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N-DROP AND DETERMINERS IN NATIVE AND NON-NATIVE SPANISH:

MORE ON THE ROLE OF MORPHOLOGY IN THE ACQUISITION OF SYNTACTIC KNOWLEDGE

Juana M. Liceras, Lourdes Díaz, Caroline Mongeon

University of Ottawa, Universitat Pompeu Fabra, University of Ottawa

jliceras at uottawa ca

Abstract

In order to investigate whether the acquisition of N-drop (null nouns) is related to the acquisition of the agreement system of Spanish determiners this paper analyzes L1 longitudinal Spanish data from two children and L2 longitudinal data from two children learning Spanish in a naturalistic setting. Based on the results, it is argued that in L1, the acquisition of N-drop may be triggered by the feature 'word marker' which constitutes the make-up of Spanish Nouns, Adjectives and Determiners (Harris 1991, Berstein 1993). However, in the case of L2 acquisition, projecting the abstract 'word marker' feature of the Spanish DP the morphology of the Spanish determiner may not be a condition for the productive use of Null Nouns. We base this conclusion on the following pieces of evidence: (1) Monosyllabic place-holders (non-tonic vowels which appear before referential categories) occur in child L1 Spanish, which leads us to propose that these items play a role in the projection of the abstract [+word marker] syntactic feature in L1 Spanish; (2) Monosyllabic place-holders do not occur in child non-native Spanish, which leads us to propose that L2 acquires' sophisticated phonological systems may prevent them from dissecting the incoming input data (using a 'bottom up' processing strategy) which leads to the projection of abstract features; (3) In L1 acquisition non-adult null determiners cease to occur when N-drop becomes productive. This is not the case on L2 acquisition, which again leads us to propose that L2 acquires do not rely on the 'bottom up' strategy to deal with input data; (4) In L1 acquisition gender mismatches cease to occur when N-drop becomes productive. In the case of L2 acquisition there is not correlation between productive use of N-drop and the disappearance of gender mismatches. Given the fact that the morphological realization of word markers and gender markers is difficult to tease apart in Spanish, these results provide further evidence that L1 learners make indirect use of morphological markers (via phonological dissection) to project abstract syntactic features.

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1. Introduction

The focus on the lexicon as depositary of syntactic learning that is so explicit in the Minimalist Program (Chomsky 1995) has put the search for lexical triggers at the forefront of the morphology/syntax interface. In fact, the role of morphology in the acquisition of L1 and L2 syntax has been subject to scrutiny by various researchers (Snyder 1995; Beck 1998a; Lardiere 1999)[1].

Some researchers argue that direct triggers for the acquisition of L1/ L2 structural properties are to be found in the overt morphological paradigms (Vainikka & Young Sholten 1998). Others such as Borer, in press, or Phillips (1996) for L1, Grondin & White (1996), Garuseva & Lardiere (1996), Haznedar & Schwartz (1997) for child L2 or Sprouse (1998) for adult L2, argue that triggers are located in the abstract features associated with functional categories, which implies that the acquisition of explicit morphology is not a prerequisite for the acquisition of syntactic operations.

Some researchers (Hawkins & Chan 1997; Liceras et al. 1997; Beck 1998b) argue that adult L2 learners are not sensitive to the triggering effect of the abstract syntactic features. Lardiere (1998; 1999) argues that when the adult L2 syntax is native-like, rather than an indication of lack of knowledge of abstract syntactic features, what omissions or variable production of particular affixesreflect is a deficit in the post-syntactic area where morphological operations lead to Phonological Form (PF).

In this paper we investigate the relationship between the L1 and child L2 acquisition of the Spanish determiner paradigm and the acquisition of null Noun constructions. We argue that neither in primary nor in non-primary acquisition there is a direct relationship between the acquisition of the morphological

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[1] To appear in Ronald P. Leow and Cristina Sanz (2000) *Current Research on the Acquisition of Spanish*. Somerville, MA: Cascadilla Press.

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paradigm of Spanish determiners as such and the implementation of Null Nouns. However, in the case of L1 acquisition there seems to be a relationship between the implementation of the [+word marker/gender] feature and the production of Null Nouns.

It has been proposed that Noun-drop (Null Nouns) is possible in Spanish with the various Determiner Phrase (DP) complements due to the presence of an abstract 'word marker' feature (Harris 1991a; 1991b) which characterizes Spanish referential categories (Nouns, Adjectives, Adverbs) as well as Spanish determiners (Berstein 1993). This feature is morphologically realized as a specific vowel which is difficult to tease apart from the gender marker. Thus, Null Nouns occur with Spanish Adjectival Phrases (AP) as in (1b) – (3b) because Spanish determiners (*Ese*, *Uno*, *la*…) have morphological word markers which are syntactically realized as an abstract [+word marker] feature.

(1)a Ese abrigo negro

[that black coat]

(1)b Ese — negro (masc. sing.)

[that — black] "that black one"

(2)a Un traje negro

[a black suit]

(2)b Uno — negro (masc. sing.)

[a — black]

(3)a La blusa roja

[the red blouse]

(3)b La —_roja (fem. sing.)

[the — red]

The presence of the 'word marker' explains why Null Nouns are also possible with Prepositional Phrase (PP) DP complements as shown in (4b) to (6b):[2]

(4)a Esas faldas de lunares

[those polka-dot skirts]

(4)b Esas —de lunares (fem.plur.)

[those — of polka dot] “those polka-dot skirts”

(5)a Unos zapatos de deporte

[some sport shoes]

(5)b Unos— de deporte (masc. plur.)

[some — of sport] “sport ones’

(6)a Los zapatos de deporte

[the sport shoes]

(6)b Los — de deporte (masc. plur)

[The — of sport]

Furthermore, when the DP complement is a Complementizer Phrase (CP), Null Nouns are possible too, as shown in (7b) – (9b):

(7)a Esa falda que tiene lunares

[that skirt that has a polka-dot pattern]

(7)b Esa — que tiene lunares (fem. sing.)

[that —that has a polka-dot pattern]

“that one with a polka-dot pattern”

(8)a Una blusa que sea barata

[a blouse that will be cheap]

(8)b Una —_que sea barata (fem. sing.)

[a — that will be cheap]

(9)a El traje que tiene lunares

[the suit that has a polka-dot pattern]

(9)b El — que tiene lunares (masc. sing.)

[the — that has a polka-dot pattern]

2. The syntax of null Nouns

The descriptive assumptions that constitute the basis for our analysis of Null Nouns are the so-called DP hypothesis (Abney 1997), the unified account of DP complements proposed by Kayne (1994) and the Word Marker analysis of Spanish categories (Harris 1991a, 1991b and Berstein 1993).

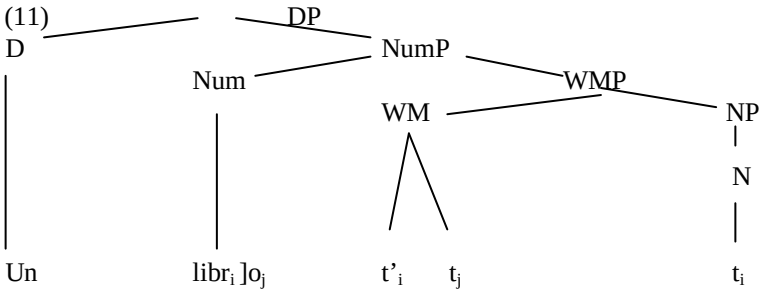
2.1. Word markers

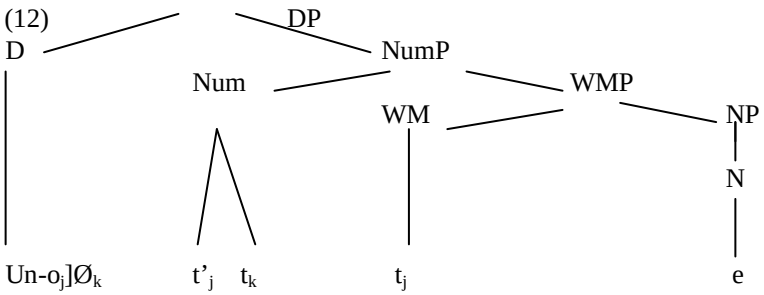
Harris (1991a; 1991b) argues that Spanish Nouns, Adjectives and Adverbs (as has been proposed for other languages) have a morpheme, a word marker which, is phonetically realized in sincretism with the gender marker. According to Piera (1995), this morpheme, which does not exist in languages such as English, as shown in (10a) versus (10b), accounts for a number of differences between English and Spanish.[3]

(10)a. [[perr-] o]

(10)b. [dog]

Berstein (1993) goes even further to propose that the Spanish Determiner also has a word marker which, in her analysis, rather than a morphological feature, is a functional category, as shown in (11) and (12):





[3] Piera (1995) argues that this difference accounts for the productivity and recursivity of N-N compounding in languages such as English, but which is not possible in languages such as Spanish. He also maintains that it is because Spanish Nouns have word markers that Spanish compounds are left-headed.

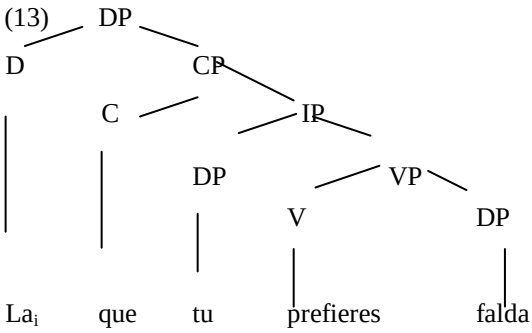
Structures (11) and (12) show is that the word marker which occurs in Spanish Nouns, the *–o* in (10a), moves to the DP when the Determiner is used intransitively, as it is the case in (12).

According to this proposal, Spanish determiners, as listed in (1) to (9) above, are marked both for number and for gender. Gender appears as a word marker projection. In other words, it is the morphological nature of Spanish determiners which accounts for the availability and productivity of N-Drop. Spanish grammarians as well as modern syntacticians (Liceras, Díaz and Rosado 1998; Rosado 1998) have always been aware of the morphological 'richness' of the Spanish determiner and have in fact linked the availability of N-drop to this 'richness'. However, only recently has the category 'word marker' come to the forefront of the analysis and a difference has been established between morphological paradigms and the actual structure of words. In fact, what has been proposed is that a distinction should be made between the morphological paradigm of the Spanish determiner as such and the 'specific nature' of Spanish Nouns and Determiners. It is the latter (Snyder 1995; Piera 1995) that, as depositary of language variation, is supposed to have parametric consequences at the syntactic level.

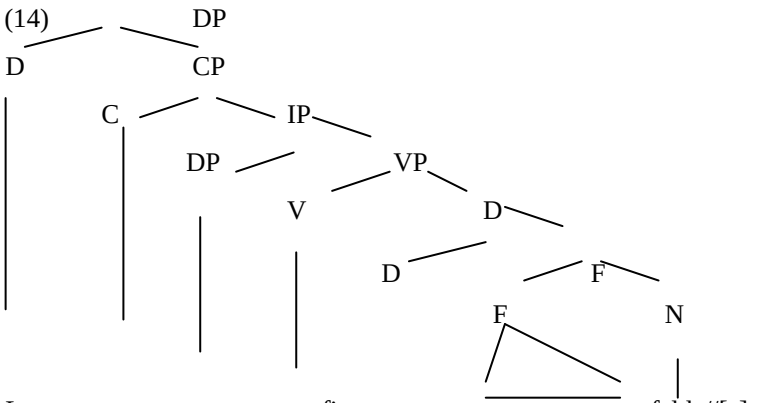
2.2. A unified account of DP complements

Kayne (1994) and Sánchez (1996) maintain that all three DP complements (AP, PP and CP) have a CP structure, as shown in (13) and (14):

(13)



(14)



What is important for us is the fact that both an overt Noun and a null Noun can occur with all three DP complements and that this is so due to the specific features of the Spanish Determiner. In other words, Null Nouns are possible, in principle, in any language. However their realization will depend on the specific features of the DP.

3. Morphological paradigms and N-drop: evidence from L1 acquisition

In terms of how the relationship between morphology and syntax is represented in the mind, the above proposal places the locus of parametric variation in the 'word marker' (feature or projection) rather than in the 'richness' of morphological paradigms as such. In order to investigate whether data from language acquisition can contribute to determine whether it is the shape of words or morphological paradigms that play a role in the acquisition of syntax, Snyder (1995) analyzed how various constructions were acquired. He specifically investigated the relationship between the production of null Nouns and the acquisition of the Spanish determiner.

3.1. Morphological paradigms and N-Drop

The analysis of L1 Spanish longitudinal data from Juan, the child of Linaza's corpus in CHILDES (MacWhinney and Snow 1990) from age 1;7 to age 3;5 leads Snyder (1995) to conclude that there is no evidence of the existence of a relationship between mastering the morphological paradigm of Spanish determiners (gender and number markings) and the production of N-drop constructions as in (1b) above. [4] However, since the first instances of N-drop with AP Det complements at age 2;8 coincide with a significant increase in the production of *–a* determiners at the exact same age, Snyder (1995) suggests that there may be a relationship between the acquisition of gender and the acquisition of N-drop, but that more evidence is needed.

In a subsequent study, Snyder and Shengas (1997) analyze L1 longitudinal data produced by Koki, the girl in Monte's corpus in CHILDES (MacWhinney & Snow 1990) from age 1;7 to 2;11. The fact that Koki mastered the Spanish determiner system at age 2;2, four months before she produced the first null Nouns (at age 2;6) leads the authors to conclude that there is no relationship between mastering the morphological paradigm and acquiring N-drop.

[4] In these L1 studies only cases of N-drop with AP complements were taken into consideration.

3.2. Morphological paradigms and 'protodeterminers'

In order to further investigate the hypothesis that there may be a relationship between the acquisition of the morphological paradigm of the Spanish determiner and the production of N-drop, Liceras, Rosado and Díaz (1998) and Rosado (1998) analyze L1 data from María (López Ornat 1994) and Magín (Aguirre 1995), and L2 data from children learning Spanish both in natural and institutional settings. Besides incorporating child L2 data, these studies looked into the production of N-drop with AP, PP and CP complements. The main differences between the L1 and the L2 data were the presence of 'protodeterminers' in the L1 data but not in the L2 data and the scarce production of N-drop in the L2 data.

The occurrence of 'protodeterminers' had been noticed by López Ornat (1997) but it had not been mentioned in the case of Juan and Koki's data.[5] The 'protodeterminers' were non-tonic clitic vowels — mainly with "a" and "e" quality— which appeared systematically before Nouns during the first months. They co-occurred with other determiners and did not show up at the later stages.[6]

With respect to the relationship between the production of N-drop and the mastering of the Spanish determiner, the data was not very transparent. However, while in the case of the two L1 children the number and gender mismatches seldom co-occurred with N-drop, this was not the case with the L2 data.

The data analyzed in Liceras, Rosado and Díaz (1998) and Rosado (1998) was only a partial sample of the L1 and the L2 data available. In this paper we analyze all the available data from Magín and María (L1 Spanish) and all the available data for Adil and Madelin (child L2 Spanish in a 'natural' setting).

4. L1 Spanish: word markers as morphological vocabulary

The L1 longitudinal data that we have analyzed in this study appears in FIGURE 1. Both María and Magín are Spanish children born in Spain. The data was collected in their respective houses. In the case of María, the available transcripts are very detailed and include the interviewers' production. Aguirre (1995) provides comments related to specific exchanges but does not provide the interviewer's

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[5] See Bottari, Cipriani and Chilosi (1993/194) for previous references to these vowels in English, Italian and other languages.

[6] A reviewer indicates that these vowels are simply incomplete phonological versions of determiners. However, we would like to point out: (a) that it is not their phonological status what is relevant here but the fact that they identify a syntactic position (that is why we prefer to use the term Monosyllabic Place Holders); and (b) that they provide evidence of a developmental stage in the acquisition process: how the actual 'word marker' feature is projected. In fact, from the repetition of stored elements such as '*a*' en '*a casa*' and '*la*' en '*la casa*', learners move towards the implementation of an independent abstract 'word marker' for the Spanish DP.

production. Another important difference between the two sets of data is the fact that Magín's production was only recorded up to age 2;7 while Maria's was recorded up to age 3;11.

FIGURE 1. Spanish L1 Subjects	
María (López Ornat 1994)	1;7 - 1;8 - 1;9 - 1;10 - 1;11 - 2;0 - 2;1 - 2;2 - 2;3 - 2;4- 2;5 - 2;6 - 2;7 - 2;8 - 2;9 - 2;11 - 3;0 - 3;1 - 3;6- 3;7- 3;8 - 3;9 - 3;10 - 3;11
Magín (Aguirre 1995)	1;8 - 1;9 – 1;10 – 1;11 – 2;0 – 2;1 – 2;2 – 2;3 – 2;4– 2;5 – 2;6 – 2;7

We will provide three different pieces of evidence to argue that in primary language acquisition there is an indirect relationship between the acquisition of the morphological vocabulary ('word marker/gender' feature) and N-drop productivity in Spanish. We will argue that the 'protodeterminers' or the 'monosyllabic placeholders' (MPHs)[7] —our preferred term for the non-tonic vowels which occur before referential categories (Nouns in this study) at the early stages of L1 acquisition—, disappear when the 'word marker' feature is projected.[8] We will first discuss the relationship between the production of MPHs and null Nouns and then we will discuss the production of null determiners and agreement mismatches with overt determiners.

4.1. Monosyllabic Place Holders

We use the term MPHs to refer to the clitic vowels produced by Magín and María —examples (15) to (23)— because the term protodeterminer (or 'protoform', in general) is linked to the assumption that children do not have an innate computational system which interacts with language specific input to project a given grammar. [9]

(15) a for / the flower [Magín 1;8]

(16) e nene / the boy [Magín 1;8]

[7] We have borrowed the term Monosyllabic Place Holder from Bottari, Cipriani and Chilosi (1993/1994).

[8] A reviewer has asked whether morphological vocabulary is a functional category. Without getting into the issue of whether 'word markers' or 'gender' are features or actual functional categories, we should like to emphasize that the morphological vocabulary in a given language leads learners to implement abstract syntactic features. Thus, the phonological realization of 'word markers' markers (in the case of Spanish in combination with 'gender' markers) leads to the projection of the [+word marker] feature of the Spanish determiner.

[9] Under this assumption 'protoforms' evidence that phonology leads to the reation of morphology and syntactic structure: NPs or VPs, as proposed, for instance, by López Ornat (1997), which is rather different from what the MPH hypothesis stands for.

(17) a bici / the bike [Magín 2;2]

(18) e agua / the water [Magín 2;3]

(19) e pie / the foot [María 1;7]

(20) a bota / the boot [María 1;8]

(21) as manos / the hands [María 2;1]

(22) e bolo (el globo) / the balloon [María 2;5]

(23) a tambor / the drum [María 2;5]

The term MPH, on the other hand, refers to the innate presence of basic syntactic structure which has to be filled in with data selected from the environment (a given language). The assumption is that the input provides the elements that will fill in the 'held places' with actual (in our case Spanish) free morphemes (Bottari, Chipriani and Chilosi 1993/1994).

TABLES 1 and 2 provide a detailed account of the production of MPHs by Magín and María. Matching refers to the use of 'e' with masculine Nouns and 'a' with feminine Nouns. These data show that MPHs are produced from the first recordings up to age 2;6 (Magín) and up to age 2;5 (María).

TABLE 1. L1 Spanish. Magín. MPHs and Gender

	Type	Matching	Non-Matching	Total
1;8	e	4	—	4
	a	4/8 = 50%	4/8 = 50%	8
1;9	e	4	—	4
	a	5/9 = 55.55%	4/9 = 44.44%	9
1;10	e	3	—	3
	a	21/23 = 91.30%	2/23 = 8.69%	23
1;11	e	10	—	10
	a	14/15 = 93.33%	1/15 = 6.66%	15
2;0	e	3/4 = 75%	1/4 = 25%	4
	a	2	—	2
2;1	e	—	—	—
	a	2	—	2
2;2	e	2	—	2
	a	1	—	1
2;3	e	1	—	1
2;5	e	1	—	1
2;6	e	2	—	2

TABLE 2. L1 Spanish. María. MPHs and Gender				
	Type	Matching	Non-Matching	Total
1;7	e a o	32/34 = 94.11% 36/40 = 90% 1	2/34 = 5.88% 4/40 = 10% —	34 40 1
1;8	e a o oa	5 12/33 = 36.36% 2 1	— 21/33 = 63.63% — —	5 33 2 —
1;9	e a o	36/38 = 94.73% 52/72 = 72.22% 1	2/36 = 5.26% 20/72 = 27.77% —	38 72 1
1;10	e a o u	27 48/57 = 84.21% 7/8 = 87.5% 24	— 9/57 = 15.7% 1/8 = 12.5% —	27 57 8 —
1;11	e a u	13 18/19 = 94.73% 1	— 1/19 = 5.26% —	13 19 1
2;0	e a o u as[1]	4 9/13 = 69.23% — 1 1	— 4/13 = 30.76% 1/1 = 100% — —	4 13 1 — —
2;1	e a u as[2]	10 6 2 1	— — — —	10 6 2 1
2;2	e	13	—	13
2;5	e a	4 —	— 1/1 = 100%	4 1

as[1] used as fem. plural; as[2] used as fem. sing.

It is interesting to notice that mismatches (the use of “e” with feminine Nouns and of “a” with masculine Nouns) cease to occur at age 2;1. There is an isolated instance produced by María at age 2;5. This indicates that, at the early stages of acquisition, learners are not using these vowels as gender markers but as MPHs. In other words, as they project the DP category the abstract feature ‘word marker’ is assigned to it.

4.2. N-drop

TABLES 3, 4 and 5 show the production of AP, PP and CP complements (as for example in (3a) - (3b), (6a) – (6b) and (9a) – (9b) that we repeat here for convenience) with overt Nouns versus the production of DPs with null Nouns (N-drop) in the same contexts:[10]

(3)a La blusa roja
[the red blouse]

(3)b La —_roja (fem. sing.)

[10] We have included ‘e’ and ‘a’ at the bottom of TABLE 3 because both María and Magín produce some MPHs with AP complements of DPs.

[the — red]

(6)a Los zapatos de deporte

[the sport shoes]

(6)b Los — de deporte (masc. plur)

[The — of sport]

(9)a El traje que tiene lunares

[the suit that has a polka-dot pattern]

(9)b El — que tiene lunares (masc. sing.)

[the — that has a polka-dot pattern]

Examples of AP complements appear in (24) to (29). The first AP complements —examples (25) to (28)— are produced by Magín at age 1;10.

(24) un cachorrito pequeño / a little puppy [María 3;10]

(25) un coche amarillo / a yellow car [Magín 1;10]

(26) otra torre grande / another big tower [Magín 2;6]

(27) la — azul / the blue (one) [María 2;11]

(28) otro — amarillo / another yellow (one) [Magín 1;10]

(29) otro — pequeño / another small (one) [Magín 2;6]

In the case of Magín the first instance of N-drop in an AP context occurs on the same month as the production of overt Nouns (TABLE 3). María's production of AP complements starts one month later (at age 2;00) with only an AP complement following an overt Noun. At age 2;3 she produces eight AP complements with overt Nouns and four with null Nouns (TABLE 3).

It should also be pointed out (bottom of TABLE 3), that there are no instances of MPHs with N-drop except for one "e" produced by Magín, before age 2:00 (Superscript 1).

TABLE 3. L1 Spanish: Det N AP versus Det Ø AP

MAGIN	Det N AP[1]	Det Ø AP[2]	MARÍA	Det N AP[3]	Det Ø AP[4]
1;10	2	1	2;0	1	—
1;11	2	19	2;3	8	4
2;0	—	1	2;4	1	—
2;1	2 (*1)	3	2;5	6 (*1)	1
2;2	2	3	2;8	2	2
2;3	4	2	2;9	6	—
2;4	4	3	2;11	2	2
2;5	4	4	3;6	1	—
2;6	5	2	3;7	12	1
2;7	2	—	3;9	1	3
			3;10	3	1
TOTAL	27	39	TOTAL	43	14
% N-drop	39/66 = 59.09%		% N-drop	14/57 = 24.56%	

[1]Det N AP: Un, el, a, la, una, e, los, las, otra [3]Det N AP: La, el, un, una, los, mis, las, mi las, mi

[2]Det $_N$Ø AP: Otro, ese, este, un, uno, los, las, e, el, toda, la, eso, una

[4]Det $_N$Ø Adj: Oto, ota, unos, una, uno, un, la, el, los

The numbers in parentheses with asterisks (columns 2 and 5 on TABLE 3 and column 2 on TABLE 4) refer to cases of gender mismatches.

Examples of PP complements produced by María and Magín appear in (30) to (33) and examples of CP complements in (34) to (37):

(30) Una 'cotita' (gotita) de agua / a little drop of water [María 1;1]

(31) La bolsa de los señores / the bag of the men [Magín 2;2]

(32) El — de las vaquitas / the (one) of the little cows [María 2;5]

(33) El — del pollito /the (one) of the little chicken [Magín 2;5]

(34) Una cosa que he hecho / a thing that I have done [María 2;6]

(35) La tortuga que viene / the turtle that is coming [Magín 2;1]

(36) La — que está en mi cole / the (one) that is in my car [María 2;5]

(37) Unos — que te pican / Some (ones) that bite you [Magín 2;1]

TABLES 4 and 5 contain the total production of PP and CP complements. The fact that, as it was the case with the AP complements, no instances of MPHs with PP or CP complements are found in these data (superscripts at bottom of TABLES 4 and 5) clearly indicate that MPHs are not compatible with N-drop.

TABLE 4. L1 Spanish: Det N PP Versus Det Ø PP					
MAGÍN	Det N PP[1]	Det Ø PP[2]	MARÍA	Det N PP[3]	Det Ø PP[4]
2;1	2	1	1;11	1	
2;2	1		2;1		1
2;3	2		2;2	1	
2;4	2		2;3	4	4
2;5	1	1	2;4	1	
2;6	9 (*1)		2;5	1	2
2;7	1	1	2;8	4	
			2;9	6	
			2;11	1	2
			3;1	4	2
			3;6	6	2
			3;7	10	
			3;9	5	
			3;10	1	
			3;11	3	
TOTAL	18	3	TOTAL	48	13
% N-drop	3/21 = 14.28%		% N-drop	13/61 = 21.31%	

[1]—Det N PP : E, todo, la, un, el, su, una, las
[2]—Det $_N$Ø PP: Las, el
[3]—Det N PP : Una, la, un, ota, las, unas, el, los, ninguna, mi, unos
[4]—Det $_N$Ø PP : Eto, el, los, una

TABLE 5. L1 Spanish: Det N CP versus Det Ø CP					
MAGÍN	Det N CP[1]	Det Ø CP[2]	MARÍA	Det N CP[3]	Det Ø CP[4]
2;1	1	1	2;3	2	
			2;5		1
			2;6	1	
			2;9	2	1
			2;11	1	
			3;1	1	1
			3;6	1	6
			3;7	4	1
			3;9		3
TOTAL	1	1	TOTAL	12	13
% N-drop	1/2 = 50%		% N-drop	13/25 = 52%	

[1]Det N CP : La
[2]Det $_N$Ø CP: Unos, el
[3]Det N CP : Una, tu, el, la, un, los [4]Det $_N$Ø CP: La, el, una, esta, uno, otro, esta

It is also important to point out that N-drop occurs parallel to overt N constructions both for Magín and María (TABLES 3, 4 and 5). There are always more instances of overt N except for the large amount of APs (19) in Magín's early data (TABLE 3). They happen to be color adjectives that he uses to describe objects.

4.3. Null determiners

Both Magín and María produce non-adult null Determiners (TABLES 6 and 7). Non-possible null Determiners refer to cases of bare nouns which are not possible in adult Spanish. Namely, a possible null determiner is (as it is the case in English), the one before *casa* in (38), and a non-possible null Determiner would be the one before *casa* in (39):

(38) Voy a — casa

I am going — home

(39) — Casa tiene muchas ventanas

— House has many windows

TABLE 6. L1 Spanish. Magín. Null Determiners			
Age	Possible	Non-possible	Total % Non-possible
1;8	14	2	2/16 = 12.5%
1;9	25	8	8/33 = 24.24%
1;10	62	14	14/76 = 18.42%
1;11	22	4	4/26 = 15.38%
2;0	10	3	3/13 = 23.07%
2;1	8	3	3/11 = 27.27%
2;2	17	7	7/24 = 29.16%
2;3	16	3	3/19 = 15.78%
2;4	14	2	2/16 = 12.5%
2;5	4	4	4/8 = 50%
2;6	13	7	7/20 = 35%
2;7	15	—	—
TOTAL	220	57	57/277 = 20.57%

These data show that non-possible (non-adult) null Determiners cease to occur at the same time as MPHs[11]. Notice that none is produce by Magín after age 2;6 (TABLE 6). This is specially clear with María, who ceases to produce non-adult null Determiners after age 2;4 (TABLE 7) but for one instance at age 3;1.

TABLE 7. L1 Spanish. María. Null Determiners			
Age	Possible	Non-possible	Total % Non-possible
1;7	156	21	21/177 = 11.86%
1;8	67	1	1/68 = 1.47%
1;9	103	6	6/109 = 55%
1;10	61	3	3/64 = 4.68%
1;11	37	9	9/46 = 19.56%
2;0	26	9	9/35 = 25.71%
2;1	33	2	2/35 = 5.71%
2;2	24	8	8/32 = 2.5%
2;3	9	1	1/10 = 10%
2;4	18	1	1/19 = 5.2%
2;5	42	—	—
2;6	14	—	—
2;7	4	—	—
2;8	16	—	—
2;9	15	—	—
2;11	9	—	—
3;1	20	1	1/21 = 4.76%
3;6	15	—	—
3;7	13	—	—
3;9	19	—	—
3;10	6	—	—
3;11	4	—	—
Total	711	62	62/773 = 8.02%

[11] One of the reviewers wonders whether examples such as (39) receive a definite interpretation, which would mean that the acquisition of the [word marker/gender] feature is linked to the spell-out of definiteness features. Specifically, this reviewer suggests that once the [+word marker] feature is acquired, the determiners must be acquired and the choice between 'el' and 'un' has to e made as the MPH is no longer an option. This in turn would mean that once definiteness is spelled-out it should be easier to fix the reference for the Null Noun antecedent, which in fact would explain the incompatibility of MPHs and Null Nouns.

We interpret these data as evidence that non-adult null Determiners cease to occur when the [+word marker/gender] feature is implemented. In other words, the children have to abandon the MPHs in order for them to project a Spanish DP which incorporates this feature.

4.4. Gender and number mismatches

Gender/agreement mismatches also provide information about the relationship between morphology and N-drop. Instances of actual gender and number mismatches are shown in (40) to (47).

(40)	Otro rama (otra rama) / another branch [Magín 1;9]	G
(41)	Eso colita (esa colita) / that little tail [Magín 2;5]	G
(42)	En el jaula (en la jaula) / in the cage [Magín 2;7]	G
(43)	Este apa (esta tapa) / this lid [María 1;7]	G
(44)	Una cuento (un cuento) / a story [María 1;7]	G
(45)	Los caramelo (los caramelos) / the candies [Magín 1;11]	N
(46)	Una medias (unas medias) / some stockings [María 2;2]	N
(47)	La bocas (las bocas) / the mouths [María 2;2]	N

TABLES 8 and 9 show that mismatches are rather irrelevant in absolute terms: 0.57% in the case of María (TABLE 8) and 2.26% overall in the case of Magín (TABLE 9).

TABLE 8. L1 Spanish. María Overt Determiner: Gender and Number Mismatches					
	Possible	Non-possible			Total % Non-possible
Age		Gender	Number	Total	
1;7	11	2	—	2	2/13 = 15.38%
1;8	10	—	—	—	—
1;9	12	1	—	1	1/13 = 7.69%
1;10	28	—	—	—	—
1;11	22	—	—	—	—
2;0	58	—	1	1	1/59 = 1.69%
2;1	85	—	1	1	1/86 = 1.16%
2;2	98	—	1	1	1/99 = 1.01%
2;3	129	1	—	1	1/130 = 0.76%
2;4	71	—	1	1	1/72= 1.38% *
2;5	144	—	—	—	—
2;6	98	—	—	—	—
2;7	37	—	—	—	—
2;8	63	—	—	—	—
2;9	111	—	—	—	—
2;11	72	—	—	—	—
3;1	64	—	—	—	—
3;6	138	—	—	—	—
3;7	160	—	1	1	1/161 = 0.62%
3;9	75	—	—	—	—
3;10	41	—	—	—	—
3;11	42	—	—	—	—
TOTAL	1569	4	5	9	9/1578 = 0.57%

- 8/532 = 1.5%

If we cut off Maria's production at the level when Magin's recordings stopped we find that the percentage is very similar: the total for María up to 2;4 (*below TABLE 8) is 1.5% while the total % for Magín up to age 2;5 (*below TABLE 9) is 2.41% (shadowed part on tables 9 and 8 respectively).

This is the overall pattern for both gender and number mismatches. However, gender mismatches show an interesting pattern if we look at them in relative terms because, in the case of María, these data show that she does produce only three instances (2+1+1) of gender mismatches before age 2;00 and one at age 2;3 (column 3 on TABLE 8). In the case of Magín there is a 50% reduction after 2;0 (column 3 on TABLE 9), since out of 12 gender mismatches, 8 (3+4+1) occur before age 2;00 while only 4 (1+1+2) after age 2;00. They then seem to disappear after age 2;5.

TABLE 9. L1 Spanish. Magín. Overt Determiner: Gender and Number Mismatches					
	Possible	Non-possible			Total % Non-possible
Age		Gender	Number	Total	
1;8	14	—	—	—	—
1;9	65	3	—	3	3/68 = 4.41%
1;10	104	4	—	4	4/108 = 3.70%
1;11	65	1	1	2	2/67 = 2.98%
2;0	49	—	—	—	—
2;1	24	—	1	1	1/25 = 4%
2;2	117	1	—	1	1/118 = 0.84%
2;3	89	—	2	2	2/91 = 2.19%
2;4	74	1	—	1	1/75 = 1.33%
2;5	45	2	1	2	2/47 = 4.25% *
2;6	108	—	1	1	1/109 = 0.91%
2;7	67	—	1	2	2/69 = 2.89%
TOTAL	821	12	7	19	19/840 = 2.26%

* 16/662 = 2.41%

Thus these data show that gender mismatches occur mainly with MPHs, as we have indicated in TABLES 1 and 2 above, and they continue to occur when Null Nouns are already a productive construction in the L1 data (TABLES 3 and 4 above). However, gender mismatches cease to occur once [+word marker/gender] feature is activated. We should point out that while Null Nouns co-occur with gender mismatches in time, no instances of gender mismatches with Null Noun complements have been attested (TABLES 3 and 4 above).

5. Child L2 Spanish in a natural context

The child L2 Spanish longitudinal data that we have analyzed appears in FIGURE 2. Both Adil and Madelin were living in Madrid (Spain) at the time of the recordings. They had only been in Madrid for two months when the first interview was carried out.[12] Adil was four years old, his mother tongue was Arabic and he was given some Spanish as a Foreign Language (SFL) instruction in public school. Madlin was 8 years, she spoke Farshi and Swedish (she was born in Persia and had lived in Sweden before immigrating to Spain with her parents) and was attending the same public school as Adil but was not

[12] These recordings were part of a subproject which expanded the joint project "L2 Acquisition of Spanish: Beyond Parameters" of the University of Ottawa and the Universitat Pompeu Fabra of Barcelona, funded by Heritage Canada (1995-1996), and the Spanish Ministry of Sciences and Education (DGCYT: PB-94-1096-C02-01). The subproject "L2 Acquisiton of Spanish in a Natural Context", funded by the Spanish Ministry of Science and Education (1996-1997) was carried out by Carmen Aguirrre.

receiving any SFL instruction. Madelin had also been in Canada with her parents for a month before going to Spain.[13]

FIGURE 2. Spanish L2 Subjects	
Adil	INT# 1 (14-10-96) to INT #18 (15-12-97) [Age 4-5]
Madelin	INT #1 (29-10-96) to INT #15 (15-12-97) [Age 8-9]

The first relevant difference between the L1 and the L2 data is the absence of MPHs in the L2 data. In fact, there are only two instances of vowels produced by Adil (Rosado 1998) and they are tonic vowels. The patterns of production of N-drop, the production of null Determiners and the distribution of agreement mismatches also show interesting differences.

It is not surprising that the L2 children, having a more sophisticated phonological system, do not produce the non-tonic vowels that we have labeled MPHs. However, we would like to propose that this phonological sophistication prevents these children from dissecting the language input in the same way as L1 children do, which in turn may interfere with their marking Spanish DPs with the [+word marker] feature. In other words, L2 children may differ from L1 children in the way in which they approach input data. We will come back to this below.

5.1. N-Drop

With respect to N-drop, both Adil and Madelin produce AP complements as in (48) to (53). However, unlike it is the case with the L1, AP complements with color adjectives are not favored.

(48) un gato persa / a Persian cat [Madelin #4]

(49) una cosa buena / a good thing [Madelin #15]

(50) un niño pequeñito / a little boy [Adil 6]

(51) una — pequeña / a little (one) [Madelin #11]

[13] Adil and Madelin were interviewed every three weeks for a period of 14 months, as indicated in FIGURE 2. The interviews were carried out by the Principal Investigator of this subproject, Carmen Aguirre. For the first four interviews she used the same pictures, questions and story pictures that have been used in Ottawa to elicit data from children learning Spanish in an institutional setting. However, since these guided interviews provedto be too restrictive for an natural setting, it was decided that a procedure similar to the one used for eliciting L1 data (López-Orant 1994; Aguirre 1995) was more appropriate.

(52) los — pequeños / the little (ones) [Madelin #15]

(53) los — grandes / the big (ones) [Adil #9]

Adil y Madelin also produce PP complements as in (54) to (60) and CP complements as in (61) to (64).

(54) Un niño con sus papas / A boy with his father [Madelin #3]

(55) Una tienda de hamburguesas / A store of hamburgers [Madelin #15]

(56) Los amiguitos de Paquito / The friends of Paquito [Adil #8]

(57) La excursión al zoo / The outing to the zoo [Adil #13]

(58) Una — con hamburguesa / A (one) with hamburger [Madelin #4]

(59) Una — de chucherías / A (one) of junk food [Madelin #15]

(60) La — de arriba / The (one) of upstairs [Adil #16]

(61) El mes que viene / The month that comes [Madelin #13]

(62) Este perro que está hablando por teléfono / The dog that is talking on the phone [Adil #11]

(63) El — que está allí / The (one) that is there [Madelin #15]

(64) La que tiene ocho / The (one) that has eight [Adil #18]

TABLES 10, 11 and 12 show that N-drop has a similar pattern to the one we saw in the L1 data discussed, since both Adil and Madelin produce AP, PP and CP complements with both overt and null Nouns.

The numbers in parentheses with an asterisk refer to gender mismatches.

TABLE 10. L2 Spanish: Det N AP versus Det Ø AP

Adil	Det N AP[1]	Det Ø AP[2]	Madelin	Det N AP[3]	Det Ø AP[4]
#4			#4	2 (*1)	—
#5			#5	2	—
#6	1	—	#6		
#7			#7	2	—
#8	2	—	#8	3 (*1)	—
#9	1	1	#9		
#10	2	—	#10		
#11			#11	2	5
#12			#12	2 (*1)	—
#13	2	2	#13	2 (*2)	—
#14	1	—	#14	3	—
#15	1	—	#15	2	2
#16	2	—			
#17	3	2			
#18	2	1			
TOTAL	17	6	TOTAL	20	7
% N-drop	6/23 = 26%		% N-drop	7/27 = 25.92%	

[1]Det N AP: Un, los, una, esa, el, mi [2]Det $_N$Ø AP: Los, el, la
[3]Det N AP: Un, este, el, mi, los, una [4]Det $_N$Ø AP: Los, una, dos

Even though both the L1 and the L2 children produce the three types of CP complements, if we compare these data with the L1 data, we see that the L2 children produce less variety of determiners with overt Nouns than the L1 children (superscripts Det N AP, Det N PP, Det N CP below TABLES 10, 11 and 12 versus TABLES 3, 4, 5). However, the type and quantity of determiners used before null Nouns by the L2 children is rather similar to that of the null Nouns produced by the L1 children (superscripts Det Ø AP, Det Ø PP, Det Ø CP below TABLES 10, 11 and 12 versus TABLES 3, 4, 5).

TABLE 11. L2 Spanish: Det N PP versus Det Ø PP

Adil	Det N PP[1]	Det Ø PP[2]	Madelin	Det N PP[3]	Det Ø PP[4]
#3			#3	2	
#4			#4	6	1
#6			#6	1	
#7			#7	3	
#8	2		#8	5 (*2)	
#9			#9	3 (*1)	2
#10	3		#10	5 (*1)	4
#11			#11	2	2
#12	1		#12	3	1
#13	1		#13	3	
#14			#14	2	1
#15	1		#15	5	2
#16		2			
#17	1	1			
#18	1				
TOTAL	10	3	TOTAL	40	13
% N-drop	3/13 = 23.07%		% N-drop	13/53 = 24.52%	

[1]Det N PP: :Los, las, el, la, un, [2]Det Ø PP: La, esa esas

[3]Det N PP::Un, mi, el, una, las, mucho, la, los, muchas, esas

[4]Det Ø PP:Una, uno, otra

TABLE 12. L2 Spanish: Det N CP versus Det Ø CP					
ADIL	Det N CP[1]	Det Ø CP[2]	MADELIN	Det N CP[3]	Det Ø CP[4]
#11	1		#11		
#12			#12		3
#13			#13	2	
#14			#14		1
#15			#15		1
#16					
#16	1				
#17	2				
#18	1	1			
TOTAL	5	1	TOTAL	2	5
% N-drop	1/6 = 16.66%		% N-drop	5/7 = 71.42%	

[1]Det N CP : Este, un, esa, una

[2]Det Ø CP: La

[3]Det N CP : El

[4]Det Ø CP: El, un, los

5.2. Null determiners

With respect to Null determiners (TABLES 13 and 14), these data show that there are more non-Spanish (non-possible) null determiners than in the case of the L1 data discussed and that Adil is different from Madelin.

TABLE 13. Spanish L2. Adil. Null Determiners			
Interview	Possible	Non-possible	Total % Non-possible
#2	5	—	—
#3	5	—	—
#4	4	1	1/5 = 20%
#5	1	1	1/2 = 50%
#6	1	—	—
#7	6	4	4/10 = 40%
#8	1	2	2/3 = 66.66%
#9	—	—	—
#10	8	1	1/9 = 11.11%
#11	1	—	—
#12	10	—	—
#13	12	—	—
#14	3	—	—
#15	5	—	—
#16	14	—	—
#17	14	—	—
#18	22	1	1/23 = 4.34%
TOTAL	112	10	10/122 = 8.19%

There are 8.19% cases of non-possible null determiners in Adil's data (TABLE 13), while there are 25.25% cases of non-possible null determiners in Madelin's data (TABLE 14). Also, in the case of Adil, non-possible null determiners cease to occur after interview #10. However, Madelin's non-possible null determiners decrease but they do not disappear during the time she was interviewed.

TABLE 14. L2 Spanish. Madelin. Null Determiners

Interview	Possible	Non-possible	Total % Non-possible
#1	16	1	1/17 = 5.88%
#2	8	8	8/16 = 50%
#3	3	10	10/13 = 76.92%
#4	21	7	7/28 = 25%
#5	9	5	5/14 = 35.71%
#6	13	4	4/17 = 23.52%
#7	9	9	9/18 = 50%
#8	24	20	20/44 = 45.45 %
#9	12	3	3/15 = 20%
#10	17	2	2/19 = 10.52%
#11	7	4	4/11 = 36.36%
#12	20	4	4/24 = 16.66%
#13	16	1	1/17 = 5.88%
#14	24	1	1/25 = 4%
#15	34	1	1/35 = 2.85%
TOTAL	233	80	80/313 = 25.55%

5.3. Overt determiners and number/gender mismatches

Gender agreement mismatches with overt determiners present a similar pattern to the one we find in the case of null determiners, as shown in TABLES 15 and 16. First of all, Adil produces a total of 2.02% of non-possible overt determiners, while Madelin produces a total of 6.17%. This difference is significant considering the high numbers involved.

The actual distribution of non-possible determiners is also different. Adil does not produce any non-possible overt determiner due to number markings and the three cases due to gender markings occur during interviews #11, #12 and #13.

Madelin's data contain some cases of non-possible number markings and her production of non-possible gender markings does not stop until the last interview.

TABLE 15. L2 Spanish. Adil. Overt Determiner					
	Possible	Non-possible			Total % Non-possible
Int.		Gender	Number	Total	
#2	6	—	—	—	—
#3	2	—	—	—	—
#4	1	—	—	—	—
#5	5	—	—	—	—
#6	8	—	—	—	—
#7	4	—	—	—	—
#8	6	—	—	—	—
#9	13	—	—	—	—
#10	19	—	—	—	—
#11	18	1	—	1	1/19 = 5.26%
#12	21	3	—	3	3/24 = 12.5%
#13	29	2	—	2	2/31 = 6.45%
#14	20	—	—	—	—
#15	22	—	—	—	—
#16	34	—	—	—	—
#17	30	—	—	—	—
#18	53	—	—	—	—
TOTAL	291	6	—	6	6/297 = 2.02%

TABLE 16. L2 Spanish. Madelin. Overt Determiner					
	Possible	Non-Possible			Total % Non-possible
Int.		Gender	Number	Total	
#1	7	1	—	1	1/8 = 12.50%
#2	4	4	—	4	4/8 = 50%
#3	16	1	—	1	1/17 = 5.88%
#4	34	2	—	2	2/36 = 5.55%
#5	24	1	3	4	4/28 = 14.28%
#6	14	2	1	3	3/17 = 17.64%
#7	40	2	1	3	3/43 = 6.97%
#8	56	1	3	4	4/60 = 6.66%
#9	37	4	—	4	4/41 = 9.75%
#10	63	6	—	6	6/69 = 8.69%
#11	50	2	1	3	3/53 = 5.66%
#12	64	6	—	6	6/70 = 8.57%
#13	147	6	—	6	6/153 = 3.92%
#14	105	2	—	2	2/107 = 2.86%
#15	84	—	—	—	—
TOTAL	745	40	9	49	49/794 = 6.17%

Examples of gender are number mismatches produced with overt determiners are listed in (65) to (70):

(65) Unas peces (unos peces) / some fish [Adil #9] G

(66) Esta gusano (este gusano) / this worm [Adil #13] G

(67) Esto tarta (esta tarta) / this cake [Madelin #2] G

(68) El cama (la cama) / the bed [Madelin #2] G

(69) El zapatos (los zapatos) / the shows [Madelin #4] N

(70) El niños (los niños) / the boys [Madelin #5] N

Madelin's and Adil's production of gender mismatches present a different distribution. Madelin produces double the amount of gender mismatches through all the interviews (TABLE 16) while Adil's mismatches only show in interviews #11 to #13 (TABLE 15). In fact, the total amount of gender mismatches is rather small for both children. However, as it was the case with the the total percentage of mismatches, the total percentage of gender mismatches is also significantly different (TABLE 17).

TABLE 17. L1/L2 Spanish: Gender mismatches with overt determiners		
María Magín	4/1578 (0.25%) 12/840 (1.42%)	[TABLE 8] [TABLE 9]
Adil Madelin	6/297 (2.02%) 40/794 (5.03%)	[TABLE 15] [TABLE 16]

TABLE 17 also shows that Adil is closer to the L1 children, María and Magín, than to Madelin in terms of the total production of gender mismatches. Adil is also closer to the L1 children in the amount of gender mismatches produced with AP and PP, which appeared marked with an asterisk in TABLES 3 and 4 (Magín and María) and in TABLES 10 and 11 (Adil and Madelin), summarized below in TABLE 18.

TABLE 18. L1/L2 Spanish: Gender mismatches with SDet complements			
	AP	PP	CP
Magín María	1/27 (3.70%) [TABLE 3) 1/43 (2.32%) [TABLE 3]	1/18 (5.55%) [TABLE 4] —	— —
Adil Madelin	— [TABLE 10] 5/20 (25%) [TABLE 10]	— 4/40 (10%)	[TABLE 11] [TABLE 11]	— —

Neither the L1 nor the L2 children produce mismatches with Null Noun complements. Nonetheless, Madelin continues to use null determiners which are not possible in adult Spanish, as well as

gender and number mismatches up to the last interview, while Adil stops using non- Spanish null determiners at #10 and mismatches at #13. It is also important to point out that instances of gender mismatches with overt determiners are larger than in L1 and they again are different for Adil and Madelin because Adil does not produce any instance.

Therefore, Madelin is the one who has active N-drop while she continues to have problems with the morphology. Adil is more like the L1 children in that he produces very few gender mismatches.

It is also important to notice that Madeline's gender mismatches occur in spite of the fact that her production of N-drop is much higher.

6. Conclusion

We have argued that MPHs are the evidence needed by children to activate the [+word marker/gender] feature of Spanish determiners. These MPHs are morphological vocabulary that has to be learned to specify the appropriate features. We have also hinted at the fact that it may be precisely the lack of phonological sophistication with which L1 children relate to the input data that allows them to implement the [+word marker/gender] feature of Spanish DPs. We should like to propose that this kind of phonological dissection of incoming data is an instance of the 'bottom up' strategy which is typical of native and possibly L2 language learning by very young children (Liceras et al., forthcoming).

We have also argued that MPHs have a direct bearing on the productivity of N-drop because they are incompatible: it is only when the [+word marker/gender] feature is specified as part of the DP projection that N-Drop becomes productive.

MPHs do not occur in our L2 data, which is not surprising because our L2 children have reached a high degree of phonological sophistication, which implies that they will use a different strategy to relate to input triggers. In other words, it may not be a 'bottom up' strategy. Nonetheless, we find different patterns of mismatches between Adil and Madelin. It is highly possible that these differences are due to the different age of the two children (as it was said above, Adil was 4 years old when the first interview took place while Madelin was eight years old). However, the previous linguistic experience of the two children was different too: Adil's L1 was Arabic and Madelin was bilingual (Farshi and Swedish) and she also had some knowledge of English.[14]

Judging from the results, it is not obvious to us whether Adil activates the [+word marker/gender] feature at all and if so, whether he uses a processing 'bottom up' procedure in relation to comprehension

and not in relation to production, because his production is closer to the L1 production than Madelin's. Nonetheless it is still rather different from the L1 pattern. Adil's production seems to indicate that he goes through a silent period and produces very few non-Spanish forms. Madelin, on the other hand, produces more non-Spanish forms. It is also possible that the differences between Adil and Madelin's data be due to L1 influence, since Arabic (Adil's L1) seems to pattern with Spanish in that it has a [+word marker] feature, while neither Farshi nor Swedish (Madelin's L1s) do. This could have made Adil more aware of the characteristics of Spanish DPs.

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