperscript{0} status that Chomsky (1995) attributes to clitic pronouns, a property that in his view triggers their movement to a higher (head) position in the sentence. The ambiguity that is meant here is that 'm can be analyzed as either a phonologically reduced DP pronoun, syntactically indistinguishable from other DPs, or as a D that occupies a head position outside the DP (possibly as a result of movement - but see section 3.3.5.2.).
This allows us to make the following predictions with respect to the acquisition of pronominal coreference:

(35) a. If the CEE shows up with all weak pronouns, no DPBE is to be expected in any construction containing the weak pronoun 'm.
b. If the CEE is restricted to syntactic clitics, (i) a DPBE is expected to show up in constructions containing weak pronominal PP complements only, if children analyze Dutch DO pronouns as syntactic clitics, but (ii) it will also show up with weak DO pronouns, if Dutch children do not analyze weak pronouns as syntactic clitics.

Recall that (35a) would be predicted if the CEE is due to clitics' inability to refer deictically (Avrutin 1994; Thornton & Wexler 1999). (35b) is predicted if the CEE is related to the movement properties of syntactic clitics (McKee 1992). In the next section we will discuss an experimental study that tested the predictions in (35).

3.3.4. Dutch weak pronouns experiment

3.3.4.1. Goal of the experiment

The goal of the experiment was to test whether Dutch speaking children allow coreference between the subject and the weak object pronoun 'm 'him' in the following three syntactic contexts.

(36) a. Het jongetje heeft 'm     denk ik getekend.  \text{(SCRAM-N)}
    the boy     has     him     think     I     draw
b. Het jongetje heeft 'm     getekend.  \text{(PRON-N)}
    the boy     has     him     drawn
c. Het jongetje heeft naar 'm     gewezen.  \text{(PREP-N)}
    the boy     has     to     him     pointed

In (36a) (SCRAM-N condition), the weak object pronoun has been scrambled over the adverbial phrase denk ik 'I think'. If scrambling involves movement out of the VP, (36a) provides maximal evidence to the child for movement of the pronoun to a

\[\text{Note that it may be justified to distinguish Dutch 't 'it' from other weak pronouns, in the sense that of all weak pronouns 't behaves most clitic-like. As we showed in section 3.3.3.1 and 3.3.3.2, 't can scramble over the embedded subject in ECM constructions, unlike 'm (and other weak pronouns). Second, unlike other weak pronouns 't cannot appear in the complement position of a preposition, a position which is not accessible to syntactic clitics, as shown by Spanish (ib):}\]

\[(i)  \text{ a. *Jan denkt aan 't}   \\
\text{   b. *Juan piensa en lo}   \\
\text{John thinks about it}\]
position outside the VP. In (36b) (PRON-N condition) no adverbial phrase is present. In (36c), the PREP-N condition, the weak pronoun is in the complement position of a preposition. If the CEE shows up with all weak pronouns, adultlike performance is expected in all three conditions. If movement of the clitic to a position outside the VP is the relevant factor explaining the CEE, and scrambling in Dutch involves movement out of the VP, the CEE is predicted to show up in at least (36a), possibly in (36b), but not in (36c).

3.3.4.2. Procedures and design
The experimental design that we used was a Truth Value Judgment Task, of the type discussed in section 2.6. Like in the experiments of section 2.6., each trial consisted of two pictures, which were introduced by a little story. In the first picture, a context was provided, introducing the participants of the action. In the second picture the actual action was depicted. In (37) we give an example of a PRON-N trial.

(37) PRON-N.1

Op een dag was Jantje op een feestje. Op dat feestje was er een clown en er was een tekenwedstrijd. Ieder kindje mocht zelf weten wat hij tekende. Jantje zat na te denken: "wat zal ik tekenen, mezelf of de clown?".

[One day Jantje was at a party. At that party there was a clown and there was a drawing contest. Every child could decide what he wanted to draw. Jantje started thinking: "what shall I draw, myself or the clown?".]

---

18 We used the adverbial phrase *denk ik* 'I think' instead of the more formal *waarschijnlijk* 'probably', since not all children may know this word. Note that *denk ik* in (36a) can be pronounced without an intonational stop.
Laten we maar eens kijken wat Jantje toen deed.

[Let's see what Jantje finally did.]

Question to Kermit: Kun je raden wat er gebeurde? Het gaat over tekenen.

[Could you guess what happened? It's about drawing.]

Answer: Mmm...Jantje en een clown.
Ik weet het: Jantje heeft 'm getekend.

[Mmm...Jantje and a clown.
I know what happened: Jantje drew him]

Adult response: NO

In addition to the 3 Test Conditions exemplified by (38), which all are No conditions, i.e. conditions intended to elicit a negative response in adults, 4 Yes Control conditions, testing the non-anaphoric interpretation of the weak pronoun 'm and the anaphoric interpretation of the SELF anaphor zichzelf "him/herself" were included, and 1 No Control Condition, testing the non-anaphoric interpretation of zichzelf.

The verbs used in the conditions containing prepositions were schrijven op 'write on', wijzen naar 'point at' and schieten op 'shoot at'. The verbs we used in the other conditions were tekenen 'draw', verven 'paint' and aaien 'pat'.

Each condition consisted of 3 trials. The test items were intermingled with 12 filler items. The total number of trials was 36 (8 x 3 trials + 12 fillers). The test was presented to the child in two sessions of 30 minutes each. The sessions were spaced apart at least one day. Before each first session some practice items were
administered to the child. In order to control for order effects, half of the children received the test in the reverse order (beginning with the last trial of each session), half in the normal order. See Appendix I for details about control conditions, procedures and design, and a complete list of test items.

### 3.3.4.3. Subjects
The experiment was carried out with 47 Dutch speaking children, ranging from 4.2 to 8.0 years old (mean age 6.7), divided over three age groups, with cut-off points that roughly correspond to the cut-off points used in the Dutch school system.

(39) • Group 1: n = 15; age range 4.17 to 5.25; mean age 4.84
• Group 2: n = 13; age range 5.67 to 6.42; mean age 5.96
• Group 3: n = 19; age range 6.50 to 8.00; mean age 7.04

In addition, 22 adult speakers were tested collectively. The adult control group consisted of undergraduate students of Dutch Language and Literature at Utrecht University, with only some basic knowledge of linguistics.

### 3.3.4.4. Results
An ANOVA showed that there were no age effects between age groups 2 and 3 on any condition (p ≥ 0.203). We therefore decided to collapse these two groups into one.

The results indicate that children of all age groups perform highly adultlike on both the Yes and No Control Conditions. On the Yes conditions the two groups children responded between 83% and 100% of the time adultlike, and on the No condition children responded between 98% and 100% of the time adultlike.

Performance on the Test Conditions, on the other hand, was highly adultlike for the group 2 + 3 children, but not for the group 1 children.

(40) Percent correct “no” responses on Test Conditions

<table>
<thead>
<tr>
<th>group</th>
<th>n</th>
<th>age range</th>
<th>mean age</th>
<th>SCRAM-N</th>
<th>PRON-N</th>
<th>PREP-N</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>15</td>
<td>4.17-5.25</td>
<td>4.84</td>
<td>62 (10)</td>
<td>53 (11)</td>
<td>47 (10)</td>
</tr>
<tr>
<td>2 + 3</td>
<td>32</td>
<td>5.67-8.00</td>
<td>6.60</td>
<td>84 (5)</td>
<td>90 (4)</td>
<td>80 (4)</td>
</tr>
<tr>
<td>4</td>
<td>22</td>
<td>adult</td>
<td>-</td>
<td>98 (2)</td>
<td>98 (2)</td>
<td>100</td>
</tr>
</tbody>
</table>

The results of group 1 resemble previous research results on the DPBE with Dutch speaking children, using the full pronouns hem ‘him’ and haar ‘her’: performance is at chance level (Philip & Coopmans 1996). A t-test shows that the results of Group 1 are indeed not different from 50% in any of the three test conditions: SCRAM-N (p = 0.274), PRON-N (p = 0.760) and PREP-N (p = 0.748).
3.3.5. Discussion

3.3.5.1. Introduction
The results show that Dutch children between 4.17 to 5.25 (group 1) exhibit a DPBE with all 3 test conditions. This indicates that:

(41) a. The CEE does not show up with regular weak pronouns (see group 1 results on the PREP-N condition).
   b. Dutch speaking children do not analyze weak DO pronouns as syntactic clitics (see group 1 results on the SCRAM-N and PRON-N condition)

From this we may conclude that the CEE cannot be related to the inability of clitics to refer deictically (Avrutin & Wexler 1992; Avrutin 1994; Wexler & Thornton 1999). However, since Dutch children also show a DPBE in the conditions containing weak DO pronouns, Dutch weak pronouns cannot be assimilated with Romance clitics, in spite of the fact that they share some properties with them. In particular, they show some evidence for head-movement to the functional domain. However, as we saw, this evidence is rather poor: only double object constructions provide some evidence. In this respect, Dutch differs radically from the Romance languages, where evidence for head-movement is abundant. Let us therefore exploit this contrast and propose the following:

(42) The CEE is the result of clitic movement.

As we will see in section 3.3.5.3., (42) is supported by cross-linguistic evidence, not only from the Romance languages, but also from Norwegian.

However, although (42) will prove to be a valid generalization, it does not explain why clitic movement should be relevant. In the next section we will show how the CEE can be argued to follow from the movement properties of syntactic clitics.

3.3.5.2. Clitics as bound variables
We claim that the DPBE does not show up in child Spanish (and in the acquisition of other Romance languages) because syntactic clitics are interpreted in a different way than VP internal regular weak pronouns or strong pronouns. We propose the following:

(43) a. Pronouns are variables, which can be bound or free.
   b. Syntactic clitics can only be interpreted as bound variables.

As we argued in section 3.2.2.2., coreference depends on the interpretation of pronouns as free variables. As we will see, the impossibility of syntactic clitics to be interpreted as free variables is due to the fact that they involve movement to the functional domain.
THE ACQUISITION OF PRONOMINAL ANAPHORA

In the previous section we assumed that the VP external position of syntactic clitics is due to head-movement to the functional domain. However, whether Romance clitics involve movement at all is in itself a much-debated question. Some authors have argued that they are base generated in a non-argument position (Jaeggli 1982; Strozer 1976; Borer 1984). Others have argued that clitics are generated in argument position, after which they are moved to a position to the left of the verb (Kayne 1975; Haverkort 1992, among others), which is INFL according to some theories (Kayne 1991) or some other functional projection to the left of IP (Kayne 1994; Uriagereka 1995). While non-movement theories are supported by the existence of clitic doubling, in languages like Spanish, movement theories are supported by participle agreement in languages such as Italian and French. We will therefore adopt a theory, inspired by Sportiche (1992), that combines both views.

We will assume the following:

(44) *Clitic Movement*

a. Clitic movement is NP movement (Sportiche 1992)

b. NP movement is empty variable movement, which is interpreted in terms of \( \lambda \)-abstraction (Neeleman & Weerman, 1999)

With respect to (44a), we will assume, following Sportiche (1992), Torrego (1998) and Suñer (1988), among others, that the clitic itself is a functional head, which we will call CL(itic) P(hrase). The Spec of this functional head is the landing site of the object, which is base generated inside the VP. For the moment we will assume that the object can be either a null element (pro), as in regular clitic constructions (45a), or overt, as in clitic-doubling constructions (45b).

(45) a. Pedro la visitó pro
    Peter her\textsubscript{cl} visited

    b. Juan la saludó a ella.
    John her\textsubscript{cl} greeted acc. her

The reason why this movement takes place does not concern us here, but it may be for case checking, as suggested by Torrego (1998) and Franco (1993). If this view on object clitics is correct, Spanish may be argued to have object-agreement, just like Basque, as explicitly argued by Mendikoetxea (1993), Franco (1993) and Saltarelli (1989). With respect to the nature of NP movement (44b), we will depart

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19 In section 3.4.3.2. we will present an alternative analysis of clitic-doubling.

20 We may adopt the view that the presence of "rich" object-verb agreement morphology licenses a pro in [Spec, CLP], in the same way as rich subject-verb agreement licenses a pro in [Spec, IP]. The inflection-like nature of Spanish clitics is confirmed by the fact that they must be adjacent to the verb (i) and that they need to be repeated in the case of conjunction (ii), like affixes.

(i) a. Juan lo (*ayer) compró.
    John it yesterday bought
from the usual assumptions. We follow Neeleman & Weerman (1999) who argue that NP movement involves the abstract displacement of an empty operator or variable (on the model of easy-to-please constructions), which gets interpreted in terms of λ-abstraction.21

Given these two assumptions, the CEE can be derived as follows: When the empty object variable moves from its argument position to [Spec, CLP], a variable chain is created. The tail of a variable chain must be interpreted as a predicative trace, i.e. a variable bound by a λ-operator. In other words, abstract NP movement corresponds to functional abstraction in the semantics at the interface. (Note that (46) abstracts away from V-to-I movement).

(46) a. CLP = \( \lambda x \lambda y \) (x señala y)  

b. La niña la señala.  

the girl her\(_{cl}\) points-at

When the structure in (46) is applied to the external argument (la niña), this will inevitably result in a Principle B violation. We assume that la niña undergoes QR (Heim 1998). Under agreement (= feature sharing) of la and the trace left by la niña the two variables will be identified (x = y), to the effect that (46) will lead to (47d) by the following derivation:

(47) a. \([\lambda x \lambda y \) (x señala y)](x)  

b. \( \lambda y \) (x señala y)  

(λ-conversion applied to the external argument)  

c. \( \lambda x \) (x señala x)  

(-agreement: x = y)  

d. \([\lambda x \) (x señala x)](la niña) \rightarrow \) Principle B violation

21 According to Neeleman & Weerman (1999), a typical instance of A-movement like passive formation does not involve movement of the object to [Spec, IP]. Instead, a null operator is moved from its argument position to [Spec, VP], providing the VP with the \( \Theta \) role it needs to license the subject, which is base generated in a VP adjoined position. As a result of this movement, the VP is turned into a predicate, i.e. an object of the form \( \lambda x \) (Rx).
Since we know that children obey Principle B (see our discussion of (2)), Romance children will reject a reading of (46b) in which the object and the subject (la niñá) refer to the same individual, which is in line with the experimental results. In Romance codetermination can only be achieved through (47d), which amounts to a Principle B violation.

However, if clitics encode functional abstraction, one may wonder how they can be allowed to give rise to intersentential coreference, as in (48), where la in the second sentence refers to Maria in the first sentence.

(48) Es imposible que Maria se haya ido al extranjero. Ayer la vi en casa.
‘It is impossible that Mary went abroad. Yesterday I saw her at home.’

We suggest that in contexts that force disjoint reference of the subject and the object, an empty topic is generated as an argument of the λ-abstract created by the variable chain:22

(49) a. [Topic ec] Juan la vio en casa. b. [λy (Juan vio y)] (ec)
  ec John hercl saw at home

This structure is very similar to (50), a case of clitic left dislocation.23 The only difference between (49) and (50) is that an empty topic cannot introduce a new discourse topic, since it lacks the necessary descriptive content. This explains why clitics generally refer to “old information.”24

(50) a. [Topic A María] Juan la vio en casa. b. [λy (Juan vio y)] (María)
  acc. Mary John hercl saw at home

Summarizing, we propose that clitic constructions are in fact hidden clitic-left-dislocation structures, and although clitics cannot be interpreted as free variables, the empty topic that functions as the argument of the λ-abstract can be interpreted as

22 For the sake of clarity, the derivation of an empty topic structure is as follows, taking the CLP level as a starting point:

(i) a. λxλy (x vio en casa y) (Juan)
   b. λy (Juan vio en casa y) (λ-conversion applied to the external argument)
   c. λy (Juan vio en casa y) (Topic ec)

23 We assume, following Cinque (1990), that the left dislocated topic is base-generated in this position. This is not uncontroversial, though. Many authors have argued that left-dislocated topics are base generated in argument position and are moved to the left periphery of the clause (see Cecchetto 1995; Escobar 1995).

24 This means that the referential properties of the empty topic of syntactic clitics and those of regular weak pronouns are similar: both refer to old information.
a free variable, as shown in (48)/(49). However, this idea gives rise to a potential problem for our approach to the CEE. The problem is that if the empty topic can be interpreted as a free variable, why do Romance children not make use of an empty topic structure in order to get a coreferential reading of (46b)?

We suggest that the impossibility of obtaining coreference between the empty topic and the subject follows naturally from the syntactic derivation of clitic constructions. Concretely, we propose that codetermination is established in the course of the interpretative analysis of the syntactic structure, i.e., as soon as the argument positions involved in the codetermination relation are taken into consideration by the bottom-up interpretative procedure. We assume that the empty topic is generated in a position to the left of IP. This means that, if the subject and the object in (46b) are to be codetermined, this relation has to hold between la niña and the object variable, represented as $y$ in (51).

\[(51) \ [\text{La niña señala } y] \]

the girl points-at $y$

As we have argued, in Romance the subject and $y$ cannot corefer, since $y$, being a predicative trace, cannot be interpreted as a free variable. This forces us to establish codetermination through binding. Since this violates Principle B, both children and adults reject codetermination between the subject and the object clitic. Stated differently, intrasentential coreference in clitic constructions is impossible because the empty topic needed to allow the clitic to corefer is too high in the structure. In other words, it comes too late. If no codetermination is intended, on the other hand, the subject can bind the external role, while the empty topic is generated to bind the internal argument variable $y$.

Note finally that the impossibility of local coreference in Romance is confirmed by adult judgments on the Spanish counterparts of (3a,c,d). Most speakers that we consulted rejected the coreference reading of the clitic in constructions like (52).

\[(52) \ a. \ ¿Sabes lo que María y Juan tienen en común? María lo admira y Juan también lo admira. \]

\[\quad b. \ A. \ ¿Esta conferencian te es Zelda? B. \ ¿Cómo lo puedes dudar? Ella la pone en el cielo. Ningún otro candidato haría eso. \]

\[\quad c. \ Todo el mundo odia a Lucifer. Hasta él (mismo) lo odia. \]

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25 Interestingly, historical data appear to support our view on the interpretation of pronominal clitics. Clitic left dislocation is already found in the first stages of the development of the Romance clitic system (Vincent 1997). Moreover, Vincent argues that “the origin of clitics is to be found in contexts involving pronominal resumption of focal and dislocated arguments” (Vincent 1997: 161).

26 We assume that those speakers that accepted a coreference reading apply some sort of reconstruction operation, interpreting the empty variable in its VP internal base position, allowing it to be interpreted as a free variable. Apparently this operation is very costly, and for that reason not available to children.
This confirms our claim that clitics in Romance are bound variables and that empty topics cannot be used to establish intrasentential coreference.

3.3.5.3. Cross-linguistic evidence

In this section we will present some cross-linguistic evidence in favor of our proposal that the CEE is dependent on clitic movement. In the previous section we argued that clitic movement should be viewed as movement of a variable to the Spec of a clitic head, located somewhere to the left of the VP. This movement creates a variable chain whose head is interpreted as a \( \lambda \)-operator. This hypothesis predicts that the CEE will show up in languages whose (weak) pronouns can argued to be VP-external, since in all these cases the creation of a variable chain must be involved.

This may raise some questions with respect to Dutch. As we argued in section 3.3.3.1., Dutch weak pronouns must be to the left of sentence adverbs and negation. If sentence adverbs are located in the functional domain, either adjoined to functional projections or in the Spec of a functional head (Cinque 1999), they indicate that Dutch weak pronouns, and optionally, specific DPs, are located in a VP external position. In fact, this is what has often been argued with respect to Dutch and German. Dutch specific DPs are argued to undergo movement to a position outside the VP (often identified with [Spec, AgrO], or a VP adjoined position), a movement generally known as "scrambling". If it is true that sentence adverbs provide evidence that Dutch weak pronouns are in a VP-external position, it is unexpected that Dutch children fail to show a CEE, like Romance children, particularly in the SCRAM-N condition.

However, it is not uncontroversial that scrambling involves movement. In fact, according to Bayer & Kornfilt (1994), Neeleman (1994) and Neeleman & Weerman (1999) scrambling does not involve movement to a VP external position. Neeleman & Weerman argue that OV languages like Dutch and German and VO languages with V-to-I movement, like Icelandic, allow their objects to be base generated in different positions inside the VP, with adverbs being able to interfere between the verb and the object in a OV language like Dutch – see (29). What does this imply for pronouns? We suggest that when pronouns appear in the same positions as specific DPs, they should be analyzed as VP internal DPs (with the pronoun in the D

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27 As Reinhart (1995) shows, a base-generation theory of scrambling is perfectly capable of deriving the fact that only "specific" (= old information) DPs scramble or shift. Cinque (1993b) argues that the most deeply embedded constituent corresponds with the focus (= new information) of the sentence and is assigned the main stress. Reinhart argues that scrambling prevents the object from being the most deeply embedded constituent, hence from being interpreted as "new information". This means that scrambling is triggered by processes at the syntax/pragmatics interface, and that there is no need for encoding "specificity" as a syntactic feature, as in Sportiche (1992), who argues that both clitic-movement and scrambling are triggered by "specificity checking".
position). However, when they appear in a position where specific DPs cannot show up, they require a different analysis. We suggest that in that case clitic-movement is involved, i.e. movement of a null pronoun to a functional head.

This correctly predicts a CEE in the Romance languages, since in Romance clitics appear to the right of the finite verb, a position which is not accessible to strong pronouns and other DPs.\(^{28}\) Interestingly, it also accounts for the presence of a DPBE in Icelandic (Sigurjónsdóttir 1992) and its absence in Norwegian (Hestvik & Philip 1996). Both languages have object shift, i.e. they allow specific objects to appear to the left of negation. However, while in Icelandic all specific objects may end up to the left of negation (53c), in Norwegian only weak pronouns can (53a,b).

(53) a. Per liker den ikke.
   Per likes it not

   b. *Per liker Jon ikke.
      Per likes Jon not

   c. Jón las bækurnar ekki.
      John read the-books not

This means that, unlike Icelandic “shifted” pronouns, Norwegian weak pronouns cannot be analyzed as VP internal DPs. As Neeleman & Weerman argue, object shift/scrambling is only possible in OV languages and VO languages with V-to-I movement. Consequently, the “shifted” position of Norwegian pronouns must have a different source, namely clitic-movement (see Deprez 1994a and Josefsson 1992 for recent analyses of Mainland Scandinavian object shift as clitic movement). As a result, the CEE shows up in Norwegian, but not in Icelandic.

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\(^{28}\) This raises the question whether Galician and Asturian children will show a DPBE, since in Galician and Asturian, like in European Portuguese and Old Spanish, the clitic may appear to the right of the finite verb (like regular DPs).

(i) Xan Rodríguez veuno/*o veu (Galician, Uriagereka 1995: 83)
   Xan Rodriguez saw-it / it saw

   However, we expect no DPBE to show up in these languages. The reason is that these languages still provide evidence for a VP external position of the clitic, since in some contexts proclisis is obligatory, like in (ii).

(ii) Todo o mundo o veu/*veuño. (Galician, Uriagereka 1995: 83)
   everyone it saw / saw-it

   In fact, even in Spanish proclisis is impossible in some contexts, like imperatives or infinitives.

(iii) a. Bébelo!/*Lo bebe!
    drink-it / it drink

    b. Juan quiere hacerlo/*Juan quiere lo hacer.
       John wants do-it / John wants it do

   Uriagereka (1995) and Kayne (1991) argue that the postverbal position of Romance clitics is the result of movement of the verb (only the infinite or imperative verb in Spanish) beyond the clitic position (\(F^3\), according to Uriagereka 1995). Interestingly, the results on the CON-N condition of the experiment presented in section 2.4.2. show that Spanish speaking children do indeed perform significantly above chance level (roughly 80% adultlike no-responses) on constructions containing postverbal clitics.
Let us now return to Dutch. We have argued in this section that, given Neeleman & Weerman's view on scrambling, the position of weak pronouns to the left of sentence adverbs does not indicate that they are in a VP external position. However, as we saw in section 3.3.3.1., Dutch weak pronouns may appear in positions that are not accessible to full DPs: they may appear to the left of IO in double object constructions (26a), and the weak pronoun 't 'it' may even appear to the left of the embedded subject in ECM constructions (27a). This raises the question why Dutch 4 and 5 year olds still show a DPBE. We suggest that they do so because the evidence showing them that Dutch weak DO pronouns are clitics is too poor to be acquired early. As we saw, only double object constructions provide evidence for a clitic status of the weak pronoun 'm 'him'. Moreover, since 'm can also be to the right of the IO, according to some speakers, this indicates that weak pronouns in Dutch are at most optionally clitics. We therefore believe that Dutch speaking children will normally analyze weak pronouns as VP internal pronouns, just like their English peers. This will allow them to interpret such pronouns as free variables, to the effect that the DPBE will show up.

Dutch children's performance on weak pronouns nicely illustrates a general claim that we want to make in this study. It shows that children are sensitive to "rich" inflectional morphology, and that children acquiring a language with "rich" inflectional morphology may have an advantage over children acquiring a language with "poor" inflectional morphology. Spanish provides clear evidence for the presence of a functional category CL, since clitics clearly appear in a non-argument position, reflected in word order differences. The early acquisition of clitics as the

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29 One may object that, although direct evidence for head-movement of Dutch weak pronouns may be scarce, children are exposed to evidence showing the [+/-human] value of weak DO pronouns. If we follow Delfitto & Corver (1993) who argue that the [+/-human] specification is the trigger of head-movement, no DPBE should be expected.

However, it is not clear whether syntactic clitichood and [+/-human] specification are directly related to each other. First, there are examples of [-human] clitics, like Spanish accusative lo 'it' in "leista" dialects.

(i) Juan lo ha llevado al garaje. (lo = the car/*the boy)
    John it has brought to-the garage

Secondly, there are examples of clear non-clitic pronouns, which nonetheless are [+/-human], like Spanish pronominal PP complements (as noted by Delfitto & Corver 1993 and Delfitto & Schroten 1991), and the English pronoun them.

(ii) a. María sufrió mucho por ella. (ella = her house/ her daughter)
    Mary suffered a lot for her/it

   b. I left them with my parents. (them = my CDs/my brothers)

It appears that the [+/-human] specification in fact contrasts weak pronouns (including clitics) with strong pronouns. If ella and them are stressed or coordinated, they can only be interpreted as [+human]. Them and ella appear to be ambiguous between strong and weak pronouns.

(iii) a. María sufrió mucho por ELLA. (ella = her daughter/*her house)
    b. I left THEM with my parents. (them = my brothers/*my CDs)
    c. María sufrió mucho por ella y su padre. (ella = her daughter/*her house)
    d. I left them and the television with my father. (them = my brothers/*my CDs)

30 The early acquisition of Romance object clitics as functional heads is confirmed by both naturalistic
head of a functional projection CLP provides children with the necessary evidence that variable movement is involved in clitic constructions, which will prevent Spanish children from exhibiting a DPBE. Since Dutch provides only very poor evidence for the existence of CLP, Dutch speaking children will analyze weak pronouns as VP internal DPs, giving rise to a DPBE.

3.4. Strong pronouns in Spanish

3.4.1. Introduction

We have seen that syntactic clitics, as a result of the fact that they involve movement to the functional domain, do not give rise to a DPBE. This allowed us to explain why Romance speaking children do not show a DPBE in constructions containing weak pronouns, and why Dutch and English speaking children do show a DPBE. However, in addition to clitic pronouns, the Romance languages also have strong pronouns, like Italian lui ‘him’. Strong pronouns can be DO, IO or the complements of prepositions.

(54)

<table>
<thead>
<tr>
<th>a.</th>
<th>Maria lo lava.</th>
<th>Maria him$_l$ washes</th>
</tr>
</thead>
<tbody>
<tr>
<td>b.</td>
<td>Maria lava lui.</td>
<td>Mary washes him$_{strong}$</td>
</tr>
<tr>
<td>c.</td>
<td>*Maria lui lava</td>
<td>Mary him$_{strong}$ washes</td>
</tr>
<tr>
<td>d.</td>
<td>Maria lava lo gnomo.</td>
<td>Mary washes the gnome</td>
</tr>
<tr>
<td>e.</td>
<td>Gianni parla di lei.</td>
<td>John speaks about her</td>
</tr>
</tbody>
</table>

As can be seen in (54b), lui appears to the right of the verb, in the same position as regular DPs (54d). We assume that this indicates that strong pronouns are in argument position, inside the VP (Sportiche 1992; Delfitto & Corver 1993). As far as can be seen in (54b), lui appears to the right of the verb, in the same position as regular DPs (54d). We assume that this indicates that strong pronouns are in argument position, inside the VP (Sportiche 1992; Delfitto & Corver 1993). As far as can be seen in (54b), lui appears to the right of the verb, in the same position as regular DPs (54d). We assume that this indicates that strong pronouns are in argument position, inside the VP (Sportiche 1992; Delfitto & Corver 1993). As far as can be seen in (54b), lui appears to the right of the verb, in the same position as regular DPs (54d). We assume that this indicates that strong pronouns are in argument position, inside the VP (Sportiche 1992; Delfitto & Corver 1993). As far as can be seen in (54b), lui appears to the right of the verb, in the same position as regular DPs (54d). We assume that this indicates that strong pronouns are in argument position, inside the VP (Sportiche 1992; Delfitto & Corver 1993). As far as can be seen in (54b), lui appears to the right of the verb, in the same position as regular DPs (54d). We assume that...
as their position inside the DP is concerned, we take them to be in the D position, like English and Dutch pronouns.

Recall that in section 3.3.5.2. we argued that VP internal pronouns may be interpreted as free variables, and that free variables may give rise to coreference. If this is correct, the following prediction can be made:

(55) Romance children will exhibit a DPBE in constructions containing strong pronouns.

In the next section the prediction made in (55) will be tested for Spanish. Like Italian, Spanish has strong pronouns, in addition to clitic pronouns. Like in Italian, strong pronouns can be DO, IO or the complement of a preposition, and show up to the right of the verb.

(56) a. María la señaló a ella.
    John cl. pointed acc. her

b. María mira hacia ella.
    Mary looks at her

It is therefore predicted that Spanish speaking children will accept coreference of the subject and the DO in (56a) in roughly 50% of the cases. For (56b) the situation is slightly more complicated. As de Jong (1996) has shown, Spanish, like many other Romance languages, is very “liberal” with respect to the possibilities for pronominal PP complements to be codetermined with the local subject. However, with some prepositions, such as the one exemplified in (56b), codetermination is rather marginal, or plainly unacceptable for many speakers. If children show a DPBE with strong pronouns, they are expected to allow coreference in (56b) much more often than adults do. In the next section we will present an experiment that tested this prediction.

3.4.2. Spanish strong pronouns: Experiment I

3.4.2.1. Goal of the experiment
The goal of the experiment was to test whether Spanish speaking children show a DPBE in the following two conditions:

(57) a. El niño le dibujó a él. (SP-N)
    the boy CL painted acc. him

b. El niño miró hacia él. (PREP-N)
    the boy looked at him.

In the SP-N condition (57a), children’s performance on strong direct object pronouns (él ‘him’) is tested. In the PREP-N condition (57b) their performance on strong pronouns (él ‘him’) as complements of prepositions is tested.
3.4.2.2. Procedures and design

The experimental procedures and design were identical to the procedures and design of the Dutch experiment of section 3.3.4. (Truth Value Judgment Task). The materials we used (pictures and input sentences) were almost identical to what we used in the Dutch experiment, except that we included two extra control conditions testing children's performance on SELF-anaphors in the complement position of a preposition, and we changed the first trial of the PREP-N condition (and its corresponding Yes control condition - see Appendix I). The pictures/scenarios used in the Dutch PRON-N condition, testing the anaphoric interpretation of non-scrambled weak pronouns, were used for the Spanish SP-N condition, testing the anaphoric interpretation of strong DO pronouns (57a). The pictures/scenario's of the Dutch PREP-N condition, testing the anaphoric interpretation weak pronouns as complements of prepositions were used for the Spanish PREP-N condition (57b). The pictures of the Dutch SCRAM-N condition, testing the anaphoric interpretation scrambled weak pronouns, were used for the Spanish CL-N No Control condition, testing the anaphoric interpretation of clitics (*'him').

(58) El niño le dibujó. (CL-N)
the boy him draw

The verbs we used in the non-prepositional conditions were dibujar 'draw', pintar 'paint' and acariciar 'pat'. The verbs used in the prepositional conditions were mirar hacia 'look at' apuntar hacia 'point at' and disparar contra 'shoot at'. The target input (the guess) was presented with normal question intonation. In the case of the conditions containing strong direct object pronouns, the experimenters were explicitly instructed to avoid emphatic stress on the strong pronoun.

The test and control conditions were intermingled with 12 filler items. The total number of trials was 46 (10 x 3 trials + 12 fillers), presented to the child in two sessions of 30 minutes each. Like in the Dutch experiment, the sessions were spaced apart at least one day. Before each first session some practice items were administered to the child. In order to control for order effects, half of the children

---

32 We used the pronoun le instead of lo, since Madrid Spanish is a "leista" dialect. In leista dialects the masculine DO clitic pronoun is lo in the case of non-human reference, and le, which is the dative form in standard Spanish, in the case of reference to human individuals.

33 This explicit instruction was needed since strong direct object pronouns are often used for emphasis, and emphasis (focal stress) may facilitate a coreference reading (Grimshaw & Rosen 1990: McDaniel & Maxfield 1992). It may be argued that the use of a strong pronoun without emphatic stress does not sound natural. However, as shown by Rigau (1986), (subject) strong pronouns need not always be emphatic (see also Fernández Soriano 1989).
received the test in the reversed order (beginning with the last trial of each session), half in the normal order. See Appendix I for a complete list of test items.

3.4.2.3. Subjects
32 normally developing Spanish speaking children between 4.33 and 7.17 years old (mean age 5.9) participated in this study. The children were divided over 3 age groups, with cut-off points corresponding with the cut-off points used in the Spanish school system.

(59) • Group 1: n = 9; age range 4.33 to 5.25; mean age 4.8
• Group 2: n = 12; age range 5.33 to 6.25; mean age 5.9
• Group 3: n = 11; age range 6.33 to 7.17; mean age 6.75

In addition, 13 adults were tested (part of them collectively, part of them individually). None of the adults had an academic background.

3.4.2.4. Results
An ANOVA showed that the three age groups did not differ significantly on the 2 test conditions (p ≥ 0.427). Therefore we decided to collapse them into one group.\(^{34}\)

The results show that children performed highly adultlike on most Yes Control Conditions and the No control conditions. Children’s performance on the Yes Conditions was accurate 95% to 100% of the time, except for the condition testing the non-anaphoric interpretation of strong pronouns in the complement position of a preposition, i.e. the non-reflexive interpretation of (57b) (PREP-Y condition - see Appendix I). Children accepted this reading 75% of the time. However, adults accepted this reading only 72% of the time. Children’s performance on the No Control conditions was between 81% and 98% of the time accurate.

(60) shows that children perform highly adultlike on the test conditions and on No condition testing the anaphoric interpretation of clitics (le 'him').

(60) Percent correct “no” responses on Test Conditions and CL-N control condition.

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>age range</th>
<th>mean age</th>
<th>CL-N</th>
<th>SP-N</th>
<th>PREP-N</th>
</tr>
</thead>
<tbody>
<tr>
<td>children</td>
<td>32</td>
<td>4.33 – 7.17</td>
<td>5.9</td>
<td>91</td>
<td>83</td>
<td>43</td>
</tr>
<tr>
<td>adults</td>
<td>13</td>
<td>-</td>
<td>-</td>
<td>92</td>
<td>95</td>
<td>51</td>
</tr>
</tbody>
</table>

Children generally rejected the reflexive interpretation of strong direct object pronouns, just like adults (SP-N). A t-test shows that SP-N did not differ

\(^{34}\) An ANOVA shows that the three age groups only differed on the No Control condition testing clitics (CL-N) (p = 0.053) and the No control condition testing SELF-anaphors as complements of prepositions (PSI-N – see Appendix I) (p = 0.002).
significantly from CL-N in the children (p = 0.090). When the strong pronoun was the complement of a preposition, children appear to accept a reflexive interpretation (PREP-N) in roughly 50% of the cases. A sign-test shows that PREP-N differed significantly from SP-N and CL-N in children (p = 0.000). Unexpectedly, though, adults too appeared to accept the reflexive reading half of the time.

3.4.3. Discussion

3.4.3.1. Introduction
The results show that our predictions were not borne out. In the first place, Spanish speaking children did not show a DPBE in constructions containing a strong DO pronoun. Second, the children accepted coreference roughly 50% of the time when the pronoun was the complement of a preposition, but adults did too.

This gives rise to two questions: (i) which property of Spanish strong DO pronouns is responsible for the absence of a DPBE in Spanish speaking children, and (ii) do children who accept codetermination between the pronoun and the subject in the PREP-N condition do so for the same reason as adults do, i.e. does it involve adultlike binding or non-adultlike coreference?

Note that children’s performance on Romance strong pronouns has been investigated for Italian by Berger (1999). Berger tested Italian speaking children on constructions containing strong DO pronouns and constructions containing clitic pronouns, using a Truth Value Judgment paradigm.

(61) a. Il ragazzo lo sta indicando.
   the boy him\textsubscript{cl} is pointing-at
   ‘The boy is pointing at him.’

b. Il ragazzo sta indicando lui.
   the boy is pointing-at him\textsubscript{strong}
   ‘The boy is pointing at him.’

The results showed that children rejected coreference when the pronoun was a clitic, but accepted it in 61% of the time when the direct object was strong a strong pronoun. This means that the Italian experimental results corroborate the prediction formulated in the previous section.\textsuperscript{35} In the next section we will propose an account that explains the absence of a DPBE in the Spanish counterparts of (61b).

3.4.3.2. Strong DO pronouns: the role of clitic doubling
Given the Italian results, Spanish children’s almost adultlike performance on constructions containing strong DO pronouns is unexpected. However, a closer look on constructions with strong DO pronouns shows an important difference between

\textsuperscript{35} Note, though, that the Italian children in Berger’s experiment surprisingly also reject the non-anaphoric interpretation of strong pronouns in constructions such as (61b) in 29% of the cases. This may indicate that other factors intervene in the DPBE, apart from a breakdown of Rule I.
Spanish and Italian. Unlike Italian strong DO and IO pronouns, Spanish strong DO and IO pronouns must be doubled by a clitic.

(62) a. Pedro *(la) vió a ella.  
       Peter cl-acc saw acc. her  
   b. María *(le) dio un libro a él.  
       Mary cl-dat gave a book to him

Clitic doubling not only takes place with strong pronouns, but also optionally shows up with IO DPs, and in some South American dialects, with DO DPs. However, only with strong pronouns is it obligatory.\(^{36}\)

(63) a. Marta (le) regaló un libro a Pedro.  
       Martha cl-dat. gave a book to Peter  
   b. %Juan (lo) vio a Pedro.  
       John cl-acc. saw acc. Peter

We propose that the absence of a DPBE in Spanish constructions containing strong DO pronouns is due to the fact that in Spanish a clitic is always present in these constructions, which means that clitic doubling constructions, like regular clitic constructions, are constructions that involve \(\lambda\)-abstraction. However, in order to implement this idea, we have to be more explicit about the position of the doubled element in clitic doubling constructions. According to some researchers, the doubled element is in an argument position (Sportiche 1992; Jaeggli 1982; Franco 1993). According to others it is in an adjoined position (Aoun 1999; Fernández Soriano 1989).\(^{37}\)

\(\text{36}^{\text{The situation is slightly more complicated than depicted here. In some cases clitic doubling is obligatory with IO DPs, like in constructions of inalienable possession (ia) (Jaeggli 1982), and constructions containing DO clitics (Torrego 1998) (ib) (in which case dative le is pronounced as "spurious" se).}}\)

(i) a. El vecino *(le) lavó las manos a su hijo.  
      the neighbor cl-dat. washed the hands to his son  
      'The neighbor washed his son's hands.'  
   b. María *(se) lo dio a Pedro.  
       Mary cl-dat. cl-acc. gave to Peter  
      'Mary gave it to Peter.'  

On the other hand, even in dialects that allow clitic doubling with DO DPs, clitic doubling is heavily constrained. One of the constraints is that the doubled element must be "specific", and in most varieties, it must be [+human] too. As Franco (1993) argues, this type of constraints on the realization of the clitics/agreement morphemes is quite common cross-linguistically. See Suñer (1986, 1988) for a discussion of the constraints governing clitic doubling and the dialectal variation shown in this area.

\(\text{37}^{\text{In fact, according to Fernández Soriano (1989), the doubled element is in an adjoined position when it is pronominal, and in argument position when it is a full DP. When the doubled element is in an adjoined position, the argument position is occupied by a pro.}}\)
We will adopt a particular version of the latter option, and argue, following Aoun’s (1999) ideas on the position of doubled elements in Lebanese Arabic, that strong DO pronouns in Spanish are not in the canonical DO position, i.e., inside the VP, but in a position to the left of the subject. Aoun argues (on the basis of scope phenomena of quantificational arguments) that the doubled element is to be analyzed as the subject of a predicate formed by the “Minimal Functional Complex” (CFC) containing the clitic. Aoun assumes that the clitic is connected with a pro, which plays the role of predicate variable.38

(64) [[CFC subject...CL-pro...] [double]]

This comes close to our idea that clitics signal the presence of a predicative trace, created by the movement of an empty variable from a VP internal argument position to [Spec, CLP]. In section 3.3.5.2. we argued that in clitic constructions with the object referring to an extra-sentential antecedent (65a), an empty topic is generated as the argument of the λ-abstract created by variable movement. What we want to propose is that in clitic doubling constructions the role of the empty topic is taken over by the doubled element (65b).39

(65) a. [Topic ec] Juan la visitó. [λy (Juan visitó y)] (ec)
   [acc. her] visited
   John her visited

b. Juan la visitó [Topic a ella]. [λy (Juan visitó y)] (a ella)
   John her visited acc. her

However, one may object that the structural position of doubled strong pronouns as topics is incompatible with their capacity to introduce new discourse topics: they can be used deictically. This does not constitute a problem, though. As Reinhart (1981) has shown, topics do not always refer to “old information”. In fact, in section

38 Although the double is to the right of the CFC, unlike subjects in general, Aoun argues that this is in fact a derived order, the result of movement of the CFC to a position to the left of the double.

39 One of the arguments presented by Aoun in favor of analyzing the double as an element that is generated in a position beyond the IP is the absence of Weak Cross Over (WCO) effects in Lebanese Arabic clitic doubled constructions. Interestingly, similar effects have been found by Suñer (1988) in Porteño Spanish:

(i) a. *Suₐ madre quiere a todosₐ.
   their mother loves acc. all
   Their mother loves them all.’

b. Suₐ madre los quiere a todosₐ.
   their mother them-cl loves acc. all
   ‘Their mother loves them all.’

Note also that clitic-left dislocation is known not to give rise to WCO effects (Zubizarreta 1998; Escobar 1995):

(ii) [A cada hijoₐ, suₐ madre loₐ protege.
    acc. every son his mother him-cl protects
3.3.5.2., we argued that only empty topics, like in (65a) are restricted to old information, as a result of their lack of lexical content.\footnote{Note that the analysis of doubled strong pronouns as topics is consistent with the impossibility of clitic-left dislocation in clitic doubling constructions:}

(i) a. A Juan lo conozco.
    acc. John him-cl know-I

b. *A Juan lo conozco a él.
    acc. John him-cl know-I acc. him

Since the clitic only provides one \(\lambda\)-operator, there can only be one topic-like element that functions as the argument of the \(\lambda\)-abstract. In (ib) there are two elements that compete for the same position.

Given the structural similarity between regular clitic constructions and clitic doubling constructions, the absence of a DPBE with these constructions can be dealt with in similar terms. In line with what we proposed in 3.3.5.2. for regular clitic constructions, the absence of a DPBE in clitic doubling constructions can be argued to follow from the structurally high position of the topic/doubled element relative to the subject, and the requirement of the object clitic to find a binder for the open internal argument position. These two facts force the child to code codetermination between the object clitic and the subject in terms of binding, preventing the doubled element from binding the internal argument variable, and hence blocking the possibility of establishing a coreference relation with the subject. Since binding between the subject and the object clitic violates principle B, children will reject a reading of (57a) in which the subject and the object refer to the same individual.\footnote{Note that Spanish children already master clitic doubling before the age of 3. According to Torrens \& Wexler (1996), they apply clitic doubling where it is obligatory, and do not apply it when it is ungrammatical. However, Lyczkowsky (1999) shows that Spanish speaking children produce some instances of clitic doubling in impossible contexts (with non pronominal DOs), although they do not omit the clitic where it is obligatory.}

Interestingly, our findings on Spanish appear to be confirmed by experimental evidence from Catalan and Greek. Escobar \& Gavarró (1999) have shown that Catalan speaking children show no DPBE in constructions containing strong DO pronouns. Like in Spanish, in Catalan strong DO pronouns must be doubled by a clitic pronoun. Recent experimental evidence from Greek shows that Greek speaking children do not show a DPBE in constructions containing strong DO pronouns either (Varlokosta 1999). As expected, Greek too has clitic doubling.\footnote{However, it should be noted that in Greek clitic doubling is not obligatory with strong DO/IO pronouns. Nonetheless, Greek-speaking children did not show a DPBE irrespective of whether the strong pronoun is doubled by a clitic or not. I have no other account to offer than to suggest that maybe a null-clitic head is present in the absence of an overt one. As a matter of fact, note that Greek strong pronouns are rather untypical in the sense that they are \([+/-human]\), like weak pronouns in Dutch and Romance, and unlike strong pronouns in these languages, which are \([+human]\).}

Finally, note that the experimental results constitute additional evidence against the claim that the DPBE derives from the pronoun’s capacity to refer deictically (Avrutin 1994). Strong pronouns in Spanish can refer deictically, but still they do not give rise to a DPBE.
3.4.3.3. Strong pronominal PP complements

As was shown in section 3.2.2.2., children allow coreference as an alternative to binding in contexts that are inadmissible to adults. However, PPs appear to be contexts where both children and adults and children allow codetermination. The question is: does codetermination involve binding in both children and adults, or coreference?

As de Jong (1996) shows, Spanish (like many other Romance languages) is much more "liberal" with respect to the possibility of pronominal PP complements referring to the local subject than Dutch and English. In the latter two languages this type of codetermination is limited to the complements of locative prepositions, such as achter/behind in (66).

(66) a. Jan, ziet een stoel achter hem.
   b. John, sees a chair behind him.
   c. Jan, praat altijd over hem.
   d. John, always speaks about him.

In Spanish, and many other Romance languages and dialects other prepositions also allow their prepositional complements to be bound by their local subjects.

(67) a. Juan, siempre habla de él.
   John always speaks about him
   b. María, compró este libro para ella.
   Mary bought this book for her

That (67a,b) really involve binding can be deduced from the availability of the sloppy reading in both (68a) and (68b).

(68) a. María puso una silla detrás de ella, y Juana también.
   Mary put a chair behind her and Juana did too
   b. Marta sólo piensa en ella, pero María no.
   Martha only thinks about her, but Mary does not

Let us first discuss the special status of locative prepositions. Hestvik (1990) argues that locative prepositions are special in the sense that they are independent theta-assigning prepositions. Unlike other prepositions, they do not just transmit the theta-role assigned by the verb (Marantz 1984). According to Reinhart & Reuland, this property turns locative PPs into predicates of their own, to the effect that the pronoun can be bound freely by the subject of the verbal predicate without violating

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43 Other languages that have this option are Galician, Portuguese, Catalan, French (see also Zribi-Hertz (1980), and some south Italian dialects, but crucially not standard Italian (see also Giorgi 1991) and the northern Italian dialects.
THE ACQUISITION OF PRONOMINAL ANAPHORA

Principle B. 44 Non-locative prepositions, on the other hand, are not predicates. According to Rizzi (1990a), de Jong (1996) and Neeleman & Weerman (1999), so-called “fixed” prepositions in English and Dutch incorporate into the verb at LF, so that the complement receives its Θ role from the V+P complex. Stated differently, in the case of locative prepositions it is the PP which receives the Θ role of the verb, while in the case of “fixed” prepositions it is the complement of the preposition which receives a Θ role. 45

If the pronominal complement of the V+P complex is bound by the subject of the verb, this leads to a Principle B violation, as could be seen in (66c,d). However, in Spanish this does not happen (67). This suggests that in Spanish non-locative prepositions somehow do not incorporate into the verb, and the PP remains a separate predicate/binding domain. On the other hand, de Jong (1996) also shows that with some prepositions codetermination between the subject and the pronoun is much more marginal, or even ungrammatical to some speakers, like the examples in (69).

(69) a. *Anoche Juan, soñó con él.
   Yesterday night John dreamed about him
   b. *María, confía en ella.
   Mary trusts on her

This may be interpreted as indicating that some prepositions in Spanish preferably incorporate into V. 46 Native speaker judgments indicated that codetermination between the subject and the pronoun was at least dispreferred in all three constructions tested under the PREP-N condition, the condition testing children’s performance on the anaphoric interpretation of pronominal PP complements, although there was some variation in relative acceptability between the three trials: codetermination was judged to be unacceptable with mirar hacia ‘look at’ (PREP-N.1), marginal with apuntar hacia ‘point at’ (PREP-N.2), and marked with disparar contra ‘shoot at’ (PREP-N.3). Nonetheless, the results indicate that the grammatical constraints governing this preference for the non-anaphoric reading are rather “soft”. They appear to be context sensitive and subject to idiolectal variation. In fact, the results on the PREP-Y control condition, testing children’s performance on the non-anaphoric interpretation of pronominal PP complements, show that some adults (like some children) sometimes prefer an anaphoric interpretation of the pronoun,

44 Recall that Reinhart & Reuland’s (1993) Principle B only applies to co-arguments of a predicate.

45 We will use the terms “non-locative preposition” and “fixed preposition” indiscriminately.

46 This must be an option for all fixed prepositions, since (i) is perfectly grammatical.

(i) Juan piensa en sí mismo.
rejecting the deictic reading: children rejected the non-anaphoric reading of the pronoun 25% of the time and adults 28% of the time.47

However, the fact that both adults and children often accept the anaphoric interpretation of constructions does not necessarily mean that children and adults accept them for the same reasons. It is very well possible that while adults analyze non-locative PPs as separate predicates, children analyze them as involving P into V incorporation. If this is the case, codetermination between the subject and the pronoun may involve binding in the adult language, since Principle B is not violated. In the child language, on the other hand, binding will then lead to a violation of Principle B, since after P incorporation the pronoun and the subject are co-arguments. In that case, codetermination between the subject and the pronoun must involve non-adultlike coreference, i.e., a DPBE.

How can we know whether codetermination in child Spanish involves coreference or binding? Recall from section 3.2.1. that the DPBE does not show up in child English and child Dutch when the antecedent of the pronoun is quantified. This is because quantifiers cannot corefer with pronouns; they can only bind them. On the face of it, this allows us to make the following prediction for Spanish: if children's acceptance of codetermination in the PREP-N condition involves non-adultlike coreference, i.e. a "real" DPBE, children are expected to accept codetermination much more often in (70a) than in (70b).

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47 Note that the experimental results do not directly support the native speaker judgments about the differences between the three trials of the PREP-N condition. A Friedman test shows that the three PREP-N trials do not differ from each other neither in children (p = 0.737) nor in adults (p = 0.717). The PREP-Y trials, on the other hand, do give some indirect support for difference in acceptability of codetermination between the three verb + preposition pairs. Both children and adults appeared to reject the deictic interpretation of the pronoun less often in the PREP-Y.1 condition (mirar hacia 'look at') (children: 2/32 = 6%; adults: 1/13 = 8%) than in the PREP-Y.2 (apuntar hacia 'point at') (children: 15/32 = 47%; adults: 7/13 = 53%) and PREP-Y.3 condition (disparar contra 'shoot at') (children: 7/32 = 22%; adults: 3/13 = 23%). A Friedman test shows that the three trials of PREP-Y.1 differ significantly in children (p = 0.0216) and adults (p = 0.009).
(70) a. La niña sueña con ella.
the girl is dreaming about her
b. Cada niña sueña con ella.
every girl is dreaming about her

However, there is a complication. Some speakers dislike a bound variable reading of the pronominal PP complement if the binder is a quantifier. Although according to Torrego (1995) the examples of (71) are fine, according to Menuzzi (1996) and many native speakers that we checked they are marginal.

(71) a. %Nadie, vio una culebra cerca de él.
nobody saw a snake next to him
b. %Todo el mundo, hablaba de él.
everybody talked about him

This effect is reminiscent of what Montalbetti (1984) found for subject pronouns and strong direct object pronouns in null-subject languages like Spanish. Montalbetti showed that in Spanish, subject pronouns (which are normally strong) and strong object pronouns cannot be bound by a quantified element (see also Rigau 1986 for Catalan and Spanish, and Menuzzi 1996 for Portuguese and Spanish).

(72) a. *Nadie, creía que María lo amaba a él.
nobody believed that Mary loved him,strong
b. *Nadie, cree que él ha ganado la lotería
nobody believed that he,strong won the lottery

It appears then that the “Montalbetti Effect” also shows up in PP complement contexts, although in a weaker form.

According to Menuzzi (1996), the “Montalbetti Effect” does not show up in PP complement contexts when the quantifier that binds the pronoun is d-linked. However, this judgment is not shared by all native speakers that we consulted. Although the effect is less strong than with non d-linked quantifiers, (73) remains marked or marginal according to some speakers.

(73) ?Cada estudiante, puso una maleta detrás de él.
‘Every student put a chair behind him.’

This has the following consequences for the interpretation of the experimental results. Spanish children can only be concluded to show a DPBE in constructions containing pronominal PP complements if they accept codetermination in (70a) more often than in (70b), and this difference between the two constructions is stronger in children than in adult speakers. In the next section we will present an experiment that tested this prediction.
3.4.4. Spanish strong pronouns: Experiment II

3.4.4.1. Goal of the experiment
The main goal of the second experiment was to test whether Spanish speaking children showed a stronger DPBE in constructions with non-locative or “fixed” PPs containing referential subjects (FIXED-N), like (74a), than in constructions containing quantified subjects (QFIXED-N) (74b).

(74) a. La niña sueña con ella. (FIXED-N)
   the girl dreams about her
b. Cada niña sueña con ella. (QFIXED-N)
every girl dreams about her

In addition, we tested children’s and adults’ performance on constructions with locative PPs, both with referential subjects (LOC-B) and with quantified subjects (QLOC-B).

(75) a. La abuelita puso la silla detrás de ella. (LOC-B)
   the grandma put the chair behind of her
b. Cada abuelita puso una silla detrás de ella. (QLOC-B)
every grandma put a chair behind of her

The reason why we tested (75) was to explore whether children and adults showed sensitivity to the contrast in grammaticality between the reflexive interpretation of (75a) which is fully acceptable according to most native speakers, and (75b), which is more marginal.

3.4.4.2. Procedures and design
The experimental design that we used was a Picture Verification Task, presented to the child as a “guessing game” in which a blindfolded hand puppet, Bert (from Sesame Street), manipulated by one of the two experimenters (who could not see the pictures), had to “guess” what happened in the pictures presented to the child. The child’s task was to look at the pictures and judge whether or not the guesses were correct. Unlike in Experiment I (section 3.4.2), only one picture per trial was used, and no introductory story was told. A second experimenter, who acted as the “helper” of the child, presented the pictures. The “helper” introduced the pictures by pointing at individuals that were involved in the action and naming them (e.g. “Here we see a girl and a mother”). After having introduced the participants of the action depicted in the picture, a “hint” was given to the guesser (e.g. “Bert, could you guess what happened? The hint is “dreaming””). Before making his guess (in the form of a question), Bert listed the participants of the depicted action (e.g. “Mmm...a girl and a mother. Is the girl dreaming about her?”). In the case of the conditions with locative prepositions the child was informed of the fact that one or more individuals displaced one or more objects (e.g. “Here we see a girl and a grandma. The girl put a
chair somewhere on the flour. Let’s see if Bert can guess where exactly the girl put it” or “Here we see three girls and a mother and three chairs. Every girl put a chair somewhere on the flour. Let’s see if Bert can guess where exactly they put them”). The target input was presented to the child with normal question intonation, avoiding emphatic stress on the pronoun.

In (76) we give an example of each of the four test conditions.

(76) a. **FIXED-N** ¿La niña sueña con ella?

Mmm...a girl and a mother. (Context-setting input)
Is the girl dreaming about her? (Target input)
b. **QFIXED-N** ¿Cada niña sueña con ella?

Mmm...three girls and a mother  (Context-setting input)
Is every girl dreaming about her?  (Target input)

c. **LOC-B** ¿La abuelita puso el jarrón delante de ella?

Mmm...a girl and a grandma.  (Context-setting input)
Did the grandma put the vase in front of her?  (Target input)
In addition to the 4 test conditions, exemplified in (74) (meant as No Condition) and (75) (meant as Yes Condition), the experiment contained 6 Yes Control Conditions, 4 of them testing children’s performance on the non-reflexive interpretation of the constructions in (74) and (75), and 2 of them testing the reflexive interpretation of constructions containing reflexive PP complements. The experiment also contained 2 No Control Conditions, testing the non-reflexive interpretation of constructions containing reflexive PP complements, 1 Screening Condition, and 23 filler items. The verb + preposition pairs used in the “fixed” conditions were mirar hacia ‘look at’, apuntar hacia ‘point at’ and soñar con ‘dream about’.48 The verb + preposition pairs used in the “locative” conditions were poner la/una X detrás de ‘put the/a X behind’, poner la/una X delante de ‘put the/a X in front of’ and trazar/(hacer) un circulo alrededor de ‘draw a circle around’.

Total number of trials was 60 (13 x 3 trials + 21 fillers), presented in 2 sessions of 15 minutes each. The procedures we followed with respect to the presentation of the materials (order and warm-up items) was the same as in the previous experiment. For a complete list of test items, see Appendix I.

48 Strictly spoken, hacia ‘to’ is a locative preposition too. However, when it combines with mirar ‘look’ or apuntar ‘point’, as in the test items, it behaves like a non-locative preposition.
3.4.4.3. Subjects

30 normally developing Spanish speaking children participated in this experiment. Of these children, 4 did not pass the screening condition, and were excluded. The remaining 26 children ranged from 4.67 to 7.25 years old (mean age 6). The children were divided into 3 age groups, matching the groups used in the Spanish school system.

(77) • Group 1: n = 8; age range 4.67 - 5.33; mean age 5.04
  • Group 2: n = 9; age range 5.83 - 6.25; mean age 5.96
  • Group 3: n = 9; age range 6.5 - 7.25; mean age 6.88

In addition, 12 adult speakers were tested collectively. The adult speakers were undergraduate students of English Language and Literature, at the Universidad Autónoma de Madrid, who only had some basic knowledge of linguistics.

3.4.4.4. Results

Since an ANOVA indicated that there were no significant differences between the three age groups on the test conditions (p ≥ 0.478) and most control conditions (p ≥ 0.088), we decided to collapse the three age groups into one.

Children responded around 90% of the time adultlike on the two Yes and two No Control conditions testing reflexive PP complements (sí misma ‘herself’). However, as (78) shows, children’s performance on the Yes Control conditions LOC-R (testing the non-reflexive interpretation of constructions like (75a)), QLOC-R (testing the non-reflexive interpretation of constructions like (75b)), and FIXED-Y (testing the non-reflexive interpretation of (74a)) was much less adultlike. Children’s performance on the QFIXED-Y condition (testing the non-reflexive reading of (74b)) was highly adultlike, though.

(78) Percent “yes” responses on pronominal Yes Control Conditions

<table>
<thead>
<tr>
<th></th>
<th>age range</th>
<th>mean age</th>
<th>n</th>
<th>FIXED-Y</th>
<th>QFIXED-Y</th>
<th>LOC-R</th>
<th>QLOC-R</th>
</tr>
</thead>
<tbody>
<tr>
<td>children</td>
<td>4.67 - 7.25</td>
<td>6</td>
<td>26</td>
<td>69 (7)</td>
<td>81 (5)</td>
<td>59 (8)</td>
<td>68 (7)</td>
</tr>
<tr>
<td>adults</td>
<td>-</td>
<td>12</td>
<td>97 (3)</td>
<td>94 (4)</td>
<td>83 (8)</td>
<td>86 (9)</td>
<td></td>
</tr>
</tbody>
</table>

Children’s performance on the test conditions, on the other hand, was far from adultlike: children accepted the reflexive reading much more often than adults did.

49 An ANOVA shows that the three age groups only differed on the control condition testing the non reflexive interpretation of constructions like (74b) (QFIXED-Y) (p = 0.053) and the control condition testing the reflexive interpretation of constructions with reflexive (non-locative) PP complements and quantified subjects (QPSI-Y) (p = 0.000) (see Appendix I).
Let us first discuss the results on the FIXED-N and QFIXED-N conditions. A 2 (Group: adults vs. children) x 2 (Condition: FIXED-N vs. QFIXED-N) analysis of variance on the dependent measure percentage of rejections of the anaphoric reading of the pronoun, with subject type (quantified/non-quantified) as within subject variable, shows a main effect for age group (F(1, 36) = 15.978, p = 0.000), and for Condition (F(1, 36) = 5.583, p = 0.024). The Group x Condition interaction, however, was not significant: F(1, 36) = 0.316, p = 0.577. This means that although children accepted the anaphoric reading of the pronoun significantly more often than adults did, they did not reject this reading more often than adults when the subject was quantified.

Let us now turn to the LOC-B and QLOC-B conditions. A t-test shows that both children and adults accepted the anaphoric interpretation of the pronoun more often in the LOC-B condition than in the FIXED-N condition (children: p = 0.049, adults: p = 0.013), and more often in the QLOC-B condition than in the QFIXED-N condition (children: p = 0.020, adults: p = 0.026). This means that both groups appeared sensitive to the distinction between locative and non-locative prepositions.

The LOC-B and QLOC-B results also show, more clearly than the QFIXED-N and FIXED-N results, that there is a strong "Montalbetti Effect" at work in adults: Spanish adults strongly disprefer binding of a strong pronoun by a quantifier. A sign test shows that LOC-B differs significantly from QLOC-B (p = 0.016). This difference was not significant in children (p = 1.000).

3.4.5. Discussion

The results clearly indicate that Spanish speaking children do not show a DPBE in constructions containing strong pronouns as complements of non-locative prepositions. Children generally accept codetermination more often than adults, but they do so both in constructions containing referential antecedents (FIXED-N) and constructions containing quantified antecedents (QFIXED-N). If the possibility for pronominal PP complements to be bound by a local c-commanding antecedent depends on the possibility for PPs headed by non-locative prepositions to act as independent predicates, we have to conclude that children allow this option more easily than adults do. Since the choice between the use of a pronoun or a reflexive

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50 Our results on the FIXED-N condition correspond with what has been found in Catalan: children accepted codetermination more often than adults did (Escobar & Gavarró 1999).
pronoun depends on the semantic/pragmatic properties of the V+P pairs, it follows that children are less sensitive to these properties.51 52

Children, on the other hand, do show sensitivity to the difference between locative and non-locative prepositions. Like adults, they accepted codetermination between the pronoun and the subject much more often when the preposition is a locative (LOC-B) than when it is a non-locative or "fixed" preposition (FIXED-N).

However, the results may give rise to an important methodological question, which we will try to answer before closing this section. As the reader may have noticed, the adults of Experiment I accepted codetermination between the subject and the object in the PREP-N condition much more often than the adults of the present experiment did in the similar condition. One may wonder why this should be the case.

We suggest that there are basically three factors that may have contributed to this difference in performance. The first (but probably least important) factor is the slightly different target input of the FIXED-N of experiment II and the PREP-N condition of experiment I: the third trial of the PREP-N condition of experiment I contained the V+P pair disparar contra 'shoot at', while in the FIXED-N condition of experiment II it was soñar con 'dream about'.53 Native speaker judgments indicate that codetermination is more marginal in the latter case than in the former case. The second factor could be the composition of the adult control group. While in Experiment I no adult had an academic background, the adults of Experiment II were all undergraduate students of English Language and Literature. It may be the case that their background in language has made them more sensitive to differences in acceptability between different constructions, but this is clearly only speculative. The third, and probably most important factor, is the fact that Experiment II tested two kinds of PP constructions: constructions with locative prepositions, which allow codetermination between the subject and the pronoun relatively easily (LOC-B), and


52 In fact, there is another argument against the presence of a "real" DPBE in Spanish. As both the results from Experiment I and II show, children (and to a lesser extent, adults) often reject the "deictic" reading of the pronoun in the PREP-Y/FIXED-Y condition (testing pronominal complements of fixed prepositions). Dutch and English speaking children, on the other hand, who often accept the anaphoric reading of a DO pronoun, almost never reject the deictic reading of it (see also the results on PRON-Y, SCRAM-Y and PREP-Y conditions of the Dutch experiment in Appendix I).

53 A Friedman test shows that the adults of experiment II did not distinguish between the three trials of FIXED-N (p = 0.311), nor on the three trials of FIXED-Y (p = 0.368). This means that the change of the last trial (FIXED-N.3/PREP-N.3) in experiment II could not have influenced the results significantly. Note that children, on the other hand, rejected codetermination more often in FIXED-N.1 (mirar hacia 'look at') (62% "no" responses) and FIXED-N.3 (soñar con 'dream about') (42% "no" responses) than in FIXED-N.2 (apuntar hacia 'point at') (23% "no" responses). A Friedman Test shows the difference between the three trials of the FIXED-N to be significant (p = 0.007). The three trials of the corresponding Yes condition FIXED-Y condition did not differ from each other (p = 0.122).
constructions with “fixed” prepositions (FIXED-N), which make codetermination harder to get. It may well be the case that the presence of both types of constructions in the test sharpened the control group’s sensitivity with regard to the relative unacceptability of codetermination in the FIXED-N condition with respect to the LOC-B condition.

3.4.6. Summary and conclusion

Summarizing, we may conclude that Spanish speaking children do not show evidence of a DPBE in constructions containing strong pronouns. However, this does not refute our account of the CEE. We have shown that Spanish children, unlike Italian children, perform highly adultlike on constructions containing strong DO pronouns. We have argued that this is due to the fact that in Spanish clitic doubling is obligatory in constructions containing strong DO pronouns. We have argued that clitic-doubled strong pronouns are interpreted in terms of λ-abstraction, just like regular clitic constructions, blocking the possibility of coreference. Children perform less adultlike on constructions containing strong pronouns as the complement of “fixed” prepositions, accepting codetermination between the pronoun and the subject more often than adults do. However, since this “delay” also shows up when the local antecedent is quantified, we conclude that this phenomenon does not represent a “real” DPBE. Instead, it shows that children can analyze PPs headed by a “fixed” (non-locative) preposition as a separate predicate in a less constrained way than adults do.

3.5. A syntactic DPBE: the role of lexical feature acquisition

3.5.1. Introduction

In the introduction of this chapter we stated that the acquisition of pronominal coreference is not only determined by problems at the syntax/pragmatics interface (i.e. the breakdown of Rule I). In the next sections we will provide experimental evidence showing that children’s interpretation of pronouns is also affected by incomplete acquisition of the lexical feature make up of pronouns. Concretely, we will argue that Spanish and Dutch children may interpret third person pronouns as Dutch SE-anaphors. We will show that the DPBE that is the result of incomplete feature acquisition does not only affect regular weak or strong pronouns, but also syntactic clitics. In addition, we will argue that the experimental results provide strong evidence in favor of a modular approach to binding.

3.5.2. Previous research: the role of the A-Chain Condition

The idea that the DPBE does not have a single source was first suggested by Sigurjónsdóttir (1992). She found that children acquiring Icelandic allowed
codertermination of the object pronoun and the subject much more often in (80a) than in (80b). This effect also shows up in the acquisition of Dutch, as shown by Sigurjónsdóttir & Coopmans (1996) (81):

(80) a. Jón rakar hann  (80% non-adultlike performance)  
   John shaves him  
   b. Jón gaf honum bók  (50% non-adultlike performance)  
   John gave him a book

(81) a. Het jongetje waste hem.  (80% non-adultlike performance)  
   the boy washed him  
   b. Het jongetje wees naar hem. (50% non-adultlike performance)  
   the boy pointed at him

Sigurjónsdóttir (1992) and Sigurjónsdóttir & Coopmans noted that the verbs that give rise to an extra strong DPBE are exactly those that can be reflexive marked in the lexicon (so-called “inherently reflexive” verbs). As we showed in section 2.5.2.3., these verbs are characterized by allowing the SE anaphor zich in object position. Other verbs can only obtain a reflexive-like interpretation by means of SELF-anaphors.

(82) a. Jan waste zich.  
   John washed SE  
   b. *Jan wees naar zich.  
   John pointed at SE  
   c. Jan wees naar zichzelf.  
   John pointed at himself

In order to account for the stronger DPBE in (80a)/(81a), we first have to explain why exactly (80a) and (81a) are ungrammatical. The answer to this question is provided by the contrast between (82a) and (82b). This contrast in grammaticality does not follow from Chomsky’s (1981) original Binding Theory, but, as we argued in section 2.5.2.3., it is explained by Reinhart & Reuland’s (1993) alternative Binding Principles, which we repeat for convenience.

(83) Reinhart & Reuland’s Binding Theory (Reinhart & Reuland 1993)  
   Principle A: A reflexive-marked syntactic predicate must be interpreted reflexively.  
   Principle B: A reflexively interpreted semantic predicate must be reflexive-marked.

Although both (82a) and (82c) are interpreted reflexively, only (82a) is reflexive-marked in the lexicon. Recall from section 2.5.2.3. that reflexive-marking in the lexicon is a lexically restricted process. Verbs like aaien ‘pat’, wijzen naar ‘point at’
or *hatten ‘hate’ do not have the relevant lexical semantic properties to undergo this process of reflexive marking.

However, in spite of the fact that *wassen can be reflexive-marked in the lexicon, (80a)/(81a) are not grammatical with a reflexive reading. Reinhart & Reuland (1993) argue that the ungrammaticality of (80a)/(81a) is not due to a violation of Principle B, but to the violation of a formal requirement on A-chains.

(84) *A-Chain Condition
A maximal A-Chain \((a_1,\ldots,a_n)\) contains exactly one link \(-a_i\) that is both [+R] and case marked.

Reinhart & Reuland argue that an A-Chain is formed between a pronoun and its local binder. The condition states that the foot of the chain (the bindee) should be referentially deficient, i.e. [-R]. This property is linked to underspecification for \(\phi\) features like number and structural case. According to Reinhart & Reuland R-expressions and third person pronouns, like *hem ‘him’ are [+R], while SE-anaphors, like Dutch *zich are [-R]. This follows from the fact that while *hem is specified for person (third) gender (masculine), number (singular) and case (non-nominative), *zich is only specified for person (third). This means that a chain between the subject and the object in (85b) will lead to a violation of the A-Chain Condition, while in (85a) this condition is respected.

(85) a. Jan wast *zich ‘John is washing SE’
   +R
   -R

b. *Jan wast *hem ‘John is washing him.’
   +R   +R

Recapitulating, we can say that while the reflexive interpretation of (80b)/(81b) violates both Principle B and the Chain condition, (80a)/(81a) only violate the Chain Condition.

Let us now return to the experimental results presented in (80) and (81). Why do Dutch children perform less adultlike in (81a) than in (81b)? Sigurjónsdóttir (1992) and Sigurjónsdóttir & Coopmans (1996) propose that this is due to the incomplete acquisition of morphosyntactic features of pronouns. Unlike adult-speakers of Dutch, children initially treat third person pronouns as optionally [-R]. Why they do so will be discussed in section 3.6. If a pronoun can be [-R], the subject can bind the pronoun without violating the A-Chain Condition. In fact, this is what happens in

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54 Note that Reinhart & Reuland’s definition of A-Chains is an extension of the traditional A-Chain, such as the chain created between the moved subject and its trace in passives (i).

(i) John was hit.

Unlike the A-Chain formed in typical cases of A-movement, like passive formation, the A-chains under discussion between the binder and a bindee contain more than one \(\theta\) role.
some adult languages too, like Frisian (86a). Note that this option is not available in (86b), since bewunderen ‘admire’ cannot be reflexive-marked in the lexicon (de Jong 1996).

(86) a. Jeltsje, wasket har.<br>Julia washes her<br>b. Willem, bewundert *him, /himsels,<br>William admires him /himself

Interestingly, this hypothesis is confirmed by experimental evidence from another construction in which binding is ruled out by the Chain Condition only, i.e. ECM constructions. Philip & Coopmans (1996a) showed that Dutch speaking children exhibited an extra strong DPBE in ECM constructions.\(^{55}\)

(87) Het jongetje zag hem dansen. (80% non-adultlike performance)<br>the boy saw him dance

Reinhart & Reuland (1993) argued that binding between the matrix subject and the embedded subject is not ruled out by Principle B, since Principle B only applies to co-arguments of the same semantic predicate. In ECM constructions like (87) the pronoun hem is the subject of the embedded verb dansen, while het jongetje is the subject of the matrix verb zien ‘see’. The reason why the matrix subject cannot bind the embedded subject in (88b) is the same as why pronouns cannot occupy the object position of inherently reflexive verbs: they violate the chain condition. Instead, a [-R] pronoun must be used (88a).


Of course, in those languages where pronouns may be [-R], like Frisian, no violation occurs, so that (89) is a well-formed structure.

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\(^{55}\) This was tested in conditions that involved pictures showing individuals that performed actions, like dancing, in front of a big mirror. It could be argued that children’s non-adultlike performance is due to the fact that they are not aware of the fact that the reflection in the mirror does not represent a different individual. However, a number of additional experiments have shown that Dutch speaking children, while showing roughly 80% non-adultlike performance on ECM constructions, only showed 50% non-adultlike performance on constructions like (i) (Coopmans & Philip 2000).

(i) Het jongetje zag hem.<br>the boy saw him
Since Dutch children can interpret third person pronouns as [-R], no Chain Condition violation occurs either.\(^56\)

Note that Philip & Coopmans enable us to account for the fact that roughly 80% non-adultlike performance is obtained in ECM constructions and inherently reflexive verbs. The 80% non-adultlike performance level can be derived in the following way. Children analyze third person pronouns as ambiguously specified between [-R] and [+R], hence it is expected that they will select half of the time the [-R] value and half of the time the [+R] value. When they select the [-R] value, they will accept *binding* between the pronoun and the subject. However, when they select the [+R] value, no well formed A-Chain can be formed, but they will still accept *coreference* half of the time, for the same reasons as why they accept coreference in simple sentences half of the time, namely the breakdown of Rule I. Summarizing, this means that 50% + 25% (= 50% of 50%) = 75% of the time Dutch children are expected to accept codetermination in ECM contexts.

Philip & Coopmans' underspecification hypothesis makes an interesting prediction for Spanish and other Romance languages. In section 3.3.5.2. we argued that Spanish speaking children do not show a DPBE in simple sentences containing pronominal clitics, due to the fact that clitics can only be interpreted as bound variables. However, this does not necessarily mean that they will not misanalyze third person pronominal clitics as [-R] elements, just like their Dutch peers. Suppose Spanish children are like Dutch children in this respect. If the extra strong DPBE found in Dutch ECM constructions really involves binding, it is expected that Spanish speaking children too will show a DPBE in ECM constructions. As Rizzi (1982), Burzio (1986), Guasti (1993), among others, have argued, Romance has ECM constructions with properties which are similar (but not identical) to Dutch ECM constructions, with the matrix verb selecting the IP as a complement and case marking the embedded subject, which receives its Θ role from the embedded verb (90a). Since Spanish weak pronouns are clitics, an ECM construction with a pronominal embedded subject (*lo 'him*) will have the structure of (90b), in which a null element moves from the embedded subject position to the Spec of the (accusative) CLP of the matrix clause.

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\(^{56}\) The idea that lexical learning plays a role in the emergence of the DPBE is not new. Jakubowicz (1984) argued that children may initially analyze pronouns as anaphors, allowing them to be bound locally. However, unlike Jakubowicz, we claim that the DPBE that arises in the acquisition of English and Dutch simple sentences involving non-inherently reflexive verbs is due to children's incapacity to apply a syntax/pragmatics interface constraint regulating intrasentential coreference, and not to the misanalysis of pronouns as SE-anaphors.
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CHAPTER 3

(90) a. María oyó [IP al niño cantar una canción]  
Mary heard the boy sing a song  
‘Mary heard the boy sing a song.’  
b. María [CIP pro[CL0 lo [VP oyó [IP t cantar una canción]].

However, since coreference is no option in clitic constructions, which means that performance is not affected by a Rule I breakdown, Spanish children are expected to show a less strong DPBE in these constructions than Dutch children do. Concretely, they are expected to show roughly 50% adultlike performance, since half of the time children will analyze *la* as a [+R] pronoun, half of the time as a [-R] pronoun. In the next section we will present an experiment that tested this prediction.

3.5.3. DPBE in Spanish: experiment I

3.5.3.1. Goal of the experiment
The main goal of the experiment was to test whether Spanish speaking children show a DPBE in ECM constructions (91a). A second goal was to replicate Padilla’s (1990) findings on the absence of a DPBE in the acquisition of Spanish simple sentences using a Picture Verification Task (91b). Finally, we tested children’s performance on constructions containing quantified subjects (91c).

(91) a. La niña la ve bailar (ECM-N)  
the girl her see dance  
b. La niña la señala (SIMPLE-N)  
the girl her points-at  
c. Cada niña la señala. (QUANT-N)  
every girl her points-at

3.5.3.2. Procedures and design
The experimental design we used was a Picture Verification task, presented to the child as a guessing game, in which one of the experimenters, who could not see the pictures, had to “guess” what happened in the picture. The children had to judge whether the “guesses” made by this experimenter were correct. Like in the previous experiment (section 3.4.4.), the pictures were presented to the child by a second experimenter, who acted as the “helper” of the child. The “guesses” (target input) were phrased as questions (“¿La niña la señala?” – “Is the girl pointing at her?”), and were read from the back of the pictures by the first experimenter, who was in front of the child and the “helper”. The procedure and the materials used were identical to those of Philip & Coopmans’ (1996a,b) Dutch experiment. In (92) we illustrate the three test conditions with an example.
(92) a. **SIMPLE-N** ¿La niña la seca?

Mmm...a girl with a towel and a mom.  (Context-setting input)
Is the girl drying her?  (Target input)

b. **QUANT-N** ¿Cada mamá la señala con el dedo?

Mmm...three moms and a girl.  (Context-setting input)
Is every mom pointing at her?  (Target input)
c. **ECM-N ¿La mamá la ve bailar?**

Mmm... a big mirror, mom and a girl. (Context-setting input)
Does the mom see her dance? (Target input)

In addition to the three test conditions exemplified by (91), the experiment contained 6 Yes Control conditions, testing children's performance on the non-anaphoric interpretation of clitics and the reflexive interpretation of SE-anaphors, and 3 No Control conditions, testing children's performance on the non-reflexive interpretation of SE-anaphors.

Each condition consisted of 3 trials. The trials differed from each other with respect to the verb. The verbs used in the ECM constructions, were *ver* 'see' in the matrix clause and *saltar a la comba* 'jump rope', *bailar* 'dance' and *hacer burbujas* 'make bubles' in the embedded clause. These conditions used pictures in which individuals performed actions in front of big mirrors. The verbs we used in the remaining constructions were *señalar* 'point at', *secar* 'dry' and *tocar* 'touch'. The experimental conditions were intermingled with 15 filler items. The total number of trials was 51 (12 x 3 trials + 15 fillers), presented to the child in 2 sessions of approximately 15 minutes each. The sessions were spaced apart at least one day. Since the conditions testing ECM constructions involved pictures containing mirrors, each child was inquired about her knowledge of mirrors, that is, her ability to distinguish the individual from his reflection in the mirror.

3.5.3.3. **Subjects**

45 normally developing Spanish speaking children were tested, ranging from 4 to 7.25 years old (mean age 5.52). In addition 19 adults were tested collectively. The
adults were undergraduate students at the Universidad Complutense de Madrid, with only some basic knowledge of linguistics.

3.5.3.4. Results
Performance on both the Yes Control conditions and the No Control conditions was highly adultlike across the board. Children responded between 84% and 99% of the time adultlike on the Yes control conditions.

Children’s performance on the No Control conditions, testing the non-anaphoric interpretation of SE-anaphors in simple sentences with referential subjects (SE-N – *La niña se señala* ‘the girl is pointing at her’), with quantified subjects (QSE-N – *Cada niña se señala* ‘Every girl is pointing at her’) and in ECM constructions (ECMSE-N – *La niña se ve bailar* ‘the girl sees her dance’) was also highly adultlike.57

(93) Percent correct “no” responses on No Control Conditions

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>age range</th>
<th>mean age</th>
<th>SE-N</th>
<th>QSE-N</th>
<th>ECMSE-N</th>
</tr>
</thead>
<tbody>
<tr>
<td>children</td>
<td>45</td>
<td>4 - 7.25</td>
<td>5.25</td>
<td>89 (4)</td>
<td>82 (4)</td>
<td>87 (4)</td>
</tr>
<tr>
<td>adults</td>
<td>19</td>
<td>-</td>
<td>-</td>
<td>100</td>
<td>94 (4)</td>
<td>94 (4)</td>
</tr>
</tbody>
</table>

Children’s performance on the Test Conditions was highly adultlike for SIMPLE-N and QUANT-N, but not for ECM-N.

(94) Percent correct “no” responses on Test Conditions

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>age range</th>
<th>mean age</th>
<th>SIMPLE-N</th>
<th>QUANT-N</th>
<th>ECM-N</th>
</tr>
</thead>
<tbody>
<tr>
<td>children</td>
<td>45</td>
<td>4 - 7.25</td>
<td>5.25</td>
<td>90 (3)</td>
<td>90 (3)</td>
<td>63 (5)</td>
</tr>
<tr>
<td>adults</td>
<td>19</td>
<td>-</td>
<td>-</td>
<td>96 (4)</td>
<td>98 (2)</td>
<td>96 (3)</td>
</tr>
</tbody>
</table>

A sign test shows ECM-N to differ from SIMPLE-N (*p* = 0.000), while a *t*-test shows SE-N not to differ from ECMSE-N (*p* = 0.519).

3.5.4. Discussion

We observe that our prediction with respect to Spanish children’s performance on ECM constructions is borne out. Spanish speaking children exhibit a DPBE in these

57 Note that the relatively high percentage of non-adultlike responses on the QSE-N condition was mainly due to trial QSE-N.2. There are good reasons to believe that a visual error was involved. The picture corresponding to this trial depicted three girls touching the head of a mother. Since the hands of the girls were very close to each other, some children may have thought that the hands touched each other. In that case they may give a “yes” response, since SE in Spanish is not only reflexive, but also reciprocal.
constructions, although they do not show a DPBE in simple constructions with clitics, independently of whether the subject is quantified or referential. This means that Spanish-speaking children, like Dutch-speaking children, are able to treat pronouns as [-R], so that chain formation will be possible.\(^{58}\) Since this DPBE does not involve coreference, but binding (as a result of chain formation), the clitic status of Spanish weak pronouns is irrelevant.\(^{59}\) This conclusion has been confirmed by recent experimental evidence from other languages that have clitic pronouns. A DPBE shows up in ECM constructions in the acquisition of languages like French (Hamann, Kowalski & Philip 1997), Catalan (Escobar & Gavarró 1999), Italian (Berger 1999), Norwegian (Hestivik & Philip 1997) and Greek (Varlokosta 1999). These are all languages that give rise to a CEE in simple sentences (like (91b)).\(^{60} \ 61\)

\(^{58}\) We assume that the embedded subject pro inherits the [-R] specification of the accusative clitic to whose Spec it is moved.

\(^{59}\) Note that the optional [-R] nature of clitic pronouns in child Spanish did not affect children's performance on the SIMPLE-N condition (testing the anaphoric interpretation of clitic pronouns). This is expected for two reasons. First, a [-R] pronoun in object position violates Principle B (like any other pronoun), unless the verb is reflexive-marked. As we argued extensively in chapter 2, in Spanish reflexive-marking requires the use of a functional head se. This means that verbs that are not marked by se, are not reflexive-marked, hence violate Principle B if they are interpreted reflexively, independently of whether the object pronoun is [+R] or [-R], and independently of the lexical-semantic properties of the verb. This explains why Spanish speaking children perform equally adultlike on the trial testing the verb secar 'dry', SIMPLE-N.1, as on SIMPLE-N.2 and SIMPLE-N.3, which tested señalar 'point at' and tocar 'touch'. A Friedman test shows that the three trials did not differ significantly (p = 0.368). If reflexive-marking depended on lexical-semantic properties of the verb, like in Dutch, a DPBE would be expected in SIMPLE-N.1, whose Dutch counterpart afdrogen is "inherently-reflexive".

60 "Real" ECM constructions like in Germanic or Romance do not exist in Greek, since it has no infinitives. Varlokosta (1999) tested two type of constructions that resemble ECM constructions, namely (ia) and (ib).

(i) a. O Goofy ton ide na chorevi.
   Goofy him-cl saw prt dance-3sg-imperf
   'Goofy saw him dance.'
   b. O Goofy ton ide demeno.
   Goofy him-cl saw tied-passive participle-acc
   'Goofy saw him tied up.'

Greek speaking children showed no DPBE in (ia) (construction containing a na-clause), but they did in (ib). Note that, given the absence of person features on the verb, (ib) resembles Romance/Germanic ECM clauses more than (ia).

61 Interestingly, Escobar & Gavarró (1999) found a strong contrast between children's performance on ECM constructions and modal verb constructions (i), which, according to Burzio (1986) involves control.

(i) a. La nena la vol [PRO tocar t, amb la mà].
   the girl her wants touch with-the hand
   'The girl wants to touch her with her hand.'
   b. La nena la, comença [PRO eixugar t,]
   the girl her begins to dry
   'The girl starts drying her.'
However, some may wonder whether the DPBE found in the Romance languages could and should not be dealt with in the same way as the DPBE found in Dutch and English in simple sentences. After all, on the face of it, the phenomenon that we try to account for is the same: children allow codetermination in roughly 50% of the cases in contexts where adults reject this. If this is correct, the DPBE in both Romance and Germanic should involve non-adultlike coreference between a pronoun and a local c-commanding antecedent. This is what has been proposed by Escobar & Gavarró (1999). They argue that the DPBE in Romance ECM constructions is the result of the presence in these constructions of a pro in the embedded subject position. They assume that this pro, although thematically linked to the accusative clitic, is not clitic-like itself, to the effect that children may establish a coreference relation between pro and the matrix subject.

However, treating the DPBE in ECM constructions does not explain why Dutch speaking children show a stronger DPBE in these constructions than in simple constructions. But suppose we ignore this fact, or attribute it to some language specific property of Dutch, how do we know for sure that the DPBE in Spanish ECM constructions is not a case of non-adultlike coreference? Recall that Dutch and particularly English-speaking children perform much more adultlike in constructions with quantified antecedents than in constructions containing referential antecedents. This was due to the fact that quantified elements cannot corefer with pronouns, they can only bind them. If the DPBE in Spanish ECM constructions involves coreference, it is predicted that Spanish speaking children will perform much more adultlike in constructions containing quantified matrix clause subjects, than constructions containing referential matrix clause subjects. In the next section we will present an experiment that tested this prediction.

3.5.5. DPBE in Spanish: experiment II

3.5.5.1. Goal of the experiment
The goal of the experiment was to test whether children accepted the anaphoric interpretation of the clitic more often in ECM constructions containing referential subjects (95a) than in constructions containing quantified subjects (95b).

(95) a. La niña la ve bailar. (ECM-N)
   the girl her sees dance
   b. Cada niña la ve bailar. (QECM-N)
   every girl her sees dance

While Catalan children rejected codetermination of the main clause subject and the embedded subject only 31% of the time in ECM constructions, they rejected the reflexive reading of (ia,b) 100% of the time. This is predicted by Reinhart & Reuland: binding of the object clitic by subject-controlled PRO leads to a Principle B violation.
3.5.5.2. Procedures and design

The experimental design we used was a Picture Verification Task. See section 3.4.4.2 for the procedures. In (96) we illustrate a QECM-N test condition.

(96) QECM-N ¿Cada niña la ve saltar a la comba?

Mmm...three girls and a mom. (Context-setting input)
Does every girl see her jump rope? (Target input)

In addition to the test conditions exemplified by (95), the experiment contained two No Control conditions, one testing the non-anaphoric interpretation of SE-anaphors in the embedded subject position of ECM constructions, and one testing the anaphoric interpretation of clitics in “simple” (non-ECM) constructions (SIMPLE-N).

(97) La niña la señala. (SIMPLE-N)
the girl her points-at

The experiment also contained three Yes Control Conditions, two testing the non-anaphoric interpretation of (95) and one testing the reflexive interpretation of ECM constructions with SE-anaphors in the embedded subject position (La niña se ve bailar - ‘The girl sees herself dance’), and finally, one Screening Condition (see Appendix I).

Like in the other experiments, each condition consisted of 3 trials, which differed from each other with respect to the verb used. The verbs we used in the conditions testing ECM constructions were ver ‘see’ in the matrix clause and hacer burbujas ‘make bubles’, bailar ‘dance’ and saltar a la comba ‘jump rope’. The verbs we used
in the control condition testing simple sentences were the same as in the previous experiment: señalar ‘point at’, secar ‘dry’ and tocar ‘touch’. Except for the conditions testing constructions with quantified subjects, the pictures were identical to the ones used in the previous experiment.

The experimental items were intermingled with 36 filler items. The total number of trials was 60 (8 x 3 trials + 36 fillers), presented to the child in two sessions of 15 minutes each. Like in the previous experiment, before each first session, children were inquired about their knowledge of how mirrors function. For a complete list of items, see Appendix I.

3.3.5.3. Subjects

30 normally developing Spanish speaking children participated in this study. 4 children did not pass the screening condition, and were excluded from the analysis. The 26 remaining children ranged from 4.67 to 7.25 years old (mean age 6). The children were divided into 3 age groups, matching the groups used in the Spanish school system.

(98) • Group 1: n = 8; age range 4.67 - 5.33; mean age 5.04
  • Group 2: n = 9; age range 5.83 - 6.25; mean age 5.96
  • Group 3: n = 9; age range 6.5 - 7.25; mean age 6.88

In addition, 12 adult speakers were tested collectively. The adult speakers were undergraduate students of English Language and Literature, at the Universidad Autónoma de Madrid, who only had some basic knowledge of linguistics.

3.3.5.4. Results

Since an ANOVA showed that group 1 and group 2 did not differ significantly on any of the conditions (p ≥ 0.114), we decided to collapse these two groups into one.

Children of both age groups performed accurately 90% to 100% of the time on the Yes and No conditions testing ECM constructions with SE-anaphors in the embedded subject position (La niña se ve bailar ‘the girl sees herself dance’). The children of group 1+2 did not perform adultlike on the ECM-Y condition, testing the non-reflexive interpretation of (95a) and the QECM-Y condition, testing the non-reflexive interpretation of (95b).

(99) Percent “yes” responses on pronominal Yes Control Conditions.

<table>
<thead>
<tr>
<th>group</th>
<th>n</th>
<th>age range</th>
<th>mean age</th>
<th>ECM-Y</th>
<th>QECM-Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>1+2</td>
<td>17</td>
<td>4.67 – 6.25</td>
<td>5.53</td>
<td>49.9</td>
<td>61.10</td>
</tr>
<tr>
<td>3</td>
<td>9</td>
<td>6.5 – 7.25</td>
<td>6.88</td>
<td>81.6</td>
<td>96.4</td>
</tr>
<tr>
<td>4</td>
<td>12</td>
<td>adults</td>
<td>-</td>
<td>92.4</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Children’s performance on the Test Conditions was non-adultlike, as shown in table (100), except their performance on the SIMPLE-N Control condition, which was highly adultlike.

(100) Percent “no” responses on Test Conditions and SIMPLE-N control condition.

<table>
<thead>
<tr>
<th>Group</th>
<th>age range</th>
<th>mean age</th>
<th>n</th>
<th>SIMPLE-N</th>
<th>ECM-N</th>
<th>QECM-N</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 + 2</td>
<td>4.67 – 6.25</td>
<td>5.53</td>
<td>17</td>
<td>84 ( (7) )</td>
<td>41 ( (9) )</td>
<td>27 ( (10) )</td>
</tr>
<tr>
<td>3</td>
<td>6.50 – 7.25</td>
<td>6.9</td>
<td>9</td>
<td>100</td>
<td>93 ( (5) )</td>
<td>70 ( (9) )</td>
</tr>
<tr>
<td>4</td>
<td>adults</td>
<td>-</td>
<td>12</td>
<td>100</td>
<td>97 ( (3) )</td>
<td>92 ( (4) )</td>
</tr>
</tbody>
</table>

The children from group 1 + 2 performed at chance level on the ECM-N condition, and even worse on the QECM-N conditions. A t-test, however, shows that the difference between ECM-N and QECM-N is not statistically significant \( (p = 0.069) \). A sign-test shows that the difference between ECM-N and SIMPLE-N is significant \( (p = 0.001) \). The same applies to the difference between SIMPLE-N and QECM-N \( (p = 0.000) \). Although the group 3 children perform highly adultlike on the ECM-N condition, their performance on QECM-N is somewhat delayed with respect to ECM-N.

3.5.6. Discussion

As expected, Spanish speaking children show a DPBE both in ECM constructions containing referential matrix clause subjects and in ECM constructions containing quantified matrix clause subjects. In fact, children perform slightly worse on constructions containing quantified subjects (QECM-N) than in constructions with referential subjects (ECM-N).\(^62\) This confirms our claim that the DPBE showing up in Spanish ECM constructions does not involve coreference between the embedded subject and the matrix subject. Instead, the embedded subject is bound by the matrix clause subject, as a result of chain formation.

There is a second argument in favor of treating the DPBE in ECM constructions differently from the DPBE found in simple sentences in the acquisition of Dutch and English. The Spanish speaking children not only often accepted the bound variable reading of embedded subject pronouns in ECM constructions, they also appeared to reject the deictic reading of the embedded subject pronoun about 50% of the time, as shown by the results on the ECM-Y and QECM-Y conditions.\(^63\) Note that this was also found in Experiment I, although the effect was less strong (16% rejections on

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\(^62\) We attribute this to a performance error, having to do with the more complicated kind of pictures we had to use in the QECM-N condition (involving several individuals and their reflections in the mirror). Note that children performed highly adultlike on the QUANT-N condition of the previous experiment (section 3.5.3.).

\(^63\) Similar results have been found for Catalan (Escobar & Gavarró 1999).
the ECM-Y condition). This is very different from what Dutch and English-speaking children do in simple sentences (like The boy is pointing at him). Although they often accept coreference between the subject and the object pronoun, they almost never reject the deictic reading of the pronoun (see, for example the performance of Dutch children on the PRON-Y, SCRAM-Y and PREP-Y conditions, in Appendix I). However, a rejection of the deictic reading of the pronoun is something that has been found in constructions that are perceived as ambiguous by adult speakers, as is shown by children’s performance on the LOC-R condition, testing the non-anaphoric or “deictic” reading of strong pronouns in locative PP contexts (see strong pronoun experiment of section 3.4.4.).

This strongly indicates that Spanish speaking children interpret third person pronouns in ECM constructions as “ambiguous” in the same sense as first and second person pronouns are. This ambiguity accounts for the roughly 50% adultlike performance in the ECM-N condition. In Reinhart & Reuald’s terms we may say that half of the time children will “select” the [+R] value of the clitic pronoun, and half of the time they will select the [-R] value of the clitic pronoun. In the first case, binding will be rejected, since no well formed A-Chain can be formed between the matrix subject and the clitic, and in the second case binding will be accepted, since chain formation is allowed.64 Dutch children differ from the Spanish children in the sense that those Dutch children that select the [+R] value of the pronoun will nevertheless allow coreference between the pronoun and the matrix subject in roughly 50% of the cases, since Dutch pronouns are not clitics. As a result Dutch children will accept codetermination about 75% of the time.65

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64 Note that our claim that 50% acceptance of the bound reading of pronouns may be the result of ambiguity is confirmed by Spanish adult’s performance on the condition testing the bound variable reading of strong pronouns in locative PP contexts (see the LOC-B condition of strong pronoun experiment II, section 3.4.4.).

65 One may wonder whether the DPBE in Spanish ECM constructions could be the result of children’s misanalysis of ECM constructions. Roeppe & Devilliers (1992) have shown that English speaking 4 and 5 years old children, unlike adults, do not allow long distance movement of a wh-word in ECM constructions. They appear to treat the embedded IP as a barrier.

(i) How did the boy see [him copy t]?
According to Roeppe & Devilliers, this indicates that the embedded subject is not exceptionally case-marked in child language, but is assigned default-case IP internally, which in English is accusative. This has the following consequences for binding. If the IP is a barrier for wh-movement, it is also a barrier for A-Chain formation, to the effect that the embedded subject pronoun in (iia) can be freely bound by the matrix subject, as a case of non-local binding, similar to (iib).

(ii) a. John saw [him dance]
   b. John saw [that he danced].

However, this account is problematic for several reasons. First, as Radford (1992) points out, it is very unlikely that 5 year olds have not mastered exceptional case-marking, for both theoretical and empirical reasons. Second, although English speaking children may misanalyze the embedded subject pronoun in ECM constructions as bearing default case, this is impossible in Dutch and Spanish, since in these languages nominative is the default case.

(iii) Who wants an ice cream? English: me/*I!
Spanish:* (a) mì/ yo!
3.6. Lexical Feature Acquisition

3.6.1. The role of overgeneralization in lexical feature acquisition

The experimental results show that children interpret third person pronouns as [-R] elements. This raises the question why children make this misanalysis.

In Philip & Coopmans (1996a) it was suggested that children may not have discovered that third person pronouns in ECM constructions bear structural (accusative) case. Reinhart & Reuland state that [+R] elements are specified for structural case. Philip & Coopmans suggest that children's problems in figuring out the case properties of third person pronouns may be due to the ambiguous status of these elements: hem 'him' can be accusative (structural case) or dative (inherent case). Haar is even more ambiguous: it can be accusative, dative or genitive (also inherent case). As long as children have not figured out that hem and haar in the embedded subject position of ECM constructions are accusative, they may analyze them as [-R] elements. Interestingly, the fact that haar is more underspecified for case than hem explains why Dutch speaking children perform less adultlike on haar than on hem: it takes them more time to figure out the case properties of haar than of hem. The problem with this analysis is that it is unlikely that 5 and 6 year old children still have problems with the case properties of pronouns. A second problem is that it cannot explain why French speaking children have a DPBE in ECM constructions with la 'her' as the embedded subject (Hamann, Kowalski & Philip 1997). French la 'her' is exclusively accusative.

An alternative account was presented in Baauw, Escobar & Philip (1997). They suggested that children may overgeneralize the ambiguous [+R]/[-R] nature of first and second person pronouns to third person pronouns.

(101) a. Jan waste me. me = [+R]  
John washed me
b. Ik waste me  me = [-R]  
I washed me  
'I washed myself'
c. Jan moet je wassen. je = [+R]  
John must you wash
d. Jij moet je wassen. je = [-R]  
you must you wash  
'You should wash yourself.'

Dutch: *mij / ik!

Third, if children treat the embedded IP as a barrier, treating binding of the pronoun by the subject as a case of non-local binding, it is not clear why Dutch and Spanish children differ with respect to their performance in ECM constructions. Finally, the extra strong DPBE of Dutch children on inherently reflexive verbs would require a different explanation than the extra strong DPBE in ECM constructions.
THE ACQUISITION OF PRONOMINAL ANAPHORA

Note that this account nicely explains some cross-linguistic findings. It accounts for the DPBE in Spanish, French, Italian and Norwegian ECM constructions, and the extra strong DPBE in Dutch ECM constructions, since in all these languages first and second person pronouns are [+R]/[-R].66 Interestingly, it also explains why no extra strong DPBE was found in English ECM constructions (Philip & Coopmans 1996a): English-speaking children performed 50% adultlike in both simple sentences and ECM constructions. As shown in (102), English first and second person pronouns are always [+R], hence no overgeneralization will take place. The only source of the DPBE in child English is the breakdown of Rule I.

(102) a. John washed me.
   b. *I washed me
   c. John will wash you.
   d. *You should wash you.

However, this approach is not unproblematic for a language like Spanish. The reason is that in Spanish first and second person pronouns in reflexive constructions are not just [-R] pronouns. As we argued in section 2.5.2.3., Spanish se must be considered a reflexive-marking morpheme. This explained why se is not lexically restricted (103a). As is shown by (103c) and (103d), the same applies to me ‘me’ and te ‘you’ when they are interpreted reflexively.

(103) a. Maria se odiaba.
    Mary SE hated
    ‘Mary hated herself.’
   b. ??Maria haatte zich
      Mary hated SE
   c. Yo me odio.
      I ME hate
      ‘I hate myself.’
   d. Tu te odias.
      You TE hate
      ‘You hate yourself.’

If me and te are not only [-R], but also [+Refl] (reflexivizer), one may wonder why children do not overgeneralize the [+Refl] feature of first and second person pronouns to third person pronouns like la and lo. If this were the case, Spanish speaking children would be expected to accept codetermination, not only in ECM constructions, but also in simple clitic constructions like (104), contrary to fact.

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66 Unfortunately, this alternative proposal cannot account for the difference in performance between hem and haar in Dutch speaking children.
(104) La niña la señala.
    ‘The girl is pointing at her.’

A possible solution is to assume that in reflexive ECM constructions me and te
(and se) are not reflexive markers, but simple [-R] pronouns, like Dutch me and je
(and zich). As is shown by Rivero (1999), clitic SE-anaphors in some Slavonic and
Romance languages may act as [-R] pronouns. In fact, there are some arguments in
favor of this idea. Note first of all that se is located in the main clause.

(105) Juan se vio [hacer burbujas]
    John SE saw make bubbles

It will therefore check the reflexive feature of the verb ver ‘see’. The reflexivisation
operation involves the identification of the internal role with the external role of the
ver ‘see’ (\(\lambda x \; (x \text{ saw } x)\)). However, the internal argument of ver is not the subject of
the embedded clause, but the embedded clause itself. The embedded clause, though,
is not interpreted anaphorically with respect to the main clause subject. What is
interpreted anaphorically instead is the embedded subject. This means that in order
to satisfy Principle A, the embedded subject must be interpreted as the internal
argument of the predicate ver. On the face of it, this is no problem, since Principle A
is interpreted in terms of syntactic predicates. Reinhart & Reuland argue that the
arguments of a syntactic predicate are the elements that are assigned a \(\Theta\) role and/or
are case feature by the predicate. The embedded subject does not receive a \(\Theta\) role
from ver, but it is case-marked by it, hence it is a syntactic co-argument of the main
clause subject. However, reflexivisation is a procedure that affects the \(\Theta\) roles of a
predicate. It is difficult to see how an element that does not have any thematic
relationship with the main clause verb ver can be affected by a procedure that only
affect the \(\Theta\) roles of this verb.67

67 According to Rizzi (1990b), the embedded subject is thematically related both to the main verb and to
the embedded verb. The evidence for this claim comes from the difference in interpretation between (ia)
and (ib).
(i) a. Ho visto [Gianni lavare la macchina].
    ‘I saw John wash the car.’
    
        b. He visto [che Gianni ha lavato la macchina].
    ‘I saw that John washed the car.’

Unlike (ib), (ia) implies direct perception, in the sense that it would be false if the subject of the root
clause did not actually see Gianni involved in a car-washing event. There is no such implication in (ib),
since (ib) could be true if the subject of the root clause didn’t see Gianni at all, but realized that he
washed the car in an indirect way, for instance, as an inference from the fact that the floor of his garage
is wet. Stated differently, we could say that in ECM constructions X saw [Y wash his car] implies X saw Y.
Rizzi accounts for this property of ECM constructions by arguing that the internal argument role
assigned by the perception verb (theme) is simultaneously fulfilled by both the complement IP and its
subject (as a consequence of the perception verbs ability to govern both the IP and the embedded
subject, and the agreement relation that exists between the embedded subject and the embedded INFL

However, if this is correct, it is a mystery why (ii) is grammatical:
(ii) I saw [it rain].
This problem could be solved by assuming that at some level the main verb and the embedded verb form a complex predicate. In fact this is what Reinhart & Reuland assume in order to account for (106).

(106) a. John sees-dance [himself t]. LF
          dat Jan [zichzelf t] ziet-dansen . SS
          that John himself sees dance

Reinhart & Reuland assume that SELF-anaphors reflexive-mark a predicate in the syntax (instead of in the lexicon). Since *himself/zichzelf in (106) is the subject of the embedded verb dance/dansen, this verb is reflexive-marked without being interpreted reflexively, in violation of Principle A. Reinhart & Reuland solve this problem by proposing that the main clause verb and the embedded verb can optionally form a complex predicate (in the overt syntax in Dutch, and at LF in English). In that case zichzelf/himself is the object and reflexive-marker of a reflexive complex verb.

However, this solution is problematic for the Romance languages. The mere fact that complex verb formation may take place is not problematic. In fact, Rizzi (1982), Burzio (1986) and Guasti (1993), among others show that in Romance such restructuring phenomena are quite common, and even in Dutch similar operations may take place, such as verb raising (Evers 1975). In particular, Guasti shows that in Italian and Spanish complex predicate formation may take place in ECM constructions. She argues that in these languages the ECM complement may be either an IP or a VP. When it is a VP, restructuring, in the sense of incorporation of the lower verb into the higher verb, takes place. This explains why the object of the lower verb may surface as a clitic in the main clause in (107a): “clitic climbing” is an indication of restructuring. (107b), on the other hand, is ungrammatical. The presence of a subject in the embedded clause indicates the presence of IP (or AgrSP). As a result no incorporation (restructuring) may take place, hence no clitic climbing (see also Baauw & Delfitto, 1999b).

(107) a. Juan lo [VP oyó cantar t].
          John it heard sing
          'John heard it being sung.'

     b. *Juan lo oyó [IP a María cantar t]
          John it heard acc Mary sing
          'John heard Mary sing it.'

It is standardly assumed that weather predicates assign a “pseudo” thematic role to their subjects (it) if the embedded subject in (ii) also receives a theme role from the main verb, this should lead to a crash. We take this as evidence that the embedded subject in (ii) receives a ∅ role exclusively from the embedded verb.

68 Note that in Reuland (1998) SELF-anaphors are no longer taken to be syntactic reflexive-markers (see section 3.2.2.1.).
Crucially, the ECM constructions that we tested all contained an embedded subject. This means that the ECM clause must be an IP, and that restructuring leading to complex predicate formation cannot have taken place. The same applies to (105), where the (non-overt) embedded subject is interpreted anaphorically with respect to the matrix subject: no complex predicate formation can take place.

Summarizing, the status of *se as a reflexive marker in (105) is problematic since it leads to a violation of Principle A. If, on the other hand, se in (105) is an accusative [-R] pronoun, no violation occurs. Since *se is a clitic, it will be base generated in the main clause. A null element is generated in [Spec IP] of the embedded clause, which is moved to the Spec of the clitic projection, where it inherits the [-R] property from the clitic-head. The same applies to *me and te, which can optionally [-R]. Note that ECM constructions are not the only constructions in which *se is not a reflexive-marking head. The same can be argued for *se in (108), as noted by Torrego (1995):

(108) María *se criticó a sí misma.
     Mary  SE criticized acc. herself

SELF-anaphors in Spanish must be doubled by *se. However, Torrego (1995) shows that SELF is the element that is responsible for the reflexive interpretation when it is present.

     Mary  SE strikes-as intelligent

     b. María se parece inteligente a sí misma.
     Mary  SE strikes-as intelligent acc. herself

Although (109b) is marginal in Spanish (see Torrego 1998 for an account), it is much better than (109a), which is ungrammatical. This would not be expected if the reflexivity of (109b) solely relied on *se. Apparently, *se in (108) is present only to satisfy the requirement of Spanish that pronominal objects must be doubled by a clitic pronoun.

It is clear that if *me 'me' and te you’ in reflexive ECM constructions are [-R] pronouns and not reflexive-markers, Spanish children may overgeneralize the [-R] property of first and second person pronouns to third person pronouns in these constructions, just like their Dutch peers.

However, our account of children’s DPBE in ECM constructions does not only benefit from Reinhart & Reuland’s (1993) insights, but also inherits some of its weak points. One such point that affects our proposal is the nature of the [-R] and [+R] specification. Reinhart & Reuland argued that the [-R] property stands for impossibility of independent reference, i.e. the impossibility of being used as demonstratives, referring to some object in the world. This property is related to the underspecification of morpho-syntactic features like number and structural case. [+R] elements like pronouns, on the other hand, are fully specified for $\phi$ features
including structural case, and hence are referentially independent. However, it is clear that in (110a), the pronoun *him* is not referential. Is it therefore [-R]? We conclude from the impossibility of (110b) that this cannot be true.

(110)  a. Every boy; thinks that Mary loves him.
       b. *John, heard [him, sing].

This problem is even stronger in Spanish, since we have argued that clitic pronouns are always bound variables. The question is thus: how can a bound variable be [+R]? If this question is not clarified, [+R] may end up meaning nothing more than [+ pronominal] (cf. Safir 1997). A second problem that is not discussed by Reinhart & Reuland is the status of first and second person pronouns. We have argued that they must be ambiguous between a [+R] and a [-R] specification. However, on the face of it, first and second person pronouns are specified for person, number and case, hence they should be [+R]. Even if we disregard the number and person specification of these elements, it remains strange that an element can be both specified and non-specified for a feature, without affecting the morphological shape of such an element. If morphological shape is irrelevant, the [+R] and [-R] specification of pronouns must be considered pure stipulations, based on their interpretation in constructions like (101).

In the next section we will discuss a possible alternative to our “overgeneralization approach” to children’s misanalysis of third person pronouns.

3.6.2. Lexical feature acquisition and economy

Reuland (1998) revises some aspects of Reinhart & Reuland (1993), in particular the Chain Condition. This revision solves the problems mentioned in the previous section. In Reuland (1998) it is no longer argued that (111a) and (111b) violate the Chain Condition.

(111)  a. *John, waste hem.  (inherently reflexive verb)
       John washed him
       b. *John, zag hem, dansen.  (ECM-construction)
       John saw him dance

What is violated instead is a economy condition which states that chain formation, which takes place in the syntax, is a cheaper way to encode a referential dependency between a pronoun and its antecedent than a bound-variable configuration that does not involve chain formation in the syntax, but which is established at the interface.

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69 Note that the impossibility of having R-expressions (nouns) in the tail of an A-chain already follows from Principle C, or the pragmatic constraint proposed by Reinhart (1983) that replaces it, as noticed by Safir (1997).
Reuland argues that while *zich* must establish a chain with the subject of the clause, by covertly moving to INFL, *hem* cannot.

Reuland (1998) argues chain formation between *zich* and the main clause subject in an ECM construction like (112) is a by-product of a feature checking operation. He argues that the formal features of *zich*, which are third person and accusative case, move to INFL, where they end up in a checking configuration with the subject in [Spec, IP].

(112) \[\text{Oscar }[[\text{INFL } F_{fich} [F_{hoorde }] ] [\text{VP hoorde } [\text{IP zich } [\text{zingen}]]]]\]

Reuland argues that *zich* checks the formal features of the subject (its D-feature and its \(\phi\) features number and person). However, when *zich* checks the person feature of the subject, this will lead to the elimination of the person feature of *zich*. Since the person feature of *zich* is interpretable, its elimination potentially leads to loss of information (Chomsky 1995). To prevent this from happening, Reuland proposes that the checked and deleted person feature of *zich* is "recovered" by the also interpretable person feature of Oscar which checked *zich*’s person feature. Importantly, the fact that Oscar identifies the deleted third person feature of *zich*, creates a referential dependency between Oscar and *zich*, an A-Chain, mediated by the formal features of *zich* in INFL.

Why can chain formation not take place between a third person pronoun and the main clause subject? Reuland argues that this is due to the fact that third person pronouns like *hem* ‘him’, *haar* ‘her’ and *hen* ‘them’ are not only specified for person, but also for number. Like the person feature, number is interpretable. However, once it is eliminated by checking against the main clause subject, it cannot be recovered by the number feature of the subject. The reason is that not all pluralities and singularities are equivalent. Concretely, the plurality of *hen* in (113) may be different from the plurality of the subject (de *jongens* ‘the boys’). The same applies to the singularity of *hem* in (111b), which may refer to a different masculine singular individual than Oscar.

(113) *De* *jongens* hoorden *hen* zingen
the boys heard them sing

Summarizing, the impossibility to delete the number feature of third person pronouns blocks the formation of an A-Chain between the matrix subject and the embedded subject pronoun in ECM constructions.\(^70\)

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\(^70\) Reuland (1996, 1998) also explains why first and second person pronouns can establish a chain. In first and second person pronouns, number is not a grammatical category. The first person pronouns *I* and *we* do not stand in a grammatical number opposition: *we* does not denote a plurality of *Is* (we may denote *I* + addressee or *I* + a third individual). Plural *you* may refer to a plurality of *yous*, but need not: it can denote *you* + third individual. The reference of first and second person pronouns is determined by the parameters of the speech event in the sense of source/speaker and goal/addressee. *I* stands in
However, although third person pronouns cannot show up in the tail of an A-Chain, they can be interpreted as bound variables. In that case, the bound pronoun and the binder are represented by two different (one membered) chains (= two syntactic objects), but an identical variable. Since the embedded ECM subject and the matrix subject are not co-arguments, Principle B does not apply. Nonetheless, codetermination between *hen and *de jongens in (114a) is ungrammatical.

(114) a. *De jongens, zagen [hen, dansen]. Variable binding
   the boys saw them dance
b. De jongens, zagen [zich, dansen]. Checking (chain formation in syntax)
   the boys saw SE dance
c. \( \lambda x (x \text{ saw } x \text{ dance}) \) (the boys)

Reuland argues that the ungrammaticality of (114a) follows from a global economy condition, which he calls Rule B(ound) V(ariable), reminiscent of Rule I (cf. Grodzinsky & Reinhart 1993).

(115) Rule BV (Reuland 1998)
NP A cannot be A-bound by NP B if replacing A with C, C an NP such that B heads an A-Chain tailed by C, yields an indistinguishable interface representation.

Rule BV states that encoding an interpretative dependency syntactically, by chain formation, is cheaper than postponing it to the interface level. This means that (114a) is ill-formed because (114b), which involves chain formation, yields an indistinguishable interface representation, namely (114c).

But suppose now that a language lacks an element underspecified for number. In that case a bound-variable configuration is no longer uneconomical, and constructions like (114a) should be grammatical. This is exactly what happens in a language like Frisian. Frisian does not have an element like *zich, hence the object position of inherently reflexive verbs and the embedded subject position of ECM constructions must be occupied by a pronoun, as was shown by (86a) and (89).

The question arises now why Dutch-speaking children initially allow pronouns in the object position of inherently reflexive verbs and in the embedded subject position of ECM constructions. We can no longer say that pronouns in child Dutch are (optionally) [-R], as in the Reinhart & Reuland framework. On the face of it, a solution in terms of economy is difficult too, since Dutch has *zich. However, the question is whether children know *zich, or that *zich is underspecified for number.

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opposition to *you, in the sense that *I = source/speaker, while *you = goal/addressee. Their number is inherently specified. Since first and second person pronouns do not bear a number feature, Dutch allows them to establish a chain with a matrix subject in an ECM construction, and with the subject of an inherently reflexive verb.
Recent experimental evidence suggests that they may not know that *zich* is underspecified for number. Coopmans & Avrutin (1999) recently showed that Dutch speaking children have problems with the adult interpretation of *zich*, and to a lesser extent *zichzelf*, in constructions like (116) (see also Sigurjónsdóttir & Coopmans 1996).

(116) a. [De boerin [naast de prinses]] wast zich.  
   the farmer’s-wife next-to the princess washes zich

   b. [De olifant [naast de beer]] houdt een paraplu boven zich.  
   the elephant next-to the bear holds an umbrella above zich

Dutch 4 and 5 to 6.5 year olds accepted coreference of *zich* with *de prinses* ‘the princess’ and *de beer* ‘the bear’, i.e., the non-c-commanding antecedent, in roughly 70% of the cases.\(^{71}\) According to Coopmans & Avrutin (1999), this indicates that children may treat *zich* as a normal pronoun, i.e., in Reinhart & Reuland’s terms, a [+R] pronoun. Since, according to Reuland (1998) the [+R] property reflects specification for number, this means that children are not completely sure that *zich* is underspecified for number, i.e., that it is compatible with both plural and singular antecedents. It is clear that if *zich* qualifies as a pronoun specified for number, chain formation is no longer an option, and a bound variable construal with the pronoun *hem* or *haar* in Dutch becomes possible.\(^{72}\)

Can the Spanish DPBE in ECM constructions be explained in similar terms? The control conditions of the experiments that we presented in this chapter seem to indicate that Spanish speaking children perform highly adultlike on *se* (see the SE-N and ECMSE-N control conditions of the experiments presented in sections 3.5.3.).

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71 Performance on *zichzelf* ‘himself/herself’ was better, but still far from adultlike. The 4 year olds allowed reference to a non-c-commanding antecedent in 57% of the cases, while the 5 to 6.5 year olds allowed it in 28% of the cases when *zichzelf* is the complement of a locative preposition (116b), but in only 10% when it was an argument of the verb (116a).

72 Coopman’s & Avrutin’s suggestion that children treat *zich* as a [+R] pronoun is problematic. It predicts that children should perform roughly 50% adultlike on (i).

(i) Het jongetje wast zich. *(zich = het jongetje)*  
   the boy washes SE

   The reason is that if *zich* is [+R], (i) would lead to a breakdown of Rule I. Children, though, perform highly adultlike on (i). Perhaps children’s non-adultlike performance on *zich* in contexts like (116) does not indicate that children treat *zich* as [+R], but rather that they do not know what kind of element *zich* is. Interestingly, while running our Dutch experiment (section 3.3.4.), we noticed that Dutch speaking children do not often use *zich* or *zichzelf* in their production. In their spontaneous reactions many children had a strong preference for the use of forms like *z’n eigen* (lit: ‘his own’), which is also frequent in many sub-standard varieties of Dutch:

(i) Het jongetje verfde *z’n eigen.*  
   the boy painted his own

   ‘The boy was painting himself.’

As far as the application of Rule BV is concerned, the predictions are the same. If for Dutch speaking children *zich* is somehow “non-existent”, a bound-variable construal with a third person pronoun becomes a grammatical option.
However, the constructions presented in these conditions all contained just one sentence internal antecedent.

(117) a. La niña se señala.
   'The girl is pointing at herself.'
   b. La niña se ve bailar.
   'The girl sees herself dance.'

Coopmans & Avrutin (1999) hypothesize that children obey a discourse strategy in determining the reference of *zieh*, where the determination of the antecedent obeys the accessibility hierarchy of Ariel (1990). Coopmans & Avrutin further argue that the 4 year olds interpret accessibility in terms of linear proximity. This leads them to prefer the non-c-commanding antecedent in (116). The 5 and 6 year olds define accessibility in terms of topichood (= saliency). If, however, there is only one sentence internal antecedent, like in the control conditions presented in our experiments, children will have no option but to choose that only antecedent, giving the impression of adultlike performance.

What we need to test in order to find out whether Romance speaking children may interpret *se/si* as regular pronouns is one-clause constructions with a c-commanding and a non-c-commanding antecedent. 73 As far as we know, this has not been done yet. We are aware of the fact that McKee (1992) tested Italian speaking children on two clause constructions like (118).

(118) Dopo che la mucca saltelló, la rana si grattó.
    after that the cow jumped the frog SE scratched

She found that Italian children (ranging from 3;7 to 5;5 years old) performed highly adultlike on (118), rejecting binding of *se* by the subject of the adjunct clause in 91% of the time. However, if Coopmans & Avrutin (1999) are right, this need not indicate adultlike behavior, since the subject of the matrix clause is a closer

73 Note that in order to test whether Romance children interpret *se* as a regular (clitic) pronoun, sentences like (i) should be tested, instead of the Romance counterparts of (116).

(i) La hermana de Juan se ve bailar.
   the sister of John SE sees dance
   The reason is that in ECM constructions *se* can be shown not to be a reflexive marker, but a [-R] pronominal element (see section 3.6.1.). Since children’s highly adultlike performance on simple clitic constructions like (ii) shows that they are aware of the fact that reflexive-marking in Spanish requires the use of *se*, and hence that *se* is a reflexive marker (see note 59), they are expected to perform highly adultlike on the Spanish counterpart of (116a).

(ii) La niña la seca.
   the girl her dries
   Spanish children’s performance on *se* in the Spanish counterpart of (116b) cannot be tested, since *se* cannot be the complement of a preposition. In some varieties the strong reflexive *si* can be used, but generally a full pronoun or alternatively a strong reflexive *si mismo* is used in this position.
antecedent than the subject of the adjunct clause, hence children may prefer the former one.

Note, however, that even if Romance children never interpreted se as a regular, i.e. [+R], pronoun, this would not prevent them from analyzing third person pronouns as [-R], i.e., as elements underspecified for number, and hence capable of undergoing chain formation. The reasoning goes as follows. If Spanish children know that se in ECM constructions is underspecified for number, i.e., [-R] in Reinhart & Reuland’s (1993) framework, the first question we need to answer is: how can children acquire this knowledge? We suggest that they can do so if they are exposed to both (119a) and (119b).

(119) a. La niña se ve bailar.
   the girl  SE sees dance
b. Las niñas se ven bailar.
   the girls SE see dance

(119a) provides evidence that se is compatible with singular antecedents, and (119b) that it is compatible with plural antecedents. But consider now third person pronouns, like Spanish la ‘her’. How do children know that la is specified for number? They may be exposed to data like (120).

(120) Maria no cree que Pedro la quiera.
    Mary not believes that Peter her loves

(120) indicates that la is compatible with singular antecedents. But how do they know that it is incompatible with plural antecedents? It appears that this can only be acquired on the basis of negative evidence. If the child knows that se is underspecified for number, she may hypothesize that la is too. In that case la can be involved in chain formation, just like se.74

However, the experimental evidence shows that Spanish children do not put la on a par with se. While they accept binding of se in ECM constructions almost 100% of the time (see the ECMSE-Y condition, section 3.5.5.), they do so only 50% of the

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74 Note that this entails that languages that do not have SE-anaphors, such as English, should not give rise to the misanalysis of third person pronouns. It is predicted that in this type of language no (extra strong) DPBE should show up in ECM constructions. As we have already pointed out, this prediction appears to be corroborated by Philip & Coopmans (1996a), who showed that English children do not exhibit a stronger DPBE in (ia) than in simple sentences. Interestingly, though, Jakubowicz (1984) presented experimental evidence showing that English speaking children exhibit a stronger DPBE in (ib) than in simple sentences.

(i) a. The boy saw him dance.
   b. Peter wanted him to hit the ball.

The extra strong DPBE in (ib) can be accounted for by assuming that [+/-number] is the default value of pronouns, reinterpreting Jakubowicz’ (1984) proposal that children initially hypothesize that pronouns are anaphors. However, if this is correct, it is no longer clear why Philip & Coopmans did not find an extra strong DPBE in (ia). We will leave this issue for future research.
time when the embedded ECM subject is la. We suggest that children, while entertaining the possibility that la is underspecified for number, do not exclude the possibility that it is specified for this feature. The reason for this is twofold. First, they have to "account" for the fact that la does not appear in combination with plural antecedents, while se does. Second, 4 and 5 year old children are most likely aware of the fact that las ‘themem’ exists. Since las does not appear in combination with singular antecedents, this may lead children to consider the possibility that la and las are different in the sense that the former is plural, while the latter is singular. This means that for a long time children have to deal with conflicting evidence concerning the nature of la (and other third person pronouns), before they eventually come to the right analysis, namely that la is [+singular]. From that time children will start rejecting codetermination between the ECM subject pronoun and the matrix subject. The experimental evidence indicates that this is around the age of 6.5 years (see section 3.5.5.).

3.7. Global economy and computational effort

In the previous section we discussed Rule BV, an economy constraint at the syntax/semantics interface that regulates the use of bound pronouns and SE-anaphors in contexts where Principle B does not rule out binding with a local subject (the embedded subject position of ECM constructions and the object position of inherently reflexive verbs). This constraint bears some similarities to Rule I, the constraint we discussed in section 3.2.2.2., which regulates intra-sentential coreference. Rule I too is a global economy condition that compares competing construals of the same construction, namely variable binding and coreference.

Reuland (1998) integrates Rule I into a economy ranking system, which distinguishes three cases, ranging from expensive to cheap: (i) coreference, (ii) variable binding, and (iii) feature checking (chain formation). Their relative cost is computed in terms of the number of cross-modular operations.

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75 It may be objected that this reasoning implies that children are supposed to learn from indirect negative evidence, contrary to what is generally claimed in the literature. However, although the influence of negative evidence in the acquisition of syntax may be limited, it must play a role in the acquisition of properties of lexical elements. For instance, it is well known that Dutch and English children overregularize verbal morphology, substituting irregular past tenses for regular ones: they may say 'I falled' instead of 'I fell'. Somehow, however, they retreat from this, probably partly because of the absence of positive evidence for the existence of a regular form, and partly because of the presence in the input of the irregular form, which will block the regular form (see Pinker 1999). This process is a slow one, though; the child needs to be exposed frequently to the irregular form, in order for the irregular form to be stored in the mental lexicon.
Referential dependencies (Reuland 1998)

<table>
<thead>
<tr>
<th></th>
<th>Coreference</th>
<th>Variable binding</th>
<th>Checking</th>
</tr>
</thead>
<tbody>
<tr>
<td>knowledge base (objects)</td>
<td>a</td>
<td>a</td>
<td>a</td>
</tr>
<tr>
<td>semantic objects (variables)</td>
<td>x₁, x₂</td>
<td>x₁ ← x₁</td>
<td>x</td>
</tr>
<tr>
<td>syntactic objects (chains)</td>
<td>C₁, C₂</td>
<td>C₁ ← C₂</td>
<td></td>
</tr>
<tr>
<td>basic expressions</td>
<td>α ... β</td>
<td>α ... β</td>
<td>α ... β</td>
</tr>
</tbody>
</table>

It is easy to see that coreference involves four cross-modular operations, variable binding three, and checking (A-Chain formation) only two.

Note that the similarity between Rule I and Rule BV has implications for acquisition. In section 3.2.2.2, we argued that young children have problems with the application of Rule I. Rule I requires the ability to compare two competing construals of the same construction (variable binding vs. coreference) with respect to their difference in meaning, something which exceeds the child’s processing capacities, leading to a breakdown. Since Rule BV too requires the ability to compare two competing construals of the same construction (variable binding vs. checking), it is not unreasonable to expect similar problems with the execution of this rule by young children. This would lead to a reinterpretation of our experimental results. The 50% adultlike performance in Spanish ECM constructions could be accounted for in terms of a “breakdown” of Rule BV.

However, we believe that a “Rule BV breakdown” is problematic. Although it can account for the experimental results in the Romance languages, it cannot account for the Dutch experimental results. Dutch speaking children performed only 20% adultlike in ECM constructions. This percentage cannot be achieved if the DPBE in ECM constructions is the result of a breakdown of Rule BV. This follows from the ranking of Rule I and Rule BV. Before the child is able to decide that feature checking (chain formation) is cheaper than a bound variable construal, she must have decided that variable binding is cheaper than coreference. This means that before Rule BV is executed, Rule I must be executed properly. We know that children fail to do so. Rule I breaks down, and children recur to a guessing strategy to determine the reference of the pronoun, allowing coreference in roughly 50% of the cases.

Note that according to this view of the DPBE, those children that correctly reject such a reading are not allowed to proceed to execute Rule BV. This is because their “no” response is the result of a guessing strategy, induced by the breakdown of a computation, not of the proper execution of Rule I. It follows that if the DPBE in ECM constructions is to be explained completely in terms of “breakdowns” of economy constraints, both Spanish children and Dutch children are expected to perform roughly 50% adultlike in these construction. The Spanish children will do so as a result of their inability to execute properly Rule BV, while the Dutch
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children will not even come to execute Rule BV: they already fail with the execution of Rule I. As shown by the experimental results, this is cannot be correct. We conclude therefore that Rule BV does not break down in young children, unlike Rule I. The DPBE in ECM constructions must be the result of either children’s ability to treat third person pronouns as elements that are underspecified for number, i.e. [-R], as most likely happens in child Spanish, or children’s incomplete acquisition of SE-anaphors as pronouns underspecified for number, which we argued to happen in child Dutch. In the former case, a chain will be established between the matrix clause subject and the embedded subject pronoun, in the latter case a bound variable construal will be licensed by Rule BV. As we showed in sections 3.5.4. and 3.5.6., this approach does account for difference in performance between Spanish children and Dutch children in ECM constructions.

The question is now: why does Rule BV not break down, while Rule I does? We propose that this is due to one important difference between the two economy constraints. Rule I implies the comparison of two construals with respect to their interpretation, while in the case of Rule BV, both construals always have the same interpretation. We suggest that this difference affects the processing load involved in the execution of the two rules. The execution of Rule BV can be seen as a fully automatic procedure without “serious” competition: the winning construal is always the checking construal, which is the more economic one. In the case of Rule I, on the other hand, there is no fixed outcome. When there is a difference in interpretation, coreference, the more expensive option, “overrules” variable binding, the more economic option. We therefore propose that only when a economy constraint requires two construals to be compared with respect to their meanings, i.e., when the computation involves a “fair” competition between two different construals, children will show difficulties with the processing of this constraint.

3.8. Conclusion

In this chapter we have argued that there are two kinds of DPBEs. One type involves coreference and only affects full pronouns, the other type involves binding and affects both full pronouns and clitic pronouns.

The first type of DPBE is due to problems children have with the execution of a syntax/pragmatics interface constraint regulating intrasentential coreference, called Rule I (Grodzinsky & Reinhart 1993). Since we have argued that clitic pronouns are interpreted as bound variables, intrasentential coreference is not an option, hence Rule I is not invoked. We have argued that the interpretation of clitics as bound variables follows from the fact that they involve movement to the functional domain. Dutch weak pronouns are interpreted VP internal by young children, giving rise to a DPBE. Since Romance strong pronouns remain VP internal too, a DPBE is predicted to show up. This prediction is corroborated for Italian strong DO pronouns, but not for Spanish strong DO pronouns. We argued that this was due to the fact that strong DO pronouns in Spanish are doubled by a clitic. Spanish
speaking children do allow codetermination between a pronominal PP complement and a local subject more often than adults do. However, this does not indicate a "real" DPBE, since it also shows up when the subject was quantified.

The second type of DPBE reflects children's incomplete lexical feature acquisition. It shows up in contexts where binding is not ruled out by Principle B, but by a the generalized A-Chain Condition (Reinhart & Reuland 1993). These contexts are provided by inherently reflexive verbs (in Dutch) and ECM constructions (Dutch, Romance). We argued, following Philip & Coopmans (1996a), that the DPBE in these contexts is the result of children's incomplete lexical feature acquisition of third person pronouns. Concretely, we argued that the DPBE in Spanish ECM constructions is due to children's misanalysis of third person pronouns as SE-anaphors. This leads them to allow third person pronouns to appear in the tail of an A-Chain. We argued that the property that allows SE-anaphors (and third person pronouns in child language) to appear in the tail of an A-Chain is the (optional) underspecification for number. As soon as children know that third person pronouns are specified for this feature (unlike SE-anaphors), this DPBE will disappear. The experimental evidence shows that Spanish children acquire this property of third person pronouns around the age of 6.5.
Conclusions

In this study we have argued on the basis of cross-linguistic experimental data that children's interpretation of definite articles and pronouns is partly determined by the incomplete acquisition of the feature content of the D position. This leads 4 and 5 year old Dutch children to interpret definite articles as expletive determiners, similar to the definite articles in Romance constructions of inalienable possession, and leads Dutch and Spanish speaking children to interpret pronouns as SE anaphors, like Dutch zich. This manifests itself in Dutch children's non-adultlike acceptance of constructions of inalienable possession and the showing up of a Delay of Principle B Effect in ECM constructions in child Spanish.

We have also shown that children are sensitive to rich inflectional morphology and that this gives children acquiring a richly inflected language a head start for certain aspects of their linguistic development. This explains Spanish children's early sensitivity to the lexical restrictions on constructions of inalienable possession in Spanish, and the absence of a similar sensitivity in Dutch children. We have argued that this cross-linguistic difference is tied to the presence in Spanish of a morphological reflexive-marker, se, and the absence of this element in Dutch. We have also argued that the presence in Spanish of syntactic object clitics (overt object agreement morphology) and the absence of these elements in Dutch accounts for the absence of a Delay of Principle B Effect in Spanish simple sentences (i.e. non-ECM constructions) and its presence in child Dutch.

The experimental results provide evidence for the claim that syntactic acquisition continues after the age of three. Although functional projections are present in the child’s syntactic representations long before the age of three, we have shown that they may remain underspecified for several \( \phi \) features until the child reaches the age of six. This means that the non-adultlike interpretation of pronouns and definite articles after the age of three is not exclusively due to problems at the syntax/pragmatics interface, but that these problems interact with children's incomplete lexical feature acquisition.

Finally, we have provided additional evidence in favor of a modular approach to binding, as proposed by Reinhart & Reuland (1993). We showed that the formation of complex predicates in S-CIPs is constrained by Reinhart & Reuland's Principle B. We also showed that Reinhart & Reuland’s reflexivity framework is able to account for the DPBE in Romance ECM constructions and the extra strong DPBE in Dutch ECM constructions.
References


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES

REFERENCES


sobre la Adquisición del Castellano, Catalán, Euskera y Gallego: Actas del I Encuentro Internacional sobre Adquisición de las Lenguas del Estado, Servicio de Publicaciones e Intercambio Científico, Santiago de Compostela.


REFERENCES


REFERENCES

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Appendix I

1. Experiment Strong Pronouns I & Constructions of Inalienable Possession in Spanish

1.1. Goals of the experiment

The experiment consisted of two studies. One study tested Spanish children's performance on Strong Pronouns (see section 3.4.2.), the other study tested Spanish children's performance on Constructions of Inalienable Possession (CIPs) (see section 2.6.2.). By combining the two studies into one experiment, the experimental items of one study served as the filler items of the other.

1.2. Procedure

The experiment was presented to the children individually by two experimenters in a quiet area of the school that the child was attending, a primary school in Rivas Vaciamadrid, a town near Madrid, Spain. The materials were presented in two sessions of roughly 30 minutes each, spaced at least one day apart. The first session was preceded by instructions and a couple of warm-up items. At each session the set of pictures were arranged face up in a pile under the table. The experimenter playing the role of "helper" sat with the child on one side of the table. The experimenter manipulating Kermit, the "guesser" sat on the other side, facing the helper and the child. At each play of the game, the helper selected the first picture of a trial from the top of the pile and laid it on the table so that the helper and the child could see it. Both the helper and the "guesser" had a printed version of the scenarios with the context setting and target input in front of them. The helper told the first part of the scenario to the child, pointing out the individuals as they were mentioned. Then the second picture was selected, and the helper told the second part of the scenario to the child. At this point the "guesser" uttered the context setting input (listing of the individuals that participated in the action) followed by the target input, i.e. the "guess". Note that the first picture was not removed from the table, but just displaced, so that after the second picture was presented, the child could still see the first picture. The helper or the guesser recorded the child's responses. In addition to the "Yes" and "No" responses, many other utterances of the child were recorded. Sometimes these utterances were elicited by asking a child that had given a "No" response why she had responded negatively. Some spontaneous utterances were also recorded.

1.3. Materials

The materials consisted of A4 color pictures that were presented with short texts about individuals that perform an action on themselves, or on some other individual represented in the picture. Each text was paired with two pictures. After the second picture was shown, the guesser (Kermit) made his guess, which represents the target input. All scenarios belonging to the Strong Pronoun study contain masculine agents and (potential) patients, since only the masculine pronouns el (strong) and le (accusative clitic) (recall that Madrid Spanish is a "leista" dialect) were tested. The scenarios and pictures belonging to the CIP study contained both masculine and feminine agents and (potential) patients. Below we give a complete list of the target input used in this experiment, indicating whether it was a "Yes" trial or a "No" trial. The trials belonging to the CIP study are represented in italics.

In order to neutralize order effects, the experiment was administered to the children in two distinct orders. Roughly half of the children did the experiment in the "normal" order, beginning with the first item of each session. The other half did the experiment in the reverse order, beginning with the last item of each session and ending with the first.

Session 1
1. SE-Y.1  (yes)  Carlos se dibujó
2. RefB-Y.1  (yes)  Los dos niños volvieron la cabeza.
3. SP-N.1  (no) Juanito le dibujó a él
4. CL-Y.1   (yes) Carlos le dibujó.
5. PSI-N.1  (no) Juanito miró hacia sí mismo.
6. Ref-Y.1  (yes) Las dos niñas tocaron la nariz.
7. PREP-Y.1 (yes) El niño miró hacia él.
8. DistB-Y.1 (yes) Las dos niñas volvieron la cabeza.
10. SP-Y.1  (yes) El principito le dibujó a él.
11. PSI-Y.1  (yes) Juanito miró hacia sí mismo.
12. CL-N.1  (no) El niño le dibujó.
14. RefB-Y.2 (yes) Las dos niñas doblaron el brazo.
15. Dist-N.2 (no) Los dos niños lavaron la cabeza.
16. PREP-N.1 (no) Pedro miró hacia él.
17. SE-N.1  (no) El enanito se dibujó.
18. PREP-Y.2 (yes) Juan apuntó hacia él
20. CL-N.2  (no) Pedro le pintó.
22. SP-Y.2  (yes) Carlos le pintó a él.

Session II
23. SE-N.2  (no) Juanito se pintó
24. PSI-Y.2  (yes) Pedro apuntó hacia sí mismo.
25. DistB-Y.2 (yes) Las dos niñas doblaron el brazo.
27. PSI-N.3  (no) El enanito disparó contra sí mismo.
29. SP-N.2  (no) Pedro le pintó a él.
30. Dist-N.3 (no) Los dos niños secaron la cara.
31. CL-Y.3   (yes) El payaso se acarició.
32. SE-N.3  (no) Carlos se acarició.
33. DistB-Y.3 (yes) Los dos niños levantaron el pie.
34. PREP-Y.3 (yes) Alberto disparó contra él.
35. RefB-Y.3 (yes) Las dos niñas levantaron el pie.
36. CL-N.3  (no) El niño le acarició.
37. PREP-N.3 (no) Juanito disparó contra él.
38. SE-Y.3   (yes) Juanito se acarició.
39. Ref-Y.3  (yes) Las dos niñas secaron la cara.
40. SP-Y.3  (yes) El niño le acarició a él.
41. PSI-Y.3  (yes) El principito disparó contra sí mismo.
42. SP-N.3  (no) El vaquero le acarició a él.

<table>
<thead>
<tr>
<th>Strong Pronouns</th>
<th>CLPs</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>yes</td>
<td>15</td>
<td>9</td>
</tr>
<tr>
<td>no</td>
<td>15</td>
<td>3</td>
</tr>
</tbody>
</table>

1.4. Coding of responses

Sometimes (rarely) children did not give a clear yes or no response. Two cases will be considered: (i) children that spontaneously changed a response, and (ii) children that could not make up their mind. In the first case the last response was coded as the true response. When a child hesitated, the guesser
repeated the target input (the guess), adding “So did I guess right?” If the child was still unable to respond, the item was retested later in the same experimental session, and this responses was coded as the true response. In four occasions, though, it was impossible to elicit a “yes” or “no” response from the child. This happened twice with the “yes” condition Ref-Y of the CIP study (child 9 (age: 5.25) and child 23 (age: 6.33)), and twice with the “yes” condition PSI-Y of the Strong Pronoun study (child 4 (age: 4.75) and child 8 (age: 5.17)). These children indicated that for them the test sentence of Ref-Y.2 was ambiguous between a “referential” or “deictic” reading and a “bound-variable” reading. Since the two conditions tested the possibility of a “referential” reading of the inalienable noun (Ref-Y condition) and the strong pronoun (PSI-Y condition), we interpreted their indeterminacy as a “yes” response, and coded it as such. The adult controls gave a “indeterminate” response on two occasions. One adult answered the Dist-N.2 trial with “yes-no” twice, indicating that this adult accepted both the “referential” reading and the “bound variable” reading of the inalienable noun. Since this condition tested the availability of a “bound variable” reading, the “yes-no” response was coded as a “yes” response.

1.5. 1. Mean scores experiment Strong Pronouns I

• Conditions Experiment I (examples given in English)

<table>
<thead>
<tr>
<th>Target input</th>
<th>Picture</th>
<th>Correct response</th>
<th>Status</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The boy painted him_{reflexive}</td>
<td>reflexive</td>
<td>no</td>
<td>control</td>
<td>CL-N</td>
</tr>
<tr>
<td>2. The boy painted him_{non-reflexive}</td>
<td>non-reflexive</td>
<td>yes</td>
<td>control</td>
<td>CL-Y</td>
</tr>
<tr>
<td>3. The boy painted him_{PSI-Y}</td>
<td>reflexive</td>
<td>no</td>
<td>test</td>
<td>SP-Y</td>
</tr>
<tr>
<td>4. The boy pointed at him_{non-reflexive}</td>
<td>non-reflexive</td>
<td>yes</td>
<td>control</td>
<td>SP-Y</td>
</tr>
<tr>
<td>5. The boy pointed at him_{reflexive}</td>
<td>reflexive</td>
<td>no</td>
<td>test</td>
<td>PREP-N</td>
</tr>
<tr>
<td>6. The boy pointed at him_{non-reflexive}</td>
<td>non-reflexive</td>
<td>yes</td>
<td>control</td>
<td>PREP-Y</td>
</tr>
<tr>
<td>7. The boy painted himself.</td>
<td>reflexive</td>
<td>yes</td>
<td>control</td>
<td>SE-Y</td>
</tr>
<tr>
<td>8. The boy painted himself.</td>
<td>non-reflexive</td>
<td>no</td>
<td>control</td>
<td>SE-N</td>
</tr>
<tr>
<td>9. The boy pointed at himself</td>
<td>reflexive</td>
<td>yes</td>
<td>control</td>
<td>PSI-Y</td>
</tr>
<tr>
<td>10. The boy pointed at himself</td>
<td>non-reflexive</td>
<td>no</td>
<td>control</td>
<td>PSI-N</td>
</tr>
</tbody>
</table>

• Percent correct “yes” responses on Yes Control Conditions

<table>
<thead>
<tr>
<th>group</th>
<th>n</th>
<th>age range</th>
<th>mean age</th>
<th>SP-Y</th>
<th>CL-Y</th>
<th>PREP-Y</th>
<th>SE-Y</th>
<th>PSI-Y</th>
</tr>
</thead>
<tbody>
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<td>1</td>
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<td>4.33-5.25</td>
<td>4.8</td>
<td>89(6)</td>
<td>93(7)</td>
<td>81(6)</td>
<td>100</td>
<td>89(8)</td>
</tr>
<tr>
<td>2</td>
<td>12</td>
<td>5.33-6.25</td>
<td>5.9</td>
<td>97(3)</td>
<td>100</td>
<td>75(9)</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>3</td>
<td>11</td>
<td>6.33-7.17</td>
<td>6.75</td>
<td>94(6)</td>
<td>91(9)</td>
<td>70(9)</td>
<td>100</td>
<td>100</td>
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<tr>
<td>4</td>
<td>13</td>
<td>adult</td>
<td>-</td>
<td>97(3)</td>
<td>95(5)</td>
<td>72(9)</td>
<td>92(4)</td>
<td>100</td>
</tr>
</tbody>
</table>

• Percent correct “no” responses on No Control Conditions

<table>
<thead>
<tr>
<th>group</th>
<th>n</th>
<th>age range</th>
<th>mean age</th>
<th>SE-N</th>
<th>PSI-N</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>9</td>
<td>4.33-5.25</td>
<td>4.8</td>
<td>93(5)</td>
<td>56(12)</td>
</tr>
<tr>
<td>2</td>
<td>12</td>
<td>5.33-6.25</td>
<td>5.9</td>
<td>100</td>
<td>89(5)</td>
</tr>
<tr>
<td>3</td>
<td>11</td>
<td>6.33-7.17</td>
<td>6.75</td>
<td>100</td>
<td>94(4)</td>
</tr>
<tr>
<td>4</td>
<td>13</td>
<td>adult</td>
<td>-</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

1 For some adult speakers the reflexive interpretation is (marginally) grammatical.
1.5.2. Mean scores Constructions of Inalienable Possession

- Percent correct "no" responses on Test Conditions

<table>
<thead>
<tr>
<th>group</th>
<th>n</th>
<th>age range</th>
<th>mean age</th>
<th>SP-N</th>
<th>CL-N</th>
<th>PREP-N</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>9</td>
<td>4.33-5.25</td>
<td>4.8</td>
<td>81 (11)</td>
<td>78 (10)</td>
<td>52 (10)</td>
</tr>
<tr>
<td>2</td>
<td>12</td>
<td>5.33-6.25</td>
<td>5.9</td>
<td>83 (6)</td>
<td>100</td>
<td>47 (13)</td>
</tr>
<tr>
<td>3</td>
<td>11</td>
<td>6.33-7.17</td>
<td>6.75</td>
<td>85 (9)</td>
<td>91 (6)</td>
<td>30 (12)</td>
</tr>
<tr>
<td>4</td>
<td>13</td>
<td>adult</td>
<td>-</td>
<td>95 (3)</td>
<td>92 (4)</td>
<td>51 (13)</td>
</tr>
</tbody>
</table>

- Percent correct "yes" responses on Yes Control Conditions

<table>
<thead>
<tr>
<th>Picture</th>
<th>Adult Response</th>
<th>Type</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The boys turned the head</td>
<td>distributive</td>
<td>yes</td>
<td>test</td>
</tr>
<tr>
<td>2. The boys turned the head</td>
<td>referential</td>
<td>yes</td>
<td>control</td>
</tr>
<tr>
<td>3. The boys touched the nose</td>
<td>distributive</td>
<td>no</td>
<td>test</td>
</tr>
<tr>
<td>4. The boys touched the nose</td>
<td>referential</td>
<td>yes</td>
<td>control</td>
</tr>
</tbody>
</table>

- Percent correct "no" responses on Test Conditions

<table>
<thead>
<tr>
<th>group</th>
<th>n</th>
<th>age range</th>
<th>mean age</th>
<th>Dist-N</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>9</td>
<td>4.33-5.25</td>
<td>4.82</td>
<td>59 (14)</td>
</tr>
<tr>
<td>2</td>
<td>12</td>
<td>5.33-6.25</td>
<td>5.93</td>
<td>67 (12)</td>
</tr>
<tr>
<td>3</td>
<td>11</td>
<td>6.33-7.17</td>
<td>6.75</td>
<td>48 (10)</td>
</tr>
<tr>
<td>4</td>
<td>13</td>
<td>adult</td>
<td>-</td>
<td>56 (12)</td>
</tr>
</tbody>
</table>

- Percent correct "yes" responses on Test Conditions

<table>
<thead>
<tr>
<th>group</th>
<th>n</th>
<th>age range</th>
<th>mean age</th>
<th>DistB-Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>9</td>
<td>4.33-5.25</td>
<td>4.82</td>
<td>67 (8)</td>
</tr>
<tr>
<td>2</td>
<td>12</td>
<td>5.33-6.25</td>
<td>5.93</td>
<td>61 (10)</td>
</tr>
<tr>
<td>3</td>
<td>11</td>
<td>6.33-7.17</td>
<td>6.75</td>
<td>79 (8)</td>
</tr>
<tr>
<td>4</td>
<td>13</td>
<td>adult</td>
<td>-</td>
<td>87 (8)</td>
</tr>
</tbody>
</table>
2. Experiment Clitic Pronouns & Constructions of Inalienable Possession in Dutch

2.1. Goal of the experiment

The experiment consisted of two studies. One study tested Dutch children’s performance on weak pronouns (see section 3.3.4.), the other study tested Dutch children’s performance on Constructions of Inalienable Possession (CIPs) (see section 2.6.1.). By combining the two studies into one experiment, the experimental items of one study served as the filler items of the other.

2.2. Procedure

The experiment was presented to the child individually by two experimenters in a quiet area of the school that the child was attending, a primary school at Montfoort, a town in the province of Utrecht, Netherlands. The procedure we followed was identical to that of the Spanish experiment described in the previous section of the appendix.

2.3. Materials

We used the same materials as in the corresponding Spanish experiment, with the following exceptions:
(i) The verb + preposition of first trial of the PREP-N and PREP-Y conditions was tekenen op ‘draw on’ instead of mirar hacia ‘look at’ as in the corresponding PREP-N and PREP-Y conditions of the Spanish experiment. (ii) The PSI-N an PSI-Y conditions of the Spanish experiment were absent in the present experiment. We used the pictures and scenarios of the Spanish SP-N and SP-Y conditions for the Dutch PRON-N and PRON-Y conditions respectively, and the materials of the CL-N and CL-Y conditions were used for the SCRAM-N and SCRAM-Y conditions. The other correspondences between the two experiments were as follows (Dutch – Spanish): ZELF-Y = SE-Y; DistB-N = DistB-Y; ZELF-N = SE-N; RefB-Y = RefB-Y; Ref-Y = Ref-Y; Dist-N = Dist-N.

Like in the Spanish version of this experiment, in order to neutralize order effects, roughly half of the children did the experiment in the “normal” order, beginning with the first item of each session. The other half did the experiment in the reverse order, beginning with the last item of each session and ending with the first.

Session I
1. ZELF-Y.1 (yes) Karel heeft zichzelf getekend.
2. RefB-Y.1 (yes) De twee jongetjes draaiden het hoofd om
3. PRON-N.1 (no) Jantje heeft ‘m getekend.
4. SCRAM-Y.1 (yes) Bas heeft ‘m denk ik getekend.
5. Ref-Y.1 (yes) De twee meisjes raakten de neus aan.
6. PREP-Y.1 (yes) Het kindje heeft op ‘m geschreven.
8. Dist-N.1 (no) De twee jongetjes raakten het oor aan.
9. PRON-Y.1 (yes) Het prinsje heeft ‘m getekend.
10. SCRAM-N.1 (no) Het jongetje heeft ‘m denk ik getekend.
11. ZELF-Y.2 (yes) Bert heeft zichzelf geverfd.
12. RefB-Y.2 (yes) De twee meisjes bogen de arm.
14. PREP-N.1 (no) Het prinsje heeft op ‘m geschreven.
15. ZELF-N.1 (no) Het kaboutertje heeft zichzelf getekend.
16. SCRAM-N.2 (no) Janie heeft ‘m denk ik geverfd.
17. Ref-Y.2 (yes) De twee meisjes wisten de neus.
18. PRON-Y.2 (yes) Karel heeft ‘m geverfd.

Session II
20. PREP-Y.2 (yes) Jan heeft naar ‘m gewezen .
29. *DistB-N.3* (no) De twee jongetjes droegen de voet op.
30. *PREP-Y.3* (yes) Bert heeft op 'm geschoten.
31. *PREP-N.3* (no) Jantje heeft op 'm geschoten.
32. *PREP-N.3* (no) Jantje heeft op 'm geschoten.
33. *PREP-Y.3* (yes) Bert heeft op 'm geschoten.
34. *PREP-Y.3* (yes) De twee jongens droegen het gezicht af.
35. *PRON-Y.3* (yes) Het jongetje heeft 'm geaaid.
36. *PRON-N.3* (no) De cowboy heeft 'm geaaid.

<table>
<thead>
<tr>
<th>Clitics</th>
<th>CIPs</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>yes</td>
<td>12</td>
<td>6</td>
</tr>
<tr>
<td>no</td>
<td>12</td>
<td>6</td>
</tr>
</tbody>
</table>

2.4. Coding of responses

As far as hesitations are concerned, see the Spanish experiment. There were no ambiguous or "indeterminate" responses in this experiment (see Spanish experiment). There was, though, one missing value: the response of child 5 (age: 4.67) on PRON-Y.2 has been omitted. We decided to ignore the missing trial and calculate the mean score on the basis of the two remaining trials.

Finally, if children used the strong reflexive *z'na eigen* 'his own' instead of *zichzelf* 'him/herself' in their spontaneous reactions, we decided to use *z'na eigen* (which is quite common in sub-standard varieties of Dutch), in the ZELF-N and ZELF-Y control conditions. We also did so if we had the impression that the child did not understand *zichzelf*.

2.5. 1. Mean scores Clitic Pronouns experiment

- Conditions Clitic Pronoun experiment (Examples given in English)

<table>
<thead>
<tr>
<th>Target input</th>
<th>Picture</th>
<th>Correct response</th>
<th>Status</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The boy painted him Adv.</td>
<td>reflexive</td>
<td>no test</td>
<td>SCRAM-N</td>
<td></td>
</tr>
<tr>
<td>2. The boy painted him Adv.</td>
<td>non-reflexive</td>
<td>yes control</td>
<td>SCRAM-Y</td>
<td></td>
</tr>
<tr>
<td>3. The boy painted him.</td>
<td>reflexive</td>
<td>no test</td>
<td>PRON-N</td>
<td></td>
</tr>
<tr>
<td>4. The boy painted him.</td>
<td>non-reflexive</td>
<td>yes control</td>
<td>PRON-Y</td>
<td></td>
</tr>
<tr>
<td>5. The boy pointed at him.</td>
<td>reflexive</td>
<td>no test</td>
<td>PREP-N</td>
<td></td>
</tr>
<tr>
<td>6. The boy pointed at him.</td>
<td>non-reflexive</td>
<td>yes control</td>
<td>PREP-Y</td>
<td></td>
</tr>
<tr>
<td>7. The boy painted himself.</td>
<td>reflexive</td>
<td>yes control</td>
<td>ZELF-Y</td>
<td></td>
</tr>
<tr>
<td>8. The boy painted himself.</td>
<td>non-reflexive</td>
<td>no control</td>
<td>ZELF-N</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX I

• Percent correct “yes” responses on Yes Control Conditions

<table>
<thead>
<tr>
<th>group</th>
<th>n</th>
<th>age range</th>
<th>mean age</th>
<th>PRON-Y</th>
<th>SCRAM-Y</th>
<th>PREP-Y</th>
<th>ZELF-Y</th>
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<tr>
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<td>89 (7)</td>
<td>87 (7)</td>
<td>100</td>
</tr>
<tr>
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<td>13</td>
<td>5.67-6.42</td>
<td>5.96</td>
<td>97 (3)</td>
<td>97 (3)</td>
<td>92 (4)</td>
<td>100</td>
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<tr>
<td>3</td>
<td>19</td>
<td>6.50-8.00</td>
<td>7.04</td>
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<td>100</td>
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<td>4</td>
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<td>adult</td>
<td>-</td>
<td>97 (2)</td>
<td>92 (5)</td>
<td>97 (2)</td>
<td>95 (3)</td>
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</table>

• Percent correct “no” responses on No Control Conditions

<table>
<thead>
<tr>
<th>group</th>
<th>n</th>
<th>age range</th>
<th>mean age</th>
<th>ZELF-N</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>15</td>
<td>4.17-5.25</td>
<td>4.84</td>
<td>100</td>
</tr>
<tr>
<td>2</td>
<td>13</td>
<td>5.67-6.42</td>
<td>5.96</td>
<td>100</td>
</tr>
<tr>
<td>3</td>
<td>19</td>
<td>6.50-8.00</td>
<td>7.04</td>
<td>95 (4)</td>
</tr>
<tr>
<td>4</td>
<td>22</td>
<td>adult</td>
<td>-</td>
<td>100</td>
</tr>
</tbody>
</table>

• Percent correct “no” responses on Test Conditions

<table>
<thead>
<tr>
<th>group</th>
<th>n</th>
<th>age range</th>
<th>mean age</th>
<th>PRON-N</th>
<th>SCRAM-N</th>
<th>PREP-N</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>15</td>
<td>4.17-5.25</td>
<td>4.84</td>
<td>53 (11)</td>
<td>62 (11)</td>
<td>47 (10)</td>
</tr>
<tr>
<td>2</td>
<td>13</td>
<td>5.67-6.42</td>
<td>5.96</td>
<td>92 (4)</td>
<td>87 (6)</td>
<td>77 (6)</td>
</tr>
<tr>
<td>3</td>
<td>19</td>
<td>6.50-8.00</td>
<td>7.04</td>
<td>88 (6)</td>
<td>82 (7)</td>
<td>82 (6)</td>
</tr>
<tr>
<td>4</td>
<td>22</td>
<td>adult</td>
<td>-</td>
<td>98 (2)</td>
<td>98 (2)</td>
<td>100</td>
</tr>
</tbody>
</table>

2.5.2. Mean scores Constructions of Inalienable Possession

• Materials Experiment Dutch CIPs (Examples given in English)

<table>
<thead>
<tr>
<th>Picture</th>
<th>Adult Response</th>
<th>Type</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The boys turned the head</td>
<td>distributive</td>
<td>no test</td>
<td>DistB-N</td>
</tr>
<tr>
<td>2. The boys turned the head</td>
<td>referential</td>
<td>yes control</td>
<td>RefB-Y</td>
</tr>
<tr>
<td>3. The boys touched the nose</td>
<td>distributive</td>
<td>no test</td>
<td>Dist-N</td>
</tr>
<tr>
<td>4. The boys touched the nose</td>
<td>referential</td>
<td>yes control</td>
<td>Ref-Y</td>
</tr>
</tbody>
</table>

• Percent correct “yes” responses on Yes Control Conditions

<table>
<thead>
<tr>
<th>group</th>
<th>n</th>
<th>age range</th>
<th>mean age</th>
<th>Ref-Y</th>
<th>RefB-Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>15</td>
<td>4.17-5.25</td>
<td>4.83</td>
<td>93 (4)</td>
<td>96 (3)</td>
</tr>
<tr>
<td>2</td>
<td>13</td>
<td>5.67-6.42</td>
<td>5.96</td>
<td>85 (7)</td>
<td>87 (9)</td>
</tr>
<tr>
<td>3</td>
<td>19</td>
<td>6.5-8.0</td>
<td>7.04</td>
<td>93 (3)</td>
<td>95 (3)</td>
</tr>
<tr>
<td>4</td>
<td>22</td>
<td>adult</td>
<td>-</td>
<td>95 (2)</td>
<td>91 (5)</td>
</tr>
</tbody>
</table>
3. Experiment DPBE I in Spanish

3.1. Goal of the experiment

The goal of the experiment was to test Spanish children's performance on three types of clitic constructions: ECM constructions, simple sentences with a referential subject and simple sentences with a quantified subject (see section 3.5.3.).

3.2. Procedure

The experiment was presented to the child individually by two experimenters in a quiet area of the school. One experimenter was a primary school student in Madrid, and the other was a primary school student in Valladolid, Spain. The experimental procedure was similar, but not identical to the procedure followed in the previous two experiments. The materials were presented to the child in two sessions of approximately 15 minutes each. The first session was preceded by instructions and a couple of warm-up items in which pictures of people looking at themselves and others in a large mirror were presented and discussed, in order to make sure that the child was aware of what mirrors are like. Unlike in the previous two experiments, one picture per trial was used, and no scenario was told to the child. Moreover, the "guessing" was done without making use of a hand puppet. Like in the previous experiments, the experimenter playing the role of "helper" sat with the child on one side of the table; the experimenter playing the role of "guesser" sat on the other side, facing the helper and the child. At each play of the game, the helper selected a picture from the top of the pile of pictures and held it up so that the helper and the child could see it, but the guesser could not. The helper then gave the "hints" by listing the kinds and number of objects depicted in the picture, pointing them out to the child as they were mentioned. The helper also sometimes elicited such hints from the child. The last hint given by the helper was a verb, in infinitival form, denoting the action depicted in the picture. The "guesser" first repeated the list of objects in the picture, as if thinking out loud, and then delivered the target input, a guess in the form of a yes/no question, read from the back of the picture. When the child had judged the correctness of the guess, the picture was placed face up on the table for all to see. At no point in the experiment was the child allowed to see the back of the pictures.

3.3. Materials

The materials consisted of A4 color pictures. Each picture had the guesser's final context-setting statement and a target input written on the back and showed either two female individuals of different age types - e.g. a mom and a girl - or three female individuals of the same age type and another of a different age type - e.g. three girls and a grandmother. The context setting input always made mention of both types of female individuals. For all test conditions, the last animate noun mentioned in the guesser's repetition of the context-setting input was the grammatical antecedent of the pronominal or reflexive clitic in the target input. For each condition, trials involving adult agents were roughly counterbalanced by trials involving child agents. The materials were presented to all subjects in the single, maximally varied, order shown below in the list of target inputs (adult response in parentheses).

Unlike in the previous experiments, all subjects received the experiment in the same order (from items 1 to item 51). 

### Percent correct "no" responses on Test Conditions

<table>
<thead>
<tr>
<th>group</th>
<th>n</th>
<th>age range</th>
<th>mean age</th>
<th>Dist-N</th>
<th>DistB-N</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>15</td>
<td>4.17-5.25</td>
<td>4.83</td>
<td>29 (10)</td>
<td>31 (9)</td>
</tr>
<tr>
<td>2</td>
<td>13</td>
<td>5.67-6.42</td>
<td>5.96</td>
<td>69 (10)</td>
<td>67 (11)</td>
</tr>
<tr>
<td>3</td>
<td>19</td>
<td>6.5-8.0</td>
<td>7.04</td>
<td>68 (9)</td>
<td>70 (9)</td>
</tr>
<tr>
<td>4</td>
<td>22</td>
<td>adult</td>
<td>-</td>
<td>71 (9)</td>
<td>70 (7)</td>
</tr>
</tbody>
</table>
### Session I

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>SE-Y.1</td>
<td>(yes)</td>
</tr>
<tr>
<td>2.</td>
<td>SE-N.1</td>
<td>(no)</td>
</tr>
<tr>
<td>3.</td>
<td>filler</td>
<td>(yes)</td>
</tr>
<tr>
<td>4.</td>
<td>filler</td>
<td>(no)</td>
</tr>
<tr>
<td>5.</td>
<td>QSE-N.1</td>
<td>(no)</td>
</tr>
<tr>
<td>6.</td>
<td>SIMPLE-Y.1</td>
<td>(yes)</td>
</tr>
<tr>
<td>7.</td>
<td>filler</td>
<td>(yes)</td>
</tr>
<tr>
<td>8.</td>
<td>QUANT-N.1</td>
<td>(no)</td>
</tr>
<tr>
<td>9.</td>
<td>SIMPLE-N.1</td>
<td>(no)</td>
</tr>
<tr>
<td>10.</td>
<td>ECM-Y.1</td>
<td>(yes)</td>
</tr>
<tr>
<td>11.</td>
<td>ECMSE-Y.1</td>
<td>(yes)</td>
</tr>
<tr>
<td>12.</td>
<td>filler</td>
<td>(no)</td>
</tr>
<tr>
<td>13.</td>
<td>ECM-N.1</td>
<td>(no)</td>
</tr>
<tr>
<td>14.</td>
<td>filler</td>
<td>(yes)</td>
</tr>
<tr>
<td>15.</td>
<td>filler</td>
<td>(yes)</td>
</tr>
<tr>
<td>16.</td>
<td>ECM-N.1</td>
<td>(no)</td>
</tr>
<tr>
<td>17.</td>
<td>filler</td>
<td>(yes)</td>
</tr>
<tr>
<td>18.</td>
<td>QSE-Y.1</td>
<td>(yes)</td>
</tr>
<tr>
<td>19.</td>
<td>QUANT-Y.1</td>
<td>(yes)</td>
</tr>
<tr>
<td>20.</td>
<td>filler</td>
<td>(no)</td>
</tr>
<tr>
<td>21.</td>
<td>filler</td>
<td>(yes)</td>
</tr>
<tr>
<td>22.</td>
<td>SIMPLE-Y.2</td>
<td>(yes)</td>
</tr>
<tr>
<td>23.</td>
<td>filler</td>
<td>(yes)</td>
</tr>
<tr>
<td>24.</td>
<td>QSE-N.2</td>
<td>(no)</td>
</tr>
<tr>
<td>25.</td>
<td>filler</td>
<td>(no)</td>
</tr>
</tbody>
</table>

### Session II

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>26.</td>
<td>QSE-Y.2</td>
<td>(yes)</td>
</tr>
<tr>
<td>27.</td>
<td>filler</td>
<td>(yes)</td>
</tr>
<tr>
<td>28.</td>
<td>SE-N.2</td>
<td>(no)</td>
</tr>
<tr>
<td>29.</td>
<td>QUANT-N.2</td>
<td>(no)</td>
</tr>
<tr>
<td>30.</td>
<td>ECM-Y.2</td>
<td>(yes)</td>
</tr>
<tr>
<td>31.</td>
<td>ECMSE-Y.2</td>
<td>(yes)</td>
</tr>
<tr>
<td>32.</td>
<td>SIMPLE-N.2</td>
<td>(no)</td>
</tr>
<tr>
<td>33.</td>
<td>filler</td>
<td>(no)</td>
</tr>
<tr>
<td>34.</td>
<td>ECM-N.2</td>
<td>(no)</td>
</tr>
<tr>
<td>35.</td>
<td>QSE-Y.3</td>
<td>(yes)</td>
</tr>
<tr>
<td>36.</td>
<td>SIMPLE-Y.3</td>
<td>(yes)</td>
</tr>
<tr>
<td>37.</td>
<td>ECMSE-N.2</td>
<td>(no)</td>
</tr>
<tr>
<td>38.</td>
<td>QUANT-Y.2</td>
<td>(yes)</td>
</tr>
<tr>
<td>39.</td>
<td>SE-N.3</td>
<td>(no)</td>
</tr>
<tr>
<td>40.</td>
<td>SE-Y.2</td>
<td>(yes)</td>
</tr>
<tr>
<td>41.</td>
<td>QSE-N.3</td>
<td>(no)</td>
</tr>
<tr>
<td>42.</td>
<td>filler</td>
<td>(no)</td>
</tr>
<tr>
<td>43.</td>
<td>SIMPLE-N.3</td>
<td>(no)</td>
</tr>
<tr>
<td>44.</td>
<td>SE-Y.3</td>
<td>(yes)</td>
</tr>
<tr>
<td>45.</td>
<td>ECM-Y.3</td>
<td>(yes)</td>
</tr>
<tr>
<td>46.</td>
<td>ECMSE-Y.3</td>
<td>(yes)</td>
</tr>
<tr>
<td>47.</td>
<td>QUANT-N.3</td>
<td>(no)</td>
</tr>
<tr>
<td>48.</td>
<td>ECMSE-N.3</td>
<td>(no)</td>
</tr>
<tr>
<td>49.</td>
<td>QUANT-Y.3</td>
<td>(yes)</td>
</tr>
<tr>
<td>50.</td>
<td>ECM-N.3</td>
<td>(no)</td>
</tr>
<tr>
<td>51.</td>
<td>filler</td>
<td>(yes)</td>
</tr>
</tbody>
</table>
3.4. Coding of responses

For hesitations or spontaneous corrections, see previous experiments. No missing values were found in the child data. No ambiguous responses were given. In the adult results we found 4 missing values. Subject number 17 showed the following omissions: ECM-Y.2, ECM-N.1, QSE-N.1 and ECMSE-Y.3. We decided to ignore these trials for this subject and calculate the mean score of the corresponding conditions on the basis of the two remaining trials.

3.5. Mean scores

* Conditions DPBE I (Examples given in English)

<table>
<thead>
<tr>
<th>Target input</th>
<th>Picture</th>
<th>Correct response</th>
<th>Status</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The girl is drying her</td>
<td>reflexive</td>
<td>no</td>
<td>test</td>
<td>SIMPLE-N</td>
</tr>
<tr>
<td>2. The girl is drying her</td>
<td>non-reflexive</td>
<td>yes</td>
<td>control</td>
<td>SIMPLE-Y</td>
</tr>
<tr>
<td>3. Every girl is drying her</td>
<td>reflexive</td>
<td>no</td>
<td>test</td>
<td>QUANT-N</td>
</tr>
<tr>
<td>4. Every girl is drying her</td>
<td>non-reflexive</td>
<td>yes</td>
<td>control</td>
<td>QUANT-Y</td>
</tr>
<tr>
<td>5. The girl sees her dance</td>
<td>reflexive</td>
<td>no</td>
<td>test</td>
<td>ECM-N</td>
</tr>
<tr>
<td>6. The girl sees her dance</td>
<td>non-reflexive</td>
<td>yes</td>
<td>control</td>
<td>ECM-Y</td>
</tr>
<tr>
<td>7. The girl is drying herself</td>
<td>reflexive</td>
<td>yes</td>
<td>control</td>
<td>SE-Y</td>
</tr>
<tr>
<td>8. The girl is drying herself</td>
<td>non-reflexive</td>
<td>no</td>
<td>control</td>
<td>SE-N</td>
</tr>
<tr>
<td>9. Every girl is drying herself</td>
<td>reflexive</td>
<td>yes</td>
<td>control</td>
<td>QSE-Y</td>
</tr>
<tr>
<td>10. Every girl is drying herself</td>
<td>non-reflexive</td>
<td>no</td>
<td>control</td>
<td>QSE-N</td>
</tr>
<tr>
<td>11. The girl sees herself dance</td>
<td>reflexive</td>
<td>yes</td>
<td>control</td>
<td>ECMSE-Y</td>
</tr>
<tr>
<td>12. The girl sees herself dance</td>
<td>non-reflexive</td>
<td>no</td>
<td>control</td>
<td>ECMSE-N</td>
</tr>
</tbody>
</table>

* Percent correct “yes” responses on Yes Control Conditions

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>age range</th>
<th>mean age</th>
<th>SIMPLE-Y</th>
<th>QUANT-Y</th>
<th>ECM-Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>children</td>
<td>45</td>
<td>4 - 7.25</td>
<td>5.25</td>
<td>98 (2)</td>
<td>99 (1)</td>
<td>84 (4)</td>
</tr>
<tr>
<td>adults</td>
<td>19</td>
<td>-</td>
<td>-</td>
<td>100</td>
<td>83 (7)</td>
<td>98 (2)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>age range</th>
<th>mean age</th>
<th>SE-Y</th>
<th>QSE-Y</th>
<th>ECMSE-Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>children</td>
<td>45</td>
<td>4 - 7.25</td>
<td>5.25</td>
<td>99 (1)</td>
<td>98 (1)</td>
<td>98 (2)</td>
</tr>
<tr>
<td>adults</td>
<td>19</td>
<td>-</td>
<td>-</td>
<td>100</td>
<td>100</td>
<td>93 (6)</td>
</tr>
</tbody>
</table>

* Percent correct “no” responses on No Control Conditions

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>age range</th>
<th>mean age</th>
<th>SE-N</th>
<th>QSE-N</th>
<th>ECMSE-N</th>
</tr>
</thead>
<tbody>
<tr>
<td>children</td>
<td>45</td>
<td>4 - 7.25</td>
<td>5.25</td>
<td>89 (4)</td>
<td>82 (4)</td>
<td>87 (4)</td>
</tr>
<tr>
<td>adults</td>
<td>19</td>
<td>-</td>
<td>-</td>
<td>100</td>
<td>94 (4)</td>
<td>94 (4)</td>
</tr>
</tbody>
</table>
APPENDIX I

* Percent correct "no" responses on Test Conditions

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>age range</th>
<th>mean age</th>
<th>SIMPLE-N</th>
<th>QUANT-N</th>
<th>ECM-N</th>
</tr>
</thead>
<tbody>
<tr>
<td>children</td>
<td>45</td>
<td>4 - 7.25</td>
<td>5.25</td>
<td>90 (3)</td>
<td>90 (3)</td>
<td>63 (3)</td>
</tr>
<tr>
<td>adults</td>
<td>19</td>
<td>-</td>
<td>-</td>
<td>96 (4)</td>
<td>98 (2)</td>
<td>96 (3)</td>
</tr>
</tbody>
</table>

4. Experiment DPBE II & Strong Pronouns II in Spanish

4.1. Goals of the experiment

The experiment contained two studies: one study tested children’s performance on constructions containing strong pronouns as complements of prepositions (see section 3.4.4.), and the other study tested Spanish speaking children’s performance on ECM constructions containing quantified matrix clause subjects (see section 3.5.5.). By combining the two studies in one experiment, the experimental items of one study served as the filler items of the other.

4.2. Procedure

The experiment was presented to the child individually by two experimenters in a quiet area of the school that the child was attending, a primary school in Madrid, Spain. The procedure we followed is virtually identical to the procedure followed in the previous experiment (DPBE I, Spanish), in the sense that a one-picture-per-trial design was used. The only difference with the previous experiment was the fact that the guessing was done by a hand puppet (Bert from Sesame Street) manipulated by one of the experimenters.

4.3. Materials

Like in the previous experiment we used A4 color pictures with the context setting input and the target input (the guess) on the back. The complete list a target inputs is given below. The trials belonging to the DPBE II experiment are represented in italics. The NEG condition is a screening condition.

Finally, in the trials LOC-R.3, QLOC-R.3, LOC-B.3, QLOC-B.3, QLCI-N.3 and QLCI-Y.3, the verb trazar un circulo ‘draw a circle’ was often substituted by hacer un circulo ‘make a circle’ with the youngest children, since we suspected that some of them may not fully understand the verb trazar, which is relatively formal in Spanish.

Half of the children received each trial of the test in the reverse order. The adults all received the test in the normal order.

Sesión I
1. QLCI-Y.1 (yes) ¿Cada mamá puso una maleta detrás de sí misma?
2. NEG-1 (no) ¿La niña puso el jarrón detrás de la abuelita?
3. ECM-Y.1 (yes) ¿La niña la ve saltar a la cuerda?
4. LOC-B.1 (yes) ¿La niña puso la maleta detrás de ella?
5. QLOC-R.1 (yes) ¿Cada mamá puso un balón detrás de ella?
6. QECM-N.1 (no) ¿Cada niña la ve saltar a la cuerda?
7. FIXED-N.1 (no) ¿La mamá mira hacia ella?
8. ECMSE-Y.1 (yes) ¿La mamá se ve saltar a la cuerda?
9. QFIXED-Y.1 (yes) ¿Cada niña mira hacia ella?
10. ECMSE-N.1 (no) ¿La niña se ve saltar a la cuerda?
11. FIXED-N.2 (no) ¿La abuelita apunta hacia ella?
12. NEG-2 (no) ¿La mamá puso la maleta delante de la niña?
13. ECMSE-Y.2 (yes) ¿La niña se ve bailar?
14. ECM-Y.2 (yes) ¿La mamá la ve bailar?
15. QPSI-Y.1 (yes) ¿Cada abuelita mira hacia sí misma?
16. SIMPLE-N.1 (no) ¿La niña la seca?
17. QLOC-R.2 (yes) ¿Cada abuelita puso una maleta delante de ella?
18. ECM-Y.2 (yes) ¿Cada mamá se ve bailar?
19. ECM-Y.1 (yes) ¿Cada mamá se ve bailar?
20. QFIXED-N.1 (yes) ¿Cada abuelita puso el jarrón detrás de ella?
21. QECM-Y.1 (yes) ¿Cada mami la ve saltar la cuerda?
22. QFIXED-N.1 (yes) ¿Cada abuelita puso el jarrón delante de ella?
23. ECM-Y.1 (yes) ¿Cada abuelita se ve bailar?
24. ECM-Y.1 (yes) ¿Cada abuelita traza un círculo alrededor de ella?
25. ECM-Y.2 (yes) ¿Cada abuelita traza un círculo alrededor de ella?
26. ECM-Y.3 (yes) ¿Cada abuelita traza un círculo alrededor de ella?
27. ECM-Y.1 (yes) ¿Cada abuelita traza un círculo alrededor de ella?
28. ECM-Y.2 (yes) ¿Cada abuelita traza un círculo alrededor de ella?
29. ECM-Y.3 (yes) ¿Cada abuelita traza un círculo alrededor de ella?
30. ECM-Y.3 (yes) ¿La abuelita se ve bailar?
31. ECM-Y.2 (yes) ¿Cada mamá la ve bailar?
32. ECM-Y.1 (yes) ¿Cada mami la ve bailar?
33. ECM-Y.1 (yes) ¿La mamá ve saltar a la cuerda?
34. ECM-Y.1 (yes) ¿La mamá la ve saltar a la cuerda?
35. ECM-Y.1 (yes) ¿La mamá se ve saltar a la cuerda?
36. ECM-Y.1 (yes) ¿La mamá se ve saltar a la cuerda?
37. ECM-Y.1 (yes) ¿La mamá se ve saltar a la cuerda?
38. ECM-Y.1 (yes) ¿La mamá se ve saltar a la cuerda?
39. ECM-Y.1 (yes) ¿La mamá se ve saltar a la cuerda?
40. ECM-Y.1 (yes) ¿La mamá se ve saltar a la cuerda?
41. ECM-Y.1 (yes) ¿La mamá se ve saltar a la cuerda?
42. ECM-Y.1 (yes) ¿La mamá se ve saltar a la cuerda?
43. ECM-Y.1 (yes) ¿La mamá se ve saltar a la cuerda?
44. ECM-Y.1 (yes) ¿La mamá se ve saltar a la cuerda?
45. ECM-Y.1 (yes) ¿La mamá se ve saltar a la cuerda?
46. ECM-Y.1 (yes) ¿La mamá se ve saltar a la cuerda?
47. ECM-Y.1 (yes) ¿La mamá se ve saltar a la cuerda?
48. ECM-Y.1 (yes) ¿La mamá se ve saltar a la cuerda?
49. ECM-Y.1 (yes) ¿La mamá se ve saltar a la cuerda?
50. ECM-Y.1 (yes) ¿La mamá se ve saltar a la cuerda?
51. ECM-Y.1 (yes) ¿La mamá se ve saltar a la cuerda?
52. ECM-Y.1 (yes) ¿La mamá se ve saltar a la cuerda?
53. ECM-Y.1 (yes) ¿La mamá se ve saltar a la cuerda?
54. ECM-Y.1 (yes) ¿La mamá se ve saltar a la cuerda?
55. ECM-Y.1 (yes) ¿La mamá se ve saltar a la cuerda?
56. ECM-Y.1 (yes) ¿La mamá se ve saltar a la cuerda?
57. ECM-Y.1 (yes) ¿La mamá se ve saltar a la cuerda?
58. ECM-Y.1 (yes) ¿La mamá se ve saltar a la cuerda?
59. ECM-Y.1 (yes) ¿La mamá se ve saltar a la cuerda?
60. ECM-Y.1 (yes) ¿La mamá se ve saltar a la cuerda?

<table>
<thead>
<tr>
<th>Strong Pronouns</th>
<th>DPBE II</th>
<th>Screening</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>yes</td>
<td>24</td>
<td>12</td>
<td>-</td>
</tr>
<tr>
<td>no</td>
<td>12</td>
<td>16</td>
<td>3</td>
</tr>
</tbody>
</table>
4.4. Coding of responses

For ambiguous and "indeterminate" responses, see previous experiments. There were no missing values in the child data. In the adult data the following missing values were found: one subject omitted trial QECM-N.2, another subject omitted LOC-R.1, and a third subject omitted QLCS-Y.2. We decided to ignore these trials and to calculate the mean score on the corresponding conditions on the basis of the two remaining trials.

4.5.1. Mean scores Strong Pronouns II

* Conditions Strong Pronouns II (Examples given in English)

<table>
<thead>
<tr>
<th>Target input</th>
<th>Picture</th>
<th>Preposition</th>
<th>Subject</th>
<th>Correct response</th>
<th>Type</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The girl is dreaming about her</td>
<td>reflexive</td>
<td>fixed</td>
<td>referential</td>
<td>no</td>
<td>test</td>
<td>FIXED-N</td>
</tr>
<tr>
<td>2. The girl is dreaming about her</td>
<td>non-reflexive</td>
<td>fixed</td>
<td>referential</td>
<td>yes</td>
<td>control</td>
<td>FIXED-Y</td>
</tr>
<tr>
<td>3. The girl put the chair behind her</td>
<td>reflexive</td>
<td>locative</td>
<td>referential</td>
<td>yes</td>
<td>test</td>
<td>LOC-B</td>
</tr>
<tr>
<td>4. The girl put the chair behind her</td>
<td>non-reflexive</td>
<td>locative</td>
<td>referential</td>
<td>yes</td>
<td>control</td>
<td>LOC-R</td>
</tr>
<tr>
<td>5. Every girl is dreaming about her</td>
<td>reflexive</td>
<td>fixed</td>
<td>quantified</td>
<td>no</td>
<td>test</td>
<td>QFIXED-N</td>
</tr>
<tr>
<td>6. Every girl is dreaming about her</td>
<td>non-reflexive</td>
<td>locative</td>
<td>quantified</td>
<td>yes</td>
<td>control</td>
<td>QFIXED-Y</td>
</tr>
<tr>
<td>7. Every girl put a chair behind her</td>
<td>reflexive</td>
<td>locative</td>
<td>quantified</td>
<td>yes</td>
<td>test</td>
<td>QLOC-B</td>
</tr>
<tr>
<td>8. Every girl put a chair behind her</td>
<td>non-reflexive</td>
<td>locative</td>
<td>quantified</td>
<td>yes</td>
<td>control</td>
<td>QLOC-R</td>
</tr>
<tr>
<td>9. Every girl put a chair behind herself</td>
<td>reflexive</td>
<td>locative</td>
<td>quantified</td>
<td>yes</td>
<td>control</td>
<td>QLCSI-Y</td>
</tr>
<tr>
<td>10. Every girl put a chair behind herself</td>
<td>non-reflexive</td>
<td>locative</td>
<td>quantified</td>
<td>no</td>
<td>control</td>
<td>QLCSI-N</td>
</tr>
<tr>
<td>11. Every girl is dreaming about herself</td>
<td>reflexive</td>
<td>fixed</td>
<td>quantified</td>
<td>yes</td>
<td>control</td>
<td>QPSI-Y</td>
</tr>
<tr>
<td>12. Every girl is dreaming about herself</td>
<td>non-reflexive</td>
<td>fixed</td>
<td>quantified</td>
<td>no</td>
<td>control</td>
<td>QPSI-N</td>
</tr>
<tr>
<td>13. The girl put a chair behind the mother</td>
<td>reflexive</td>
<td>locative</td>
<td>referential</td>
<td>no</td>
<td>screen</td>
<td>NEG</td>
</tr>
</tbody>
</table>

2 Some speakers find 1 and 5 (marginally) acceptable.

3 According to some speakers 7 is marginal/ungrammatical.
• Percent “yes” responses on Yes Control Conditions

<table>
<thead>
<tr>
<th>Group</th>
<th>mean age</th>
<th>age range</th>
<th>n</th>
<th>FIXED-Y</th>
<th>QFIXED-Y</th>
<th>LOC-R</th>
<th>QLOC-R</th>
<th>QLCSI-Y</th>
<th>QPSI-Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5.04</td>
<td>4.67 – 5.33</td>
<td>8</td>
<td>54&lt;sup&gt;(15)&lt;/sup&gt;</td>
<td>62&lt;sup&gt;(10)&lt;/sup&gt;</td>
<td>46&lt;sup&gt;(17)&lt;/sup&gt;</td>
<td>54&lt;sup&gt;(15)&lt;/sup&gt;</td>
<td>87&lt;sup&gt;(9)&lt;/sup&gt;</td>
<td>71&lt;sup&gt;(8)&lt;/sup&gt;</td>
</tr>
<tr>
<td>2</td>
<td>5.96</td>
<td>5.83 – 6.25</td>
<td>9</td>
<td>70&lt;sup&gt;(12)&lt;/sup&gt;</td>
<td>93&lt;sup&gt;(7)&lt;/sup&gt;</td>
<td>63&lt;sup&gt;(12)&lt;/sup&gt;</td>
<td>78&lt;sup&gt;(8)&lt;/sup&gt;</td>
<td>93&lt;sup&gt;(5)&lt;/sup&gt;</td>
<td>100</td>
</tr>
<tr>
<td>3</td>
<td>6.88</td>
<td>6.5 – 7.25</td>
<td>9</td>
<td>81&lt;sup&gt;(10)&lt;/sup&gt;</td>
<td>85&lt;sup&gt;(8)&lt;/sup&gt;</td>
<td>67&lt;sup&gt;(14)&lt;/sup&gt;</td>
<td>70&lt;sup&gt;(13)&lt;/sup&gt;</td>
<td>96&lt;sup&gt;(4)&lt;/sup&gt;</td>
<td>96&lt;sup&gt;(4)&lt;/sup&gt;</td>
</tr>
<tr>
<td>4 adults</td>
<td>-</td>
<td>12</td>
<td>97&lt;sup&gt;(3)&lt;/sup&gt;</td>
<td>94&lt;sup&gt;(4)&lt;/sup&gt;</td>
<td>83&lt;sup&gt;(3)&lt;/sup&gt;</td>
<td>86&lt;sup&gt;(9)&lt;/sup&gt;</td>
<td>100</td>
<td>89&lt;sup&gt;(3)&lt;/sup&gt;</td>
<td></td>
</tr>
</tbody>
</table>

• Percent “no” responses on No Control Conditions.

<table>
<thead>
<tr>
<th>Group</th>
<th>mean age</th>
<th>age range</th>
<th>n</th>
<th>QLCSI-N</th>
<th>QPSI-N</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5.04</td>
<td>4.67 – 5.33</td>
<td>8</td>
<td>83&lt;sup&gt;(9)&lt;/sup&gt;</td>
<td>75&lt;sup&gt;(14)&lt;/sup&gt;</td>
</tr>
<tr>
<td>2</td>
<td>5.96</td>
<td>5.83 – 6.25</td>
<td>9</td>
<td>100</td>
<td>89&lt;sup&gt;(8)&lt;/sup&gt;</td>
</tr>
<tr>
<td>3</td>
<td>6.88</td>
<td>6.5 – 7.25</td>
<td>9</td>
<td>96&lt;sup&gt;(4)&lt;/sup&gt;</td>
<td>96&lt;sup&gt;(4)&lt;/sup&gt;</td>
</tr>
<tr>
<td>4 adults</td>
<td>-</td>
<td>12</td>
<td>100</td>
<td>97&lt;sup&gt;(3)&lt;/sup&gt;</td>
<td></td>
</tr>
</tbody>
</table>

• Percent “no” responses on Test Conditions.

<table>
<thead>
<tr>
<th>Group</th>
<th>mean age</th>
<th>age range</th>
<th>n</th>
<th>FIXED-N</th>
<th>QFIXED-N</th>
<th>LOC-B</th>
<th>QLOC-B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5.04</td>
<td>4.67 – 5.33</td>
<td>8</td>
<td>54&lt;sup&gt;(13)&lt;/sup&gt;</td>
<td>54&lt;sup&gt;(11)&lt;/sup&gt;</td>
<td>33&lt;sup&gt;(11)&lt;/sup&gt;</td>
<td>42&lt;sup&gt;(15)&lt;/sup&gt;</td>
</tr>
<tr>
<td>2</td>
<td>5.96</td>
<td>5.83 – 6.25</td>
<td>9</td>
<td>41&lt;sup&gt;(13)&lt;/sup&gt;</td>
<td>48&lt;sup&gt;(8)&lt;/sup&gt;</td>
<td>22&lt;sup&gt;(10)&lt;/sup&gt;</td>
<td>19&lt;sup&gt;(8)&lt;/sup&gt;</td>
</tr>
<tr>
<td>3</td>
<td>6.88</td>
<td>6.5 – 7.25</td>
<td>9</td>
<td>33&lt;sup&gt;(10)&lt;/sup&gt;</td>
<td>56&lt;sup&gt;(8)&lt;/sup&gt;</td>
<td>26&lt;sup&gt;(7)&lt;/sup&gt;</td>
<td>44&lt;sup&gt;(16)&lt;/sup&gt;</td>
</tr>
<tr>
<td>4 adults</td>
<td>-</td>
<td>12</td>
<td>72&lt;sup&gt;(9)&lt;/sup&gt;</td>
<td>89&lt;sup&gt;(5)&lt;/sup&gt;</td>
<td>50&lt;sup&gt;(10)&lt;/sup&gt;</td>
<td>72&lt;sup&gt;(8)&lt;/sup&gt;</td>
<td></td>
</tr>
</tbody>
</table>

4.5.2. Mean scores DPBE II

• Conditions DPBE II (Examples given in English)

<table>
<thead>
<tr>
<th>Target input</th>
<th>Picture</th>
<th>Correct response</th>
<th>Status</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The girl sees her dance</td>
<td>reflexive</td>
<td>no</td>
<td>test</td>
<td>ECM-N</td>
</tr>
<tr>
<td>2. The girl sees her dance</td>
<td>non-reflexive</td>
<td>yes</td>
<td>control</td>
<td>ECM-Y</td>
</tr>
<tr>
<td>3. Every girl sees her dance</td>
<td>reflexive</td>
<td>no</td>
<td>test</td>
<td>QECM-N</td>
</tr>
<tr>
<td>4. Every girl sees her dance</td>
<td>non-reflexive</td>
<td>yes</td>
<td>control</td>
<td>QECM-Y</td>
</tr>
<tr>
<td>5. The girl sees herself dance</td>
<td>reflexive</td>
<td>yes</td>
<td>control</td>
<td>ECMSE-Y</td>
</tr>
<tr>
<td>6. The girl sees herself dance</td>
<td>non-reflexive</td>
<td>no</td>
<td>control</td>
<td>ECMSE-N</td>
</tr>
<tr>
<td>7. The girl is touching her</td>
<td>reflexive</td>
<td>no</td>
<td>control</td>
<td>SIMPLE-N</td>
</tr>
<tr>
<td>8. The girl put a chair behind the mother</td>
<td>reflexive</td>
<td>no</td>
<td>screening</td>
<td>NEG</td>
</tr>
</tbody>
</table>

• Percent adult-like “Yes” responses on “Yes” Control Conditions.

<table>
<thead>
<tr>
<th>Group</th>
<th>mean age</th>
<th>age range</th>
<th>n</th>
<th>ECM-Y</th>
<th>QECM-Y</th>
<th>ECMSE-Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4.67 – 5.33</td>
<td>5.04</td>
<td>8</td>
<td>46&lt;sup&gt;(13)&lt;/sup&gt;</td>
<td>50&lt;sup&gt;(15)&lt;/sup&gt;</td>
<td>83&lt;sup&gt;(11)&lt;/sup&gt;</td>
</tr>
<tr>
<td>2</td>
<td>5.83 – 6.25</td>
<td>5.96</td>
<td>9</td>
<td>52&lt;sup&gt;(14)&lt;/sup&gt;</td>
<td>70&lt;sup&gt;(12)&lt;/sup&gt;</td>
<td>96&lt;sup&gt;(4)&lt;/sup&gt;</td>
</tr>
<tr>
<td>3</td>
<td>6.5 – 7.25</td>
<td>6.88</td>
<td>9</td>
<td>81&lt;sup&gt;(6)&lt;/sup&gt;</td>
<td>96&lt;sup&gt;(4)&lt;/sup&gt;</td>
<td>100</td>
</tr>
<tr>
<td>4 adults</td>
<td>-</td>
<td>12</td>
<td>92&lt;sup&gt;(4)&lt;/sup&gt;</td>
<td>100</td>
<td>97&lt;sup&gt;(3)&lt;/sup&gt;</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX I

- Percent adult-like “No” responses on “No” Control Conditions.

<table>
<thead>
<tr>
<th>Group</th>
<th>age range</th>
<th>mean age</th>
<th>n</th>
<th>ECMSE-N</th>
<th>SIMPLE-N</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4.67 - 5.33</td>
<td>5.04</td>
<td>8</td>
<td>100</td>
<td>79 (14)</td>
</tr>
<tr>
<td>2</td>
<td>5.83 - 6.25</td>
<td>5.96</td>
<td>9</td>
<td>89 (4)</td>
<td>89 (6)</td>
</tr>
<tr>
<td>3</td>
<td>6.5 - 7.25</td>
<td>6.88</td>
<td>9</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>4</td>
<td>adults</td>
<td>-</td>
<td>12</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

- Percent adult-like “No” responses on Test Conditions.

<table>
<thead>
<tr>
<th>Group</th>
<th>age range</th>
<th>mean age</th>
<th>n</th>
<th>ECM-N</th>
<th>QECM-N</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4.67 - 5.33</td>
<td>5.04</td>
<td>8</td>
<td>33 (15)</td>
<td>29 (16)</td>
</tr>
<tr>
<td>2</td>
<td>5.83 - 6.25</td>
<td>5.96</td>
<td>9</td>
<td>48 (11)</td>
<td>26 (12)</td>
</tr>
<tr>
<td>3</td>
<td>6.5 - 7.25</td>
<td>6.88</td>
<td>9</td>
<td>93 (5)</td>
<td>70 (9)</td>
</tr>
<tr>
<td>4</td>
<td>adults</td>
<td>-</td>
<td>12</td>
<td>97 (3)</td>
<td>92 (4)</td>
</tr>
</tbody>
</table>

5. Complex nominals in Spanish

5.1. Goal of the experiment

The experiment tested children’s performance on the interpretation of pronouns and long distance wh-extraction in “light-verb” constructions and “heavy-verb” constructions (see section 2.4.2.).

5.2. Procedures

The experiment was presented to the child individually by two experimenters in a quiet area of the school that the child was attending, a primary school in Madrid, Spain. The experimental procedure was very similar to the procedure followed in the Spanish Strong Pronoun & CIP experiment (section 1 of the appendix) and the Dutch Clitic & CIP experiment (section 2 of the appendix). The main difference consisted in the fact that in the HEAVY-B, HEAVY-R, WHeavL-N, WHeavS-Y, WLiteL-Y and WLiteS-Y conditions each trial was paired with three pictures instead of two.

5.3. Materials

The experiment had a Latin Square design, and was presented in four different versions (A, B, C, D). A and B differed from C and D in the LITE-N and LITE-Y conditions with respect to the way feminine and masculine individuals (and pronouns, in the target input) were distributed over the trials of the two conditions (see the list of target input items below).

A and D differed from B and C in the WHeavL-N, WHeavS-Y, WLiteL-Y and WLiteS-Y conditions with respect to the way in which the two alternative orders of presentation of the two last pictures/events of a scenario (consisting of a total of 3 pictures) were distributed over the different trials of the four conditions. The two last pictures referred to two events involved in wh-sentences like “When did John make the decision to write a letter” and “When did John hear about the decision to write a letter”: one pictures represented the moment at which the letter was written, and the other picture represented the moment at which the decision was either taken (the first sentence) or heard about (second sentence). In some trials the picture corresponding to the main clause event (making the decision or hearing about it) was presented first, and in some trials the picture corresponding to the event of the embedded clause (writing of a letter) was presented first. In Appendix 2 the two different orders of presentation are exemplified by two trials. The reason we introduced this variation was to control for the effect that the
last mentioned event/picture may have on the interpretation of the target input. In the following table the distribution of the two orders over the different trials of the four lists is given. 4

<table>
<thead>
<tr>
<th>Order of presentation</th>
<th>WHeavS-Y</th>
<th>WLiteS-Y</th>
<th>WHeavL-N</th>
<th>WLiteL-Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>main clause event first</td>
<td>WHeavS.Y.1 A/C</td>
<td>WhiteS.Y.1 A/C</td>
<td>WHeavL-N.1 A/C</td>
<td>WLiteL-Y.1 B/D</td>
</tr>
<tr>
<td></td>
<td>WHeavS-Y.3 B/D</td>
<td>WhiteS-Y.3 B/D</td>
<td>WHeavL-N.3 B/D</td>
<td>WLiteL-Y.3 A/C</td>
</tr>
<tr>
<td>embedded clause event first</td>
<td>WHeavS-Y.1 B/D</td>
<td>WhiteS.Y.1 B/D</td>
<td>WHeavL-N.1 B/D</td>
<td>WLiteL-Y.1 A/C</td>
</tr>
<tr>
<td></td>
<td>WHeavS-Y.3 A/C</td>
<td>WhiteS-Y.3 A/C</td>
<td>WHeavL-N.3 A/C</td>
<td>WLiteL-Y.3 B/D</td>
</tr>
</tbody>
</table>

In order to neutralize order effects, roughly half of the children received each session of the test in the reverse order. The adults all received the test in the normal order. The POSSE-N and POSSE-Y filler conditions are S-CIPs reflexive-marked by SE (Las niñas se secaron la cara ‘the girls SE dried the face’)

Below we give the complete list of target inputs with the (expected) adult responses in parenthesis. The filler items that we included, testing CIPs, are represented in italics.

**Session I**
1. LITESE-Y.1 (yes) El niño tomó la decisión de dibujarse
2. LITESE-N.1 (no) La niña tomó la decisión de dibujarse
3. WHeavS-Y.1 (yes) Cuando estaba columpiándose
4. POSSE-N.1 (no) Los dos niños se tocaron la lengua
5. WHeavL-N.1 (no) Cuando su papá llegó a casa con brochas nuevas
6. HEAVY-R.1 (yes) La niña se enteró de la decisión de dibujarla
7. WLiteL-Y.1 (yes) Cuando se hiciera de noche
8. CON-N.1 (no) El niño trataba de dibujarle
9. POSSE-Y.1 (yes) Las dos niñas se tocaron la oreja
10. LITE-Y.1 (yes) El niño/la niña tomó la decisión de dibujarle/la (AB/CD)
11. WHeavS-Y.2 (yes) Cuando estaba jugando en la arena
12. LITESE-N.2 (no) La niña tomó la decisión de pintarse
13. CON-N.2 (no) El niño trataba de pintarle (de rojo)
14. WLiteL-Y.1 (yes) Cuando se fue a dormir
15. HEAVY-B.1 (yes) El niño se enteró de la decisión de dibujarle
16. POSSE-N.2 (no) Las dos niñas se lavaron la cara
17. LITE-Y.2 (yes) El niño/la niña tomó la decisión de pintarle/la (AB/CD)
18. WLiteL-Y.2 (yes) Cuando tuviera mucho dinero
19. HEAVY-R.2 (yes) El niño se enteró de la decisión de pintarle
20. LITE-N.1 (no) La princesa/el niño tomó la decisión de dibujarla/le (AB/CD)

**Session II**
21. LITESE-Y.2 (yes) El niño tomó la decisión de pintarse
22. LITE-Y.3 (yes) La niña/el niño tomó la decisión de rasparla/le (AB/CD)
23. POSSE-N.3 (no) Los dos niños se secaron la cabeza
24. WLiteL-Y.2 (yes) Cuando estaba duchándose
25. HEAVY-B.2 (yes) La niña se enteró de la decisión de pintarla
26. WHeavL-N.2 (no) Cuando soplará un viento fuerte

---

4 An ANOVA reveals that the four versions do not differ with respect to children’s performance on any test condition (p ≥ 0.083).
27. CON-N.3 (no) La niña trataba de rascarla
28. LITESE-N.3 (no) El niño tomó la decisión de rascarse
29. WHeavS-Y.3 (yes) Cuando estaba dando de comer a los peces
30. LITE-N.2 (no) La niña/el niño tomó la decisión de pintarla/le (AB/CD)
31. WLiteL-Y.3 (yes) Cuando su mamá hiciera una tarta
32. HEAVY-R.3 (yes) La princesa se enteró de la decisión de rascarla
33. POSSE-Y.2 (yes) Los dos niños se lavaron la cara
34. WHeavL-N.3 (no) Cuando estuviera arreglada la silla
35. LITESE-Y.3 (yes) La niña tomó la decisión de rascarse
36. CON-N.4 (no) La niña trataba de señalarla
37. WLiteS-Y.3 (yes) Cuando estaba comiendo con el rey
38. POSSE-Y.3 (yes) Las dos niñas se secaron el cuello
39. HEAVY-B.3 (yes) El niño se enteró de la decisión de rascarle
40. LITE-N.3 (no) El enanito/la niña tomó la decisión de rascarle/la (AB/CD)

<table>
<thead>
<tr>
<th>test</th>
<th>filler</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>yes</td>
<td>21</td>
<td>24</td>
</tr>
<tr>
<td>no</td>
<td>13</td>
<td>16</td>
</tr>
</tbody>
</table>

5.4. Coding of responses

For hesitations, see previous experiments. There were no missing values or ambiguous/indeterminate” responses.

5.5. Mean scores per condition

* Materials Pronoun Task (Examples given in English)

<table>
<thead>
<tr>
<th>Target input</th>
<th>Picture</th>
<th>Adult response</th>
<th>Type</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The boy made the decision to draw him</td>
<td>reflexive</td>
<td>no test</td>
<td>LITE-N</td>
<td></td>
</tr>
<tr>
<td>2. The boy made the decision to draw him</td>
<td>referential</td>
<td>yes control</td>
<td>LITE-Y</td>
<td></td>
</tr>
<tr>
<td>3. The boy found out about the decision to draw him</td>
<td>reflexive</td>
<td>yes test</td>
<td>HEAVY-B</td>
<td></td>
</tr>
<tr>
<td>4. The boy found out about the decision to draw him</td>
<td>referential</td>
<td>yes control</td>
<td>HEAVY-R</td>
<td></td>
</tr>
<tr>
<td>5. The boy made the decision to draw himself</td>
<td>reflexive</td>
<td>yes control</td>
<td>LITESE-Y</td>
<td></td>
</tr>
<tr>
<td>6. The boy made the decision to draw himself</td>
<td>referential</td>
<td>no control</td>
<td>LITESE-N</td>
<td></td>
</tr>
<tr>
<td>7. The boy tried to draw him</td>
<td>reflexive</td>
<td>no control</td>
<td>CON-N</td>
<td></td>
</tr>
</tbody>
</table>

* Percent correct “yes” responses on Yes Control Conditions

<table>
<thead>
<tr>
<th>group</th>
<th>n</th>
<th>age range</th>
<th>mean age</th>
<th>HEAVY-R</th>
<th>LITE-Y</th>
<th>LITESE-Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>11</td>
<td>4.50-5.33</td>
<td>4.90</td>
<td>42 (9)</td>
<td>88 (5)</td>
<td>88 (5)</td>
</tr>
<tr>
<td>2</td>
<td>11</td>
<td>5.42-6.25</td>
<td>5.91</td>
<td>73 (8)</td>
<td>85 (5)</td>
<td>94 (4)</td>
</tr>
<tr>
<td>3</td>
<td>13</td>
<td>6.42-7.33</td>
<td>6.93</td>
<td>77 (18)</td>
<td>95 (5)</td>
<td>97 (3)</td>
</tr>
<tr>
<td>4</td>
<td>17</td>
<td>adults</td>
<td>-</td>
<td>80 (6)</td>
<td>100</td>
<td>98 (2)</td>
</tr>
</tbody>
</table>
• Percent correct “no” responses on No Control Conditions

<table>
<thead>
<tr>
<th>group</th>
<th>n</th>
<th>age range</th>
<th>mean age</th>
<th>CON-N</th>
<th>LITE-N</th>
<th>LITESE-N</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>11</td>
<td>4.50-5.33</td>
<td>4.90</td>
<td>80 (11)</td>
<td>64 (9)</td>
<td>94 (4)</td>
</tr>
<tr>
<td>2</td>
<td>11</td>
<td>5.42-6.25</td>
<td>5.91</td>
<td>84 (8)</td>
<td>76 (3)</td>
<td>88 (7)</td>
</tr>
<tr>
<td>3</td>
<td>13</td>
<td>6.42-7.33</td>
<td>6.93</td>
<td>75 (7)</td>
<td>69 (9)</td>
<td>92 (4)</td>
</tr>
<tr>
<td>4</td>
<td>17</td>
<td>adults</td>
<td>-</td>
<td>94 (3)</td>
<td>100</td>
<td>98 (2)</td>
</tr>
</tbody>
</table>

• Percent correct “yes” responses on Test Conditions

<table>
<thead>
<tr>
<th>group</th>
<th>n</th>
<th>age range</th>
<th>mean age</th>
<th>HEAVY-B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>11</td>
<td>4.50-5.33</td>
<td>4.90</td>
<td>39 (11)</td>
</tr>
<tr>
<td>2</td>
<td>11</td>
<td>5.42-6.25</td>
<td>5.91</td>
<td>45 (9)</td>
</tr>
<tr>
<td>3</td>
<td>13</td>
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<td>6.93</td>
<td>90 (4)</td>
</tr>
<tr>
<td>4</td>
<td>17</td>
<td>adults</td>
<td>-</td>
<td>82 (4)</td>
</tr>
</tbody>
</table>

Results on Extraction Conditions

• Materials Wh-Movement (Examples given in English)

<table>
<thead>
<tr>
<th>Question Type</th>
<th>Target input</th>
<th>Adult response</th>
<th>Type</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>When did the boy find out about the decision to X?</td>
<td>When he was playing in the sand (short distance)</td>
<td>yes</td>
<td>control</td>
<td>WheavS-Y</td>
</tr>
<tr>
<td>When did the boy make the decision to X?</td>
<td>When he was playing in the sand (short distance)</td>
<td>yes</td>
<td>control</td>
<td>WLiteS-Y</td>
</tr>
<tr>
<td>When did the boy find out about the decision to X?</td>
<td>When he would be playing in the sand (long distance)</td>
<td>no</td>
<td>test</td>
<td>WheavL-N</td>
</tr>
<tr>
<td>When did the boy make the decision to X?</td>
<td>When he would be playing in the sand (long distance)</td>
<td>yes</td>
<td>test</td>
<td>WLiteL-Y</td>
</tr>
</tbody>
</table>

• Percent correct “yes” responses on Yes Control Conditions

<table>
<thead>
<tr>
<th>group</th>
<th>n</th>
<th>age range</th>
<th>mean age</th>
<th>WHeavS-Y</th>
<th>WLiteL-Y</th>
<th>WLiteS-Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>11</td>
<td>4.50-5.33</td>
<td>4.90</td>
<td>73 (11)</td>
<td>79 (8)</td>
<td>76 (6)</td>
</tr>
<tr>
<td>2</td>
<td>11</td>
<td>5.42-6.25</td>
<td>5.91</td>
<td>85 (7)</td>
<td>67 (8)</td>
<td>67 (6)</td>
</tr>
<tr>
<td>3</td>
<td>13</td>
<td>6.42-7.33</td>
<td>6.93</td>
<td>92 (6)</td>
<td>82 (5)</td>
<td>72 (7)</td>
</tr>
<tr>
<td>4</td>
<td>17</td>
<td>adults</td>
<td>-</td>
<td>90 (3)</td>
<td>59 (8)</td>
<td>96 (4)</td>
</tr>
</tbody>
</table>

• Percent correct “no” responses on Test Conditions.

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>age range</th>
<th>mean age</th>
<th>WHeavL-N</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>11</td>
<td>4.50-5.33</td>
<td>4.90</td>
<td>27 (9)</td>
</tr>
<tr>
<td>2</td>
<td>11</td>
<td>5.42-6.25</td>
<td>5.91</td>
<td>55 (12)</td>
</tr>
<tr>
<td>3</td>
<td>13</td>
<td>6.42-7.33</td>
<td>6.93</td>
<td>54 (12)</td>
</tr>
<tr>
<td>4</td>
<td>17</td>
<td>adults</td>
<td>-</td>
<td>78 (6)</td>
</tr>
</tbody>
</table>
Pedro no había nunca navegado en un barco, y por eso le preguntó a su tío, que tenía un barco de vela, si podían navegar un rato. El tío dijo que tenía que pensar lo antes. Así que Pedro se quedó esperando hasta que su tío tomará una decisión. Por fin el tío se decidió.

[Pedro has never sailed on a boat, therefore he asked his uncle, who had a boat, whether they could sail a little. The uncle told him that he would think about it. So, Peter started waiting until his uncle made a decision. Finally, the uncle made up his mind.]
El tío le contó su decisión a Pedro cuando estaba leyendo un libro.

[The uncle told Peter his decision when he was reading a book]

El tío había decidido que iban a navegar cuando hubiera mucho viento. “Qué bien!”, dijo Pedro. Bueno, vamos a hacerle ahora una pregunta a Blas.

[The uncle decided that they would sail when there would be a lot of wind. “Great”, Peter said. Well, let’s put a question to Bert.]

Question to Bert: Blas, ¿cuándo se enteró Pedro de la decisión de navegar?

[Bert, when did Pedro find out about the decision to sail?]

Answer: Cuando soplará un viento fuerte.

[When there would be a strong wind]

Adult response: NO
Estefanía no había nunca navegado en un barco, y por eso le preguntó a su tío, que tenía un barco de vela, si podían navegar un rato. El tío dijo que tenía que pensar lo antes. Así que Estefanía se quedó esperando hasta que su tío tomaría una decisión. Por fin el tío se decidió.

[Estefanía had never sailed on a boat, therefore he asked his uncle, who had a boat, whether they could sail a little. Her uncle told her that he would think about it. So, Estefanía started waiting until her uncle made a decision. Finally, her uncle made up his mind.]

El tío había decidido que iban a navegar cuando hubiera mucho viento.
[The uncle decided that they would sail when there would be a lot of wind]
El tío le contó su decisión a Estefanía 

**cuando estaba leyendo un libro.** "Qué bien!", dijo Estefanía. Bueno, vamos a hacerle ahora una pregunta a Blas.

[The uncle told his decision to Estefanía when she was reading a book. “Great” Estefanía said. Well, let’s now put a question to Bert.]

**Question to Bert:**  

Blas, ¿cuándo se enteró Estefanía de la decisión de navegar?

[Bert, when did Estefanía find out about the decision to sail?]

**Answer:**  

**Cuando soplará un viento fuerte**

[When there would be a strong wind].

Adult response: NO