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Case, inflection and subject licensing in child Catalan and Spanish*

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ABSTRACT

The development of specified tense and number morphology in child Catalan and Spanish is found to correlate with the onset of overt subject use. The data come from four monolingual child Catalan-speakers (from the Serrà & Solé corpus) and one monolingual child Spanish-speaker (from the Linaza corpus) who were studied longitudinally from 1;0 to 3;6, approximately. The simultaneous emergence of tense and number morphology on one hand and overt subjects on the other in the children's speech is taken as evidence that a particular aspect of Universal Grammar, Case Theory, determines the possible co-occurrences of verbal inflections and subject types in developing grammatical systems. Parallels in verbal inflectional development are found in other child languages, while such parallels are not found in regard to subject use. Possible modifications to Case Theory, which would allow a unified account of the cross-linguistic developmental patterns of subject use, are considered. The possibility of explaining the early absence of overt subjects in these null subject languages as the result of an early sentence processing deficit is explored and rejected. The children's knowledge of whether their language is a null subject or overt subject language even before acquiring adult-like verbal inflection is taken as further evidence for what has been called 'early convergence' on parameter settings.

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INTRODUCTION

A central topic of debate in the child language literature over the last fifteen years has been the nature of the omitted subjects in the acquisition of languages which require overt subjects (Hyams, 1986; Valian, 1991; Bloom, 1993 and others). Some of these accounts have proposed that child speakers of overt subject languages, such as English, fail to produce overt subjects obligatorily because their inflectional system differs from the target adult system. Hence, these theories have argued for a special link between verbal inflection and the subject position. For example, Hyams (1986) argued that the subject-verb agreement setting for child English was such that a phonetically null subject of the Italian kind was licensed (i.e. AGR = PRO). This was argued to allow English-speaking children to optionally use null subjects. With a different view of the link between verbal inflection and the English-speaking child's inability to use overt subjects obligatorily, Guilfoyle (1984) argued that the absence of Tense in child English prevented nominative Case from being assigned to the subject position. Since (abstract) nominative Case could not be assigned, no overt subject could appear there, following the logic of the Case Filter (e.g. Chomsky, 1981) which states that NPs can only occur if they are assigned abstract Case.

A problem for Guilfoyle's account, however, which she pointed out, was the fact that if nominative Case could not be assigned in child English, this should prevent all overt subjects from occurring, contrary to the facts. The facts are that English-speaking children use overt subjects optionally (cf. Valian, 1991). However, in the study presented here of four monolingual Catalan-speaking children and one monolingual Spanish-speaking child, Guilfoyle's problem does not arise. That is, during an early period of child Catalan and Spanish, there is a stage in which no overt subjects whatsoever are used. They are not optionally used as in child English, and adult Catalan and Spanish. I will argue that in this same stage, the children's verbs also lack tense and number inflection. Hence, I will contend that Guilfoyle's original idea of nominative Case failure resulting in the complete absence of overt subjects was correct, but only in null subject languages (NSLs), not overt subject languages (OSLs). I will suggest that nominative Case fails to be assigned because Tense and Number (the syntactic functional projections – written in upper case throughout) are inactive initially, violating a constraint on nominative Case assignment which requires that Person, Number and Tense all be active. In a second stage when tense, number and person inflection (written in lower case throughout) begin to be used, overt subjects also emerge.

In the next section an overview of Case Theory is presented and we examine the relationship between the onset of certain aspects of agreement morphology and the nature of the null subjects licensed in child NSLs. In the

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third section I discuss the children's subject use and address the question of how these subjects may be licensed. In the fourth section I present the results of the morphological study with respect to tense, person and number inflection. In the fifth section we present what is known about the interaction of subjects and inflection in adult Catalan and Spanish. In section six, we review the development of inflection and subjects in other languages and arrive at two tentative generalizations. In section seven, I explore possible unified analyses of subject licensing across null and overt subject languages. In the eighth section, I argue against a processing account of the early lack of overt subjects.

CASE THEORY AND NULL SUBJECTS

When speaking of 'case' we need to distinguish between morphological case and Abstract Case (Abstract Case will be capitalized for the remainder of this paper, following convention). Morphological case includes the inflectional elements that occur affixed to nouns which indicate the grammatical role of the noun with respect to the verb in languages such as Latin, Russian and others. In contrast, Abstract Case Theory attempts to account for the environments in which NPs are licensed, by positing that all overt noun phrases require Case in order to appear. This is called 'The Case Filter' (e.g. Chomsky, 1981) and it is proposed to hold universally. In languages like Russian and Latin, Abstract Case occurs in a phonetically perceptible form, while in languages like English, Catalan and Spanish, it only occurs overtly on some pronoun forms (e.g. 'him' vs. 'he' in English), and in a phonetically null form on the rest of the NPs in the language. Morphological case, then, is a phonetic representation of Abstract Case, although Abstract Case may also be phonetically null. Hence, all NPs must have Abstract Case, and in some languages this is represented overtly and in others not.

The basic contrast accounted for by Case theory with respect to subject position is the fact that overt subjects do not occur in infinitive clauses as in (1), while they do in finite sentences, as in (3).[1]

(1) John wondered [how Ø to leave].
(2) *John wondered [how Bill to leave].
(3) John left.

There is some controversy with respect to which of the two inflectional elements (Tense or Agreement) is the Case-related element or whether they

[1] Here we refer to subjects of infinitivals that do not have a clear sentence external Case assigner such as 'for' in an infinitival clause such as (i):
(i) There will have to be a very good reason for me to leave.
(ii) *There will have to be a very good reason I/me to leave.
The fact that the subject of (i) occurs in non-nominative case is evidence that another kind of Case assignment mechanism is at work in these clauses.

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both are Case-related. This controversy arises out of the fact that in many languages (such as English, Catalan and Spanish) infinitives lack both tense and agreement specifications simultaneously.[2] Whether there is a universal nominative Case assigner or not is unclear in the present state of the theory. I will speculate in section 7 that the features which assign Case are simply distributed in language-particular ways, resulting in different co-occurrences between subject types and verb types cross-linguistically.

Notice that the finite/non-finite distinction for Nominative Case assignments holds for adult Catalan and Spanish as well, as in (4) through (6). In (4) the subject of the subordinate infinitival clause is null. (5) shows that if this subject is overt, the sentence is ungrammatical. (6) shows that standard finite verbs with tense and agreement morphology license overt subjects.

(4) En Joan es preguntava [com Ø cantar la cançó].
art. Joan cl. refl. asked how to sing the song.
'Joan wondered how to sing the song.'

(5) *En Joan es preguntava [com ell cantar la cançó].
art. Joan cl. refl. asked how art. Pere to sing the song.
'Joan wondered how Pere to sing the song.'

(6) *Ell cantava*.
art. Joan was singing.
'Joan was singing.'

In this model of grammar, then, there is a link between the occurrence of verbal inflection on one hand and the occurrence of overt subjects on the other. The Case Filter accounts for the occurrence of overt subjects. It is stated in Chomsky (1981, p. 49) as in (7).

(7) *NP if NP has phonetic content and has no Case.

Infinitives such as in (4) occur with a subject of some kind as well, however. Following Bouchard (1983),[3] among others, I will assume that this null

[2] Other languages, however, do not share this simultaneous lack of tense and agreement on non-finite forms. European Portuguese (Raposo, 1987), for example, employs a kind of 'inflected infinitive' in subordinate clauses which shows subject-verb agreement with nominative case marked subjects, but lacks a tense specification independent of the matrix verb. This type of evidence could argue for agreement being the universal Case assigning element rather than tense. However, other languages have no subject-verb agreement at all, but still have nominative case-marked subjects, as in Japanese. Japanese (and all languages, in fact) can be argued to have tense marking of some kind in matrix clauses (abstracting away from the tense-aspect distinction). This kind of evidence argues that Tense is the universal Case assigning element. The essential relationship, in any event, is between morphological features on the verb and the possibility of different NPs co-occurring with them. Furthermore, the generalization that infinitives occur with null subjects and finite verbs occur with nominative case-marked subjects still holds for the languages in question and suffices for our immediate purposes.

[3] This is true in spite of the fact that the more widely accepted PRO Theorem (Chomsky, 1981) is stated in terms of PRO occurring in environments in which it is ungoverned.

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subject, PRO, in contrast to overt subjects, occurs only in environments in which it cannot be assigned Case by finite verbs. PRO receives its reference from a preceding NP which controls it.

While the null subject PRO occurs with infinitives in 'overt subject languages' as well as 'null subject languages', such as Italian, Catalan and Spanish, the latter permit null subjects with finite verbs, as illustrated in (8) and (9). This subject has been argued by Rizzi (1986a) to be different from PRO, and is referred to as *pro*.

(8) *pro* cantava cançons molt boniques.
was singing (3rd, sg) songs very beautiful (pl)
'He/she/it was singing very beautiful songs.'

(9) La solista cantava cançons molt boniques.
The soloist was singing (3rd, sg) songs very beautiful (pl)
'The soloist was singing very beautiful songs.'

Given that overt subjects and null *pro* subjects can both occur with finite verbs, one must assume that whatever assigns Nominative Case to overt subjects also assigns the Case of null *pro* subjects in finite verb constructions.[4] Hence, the Case filter must apply to the null subjects of finite clauses as well. This implies that Case assignment is necessary for the licensing of *pro*.[5] But what allows some languages to use null subjects and other not to? Rizzi (ibid.) proposed that 'rich agreement' is what allows languages like Italian, Catalan and Spanish to recover the content of null subjects, while the lack of rich agreement in overt subject languages prevents them from doing so. This will be relevant to our study because while adult Catalan and Spanish are argued to employ this Case-marked, null subject (*pro*), we will argue that the child language grammars of these languages can neither assign Nominative Case nor license Rizzi's finite clause 'little *pro*' subjects.

The proposal advanced here is that the underspecification of tense and agreement in child Catalan and Spanish blocks Nominative Case assignment and the absence of the complete agreement paradigm blocks recovery of *pro*'s content. I conclude that the unavailability of Tense and the incomplete agreement paradigm in the early stage of child Catalan and Spanish restricts the children to using the only subject grammatically possible in the absence

[4] There could, of course, be one mechanism for licensing null subjects and another one for licensing overt subjects. However, the standard assumption (cf. Rizzi and Chomsky, op cit.) has been that there is a connection between the type of subject that can occur with a verb and the type of inflection it carries. This is the empirical basis of Case Theory. In this view, since overt and null subjects both occur with finite verbs in Catalan, Spanish, Italian, Japanese, etc., it seems reasonable to assume that both subject types share some fundamental licensing property. I will assume that property is Case assignment.

[5] It must not be NOMINATIVE Case specifically which does this, given that *pro* may also occur in object position (cf. Rizzi, 1986a).

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of tense and agreement: the PRO subject used in adult infinitive clauses. Now we will examine the child Catalan and Spanish data on which these conclusions are based. First, we look at the subject use data and then we will turn to the data on verbal inflection.

OVERT SUBJECTS IN CHILD CATALAN AND SPANISH

What I will call the Early Stage of child Catalan and Spanish is defined by the fact that there are no overt subjects. When overt subjects begin to be used, the child is said to have advanced to the Later Stage. Chronologically, the cutoff point between the two stages appears to be around 2 years old. There is individual variation with respect to the length and cut-off point of the stages, as the ages next to the children's names indicate.

The second column of Table 1 includes the total number of verbs which occur with null subjects, while the third column includes the total number of verbs which occur with overt subjects. Each child has one row for their early stage and another row for their later stage. As stated, there are by definition no overt subjects in the early stage. The Spanish data (on Juan) is sparse in the early stage and I believe that further data collection is necessary to falsify or confirm the predictions presented here for Spanish.[6]

For this reason the stages are considered to be grammatical, not chronological. The data on the four Catalan-speaking children is from the Serrà & Solé (1986) Corpus of the CHILDES data base (MacWhinney & Snow, 1985). The Spanish data comes from the Linaza Corpus, also from the CHILDES data base. The data collection sessions on the children whose transcripts I studied lasted 30–45 min and the children were recorded approximately once a month.

Having noticed that there was an early stage without overt subjects, I examined roughly equal amounts of data, measured in number of files and months before and after the point at which the first overt subject was used. I will call the files before the onset of the first overt subject in each child's data the early stage and the files after this point the later stage. The point of segmenting the data in this way was to abstract away from chronological differences in grammatical development. While it is true that some of the early stage files contain no verbal utterances, it is also true that all of the children examined had a significant period of time/number of files in which

[6] At the time the study was done, the new data base produced by Susana López-Ornat, contained and analysed in López-Ornat (1995) was not available, and the data from her subject could not be considered in detail. She informs me, however, that correlations I find between inflection and overt subjects appear correct for the child she studied as well (López-Ornat, p.c.). I am aware of no other child Spanish data base that starts sufficiently early so as to capture this early 'no-tense/no-number' stage.

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TABLE 1. *Overt vs. null subjects in the early and later stages*

Child	Verbs with null subjects	Verbs with overt subjects
Laura I (1;7–2;2)	145 (100%)	0 (0%)
Laura II (2;4–2;11)	747 (89%)	96 (11%)
Pep I (1;0–1;8)	48 (100%)	0 (0%)
Pep II (1;10–2;4)	305 (88%)	41 (12%)
Guillem I (1;0–1;9)	56 (100%)	0 (0%)
Guillem II (1;11–2;7)	484 (82%)	104 (18%)
Gisela I (1;7–1;11)	31 (100%)	0 (0%)
Gisela II (2;1–2;9)	301 (70%)	125 (30%)
Spanish		
Juan I (1;7–1;9)	25 (100%)	0 (0%)
Juan II (2;0–2;1)	29 (90%)	3 (10%)

TABLE 2. *Verbs with null subjects versus verbs with overt subjects in the early and later stages of child Catalan and Spanish*

	Early stage	Later stage
Verbs with null subjects	305	1866
Verbs with overt subjects	0	369

they did produce verbal utterances before they produced an overt subject. Guillem had 12 files per stage, Pep had nine files per stage, Laura had six files per stage, Gisela had six files per stage and Juan, the Spanish-speaking child had two files per stage.

In Table 2 we see that there are many utterances produced in the early stage, none of which carry overt subjects.

All overt subjects that co-occurred with a verb were counted, excluding repetitions of immediately preceding utterances, lexically-learned utterances, lexicalized tags and unclear utterances. A large portion of the verb forms in the early stage occur in present tense and imperative forms. Imperatives were removed from the count because the pragmatic and grammatical licensing factors for overt subjects which occur with imperatives appear to differ from those which occur with non-imperative verbs. That is, since imperative license null subjects even in overt subject languages, it is likely that mechanisms beyond those that license declarative null subjects are at work.

If there is such a thing as an adult norm for overt subject use in null subject languages, it may be about 30% overt subject use. The adult Spanish speakers reported in Silva-Corvalán (1977), used overt subjects an average of 39% of the time (501 overt subjects out of 1284 possible). Similarly, in the utterances produced in four files by Juan's father, an adult native speaker of

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Spanish, overt subjects were used 23% of the time (109 overt subjects out of 464 possible). Thus we can see that the children's overt subject production in the later stage, which averages 20%, begins to come close to adult proportions by the end of the later stage.

THE EMERGENCE OF INFLECTION IN CHILD CATALAN AND SPANISH

Tense

As mentioned above, the onset of overt subject use is the criterion used to delimit the boundary between the two grammatical stages. Another element that begins to be used in the second stage, however, is Tense. I propose that the emergence of Tense and Number into the grammar of child Catalan and Spanish makes nominative Case assignment possible and that it is for this reason that they correlate. What it is meant by the 'emergence' of Tense into the grammar is that tense begins to be used in CONTRASTIVE ways. Before this point, only forms with a present or irrealis interpretation are used. This notion of contrast appears in Klima & Bellugi-Klima (1966), for example, when she argued that children who say 'What's that?' but never use uncontracted 'is' have not acquired the copula. Similarly, I argue that the important shift in the children's grammar is between the absence and presence of non-present (contrastive) tenses. In Reichenbachean terms (Reichenbach, 1947), the child must be able to syntactically represent speech time and event time as non-simultaneous. When the child is able to grammatically represent this distinction we argue that the Tense Phrase has become active. In spite of the fact that this distinction is not represented, verbs with the following norms nonetheless occur: present, imperative, infinitive, gerund and participle forms. These are illustrated in (10) through (14).

(10) *Present* – Pep (1;8·30)
ara crema.
now burns (3rd sg.).
'It's burning now.'

(11) *Imperative* – Guillem (1:9·12)
ajuda'm
help cl (acc. 1st sg.)
'Help me.'

(12) *Infinitive* – Laura (1;7·20)
dormir.
'To sleep.'

(13) *Gerund* – Pep (1;8·0)
xx dormint.
'(unintelligible) Sleeping.'

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(14) *Participle* – Laura (1;10·22)
caigut.
Fallen.

TABLE 3. *Verbs inflected for non-contrastive tense versus contrastive tense in the early and later stages of child Catalan and Spanish*

	Early stage	Later stage
Non-contrastively tensed verbs	320	1914
Contrastively tensed verbs	2	192

All of these forms encode speech time, event time and reference time (in the sense of Reichenbach, 1947) as simultaneous. The contrastive tense verb forms include the past preterite, past imperfect, periphrastic future and simple future. The claim being made here is not that these children have no concept of time, because I assume that to be universal. Rather, I assume that the Catalan and Spanish-speaking children have adult-like time concepts, but that they simply fail to grammaticalize this knowledge.[7]

Could it be that these children have in fact acquired grammatical tense morphology, but merely fail to use it? This is possible, but if this were the case, we would have to explain why the Japanese-speaking children described in Murata (1961), among others, begin to use contrastive tense from 1;6 and 1;7. That is, Japanese-speaking children seem to find non-present tense topics to talk about using appropriate non-present tense morphology, so if these Catalan and Spanish-speaking children have this same grammatical ability *vis-à-vis* tense marking why do all five of them only use it 2 times out of 322 verbal utterences in the early stage? This seems highly improbable. Consequently, I interpret this non-use of tense morphology to be reflective of a grammatical deficit.

Table 3 shows that across the two stages, the children show a dramatic increase in their use of non-present tense morphemes. From Table 3 we can deduce that in the first stage the aggregate ratio of irrealis to contrastively marked verbs is 155 to 1. In the second stage it is 10 to 1. This increase constitutes the onset of contrastive tense marking. Pep uses 2 apparently present perfect verbs, which are considered contrastively tensed in this framework, near the end of the early period, but the difference between the

[7] Fantuzzi (1996) shows that in English, for example, Adam and Eve (Brown, 1973) use temporal prepositions and adverbs to grammaticalize temporal relations before they become proficient with verbal tense marking. Similar arguments are made for child German in Behrens (1993). I have not yet investigated this question in detail in early child Catalan or Spanish.

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TABLE 4. *Verbal tenses in the 5 children in the early and late stages*

	Present	Imperative	Infinitive	Gerund	Participle	Imperfect	Preterite	Pres Perf	Pres Prog	anar/ ir+a+ inf	Pres Subj	Future
Laura I (1;7–2;2)	69	71	11	0	3	0	0	0	0	0	0	0
Laura II (2;4–2;11)	352	148	29	6	9	9	1	26	0	4	0	6
Pep I (1;0–1;8)	14	28	2	3	4	0	0	2	0	0	0	0
Pep II (1;10–2;4)	101	80	8	0	15	7	1	33	6	2	5	14
Guillem I (1;0–1;9)	20	14	2	0	0	0	0	0	0	0	0	0
Guillem II (1;11–2;7)	418	145	3	3	3	3	0	36	2	8	15	25
Gisela I (1;7–1;11)	26	31	2	0	0	0	0	0	1	0	0	0
Gisela II (2;1–2;9)	221	128	7	0	0	0	0	11	3	0	1	0
Spanish												
Juan I (1;7–1;9)	26	1	0	0	0	0	0	0	0	0	0	0
Juan II (2;0–2;1)	131	72	0	2	1	0	6	0	0	0	0	0

two stages is, nonetheless, clear. What this shows, to be precise, is that contrastive tense marking begins at the same time or later than the onset of overt subject use.

Table 4 gives a breakdown of verb use by tense marking in the two stages. Notice that the contrastively tensed verb forms (on the right side of Table 4) begin to be used in the later stage.

An assumption in much recent syntactic theory is that each inflectional feature is represented by a functional category which consists of a head and its maximal projection (Pollock, 1989, for example). Hence, Person, Number and Tense in Figure 1 all constitute maximal projections in the syntactic tree.

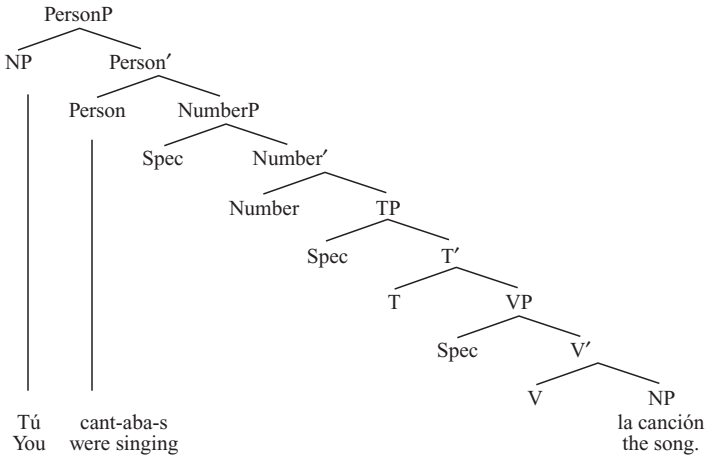


Fig. 1.

This assumption is justified by evidence from adult languages which correlates particular verb positions with the morphemes carried by the verb (cf. Shlonsky, 1989, for example).

Returning to the Tense projection specifically, I propose that when tense morphology begins to be used contrastively, it has become an active part of the grammar in the sense that it participates in morphosyntactic operations such as verb movement, subject-auxiliary inversion, etc. In this view, before contrastive tense morphology is used, the Tense head of the syntactic tree is inactive. According to the 'Full Clause Hypothesis' (Hyams, 1986) the Tense projection is an active part of the grammar from the beginning. I depart from this hypothesis in claiming that although the Tense projection is part of the tree, it is not active until contrastive tense morphology is used. For concreteness, I assume that all of clause structure is available from the beginning. What must be learned then is the connection between abstract features (such as Case features) and overt morphological features.

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Person and number agreement

The children studied did not appear to use number in a morphologically contrastive way in the early stage, as we see in Table 5. However, they did

TABLE 5. *Verbs inflected for singular versus plural number in the early and later stages of child Catalan and Spanish*

	Early stage	Later stage
Verbs inflected for singular number	287	2193
Verbs inflected for plural number	6	101

appear to use person morphology contrastively in the early stage, as can be seen in Table 6.

In Table 6 we see the number and proportion of the different verb forms uttered by each child in the two stages with respect to person and number inflection. We see that many of the utterances made by the children bear first and third person singular agreement. Plural number agreement, however is almost totally absent. All four first person plural utterances by Laura are imperatives. They occur at close to the approximate chronological point (24 months) which delimits the two stages. Pep also uses his two plural utterances in his last file in the first stage, at age 1;8. In light of this individual variation across children, we see that the generalization that person and not number is used contrastively in the early stage holds for grammatical, not chronological stages. Examples from the first stage include the following:

(15) Pep – 1;4;24
me'n vaig
leave (1st, sing)

(16) Laura – 1;11;12
no vull
no want (1st, sing)

(17) Guillem – 1;8;0
vull aigua
want (1st, sing) water

(18) Juan – 1;9;2
teno momos
have (1st, sing) mucous
'I have a runny nose.'

(19) Gisela – 1;8;3
cai
fall (1st, sing)

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TABLE 6. *Person and number morphology* (*as a percentage of utterances which could carry them*) *in the two stages of child Catalan and Spanish*

Person Morph. ⇒ Child ⇓	First person Sing.	Second person (Imp.)	Second person (Ind.)	Third person Sing.	First person Pl.	Second person Pl.	Third person Pl.
Laura I (1;7–2;2)	12 (10%)	50 (41%)	5 (4%)	51 (42%)	4 (3%)	0	0
Laura II (2;4–2;11)	164 (21%)	246 (31%)	38 (5%)	306 (39%)	17 (2%)	0 (0%)	12 (1%)
Pep I (1;0–1;8)	4 (9%)	25 (59%)	0	11 (26%)	2 (5%)	0	0
Pep II (1;10–2;4)	48 (14%)	92 (27%)	13 (4%)	162 (46%)	15 (4%)	0	17 (5%)
Guillem I (1;0–1;9)	12 (18%)	15 (22%)	0	40 (60%)	0	0	0
Guillem II (1;11–2;7)	161 (25%)	164 (25%)	18 (3%)	280 (43%)	13 (2%)	1 (0·1%)	10 (1%)
Gisela I (1;7–1;11)	11 (33%)	12 (35%)	0	10 (32%)	0	0	0
Gisela II (2;1–2;9)	123 (25%)	101 (21%)	38 (8%)	208 (43%)	9 (2%)	1 (0·2%)	6 (1%)
Spanish							
Juan I (1;7–1;9)	5 (17%)	4 (14%)	0	20 (69%)	0	0	0
Juan II (2;0–2;1)	4 (13%)	16 (52%)	0	11 (35%)	0	0	0

As with Tense, I assume that children are conceptually aware of and sensitive to number distinctions from very young (e.g. Gallistel & Gelman, 1992, and references cited therein). Again, however, they seem unable to use plural morphology on verbs even in situations in which it is called for. For example three monolingual Spanish-speaking children in a current study (Grinstead, 1998) all utter the singular sentence 'Se cayó.' or 'It fell.' in the context of pointing at two or more plastic animals which tip over simultaneously.

Given the fact that tense and number verbal morphology do not appear to be used contrastively in the early stage, we will follow our stated assumptions that the Tense and Number Phrases do not form an active part of the clause structure of child Catalan and Spanish in the early stage. The Person Phrase, in contrast, does appear to be active from the very beginning.[8] While it is possible that these children may have used 3rd person verbs with some non-third person subjects[9], it is not the case that they ever used a third or a second person subject with a first person verb. I take this restrictive use of subjects, along with contrastive use of person to indicate an active Person Phrase. Using bold to indicate activity then, we assume the clause structure of the early stage of child Catalan and Spanish to be as in Figure 2, while assuming the clause structure of the later stage to be as in the adult language, at least with respect to verbal inflection.

As mentioned earlier, another role played by agreement in Catalan and Spanish is the licensing of the finite clause null subject, little *pro*. According to Rizzi (1986*b*), one of the conditions under which little *pro* is licensed is that its content must be recovered by 'rich agreement'. Interestingly, Rizzi speculates that content recovery, a fundamental aspect of licensing *pro*, is parameterized such that if both person and number are available agreement features in a language, *pro* will be available, as in adult Italian. If only number agreement features are instantiated, then *pro* will only be available for non-referential subjects such as expletives in Dutch and German (sentences like 'It's raining.' for example). If neither person nor number features are

[8] I speculate that the lack of the second person singular forms, reported in other languages (cf. Clahsen & Penke, 1992 and Poeppel & Wexler, 1993 for examples of this in German), is related to the development of the pragmatic distinction underlying the formal/familiar distinction. Catalan and Spanish have two forms which are used with second person, singular referents: 'vostè/usted', which is formal (and grammatically third person), and 'tu/tú', which is familiar (and grammatically second person). Since the children already appear to be using grammatically third person subjects (see Table 6), nothing grammatical should prevent them from using the grammatically third person 'vostè/usted' form. The fact that they do not use 'vostè/usted' at the same time as they lack the grammatically second person 'tu/tú' form can be interpreted to mean that it is the lack of understanding of the pragmatic familiarity distinction which keeps them from using second person singular 'tu/tú'.

[9] As reported for French by Ferdinand (1994) and Greek by Varlokosta, Vainikka & Rohrbacher (1996).

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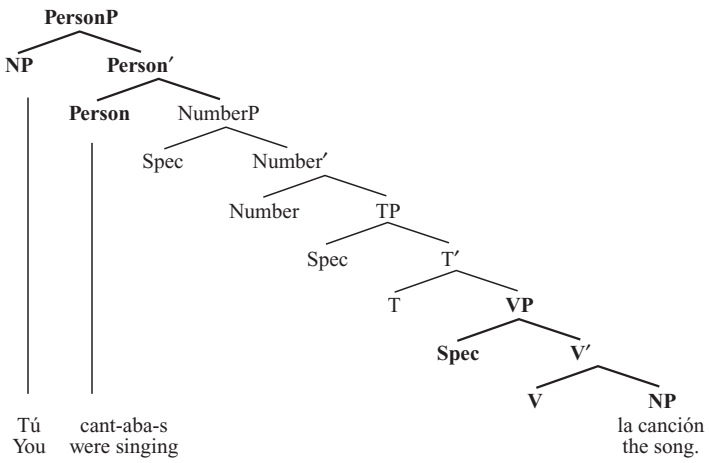


Fig. 2.

available, then *pro* will be unavailable. The fourth logical possibility in Rizzi's speculative paradigm, which he does not address, is that person, but not number, is instantiated, as we see in child Catalan and Spanish. While the set of facts found in child Catalan and Spanish is not directly addressed by Rizzi, the inflectional features found in the early stage do not meet his characterization of 'rich' agreement since only person, and not number, are represented. Consequently, Rizzi's criterion for licensing *pro* is not met. Hence, we see a relatively impoverished level of agreement in the early stage of child Catalan and Spanish which, at least according to Rizzi's technical definition, is not sufficient to license *pro*. Furthermore, we would expect *pro* to occur with the same distribution as Case-assigned overt pronoun subjects, which we have shown that these children lack. These two facts taken together suggest that these children are not using the little *pro* subject of adult Catalan and Spanish with the verb form we have described. What kind of phonetically null subject, then, is possible if *pro* is not available?

PRO as the null subject of child Catalan and Spanish

The null subject verbal utterances children use clearly have some kind of logical subject because children refer to people and objects in the environment, indicating their actions, states, etc. The question is what kind of subject can be used in the absence of Tense and Number and does not occur with the same distribution as overt subjects (as little *pro* does)? The null subject PRO occurs in infinitives, which lack Number and Tense. Infinitives, furthermore, cannot cooccur with overt subjects in root clauses. On the basis

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of these two facts, PRO would appear to be the best candidate for the subject used by child speakers of Catalan and Spanish. Though this conclusion may not be uncontroversial, it is encouraging that researchers working on other languages have converged on this same conclusion (e.g. Sano & Hyams, 1994 for child English, and for other child languages see references cited therein).

To summarize, I have argued that in adult languages in general and in the adult null subject languages in particular, verbal tense and number morphology license the occurrence of overt subjects. This correlation is the basis for nominative Case assignment. We have also seen that when child Catalan and Spanish lack overt subjects they also lack contrastive tense and number morphology on verbs. Most importantly, contrastive tense and number emerge at roughly the same time as overt subjects. This leads us to the conclusion that nominative Case is not assigned in the early stage in these languages as a result of the absence of crucial morphological elements: Tense and Number.

One might argue that subject use arises in the later stage as a result of 'general maturation' of grammar or of cognition in general. However, such an explanation would not account for the selective development of grammar. As we have seen, Person develops before Number and Tense, and appears to have no impact on overt subject use. Below we will see that objects are also used in the early period in the absence of Tense and Number. Hence, it is not the case that 'everything' emerges at the same grammatical moment. We will also see that the same sequence of morphological development shows up in many other languages, lending further plausibility to the argument that this is a robust grammatical phenomenon and not a coincidence. First, however, we will examine more closely the relationship between inflection and subjects in adult Catalan and Spanish.

TENSE, NUMBER AND NOMINATIVE CASE IN ADULT GRAMMAR

We may ask why Tense and Number are such crucial elements of clause structure that their absence causes nominative Case assignment to fail. Why is Person agreement, which these children do use, not sufficient for Case assignment? In fact, there are constructions in adult Catalan that lead us to the conclusion that it is not any one of the three inflectional elements (Tense, Number or Person) which is crucial, but rather it is the three of them in combination which are necessary to make nominative Case assignment possible. I will call this constraint the Full Morphological Specification Constraint (FMSC) and assume for the moment that it is language-particular in nature.

(20) The Full Morphological Specification Constraint – Person, Number and Tense must all be active syntactic heads in order for nominative Case to be assigned.

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Activity is defined as participation in morphosyntactic operations. Thus, we expect to see contrastive tense and number morphology on the verb if the Tense and Number heads are participating in verb movement, for example.

Catalan and Spanish impersonal constructions illustrate how the absence of Person and presence of Tense and Number can result in the failure of nominative Case assignment. Verbs in impersonal expressions are said to lack person morphology because they can only take third person subjects. Third person morphology is often taken to mean a lack of person agreement (cf. Rigau, 1991), and others (cf. Stenson, 1989 for Irish impersonals) argue that impersonal verbs are incapable of assigning nominative Case. Rigau (1991, p. 249) gives the following contrast, among others, as evidence from adult Catalan in favour of this idea.

(21) Es premiaran els millors escriptors.
SE (impersonal clitic) reward (fut., pl) the best writers.
'The best writers will be rewarded.'

(22) *Es premiaran ells_{NOM}
SE (impersonal clitic) reward (fut., pl) they.
'The best writers will be rewarded.'

According to Rigau, the non-specific subject of the impersonal expression in (21) receives partitive Case and cannot receive nominative Case. One of several arguments for this position is that the specific, nominative Case-marked subject pronoun in (22) is ungrammatical in impersonal expressions. Thus, the verbs in (21) and (22) lack person morphemes in spite of the fact that they are inflected for plural number and future tense. By our hypothesis, then, (22) violates the FMSC on nominative Case assignment and can only co-occur with a subject which has been assigned another kind of Case.

With respect to number, there is no clear evidence that isolates its effects from those of person. However in Northwestern Catalan, one of the dialects described in Rigau (1991), impersonal expressions lack both person and number. Hence in (23), a grammatical impersonal construction, the subject is plural but the verbal number agreement is singular.

(23) Ha vingut més turistes.
Has come more tourists.
There have come more tourists.

If the verb agrees with the plural subject, as in (24), the utterance is ungrammatical as an impersonal (although grammatical as a present indicative).

(24) *Han vingut més turistes.
Have come more tourists.
There have come more tourists.

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Keeping in mind that morphological case is only marked on pronouns in Catalan and Spanish, we can see that in fact nominative Case is not possible with impersonals, because an impersonal construction, like (25), where the pronominal subject bears nominative Case is also ungrammatical (Rigau, p.c.).

(25) *Ha vingut ells.
Has come they.
There have come they.

Thus, a plural subject in impersonal expressions occurs with singular agreement. If it appears in unambiguously nominative Case form, as in (25), the expression is ungrammatical (as an impersonal or a present indicative). What this shows is that the absence of Number and Person prevents nominative Case assignment and that Tense by itself cannot assign nominative Case.

Similar facts are pointed out in Henry (1995), who reports that in Belfast, English, sentences with plural subjects and singular verb agreement, as in (26), are grammatical, but a similar sentence with a nominative Case pronoun, as in (27), is ungrammatical.

(26) The eggs is cracked.
(27) *They is going.

It is also clear that these constructions lack person agreement, because a third person subject, as in (28), can take a first person anaphor.

(28) John and me kicks ourselves.

These results are predicted by the FMSC. The child languages in question (Catalan and Spanish) also obey the FMSC. Here the absence of Tense and Number blocks the assignment of nominative Case. Person alone is insufficient. The impersonal construction in adult Catalan is special in having a partitive Case to assign and consequently does not need full morphological specification.

INFLECTION AND SUBJECTS IN OTHER CHILD LANGUAGES

Let us now consider morphological development and subject use in other child languages. As in child Catalan and Spanish, person agreement in child Italian, French and German appears to be acquired earlier than contrastive tense and number. As predicted, overt subjects begin to be used in child Italian (a null subject language like Catalan) when tense and number emerge. However, with child French and German (both of which require overt subjects in the adult language) we find a different situation whereby subject

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omission drops with the emergence of verbal inflectional morphology. Let us now consider the developement of morphology and subject use in these languages in more detail.

Morphological development

As we have stated, first and third person singular morphology appears to be present from the very beginning in child Catalan and Spanish. In child Italian, as reported in Pizzuto & Caselli (1992), the situation appears to be quite similar. As illustrated in Table 7, contrastive person morphology is

TABLE 7. *Onset of contrastive person, number and tense morphology and overt pronominal subjects in child Italian (compiled from Pizzuto & Caselli's (1992) Table 4)*

	Claudia	Francesco	Marco
Contrastive person onset	1;4	1;5	1;8
Contrastive tense onset	1;9	2;1	2;0
Contrastive number onset	1;7	1;7	2;0
Overt pronominal subject onset	1;8	1;8	1;10

used very early. Contrastive tense and number always arise later than does contrastive Person. The onset of contrastive number in Pizzuto & Caselli's data was determined by the first occurrence of a plural verb. The onset of contrastive tense was determined by the first occurrence of a non-present tense verb, which was the present perfect ('*passato prossimo*') in all cases. Hence, with respect to verbal morphology, Italian shows approximatedly the same grammatical stages found in child Catalan and Spanish. Specifically, we find the order of emergence of Person first with Number and Tense emerging later. As we will see there are other, more properly grammatical, indicia that the Italian children are passing through similar grammatical stages as well.

Relevant data are also available for French and German. Ferdinand (1994), for example, has looked closely at the morphological development of child French. Her findings confirm for child French what we have seen in child Italian, Catalan and Spanish: the early use of person morphology coupled with an early lack of tense and number. Given a French verb paradigm for a verb like *manger*, the SPOKEN verb forms are the following (examples from Ferdinand, 1994, p. 2):

(29) *manger*

sing	**plur**
1[mãʒ]	[mãʒ]
2[mãʒ]	[mãʒe]
3[mãʒ]	[mãʒ(t)]

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The spoken forms for irregular verbs *aller* and *avoir*, in contrast, are as follows:

(30) *aller*

sing	**plur**
1[ve(z)]	[va]
2[va(z)]	[ale(z)]
3[va]	[võ(t)]

(31) *avoir*

sing	**plur**
1[e]	[a]
2[a(z)]	[ave[z])
3[a]	[õ(t)]

In the adult language the principal difference between main verbs like *manger* and irregular verbs like *aller* and *avoir* is that *manger* and regular verbs generally have overt person agreement only in the plural, not in the singular. Verbs like *aller* and *avoir*, on the other hand, do show person agreement in the singular.

If French children acquire Person initially, as in Catalan and Spanish, but not Number or Tense, several things should happen in the early stage of child French: (1) there should be no non-present tenses marked. In this vein, Ferdinand states,

> I discuss only the present tense paradigms, since these are the only ones used at the relevant stage in child French (p. 2, footnote 1).

The relevant stages to which she refers are 1;9–2;3 for Grégoire and 2;1–2;6 for Phillipe of the Champaud and Leveillé corpora, respectively. Thus, it appears that child French lacks tense contrasts as do Catalan and Spanish. If the French children lack Number in the early stage, as do Catalan and Spanish-speaking children, then there should be no plural agreement. On page 5 (ibid.) Ferdinand adds,

> In the whole period I studied, Grégoire and Philippe did not use the second person plural form at all, nor third plural form of regular verbs…This entails that on regular verbs there was no subject agreement to be seen. (ibid.)

Thus child French is consistent with Catalan and Spanish with respect to Number. Finally if the French children acquire Person in the early stage then verbs like *aller* and *avoir* which *do* have person marking in the singular should show agreement in the singular. Ferdinand says,

> The only verbs showing subject agreement marking were *etre* 'to be', *avoir* 'to have', and *aller* 'to go' for both Grégoire and Philippe and *faire* 'to do' for Phillipe only. (ibid).

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Thus, French appears to behave exactly as do Italian, Catalan and Spanish with respect to early acquisition of Person and early absence of Number and Tense. What is unclear in Ferdinand's work is when contrastive Tense and Number begin to be used. This question needs to be examined to determine what the consequences are for subject use.

With respect to child German, Poeppel & Wexler (1993) examined the Andreas corpus (Wagner, 1985) from the CHILDES data base (MacWhinney & Snow, 1985) and their results show morphological patterns identical to those observed thus far in these other languages. With respect to agreement, Poeppel & Wexler report,

> First and third person singular subjects always co-occur with the correct agreement form on the verb ... Second person singular subjects are rare (total: 9).

Thus person agreement shows up where predicted. But what about number? Interestingly, the authors report that seven errors involving number occurred,

> All the errors (total: 7) occur with plural subjects (total: 11); there are two correct cases and two bare stems. The errors are all of a characteristic type: plural subjects occur with singular verb agreement, with correct person agreement. So, for instance, a 3plu. subject NP will co-occur with 3sg. verb morphology -... (ibid. p. 9).

Poeppel & Wexler give the following example of this phenonemon:

(32) Alle Tiere liegt da.
All animals lies there.

More confirmation of this same pattern with respect to agreement in child German can be found in the Simone corpus (Miller, 1976). The -n morpheme which occurs on child German verbs could be either a plural or an infinitive marker in the early stage. However, Clahsen & Penke (1992) show that in the Simone corpus, -n occurs with both singular and plural subjects in the early phases (1;7·3–2;0·21), but that it only occurs with plural subjects in the later phases (2;4·17–2;8·16). Correct subject–verb agreement occurs with 85%, 68%, 83% and 80% of Simone's verbs in corpora 11, 12, 13 and 14 respectively (Clahsen & Penke, p. 193, table IVb). This would make it appear that -n is an infinitive marker in the early stage and an agreement morpheme in the later stage. These facts are consistent with the claim that number is not available early on, but is in later stages. With respect to person, Simone, as well as Daniel and Mathias (Clahsen, 1986), use the -t morpheme correctly (with 3rd person, singular present tense agreement) from very early (beginning in Phase II for Daniel and Mathias and Phase I for Simone). I follow Meisel, 1990, among others, who argues that this is

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evidence of active person agreement from the beginning of two word speech.[10]

With respect to Tense in child German, Clahsen & Rothweiler (1993) tell us that three of their subjects produce present as well as present perfect tense utterances from very early. The present perfect is used to express the simple past in German and is made up of an auxiliary and a participle. While the present perfect is used early in child German, there does appear to be a point at which the three children take a qualitative step towards the adult grammar. In general, it appears that present perfect utterances spike upwards in Clahsen's Phase IV, as illustrated by Table 8. This change is most dramatic in Simone, and less so in the speech of Daniel and Mathias. It may be the case that if Clahsen's stages were divided differently, with Phase IV starting earlier for Mathias for example, the contrast would be sharper. Only further research will answer this question. Nonetheless, Table 8 shows that the children begin to use past tense more frequently in Phase IV.

To reiterate, the early appearance of person marking, with contrastive number or tense marking on the verb arising later appears to be repeated in Italian, French and German, with a particular past tense morpheme in German appearing early in development, but becoming close to obligatorily in Clahsen's Phase IV.

Development in the Subject position

Given the cross-linguistic uniformity of early morphological development, our hypothesis predicts similar uniformity with respect to the development of subjects, under the assumption that Tense and Agreement determine the nature of the subject. This does not turn out to be true for all of the European languages we are considering.

Let us consider Italian first, Italian behaves as expected; subjects begin to be used about the same time as they do in Catalan and Spanish. Based on Pizzuto & Caselli's (1992) report, we can see in Table 7 (above) that overt subject pronouns begin to be used after person agreement begins to be used and around the same time that tense and number inflection begins to be used.

[10] Clahsen & Penke argue that '-t' is not a person marker at the beginning, but rather a transitivity marker. This seems unlikely for a number of reasons. Such a state of affairs would pose serious learning difficulties for children who would have to learn that -t represents transitivity, in spite of the fact that they hear no evidence of this in the adult input. They would then have to unlearn the link with transitivity and reconnect -t with person. Further, C & P admit that -t is at least a 'finiteness' marker as well as a transitivity marker (p. 202) given that it occurs in V2 position in high percentages from the very beginning of Simone's speech. While the transitivity argument is an interesting possibility, I speculate that, from the very beginning, -t represents a 3rd person morpheme which contrasts with bare stem 1st person morpheme, as in all of the other languages reviewed.

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TABLE 8. *The percentage of present perfect expressions used out of the total number of verbal utterences (from Clahsen & Rothweiler, 1993, compiled from Tables 1 and 3)*

	Mathias	Daniel	Simone
Phase I	6/1082 (> 1%)	7/1084 (> 1%)	9/511 (1·8%)
Phase II	15/897 (1·6%)	5/466 (1·0%)	209/8361 (2·5%)
Phase III	8/245 (3·2%)	10/504 (1·9%)	22/1114 (2·0%)
Phase IV	35/707 (4·9%)	13/349 (3·7%)	498/6449 (7·7%)

The data are incomplete in the sense that only subject pronouns are counted (and not non-pronominal subjects). Nonetheless, the approximate pattern found in Spanish and Catalan obtains and is consistent with our hypothesis that nominative Case begins to be assigned when contrastive tense and number emerge, in spite of the fact that the association is not as tight.

When we examine the development of subjects in child overt subject languages, however, we find a very different pattern from that found in child Catalan, Spanish and Italian. In the former, we find children using overt subjects from the beginning of two-word speech. This should be impossible if nominative Case assignment is being blocked by underspecified Tense and Number projections, as pointed out by Guilfoyle (1984) for child English, and as I have argued for the null subject languages. The behaviour of subjects in these child languages is not completely adult-like however. Clahsen (1986) and Clahsen & Penke (1992) find that both null and overt subjects are used in early stages (Clahsen's phases II and III) of child German in which tense and number agreement appear to not yet to be adult-like. They also find that null subjects drop off dramatically at the same time as the onset of fully inflected verb forms. That is, null subjects are used in child German when verbs inflected for person only are used in Clahsen's Phase II and III in about 40–45 % of utterences. This is the stage when children are using the '-t' morpheme which I assume to be a Person marker (following Meisel, 1990 and others).[11] Null subjects then drop to between 10 and 25 % in Clahsen's stage IV, when inflection for person, number and tense become adult-like. This finding is important because it shows a correlation between adult-like subject use (obligatorily overt) and contrastive tense and number morphology. Catalan, Spanish and Italian differ from German only in that the use of person, number and tense makes overt subject use possible in the former, but obligatory in the latter. Viewed in this way we see a parallel between the development of subjects in overt and null subject languages.

A similar result obtains in child French; while overt subjects are used from the earliest stage, subject use is not adult-like during the period in which number and tense have not yet developed. Pierce (1989) found that in addition to overt, pre-verbal subjects, the three French-speaking children she studied used overt, post-verbal subjects as well as null subjects – neither of which is licit outside of very restricted discourse contexts in the adult language. Thus, there are overt subjects in child French, as opposed to the southern Romance child languages. Yet the behaviour of these child speakers is nonetheless not adult-like, given the existence of null subjects (about 34 % of Phillipe's verbal utterances from 2;1 to 2;3 according to Pierce) and post-

[11] Again, Clahsen & Penke (1992) regard the '-t' morpheme as a marker of transitivity and not as a marker of Person. cf. footnote 10.

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verbal subjects (about 14% for the same period according to Pierce). My account predicts that the development of contrastive tense and number in French would signal the end of the null subject-stage. This prediction has yet to be empirically tested. It is, nonetheless clear that the lack of tense and number morphology and optional null subjects co-occur in child French.

Similarly, child English shows less than full specification of its verbal inflection – to the degree that this can be determined – as well as non-adult-like subject use. First of all, null subjects in child English are used in from 15% to as many as 61% of verbal utterances, depending on the child and age observed (Austin, Blume, Lust, Núñez del Prado, Parkinson & Promán, 1995). Additionally, the case of the subject varies among nominative, accusative and genitive, again, depending on the child in question and their age (cf. Vainikka, 1993 and others). This period of non-adult-like subject use at least overlaps with the period in which English-speaking children use less than fully inflected verb forms, as well as gerunds, with both overt and null subjects, as we will see in the next section. Nina, from the Suppes corpus of the CHILDES data base (MacWhinney & Snow, 1985) for example, uses all of these verb forms with null and overt subjects of different cases from 1;11–2;5. As mentioned earlier, there is also a relation between uncontracted forms of 'be' and overt subjects on one hand and between modals and overt subjects on the other, documented in Sano & Hyams (1994). Further evidence of the connection between inflectional development and subject development is found in Roeper & Rohrbacher (1995) who show that null subject use in the speech of four English speaking subjects drops dramatically in wh- as well as declarative utterences at around the time 'Tense' begins to be used more frequently. They defined tensed verbs in English as forms ending in -s, -ed, forms of 'be, 'do' and possessive 'have'. This points again to the conclusion that inflection and overt subjects correlate.

On the basis of the data just reviewed we can formulate the following (tentative) generalizations:

(33) Generalizations:
a. Null subject languages: the onset of adult-like tense and agreement morphology correlates with the onset of overt subject use.
b. Overt subject languages: the onset of adult-like tense and agreement morphology correlates with the end of null subject use.

What both language types have in common is the fact that plural and non-present tense verbal morphology (contrastive Number and Tense) are unspecified at the same time that subject use is non-adult like. Let us now turn to some possible unified accounts of the development of these apparently disparate systems.

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SOME POSSIBLE SOLUTIONS

There are two questions raised by the previous sections:

- why are overt subjects possible from the very beginning in child overt subject languages, but not in child null subject languages?
- why does the onset of contrastive tense and number morphology correlate with the onset of overt subject use in child null subject languages, but with the off-set of null subject use in child overt subject languages?

While there do not appear to be clear answers to these questions, there are some possibilities.

As discussed in earlier sections, it is assumed that the abstract nominative Case feature is associated with some phonetically realized inflectional element (person, number, tense or the verb stem). One possible explanation for the differences we see in overt subject development is that the abstract nominative Case feature is associated with different inflectional elements in different languages. For example, in child German, overt subjects are used before either plural number or non-present tense morphology is used. In German, one could propose that the feature that allows overt subjects to occur is associated with the verb stem itself. Thus, from the time that verb stems begin to be used, overt subjects are used as well. Notice that this would be a feature which makes overt subjects merely 'possible', and not obligatory. Because overt subjects are obligatory in adult German, one could speculate that a second feature, which makes overt subjects obligatory, is associated with either the tense or the number morpheme. Such a formulation would derive the fact that overt subjects are used from the beginning and become obligatory when verbal inflection becomes adult-like. In Catalan, in contrast, only the feature that makes overt subjects possible would exist and it would be associated with number and tense morphemes.

Such an approach has the obvious learnability disadvantage that, for each particular language, children would have to learn which abstract feature is associated with which overt morpheme. Given the rapidity with which children appear to acquire grammar, a theory which presupposes such a learning burden is undesirable. Similarly undesireable is an adult theory of grammar that derives such universal properties as subject licensing from language-particular facts.

Another general route to explore would be to suggest that morphological constraints determine the development of subject use. Thus, as pointed out in Hyams (1987), languages can be characterized as those which allow verbs to occur with bare stem verbs and those which do not (THE STEM PARAMETER). The observation underlying this distinction is that in a like English, French

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or German, verb stems may occur by themselves, as phonologically permissable words.

(34) English – walk – verb stem
They walk.
(35) French – mange – verb stem
Elle mange le pomme.
She eats the apple.
(36) German – geh – verb stem
Geh über die strasse!
Walk across the street!

Verbal stems in Spanish, Catalan and Italian, however, cannot occur without some type of inflectional morphology.

(37) Spanish – habl – verb stem
*Habl.
Speak.
(38) Catalan – parl – verb stem
*Parl.
Speak.
(39) Italian – parl – verb stem
*Parl.
Speak.

As pointed out in Grodzinsky (1985), this typological distinction is reflected in the speech of aphasics, as well. Thus, aphasic speakers of English will omit inflectional morphemes from the verb and produce bare stem verbs, optionally. Aphasic speakers of Italian, however, appear to not omit inflectional morphology. Rather, the type of errors they produce involve using the wrong inflectional morpheme, vis-a-vis the person or number of the subject. Thus English-speaking aphasics treat inflectional morphemes in a fundamentally different way than do Italian-speaking aphasics, corroborating the assertion that languages view verb stems as either phonologically complete units or not.

If this morphological distinction is crucial to distinguishing null and overt subject languages typologically, as proposed by Sano (1995), then the observed differences in the development of overt subject in the two language families may result from children's early convergence on the morphological parameter settings for their language. Sano suggests that this morphological distinction is rooted in the fact that each language type uses a different kind of verb movement (ADJOINED AFFIXATION for overt subject languages versus HEAD AFFIXATION for null subject languages). Sano uses this difference to explain the occurrence of root infinitives in one language family [+bare stem] and not the other [−bare stem]. Because romance null subject

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languages are [−bare stem] and also exhibit similar subject development, one might try to link the bare stem parameter setting with the subject development pattern. Thus, [+bare stem] languages, such as English license overt subjects independently of their inflectional morphology, while [−bare stem] languages depend on their inflectional morphology to license overt subjects. The principal empirical problem with this approach is that child speakers of at least one non-romance null subject language, Japanese, appears to use overt subjects from the very beginning (Sano, p.c.). Thus, it cannot be the bare stem property by itself that accounts for the patterns of subject development observed.

Another approach would be to assume that semantic properties of predicates, and not the inflectional morphology of verbs, are responsible for subject licensing. Following Schütze (1997), we could suggest the factors such as whether a predicate is a proposition or an event, determine whether or not an overt subject is licensed. Thus, Schütze proposes that the subjects of some infinitive subordinate clauses are licensed internal to the subordinate clause itself, while others must have their overt subjects licensed from outside the subordinate clause. The basic distinction drawn in this proposal is between the complements of verbs like 'believe', which Schütze suggests are propositions, as in (40), and the complements of verbs like 'want', which Schütze suggests are events, as in (41).

(40) I believe Bill to run fast.
(41) I want Bill to run fast.

One reason for believing that a semantic distinction of this type has syntactic consequences with respect to subject licensing is the observation that when the subordinate clause subject is removed from the subject position of a 'want' verb by such syntactic processes as passivization, the utterance is ungrammatical, as in (42). This ungrammatically could be explained if overt subjects could only occur in the subject position of the subordinate clause infinitive, as as result of being licensed internal to the subordinate clause.

(42) *Bill is wanted to run fast
(43) Bill is believed to run fast.

Conversely, the possibility of passivizing the subject of the subordinate clause of 'believe' verb may suggest that subjects are not licensed internally to the subordinate clause.

Notice that these subjects are the subjects of infinitives, which in the classic formulation of Case Theory are asserted to not license overt subjects by virtue of lacking tense and agreement. Schütze proposes that most predicates are eventive and have their overt subjects licensed clause-internally as with the complements of 'want' verbs. If this assertion is correct, then we have an explanation of why overt subjects are licensed in child overt subject

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languages independently of the development of inflection (i.e. before the development of number and tense morphology).

If this is a universal explanation of subject licensing, however, we must ask why overt subjects are not available from the beginning in child Catalan and Spanish. Schütze does not address this question. Nonetheless, a universal subject licensing explanation could be made consistent with the child Spanish, Catalan and Italian facts, if we make a particular assumption about how subjects are expressed in the adult versions of these languages. Namely, Spanish, Catalan and Italian could be similar to Arabic, Mohawk and other languages, in that subject agreement in these languages constitutes a pronominal argument by itself (e.g. Jelinek, 1984). In such a view, person agreement in child Catalan, Spanish and Italian would, itself, constitute a pronominal overt subject. If this were true, then we should look to see when subject agreement begins to be used in child Catalan and Spanish in order to determine when overt subjects are used. As discussed earlier, person contrasts are present from the beginning in these languages. Hence, under the assumptions that the same semantic conditions license overt subjects in both languages and that Spanish and Catalan are pronominal argument languages, both child languages begin to allow overt subjects from the very beginning. In such a framework, the fact that child Japanese uses overt subjects from the very beginning would be explained, by the fact that it lacks subject agreement and consequently could not plausibly be a pronominal argument language. As a result, non-pronominal overt subjects are available from the beginning.

For such an account to function, however, evidence would need to be provided that the distinction made by Schütze between propositions and events holds in Catalan and Spanish as well. Furthermore, we would need evidence that Catalan and Spanish can be analysed as promotional argument languages. Such work lies outside the scope of this paper (although see Ordóñez, 1997). Thus, the questions posed at the beginning of this section do not yet have a complete answer, though there are some promising routes to be explored.

AGAINST A PROCESSING ACCOUNT OF NULL SUBJECTS

I have tacitly assumed up until now that the existence of null subjects in child language is a grammatical phenomenon. However, others have argued that dropped subjects in child language are the result of children having more limited processing resources than adults. Bloom (1990, 1993), for example, has made this argument for child language. His argument is that children have the same grammatical competence as adults with respect to subjects, but that their performance or processing abilities are less well developed. Bloom's particular processing account posits that when a subject is dropped, more processing resources are available to expand the VP. Hence where

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subjects are dropped, their corresponding verb phrases should be longer than the verb phrases associated with overt subjects.

Hyams & Wexler (1993) argue against such a processing account of null subjects in English and one of their principal arguments against it is that it would not explain the subject–object asymmetry with respect to null arguments. That is, if processing were responsible for subjects in English being 'unpronounced', we would have no explanation for the fact that objects do not 'drop' in similar proportions. If we average the data from Adam and Eve provided by Hyams & Wexler, we see that subjects were omitted 35% of the time, while objects were omitted only 8% of the time.

Bloom's (1990) explanation of the subject–object asymmetry is that the beginning of the sentence imposes a higher processing load than the end of the sentence does. This proposal is at variance with most other processing accounts (see Frazier, 1985 for an overview) in that it makes no reference to sentential structure, but rather to serial position. In support of this position, Bloom notes that adults hesitate more at the beginning of phrases and clauses than at other points in the sentence which suggests a heavier processing load at the 'initiation of a structural planning unit' (attributed to M. Garrett, p.c.). Bloom argues that this processing load is more likely to affect the subject than the object, presumably because subjects always occur sentence-initially in English. But what does Bloom's account predict with respect to child versions of languages in which subjects may occur either pre- or postverbally? Postverbal subjects in Catalan provide an excellent opportunity to examine Bloom's claim that sentence-initial constituents impose a heavier processing load.

In adult Catalan, overt subjects can occur either post-verbally or pre-verbally. Thus (44) and (45) (examples from Bonet, 1989, p. 3) have the same truth conditions, according to Bonet, and their subjects are non-contrastive.

(44) Ha ficat les sabates a l'armari, l'Oriol.
has put the shoes in the closet Oriol.
Oriol has put the shoes in the closet.

(45) L'Oriol ha ficat les sabates a l'armari.
Oriol has put the shoes in the closet.

(44) and (45) contrast with (46) which puts contrastive focus on the post-verbal subject, as indicated by the gloss in (46). (46) is distinguished from (44) by having no intonation break between 'l'armari' (the closet) and the post-verbal subject. The intonation break is represented by the comma in (44).

(46) Ha ficat les sabates a l'armari l'Oriol.
has put the shoes in the closet Oriol.
the one who has put the shoes in the closet is Oriol

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Assuming Bloom is right that there is a heavier processing load at the beginning of the sentence than at the end, we may ask why Catalan and Spanish-speaking children in the early stage do not use post-verbal subjects given that they occur in sentence-final position, as do direct objects. That is, Bloom's claim is consistent with the fact that there are no pre-verbal subjects, but contradicted by the fact that postverbal subjects also fail to occur. To illustrate the asymmetry between subjects and objects, which again are both potentially sentence-final constituents in Catalan, Table 9 shows the number

TABLE 9. *Total number of verbs with objects, objects in obligatory contexts and verbs with overt subjects in the early stage*

Child	Objects in obligatory contexts (%)	Verbs with overt subjects
Laura I (1;7–2;2)	7/8 (88%)	0 (0%)
Pep I (1;0–1;8)	5/9 (55%)	0 (0%)
Guillem I (1;0–1;9)	6/9 (77%)	0 (0%)
Gisela I (1;7–1;11)	0/0 (0%)	0 (0%)
Juan I (1;7–1;9)	0/0 (0%)	0 (0%)

of objects and subjects present in child Catalan during the early stage. We see that the children studied rarely omitted subjects, particularly when compared to the percentage of omitted subjects. In order to calculate obligatory contexts for the occurrence of objects, verbs which take null objects in the adult grammar were not counted.

As we can see the children use objects but do not use subjects. Three of the children used objects in obligatory contexts and all of them used at least some objects. The total number of objects (including those in non-obligatory contexts) for all five children in the early stage was 36, while in the same period they used no subjects – a clear asymmetry. This shows that there is a subject–object asymmetry in child Catalan of the kind found in child English, in spite of the fact that subjects can occur in postverbal position in Catalan. If sentence-initial processing load were responsible for subject omission in child Catalan, we would have no explanation for the lack of subjects in sentence-final position. It is clear that the asymmetry is due to a structural property distinguishing subjects and objects and not one having to do with serial position.

In spite of this evidence with respect to the subject–object asymmetry, Bloom might want to argue that the lack of overt subjects in the first stage is

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consistent with his account. One could argue that the lack of pre-verbal subjects in the first stage is due to processing factors and that post-verbal subjects are missing for some other reason. If this were true, it would be unexpected for post-verbal and pre-verbal subjects to begin to be used simultaneously. To reiterate, if processing keeps pre-verbal subjects from being overt and some non-processing factor prevents post-verbal subjects from being overt, it would be completely coincidental that both subject types begin to be used at the same time. On the other hand, if one mechanism, such as the failure of nominative Case assignment, were responsible for the absence of overt subjects, then we would predict that both subject types show up at the same time once nominative Case assignment becomes possible. As Table 10 illustrates, both subject types show up at the same time. The first files in Table 10 are the earliest files with any overt subjects in them, and they have approximately the same number of post-verbal as pre-verbal subjects.

If we average across the first two files for all five children we get a ratio of 15 pre-verbal subjects to 13 post-verbal subjects. Hence, it appears that whatever licenses subjects in child Catalan and Spanish licenses pre-verbal and post-verbal subjects at the same time. This finding supports a unitary underlying cause for subject onset.

Beyond the question of which subject type emerges first, we might expect processing factors of the kind proposed by Bloom to generally bias children toward post-verbal subjects in the later stage, when they do begin to use overt subjects. This does not turn out to be true, as illustrated in Table 10. Only 36% of all overt subjects in the later stage were post-verbal. Hence if there is a bias in early overt subject use, it would be towards pre-verbal subjects (64%). To the degree that these numbers mean anything, they at least show that if processing factors bias children towards using one subject type or another, it is not post-verbal subjects, as Bloom's account would predict. In fact, the distribution pre-verbal and post-verbal subjects is most likely a function of the contrastive focus versus unmarked interpretations used in the adult target grammar of Catalan illustrated in (44) through (46).

In conclusion, Bloom's account cannot explain the subject-object asymmetry in the early stage. If his account explained the early absence of overt pre-verbal subjects and something else were responsible for the absence of overt post-verbal subjects in the early period, then we might expect the onset of pre- and post-verbal subjects to occur at different points in time, contrary to fact. The fact that both subject types emerge simultaneously lends credence to my account which argues that one licensing mechanism is responsible for both subject types. Furthermore, Bloom's processing account predicts that once overt subjects begin to be used, that they should tend to be post-verbal. In fact, there is a slight bias towards pre-verbal subjects in the data examined. Finally, Bloom's processing account, and indeed any non-grammatical account, generally fails to explain the correlation between the

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TABLE 10. *Pre-verbal and post-verbal subjects in the later stage of Catalan and Spanish*

Gisela II			Guillem II			Laura II			Pep II			Juan II (Spanish)		
File	Pre	Post	File	Pre	Post	File	Pre	Post	File	Pre	Post	File	Pre	Post
2;2·6	1	0	1;11·13	1	1	2;4·11	1	0	1;10·6	2	2	2;0·23	1	1
2;4·25	5	2	2;0·12	0	0	2;5·8	2	2	1;11·6	2	1	2;1·0	0	4
2;6·3	10	2	2;1·4	1	0	2;6·5	1	1	2;0·0	0	0	—	—	—
2;8·0	35	23	2;2·11	2	1	2;7·20	4	6	2;1·1	0	3	—	—	—
2;9·16	22	6	2;2·28	9	1	2;8·30	4	6	2;2·3	2	10	—	—	—
2;11·0	13	3	2;3·12	1	0	2;11·17	4	8	2;3·10	3	7	—	—	—
—	—	—	2;3·18	7	1	—	—	—	2;4·4	9	3	—	—	—
—	—	—	2;4·24	10	1	—	—	—	—	—	—	—	—	—
—	—	—	2;5·25	6	2	—	—	—	—	—	—	—	—	—
—	—	—	2;5·29	4	0	—	—	—	—	—	—	—	—	—
—	—	—	2;6·10	1	1	—	—	—	—	—	—	—	—	—
—	—	—	2;7·9	10	0	—	—	—	—	—	—	—	—	—
Total	86	36	—	52	8	—	16	23	—	18	26	—	1	5
(%)	70	30	—	87	13	—	41	59	—	41	59	—	17	83

onset of contrastive Tense and Number and overt subjects in child Catalan and Spanish, which has been documented here.

CONCLUSION

Hence we have seen that, using the 'Contrast Principle' as our criterion, child speakers of Catalan and Spanish in our early stage lack contrastive use of tense and number morphology, which we have assumed to mean that they are unable to use the Tense and Number projections in their clause structures. Two consequences of the syntactic inertness of Tense and Number are: (1) that nominative Case cannot be assigned, and as a result no overt subjects are used, and (2) that pro cannot be licensed by the underspecified agreement paradigm. Consequently, Case-less PRO (used in adult infinitives) is hypothesized to be the phonetically null subject used by the Catalan and Spanish speaking children studied. On the basis of these child facts as well as adult impersonal expressions and imperatives, the Full Morphological Specification Constraint (FMSC) on Case Assignment was proposed for Catalan and Spanish. Upon examining other languages we found that Italian, another null subject language, appeared to obey the FMSC for optionally licensing overt subjects. Overt subject languages like German, French and English, however, appear to obey something like the FMSC for licensing overt subjects obligatorily. This was formulated in the generalizations in (33) on page 143. Because no definitive means of unifying the divergent nature of these generalizations was found, we then explored a number of possible alternative hypotheses.

We have noted that while null subjects were used exclusively in the first stage, a large percentage of objects were overt, particularly those in obligatory contexts. Furthermore, non-contrastive postverbal subjects do not occur in this stage, contrary to what one might expect on Bloom's sentence-initial processing load account. These facts make a processing explanation, in the sense of Bloom (1990, 1993), seem unlikely for the languages in question. Furthermore, the grammatical correlation of overt subjects and inflectional morphology makes it difficult for any non-grammatical account to explain this data.

In this paper it was impossible to settle on a unified approach to subject development in overt and null subject child languages. Nonetheless, a significant conclusion of this study is its support for what has been called children's 'early convergence' (cf. Hoekstra & Hyams, 1998) on their adult target grammars. Thus, we saw first that morphological development on the verb correlates with more adult-like subject use in both language families, suggesting, together with the adult-language data from impersonal expressions, that the degree of specification of inflection determines the nature of the subject. However, this adult-like specification in inflection does not result in the same kind of overt subject use in both language families. This

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suggests that children determine whether their language is an overt or a null subject language before they master verbal inflection. This conclusion diverges from earlier approaches which suggested that children 'misset' parameters early on (cf. Hyams, 1986), but rather falls in line with other recent work in child language research which suggests that parameter settings are fixed very early, as in the V-2 Parameter (Verrips & Weissenborn, 1991; Poeppel & Wexler, 1993).

Thus it appears clear that children acquire whatever it is that distinguishes these two language families at approximately at the same time as they begin to use verbs to form clauses. A continuing topic for research is the determining precisely what aspect of grammar that is.

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