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Null Arguments in Early Child Grammars: A Minimalist Approach

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Abstract

The purpose of this paper is to reconsider the problem of null arguments, and in particular of null subjects, in early child grammars, under a theoretical approach that eliminates empty categories such as PRO and pro. In particular, we argue that thematic properties are represent by means of the aspectual properties of the predicate. Theta-properties raise, under F-movement, from the VP-shell and enter a checking configuration with the D(P) argument in spec,IP. Assuming that weak features are the unmarked value, a weak D-feature, will give rise to a null argument. The association of theta-properties with an argument interpretation is contigent on the interpretation of T, under the formation of the (C, T) dependency.

1. Null subjects and empty categories

One of the most well-known characteristics of early child grammars is the possibility of allowing for null arguments, as in the examples below:

(1) *English*
- a. Play it
- b. Eating cereal
- c. Shake hands
- d. Want more apple

(Bloom (1970) cited in Radford (1990))

(2) *Greek*
- a. Exi paputsi
  has shoe (=I have a shoe/shoes)
- b. Thelis psomi
  want-2s bread (=I want bread)
- c. Skupisi ti kaekla mas
  dry-3s the chair-ours (=I dry our chair)
- d. Na katevaso
  part. get-down-1s (=I want to get down)

(3) *German*
- a. Esse pudding
  eats pudding
- b. Brauche lala
  need pacifier
- c. Schuh anziehen
  shoe take-off
- d. Haare waschen
  hair wash

(cited in Weissenborn (1992))

A number of questions arise with respect to null subjects in early child speech. Probably the most important one is how null arguments are syntactically represented, or to be more precise what sort of empty category is involved. This question becomes even more challenging for those cases where null subjects do not constitute a grammatical option in the target language. For example, although null subjects are found in child English, German and Greek it is only in the last case that null subjects are allowed in the adult grammar, given that Greek is a pro-drop language. In other words, (4) below is grammatical in adult Greek, but ungrammatical in English and German.

(4)
- a. Thel*o* na fa*o*.
  Want-1s prt eat-1s
  "I want to eat."
- b. *Want to eat.
- c. *Wolle essen.

The question is then what property of child grammars allows for this apparent 'pro-drop', and how children of a non-pro-drop language set the parameter correctly. In the present paper we will mainly attempt to provide an account with respect to the first question, that is how null subject are syntactically represented (1)-(3). Once an analysis is provided, we will argue that the answer to the second question follows from the properties associated with functional heads such as T, Agr, and C.

Before we present our analysis let us first examine briefly some of the proposals that have been put forward in the literature and consider some of the problems associated with them. In an early study Hyams (1986) argues that in early child grammars Inflection is pronominal as in the adult grammar of pro-drop languages (cf. Chomsky 1981):

(5) [I' [I Pro/Aux [VP...]]]

Thus children start from the 'pro-drop', i.e. the default, value of the parameter. The problems with this analysis have been discussed in subsequent work by Hyams herself as well as other researchers.

Hyams (1992, 1994a), on the other hand, argues that the ec is a pronominal (pro) which is licensed under spec-head agreement with an A or an A'-position. The type of Agreement that licenses pro is subject to parametrization. Accordingly, pro-identification is satisfied in two ways: in spec,IP (an A-position), as in pro-drop languages (eg. Italian, Greek) which have agreement (Agr-identification), or by movement of pro to spec,CP, as in child English. This

movement renders spec,CP an A-position; pro is identified under topic-drop (topic-identification), as in adult German topic-drop constructions:

(6) a. [IP pro [I]....]]
b. [CP pro_i [C] [IP t_i [I]...]]

(7) Habe es gestern gekauft.
Have-I it yesterday bought.
"I bought it yesterday."

A rather similar analysis is argued for by Rizzi (1994) who argues that the ec is a null constant, namely, a [-pronominal, -anaphoric, -variable] category. In other words, the null argument is a non-variable R-expression bound by a null non-quantificational operator in an A'-position. Crucially though, binding takes place only when possible: if the null subject occurs in the root of the (truncated) clause-structure binding cannot take place, and therefore it does not. The null argument then is interpreted under discourse identification.

Under the last two analyses null subjects in child language correspond to some sort of a null topic. In Hyams' analysis, discourse identification is derived under topicalisation, while in Rizzi's it follows from the truncated structure. With respect to the first approach, the question is why children should first topicalize and then drop the topic instead of simply realizing the DP overtly. Moreover, both analyses predict, albeit in different ways, that when there is a wh-phrase present there can be no null subjects: for Rizzi, this is excluded because then the null subject will not be at the root and discourse identification will fail; for Hyams, if there is a wh-phrase in spec,CP the subject cannot be topicalized, and therefore it must be overly realized lower down in the structure. However, Radford (1995) argues that it is possible to find wh-questions with null subjects, as in the examples below:

(8) a. Where put?
b. What say?
c. Where go drop it?

If the data in (8) are correct, they provide a counterexample to the approaches just presented.

An alternative account is to treat null subjects as PRO. For example Tsimpli (1992) argues that in the absence of functional projections in the early stage of language acquisition, PRO can be adjoined to the (left or right periphery of the) VP as in (9):

(9) [VP [PRO VP]]

PRO in this position lacks a governor (i.e. there is no Agr present), and therefore the PRO-theorem is satisfied. The interpretation of PRO is derived by the discourse. The arbitrary interpretation of PRO does not arise, since there is no generic T present.

Hyams (1994b), Sano & Hyams (1994) also argue for a PRO analysis, albeit with PRO in spec,IP: when I is underspecified for Tense (and Agreement) there is no V-raising, and therefore PRO is licit because it remains ungoverned. When T becomes specified (with consequent V-to-I raising) null subjects will disappear in languages like English. The two representations are given in (10) and (11) respectively:

(10) [IP PRO [I] [VP shake hands]]
(11) [IP John/*PRO [I shakes][VP t_i hands]]

According to the Sano and Hyams' analysis, once auxiliaries and past tense emerge, subjects will start being obligatorily realized, and the ratio of null subjects will drop. There are, however, two problems with respect to this analysis: first, it does not account for the possibility of having a non-finite form with an overt subject, as shown in (12):

(12) a. Jem have it.
b. Duck want bread.
c. Mummy do it.
d. Mummy doing dinner.
e. Bee going window.
(Radford 1990)

The data in (12) can only be accommodated under some extra stipulations. The second problem, is that (11) can be problematic in English, if one assumes that English has no V-to-I raising. Thus the productive use of auxiliaries, and not of past tense, should be the only trigger for the non-pro-drop option.

The discussion so far shows that the status of null-subjects in child language is far from clear. To a very large extent the diversity of approaches stems not just from the puzzling data, but also from the theory of empty categories itself. That is the repertoire of ec's and their characterisation as +/-anaphor and +/-pronominal elements requires the specification of a certain context where each of these ec's may occur (eg. governed vs. ungoverned positions) with some extra requirements that determine their antecedent (eg. Agreement, another DP, etc.).

In the GB framework, the postulation of empty categories was necessary to ensure that thematic properties were syntactically represented, even if there was no PF-realisation. In the minimalist framework of Chomsky (1993, 1995) the theory of ec's is less than clear: (wh-) traces reduce to copies, the notion of government is dispensed with, and anaphoric-binding reduces to movement. Although the implications for null arguments in language acquistion are obvious, the analysis is not. It is the aim of the present paper then to outline an alternative approach to ec's and consider the early child data within a new, even if schematic, perspective.

2. Empty categories and Aspect

Before we consider the child data, we will outline the analysis of Manzini and Roussou (1997) with respect to PRO (and A-movement). Chomsky (1995) assumes a

configurational approach to thematic properties, of the type argued for by Hale and Keyser (1993). Another possibility is to take thematic roles to be the by-product of the aspectual (*Aktionsart*) properties of lexical predicates (cf. Dowty 1991, Tenny 1994, among others). Borer (1994) and Arad (1996) argue that arguments are licensed as spec's to Asp heads. For present purposes, let us assume that thematic properties are indeed features realised as part of the aspectual make-up of the predicate. The configuration we will assume is that of a VP-shell where V_{OR} stands for Originator (the prototypical Agent), and V_M for the event measurer (the prototypical patient) (cf. also Salles 1997); that is each V in the VP-shell bears some aspectual specification:

(13) $[_{VPOR}\ V_{OR}\ [_{VPM}\ V_M\ ]]$

Manzini and Roussou (1997) argue that if thematic/ aspectual features are interpretable, but weak, then the DP argument can be directly merged in the position where it surfaces. For example, in a simple raising construction as in (14), the subject *John* is directly merged to spec,IP to satisfy the EPP, i.e. the strong D feature of I. The object *Mary* is directly merged in spec,V_M, if we assume that V_M bears a strong Case/D feature. This derivation is indicated in (14):

(14) $[_{IP}$ John I $[_{VPOR}$ kissed $[_{VPM}$ Mary $V_M]]$

The DP argument *John* is associated with the OR feature (the theta-role) by means of Move-F: OR is attracted to the checking domain of the DP. In technical terms, some -interpretable feature of the DP (call it [Asp]) needs to be checked, triggering F-movement of OR which in turn adjoins to I:

(15) $[_{IP}$ John OR-I$[_{VPOR}$ kissed$_{OR}$ $[_{VPM}$ Mary $V_M]]$

The advantage of this approach is that it eliminates the presence of A-traces (the empirical justification is discussed in detail in Manzini and Roussou (1997)).

The elimination of PRO follows along similar lines: in the absence of a D-feature in the infinitival I, the embedded thematic property is attracted by the first DP that it comes across, namely the subject of the matrix clause:

(16) a. John tried to eat
b. John OR_1-OR_2-I $[V_{OR1}$ tried [to V_{OR2} eat]

Arbitrary control arises when there is no DP present and I/T is bound by a generic/habitual operator in C. Technically again, movement of I to C, for reasons that have to do with the interpretation of the (C, T) dependency, carries along, as free riders, the Asp features that have adjoined to I (DEL stands for DELIMITER, which is associated with the adjectival predicate *easy*):

(17) a. It is easy to work.
b. [is-OR-DEL-C][it $is_{OR\text{-}DEL}$ $[A_{DEL}$ easy [to V_{OR} work]]]]

Thus depending on whether T itself is interpreted as specific or not, Asp will be interpreted accordingly.

Consider pro, on the other hand. Manzini and Savoia (1997) argue that pro reduces to a different realization of the D-feature. While in English the strong D-feature of what they call I_{CL} (nominal inflection) is satisfied by merging an overt DP in the spec, in subject-clitic languages, it is satisfied by merging a clitic in the head position; finally in null-subject languages of the Greek type, nominal inflection is not realised separately, but is recovered by the verb in I in the form of verbal affixes, as (4) above shows (cf. also Roberts and Roussou 1997). When the subject is overtly realized as a DP, it occupies a topic position, as have been argued quite extensively for null-subject languages.

The implications of this approach for language acquisition are clear: if there are no ec's, such as PRO, pro, and DP-traces, then the issue of the nature of the ec in early child grammars does not arise. Null subjects in child language should then reduce to either a theta-property bound by D (also in the form of nominal I) or C. These two cases, are not actually two different alternatives: if there is no overt D/nominal I, then the interpretation of the null argument will be dependent on that of I; that is, if T is interpreted as specific, then the null argument will also be interpreted as a pronoun-like element, choosing any referent in the discourse. Before we provide empirical evidence regarding language acquisition for this analysis, we need to establish whether thematic properties are syntactically represented in early child grammars. We will consider this issue in the next section.

3. Thematic properties in child grammars.

If theta-roles are the by-product of the aspectual properties of the predicate, the question is in fact, whether children are aware of aspectual distinctions at the stage under discussion. Indeed it has been observed by a number of researchers that children master aspectual distinctions (eg. stative vs. non-stative) quite early (Antinucci and Miller 1975, Brown 1973, Tsimpli 1992). Brown (1973) observes that although children in general overgeneralize morphemes suchs as *-s*, *-ed* during the various stages of language development, they never ovegeneralize the *-ing* form to the 'wrong' class of verb. In other words, they never produce forms of the following type with stative verbs:

(18) a. *Wanting
b. *liking

This is interesting, especially since the *-ing* morpheme is one of the very first ones to appear. Similar data are discussed in Tsimpli (1992) who furthermore argues that aspect is alredy present in the so called 'prefunctional' stage. Tsimpli takes Asp to correspond to the <e> position in the sense of Higginbotham (1985), and therefore to form

part of the argument structure of the predicate. Thus aspectual properties and argument structure are linked.

Radford (1990) argues that child grammars at this stage are lexical-thematic, in that children have a syntactic representation of theta-roles, such as Agent and Patient, as these are determined by the argument structure of the predicate. This observation, along with the idea that children are aware of aspectual distinctions at this stage, translates rather straighforwardly to the idea endorsed in the present paper: thematic information is syntactically represented by means of Asp features realized on verbal heads within the VP-shell. Therefore thematic-properties have a syntactic realization in early child grammars.

What remains to be considered next is how thematic-properties are associated with an argument interpretation, when there is no overt DP, and furthermore what allows for null subjects at this stage, even though these may not permitted by the target grammar.

4. Null arguments and the clause structure.

Note that, as already mentioned, an underlying assumption in the various approaches to null subjects refers to the amount of structure that is available in early grammars; that is whether all functional categories are present (eg. Hyams 1986, 1992, 1994a&b, among others) or not (eg. Radford 1990, Tsimpli 1992), or whether parts of the structure can be available giving rise to truncated structures (Rizzi 1994).

Platzack (1994) and Roberts (forthcoming) have independently argued that functional categories are present throughout language acquisition, but that the unmarked option is to associate them with weak features. If so, there is no overt movement or, in more current terms, even merge of an overt element. Platzack calls this the *Initial Hypothesis of Syntax (IHS)*: language learning is essentially guided by the idea that there are no marked values, that is no visible movement. Parametrization then reduces to fixing the marked values of some functional heads, that is determining which functional heads bear strong features in a given language.

Let us assume that the IHS is essentially correct. In other words, in early child grammars, a lexical head, such as V, is associated with functional structure, namely I and C (its extended projection). The presence of functional heads ensures interpretability at the LF interface, in a fashion similar to adult grammars. Where child grammars differ is simply with respect to setting the marked value, i.e. strong feature, of the relevant functional head.

Consider next null subjects. Hoekstra and Hyams (1996) assume a fully-articulated structure with repsect to I which arises from splitting Agr into (at least) Person and Number, as in (19):

(19) C - Person - Number - T-....

They furthermore argue that root infinitives are characterized by the underspecification of Number in the verbal paradigm, which in turn breaks the dependency formed between C and T. Thus T, a pronominal, cannot be interpreted under binding by C. Instead it has to be interpreted as a deictic pronoun, i.e. is its interpretation is discourse-fixed. With respect to pronouns, underspecification of Number in the (D, Num, N) chain, gives rise to a free pronoun, that is a null argument.

Following upon their analysis, let us assume that what indeed creates a 'problem' regarding null subjects in early grammars, is the nominal features between the (C, T) dependency. This can be explained under the simple assumption that these features are heavily parameterized as the morphosyntax of various languages shows. However, following the IHS, we assume that children start not with an underspecification of the relevant features, but with a weak-feature specification. If the relevant nominal inflection is weak, then it follows that there can be no overt DP, since merger of an overt element implies the presence of a strong feature. Null subjects then are expected to arise, as the crosslinguistic data seem to confirm.

Let us illustrate these points with the following data:

(20) a. Play it.
b. Eating cereals.
c. Shake hands.
d. See window.
(Eric 20-22 months (Bloom 1970), cited in Radford (1990))

(21) a. en selis
not want-2s (= I don't want)
b. vali musiki
put-3s music (= you put some music on)
c. exi paputsi
have-3s shoe (=Elli has shoes)
(Elli 20 - 23 months)

The English data in (20) show no agreement; the Greek data in (21), on the other hand, do have agreement. It is crucial to note that Greek has no infinitives or the equivalent of *-ing* participles. However, as the English translation shows, agreement although required by the morphology of the language, it is not always correctly used in the child data (cf. Tsimpli (1992) for a discussion). Thus the English data are ungrammatical in adult speech because there is no overt DP, while in Greek this is so because of the wrong agreement ending on the verb. If, weak features constitute the unmarked value, the problem in (20)-(21) reduces to the absence of the correct setting for the relevant functional heads in both cases. In other words, English children need to learn that nominal inflection is strong and is satisfied by merging an overt DP. In the Greek case the correct setting requires the full realization of the agreement (phi-featues) on the verb.

The question of course is how the thematic properties, which as we argued above are syntactically present, receive an argument interpretation. Recall that when there is no

overt DP, thematic properties in the form of Asp features are carried along with T to C, and receive whatever interpretation is assigned to T: if T (in child language) is bound by a specific operator in C, then the Asp features will also be interpreted as such, namely the interpretation will be that of a pronoun whose referent is determined by the discourse. Note that, as opposed to Hoekstra and Hyams (1996), we assume that the (C, T) dependency, i.e. the quantificational part of the grammar, is always formed. Thus the proposed analysis can account for the occurrence of null subjects in early grammars and account for their interpretation without requiring the existence of a specialized ec.

One further consequence of the proposed analysis is the following: if there is a correlation between null subjects and the temporal properties of the clause in early grammars, then should be some developmental evidence as well. In particular, we would expect to find a further correlation between the obligatory realization of subjects (to be more precise the overt realization of the D-feature one way or another, subject to parametrization) and the development of full T-specifications, modals, auxiliaries, etc.

It has already been noticed in the literature (cf. Hyams 1986), that there is indeed a correlation between the development of auxiliaries, modals and other inflectional elements (such as past tense *-ed*), and the disappearence of null subjects in languages like English. This state of affairs can be easily accommodated under our analysis: let us assume, following Savoia and Manzini (in prep.), that auxiliaries are the realisation of nominal inflections. If so, the problem can once more be located in the parametrization of the nominal inflection.

Instead of taking T to be the trigger though, we could reverse the problem and assume that it is actually the development of nominal features that triggers a set of other developments, such as the productive use of auxiliaries in child grammars. In other words, the nominal features of I, which are prototypically realized by auxiliaries, are set to their correct values at the same time as that of the Person/Number projections. This is consistent with the claim that the (C, T) dependency is present throughout, allowing for the clause to be temporally evaluated even in the presence of a root infinitive or a participial clause.

The correlation between these two types of nominal features, with further implications for temporal specifications is also found in pro-drop languages. For example, in Greek the productive use of past tense goes along with a drop in 'disagreeing' endings, starting roughly from the age of 24 months onwards in our corpus. In particular, the main agreement errors are restricted to 1st and 2nd person singular (even these, however, are mainly found with the verb *want*), while number is correctly produced. Illustrative data are provided in (22) below:

(22) a. epije sto neo
went-3s to-the water (=he went to the water)
b. ti hasame
her lost-1pl (= we lost her)
c. to evghala
it took-out-1s (=I took it out)
d. ses mia biskoto
want-2s one biscuit (=I want a biscuit)
e. ezo ime
here am (=I'm here)
(Elli 25 - 27 months)

(22) compared to (21) for example, shows that considerable drop in disagreeing endings, along with a productive use of past tense (cf. (22a)-(22c)).

One final point that remains to be considered is how overt subjects are to be analyzed at the stage where null subjects also occur, as in the following data:

(23) a. Mommy throw it away.
b. Lois coming.
c. Kathryn read this.
d. Boy jumping in a bathtub.
(Bloom (1970), cited in Hyams (1986))

(24) a. kani palilato Elli
do-3s bicycle Elli (=Elli wants to ride the bicycle)
b. kimate i ghata.
sleep-3s the cat (=the cat is sleeping)
c. kimate ta pedhakia
sleep-3s the children (=the children are sleeping)
d. ftino Elli
spit-1s Elli (=I'm spitting/Elli is spitting)

If, according to the preceding discussion, the parametric values have not been set correctly yet, allowing therefore for null subjects, the presence of overt subjects becomes problematic. One possibility is to assume that the subject in child English, occupies the same spec position as in adult English. Thus D in child grammars can be optionally strong or weak. The problem with this approach is that it considerably undermines the idea that weak features constitute the unmarked value (i.e. the IHS). There is another alternative open though, and that is to assume that overt subjects at this stage have a different status altogether. As already mentioned above, overt subjects in pro-drop languages like Greek, are analysed as topics (or receive focal stress, if they occur in various postverbal positions). What we would like to suggest is that the same extends to child grammars. Thus we can still maintain the initial weak-feature specification. This kind of approach suffices for the present purposes. Further discussion at this point would require a detailed analysis of word order in early grammars, an issue which is beyond the scope of the present paper.

To conclude, we have argued that a theory that does not have ec's such as PRO and pro, can have a clear advantage with respect to the analysis of null subjects in child data. We have assumed that thematic properties are syntactically represented as aspectual features of the predicate. The interpretation of Asp is derived, in the absence of an overtly

realized D-feature, by means of the (C, T) dependency. This kind of correlation between null subjects and the temporal properties of the clause, allows for a further developmental correlation between overt subjects and Tense specifications (eg. auxiliaries, etc.).

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