On the Maturation of Functional Categories: Early Child Speech

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1 Introduction

The purpose of this paper is twofold. First, it outlines a theory of maturation for language acquisition which assumes that maturation affects functional categories rather than the principles of UG. The second aim is to show how this theory accounts in a principled way for the properties of early child speech, concentrating mainly on the structural properties of the sentence and the representation of subjects both null and lexical. The data considered is drawn from a relatively broad range of languages with the aim of showing that the predictions made by the theory of acquisition suggested receive significant empirical support. The data from child Greek are taken from a relatively substantial corpus based on the speech of two children whose development I have monitored closely. As will be revealed later the child Greek data offer an important insight into the properties of early child speech, in particular with respect to the status of functional elements. Modern Greek has a rich inflectional system, including a well-articulated system of Case inflection.

The paper is organised as follows. In section 2 I discuss some of the existing theories of parameterisation, and outline the properties of functional categories which distinguish them from substantives. The theory of parameterisation which I will adopt is one which associates parameters with functional categories rather than with the principles of UG. In section 3 I discuss the theory of maturation which associates parameters with UG principles and point out some respects in which it is inadequate. I also present the broad lines of an alternative theory of maturation which claims, first, that the principles of UG are available to the child right from the onset of acquisition, and, secondly, that functional categories mature according to a programme prescribed by UG. Clause structure in early child speech will be claimed to lack functional categories (or projections); it consists simply of the projection of V. In section 4 I discuss the properties of subjects. It is argued that subjects in early child speech fail to exhibit the parametric variation found in corresponding adult languages, and that this failure is due to the absence of

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functional categories. Missing subjects will be argued to be realised structurally as PRO whose content is identified by a discourse controller.

2 Theoretical background

2.1 UG and parameters

Any adequate theory of language has to explain, first, how natural languages, despite superficial differences, are identical at a deep and abstract level, and secondly, define the range of possible variation among them. In the Principles and Parameters framework (cf. Chomsky (1981), (1982), (1986a), (1986b) & (1988)), the first issue is dealt with by assuming the existence of a set of predetermined principles called Universal Grammar (UG). These principles govern the structural and grammatical properties of all languages of the world by virtue of biological necessity. The fact that languages exhibit fundamental similarities therefore follows from the assumption that they share a common set of grammatical principles, i.e. UG.

The second issue is dealt with in terms of a finite set of parameters with a finite number of open values associated with them. The fixing of the values of the parameters results in linguistic differences which are manifest in terms of (clusters of) surface phenomena. Language variation therefore reduces to variation in the values of parameters. The requirement that the set of parameters and the values associated with them should be finite guarantees that languages will differ only in restricted ways, given the known constraints on the range of possible variation (cf. Chomsky (1986a)). As far as this much is concerned there is a near consensus among researchers who subscribe to the Principles and Parameters theory. The consensus breaks down when the question concerning the nature of the elements with which parameters are associated is considered. In this respect two major hypotheses have been put forward in the literature. In one hypothesis, formulated in Chomsky (1986a), parameters are assumed to be associated with the principles of UG. In the other hypothesis, articulated in Borer (1984), parameters are associated with individual lexical items. The two hypotheses have different implications for the phenomenon of language variation as well as the process of language acquisition, given the widely accepted idea that language acquisition is essentially a process of fixing parameters.

In Chomsky (1986a) parameters are conceived of as some sort of switches with a number of open positions. The selection of a specific value yields a specific pattern of linguistic properties, and the selection of a different value yields a different pattern. A typical example of such parameters is the Head Parameter of X-bar theory which fixes the order of head categories in relation to their complements. This parameter is assumed to have two values,

Head-first and Head-last. The first value characterises head-complement languages such as English, and the second complement-head languages such as Japanese. Among the important aspects of any theory which associates parameters with the principles of UG is that it predicts uniformity of behaviour among the elements which fall under the scope of a given parameter. Thus, with respect to the Head parameter the theory predicts that all head categories should take their complements in the same direction, contrary to fact as we will see below.

Borer's (1984) theory of parameterisation differs fundamentally in that it associates parametric variation with individual lexical items, rather than with the principles of UG. Moreover, the lexical items which are subject to variation are restricted to the set of inflectional or, as we will call them here, functional categories. Borer's theory is basically an attempt to reduce language variation to variation in the lexical properties of functional categories. In addition to the phenomena discussed by Borer this theory has been shown to account successfully for a number of other major aspects of language variation (cf. Ouhalla (1990)), as well as for some aspects of language acquisition relating to pronominal and anaphoric elements (cf. Wexler and Manzini (1987)).

Wexler and Manzini (op.cit.) point out that among the consequences of any theory which associates parameters with individual lexical items is that a language may instantiate more than one value of a given parameter. They then go on to demonstrate that this is a desirable consequence as far as interlanguage variation in the distribution of anaphoric and pronominal elements is concerned. The binding domains (governing categories) of these elements have been found to differ not only across languages but inside the same language. Another fact which this theory of parameterisation naturally accounts for concerns the order of complements in relation to their selectors discussed above. It is well known that in some languages, e.g. Dutch and German, verbs take their complements to the left (OV), while adpositions take their complements to the right (PO). This shows that there is variation among lexical items with respect to the directionality of complementation. It should be clear in what sense these and any other instances of intralanguage variation are naturally accounted for in the context of a theory which associates parametric variation with individual classes of lexical items.

As far as language acquisition is concerned it is widely assumed in the literature that the process of learning reduces, to a large extent, to a process of fixing the values of parameters on the basis of positive linguistic experience. In other words, the process of fixing the values of parameters is crucial in determining not only linguistic variation but also the process of learning. The exact details of how this process takes place are not clear, and furthermore tend to differ according to the theory of parameterisation adopted. Hyams (1986), for example, argues that the values associated with parameters are ordered in terms of a markedness hierarchy, such that the initial setting corresponds to the

unmarked value of the parameter. This value can either be adhered to in the remaining stages of acquisition or be changed in the light of positive evidence to the contrary. Wexler and Manzini (op.cit.), on the other hand, argue that the process of fixing parameters is subject to a Subset Condition, such that the initial setting generates a language which is smaller than the language generated by the subsequent setting.

As far as the present paper is concerned, we will adopt Borer's theory of parameterisation, that is we will assume that parametric variation reduces to variation in the lexical properties of individual items, and that the set of these lexical items is restricted to the class of functional categories. The important implication which this theory has for the prefunctional stage of acquisition, where as we will see below functional categories are lacking, is that it predicts a total absence of (parametric) variation either inside the same language or across languages. In other words, given the assumption that parameters are exclusively associated with functional categories, and given that functional categories are lacking altogether, we should expect a large degree of uniformity in the properties of child speech at this stage of acquisition. One of the major aims of this paper is to show that this is indeed the case. In view of the fact that the theory adopted gives prime importance to functional categories we will first discuss their inherent properties, as opposed to those of substantives, and the role they play in the grammar.

2.2 Functional categories and their role in the grammar

In traditional typology categories are assumed to fall into two classes, open and closed. The open class includes the major (lexical) categories, V, N and A, while the closed class includes nonlexical categories such as Determiners, inflectional elements, Complementizers, Auxiliaries...etc. In the present paper I will refer to members of the open class as substantives, and those of the second class as functional categories. As used in current literature these terms do not correspond exactly to the traditional open/closed division, as we will see below.

Ouhalla (1990) argues that functional categories have a set of inherent, more precisely lexical, properties which set them apart from substantives. Two of these properties are listed under (1):

(1) (a) C(ategorial)-selectional properties
(b) Grammatical features

Starting with (1a), Ouhalla argues that functional categories differ from substantives in that their selectional restrictions operate in terms of syntactic categories, while those of substantives operate in terms of semantic categories

(s-selection) (cf. Chomsky (1986a)). Thus, verbs and nouns, for example, are said to select patient and theme arguments, whereas functional categories such as I and Det are said to select VP and NP, and possibly other syntactic categories. Ouhalla derives this distinction between functional categories and substantives from a more fundamental distinction relating to the ability or inability of these categories to assign thematic roles. Substantives have the ability to assign thematic roles to the arguments they select whereas functional categories lack this ability altogether, hence the idea that complements of substantives are of the type that need a thematic role, necessary for their licensing, whereas the complements of functional categories are not; the latter are licensed in terms of c-selection as well as other considerations.

Turning now to (1b), by "grammatical features" are meant the features which play a crucial role in the licensing of certain elements and in determining grammatical processes such as movement. Examples of these features are the phi-features (person, number, and gender) associated with AGR elements. These features determine the possibility of licensing the empty category pro and its various interpretations (cf. Rizzi (1986)). Other examples of grammatical features are the Case features which are crucial in licensing subjects in general. Case features are also associated with AGR elements; nominative Case is associated with AGR-S (i.e. Subject AGR) and accusative Case with AGR-O (i.e. Object AGR) (cf. Chomsky (1988)). Case features are also associated with the D elements, in the sense that DP's, but not other categories, require Case (cf. Abney (1986)). That Case considerations determine movement processes is widely assumed in the literature. DP-movement in passive and raising constructions is standardly assumed to be motivated by Case considerations.

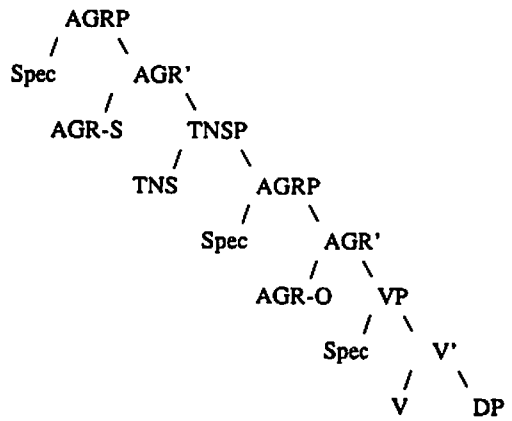
Among the consequences of this model crucially relevant to the present paper is that the (lexical) properties which determine movement processes are exclusively associated with functional categories. Head-movement processes such as V-movement are determined by the bound nature of the AGR elements as well as TNS (cf. Baker (1988)), while DP-movement in passive and raising constructions is determined by Case considerations. It follows from this situation that any language which lacks functional categories will also lack movement. I will argue below that this is precisely the case in the prefunctional stage of child language. The variation in word order exhibited will be argued to be the result of an absence of directionality restrictions on the representation of constituents, rather than the application of movement processes. The absence of directionality restrictions is in turn the result of the absence of functional categories, the underlying assumption being that directionality restrictions are determined by functional categories.

Another respect in which the absence of functional categories, in particular AGR, has a crucial effect concerns the phenomenon of missing subjects discussed in Hyams (1987). As is well-known, this phenomenon

characterises child speech across languages, that is regardless of whether the corresponding adult speech allows null subjects. In view of this fact, together with the assumption that pro subject can only be licensed by a sufficiently rich AGR element (cf. Rizzi (1986)), I will argue that missing subjects are structurally represented in terms of another empty category whose licensing is not dependent on a specific functional category but on general principles of UG.

The clause structure of adult speech which we will assume in this work is the one suggested by Chomsky (1988) where each of the elements previously assumed to belong under the I node heads its own X-bar projection. Thus, the structure of a finite affirmative clause has the form outlined in (2):

(2)



Following a suggestion by numerous researchers, e.g. Koopman and Sportiche (1987), we will also assume that thematic subjects are base-generated inside the VP predicate and are subsequently moved to the Spec position of AGR-S for Case reasons. On the other hand, we will assume, following Ouhalla (1990), that the DP direct object of the verb moves to the Spec of AGR-O. Both movements are motivated by Case considerations, in the sense that the DP arguments of the verb move to their respective s-structure positions to receive Case via Spec-Head agreement with the corresponding AGR category. The merger between the verb and the functional elements results from V-movement to AGR-S through AGR-O and T. I will differ from Pollock (1989) and Chomsky (1988) in assuming that the possibility of these categories lowering to V is excluded by a general ban on downgrading processes in the grammar which is ultimately reducible to the ECP.

3 Maturation

One of the major issues which have concerned researchers in the domain of language acquisition is to identify and explain the factors which determine the transition from one stage of language development to the next. Within the context of the Continuity Hypothesis (cf. Pinker (1984) and Hyams (1987)), the transition is argued to be determined by the recognition on the part of the child of a crucial piece or set of data, known as "triggering data". The introduction of these data leads to a restructuring of the child grammar, as a result of its interaction with the general principles of UG. The latter are assumed to be available in their entirety from the onset of acquisition. As is well known this theory leaves a number of important questions unanswered. For example, what is the nature of the elements which serve as triggering data? Secondly, why do certain elements but not others serve as triggering data? Thirdly, and most importantly, why should the elements which serve as triggering data, whatever their nature, serve as triggers at a certain stage of development but not at another, given that they are available to the child throughout all stages of development? In the context of the Continuity Hypothesis the problem raised by the last question can only be solved by resorting to an extrinsic ordering of the triggering data, a rather undesirable undertaking in the context of the current state of theorising where extrinsic orderings have all but disappeared.

It was partly to overcome problems of this nature that an alternative theory was suggested which came to be known as the theory of maturation (cf. Felix (1984) and Borer and Wexler (1987)). According to this theory the stages of language development are determined by inherent maturational factors, similar to the factors known to constrain the development of other biological phenomena. These factors are argued to constrain the order of availability of UG principles, such that a given principle may not be available at a certain stage. It is the introduction, or maturation, of new principles which marks the transition from one stage to the next. Notice that this theory differs essentially from the Continuity Hypothesis in that it assumes that not all principles of UG are available to the child at all stages of development.

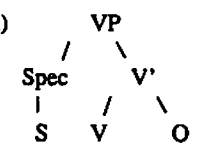
I will argue that this particular theory of maturation gives rise to problems which are no less serious than the problems raised by the Continuity Hypothesis, despite the fact that it represents a substantial improvement. I will then suggest an alternative theory of maturation which differs in that *it associates maturation with functional categories rather than with the principles of UG*. In terms of this theory we will have a principled motivation for postulating a clause structure of child speech at the prefunctional stage which lacks functional projections altogether. This theory will also allow us to account in a principled way for certain constraints on the structural and derivational properties of sentences in terms of general principles of UG.

3.1 The maturation of UG principles

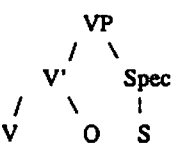
Before we demonstrate how the theory of maturation of UG principles gives rise to some rather intractable problems, let us first see how it has been used to account for the acquisition of certain phenomena, namely word order and passive constructions. Starting with word order, Felix (op.cit.) remarks that at an early stage of the acquisition of German the order of constituents is fairly free, exhibiting all the logical combinations of the subject, object and verb. At a later stage, this freedom of ordering is limited to a subset of the logically possible combinations. Felix argues that this restriction on word order is the result of the maturation of the principles of X-bar theory, on the assumption that the latter impose structural constraints on the ordering of constituents. As a result of the introduction of these constraints into the child grammar some word order combinations, specifically VSO and OSV, become impossible, in the sense that their structural representation gives rise to a violation of the principles of X-bar theory.

Notice, however, that Felix's analysis goes through only if, first, the clausal structure of the child consists of just a VP projection, and secondly, no movement processes apply. This is due to the fact that the constraints imposed by the principles of X-bar theory on word ordering apply only to constituents contained inside the same maximal projection, in this case VP. In other words, assuming the absence of directionality restrictions on the positions of the subject and the object the only base-generated word order combinations consistent with X-bar theory are the following:

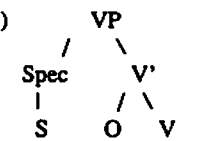
(3) (a)



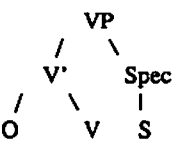
(b)



(c)



(d)



This way the VSO and OSV orders are excluded in principle. Felix, however, does not explain why the derivation of these orders via movement processes should be excluded. The VSO order can legitimately be derived from structure (3d) by moving the object and right-adjoining it to VP, while the OSV order can be derived from structure (3a) by moving the object and left-adjoining it

to VP. Could it be the case that these derivations are excluded because Move-alpha has not matured yet at this stage?

Furthermore, Felix does not explain why the sentential structure at this stage should consist of just a VP projection. In other words, why are the I and C projections missing? Could it be the case that these categories have also not matured yet at this stage? If that is the case what precisely matures, the principles of UG or certain categories, or is it the case that both these grammatical constructs are subject to maturation? Notice that if the sentential structure of the child language contained the I (or its equivalents) and C categories, a possibility which Felix does not exclude, at least not explicitly, then the derivation of at least the VSO order becomes possible. The latter can legitimately be derived by movement of the subject to Spec of IP and of the verb to C.

Moreover, assuming that the sentential structures that Felix has in mind are the ones outlined in (3a,b,c & d) the question arises as to why the order of the object in relation to the verb is free, contrary to what is the case in adult speech. Could it be the case that the Head Parameter of X-bar theory which is responsible for fixing the order of heads in relation to their complements has not matured yet despite the fact that the principles of X-bar theory have matured? And if so, is it the case that principles can mature separately from the parameters associated with them? Here again we are left to guess as to what exactly matures and what doesn't.

It should be clear from the discussion above that Felix is not explicit about the structural properties of the sentential structure of the child language, the mechanisms which are responsible for excluding the derivation of the unattested word orders, and, generally, the exact nature of the principles which have matured at a given stage and those which have not. This fact makes it difficult to evaluate properly the theoretical and empirical consequences of his analyses. There are additional problems which emanate not so much from Felix's analyses of data as from the theory of the maturation of UG principles itself. To illustrate with just one example the question raised above as to what excludes the derivation of the unattested orders via movement can always be answered by invoking the possibility that the principle of Move-alpha is also not available to the child as yet. The fact that the possibility that a relevant principle of UG is still dormant can readily be invoked to get around potential problems casts considerable doubt on the viability of the theory as a whole.

Another respect in which the theory of the maturation of UG principles has been argued to produce desirable results concerns the absence of passive constructions in early child language. Borer & Wexler (1987) argue that the lack of passives at this stage of development can be attributed to the absence of the formal mechanisms of UG involved in their derivation, in the sense that they have not matured yet. The mechanism in question is the chain algorithm which links moved arguments with their traces in thematic positions. Given that

passives involve object-to-subject movement there is a chain relation between the moved argument and the trace in the object position. This analysis, however, ignores completely the role played by the passive morpheme in the derivation of passive construction. As a matter of fact it is standardly assumed in the literature that the properties of passives, including the process of object-to-subject raising, which distinguishes them from active constructions are the immediate consequence of the presence of the passive morpheme (cf. Chomsky (1981), Jaeggli (1986), Baker, Johnson & Roberts (1989)), among many others.

In view of this, Borer and Wexler's account of the absence of passives in early child language is somewhat misguided because it is based on a consequential property, rather than a basic property, of passives. An analysis of the absence of passives in terms of a possible absence of the passive morpheme would not only be more consistent with standard ideas about passive constructions but also account for the absence of object-to-subject raising, as a consequential property. Such an account will be outlined below in the context of a theory which treats the passive morpheme as essentially a functional category which projects its own X-bar structure. This analysis will be shown to account for the absence of not only personal passives but also the impersonal ones, that is passive constructions which do not involve object-to-subject raising. Notice that Borer and Wexler's account predicts that impersonal passives should be present in the child language at the stage where the personal ones are lacking. This is due to the fact that their derivation does not involve movement of the object to the subject position, and they therefore lack a chain relation of the type found in personal passives.

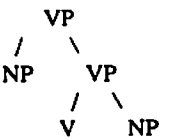
3.2 Maturation of functional categories: an alternative theory

The alternative theory of maturation I would like to suggest assumes that maturational processes affect functional categories rather than principles of UG. The latter are available to the language learner in their entirety right from the onset of acquisition. This implies that at no stage in acquisition do children construct "wild" grammars. In other words, each member of the sequence of grammars constructed by the child on its way to the adult stage constitutes a "possible" grammar.

It is not unreasonable to assume that one of the consequences of the idea that functional categories mature is that there is an early stage in development when they are lacking altogether from the child grammar. In structural terms this implies that sentences consist simply of the X-bar projections of substantives, as suggested in Radford (1988) & (1990)). Radford argues that sentential structure can consist of the projection of any of the lexical categories: V, N, A or P. However, in this paper we will concentrate on sentences which consist of the projection of VP, that is sentences whose semantic head is a

verb. The relevant structure is as in (4) below where the subject is adjoined to VP:

(4)



VP constitutes the thematic domain of the verb, where external and internal arguments are structurally represented according to the principles of X'-theory. Notice that, contrary to their counterparts in adult language, the arguments of the verb are NP's not DP's, D being a functional category, which therefore does not project (we will come back to this issue below). The assumption that the subject is adjoined to VP is motivated by the necessity to guarantee a predication relation between the subject, on the one hand, and the verb and its object, on the other, a relation which holds under the condition of c-command by the subject of the maximal projection which contains the verb and its object.

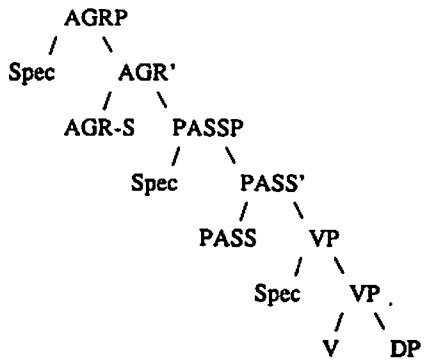
Functional categories mature according to a programme prescribed by UG. Their order of appearance can be argued to reflect their hierarchical order in the clause structure. In relation to the structure in (2) this would amount to the claim that the AGR-O category matures before TNS and the latter before AGR-S and so on. However, this need not be the case. It is conceivable that the order in which functional categories are introduced does not necessarily reflect their hierarchical order in the clause structure. The issue is essentially an empirical one, but the available evidence does not seem to point clearly in one direction or another. For example, one could argue on the basis of the fact that complementizers appear fairly late in relation to other functional categories that the order of their appearance reflects their order in the structure, given that C is the topmost category. On the other hand, there is evidence that the passive morpheme, which we are assuming to be a functional category (PASS), responsible for the derivation of passive construction, is closer to VP than the other functional categories (cf. Ouhalla (1990)), and yet passives appear fairly late in child speech.

While the issue concerning the order of the appearance of functional categories has to remain open, what should be clear is that each time a new functional category matures it is added to the clause structure in terms of a projection which is consistent with the principles of X-bar theory. This implies that language development is essentially a process of structure building (cf. Guilfoyle and Noonan (1988)). The introduction of a new functional category into the system marks a transition from one stage of the grammar to another. In most parts the changes take the form of processes which at a previous stage could not take place due to the absence of the functional category in question.

To illustrate with one example, the appearance of the AGR-S and AGR-O categories provides the subject and object arguments, respectively, with landing sites outside VP and consequently with fixed positions in the structure, thereby marking the transition from a relatively free word order stage to a fixed word order stage.

A similar analysis can be applied to the transition from the stage where passives are missing to the stage where they appear. Given the standard assumption mentioned earlier that the properties of passives are the consequence of the presence of the passive morpheme it is plausible to attribute the absence of passives in early child speech to the absence of the PASS morpheme, on the assumption that it is a functional category. In adult speech passive constructions have the following simplified structure where the PASS morpheme heads its own X-bar projection:

(5)



Ouhalla (1990) argues that the effect of the presence of the PASS category is to prevent the subject (in Spec of VP) from moving to the Spec of AGR-S and becoming the grammatical subject of the sentence. In order to satisfy the Extended Projection Principle either the object moves to the Spec of AGR-S, deriving personal passives, or an expletive is inserted in the same position, deriving impersonal passives in languages which allow them. On the assumption that early child language lacks the PASS category nothing prevents the thematic subject from moving to the structural subject position (Spec of AGR-S), hence the absence of passive constructions.

The advantage of this analysis is that it links the absence of passives directly to the PASS morpheme, contrary to the analysis outlined in Borer and Wexler (1987). Moreover, it explains the absence of all types of passive constructions, that is personal and impersonal. The two constructions have in common the fact that they contain a passive morpheme, but they differ in that impersonal passives do not involve movement of the object to the structural

subject position. In other words, impersonal passives do not involve an A-chain, and as such cannot be accommodated under the analysis suggested by Borer and Wexler.

Before moving on to see how the proposed theory of maturation and the claims it makes about the structural properties of the sentence account in a principled way for some major properties of prefunctional child language an important point need to be clarified. It could be argued that the claim that prefunctional child language lacks functional categories is inaccurate because children do seem to produce verbal forms which clearly contain functional morphemes. The following examples are from French, English and Modern Greek:

(6) (Lightbown 1977)

(a)	monsieur conduire	(=man drive)
(b)	tracteur casser maison	(=tractor break house)
(c)	Michel dormir la	(=Michel sleep there)
(d)	peigner tout seul Philippe	(=comb by self Philippe)

(7) (Radford 1990)

(a) Bee going window
(b) Birdie flying
(c) Her going on walk
(d) Mummy doing dinner
(e) It gone in
(f) Bunny broken foot
(g) Her gone school

(8)	(a)	pji ato ego (drink-3s this I)	(=I will drink this)
	(b)	miizi katses (smell-3s socks)	(=the socks smell)
	(c)	ze figi, mama (not go-3s mummy)	(=don't go Mummy)

The Modern Greek examples in (8) contain AGR morphemes, while the French examples in (6) contain an infinitival marker which is arguably a T element (cf. Pollock (1989) and Belletti (1988)). The English examples in (7), on the other hand, contain the 'ing' and participial 'en' forms which are arguably ASP elements, where ASP is a functional category which projects its own X-bar structure in adult language (cf. Ouhalla (1990)).

Taken at face value these examples can be argued to imply that functional categories do project in the sentence, contrary to the assumption made above. However, this is the wrong conclusion to draw from these facts. Notice, crucially, that in the Greek examples the AGR morpheme does not agree with the subject. In the context of the theory outlined above this implies that the two elements are not in the configurational relation of Spec-Head

agreement. If the AGR morpheme is assumed to project its X-bar structure and the subject occupies its Spec position a violation of the Spec-Head Condition will ensue. In other words, the sentence should be expected to be ungrammatical for the same reason that an adult sentence such as '*The children goes to school every day' is ungrammatical. However, if the AGR morpheme is assumed to be base-generated attached to the verb and the subject is adjoined to VP as in (4) above then no such violation will ensue. In addition to the fact that the AGR morpheme is not the head of the VP projection, the mutual c-command relation between the subject and AGR, necessary for a proper Spec-Head agreement relation, is blocked by the first VP projection.

Thus, the appearance of functional elements in prefunctional child speech need not imply that they have matured, where by maturation is meant the ability to project an X-bar structure. Rather, their appearance is due to an interaction between the lexical properties of verbs and the general principles of UG. As far as the Greek examples are concerned, the appearance of the AGR morpheme is due to the fact that verbs, like their counterparts in Semitic languages (cf. McCarthy (1979)), cannot stand alone as well-formed morphophonological units of representation. In other words, for a verbal stem to be well-formed it has to have an AGR morpheme attached to it. This implies that the stem forms of the verb are affixal in nature and therefore subject to the UG principle which requires affixal categories to be attached to an appropriate morpheme at S-structure. We will refer to this principle as Lasnik's Filter (cf. Lasnik (1981), Baker (1988), among others). Thus, the obligatory appearance of the AGR morpheme in early child Greek is to be expected in the context of the theory of maturation suggested above which assumes that the principles of UG are operative at all stages of language development.

A similar explanation applies to the French examples in (6) which contain the infinitival marker. Like their counterparts in Greek, verb stems in Romance are also affixal and therefore subject to Lasnik's Filter. However, they differ in that their morphological requirements can be satisfied by the infinitival marker. The latter can plausibly be assumed to be the unmarked form of the Tense paradigm, that is a form which is specified negatively or anaphorically for the tense features. In view of this the infinitival marker, like the AGR morpheme in child Greek, can plausibly be assumed to attach to the verb via a lexical process of affixation deriving a complex which is inserted under the V node in (4) above.

As for child English, I will assume that verb stems are also affixal in nature and that the apparently uninflected forms do contain an abstract infinitival marker equivalent to the one found in German and other Germanic languages. Note that most verbs in child German like their counterparts in Romance, also carry an infinitival marker (cf. Clahsen (1986)). The morphological requirements of English verb stems can be satisfied by the abstract infinitival marker, the 'ing' form, or the participial form, thereby

explaining the appearance of the V+ing and V+en complexes. Note that in child French also, verbs sometimes appear in the participial form in addition to the infinitival form. This implies that participial morphology can also satisfy the morphological requirements of the stem.

To summarise, I have outlined in this section an alternative theory of maturation which associates maturation with functional categories. The principles of UG are assumed to be available in their entirety to the language learner from the onset of acquisition, implying that all stages of acquisition represent, in this respect, possible grammars. In the context of this theory I put forward the claim that prefunctional child language lacks functional categories altogether. In structural terms this claim means that the sentential structure lacks functional projections, consisting simply of the maximal projection of the verb and its arguments. As I explained, the claim that functional projections are lacking does not necessarily imply that their corresponding morphemes should be invariably absent. The presence of the latter may be required by the lexical morphophonological properties of the verb and their interaction with the principles of UG, namely Lasnik's Filter. In the next section I will show how the theory of language acquisition accounts in a principled way for null subjects in prefunctional child speech.

4 Subjects in prefunctional child language

4.1 Some facts and their explanation

Recall that the theory of parameterisation adopted associates parameters with functional categories rather than with the principles of UG. As far as the Null Subject parameter is concerned this theory appears to be strongly vindicated, for most accounts of this phenomenon link it directly to the nature of AGR-S, that is a functional category. In null subject languages such as Italian and Modern Greek AGR-S has the property of licensing a pro subject, whereas its counterpart in languages such as English lacks this property. According to Rizzi's (1986) theory of pro, null subjects are licensed under a configurational condition of government and coindexation, that is the condition which we have been referring to so far as the Spec-Head Condition.

Another aspect of linguistic variation related to the Null Subject parameter involves the linear position of the subject. It is generally the case that null subject languages allow subjects in the postverbal position (VOS), while non-null subject languages generally do not, a fact which has led linguists to believe that this variation is related to the Null Subject parameter (cf. Rizzi (1982) and Chomsky (1986a)). Generally, languages which allow postverbal subjects are those whose AGR-S can license a pro in the structural

subject position. Thus, like null subjects post-verbal subjects are also licensed by a functional category, namely AGR-S, albeit indirectly.

With these ideas in mind let us now go back to prefunctional child language. Note that the claim that it lacks functional categories implies, in the context of the theory of parameterisation outlined above, that it will fail to exhibit parametric variation. In other words, if we are correct in assuming that prefunctional child language lacks functional categories then it should be expected to fail to exhibit parametric variation,given that parametric variation is determined by functional categories. As is well-known, this is true as far as the phenomenon of null subjects is concerned (cf. Hyams (1986)). Prefunctional child language exhibits null subjects even when the target language, e.g. English, lacks this property. Below I will outline an alternative analysis of null subjects in child language consistent with the theory of acquisition outlined above. For the moment, it is important to emphasise the fact that this theory predicts that prefunctional child language fails to exhibit parametric variation with respect to the phenomenon of null subjects.

While there is a consensus among researchers that early child language exhibits null subjects across language types, the issue concerning postverbal subjects is surrounded with controversy. Some researchers believe that early child language involves only a few word order 'violations', implying that the orders produced by the child which deviate from the canonical order in adult speech do not represent a significant property of child grammar. Among these word orders are those where the subject is in the postverbal position, e.g. VOS which, as is well-known, are not attested in adult English and French, given the fact that they are not null subject languages.

However, a number of recent studies have revealed that postverbal subjects are more widespread in early child English and French than is otherwise believed. With respect to English, Bowerman (1990) has pointed out that an average of 40% of the sentences in a relatively large corpus exhibit postverbal subjects. On the other hand, Pierce (1989) has pointed out that 74 to 100% of utterances in early child French exhibit postverbal subjects. The following are some representative examples:

(9) English (Bowerman 1973)

(a)	see Kendall	VS
(b)	hug Mommy	VS
(c)	open door Mommy	VOS (Bowerman, 1990)
(d)	close door me	VOS
(e)	ride boat man	VOS
(f)	hit me Christy arm mines	VOS
(g)	daddy get me (= I'll get daddy)	VOS

(10) French (Lightbown 1977)

(a)	pas manger la poupee	VS
(b)	tomber papa	VS
(c)	dormir bebe	VS
(d)	mets le manteau maman	VS
(e)	vider la terre moi	VOS
(f)	fait du bruit la voiture	V PP S

These facts suggest clearly that postverbal subjects are a basic property of early child language. With respect to English and French this implies that as in the case of null subjects early child language also fails to exhibit parametric variation with respect to the position of the subject.

In the present context this fact follows from the absence of the parameterised constraints on word order due to the absence of functional categories. The question as to why instances of postverbal subjects are allowed less frequently in English child speech than in French child speech, though potentially interesting, is however, less interesting than the question as to why English and French child languages allow these orders while their adult counterparts do not. The difference in frequency could be attributed to a difference in the nature of the input data. Adult French speakers tend to use right dislocations of the subject as in sentences (11) below more often than English speakers:

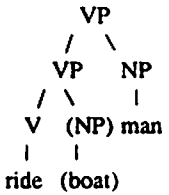
(11) (a) Il a mange son repas, Jean?
(b) Elle est amoureuse de Pierre, Marie.

It is not unreasonable to assume that children construe the dislocated noun phrases in sentences of this type as structural subjects right-adjoined to VP. Their failure to link them to the subject pronouns can be attributed to the possibility that they are "blind" to the presence of pronouns due to the fact that they are D elements (cf. Postal (1966), Abney (1987)). Whatever the reason behind the difference in frequency the important point remains that child data in general exhibit postverbal subjects regardless of whether the target language allows them. Our concern in this paper has been to show that this property of child speech follows from the assumption that functional categories, in this case AGR-S, which are responsible for determining the word order possibilities in adult speech, are missing.

4.2 The structural representation of subjects

Given the clause structure in (4) assumed for prefunctional child language, a sentence with a postverbal subject has the form shown in (12) below:

(12)



This structure differs from the one in (4) above in that the subject is right-adjoined to VP. This implies that postverbal subjects in child language are not derived as is the case in adult null subject languages but are base-generated in their surface position. We are assuming that in both adult and child language the subject can freely adjoin to the left or to the right of VP. The fact that in adult English the subject is not allowed in the postverbal position follows from the assumption that it moves to Spec of AGR-S and that AGR does not license a pro.

Notice, however, that the idea that the subject in prefunctional child speech remains in the thematic subject position might be understood to give rise to a violation of the Case requirement. Recall that movement of the subject in adult speech is motivated by Case considerations, in the sense that the subject moves obligatorily to Spec of AGR-S in order to receive nominative Case under Spec-Head agreement. Since we have been assuming that all principles of UG, including the Case Filter, are operative in early child grammar it could be argued that the analysis outlined above gives rise to a contradiction. Notice, however, that this argument would go through only if the subject is assumed to be a DP instead of an NP. If we assume along with Abney (1987) that the Case Filter holds of DP's instead of NP's, and if we assume that noun phrase arguments in early child language are NP's, i.e. they lack a D category, then no problem arises. The Case Filter could plausibly be said to hold vacuously; this situation is consistent with the overall theory of acquisition outlined above.

Another important issue related to the subject position in child data is the apparent lack of the VSO order which was discussed above in relation to child German. It is important to point out in this respect that the VSO order seems to be lacking in prefunctional child language even in situations where the target language allows it freely. In the fairly substantial corpus I have of child Greek the VSO order is almost entirely non-existent, despite the fact that this order is one of the most frequent in adult Greek. A similar situation is also

found in child Spanish (cf. Pina (1984)), a fact which distinguishes it from adult Spanish where the VSO order is attested fairly frequently. However, this important property of early child language is nowhere more obvious than in child Irish (cf. Hickey (1988)), given that the VSO order is in fact the only order possible in adult Irish. In view of these facts any adequate theory of early child grammar will have to explain why this apparently basic property of the language is missing in the early stages of linguistic development.

In the context of the theory of acquisition outlined in this paper the lack of the VSO order receives a natural explanation. The only ways for the subject to intervene between the verb and the object will be if the verb is moved and left-adjoined to VP in structure (4), or if the object is moved and right-adjoined to VP in structure (12). However, the first option is excluded by the Structure Preserving Hypothesis which requires, among other things, that a head category, in this case V, can only adjoin to another head category. The second option can be excluded on the ground that it gives rise to an ill-formed chain, more precisely a chain which includes a Caseless variable. Given that the definition of a variable requires that the latter be Case-marked and given that, at the prefunctional stage, Case-assignment is assumed not to take place due to the absence of the D category, it follows that A'-movement of the relevant type is excluded. Notice that substitution movement is already excluded by the absence of functional categories whose Spec positions serve as landing sites for moved arguments in adult language.

To summarise, we have seen that prefunctional child language fails to exhibit parametric variation with respect to null and postverbal subjects. Prefunctional child language exhibits null and postverbal subjects irrespective of whether the target languages allow them. These properties were shown to follow naturally in the context of a theory of parameterisation which assumes that parametric variation is determined by functional categories. Postverbal subjects in prefunctional child language have been argued to be base-generated in their surface position right-adjoined to VP. Another property of prefunctional child language which has been shown to follow naturally from the proposed theory of acquisition is the absence of the VSO order. The derivation of the VSO order from a clause structure which consists of simply the projection of the verb is excluded by general principles of UG, more precisely the Structure Preserving Hypothesis, and the Case-requirement on the distribution of variables and the well-formedness of chains.

4.3 Missing subjects

It was mentioned earlier that among the interesting and most celebrated properties of early child language is the one relating to null subjects. It was also mentioned that this property holds in all languages irrespective of whether

the target language allows them. The following are representative examples from English and French which are non-pro-drop languages, and Modern Greek and Italian which are:

(13) English (Bloom 1970)
- (a) play it
- (b) eating cereal
- (c) shake hands
- (d) see window
- (e) no go in

(14) French (Lightbown 1977)
- (a) tomber (fall)
- (b) veut pas lolo (wants not water)
- (c) pas manger (not eat)
- (d) veut lait (wants milk)
- (e) est pas gros (is not big)
- (f) cherche' une autre tasse (look for another cup)

(15) Modern Greek
- (a) kani padhl (makes puzzle)
- (b) thelis tili (want-2s cheese)
- (c) kani gata (makes cat)
- (d) en selis (not want-2s)
- (e) ehi sokolata (has chocolate)
- (f) ftiaksume supa (make-1p soup)

(16) Italian (Schaeffer, 1990)
- (a) tanti ocattoli porta (many toys brings)
- (b) vado giostra (go-1s round-about)
- (c) pendo chetta (take-1s this)
- (d) butto ia (throw-1s away)
- (e) la vado (there go-1s)
- (f) voio mica (want not)

Recall that in adult pro-drop languages null subjects are realised as pro licensed by AGR-S under the condition of Spec-Head agreement. In view of the assumption that prefunctional child speech lacks functional categories, including AGR-S, it is unlikely that null subjects are realised as pro. A pro in the Spec of VP will not be licensed simply because the configuration does not satisfy the Spec-Head agreement requirement.

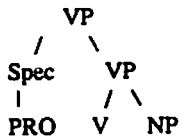
There is a further reason why null subjects in early child language are not likely to be realised as pro. The Modern Greek examples (15b,c&d) were

intended to have the following meanings, respectively: "I want cheese", "You draw a cat" and "I don't want to...". In other words, the null subject in (15b&d) is meant to be first person singular, whereas the agreement features on the verb are second person singular; on the other hand, in (15c) the null subject is meant to be second singular, whereas the agreement features on the verb are third person singular. These facts show clearly that there is a lack of agreement between the features on the AGR element and the null subject similar to the lack of agreement in sentences with overt subjects discussed earlier in this paper. We concluded there that to avoid a violation of the Spec-Head agreement condition the AGR element should be assumed to be attached to the verb instead of projecting its own X-bar structure. With respect to the phenomenon of null subjects these facts imply that the null subject cannot be a pro because if it were there would be a clear violation of the identification requirement discussed above in relation to Rizzi (1986).

Assuming this conclusion to be correct the obvious question that arises is: How are null subjects in early child speech realised? Note that the implicit idea that apparently subjectless sentences have a null subject is forced on us by the general principles of UG, more precisely the Principle of Full Interpretation of Chomsky (1986a) which requires, among other things, that the VP predicate be licensed by a c-commanding subject. This is the requirement known otherwise as the Extended Projection Principle (cf. Chomsky (1981)). There is a sense in which the decision as to which empty category realises null subjects in child speech is forced on us by the general theory of acquisition developed above; it must be a category whose licensing does not depend on a functional category, as is the case with pro, but on the general principles of UG.

Given the restricted repertoire of the existing empty categories it can only be PRO. Unlike pro the licensing of PRO depends on the requirement that it be ungoverned (the so-called PRO Theorem). We concluded earlier that the adjoined Spec position of VP in (4) is not governed by the verb due to the fact that c-command is blocked by the first projection of VP. Thus, sentences with null subjects in child speech are concluded to have the form in (17) below:

(17)



However, this conclusion raises an immediate problem, namely the PRO is not controlled and yet seems to have a referential interpretation. As is well-known in adult speech non-controlled PRO tends to have an arbitrary interpretation as can be seen in examples such as "It is difficult PRO to predict the future.". In child speech, however, null subjects have a referential interpretation whereby

their content can easily be recovered from the context. Our account of the fact that PRO subject in child speech has a referential interpretation will rely on the fundamental assumption that functional categories are missing.

Manzini (1983) argues that PRO is an anaphoric element which in obligatory control constructions such as "John tried [PRO to leave]" is bound by the matrix subject. Like all anaphoric elements it is subject to Binding Condition A which requires anaphoric elements to be bound inside their Governing Category. In obligatory control constructions the Governing Category of PRO is the matrix clause which contains the binder, i.e. the matrix subject. Arbitrary control constructions differ in that the matrix clause, i.e. the Governing Category, does not contain a suitable binder. As a result the PRO is assigned an arbitrary interpretation by a default mechanism of the grammar. The point to stress with respect to this analysis is that in both obligatory and arbitrary control constructions PRO can be taken to have a Governing Category, differing as to whether the latter contains a suitable binder.

Like all empty categories PRO can be assumed to be subject to the requirement that it has a Governing Category. Among the categories which are assumed in the literature to determine the notion of Governing Category is AGR, i.e. a functional category (cf. Chomsky (1981) and Aoun (1985)). In fact, most of the categories listed in Wexler and Manzini (1987) which determine Governing Categories across a broad range of languages are functional, e.g. TNS and Mood. This fact can be understood to imply in general that the notion of Governing Category is crucially defined by a functional category of some sort, the choice being subject to parametric variation, as Wexler and Manzini argue (incidentally, this fact provides additional support for the hypothesis that parametric variation is determined by functional categories.). Turning now to child speech and the structure in (17) above, the absence of functional categories implies that PRO does not have a Governing Category. This situation can be understood to result in a failure to find an antecedent for PRO within a syntactically defined domain, thus opening the possibility of finding an antecedent in a discourse context. In other words, this reasoning leads to the conclusion that in child speech PRO is controlled by a discourse antecedent[1].

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[1]In the absence of a Governing Category for PRO it may be argued that the possibility of assigning arbitrary interpretation to the null subject is not excluded (Manzini, p.c.). It is a common assumption, however, that null subjects in early child language always have a referential status. It seems that the [arb] feature is not as yet part of the conceptual apparatus of the child, or at least, it is not as yet grammaticalised. Notice that NP arguments also at the prefunctional stage have a definite referential status despite the fact that determiners are missing. In early child Greek, for example, it is the definite interpretation of NP arguments that is intended on the part of the child despite the fact that, in the target grammar, the presence of a determiner is obligatory in the same context. It could, therefore, be argued that there is a (semantic) condition on the interpretation of arguments in early child language that restricts the feature specification to [+definite] and

There is experimental evidence supporting the conclusion that early child speech lacks syntactically defined control relations. McDaniel and Cairns (1990) have shown that even in obligatory control constructions children may interpret PRO as being coreferential with a discourse antecedent rather than the syntactically appropriate one in the matrix clause. I will take this evidence to suggest that child grammar allows PRO to have a referential status not exclusively in control environments. The fact that children may either opt for an antecedent provided by the context or the actual antecedent in the structural representation (the latter being the only choice in adult grammar) is taken to indicate that the reasons responsible for the restrictions on interpretations in the adult grammar are missing in child speech. Above we identified these reasons as involving crucially functional categories, that it is these categories which play a crucial role in determining the notion of Governing Category which in turn plays a crucial role in determining the domain in which an antecedent for PRO can be found.

To summarise, missing subjects in child speech are argued to be structurally realised as PRO on the assumption that this empty category is made available directly by UG, its distribution being regulated by configurational constraints (government). In the absence of AGR null subjects cannot be pro as in the apparently similar phenomenon in adult language. Null subjects in adult language are the result of parameterisation as opposed to child language where missing subjects are crosslinguistically available given that their occurrence is allowed by UG, the latter not being subject to parameterisation. PRO in child speech has free definite reference recovered by contextual information.

4 Conclusion

In this paper I have suggested an alternative theory of acquisition which assumes a maturational approach associated exclusively with the emergence of functional categories. UG principles are argued to be available throughout the process of linguistic development. On the assumption that parameters are associated with functional categories, the claim with respect to language acquisition in the prefunctional stage is that parameterisation is lacking. The prediction on the basis of the theory suggested is that child speech data crosslinguistically are expected to exhibit certain similarities on the grounds that speech pattern at the stage in question is regulated by principles of UG. Variation in word-order and the crosslinguistic availability of null subjects have been argued to be consequences of the non-parameterised prefunctional grammar.

[+referential] (Chao, p.c.).

On the basis of child speech data from a relatively broad range of languages I have shown that the functional category, AGR, responsible for fixing the position of subjects as well as for licensing a null subject in the corresponding adult grammars is missing. Thus, missing subjects are not instances of pro given that the distribution of the latter crucially depends on the presence of the AGR category. Instead, I have argued that the empty category involved in subjectless sentences is PRO given that its availability is determined by UG and that the requirement imposed on its distribution is fulfilled in the relevant configuration.

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