

Subject-Object Asymmetry in the Acquisition of the Definite Article in Modern Greek*

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0. Introduction

The study of language acquisition has played a central role in the generative framework from the early 60s until now for reasons related to the innateness hypothesis. Based on the idea that humans have a genetic endowment that enables them to learn language - the *Language Acquisition Device* or *Language Faculty* - knowledge of language is considered to be innate. Although the ideas about the form of the *Language Faculty* have changed over time, the general idea remains the same: the *Language Faculty* is thought to provide the child with a *blueprint* for developing grammar on the basis of linguistic experience.

Although language acquisition studies for obvious reasons cannot explore the Initial State - the *Language Faculty* prior to any linguistic experience – they can shed light into intermediate grammars, i.e. grammars which are halfway between the Initial State and the Final State - the adult grammar. Consequently, by revealing how the *Language Faculty* develops, language acquisition studies can bring insight into the design of the *Language Faculty*.

The acquisition of the definite article has been one of the central topics of interest in the acquisition literature during the last decade. After the introduction of the DP-Hypothesis (Horrocks & Stavrou, 1986; 1987; Abney, 1987), studies on the acquisition of the definite

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article have been of considerable importance because - as definite articles belong to the category D - they can provide evidence for the presence of the DP in child grammar, and thus, for the acquisition of the functional domain. As a result, the bulk of studies on the acquisition of the definite article within the generative framework has investigated the emergence and mastery of the definite article in child speech (see Radford, 1990; Clahsen et al. 1994; Penner & Weissenborn, 1996, among others).

However, the majority of these studies have not separately investigated the different obligatory contexts of the definite article (e.g. definite articles used with different noun classes or in different syntactic positions). Moreover, very few, if any specific studies have been undertaken on the acquisition of grammatical bare nouns and their licensing conditions. As a result, very little is known as to when children acquire the licensing conditions for bare nouns and how this knowledge is related to the acquisition of the definite article. This paper addresses this vacuum by comparing the acquisition of the definite article with the acquisition of bare nouns in argument positions and the licensing of bare singular count nouns.

In Section 1, I will present the factors involved in the licensing of bare nouns in argument positions. These will be couched within Chierchia's *Nominal Mapping Parameter* hypothesis in Section 2. Section 3 is concerned with the predictions for the acquisition of the definite article and the licensing of bare nouns in argument positions, which will be tested on the basis of acquisition data in Section 4. The results are summarised and further discussed in Section 5.

1. Factors involved in the licensing of bare nouns

The main factors involved in the licensing of bare nouns are: a) argumenthood, b) syntactic position, c) noun class, d) number marking, e) verb type and f) word-order.

Nouns in argument positions are, apart from the exceptions discussed below, used with articles, as shown in examples (1) and (2) below. This does not hold for nouns in non-argument positions, as shown in example (3) below.

(1)a. **To pedhi** kimate. (argument, subject)
the child sleeps

b.***Pedhi** kimate.
child sleeps
'The child is sleeping.'

(2)a. **Ida to pedhi** sto parko. (argument, object)
saw the child in-the park

b.***Ida pedhi** sto parko.
saw child in-the park
'I saw the child in the park.'

(3) **Afto ine vivlio.** (non-argument)
this is book
'This is a book.'

Since this paper focuses on the acquisition of argumental noun phrases, the issue of bare nouns in non-argument positions will not be further discussed.

There is a subject-object asymmetry in the use of bare nouns, as shown in examples (4) and (5) below. The generalisation is that bare nouns are not licit in the subject position, whereas they can be licit in the object position.

(4)* **Ghala** ine sto trapezi. (subject)
milk is on-the table
'Milk is on the table.'

(5) **Aghorasa ghala.** (object)
bought milk
'I bought milk.'

However, bare nouns in the object position are not always licit, but only under certain conditions. Moreover, in certain contexts bare nouns are also licit in the subject position. As far as bare nouns in the object position are concerned, four factors are important for their licensing: noun class, number marking, verb type, word-order.

The relevance of the factor noun class is illustrated in examples (6), (7) and (8) below. Mass nouns are licit as bare objects - consider example (6) below – whereas this does not

hold in general for count nouns, as shown in example (7) below. Finally, proper names in their typical use¹ cannot be used as bare objects, as shown in example (8) below.

(6)a O Nikos ipie **to chimo**. (object, mass noun)
 the Nikos drank the juice

b O Nikos ipie **chimo**.
 the Nikos drank juice
 ‘Nikos drank (the) juice.’

(7)a Xthes vradi o Nikos sidherose **ena pukamiso**. (object, count noun)
 yesterday evening the Nikos ironed a/one shirt

b* Xthes vradi o Nikos sidherose **pukamiso**.
 yesterday evening the Nikos ironed shirt
 ‘Nikos ironed a/one shirt yesterday evening.’

(8)a Aghapao **ti Maria**. (object, proper name)
 love the Maria

b* Aghapao **Maria**.
 love Maria
 ‘I love Maria.’

Noun class interacts with number marking. Count nouns are illicit as bare objects when used in the singular, as already shown in example (7) above, but they are licit in the plural, as in example (9) below.

(9) Xthes vradi o Nikos sidherose **pukamisa**. (object, count noun, plural)
 yesterday evening the Nikos ironed shirts
 ‘Nikos ironed shirts yesterday evening.’

Bare singular count nouns (BSCNs) are in general illicit, as illustrated in example (7b) above. However, in some contexts they are fully grammatical. This holds when they are objects of verbs of accomplishment (see Vendler, 1967), as shown in example (10) below, objects of light verbs, such as the verb *kano* = *do*, see example (11) below, objects of the verb *thelo* = *want*, see example (12) below and objects of the copula *exo* = *have*, see

¹ See Marmardou (1984; 1989) for other uses of proper names.

example (13) below, something which has also been noted in Tzartanos (1945), Mackridge (1990), Holton, Mackridge & Philippaki-Warburton (1997) and Tsimpli & Stavrakaki (1999).

(10) I Maria **agorase aftokinito**.
 the Maria bought car
 ‘Maria bought a car.’

(11) I Maria **ekane mbanio** sti Varkiza.
 the Maria did bath in-the Varkiza
 ‘Maria had a bath/swim in Varkiza.’

(12) I Maria pantrevete ke **theli spiti** stin Kifisia.
 the Maria gets married and want house in-the Kifisia
 ‘Maria is getting married and wants a house in Kifisia’

(13) I Maria **echi aftokinito** Italiko.
 the Maria has car Italian
 ‘Maria has an Italian car.’

As far as word-order is concerned, bare nouns in the object position are licit post-verbally, i.e. in lexically governed positions, as shown in examples (14) and (15) below; however, they can also surface pre-verbally when they are focused, as shown in example (16) below.

(14) I Maria agorase **aftokinito**.
 the Maria bought car
 ‘Maria bought a car.’

(15)* **Aftokinito** aghorase i Maria.
 car bought the Maria
 ‘Maria bought a car.’

(16) **AFTOKINITO** aghorase i Maria.
 car bought the Maria
 ‘Maria bought a car.’

Bare nouns in the subject position are licit in even more restrictive ways, namely, when the noun is used contrastively, as in example (17) below, if it is used in the scope of negation, as in example (18) below (see Setatos 1995), if it is used in the context of headlines or as announcements, as in example (19) below (see Marmaridou 1984:171; Mackridge

1990:300; Holton, Mackridge & Philippaki-Warburton 1997:284), or if it is used as meta-language, as in example (20) below (Anastasiadi-Simeonidi p.c.).

- (17) **Stratiotis** perase apo do, **politis** apo ki.
 soldier passed from here civilian from there
 ‘A soldier passed from here, a civilian from there.’ (from Setatos 1995:184)
- (18) **Skilos** dhen troi tetia.
 dog not eats such
 ‘Dogs do not eat such things.’ (from Setatos 1995:186)
- (19) **Mitera** skotose ta dhio tis pedhia ke meta aftoktonise.
 mother killed the two her children and then killed herself
 ‘A mother killed her two children and then committed suicide.’
- (20) **'Efimeridha'** ine usiastiko thiliku ghenus.
 newspaper is noun feminine gender
 ‘*Newspaper* is a feminine noun.’

Finally, bare arguments have a different interpretation as compared to arguments involving articles. Bare arguments are typically interpreted as non-specific, as shown in examples (21)-(23) below for bare nouns as objects and in examples (17)-(20) above for bare nouns as subjects.

- (21) O Nikos ipie **chimo**. (object, mass, non-specific)
 the Nikos drank juice
 ‘Nikos drank juice.’
- (22) Aghorasa **vivlia**. (object, count, plural, non-specific)
 bought books
 ‘I bought books.’
- (23) I Maria echthise **spiti**. (object, count, singular, non-specific)
 the Maria built house
 ‘Maria has built a house.’

Summarising this section, I have demonstrated that the relevant factors for the licensing of bare nouns are: argumenthood, syntactic position, noun class, number marking, verb type and word-order. Crucially, there is a subject-object asymmetry in the use of bare nouns. Bare nouns in the subject position are licit in much more restricted environments than bare

nouns in the object position. These descriptive generalisations will be discussed in the next section within Chierchia's *Nominal Mapping Parameter* hypothesis (see Chierchia, 1998).

2. Chierchia's Nominal Mapping Parameter

According to standard assumptions concerning the mapping of nominal categories onto their denotations, common nouns are of the type $\langle e, t \rangle$ - they are mapped onto predicates -, whereas DPs are of the type e (referential nominals), or $\langle \langle e, t \rangle, t \rangle$ (quantificational nominals) - they are mapped onto arguments. This being so, bare common nouns should not appear in argument positions because they are of the wrong type, i.e. $\langle e, t \rangle$, i.e. they cannot be mapped onto arguments. This line of reasoning has led to the assumption that the DP layer must be projected with a null D^0 each time a bare common noun appears in an argument position (Longobardi, 1994).²

Chierchia's (1998) approach treats these facts differently. According to Chierchia there is no cross-linguistic isomorphism between arguments and the DP layer. In his account, count nouns are not cross-linguistically of the type $\langle e, t \rangle$, they are not per definition predicates. They can or even sometimes must be kind-denoting in the sense of Carlson (1977). In other words, count nouns can and sometimes must be of the type e , that of arguments. Given that, there is no need to assume the presence of a DP layer with a null D^0 each time when bare common nouns appear in argument positions.³

The mapping of nouns onto their interpretations is constrained in Chierchia's model through the use of the binary features $[\pm\text{arg}]$ for argument, $[\pm\text{pred}]$ for predicate. When a noun has a $[\text{+arg}]$ specification, this means that it can be mapped onto an argument, consequently it can appear as a bare noun in an argument position. Nouns with a $[\text{-arg}]$ specification, on the other hand, cannot be mapped onto arguments. In order to do so they

² As far as proper names are concerned, under the assumption that they are universally of type e , they are of the right type to appear as bare nouns in argument positions. In order to account for languages in which proper names are preceded by determiners (Northern Italian dialects, Swiss German, High German and Modern Greek, among others), Longobardi (1994), Rousou & Tsimpli (1994), Penner (1994), Marini (1998), have suggested that definite articles used with proper names are expletives.

³ In Chierchia's approach, the denotation of proper names, like the denotation of common nouns, is not cross-linguistically uniform: proper names may have the semantic type $\langle e, t \rangle$, meaning that they are predicates true of just one individual.

need a DP layer. Similarly, for [+pred] and [-pred].⁴ Accordingly, cross-linguistic variation is expressed through the combination of two binary features.

There are three combinations, which represent the possible language types, i.e. [+arg, -pred], [+arg, +pred] and [-arg, +pred],⁵ each one of which represents a setting of the *Nominal Mapping Parameter*. The three possible combinations correspond to three language types, Chinese, Romance and Germanic. The specification [+arg, -pred] appears in languages of the Chinese type, such as Chinese and Japanese, the specification [-arg, +pred] in Romance languages, such as French and Italian, and the specification [+arg, +pred] in Germanic languages, such as English and German.

Nouns in Chinese have the specification [+arg, -pred]. Consequently, they are argumental (names of kinds) and can occur without determiners in argument positions, as illustrated in example (24) below. The extension of all nouns is mass and there is no plural marking, as shown in example (25) below. Finally, Chinese has a Generalised Classifier System, as illustrated in example (26) below.

(24) wò kànjiàn **xióng** le.
I see bear ASP
'I saw (some/the) bears.'

(25) **liang** zhang **zhuozi**.
two CL table
'Two (pieces of) tables.'

(26) yí **zhang** zhuozi.
one CL table
'One (piece of) table.'

(from Chierchia, 1998)

In Romance languages, nouns are specified with the features [-arg, +pred] and are, thus, mapped onto predicates. Consequently, they need a DP layer whenever they occur in argument positions. In these languages the extension of nouns is count or mass, and count nouns may have plural marking. French does not have bare nouns in argument positions, as

⁴ Since this paper focuses on the use of nouns in argument positions, we will not discuss further the issue of the specification of nouns that are used as predicates.

⁵ The [-arg, -pred] specification is not a possible option, because it would prevent nouns from having any interpretation at all, i.e. nouns would be mapped neither onto arguments nor onto predicates.

illustrated in examples (27) and (28) below, whereas Italian does have in positions governed by a lexical head, as illustrated in examples (29) and (30) below. In this case it is assumed that a null D^0 is present. The null D^0 is licensed by a lexical head, in this case the verb.

(27)* **Enfants** sont venus chez nous.
children are come at us
'Children have come to our place.'

(28)* J' ai mangé **biscuits** dans mon lait.
I have eaten biscuits in my milk
'I have eaten biscuits with my milk.'

(29)* **Bambini** sono venuti da noi.
children are come at us
'Children have come to our place.'

(30) Ho mangiato **biscotti** con il latte.
have eaten biscuits with the milk
'I have eaten biscuits with my milk.'

(from Longobardi, 1994)

Finally, nouns in Germanic languages have the specification [+arg, +pred], i.e. some nouns are argumental and some others predicative. For example, English allows both predicative and argumental NPs, and behaves like French for certain aspects of its nominal system, i.e. for singular count nouns and like Chinese for other aspects, i.e. for plurals and mass nouns, as illustrated in examples (31) and (32) below.

(31) **Dogs** are widespread.

(32) **Gold** is rare.

The distribution of bare objects in Modern Greek (hereafter MG) has been analysed within Chierchia's *Nominal Mapping Parameter* hypothesis by Sioupi (1999; 2001) and Marinis (2000; 2001). Accordingly, MG matches the [-arg, +pred] setting, the Romance setting. As shown in Section 1, bare nouns in argument positions are generally disallowed, they are licit only in restricted environments. Since nouns in MG have the specification [-arg, +pred], as nouns in Romance do, a null D^0 head is assumed to project a DP layer and map the interpretation of the noun onto an argument. In the case of post-verbal bare objects, the

null D^0 is licensed by a lexical head, i.e. the verb that takes the bare object as its argument (cf. Longobardi, 1994; Rousou & Tsimpli, 1993). Pre-verbal focused bare objects, on the other hand, are licensed via Spec-Head Agreement by the head of a Focus Phrase in a system à la Rizzi (1997).

Evidence for a null D^0 in BSCNs has been provided in Sioupi (1999) by word-order facts, and in Sioupi (2001) by the interpretation of bare objects. Moreover, evidence against an incorporation analysis and a complex predicate analysis has been provided by a series of tests involving co-ordination, focalisation, wh-questions, adjectival modification, and the use of adverbs (see Sioupi, 1999). Consider examples (33a)-(33e) below, which correspond to the five tests.

- (33)a Efagha **milo** ke **portokali**. (coordination)
 ate apple and orange
 ‘I ate an apple and an orange.’
- b **MILO** troo. (focalisation)
 apple eat
 ‘I eat an apple.’
- c Ti echtise o Petros? - **Spiti**. (wh-question)
 what built the Petros house
 ‘What did Petros build? - A house.’
- d Echtise **oreo spiti**. (adjectival modification)
 built nice house
 ‘He built a nice house.’
- e Dhiavaze **sinithos efimeridhao** Giannis. (use of adverbs)
 read usually newspaper the Giannis
 ‘Giannis was usually reading the newspaper.’ (from Sioupi 1999)

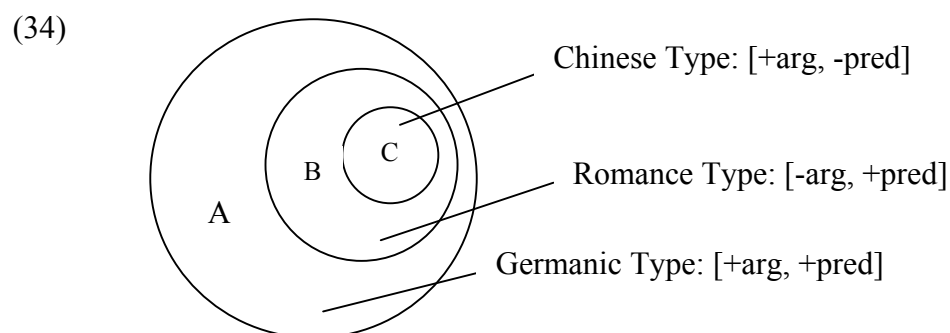
Example (33a) above shows that BSCNs can be co-ordinated, example (33b) that they can be focused, example (33c) that they can be used in isolation as an answer to a wh-question, example (33d) that they can be modified by adjectives and example (33e) that adverbs may intervene between the verb and the bare object. If the bare object would form a unit with the verb either by incorporation or as a complex predicate, examples (33a) to (33e) above would have been ungrammatical.

As far as bare nouns in the subject position are concerned, as shown in Section 1, these are restricted to cases involving a contrastive interpretation, negation, context of headlines and the use in meta-language. The context of headlines and the use of expressions as meta-language display often exceptional behaviour. Therefore, they will not be further discussed. Bare subjects in a contrastive context and in the scope of negation, however, can be analysed on a par with bare objects involving a null D^0 . The null D^0 in bare subjects involving a contrastive interpretation can be licensed by a functional head similarly to the null D^0 in bare objects involving focus, whereas the null D^0 in bare subjects which appear in the scope of negation can be licensed by the head of a NegPhrase.

Summarising this section, within Chierchia's *Nominal Mapping Parameter* model, nouns in MG have the specification [-arg, +pred] and need a DP layer in order to be able to surface as arguments. Bare nouns in both the subject and object position involve a null D^0 , which is licensed by a lexical or a functional head. Based on these assumptions, in the next section I shall develop the predictions for the acquisition of the definite article and the licensing conditions for bare nouns in argument positions.

3. Predictions for the acquisition of the definite article and the licensing conditions for bare arguments

The *Nominal Mapping Parameter* model predicts a very specific acquisition sequence with respect to articles. Based on the Subset Principle (see Wexler & Manzini 1987), according to which children hypothesise the most restrictive grammar, the prediction is that they will start with the feature specification that rules out the most, so that they may revise their hypothesis on the basis of positive evidence. Consider (34) below.



As shown in (34) above, the most restrictive feature specification within the *Nominal Mapping Parameter* model is [+arg, -pred], which corresponds to the Chinese setting. This is based on the idea that in Chinese type languages:

- a) nouns occur without determiners,
- b) the extension of nouns is mass,
- c) there is no plural marking and
- d) a classifier system is operative.

The properties a) to d) are contained in Romance and Germanic type languages. If the initial setting is [+arg, -pred], we expect children to initially omit definite articles, treat all nouns as mass and not use plural morphology. The existence of definite articles, plural morphology and numeral quantifiers combining directly with nouns (which are not part of the properties of Chinese type languages) can provide positive evidence to the language learner in order to change the feature specification of nouns. Upon discovering definite articles, plural marking and quantifiers combined directly with nouns in the input, children should change the initial feature specification to [-arg, +pred] (Romance type).

The value of Romance type languages is the next most restrictive feature matrix, since in Romance type languages:

- a) the extension of nouns is mass or count,
- b) nouns occur with determiners,
- c) there is plural marking on count nouns and
- d) a classifier system is operative.

The properties a) to d) are contained in Germanic type languages. The second setting excludes bare nouns altogether. Consequently, children are expected to project a DP-layer always, when the noun phrase is in an argument position. However, they have to figure out, which nouns are mass and which are count, as well as when a null D^0 is licit and when not. Finally, unrestricted occurrence of bare mass nouns in argument positions should lead children to change the value of the *Nominal Mapping Parameter* to the setting of Germanic type languages, i.e. [+arg, +pred].

The value of Germanic type languages is the most non-restrictive feature matrix, since:

- a) the extension of nouns is mass or count,
- b) nouns may occur with or without determiners,
- c) there is plural marking on count nouns and
- d) a classifier system is operative with mass nouns.

Since all children are expected to start with the Chinese setting irrespective of the language they are acquiring, the first prediction concerning the use of articles is that initially children will use bare nouns. Children acquiring MG, upon discovering definite articles, plural morphology and/or numeral quantifiers combining directly with nouns, should switch to the Romance setting. This predicts that at a second stage, they will always project a DP-layer. However, the input to children acquiring MG contains bare nouns in argument positions. Thus, children must discover, in which positions bare nouns are licit. This involves:

- a) discovering the distinction between argument vs. non-argument,
- b) identifying the subject and object position and that MG displays a subject-object asymmetry,
- c) discovering the distinction between mass and count nouns and the possibility of mass nouns to appear as bare singular objects,
- d) detecting plural marking and finding out that bare plurals are licit in the object position,
- e) identifying which verb classes allow BSCNs as arguments and
- f) observing the impact of word-order and focalisation in the use of bare nouns.

Uncertainty in these aspects may result in the optional use of definite articles. However, given that the input to the child acquiring MG includes bare nouns, how is it possible to exclude the possibility that children will change the feature value of the *Nominal Mapping Parameter* to [+arg, +pred] (Germanic type). Are there any contexts, which can provide unambiguous evidence that nouns in MG are [-arg, +pred]?

Unambiguous contexts that nouns in MG are [-arg, +pred] can be provided by the use of proper names (hereafter PNs) and kinship terms (hereafter KTs). PNs and KTs are the only nouns that cannot be used as bare nouns in argument positions: in argument positions they must be obligatorily used with definite articles, in non-argument positions - for example in the vocative - they must be obligatorily used without definite articles. This minimal pair can act as a Unique Trigger⁶ providing the relevant information for the feature specification of nouns. Importantly, PNs and KTs are very frequent in child directed speech in both argument and non-argument positions, which ensures that children will get enough input from these two contexts.

Considering this last property of MG, under the assumption that the trigger not only contributes to the setting of a parameter, but also the structure comprising the trigger

⁶ See Roeper & Weissenborn (1990) for the notion of Unique Trigger.

emerges quite early in child speech, it is expected that children will use definite articles with PNs and KTs as soon as they start using definite articles productively. This does not imply that they will use definite articles only with PNs and KTs and not with nouns belonging to other classes, since having the right specification will lead them to use definite articles with all noun classes.⁷

As we already shown in Section 2, there is a subject-object asymmetry in the use of bare nouns in MG. Moreover, BSCNs are restricted to appear as objects of a specific set of verbs. Acquisition of the MG nominal system should be reflected in the conformity of these restrictions, if children have knowledge of the grammar of the target language. The predictions for the acquisition of definite articles and for the licensing of bare arguments in MG are summarised in Table 1 below.

Table 1: Predictions for the acquisition of definite articles and the licensing of bare arguments

<i>Prediction 1:</i>	initial stage: drop of definite articles
<i>Prediction 2:</i>	second stage: optional use of definite articles
<i>Prediction 3:</i>	definite articles with PNs and KTs at the outset of productive use of definite articles
<i>Prediction 4:</i>	subject-object asymmetry
<i>Prediction 5:</i>	compliance with the licensing conditions for BSCNs

These predictions will be tested in the next section.

4. The Data

This study is based on a longitudinal corpus, the Christofidou Corpus which consists of audio-recordings of one monolingual child, Christos, growing up in Athens, Greece. The collection was made by the mother of the child, Anastasia Christofidou, which was the main person interacting with the child. The recordings, which were made on a weekly basis, took place in a natural setting in the house of the family and consisted mainly of the

⁷ With respect to the change of the feature specification of nouns, we can imagine this procedure to take place as in Roeper (1999).

description of picture books, free play with toys and talking about activities during the day or during previous days. The data analysed in this study consist of 69 recordings between the age of 1;7 and 2;8.

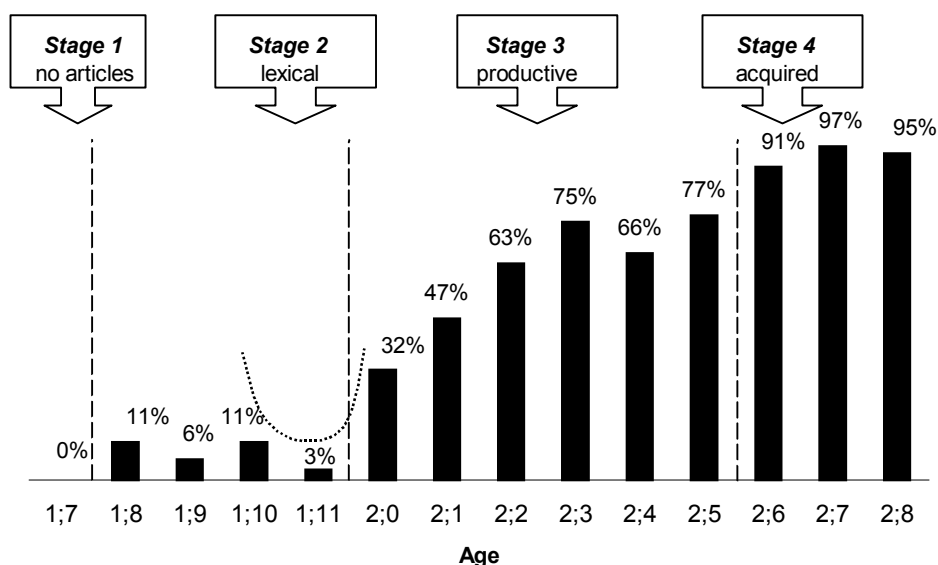
The data has been transcribed in CHAT format and coded on the basis of the CHILDES coding scheme. Noun phrases involving article omission have been coded separately from noun phrases involving grammatical bare nouns. Bare nouns which was not clear from the context whether they involve article omission or a grammatical bare noun have been excluded from the analysis. Noun phrases involving imitations of preceding adult utterances, self-repetitions and formulaic expressions have also been excluded. The total number of noun phrases that entered into the analysis is 5,203.

4.1 The acquisition of definite articles: overall use of definite articles

As shown in Section 3, Chierchia's Mapping Parameter model predicts that children will initially pass through a stage, in which they drop definite articles. This stage should be followed by a period, in which definite articles are optional. Finally, in the next stage definite articles should become obligatory in child speech.

In the speech of Christos there are four stages in the acquisition of articles, as illustrated in Figure 1 below. In *Stage 1*, which is at the age of 1;7 (MLU = 1.2), Christos does not use any definite articles at all. Definite articles are omitted in all 28 obligatory contexts.

Figure 1: Percentage of use of definite articles in obligatory contexts



Stage 2 covers the age of 1;8 to 1;11.0 (MLU = 1.2 to 1.5). During this stage Christos uses a very small number of definite articles (type/token = 9/12) with a restricted set of nouns. This indicates that he uses definite articles in a lexically based fashion. Additional evidence for a lexically based use of definite articles comes from the fact that from 1;11.10 to 1;11.19 he does not use any definite articles at all. As a result we can see a U-shaped curve in Figure 1.⁸

In *Stage 3*, which starts from 1;11.27, definite articles are used productively in the speech of Christos. Evidence for the productive use of definite articles comes from the fact that Christos uses definite articles:

- a) with more nouns than he did before,
- b) with nouns that appear for the first time in his speech,
- c) with nouns from different noun classes (count nouns, PNs and KTs) and
- d) with nouns in different syntactic positions (in both the subject and object position).

Despite the productive use of definite articles, the percentage of definite articles in obligatory contexts is from the age of 2;0 until the age of 2;5 lower than 90% (Brown's acquisition criterion). This shows that definite articles are used during this stage in an optional manner. Definite articles become obligatory in *Stage 4*, that is from the age of 2;6 onwards, when they are used in more than 90% in obligatory contexts.

Summarising, at the initial stage (*Stage 1*), there are no definite articles found in the speech of Christos. In the next stage (*Stage 2*), Christos uses definite articles, but there is no evidence for productivity. Productive use of definite articles is attested in the subsequent stage (*Stage 3*), however, at that stage definite articles are used optionally. Definite articles are fully acquired only at the last stage attested in Christos' speech (*Stage 4*).

Does the use of definite articles by Christos support the predictions deriving from the *Nominal Mapping Parameter* model? The development of the use of definite articles attested in the speech of Christos is very similar to the one predicted by the *Nominal Mapping Parameter* model. As shown in Section 3, this model predicts an initial stage, in which children drop definite articles altogether (*Prediction 1*) followed by a second stage of optional use of definite articles (*Prediction 2*). The stages predicted correspond to *Stage 1*

⁸ A U-shaped curve has often been reported to indicate the switch from the use of elements belonging to functional categories as impostors into their use in a target-like fashion (see Marcus, Pinker, Ullman, Hollander, Rosen & Xu, 1992; Eisenbeiss, 2000).

and *Stage 3* in the speech of Christos. Although the *Nominal Mapping Parameter* model does not predict a stage of lexically based use of definite articles, such a stage does not pose a problem for the following reason: considering that the stage of lexically usage of definite articles is possibly the result of memorising definite articles with nouns, this stage is not related to any model that predicts the development of a system of rules, like the *Nominal Mapping Parameter* model does.

4.2 Looking for the trigger: the use of articles with proper names and kinship terms

As discussed in Section 3, the presence of bare nouns in the input of the child acquiring MG may lead children to hypothesise that MG nouns have the feature specification of Germanic type languages, i.e. [+arg, +pred]. Unambiguous cues that MG has the Romance type specification, i.e. [-arg, +pred], can be provided by the use of PNs and KTs. Evidence for the function of PNs and KTs as trigger for the setting of the *Nominal Mapping Parameter* may be provided from the use of definite articles with these noun classes. If PNs and KTs are the unambiguous trigger, children should use definite articles with these noun classes as soon as they start to use definite articles productively. In the case of Christos, given that he uses definite articles from *Stage 3* productively, the prediction is that he will use from that stage onwards definite articles with PNs and KTs.

In order to test this prediction, I analysed the use of definite articles with PNs, KTs and count nouns (hereafter CNs) in the speech of Christos at *Stage 2* and the beginning of *Stage 3*. The number of definite articles used with nouns belonging to these nouns classes is given in Table 2 on the next page.

Table 2: The use of definite articles with CNs, PNs and KTs

	<i>Age</i>	<i>CN</i>	<i>PN & KT</i>
<i>Stage 2</i>	1;08	0	2
	1;09	1	1
	1;10	3	3
	1;11	0	4
<i>Stage 3</i>	2;00	38	44
	2;01	93	106
	2;02	57	89
	<i>Total =</i>	<i>192</i>	<i>249</i>

As we can see in Table 2, Christos uses a small number of definite articles with all noun classes at the stage, in which definite articles are used in a lexically-based fashion (*Stage 2*). There is an immense increase of the number of definite articles used with these noun classes at *Stage 3*, which is also the relevant stage, since from this stage onwards he uses definite articles productively. The use of definite articles with PNs and KTs at *Stage 3* supports the idea that PNs and KTs may provide the unambiguous trigger to children acquiring MG for the setting of the *Nominal Mapping Parameter (Prediction 3)*.

4.3 Acquiring bare arguments

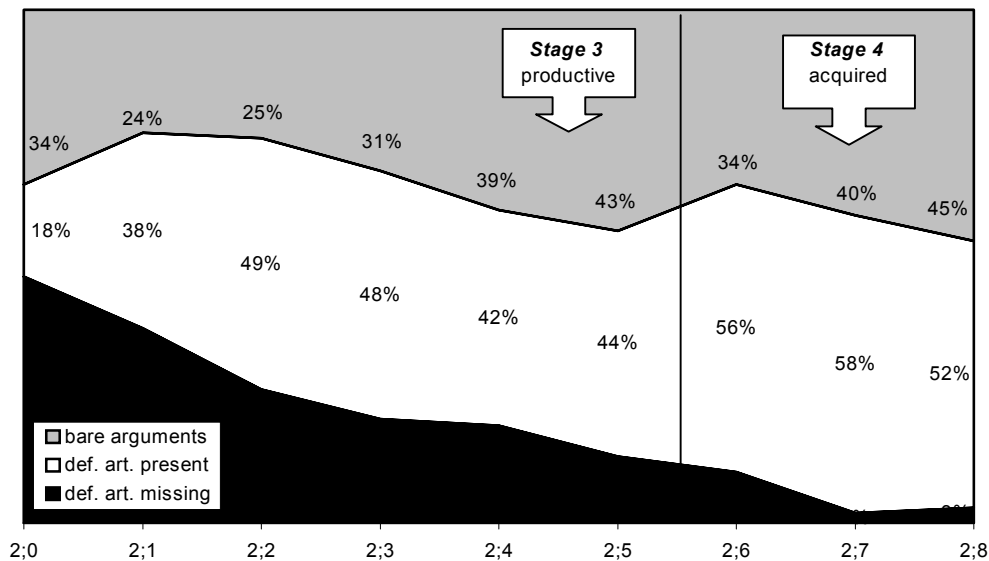
Productive use of definite articles does not necessarily comprise a target-like use of definite articles. Indeed, as shown in Section 4.1, there is a high rate of definite article omission in the speech of Christos at *Stage 3*, although he uses definite articles productively. Given this observation, the next question to be asked is, how much knowledge he has for the use of definite articles in obligatory contexts. This issue will be addressed by analysing the use bare nouns in argument positions.

As shown in Section 1, MG allows bare nouns in argument positions under specific licensing conditions. This should be reflected in the speech of children acquiring MG, if they have the knowledge of the target grammar. In the speech of Christos, the relevant stage for this issue is *Stage 3*, since this is the stage in which he uses definite articles

productively, but the percentage of definite articles is lower than 90% in obligatory contexts indicating that he has not acquired fully the target grammar.

An initial step is to consider the use of bare nouns in argument positions at *Stage 3*. Figure 2 below illustrates the percentage of bare (grammatical) nouns compared to the percentage of nouns used with definite articles present and missing in his speech.

Figure 2: Bare nouns vs. definite articles present and missing



As shown in Figure 2, bare nouns make approximately one third of the noun phrases in argument positions at the age of 2;0. If we compare the development of bare nouns as opposed to the development of noun phrases with definite articles present, we can observe that although both types of noun phrases increase through time, the rate of bare nouns increases in a different manner than the rate of noun phrases with definite articles:

- at *Stage 3* there is a great increase of the rate of noun phrases with definite articles (from 18% to 44%), whereas the rate of bare nouns is at the beginning of *Stage 3* already 34% and ranges between 24% and 43%,
- there is a radical increase of noun phrases with definite articles between 2;0 and 2;2 (from 18% to 49%), whereas there appears to be no radical increase in the rate of bare nouns and
- the increase of the rate of noun phrases with definite articles coincides with a decrease of the rate of bare nouns and vice versa.

The rate of nouns with definite articles increases between 2;0 and 2;2 (from 18% to 49%) and between 2;5 and 2;6 (from 44% to 56%), whereas in the same periods the rate of bare

nouns drops (from 34% to 25% and from 43% to 34% respectively). Additionally, the rate of nouns used with definite articles decreases between 2;2 and 2;4 (from 49% to 42%) and between 2;7 and 2;8 (from 58% to 52%), and in the same periods the rate of bare nouns increases (from 25% to 39% and from 40% to 45% respectively). A simultaneous increase of both nouns used with definite articles and bare nouns takes place only between 2;4 and 2;5 and between 2;6 and 2;7.

From this figure it is not possible to establish, whether there is a correlation between the increase/decrease of nouns with definite articles and bare nouns. However, two things are clear: a) a great percentage of grammatical bare nouns is used by Christos from the beginning of *Stage 3*, and b) the increase of the rate of bare nouns from *Stage 3* to *Stage 4* is only approximately 10% (unlike the increase of definite articles, which is approximately 40%). The fact that Christos is using (grammatical) bare nouns along with noun phrases with definite articles from the beginning of *Stage 3* indicates that he has some knowledge of the target grammar. In order to take a closer look to this issue, it is necessary to analyse the contexts, in which Christos uses bare nouns. Is there a subject-object asymmetry in his use of bare arguments? This issue will be discussed in the next section.

4.4 Subject-object asymmetry

As shown in Section 1, there is a subject-object asymmetry in the use of bare nouns in the target grammar. Bare nouns in the subject position are licit in much more restricted environments than bare nouns in the object position. This should be reflected in the speech of Christos, if he has acquired the licensing conditions for bare nouns in argument positions. The use of bare arguments in the subject versus in the object position is illustrated in figures 3 and 4 below.

The subject-object asymmetry in the use of bare nouns is apparent. As shown in Figure 3, there are hardly any bare subjects present, whereas bare nouns make up roughly two thirds of the noun phrases in the object position. Interestingly, although the rate of bare nouns in the object position at *Stage 3* shows an increase and decrease in specific points in time, there is no vital change between *Stage 3* and *Stage 4*.

Figure 3: Bare subjects vs. definite articles present and missing

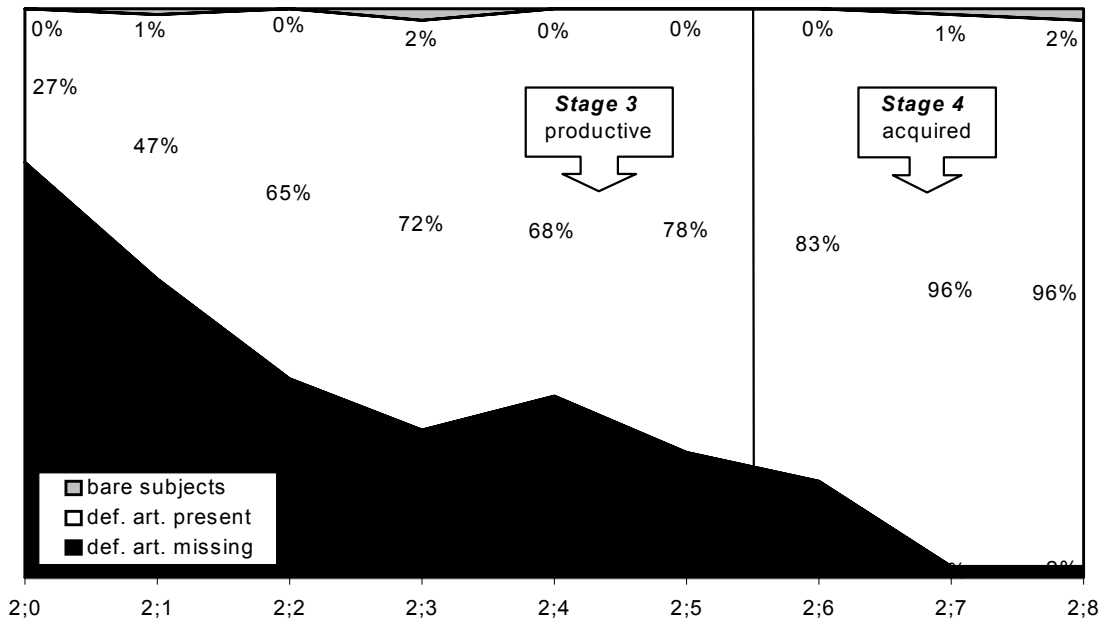
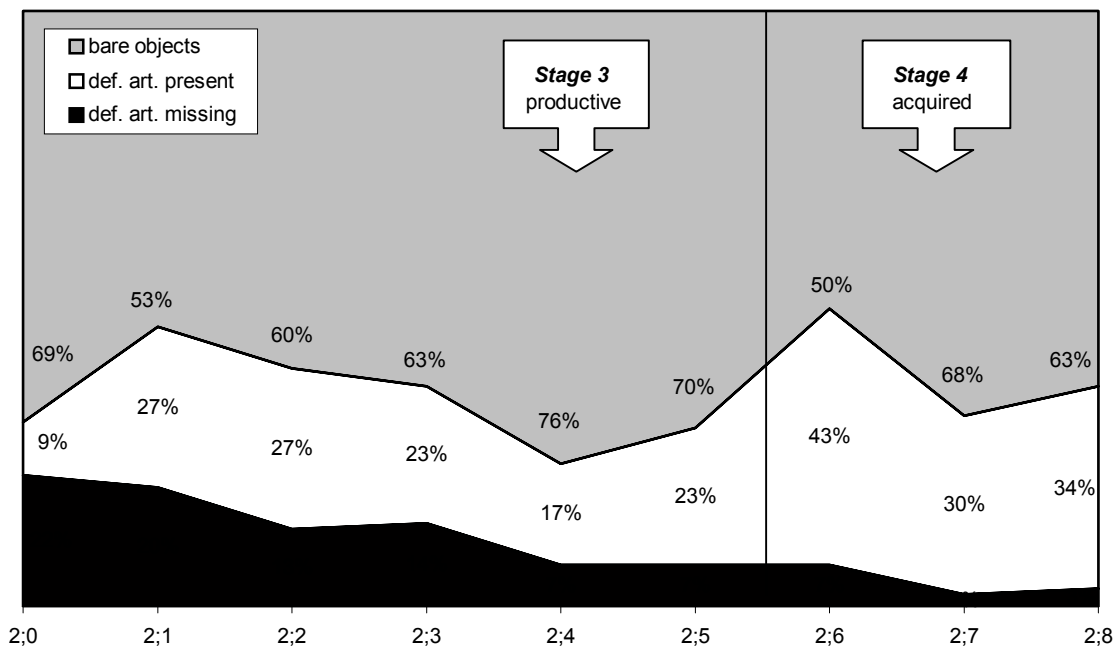


Figure 4: Bare objects vs. def. articles present and missing



The comparison of the two figures is also revealing with respect to the acquisition of definite articles. Looking at the acquisition of definite articles in Section 4.1, two stages have been established (based on Brown's criterion of 90% use in obligatory contexts): *Stage 3*, in which Christos uses definite articles productively, but the rate of omission is more than 10%, and *Stage 4*, in which he uses definite articles over 90% in obligatory contexts.

(36) Child: Oi **telo cicineto.**
 dhen thelo aftocinito
 not want car
 'I don't want a car.'

(Christos 2;3.14)

BSCNs emerge in the speech of Christos at the age of 1;10 with the verb *thelo* = 'want'. The next verb to be used with BSCNs is the copula *echo* = 'have' at the age of 2;0, followed by the light verb *kano* = 'do'.

However, the use of grammatical BSCNs with this set of verbs does not necessarily provide evidence that Christos has acquired the licensing conditions for BSCNs. It may be the case that Christos uses BSCNs in a lexically based fashion. There are at least two ways to test, whether he is using BSCNs in a lexically based way or productively. Lexically based use of BSCNs can be indicated from their use with a small number of verbs. Moreover, if Christos is using BSCNs in a lexically based manner, he may use a specific set of verbs only with BSCNs and not with nouns preceded by a definite article.

In order to test the first scenario, I have compiled all verbs used by Christos with BSCNs. The list is given in Table 3 below.

Table 3: Verbs used with BSCNs

Age	Verbs used with BSCNs
1;10	<i>thelo</i> = 'want'
1;11	<i>thelo</i> = 'want'
2;00	<i>echo</i> = 'have'
2;01	<i>thelo</i> = 'want', <i>echo</i> = 'have'
2;02	<i>echo</i> = 'have', <i>kano</i> = 'do'
2;03	<i>thelo</i> = 'want', <i>echo</i> = 'have', <i>pezo</i> = 'play'
2;04	<i>echo</i> = 'have', <i>allazo</i> = 'change', <i>odhighao</i> = 'drive'
2;05	<i>thelo</i> = 'want', <i>echo</i> = 'have', <i>perno</i> = 'take', <i>vazo</i> = 'put'
2;06	<i>thelo</i> = 'want', <i>echo</i> = 'have', <i>kano</i> = 'do'
2;07	<i>thelo</i> = 'want', <i>echo</i> = 'have', <i>kano</i> = 'do', <i>perno</i> = 'take', <i>vazo</i> = 'put', <i>troo</i> = 'eat'
2;08	<i>thelo</i> = 'want', <i>echo</i> = 'have', <i>kano</i> = 'do', <i>perno</i> = 'take', <i>vazo</i> = 'put', <i>troo</i> = 'eat', <i>dhino</i> = 'give', <i>ftiachno</i> = 'construct', <i>vafo</i> = 'paint', <i>vrisko</i> = 'find'

Table 3 shows that the core verbs used with BSCNs are the verb *thelo* = 'want', the copula *echo* = 'have' and the light verb *kano* = 'do'. From 1;10 to 2;3, Christos is using BSCNs only with this set of verbs. However subsequently, BSCNs are also used with other verbs and the number of verbs used with BSCNs increases through time. Consequently, the scenario in which Christos uses BSCNs in a lexically based manner in a sense that he uses

them only with a small number of verbs can be maintained only for the age range of 1;10 to 2;3.

In order to test the second scenario, I looked at whether the verbs used with BSCNs appear exclusively with BSCNs or whether they are also used in noun phrases containing definite articles. Consider Table 4 below.

Table 4: Verbs used with BSCNs and definite articles

Age	Verbs used only with BSCNs	Verbs used with both BSCNs and definite articles
1;10	<i>thelo</i> = 'want'	
1;11	<i>thelo</i> = 'want'	
2;00	<i>echo</i> = 'have'	
2;01	<i>thelo</i> = 'want', <i>echo</i> = 'have'	
2;02	<i>echo</i> = 'have', <i>kano</i> = 'do'	
2;03	<i>pezo</i> = 'play'	<i>thelo</i> = 'want', <i>echo</i> = 'have'
2;04	<i>allazo</i> = 'change', <i>odhighao</i> = 'drive'	<i>echo</i> = 'have'
2;05		<i>thelo</i> = 'want', <i>echo</i> = 'have', <i>perno</i> = 'take', <i>vazo</i> = 'put'
2;06		<i>thelo</i> = 'want', <i>echo</i> = 'have', <i>kano</i> = 'do'
2;07		<i>thelo</i> = 'want', <i>echo</i> = 'have', <i>kano</i> = 'do', <i>perno</i> = 'take', <i>vazo</i> = 'put', <i>troo</i> = 'eat'
2;08	<i>ftiachno</i> = 'construct', <i>vrisko</i> = 'find'	<i>thelo</i> = 'want', <i>echo</i> = 'have', <i>kano</i> = 'do', <i>perno</i> = 'take', <i>vazo</i> = 'put', <i>troo</i> = 'eat', <i>dhino</i> = 'give', <i>vafo</i> = 'paint'

This is also a possible scenario until the age of 2;3, because until then the verbs used with BSCNs are not used with noun phrases involving definite articles. The verb *echo* = 'have' is used initially only with bare objects. Only from 2;3 onwards does Christos start using it with objects preceded by the definite article. The same is true for the verb *thelo* = 'want', which is used initially with bare nouns. Consider example (37) below, in which Christos is using a BSCN with the verb *thelo* = 'want', but also examples (38) and (39) below, in which he is using the same verb with mass nouns and abstract nouns.⁹

⁹ Interestingly, in all three examples the verb does not show target-like person marking, but is rather used with the suffix *-i*. Katis (1984), Stephany (1997) and Varlokosta et al. (1998) have reported that children acquiring MG pass through a stage in which they overgeneralise this suffix *-i*, which corresponds to the 3rd person singular. Varlokosta et al. have related the use of this suffix to the form of the past participle and suggested that although MG does not have infinitival forms, verbs with the suffix *-i* in MG child speech correspond to *Root Infinitives* in languages that have infinitival forms.

- (37) Child: **Theli pipilia.** (Christos 1;10.9)
 thelo pipila (target-utterance)
 want pacifier
 'I want the pacifier.'
- (38) Child: **Eli ciaghia.** (Christos 1;10.9)
 thelo ghala (target-utterance)
 want milk
 'I want some milk.'
- (39) Child: **Eli meki.** (Christos 1;10.9)
 thelo musiki (target-utterance)
 want music
 'I want some music.'

As in the case of the verb *echo* = 'have', only from the age of 2;3 does Christos use the verb *thelo* = 'want' with nouns preceded by the definite article.

Summarising this section, it has been shown that BSCNs are attested in the speech of Christos as early as at the age of 1;10. However, from 1;10 to 2;3, it is likely that he is using BSCNs in a lexically based fashion, because he is using BSCNs only with three verbs. Moreover, he uses these three verbs until 2;3 only with BSCNs and not with nouns preceded by the definite article. The use of BSCNs with a greater number of verbs and also the use of these verbs with noun phrases involving definite articles suggests that from the age of 2;3, Christos is using BSCNs productively. This can be taken as an indication that he has knowledge of the licensing conditions for BSCNs.

5. Summary and conclusion

The majority of studies on the acquisition of the definite article have focused on determining the emergence and target-like use of definite articles, the rationale behind that being that this can provide evidence for the acquisition of functional categories (see Radford, 1990; Clahsen et al. 1994; Penner & Weissenborn, 1996, among others).

In the present study, I have addressed four further issues:

- a) the use of definite articles with different noun classes,
- b) the use of definite articles in the subject vs. in the object position,
- c) the use of bare nouns in argument positions,
- d) the use verbs with BSCNs.

Given that children pass through a stage in which they use definite articles productively but there is a high rate of definite article omission, investigation of these issues can bring insight about how children's knowledge about the obligatory contexts for the use of definite articles and the licensing conditions for bare arguments changes over time.

As shown in Section 1, the main factors involved in the licensing of bare nouns in MG are argumenthood, syntactic position, noun class, number marking, verb type and word order. There is a subject-object asymmetry in the use of bare nouns: bare nouns in the subject position are licit in more restricted environments than bare nouns in the object position. These descriptive observations have been framed within Chierchia's *Nominal Mapping Parameter* model in Section 2. Based on the licensing conditions for bare nouns in argument positions, it has been suggested that MG matches the Romance setting in Chierchia's model. Accordingly, nouns have the specification [-arg, +pred], which means that they are predicative, hence, they need a DP-layer in order to be able to be used in argument positions. Bare nouns in the subject and object position involve a null D^0 , which is licensed by a lexical or functional head.

Chierchia's *Nominal Mapping Parameter* model makes a set of very specific predictions for the acquisition of articles, which have been tested on the basis of acquisition data. This model predicts that children will initially drop articles irrespective of the language they are acquiring. The initial hypothesis of children will be that nouns are argumental, i.e. [+arg, -pred] (*Prediction 1*). This prediction has been supported by the MG data. As shown in Section 4.1, Christos does not use any definite articles at all in *Stage 1*. *Prediction 2* consists of two parts. The first part of this prediction is that at a second stage children acquiring MG will start using definite articles in obligatory contexts. This is based on the idea that children will change their initial hypothesis and shift to the Romance setting upon discovering in the input articles, plural marking and/or quantifiers combined directly with nouns. However, the presence of bare nouns in argument positions might cause uncertainty as to when bare nouns are licit. This leads to the second part of the prediction according to which children will use definite articles in an optional manner until they discover the licensing conditions for bare arguments. The second prediction has also been borne out by the data. In *Stage 3*, Christos uses definite articles in obligatory contexts productively, however, the rate of definite article omission is less than 90% in obligatory contexts.

The next prediction (*Prediction 3*) is related to the triggering information for the setting of the *Nominal Mapping Parameter*. Given that PNs and KTs are the only nouns in MG

that cannot be used as bare nouns in argument positions, PNs and KTs (but not CNs) can provide unambiguous information that MG nouns are predicative. Since structures comprising the trigger often emerge early in child speech (see Penner, 1994), the third prediction is that children will use definite articles with PNs and KTs as soon as they start using definite articles productively. Data from the speech of Christos support this prediction: as shown in Section 4.2, Christos uses definite articles with KTs and PNs in *Stage 3*.

The next set of predictions are independent from the *Nominal Mapping Parameter* model; they are based on the idea that knowledge of the system of the target grammar should be reflected in the use of definite articles and bare nouns in argument positions. Consequently, a subject-object asymmetry in the use of bare nouns (*Prediction 4*) and compliance with the licensing conditions for BSCNs (*Prediction 5*) can be used as criteria for the knowledge of the target system of grammar. As shown in Section 4.3, Christos is using (grammatical) bare nouns in argument positions from the beginning of *Stage 3*. This indicates that Christos has some knowledge about the licensing of bare arguments at the stage in which he uses definite articles productively. As shown in Section 4.4, a subject-object asymmetry has been attested at *Stage 3*, i.e. the rate of bare nouns in the object position is much higher than the rate of bare nouns in the subject position. Interestingly, there is also a subject-object asymmetry in the rate of definite article omission. The rate of definite article omission in the object position is below 10% at the age of 2;4, whereas in the subject position it is below 10% at the age of 2;7. This indicates that definite article omission is ruled out in the speech of Christos earlier in the object position than in the subject position.

Finally, evidence for the knowledge of the licensing condition of BSCNs comes from the use of verb + BSCNs combinations. From the age of 2;3 onwards Christos uses BSCNs with the set of verbs that may take BSCNs as complements in the target language. Moreover, these verbs are also used with nouns preceded by definite articles. This observation together with the fact that the rate of definite article omission for noun phrases in the object position is less than 10% after the age of 2;3 provides conclusive evidence that, from that age onwards, Christos has knowledge of the licensing conditions of BSCNs.

Some discussion about the advantages of the *Nominal Mapping Parameter* model for the acquisition process over other hypotheses are in order here. As far as the predictions for the acquisition process are concerned, the *Nominal Mapping Parameter* model is not the only

model that predicts a stage in which children should omit articles followed by a stage in which they should start using articles productively. For example, the *Structure Building Hypothesis* (Radford, 1990) makes exactly the same predictions. The advantage of the *Nominal Mapping Parameter* model is that it can provide predictions for the acquisition process across several languages, something that is not possible in other models. For example, the *Nominal Mapping Parameter* model predicts that definite articles should emerge in the speech of children acquiring Romance languages earlier than in the speech of children acquiring Germanic languages, a prediction that has been justified in Chierchia, Guasti & Gualmini (1999).

Concluding, a detailed analysis of the speech of one child acquiring MG has revealed that the acquisition of definite articles is related to the acquisition of bare nouns in argument positions. Several issues have not been discussed, such as: a) how do children find out that the language they are learning has null Ds, b) how do children determine when to use null Ds and when contentfull Ds, c) how do they identify lexically governed and focus positions and d) how do children acquiring MG discover that BSCNs are licit with a specific set of verbs. These questions remain open for further research. Finally, given that the data used in this study consist of the corpus of one child only, further research is necessary in order to ensure that the development attested in the speech of Christos is typical for children acquiring MG.

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