

The Nature of the Pronominal System and Verbal Morphology in Bilingual Spanish/English Child Data: Linguistic Theory and Learnability Issues

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1. Introduction

In this paper we investigate the status of three different types of agreement spell-outs in English/Spanish bilingual data: (1) free [+pronominal] agreement morphemes (the nominative pronouns in English: *he*, *they*...); (2) bound [+pronominal] agreement morphemes (the Spanish person agreement markers in V: *-mos*, *-s*...); and (3) bound [-pronominal] agreement morphemes (the English third person singular marker *-s*).

Using production data from two English/Spanish bilingual children, we will establish interlinguistic contrasts (e.g., English *-s* spell-out versus Spanish person agreement markers), as well as intralinguistic contrasts (e.g., English *-s* spell-out versus English pronominal subjects). This will allow us to characterize these different types of agreement spell-outs with respect to learnability. Our specific aim is to determine whether the L1 development of these agreement spell-outs in our production data provides evidence for the different status attributed to them by linguistic theory. The use of Spanish/English bilingual data allows us to analyze the three different types of agreement spell-outs and test our hypotheses within the same ‘population’.

We will start by reviewing Alexiadou and Anagnostopoulou (1998) proposal from linguistic theory regarding the distinction between [+null argument] languages and [-null argument] languages. In relation to this analysis, we will discuss the notion of markedness and how the three spell-outs can be accounted for in terms of different markedness proposals. We will then present and analyze our data in terms of productivity and error index. The discussion of the data will be followed by our conclusions and suggestions for further research.

2. Linguistic theory and language acquisition

There seems to be a consensus in the L1 language acquisition literature that bound and free morphology develop in a parallel fashion. In fact, it has even been suggested that bound morphology may play a spearheading role in the L1 projection of functional categories (Zobl and Liceras 1994, Vainikka and Young-Scholten 1998). However, there is no consensus with respect to whether the grammatical representation of morphological paradigms and the syntactic operations that are associated with them have an independent grammatical representation (Meisel 1994, Snyder 1995, Sprouse 1998).

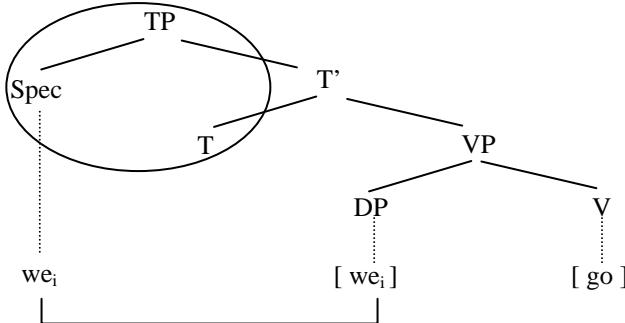
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Here, we would like to address the role of bound and free morphology in L1 acquisition from the perspective of Alexiadou and Anagnostopoulou's (1998) proposal in linguistic theory concerning [+/-null argument] languages. We will relate this proposal to the theories of markedness proposed by Roberts (1999, 2001), Chomsky (2001) and Rivero (1997, 1999).

2.1. Alexiadou and Anagnostopoulou's (1998) account of null subjects

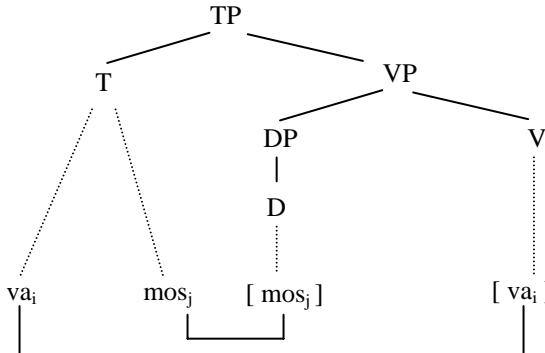
Alexiadou and Anagnostopoulou (1998) account for the properties of pro-drop versus non-pro-drop languages in terms of the parameterized nature of the Extended Projection Principle (EPP). That is, in English-like languages the EPP is satisfied via a Spec-head relationship, implying that the presence of nominative subject pronouns is required in order to satisfy the EPP, as shown in (1).

- (1) We go



In Spanish-like languages, the EPP is satisfied via V-raising on a head-to-head relationship, implying that no nominative subject pronouns are required for this purpose. Consequently, null subjects are allowed, as shown in (2).

- (2) vamos
[go-2nd pp]
'We go'



As reflected in (1) and (2), Spanish-like agreement morphemes (-mos in (2)) are pronominal elements that have semantic content and are entries in the numeration. In contrast, English agreement morphemes do not have semantic content and are phonological spell-outs.

2.2. Markedness and learnability

In order to provide an analysis of the bilingual data which we present in section 3, we will consider two markedness proposals in terms of how they would apply to the different operations shown in (1) and (2) for English and Spanish respectively.

(i) Roberts (1999, 2001) argues that an operation which creates additional layers of structure is more marked than one which does not. This means that English represents the marked option. Consequently, (1) would be more marked than (2).

(ii) Chomsky (2001) and Rivero (1997, 1999) propose that the operations which belong to core grammar—the computational component—are less marked than the operations which take place at the periphery—the interface levels—. Thus, the implementation of the agreement morphemes in English would be more marked than the obligatory presence of subject pronouns in English or the implementation of agreement morphemes in Spanish.

In the light of these different views of markedness, we will analyze whether and how the development of the three agreement spell-outs in English and Spanish provides evidence for these markedness proposals. Specifically, we will try to determine whether this development follows the hierarchy that can be inferred from these proposals: (a) Spanish agreement markers (bound [+pronominal] morphemes) and English pronouns (free [+pronominal] morphemes) are instances of core operations because they belong to narrow syntax; (b) however, English pronouns require an extra level of structure, which makes them more marked than Spanish agreement markers; and (c) English agreement markers (bound [-pronominal] morphemes) represent the most marked spell-out because they are related to a periphery operation that belongs to the phonological component.

3. The study

3.1. Subjects and data

We analyzed the spontaneous production data of two English/Spanish bilingual twin brothers, Simon and Leo. They live with their parents in Salamanca, Spain. The father is a native speaker of Peninsular Spanish and the mother is a native speaker of American English. Both parents are university educated and work in an academic setting. The parents practice a strict ‘one person one language’ strategy of communication with the children; the father always speaks to them in Spanish and the mother always addresses them in English. According to a parental questionnaire, this practice was followed from the moment the twins were born. The parents generally speak Spanish with each other, except when they travel to the United States or when a monolingual English speaker is present.

The recording sessions of the twins’ linguistic production began in February 2000 (age 1;1) and continue to the present. The recordings were conducted according to the procedures specified in the literature on monolingual and bilingual first language acquisition (c.f. Slobin 1985, De Houwer 1990, López Ornat 1994, McDaniel et al. 1995, Thornton 1996, Rice et al. 1999, Bel 2001).

Spontaneous data were elicited by means of periodic video recordings of about one hour and a half (45 minutes in English and 45 minutes in Spanish) at their home in Salamanca. The recordings took place every two/three weeks when the children were 2 to 6 years old, and, after that period, first once a month and then once every three months. These sessions are interrupted for approximately two months in the summer when the family travels to the United States. On these occasions, recordings were made by the parents in order to maintain continuity.

During the sessions, we attempted to maintain a strict separation between English and Spanish (except when an experimental test required otherwise). Thus, in the English sessions, the mother (Melanie) and an English interlocutor (if available) interact with the twins; in the Spanish sessions, it is the father (Ivo) and a Spanish interlocutor.

The data we have collected to this point cover the age range of 1;1 to 6;10. Most of it is already transcribed into CHAT format (MacWhinney 2000). For the present study, we have considered data from three discontinuous developmental stages, as reflected in tables 1 and 2 for Spanish and English.

Table 1: Stages in the discontinuous longitudinal data of Simon and Leo [SPANISH]			
Stage	Age	MLUw Simon	MLUw Leo
1 st stage	2;04 - 2;05	1.5768	1.691
2 nd stage	3;09 - 3;10	3.549	3.453
3 rd stage	4;04 - 5;00	3.893	3.6362

MLUw: mean length of utterance in words

Table 2: Stages in the discontinuous longitudinal data of Simon and Leo [ENGLISH]			
Stage	Age	MLUw Simon	MLUw Leo
1 st stage	2;04 – 2;07	1.509	1.611
2 nd stage	3;09 – 3;10	3.710	4.248
3 rd stage	4;03 – 4;10	4.092	4.172

These three stages have been established on the bases of two main issues: 1) the material that has already been transcribed in CHAT format so that it is actually available to be analyzed; and 2) an attempt to use data from the two children which were compatible from the point of view of the corresponding MLUw, which, in its turn, makes the two sets of data comparable.

3.2. Data analysis

Taking into account these three developmental stages, we analysed the realization of the three different types of agreement spell-outs in the English/Spanish bilingual data. We focused on two interlinguistic contrasts: (i) English -s spell-out versus Spanish agreement spell-outs; and (ii) English pronominal subjects versus Spanish agreement spell-outs. According to the theory, English should be more problematic: in the case of English -s, because it has been proposed to belong to the phonological periphery; in the case of English pronouns, because they require an extra level of structure. We considered a third contrast, an intralinguistic one: we compared the English -s spell-out to English pronominal subjects. Again, the -s spell-out should present more problems because it does not belong to narrow syntax.

To determine the directionality of difficulty we take into consideration two variables, i.e. productivity and error index.

3.2.1. Spanish agreement spell-outs

Examples of grammatical and ungrammatical Spanish agreement spell-outs produced by Simon and Leo appear in APPENDIX I. The different occurrences were classified depending on the type of verb used (lexical verb, copulative verb, auxiliary verb or impersonal/existential).

Table 3 shows the different types of subjects produced by Simon along the three stages, while table 4 shows those produced by Leo.

Table 3: Spanish agreement spell-outs, Simon						
	GRAMMATICAL	UNGRAMMATICAL				
		Omissions	Substitutions			
1 st Stage	84 [7.78%] [95.45%]	3 [13.64%] [3.41%]	1 [14.29%] [1.14%]			
2 nd Stage	391 [36.2%] [99.24%]	3 [13.64%] [0.76%]	0			
3 rd Stage	605 [56.02%] [96.5%]	16 [72.72%] [2.55%]	6 [85.71%] [0.95%]			
TOTAL	1080 [100%]	22 [100%]	7 [100%]			

1st % -over the column-: 1st stage, 2nd stage, and 3rd stage with grammatical and ungrammatical occurrences

2nd % -over the line-: grammatical and ungrammatical per stage

Table 4: Spanish agreement spell-outs, Leo						
	GRAMMATICAL	UNGRAMMATICAL				
		Omissions	Substitutions			
1 st Stage	107 [11.81%] [95.53%]	3 [8.57%] [2.68%]	2 [18.2%] [1.79%]			
2 nd Stage	353 [38.96%] [97.25%]	6 [17.14%] [1.65%]	4 [36.36%] [1.10%]			
3 rd Stage	446 [49.23%] [93.50%]	26 [74.29%] [5.45%]	5 [45.45%] [1.05%]			
TOTAL	906 [100%]	35 [100%]	11 [100%]			

1st % -over the column-: 1st stage, 2nd stage, and 3rd stage with grammatical and ungrammatical occurrences

2nd % -over the line-: grammatical and ungrammatical per stage

Regarding productivity, Simon's overall production per stage is 1109 occurrences (88 in the 1st stage; 394 in the 2nd stage; and 627 in the 3rd stage) and Leo's is 942 (112 in the 1st stage; 353 in the 2nd stage; and 477 in the 3rd stage). The statistical analyses by means of contrast of percentages show that the differences between the children's production are non-significant (*p*-value > 0.05) in the first stage (*p*-value = 0.998687) and the second stage (*p*-value=0.819289). However, they are significant (*p*-value < 0.05) in the case of the third stage (*p*-value=0.003779), where Simon's production is significantly higher.

For each child, grammatical occurrences outnumber ungrammatical ones. Regarding ungrammatical cases, omission errors are exemplified in (1) and (2), while (3) and (4) are instances of what we have labelled substitution errors.

- | | | |
|-----|---|------------------|
| (1) | Yo [he] comido
I [have] eaten
'I have eaten'
(omission of 1 st person singular auxiliary) | [Leo, stage 1] |
| (2) | Tintín [ha] dicho que no hace
Tintin [has] said that no does
'Tintin has said that he won't do it'
(omission of 3 rd person singular auxiliary) | [Simon, stage 3] |
| (3) | Se me va [=van] a romper los dientes
me goes go to break the teeth
'My teeth are going to break'
(3 rd person singular verb substitutes for 3 rd person plural) | [Leo, stage 3] |
| (4) | Me ha [=he] escondido debajo de una mesa
me has have hidden under a table 'I was hidden under a table'
(3 rd person singular auxiliary 'ha' substitutes for 1 st person auxiliary 'he') | [Simon, stage 2] |

In the case of Spanish, and following current analyses and interpretations of the null subject parameter in terms of [+/- strong] agreement (Fernández Soriano 1989, Ordóñez 1997, Kato 1999, Rosselló 2000, among many others), Spanish weak pronominal subjects are morphologically present in verbal inflection (see section 2.1.).¹ Therefore, since the target property (Spanish agreement spell-outs) happens to be located in the verb, examples (1) to (4) are referred to as omissions and substitutions errors.

With regard to the error index, there are significant differences between grammatical and ungrammatical items in each stage for each child, since grammatical items always outnumber ungrammatical ones (*p*-value = 0 for Simon and for Leo in all stages). If we compare the two children in terms of grammatical production, we find significant differences in the third stage where Simon scores significantly higher than Leo (*p*-value < 0.05; *p*-value = 0.010663). When comparing them in terms of ungrammaticality and taking into account cases of both omission and substitution, there are no significant differences between the children in the two types of ungrammaticality (omission *p*-value = 0.491141; substitution *p*-value = 0.508859).

¹ Kato (1999), following Ordóñez (1997), argues that there are two types of pronominal subjects: weak pronouns and strong pronouns. In Kato's proposal, strong pronouns include nominative pronouns in Spanish (yo, tú, él...), accusative pronouns in English (me, him, her...) and dative pronouns in French (moi, toi, lui...), while weak pronouns include free nominative pronouns in English (I, you, he...), nominative clitic pronouns in French (je, tu, il...) and, following Fernández-Soriano (1989), verbal agreement affixes in Spanish (-o, -as, -a...). Thus, overt pronominal subjects are weak pronouns in English but strong pronouns in Spanish.

3.2.2. English pronominal subjects

Examples of English pronominal subjects appear in APPENDIX II and the corresponding production is shown in tables 5 and 6.

Table 5: English pronominal subjects, Simon						
	GRAMMATICAL		UNGRAMMATICAL			Substitutions
	Omissions	Substitutions	Omissions	[100%]	[1.43%]	
1 st Stage	39 [6.34%]	[55.72%]	8 [32%]	[11.43%]	1 [100%]	[1.43%]
2 nd Stage	131 [21.30%]	[50.78%]	7 [28%]	[2.71%]	0	
3 rd Stage	445 [72.36%]	[61.98%]	10 [40%]	[1.39%]	0	
TOTAL	615 [100%]		25 [100%]		1 [100%]	

Table 6: English pronominal subjects, Leo						
	GRAMMATICAL		UNGRAMMATICAL			Substitutions
	Omissions	Substitutions	Omissions	[100%]	[0.99%]	
1 st Stage	43 [5.92%]	[31.86%]	28 [73.68%]	[20.74%]	0	
2 nd Stage	318 [43.80%]	[59.22%]	4 [10.53%]	[0.74%]	0	
3 rd Stage	365 [50.28%]	[60.14%]	6 [15.79%]	[0.99%]	0	
TOTAL	726 [100%]		38 [100%]		0	

With regards to productivity, Simon's overall production of English overt subjects is 615 (39 in the 1st stage; 131 in the 2nd stage; and 445 in the 3rd stage) and Leo's is 723 (43 in the 1st stage; 318 in the 2nd stage; and 365 in the 3rd stage). The statistical analyses we have conducted indicate that the differences between the children's production are not significant for the first stage (p-value = 0.617709) and the third stage (p-value = 1), but they are significant for the second stage (p-value < 0.05; p-value = 0), where Leo's production is significantly higher than Simon's.

Omissions errors are exemplified in (5) and (6), while (7) and (8) are instances of what we have labelled substitution errors.

- (5) saw cat [Leo, stage 1]
 ‘I saw a cat’
 (omission of 1st person singular pronoun)
- (6) fits [Simon, stage 1]
 ‘it fits’
 (omission of 3rd person singular pronoun)
- (7) this is the woods where he was [Leo, stage 3]
 ‘these are the woods where he was’
 (3rd person singular verb substitutes for 3rd person plural)
- (8) things that you eat is candy [Simon, stage 2]
 ‘things that you eat are candy’
 (3rd person singular verb substitutes for 3rd person plural)

If we consider the error index, we find significant differences between grammatical and ungrammatical items in each stage and for each child. As it was the case for the Spanish agreement markers, grammatical items outnumber ungrammatical ones (p-value = 0 for both children). When establishing a comparison between the two children in terms of grammatical items (examples 7 and 9), significant differences are only found in the second stage (p-value = 0), where Leo's production of grammatical items is higher than Simon's. For ungrammatical items, the significant differences

between the children are found only in the first stage (p -value = 0.004052), where Leo produces more instances of ungrammatical pronouns.

3.2.3. English -s spell-out

Tables 7 and 8 show the distribution of English -s spell-out for Simon and Leo respectively. Examples of this type of spell-out are found in APPENDIX III.

Table 7: English -s spell out, Simon						
	GRAMMATICAL		UNGRAMMATICAL			
			Omissions	Substitutions		
1 st Stage	11	[4.66%]	[15.71%]	4	[30.77%]	[5.71%]
2 nd Stage	63	[26.7%]	[24.42%]	1	[7.69%]	[0.39%]
3 rd Stage	162	[68.64%]	[22.56%]	8	[61.54%]	[1.12%]
TOTAL	236	[100%]		13	[100%]	3 [100%]

Table 8: English -s spell out, Leo						
	GRAMMATICAL		UNGRAMMATICAL			
			Omissions	Substitutions		
1 st Stage	14	[5.02%]	[10.37%]	16	[59.26%]	[11.85%]
2 nd Stage	124	[44.44%]	[23.09%]	6	[22.22%]	[1.12%]
3 rd Stage	141	[50.54%]	[23.23%]	5	[18.52%]	[0.82%]
TOTAL	279	[100%]		27	[100%]	1 [100%]

Simon's total production of English -s spell out is 252 (15 in the 1st stage; 67 in the 2nd stage; and 170 in the 3rd stage) and Leo's 307 (30 in the 1st stage; 130 in the 2nd stage; and 147 in the 3rd stage). A statistical contrast between the two children's production shows that there are significant differences in the first and second stage (p -value < 0.05; p -value = 0.049308 and p -value = 0, respectively), and that Leo's production is significantly higher than Simon's.

Examples of grammatical and ungrammatical items are exemplified in (9)-(10) and (11)-(12).

- (9) it goes in the garbage [Leo, stage 2]
- (10) when Leo finishes drinking [Simon, stage 2]
- (11) *now the knight go [=goes] there [Leo, stage 3]
- (12) *he brush [=brushes] his teeth [Simon, stage 2]

An example of a substitution error appears in (13)

- (13) *if emu would starts [= start] wis [: with] da [: the] n it will be enmumu [Leo, stage 3]

With regard to the error index, there are significant differences between grammatical and ungrammatical items in each stage and for each child (p -value = 0), as with the other two types of spell-outs. As expected, there is a significantly higher amount of grammatical items. We found no significant differences among the three stages, neither for Simon nor for Leo.

If we compare the two children, there are significant differences in the production of grammatical and ungrammatical items in the first stage, where Leo produces more ungrammatical items than Simon (p -value = 0.044843). By type of ungrammaticality (omission and substitution), significant differences appear between the children in the case of omissions but not in the case of substitutions, where production is fairly similar. Regarding omissions, statistically significant differences are only found in

the first stage (p -value = 0.044843), where Leo produces more omissions. In fact, and since no instances of substitution are found in either of the two children for the first stage, p -values of ungrammatical items and ungrammaticality due to omissions are one and the same.

4. Discussion

The data analyzed in section 3 reveal that there are quantitative differences between children in terms of productivity and that these seem to depend on the type of spell-out. For instance, Simon's production of Spanish agreement spell-outs is significantly higher in the first stage, and Leo's production of English pronominal subjects and *-s* marker is significantly higher in the second and first stage, respectively.

A contrast among the three developmental stages shows that grammatical items significantly outnumber ungrammatical items irrespectively of child, stage and type of spell-out. Also, Leo produces more ungrammatical uses of English pronominal subjects and the English *-s* marker (omissions) in the first stage. In the case of the *-s* marker, Leo's overall production is also higher. In the second stage, Leo produces more grammatical uses of English pronominal subjects, and his overall production is also higher than Simon's. Finally, in the third stage, Simon produces more grammatical uses of Spanish agreement markers, and his overall production is also higher than Leo's.

There are also differences among the three types of spell-outs, both in the case of grammatical occurrences (tables 9 and 10 for Simon and Leo) and in the case of ungrammatical ones (tables 11 and 12 respectively).

Table 9: Spanish and English agreement spell-out subjects, Simon				GRAMMATICAL
	Spanish agreement	English pronouns	English <i>-s</i>	
1 st Stage	84 [95.45%]	39 [55.72%]	11 [15.71%]	
2 nd Stage	391 [99.24%]	131 [50.78%]	63 [24.42%]	
3 rd Stage	605 [96.5%]	445 [61.98%]	162 [22.56%]	

Table 10: Spanish and English agreement spell-out subjects, Leo				GRAMMATICAL
	Spanish agreement	English pronouns	English <i>-s</i>	
1 st Stage	107 [95.53%]	43 [31.86%]	14 [10.37%]	
2 nd Stage	353 [97.25%]	318 [59.22%]	124 [23.09%]	
3 rd Stage	446 [93.50%]	365 [60.14%]	141 [23.23%]	

As tables 9 and 10 reflect, the highest percentages of grammaticality correspond to Spanish agreement spell-outs (more than 95%), followed by English pronouns (between 30% and 60%) and finally by English *-s* marker (between 10% and 25%). This reinforces the hierarchy of agreement spell-outs that we suggested in section 2.2.

As for ungrammatical occurrences (tables 11 and 12 below), overall percentages are fairly low. Simon's omissions mainly seem to affect English pronouns in the first stage, while substitutions approach zero for the three spell-outs. In the case of Leo, omissions increase in the case of both English spell-outs, although the number of occurrences drops in later stages. Leo's substitutions are more frequent in Spanish (even if the percentage is still low) than in English.

Table 11: Spanish and English agreement spell-out subjects, Simon				UNGRAMMATICAL		
	Omissions			Substitutions		
	Spanish agreement	English pronouns	English <i>-s</i>	Spanish agreement	English pronouns	English <i>-s</i>
1 st Stage	3 [3.41%]	8 [11.43%]	4 [5.71%]	1 [1.14%]	1 [1.43%]	0
2 nd Stage	3 [0.76%]	7 [2.71%]	1 [0.39%]	0	0	3 [1.16%]
3 rd Stage	16 [2.55%]	10 [1.39%]	8 [1.12%]	6 [0.95%]	0	0

Table 12: Spanish and English agreement spell-out subjects, Leo					UNGRAMMATICAL
	Omissions			Substitutions	
	Spanish agreement	English pronouns	English -s	Spanish agreement	English -s
1 st Stage	3 [2.68%]	28 [20.74%]	16 [11.85%]	2 [1.79%]	0
2 nd Stage	6 [1.65%]	4 [0.74%]	6 [1.12%]	4 [1.10%]	0
3 rd Stage	26 [5.45%]	6 [0.99%]	5 [0.82%]	5 [1.05%]	1 [0.16%]

In the case of ungrammatical items and if we pay attention to the number of occurrences, there seems to be an inversion in the hierarchy of spell-outs, though slight and not statistically significant, in the sense that while both omissions and substitutions seem to decrease in the case of English spell-outs (clearly seen in the case of Leo), Spanish spell-outs show a certain increase in this respect. This may be linked, on the one hand, to the amount and complexity of production in the last stage and, on the other hand, to the nature of verbal inflection in both languages: in the case of Spanish agreement spell-outs, agreement markers have to combine with other verbal morphology (tense, mood, voice, etc.); in English this verbal information has a lexical nature. Thus, in Spanish, difficulties are added to the production of morphologically fully inflected verbs (agreement, tense, aspect, etc). In any case, as we mentioned above and as the data in tables 11 and 12 show, the percentage of ungrammaticality in Spanish never goes up as high as the English one (Spanish never exceeds 6%, while English goes beyond 20%).

Taking all this into account, overall differences between both languages show that these two English/Spanish bilingual children have problems with the English -s marker (first stage) and English pronominals (first stage), and that problems with English -s marker are mainly due to omissions. Problems with English spell-outs disappear in later stages. As opposed to English spell-outs, the twins do not have problems with Spanish agreement markers. Therefore, we can conclude that Spanish agreement spell-out is acquired earlier (because of the lower error rate) than English weak morphology (Pierce 1992).

5. Conclusion

In this paper we have addressed the different acquisition processes of three types of agreement spell-outs in the production data of two English/Spanish bilingual children: Spanish verbal agreement markers (1st, 2nd and 3rd person singular and plural), English third person singular marker -s, and the English nominative pronominal system. Based on the different acquisition patterns displayed by these elements, we can conclude that the spell-out hierarchy in (14) holds, but only for the first stage.

$$(14) \quad \begin{array}{ccc} -s \text{ marker} & > & \text{English pronominals} \\ & & [\text{more problematic}] \end{array} \quad \begin{array}{ccc} & & \text{Spanish agreement spell-outs} \\ & & [\text{less problematic}] \end{array}$$

This hierarchy leads us to revise the conclusions concerning the role of free and bound morphology in L1 acquisition arrived at by Zobl and Liceras (1994), and Vainikka and Young-Scholten (1998). Namely, what our data show is that the acquisition of L1 bound morphology cannot be dealt with as a unified entity, since there are differences between bound morphology which is part of the numeration (the Spanish [+pronominal] agreement markers) and bound morphology which belongs to the phonological interface (English -s marker). In fact, the latter seems to be problematic at the initial stages, and equally or even more problematic than free morphology (the English pronouns).

There are two issues that we have not addressed in this paper that would complete the picture of the pronominal system and verbal morphology in English/Spanish bilingual data: the distribution of Spanish null and subject pronouns, and the possibility that there may be a radical pro-drop stage.

With respect to the distribution of null and overt subject pronouns in null subject languages, this is regulated at the semantic interface, which has been said to be a source of problems for bilingual acquisition (Serratrice et al. 2004, among others). The logical question that our proposal raises is whether or not it will also be problematic for our children, and whether a parallel pattern between English (-s marker) and Spanish (subject pronouns) will be found, since both are interface-based. In other words, are both the semantic and the phonological interfaces equally problematic for L1 acquisition?

APPENDIX #1. SPANISH AGREEMENT SPELL-OUTS

1- SIMON

NULL SUBJECTS

Los tiro aquí	Simon, stage 1	Vlex
No está	Simon, stage 1	Vcop
Es un triángulo	Simon, stage 2	Vcop
Pero tenemos espadas	Simon, stage 2	Vlex
Oh, no, se ha roto [=rotó]	Simon, stage 2	Vaux
Cuando vienes hasta aquí ganas	Simon, stage 3	Vlex
Ya la hemos alcanzado	Simon, stage 3	Vaux
Había tesoros	Simon, stage 3	impersonal
No es desnudo	Simon, stage 3	Vcop

OVERT SUBJECTS

Tú puedes sacar +...	Simon, stage 1	Vlex
No Leo, este es mío	Simon, stage 1	Vcop
No cabe vaca	Simon, stage 1	Vlex
Yo quiero mover este	Simon, stage 2	Vlex
Mira, yo tengo dos amarillas	Simon, stage 2	Vlex
Este va aquí	Simon, stage 2	Vlex
Un cocodrilo s(e) ha comido una manzana	Simon, stage 2	Vaux
porque los cocodrilos son verdes	Simon, stage 2	Vcop
Yo creo que sí	Simon, stage 3	Vlex
Yo soy esta	Simon, stage 3	Vcop
El tobogán baja	Simon, stage 3	Vlex
Los pies son muy pequeñitos	Simon, stage 3	Vcop
La llama le ha hecho eso	Simon, stage 3	Vaux
*Eso lo [=roto]	Simon, stage 1	null Vaux + participle
*Ha [=he] ponido [=puesto] uno así	Simon, stage 2	3 rd p. for other person
*Esto está aquí y no puede [=pueden] estar todos	Simon, stage 2	singular for pl.
*No puede [=pueden] volar si no tienen alas	Simon, stage 3	singular for pl.
*El ciempiés no tienen [=tiene] alas	Simon, stage 3	plural for singular
*Me ha [=he] escondido debajo de una mesa	Simon, stage 2	3 rd p.f.o.p.
*Tintín [ha] dicho que no hace	Simon, stage 2	null Vaux+particip

2- LEO

NULL SUBJECTS

Son patos	Leo, stage 1	Vcop
Quiero agua	Leo, stage 1	Vlex
Oh, y he roto el suelo	Leo, stage 1	Vaux
Tengo un dado	Leo, stage 2	Vlex
Ya lo ha comido	Leo, stage 2	Vaux
Pues estoy aquí	Leo, stage 3	Vcop
Como coja este voy aquí	Leo, stage 3	Vlex
Hay muchas canicas	Leo, stage 3	impersonal

OVERT SUBJECTS

Y yo quiero éste	Leo, stage 1	Vlex
Este es rojo	Leo, stage 1	Vcop
La bolsa está dentro de el [= la] bolsa	Leo, stage 1	Vcop
¡Bien, yo he hecho una aquí grande, ahá!	Leo, stage 2	Vaux
No, esta no es la reina [= reina]	Leo, stage 2	Vcop
¿Los piratas llevan eso?	Leo, stage 2	Vlex

Pues tú no ganas	Leo, stage 3	Vlex
Yo lo voy a poner adento [= dentro]	Leo, stage 3	Vaux
Tú eres un glotón	Leo, stage 3	Vcop
Todo, las llamas han hecho	Leo, stage 3	Vaux
Mi papá es más que tú	Leo, stage 3	Vcop
¿Qué ha pasado?	Leo, stage 3	Vaux
*Eso roto	Leo, stage 1	null Vaux + participle
*Yo poner	Leo, stage 1	no agreement marker
*Yo comido	Leo, stage 2	null Vaux + participle
*Un día ha [=he] visto unos bichos	Leo, stage 2	3 rd person for other person
*Y era [= eran] arañas	Leo, stage 2	singular for plural
*Se me va [=van] a romper los dientes	Leo, stage 3	singular for plural
*Te ha [=he] engañado	Leo, stage 3	3 rd p.f.o.p.; null SU
*Yo no la ha [=he] comido	Leo, stage 3	3 rd p.f.o.p.; overt SU

APPENDIX #2. ENGLISH PRONOMINAL SUBJECTS

1- SIMON

PRONOMINAL SUBJECTS

Can I see Muzzy, please?	Simon, stage 1	Vmod
I want that	Simon, stage 1	Vlex
It's that green sing [= thing]	Simon, stage 2	Vcop
He's putting water all over the bath!	Simon, stage 2	Vaux
I have it	Simon, stage 2	Vlex
He's not putting it in the pile	Simon, stage 2	Vaux
Simon says she'd buy a book about froggie and Toad	Simon, stage 2	Vlex
No, it's my turn	Simon, stage 3	Vcop
He is blue	Simon, stage 3	Vcop
Why am I always getting minus one?	Simon, stage 3	Vaux
They break, see?	Simon, stage 3	Vlex
Hey, we don't know how to play!	Simon, stage 3	Vaux
This one is this one	Simon, stage 3	Vcop

NP SUBJECTS

Elmo is blue	Simon, stage 1	Vcop
Leo is not letting me play!	Simon, stage 2	Vaux
Pea starts with p	Simon, stage 3	Vlex

*(it) fits	Simon, stage 1	Null pronoun
*(it) roars	Simon, stage 1	Null pronoun
*(I)can't pull that one wis [: with] me	Simon, stage 2	Null pronoun
*and things that you eat is candy	Simon, stage 2	Substitution sing. by pl.
*hey, (it) is this one!	Simon, stage 3	Null pronoun

2- LEO

PRONOMINAL SUBJECTS

I want a book	Leo, stage 1	Vlex
I chase	Leo, stage 1	Vlex
This is mine	Leo, stage 1	Vcop
But it's really big	Leo, stage 2	Vcop
Yeah, because it goes up to there	Leo, stage 2	Vlex
I can take mine off	Leo, stage 2	Vmod

But you said I can have it	Leo, stage 2	Vlex
Because those ones had to pull them all off	Leo, stage 2	Vlex
It says Leo	Leo, stage 3	Vlex
She is a queen	Leo, stage 3	Vcop
I am going to win	Leo, stage 3	Vaux
We need that too	Leo, stage 3	Vlex
Yeah, I can't see	Leo, stage 3	Vmod
NP SUBJECTS		
The piggies went inside there	Leo, stage 1	Vlex
Massy starts with m	Leo, stage 2	Vlex
Peter Cottontail is a big rabbit	Leo, stage 2	Vcop
Because knives are sharp	Leo, stage 3	Vcop
These pats are for eating	Leo, stage 3	Vcop
*(I) saw cat	Leo, stage 1	Null pronoun
*(I) want to rest up in my bed	Leo, stage 2	Null pronoun
*(I) want more these	Leo, stage 3	Null pronoun
*This is the woods where he was	Leo, stage 3	Substitution sing. by pl.

APPENDIX #3. ENGLISH -S SPELL-OUT

1- SIMON		
What's that?	Simon, stage 1	Vcop
It's there	Simon, stage 2	Vcop
When Leo finishes drinking	Simon, stage 2	Vlex
Because it whips and it wills	Simon, stage 3	Vlex
It needs to be with a q, silly	Simon, stage 3	Vlex
*Fall bunny	Simon, stage 1	Null -s marker
*Leo chase cat	Simon, stage 1	Null -s marker
*When he finish [= finishes] drinking	Simon, stage 2	Null -s marker
*He brush [=brushes] his teeth	Simon, stage 3	Null -s marker
2- LEO		
It is mine	Leo, stage 1	Vcop
It goes in the garbage	Leo, stage 2	Vlex
That looks like a t	Leo, stage 2	Vlex
Maybe she was getting old	Leo, stage 3	Vaux
He has a whole lot of pictures	Leo, stage 3	Vlex
*They kissing	Leo, stage 1	Null -s marker
*Because if he push [= pushes] himself there, he's going to break there	Leo, stage 2	Null -s marker
*Now the knight go [= goes] there	Leo, stage 3	Null -s marker

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