WH- MOVEMENT IN CHILD CATALAN

1. Introduction - It has been noted that children in many languages have difficulty producing adult-like questions in the early stages of their grammatical development. While speakers of child English appear to drop or fail to invert auxiliaries, speakers of child Swedish, German and Dutch drop the wh- word.

2. Child Italian as an Exception

In contrast, Guasti (1996) reports that three Italian-speaking children of the Calambrone corpus, who she studied, never produced a non-adult-like question. (1) on the handout, for example, is an adult-like Italian question and (2) would be an example of a non-adult-like question in Italian, in which the verb has not raised above the subject, analogous to the univerted questions in child English. According to Guasti, utterances like (2) do not occur in the Italian child production data she studied.

(1) Adult-like Italian Wh- Question

Cosa mangia Gianni?

'what eats Gianni?'

What does Gianni eat?

(2) Un-inverted Child Italian Utterance (@ = Unattested)

@cosa Gianni mangia?

'what Gianni eats'

What Gianni does eat?

Of course since Italian is a null-subject language, one can only determine whether subject-verb inversion has taken place if an overt subject has been used. According to Guasti, out of 171 spontaneous utterances produced by Martina (1;8 - 2;7), Diana (1;10 - 2;6) and Guglielmo (2;2 - 2;11), 67 had overt subjects. Of these overt subject questions, which are the ones capable of telling us whether or not inversion has occurred, only three included non-inverted word orders, and these

were *perchè*(why) questions which are grammatical in the adult language without inversion. These results are summarized in Table 1.

	Total # of Wh- Questions	Total # of Wh- Questions with Overt Subjects	Total # of Inverted Wh- Questions with Overt Subjects
Martina (1;8 - 2;7) Diana (1;10 - 2;6) Guglielmo (2;2 - 2;11)	171	67	64

Table 1 - Wh- Questions, Wh- Questions with Overt Subjects and Inverted Wh- Questions with Overt Subjects in Three Speakers of Child Italian from the Calambrone Corpus (Summarized from Guasti, 1996).

Thus, while it is possible that inversion failed to take place in all of the utterances in which there was no overt subject, this seems implausible. We expect null subjects and overt subjects to occur in the same environments in child language, just as we do in adult language, unless there is some reason to suspect that they do not. Thus, Italian-speaking children appear to form questions in an essentially adult-like way from the beginning.

3. Child Catalan and Methodology

3.1 Child Catalan Data

If we analyze wh- questions in child Catalan, a related southern Romance language, using Guasti's methodology, we find a similar result. That is, if we cull all questions asked by the four monolingual Catalan speaking children from the Serrà and Solé corpus from the CHILDES data base, and then count the number of wh- questions with overt subjects with and without inversion we get the results in Table 1.

	Total # of Wh- Questions	Total # of Wh- Questions with Overt Subjects	Total # of Inverted Wh- Questions with Overt Subjects
Gisela (1;7 - 3;0) Guillem (1;0 - 3;1) Laura (1;7 - 3;3) Pep (1;0 - 3;0)	146	37	37

Table 2 - Wh- Questions, Wh- Questions with Overt Subjects and Inverted Wh- Questions with Overt Subjects in Three Speakers of Child Catalan from the Serrà and Solé corpus of the CHILDES data base (MacWhinney and Snow, 1985).

As you can see, out of 146 wh- questions that these four children asked, 37 had overt subjects. All of these 37 questions had either a left dislocated subject, as in (3), or an utterance-final subject, as in (4).

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(3) papa on és? (Guillem - 2;11.25)
'papa where is?'
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(4) on està la groga? (Gisela - 2;8.0)

'where is the yellow?'

where is the yellow one?

3.2 The Period Preceding Verbal Wh- Questions

In order to get a clearer picture of how development takes place, we can track the onset of particular grammatical elements, which are theoretically relevant to wh- movement, over the course development. This approach to studying language development makes it logically possible to discover developmental stages, which is impossible if we treat 8 to 11 months worth of files as if they were developmentally homogenous.

So, to examine the Catalan children's development in greater detail, each verbal utterance in

each file was coded for person, number, tense and illucutionary force, among other things. Then, using a counting subroutine written in perl for use on a UNIX machine, the number of occurrences of each code was calculated for each file. Using this procedure to calculate the total number of verbal utterances per file and the total number of wh- questions per file, we get the results in Table 3. What we notice is that there is a lengthy period in the data of all four children before they produce any wh- questions at all. In Table 3, there are two columns after each child's age. The first of these gives the number of verbal wh- questions for the particular file and the second gives the total number of verbal utterances produced in that file. The numbers in bold are considered to be the first non-formulaic, wh- question which included a verb for each child. The wh- questions occurring before those in bold, in the data of Guillem and Laura, are possibly formulaic, lexicalized units, given in (5) and (6). The number of total utterances is provided to show that questions are not missing as a consequence of everything being missing.

(5) què és això? (Guillem - 1;8.0)

(6) què és? (Laura - 2;2.13)

what is that?

'what is (that)?'

Gisela			Guillem			Laura			Pep		
	Wh-	VU		Wh-	VU		Wh-	VU		Wh-	VU
(1;7,14)	0	0	(1;0,0)	0	0	(1;7,20)	0	0	(1;0,27)	0	0
(1;8,3)	0	8	(1;1,23)	0	0	(1;9,7)	0	6	(1;1,28)	0	0
(1;8,24)	0	11	(1,1,29)	0	0	(1;10,22)	0	25	(1;3,23)	0	0
(1;9.0)	0	4	(1;4,18)	0	0	(1;11,12)	0	37	(1;4,24)	0	5
(1;10,7)	0	10	(1,4,26)	0	0	(2;2,5)	0	25	(1;5,29)	0	13
(1;11,11)	0	2	(1;5,29)	0	0	(2;2,13)	1	52	(1;6,23)	0	10
(2;1,23)	0	7	(1;6,26)	0	2	(2;4,11)	1	13	(1;8,0)	0	7
(2;2,6)	0	0	(1;7,15)	0	2	(2;5,8)	0	72	(1;8,30)	0	12
(2;4,25)	0	49	(1;7,22)	0	0	(2;6,25)	4	41	(1;10,6)	0	73
(2;6,23)	0	29	(1;8,0)	1	14	(2;7,20)	1	120	(1;11,6)	4	50
(2,8,0)	19	224	(1;9,12)	0	26	(2;8,30)	1	148	(2;0,0)	0	18
(2,9,16)	8	154	(1;9,24)	0	11	(2;11,17)	7	157	(2;1,1)	1	59
(2;11,0)	4	103	(1;11,13)	0	36	(3;0,2)	5	293	(2;2,3)	5	92
(3;0,29)	0	23	(2;0,12)	0	16	(3;3,21)	1	220	(2;3,10)	3	106
			(2;1,14)	0	27				(2;4,4)	5	95
			(2;2,11)	0	8				(2;5,4)	7	163
			(2;2,28)	2	19				(2;6,15)	1	19
			(2,3,12)	0	4				(2;7,8)	2	121
			(2;3,18)	0	26				(2;7,28)	0	12
			(2;4,24)	4	37				(2;9,10)	7	197
			(2;5,25)	4	30				(2;10,15)	4	99
			(2;5,29)	1	24				(2;11,10)	0	100
			(2;6,10)	10	35				(3;0,27)	1	114
			(2;7,9)	0	44						
			(2;7,25)	1	71						
			(2;9,8)	2	99						
			(2;10,3)	4	29						
			(2;11,5)	5	35						
			(2;11,21)	2	68						
			(2;11,25)	7	91						
			(3;0,0)	1	7						
			(3;1,18)	8	68						

Table 3 - Verbal Wh- and Total Verbal Utterances in Four Monolingual Catalan-Speaking Children

You will notice that Gisela produces 19 questions in the first file where she produces any questions at all. This was not typical. In fact nothing seems typical when it comes to the absolute <u>number</u> of wh- questions children produce. Rather, external contextual circumstances as well as the children's varying curiosity levels appears to induce different numbers of questions during different sessions.

To be clear, only wh- words which occurred <u>with verbs</u> were counted as questions in Table 3. During the period before verbal wh- questions begin to be formed, there are, nonetheless, a wide array of wh- words <u>without</u> verbs, as in (7).

(7)Wh- Words in Child Catalan Before Verbal Questions Are Formed

a. quin? (Gisela - 1;8.24)

e. què? (Laura - 1;11.12)

which (one)?

what?

b. este a on? (Gisela - 1;8.24)

f. on, on? (Laura - 2;2.5)

this one where?

where, where?

c. que be. (Guillem - 1;8.0)

g. quina! (Laura - 2;2.13)

how good.

which one!

d. per què no? (Laura - 1;11.12)

why not?

3.3 The Period Preceding Verbal Wh- Phrases Is Not Pre-Syntactic

While many of the utterances in this pre-question period are simple imperatives and 3rd person singulars, others of them seem quite sophisticated and adult-like, as in (8) through (12) on the handout.

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(8) no n'hi ha. (Gisela - 1;9.0)

'not cl. (partitive) cl. (locative) is.'

There isn't any of that.

(9) vull beure. (Guillem - 1;8.0)

'vant (1st sg.) to drink.'

I give you that.

(12) dona+me+la. (Pep - 1;5.29)

'want (1st sg.) to drink.'

I give (2nd sg. imp) cl. (dat. 1st sg.) cl. (acc. sg. fem.)'

Give it to me.

(10) papa, vull probar+ho. (Guillem - 1;8.0)

'papa, want (1st sg) to try cl. (acc. sg. masc.)'
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Papa, I want to try it.

Notice that in examples (8) through (12) partitive, accusative, dative and locative clitics are used and that they are used in their correct verb-final position in infinitves and imperatives, as in (10) and (12), and in their correct verb-initial position with finite verbs, as in (8) and (11). Notice as well that negation seems adult-like, as in (8), as does non-finite complementation, as in (9) and (10). In short, it does not appear to be the case that the period preceding verbal wh- questions can be characterized as pre-syntactic or as any kind of one-word stage. Hence, we ask why are no questions used by any of these four children?

Some authors have suggested that question formation does not take place in the adult-like way in early child speech because CP is not available, as in the work of Haverkort & Weissenborn (1991) for French and Meisel and Müller (1992) for German. Fortunately, in child Catalan we may test for the existence of CP, independently of wh- movement, by examining the use of imperatives. As shown in Grinstead (1997b), Catalan children use affirmative imperative verbs, as in (13), and negated declarative verbs, as in (14), in the period before verbal questions begin to be used.

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(13) Mira. Pep (1;4.24)
look (2nd, sg., familiar, imp.)
Look.
(14) No vol. Pep (1;4.24)
not want. (3rd, sg., pres., declarative)
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He doesn't want to.

During this period, however, they do not produce negative commands, as in (15), apparently because they have not yet mastered the subjunctive morphology necessary to form them in an adult-like way.

(15) Adult Negative Subjunctive Command (unattested in the early stage of child Catalan)No miris.not look (2nd, sg., subj., imperative)Don't look.

A seemingly obvious, and logical means to bridge this gap in their grammatical repertoire and to "satisfy their communicative needs", from a functional point of view, would be to simply concatenate the negative particle "no" with the affirmative imperative to form a negative command, as in (16).

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(16) @No mira. (@ = unattested)no mira ("true imperative" form)Don't look.
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Children refrain from doing this however and appear to issue negative commands using only the negative particle by itself, with no verb. The form in (16), which children could produce, but don't

produce, is ungrammatical in the adult grammar. It is argued to be ungrammatical because its derivation would imply a violation of Relativized Minimality, in the sense of Rizzi (1990), as further developed in Rivero (1994) and Terzi (1992). Concretely, Rivero and Terzi (1995) argue that imperative verbs move to C. They assume that negation is an operator intervening between the verb and C. Movement of the verb to C over a negative head, then, would constitute a violation of Relativized Minimality for heads with operator features, which Rivero and Terzi consider to be Abar characteristics. In the same way that this explanation accounts for the impossibility of structures like (16) in adult Catalan, it also explains why children never produce structures like (16). Thus, children obey Relativized Minimality with respect to verb movement to C, in spite of the fact that all of the elements necessary to produce ungrammatical, yet functionally felicitous, strings such as (16) are available in their production and in spite of the fact that producing such strings would go alot further towards meeting their communicative needs than producing a simple "no" does.

This account argues for the early existence of C in child Catalan in the following way. Assuming a relatively stable post-SPELLOUT position for clitics above IP and below CP, as in Sportiche (1992), we derive the fact that imperatives occur with enclitics, as in (17) a., and non-imperative finite verbs occur with proclitics, as in (17) b.

(17) Adult and Child Clitic Position With Respect to Finiteness

a. canta+la. b. la canta.

Sing it (cl. sg. fem.). He/She/It sings it (cl. sg. fem.).

Given that children produce imperative utterances with enclitics like (18) - (23), before they produce questions, they appear to be moving verbs to C before the C projection becomes the locus of wh- movement. Furthermore, children not only use the C projection in the adult-like way very early, they also refrain from using C in precisely the way that Relativized Minimality dictates that they should.

(18) Pep (1;5.29) (21) Laura (2;2.13) dòna+me+la. tornem+hi. Give me (cl. dat.) that (cl. acc. fm. sg.). return (1 pl. imp.) there (cl. loc.) Let's go back there. (22) Guillem (1;8.0) (19) Pep (1;6.23) busca+la tu dona 'm iogurt. Look for it (cl. acc. fm. sg.). You, give me (cl. acc.) yogurt. (20) Laura (2;2.13) (23) Guillem (1;9.12) dona 'm. ajuda 'm. Give me (cl. dat.). Help me (cl. acc.).

Thus, there appears to be a period during which speakers of child Catalan do not form whquestions and this failure does not appear to be due to either a general lack of syntactic sophistication or to the inactivity of the C projection.

4. The Wh-/Tense Asymmetry in Child Catalan

4.1 The Wh- Criterion and Minimalism

A possible explanation for the inability of these children to form questions is that another aspect of child functional structure is not yet syntactically active. Namely, Tense. Rizzi's (1991) Wh- Criterion states that a wh- operator must be in a spec-head configuration with a plus wh- head and that a plus wh- head must be in a spec-head configuration with a wh- operator.

(24) The Wh- Criterion (Rizzi, 1991)

- a. A Wh- operator must be in a Spec-head configuration with a X⁰. [+wh]
- b. A X^0 must be in a Spec-head configuration with a Wh operator. [+wh]

In Rizzi's formulation, verbs move to I to pick-up or check inflectional features and then move to C to satisfy the Wh- Criterion in a Spec-head configuration with the wh- word. Rizzi assumes that the element which carries the wh- feature is Tense, generalizing from the work of Haïk (1988) and others who give examples of languages in which verbs carry an interrogative inflectional morpheme. Following Chomsky (1995), I assume that uninterpretable features must be checked before SPELLOUT in order to prevent a derivation from crashing. I further assume that, in adult Catalan, uninterpretable wh-features on Tense and in the wh- phrase must check each other in a specifier-head configuration before LF. Assuming such a framework, both Tense and wh- elements must be present in order to produce a wh- question, because the absence of either will leave an uninterpretable feature in the derivation at LF, causing it to crash.

4.2 Wh- Words in Child Catalan

So, let us first ask if wh- elements appear in the child Catalan vocabulary before the point at which these children begin to form syntactic or verbal questions. Remember that we have already shown that there is an early stage in which no syntactic questions are formed. The answer appears to be yes. A broad array of wh- words is found in the pre-question speech of all of the children except Pep, as was pointed-out earlier, in (7), repeated on the handout for convenience. Hence there is no lexical deficit with respect to the wh- words themselves that is preventing syntactic questions from being formed.

4.3 Tense and Wh- Questions in Child Catalan

So, within the framework of assumptions just outlined, that leaves one other element in whquestions which carries an uninterpretable feature, again: Tense. We can imagine that if Tense were
not available to check the uninterpretable feature in these question words, then every derivation
which included a question word with no tense, should crash. Let us, then, examine the question of
whether there is any overt morphological evidence for the existence of Tense, as an active functional
element in child Catalan. What we find in the way of verbal morphology in child Catalan before
verbal questions are formed are second person singular imperatives, first and third person singular
present indicatives and a small number of root gerunds, infinitives and participles, as in (25)
through (28).

As pointed out and argued in greater detail in Grinstead (to appear), these verb forms encode only present or irrealis temporal interpretation, which could be interpreted as the absence of tense. I will call this set of morphological tense markings "non-contrastive" to distinguish them from "contrastive" tense markings which I define as encoding speech time and event time as non-simultaneous. In Catalan, the contrastive forms include preterit, imperfect, simple future, periphrastic future, present perfect, past perfect and the conditional. After an extended period during which only non-contrastive forms are used, then, contrastive tense forms begin to be used as well. I assume that

the Tense category can form part of the numeration and constitutes part of child clause structure, in line with the Full Clause Hypothesis of Hyams (1986). I also assume, however, that Tense can be underspecified in early child language. I suggest that the onset of contrastive tense morphology is an indicator that syntactic and semantic tense specifications are then included in the child's syntactic structures.

To investigate the impact of the emergence of contrastive tense on the formation of questions we take the point at which the first contrastive tense morpheme is found in the speech of each child and search for questions both before and after that point for a roughly symmetrical number of files and months. Hence, in the case of Laura, in Table 4, the first contrastive tense morpheme is found in the seventh file, when she is 2;4.11. We then compare the preceding 6 files, which cover 7 months, with the subsequent 8 files, which also cover 7 months. The number of files, months and total verbal utterances for both stages of each child, are given in Table 4.

	Number of Files	Number of Months	Total Verbal Utterances
Gisela I (1;7.14 - 2;2.6)	8	7	42
Gisela II (2;4.25 - 2;11.0)	5	7	559
Guillem I (1;5.29 - 1;9.12)	6	4	44
Guillem II (1;9.24 - 2;2.28)	6	5	117
Laura I (1;7.20 - 2;2.13)	6	7	145
Laura II (2;4.11 - 2;11.17)	6	7	551
Pep I (1;3.23 - 1;5.29)	4	5	18
Pep II (1;6.23 - 1;10.6)	5	5	102

Table 4 - The Number of Files, Months and Total Verbal Utterances Per Each Child's Early and Late Stage

In Table 5, we see the extended early period in which there are neither contrastively tensed verbs nor verbal wh- questions.

Gisela			Guillem			Laura			Pep		
	CT	Wh-		сТ	Wh-		сT	Wh-		сТ	Wh-
(1;7,14)	0	0	(1;5,29)	0	0	(1;7,20)	0	0	(1;1.28)	0	0
(1;8,3)	0	0	(1;6,26)	0	0	(1;9,7)	0	0	(1;3,23)	0	0
(1;8,24)	0	0	(1;7,15)	0	0	(1;10,22)	0	0	(1;4,24)	0	0
(1;9.0)	0	0	(1;7,22)	0	0	(1;11,12)	0	0	(1;5,29)	0	0
(1;10,7)	0	0	(1;8,0)	0	1	(2;2,5)	0	0	(1;6,23)	2	0
(1;11,11)	0	0	(1;9,12)	0	0	(2;2,13)	0	1	(1;8,0)	0	0
(2;1,23)	0	0	(1;9,24)	1	0	(2;4,11)	1	1	(1;8,30)	0	0
(2;2,6)	0	0	(1;11,13)	2	0	(2;5,8)	1	0	(1;10,6)	10	0
(2;4,25)	3	0	(2;0,12)	0	0	(2;6,25)	3	4	(1;11.6)	11	4
(2;6,23)	0	0	(2;1,14)	0	0	(2;7,20)	10	1			
(2,8,0)	13	19	(2;2,11)	0	0	(2;8,30)	12	1			
(2,9,16)	27	8	(2;2,28)	2	2	(2;11,17)	18	7			
(2;11,0)	23	4									

Table 5 - The Onset of Contrastive Tense Marking and Verbal Wh- Question Formation

Then, sometime after the first contrastively tensed verb is produced, questions begin to be used. Dividing up the children's data into two stages this way: a pre-tense and a post-tense stage, we can measure the degree to which questions increase as percentage of overall verbal utterances, and the difference is significant according to the chi square given in Table 6.

	Questions	Total Verbal Utterances
Early	0	249
Late	47	1333

Table 5 - The Ratio of Questions to Total Verbal Utterances in Two Stages Compared $\chi^2 = 7.56,\, p < 0.01.$

Thus it appears that the emergence of tense is a necessary precondition for the emergence of

question formation, as the minimalist interpretation of the wh- criterion sketched out earlier suggested it should be.

4.5 Summary

To summarize, we have seen that while wh- questions in child Catalan appear adult-like from the point at which they begin to be used, there is a lengthy period preceding their emergence during which the C projection nonetheless appears active and syntactically sophisticated constructions are used. I have suggested that this complete absence of wh- questions can be explained as the result of the children's inability to check the uninterpretable syntactic wh- feature associated with wh- words. The Catalan children studied appear to have wh- words in their productive vocabulary during the non-question period. In adult Catalan, following Rizzi (1991), the wh- feature carried by the wh- word is checked by the homologous uninterpretable wh- feature carried by Tense. But child speakers of Catalan who lack an active Tense projection have no projection to attach the second wh- feature to. As a consequence, all derivations they attempt, with the wh- words in their vocabulary, crash, because an uninterpretable features remains unchecked at LF.

5. Back to Italian

If something like the picture I have painted for child Catalan is correct, then a similar account of child Italian should be possible. The account developed here predicts the following:

- 1. There should be an early period during which no verbal questions are asked.
- 2. During this period, wh- words should, nevertheless, be available in children's vocabularies.
- 3. The production of verbal wh- questions should not precede the use of contrastively tensed verbs.

To test these predictions, the files of Rosa, one of the children from the Calambrone corpus from the CHILDES data base (MacWhinney and Snow, 1985) were coded by a fellow graduate student,

Stefano Vegnaduzzo, a native speaker of Italian, for Tense and wh- questions, among other things. After tallying the codes for Tense in Italian, we find a situation which is essentially identical to child Catalan. In the early files, present indicative and imperatives are the only verb forms used. In the first file, there are a number of wh- words used without verbs, as illustrated in (29).

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(29) Wh- Words in Rosa (1;7.13)a. chi!who!b. che?what?
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As we can see in Table 7, these wh- words ocurred in Rosa's vocabulary before the first use of a question or of a contrastively tensed verb, which both occurred in the third file.

	Passato Prossimo & Imperfect	Wh- Questions	Total Verbal Utterances
1;7.13	0	0	1
1;9.11	0	0	14
1;10.08	1	3	30
1;11.24	2	2	30
2;0.07	0	6	29
2;1.14	1	7	32
2;01.29	2	2	35
2;02.11	1	5	43
2;4.09	1	52	99
2;4.23	0	36	121
2;5.25	4	3	78
2;6.29	6	17	116
2;7.26	3	11	146
2;9.04	13	13	186
2;9.24	5	8	178
2;10.14	8	12	167
2;11.12	8	12	167
2;11.30	25	50	187
3;0.24	26	34	158
3;1.29	6	15	151
3;3.23	22	12	208

Table 6 - Contrastively Tensed Verbs and Verbal Wh- Questions in the Speech of Rosa (Calambrone Corpus, CHILDES Data Base, MacWhinney and Snow - 1985)

In the third file, the passato prossimo past tense begins to be used as do wh- questions. Strikingly, they not only begin to be used in the same file, but actually co-occur in the same utterance, given in (30).

(30) detto baba detto cosa ha detto? said papa said what has said?

Thus it appears possible that Italian-speaking children, like Catalan-speaking children, pass through a period during which no verbal question formation is possible. When contrastive Tense enters their grammar, checking the wh- feature carried by wh- words becomes possible. This in turn allows verbal wh- question derivations to be carried out, because the impediment which caused them to crash before this point can be removed.

6. Conclusion

We now have a theory of development which suggests that children need to acquire contrastive tense features before being able to check certain of the features associated with tense. I assume throughout that the features that cause wh- movement are available as part of UG. The child then has to learn the morphology associated with Tense in order to make available an attachment sight for the wh- feature.

This analysis is analogous to the analysis of the emergence of nominative Case checking presented in Grinstead (1995) which suggested that the onset of Tense and Number allow nominative Case to be checked in child Catalan. In that instance, the uninterpretable feature which could not be checked by its counterpart was the nominative Case feature. The impossibility of checking the uninterpretable nominative Case feature explained the complete absence of overt subjects in the early stage of child Catalan, as well as the emergence of overt subjects at the point when contrastive tense and number begin to be used.

A question for further research is how such a theory might be applied to languages outside the southern Romance family.

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