Agreement, Finiteness, and the Development of Null Arguments

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1. Introduction

As is well-known, children optionally produce null arguments even in languages such as English in which null arguments are not typically licensed. The examples in (1), (cf. Brown 1973) are illustrative.[1]

[1] Unless otherwise indicated all the English child language data in this paper are from the Child Language Data Exchange System (CHILDES) (McWhinney & Snow, 1985).

(1)   Drop bean. (NS= you, Adam 2;4.15)
        Fix Mommy shoe. (NS= I, Eve 1;7)
        Go on track. (NS= train, Adam 2;5.12)
        Daddy broke. (NO= horn, Adam 2;5.12)
        Eve put in. (NO= water, Eve 1;9)

        (NS: Null Subject, NO: Null Object, = referent, child name and the child's age
        (year;month,(date)))

There is a wide consensus that the availability of null subjects relates to properties of the developing I system, but it has proved difficult to specify the precise nature of the relationship. Following ideas of Rizzi (1982) for adult null subject languages, Hyams (1983, 1986) originally proposed that AGR in child grammars is initially specified as pronominal and thus licenses little *pro*. This version of the pro-drop hypothesis has proved untenable, however, in light of the fact that there are significant differences in the distribution of null subjects in child English and adult pro-drop languages. For example, in child English null subjects do not occur in embedded contexts (cf. Valian 1991), though they do occur in child and adult Italian (cf. Rizzi 1992).[2] Our concern in this paper is to explain null arguments in child English, a language in which the adult "target" does not freely license null arguments, and also to explain the cross-linguistic variation that we find with respect to null arguments in early and adult grammars. Thus, the specific questions we wish to address are in (2)

(2)   (i)   What are the null elements in subject and object position?
        (ii)   How are they licensed?
        (iii)   Where do the null arguments of child English fit into the typology of null
                 arguments?

We will propose that the null subject stage in child English is directly related to what Wexler (1992) has called the "optional infinitive stage." We will also suggest that the structure of null subject sentences in child English parallels null subject sentences in adult Japanese and Chinese.

2. Root Non-finite Forms and the Null Subject in Child English

Weverink (1989) first observed that Dutch children pass through a stage in which they freely allow infinitives in root clauses. Wexler (1992) observes that this generalization holds across a wide range of languages, in marked contrast to adult grammars. Some examples from French, German, Dutch, Italian are given in (3).

(3)   Pas manger la poupée.   Pappa schoenen wassen.
        'Not eat the doll'   'Daddy shoes wash'

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[2] It should be pointed out that early English also differs from early German and Dutch with respect to null arguments. In these languages, children topic-drop, that is, null subjects and objects are licensed only in V2 contexts. (See de Haan & Tuijmann, 1988; Verrips & Weissenborn, 1992; Poeppel & Wexler, 1993 and Hyams, 1994.)

Michel dormir.   Ik ook lezen
'Michael sleep'   'I also read'
        (Pierce, 1989)   (Weverink, 1989)

Zahnne putzen.   Anche io giocae.
'Teeth brush'   'Also I play'
Thorstn das haben   Gabiele mangiae.
'Thorsten that have'   Gabriele eat'
        (Wexler, 1992)   (Schaeffer, 1990)

Wexler extends this idea to child English, arguing that uninflected verbs such as those in (4), that occur during the so-called "telegraphic stage", are actually infinitives, which in English happen to be indistinguishable from stems. This hypothesis brings English in line with the other languages discussed above, in which the infinitive is overtly marked.

(4)   Eve sit floor. (Eve 1;7)
       Where penny go? (Adam 2;4.30)
       That truck fall down. (Nina 2;0.24)

Although Wexler does not deal directly with the null subject issue, his optional infinitive analysis leads straightforwardly to the hypothesis that it is the availability of root infinitives that makes null subjects possible in child English.[3] This is the hypothesis that we want to develop in this paper. On this view, then, children's null subjects are not the result of a missetting of a null subject parameter *per se*, as originally argued by Hyams (1983, 1986), but rather derives from an independent aspect of child grammars which is found in many languages other than English, the property which is responsible for root infinitives.

As a point of departure, we note that alongside root infinitives we also find other non-finite forms in root contexts, such as participles. Thus, in English we find frequent occurrences of the progressive participle without the auxiliary, as in (5), while in Romance languages, we find past participles similarly without auxiliary, as in (6).

(5)   Adam laughing. (Adam 2;4.3)
       I brushing. (Eve 1;9)
       Becca making a table. (Nina 2;0.10)

(6)   Visto mao.   Cotta a pappa.
       'Seen kitty'   'Cooked the food'

       Rotta a pallina.   Vista etta.
       'Broken the ball'   'Seen this'

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[3] The term "root infinitives" is from Rizzi, (1994), who provides an alternative analysis of the construction. Rizzi proposes that root infinitives are truncated (VP) structures in early grammar and that child grammars, in contrast to adult grammars, need not project to a CP root. Reasons of space prevent us from a more detailed discussion of Rizzi's analysis.

Porta chiusa.   (from Antelmi, 1992)
'Door closed'

Thus, it seems reasonable to extend Wexler's generalization concerning an early root infinitive stage to include non-finite forms in general. Note that this is a fundamental respect in which early grammars differ from the target adult grammars, which do not license root non-finite verbs. We assume that in the adult grammar of many European languages root non-finite forms are blocked by the specification of T, AGR features in the various I positions. These features must be checked and hence require V-raising at some point in the derivation. The specification of I features is not universal, however; it holds for many, though possibly not all, European languages, but it probably does not hold in many East Asian languages. Thus, we assume this aspect of grammar is subject to language particular variation, as in (7).

(7)   I-FEATURE PARAMETER: I feature(s) are specified (and must be checked off by V-raising by or at LF).
                        + : English, French, German, Italian, ...
                        –: Japanese, ...

For ease of exposition we do not split INFL into various heads; however, our claims can be readily translated into a split INFL system (assuming AGR-S is higher than T). In the adult grammar of English, Tense and agreement features are specified in I; these features of English I, which are 'weak' and hence invisible at PF, are checked off by the verbal morphemes under LF V-raising, as proposed in Chomsky (1992).

The claim that AGR features are unspecified in Japanese is motivated by the lack of overt agreement morphemes (cf. Fukui 1986, Kitagawa 1986, Kuroda 1986) and the non-specification of finiteness in the Japanese I node is motivated by the fact that Japanese embedded clauses always behave like non-finite clauses in sequence of tense phenomena (cf. Ogihara (1989)). Examples in (8) illustrate the latter point.

(8) a. Hanako ga [Taro ga byooki da-tta] to omo-tta.
            nom   nom sick be-PFT   think-PFT
        'Hanako thought that Taro had been sick'
        but NOT 'Hanako thought that Taro was sick'
     b. Hanako ga [wara-tte-iru otoko] o mi-ta.
            nom laughing-NONPFT man acc see-PFT
        'Hanako saw a man who was laughing'
        or 'Hanako saw a man who is laughing' (cf. Ogihara 1989)

In (8a), *datta*, which is an inflected form of the BE-verb, is interpreted as past perfect but not as pure past. If *datta* were a past form exactly equivalent to *was*, the simultaneous reading should be possible, but in fact it is not. In (8b), the verb *waratteiru* in the relative clause can be interpreted as referring to progressive in the past, which is unexpected if it were a present progressive exactly equivalent to *is laughing*. These phenomena of sequence of tense support the view that so-called "tense" morphemes in Japanese are just aspectual and Japanese tense is always

"non-finite" in embedded contexts.[4]

We claim that the child grammar of English differs from the adult's with respect to the parameter in (7): in the early child grammar, the features in I can be left unspecified, whereas in the adult grammar they must be specified, particularly in English. When the features are unspecified in the early child grammar, the verb does not raise to I (given principles of economy) and the verb is non-finite. When the features are specified the verb raises to I at LF for checking purposes and the sentence is finite. This is very much in the spirit of Wexler's proposal that in child grammars finite forms result from verb raising, while root infinitives result from lack of V to I.

In English, we cannot directly observe the raising in the children's data, unlike French (cf. Pierce 1992) or German (cf. Meisel and Müller 1992; Verrips and Weissenborn 1992). The raising takes place at LF in English because the features in I are weak and there is no overt morphological distinction of finiteness in English main verbs.

However, we claim that it is precisely the optionality of verb raising which gives rise to the null subject phenomenon in child English. Under the assumption that the null subject in child English is PRO, the structure of root infinitives is precisely the one in which PRO is licensed (cf. (9a)), while LF raising of V to I blocks a PRO subject (cf (9b)). Thus, the LF-structures are:
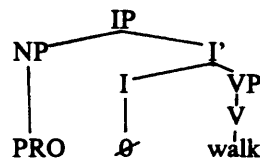
(9) a.   b.
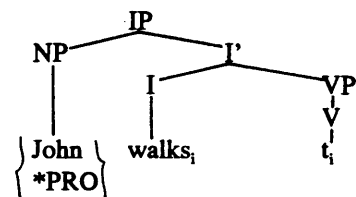
For the purposes of this paper we assume a version of the PRO theorem according to which PRO cannot be governed by a lexically specified head. Thus, V to I raising in (9b) creates an illicit context for PRO.[5,6]

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[4] This does not mean that Japanese sentences, in particular those in the root context, are "tenseless". What we have in mind is the following: unspecified tense is interpreted as finite present by default unless it is specified by the tense of a higher predicate, and aspectual inflections specify "perfect", "non-perfect", etc., with respect to the tense specified by default or by the higher predicate. This is in the line of the tense system in Stowell (1992), but details are yet to be worked out.

[5] Alternatively, we might assume, following ideas of Chomsky and Lasnik (1992), that PRO requires null Case, which must be checked by a "minimal INFL." We then understand minimal INFL to be one which is devoid of lexical content.

[6] Belletti (1990) argues convincingly that Italian infinitives raise to I (parallel to tensed verbs) in apparent violation of the constraint assumed in this paper. We suggest that in Italian and other languages in which infinitives undergo V to I, that the null subject of the embedded infinitive is

We thus follow early proposals by Guilfoyle (1984), Guilfoyle and Noonan (1989) and Radford (1990) in assuming that the null subject of child English is PRO. However, unlike these authors, we are not proposing that it is the absence of functional projections which creates a licit context for PRO, but rather it is the underspecification of I features, and hence of verb raising, which is responsible for the null subject phenomenon in question. In what follows, we provide empirical support for this proposal.[7]

3. Empirical Considerations

3.1. Null Subject and Inflected be

Our analysis makes a number of clear predictions. In English, the verb *be* provides the only unambiguous case of agreement morphology. We thus predict that null subjects will not occur with inflected forms of the verb *be*, since this would entail specification of AGR features and hence verb raising to I. In Table 1, we show the number of null subjects occurring in sentences with the uncontracted *am, are, is* in the corpora of Eve, Adam (cf. Brown 1973) and Nina (cf. Suppes 1973).

TABLE 1:   The proportion of null subjects in sentences containing uncontracted *am, are, is*

File	Age	am	are	is
EVE01-20	1;6-2;3	0/4	0/36	0/109
ADAM01-20	2;3.4-3;0.11	0/1	0/71	13/114 (=11.4%)
NINA01-21	1;11.16-2;4.12	0/0	0/19	2/50 (=4%)

(NINA 08 is not available, hence NINA 01-21 consists of 20 files.)

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pro, which is licensed by verb raising (cf. section 4) and identified by the matrix NP. In these cases, then, control reduces to identification.

[7] Krämer (1993) independently arrives at a similar analysis on acquisition data from one German speaking child and two Dutch children. She observes a high correlation between lexical subjects and finite verbs on the one hand, and between null subjects and root infinitives on the other. On the basis of these data, Krämer argues two points; first, that the Case Filter is operative in early child grammar and hence lexical subjects must occur with finite verbs (or with a null modal & infinitives), and second, that the (predominant) null subject in these early (non-*pro*-drop) languages is PRO.

While we also argue for a PRO analysis of null subjects, we remain neutral with respect to the Case Filter issue. Early child English poses a problem for Krämer's first claim: if uninflected verbs in English are root infinitives (as argued by Wexler, 1992), then early child English shows a very high proportion of lexical subjects with infinitives, which cannot be plausibly argued to involve a null modal or modal interpretation.

To our knowledge, Weverink (1989) was the first to note the correlation between null subjects and root infinitives. She proposes a more pragmatic type of analysis according to which root infinitives are topic-comments structures in which the topic is optional.

As can be seen in Table 1, children use null subjects very infrequently with *am/are/is*. A comparison with these children's overall null subject highlights this result. Table 2 lists the proportion of null subject sentences out of sentences containing lexical verbs (i.e., non-copulas, non-auxiliaries) for Eve and Adam (from Hyams and Wexler, 1993) and the proportion of null subject sentences out of all utterances for Nina (from Pierce, 1992).

TABLE 2:   The overall proportion of sentences with null subjects

Child	Age	Proportion	
EVE	1;6-2;1	26%	
ADAM	2;5-3;0	41%	
NINA	1;11.16	44%	(File NINA01)
	2;2.6	11%	(File NINA13)

Although the data in Table 2 do not cover the whole period covered in Table 1, it is obvious that the children produce null subjects with uncontracted *am/are/is* far less frequently than with lexical verbs, thus supporting the analysis proposed here.

One final point regarding *be* concerns its optionality. It is well-known that *be* is often omitted in obligatory contexts (Brown, 1973), as in (5) and in predicative constructions, Hyams and Jaeggli (1987) and more recently, Wexler (p.c.) have proposed that this is directly related to the availability of I features. Hyams and Jaeggli suggest that *be* is an expletive verb inserted into the derivation to carry tense and AGR features (see also Scholten, 1988). It thus follows from economy considerations that if I is unspecified, *be* will be omitted.[8] This result also follows on the account proposed here.

3.2. Null Subject and Modal

A second prediction of our analysis is that the null subject of child English should not co-occur with modals, which are inherently finite in English and appear in I. The data in Valian (1991) shows that this is the case for the corpora she examined (N=21). While modals do occur during the stage at which children produce null subjects, they occur almost always with overt subjects, as shown in Table 3.

TABLE 3:   The proportion of overt subjects in sentences containing the modals (from Valian 1991)

	Group I	Group II	Group III	GroupIV
Mean Age/MLU	2;0/1.77	2;5/2.49	2;5/3.39	2;7/4.22
%	94	95	98	99

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[8] Wexler (p.c.) further observes that this accounts for the interesting and previously unexplained fact that children do not use the non-finite form of *be* during the optional infinitive stage, in contrast to their behavior with lexical verbs. Thus, '*I be good*' occurs rarely, if at all. As Wexler notes, this also follows on the assumption that *be* is expletive and hence needed only for feature checking.

3.3. Null Subject and -ed

The predicted incompatibility between null subjects and finiteness does not appear to hold for the past tense morpheme -ed. However, we will argue that this problem is only apparent. Table 4 shows the proportions of null subjects with verbs inflected with -ed.[9]

TABLE 4: The proportion of null subjects with verbs inflected with -ed

File	Age	%
EVE01-20	1;6-2;3	22.5% (9/40)
ADAM01-20	2;3-3;0	56.5% (13/23)
NINA13-21	2;2-2;4	18.8% (3/16)

A comparison with the corresponding data in Table 1 and 2 for each child indicates that null subjects occur substantially more with the morpheme -ed than with am/are/is (cf. Table 1), and the proportion is close to the overall proportion in Table 2. (Note that Nina began to produce the morpheme -ed only after the age of 2;2, hence her 18.8% in Table 4 should be compared with the 11%, which is at the comparable age, in Table 2).

The same observation holds when irregular past tense forms are included. The data in Table 5 are from Bloom (1990), who calculated the frequency of null and overt subjects collapsing regular and irregular past tenses for Adam, Eve and Sarah .

TABLE 5: The proportion of null subjects with regular and irregular past tense verbs (adapted from Bloom, 1990, 497)

| File	Age	%
EVE01-10	1;6-1;10	41.5% (17/41)
ADAM01-10	2;3-2;7	45% (36/80)
SARAH01-20	2;3-2;7	25.9% (7/27)

Clearly, null subjects co-occur with -ed. Some examples are given in (10).

(10)   Goed on that way. (Eve 2;2, NS= cow)
       Dropped a rubber band. (Adam 2;6.17, NS= I)
       Slapped Becca and Rachel. (Nina 2;3.28, NS= I)

On the face of it, these data appear to show that children use null subjects in finite clauses, clauses requiring verb raising, contrary to our hypothesis. We propose, however, that the -ed morpheme

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[9] We excluded from the count subject wh-questions such as "What happened?" because such sentences do not allow null subjects for independent reasons. For Adam, this adjustment makes quite a difference since most of his early use of -ed is in "What happened?".

at this stage is *not* analyzed as a tense morpheme, but rather as a perfective aspect marker.[10] The relevant structure is roughly as in (11). Note that the I position is unspecified (irrelevant projections omitted.).

(11) ...

(Irrelevant projections omitted)
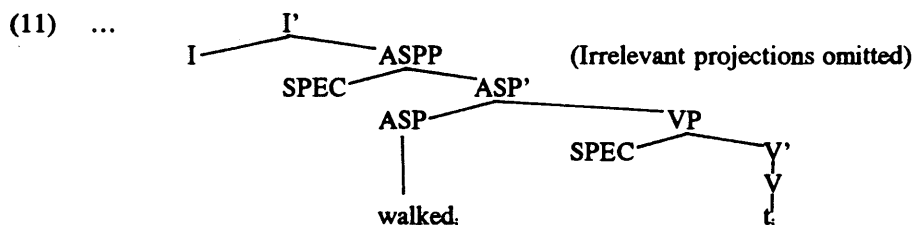
There are several facts which give this hypothesis a priori plausibility. First, as illustrated by the data in (5), English speaking children use the progressive participle at this stage, also without an auxiliary. We assume that such sentences have a structure of the form in (11), where I is unspecified and ASPP is headed by progressive *-ing*. Second, children acquiring languages other than English, in which the past tense and participle are distinct, as in the examples in (6), give unambiguous evidence that perfect participles can appear in root contexts in early child language. Thus, if the verbal forms in (10) are not participle, then English represents a curious gap.

In addition to the considerations just noted, we think that our proposal that children prefer an analysis of *-ed* as a perfective aspect marker rather than a past tense marker follows from principles of economy of derivation. Assuming children (and adults) prefer the shortest derivation, all else being equal, then a movement of V to ASP is more economical than a movement to the higher I position. For adults, all else is not equal, since I must be specified (cf. section 4 discusses the switch to the adult grammar of English). For children, however, our claim is that all else is equal since I may be left unspecified. Moreover, we speculate that the semantic distinction between the English past tense and present perfect may not be available at the relevant age. The present perfect expresses a relation between a past event time and the present. In general, temporal relations (as expressed by temporal adverbs, for example, and other relational notions such as size, distance, quantity) are notoriously difficult for children at this age. Thus, for children, an aspectual *-ed* structure as in (11) is forced by economy of derivations (See Sano (in preparation) for extensions of such an idea).

3.4. Null Subject and -s

Turning to 3rd person singular *-s*, we find that it appears with null subjects at the frequencies given in Table 6. Thus, null subjects occur less frequently with *-s* than with *-ed* (cf. Table 2), but not as infrequently as with *am/are/is* (cf. Table 1).

TABLE 6:   The proportion of null subjects in sentences containing *-s*

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[10]   The more general hypothesis that children acquire aspect before tense was first proposed in Antinucci and Miller (1976), with Italian and English data. See Tsimpli (1992) for a more recent and theoretical proposal, which covers Greek, German, English, Irish and some others.

File	Age	%
EVE01-20	1;6-2;3	10% (5/50)
ADAM01-20	2;3-3;0	25.8% (16/62)

We will tentatively suggest that these forms are also participles which do not raise to I at LF and that they mark number agreement but not person agreement.[11]

3.5. Null Subject and Finite Subordinate Clauses

A further empirical point concerns Valian (1991)'s observation that English speaking children do not use null subjects in embedded finite contexts, in contrast to Italian children (cf. Rizzi 1992). Valian reports that in 21 children ranging in age from 1;10 to 2;8, there were no occurrences of null subjects in 123 finite subordinate clauses. Roeper and Weissenborn (1990) confirm this for French and German though they do not provide figures. This is predicted by our proposal that the null subject is PRO.

To sum up the arguments so far, we have proposed that the null subject stage of child English is not an independent phenomenon, but rather is related to the early optionality of root non-finite forms. Both phenomena derive from the underspecification of AGR/T features in I. This proposal is empirically supported by the fact that null subjects do not appear in unambiguously finite contexts, for example in constructions involving am/are/is and embedded finite clauses. We have proposed that apparent cases of past tense (and 3rd person -s) morphology in null subject sentences are participial affixes — which occur inside a low ASPP, and hence do not block big PRO.

4. Null Object in Child English

Next we briefly discuss null objects in child English. Hyams and Wexler (1993) report a null object rate of about 9% in child English (averaging across Adam and Eve) as compared to a null subject rate of around 40-50%. In addition to frequency, the null subject and null object of child English differ in another respect, which is that the null object is invariably third person (and deictic). In Table 7 we report the number of 3rd person vs. non-3rd person null objects as inferred from context.[12]

TABLE 7:   The proportion of 3rd person null objects to all null objects

File	3rd Person	Non 3rd person
EVE: 02,04,06,08,10	27	(1)
ADAM: 06,08,10,12,14	23	0

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[11] This follows in the spirit of Kayne's (1989) proposes that English -s marks number, i.e., singular, not person and is thus consistent with the observation that participles typically mark number and gender, but not person.

[12] The data in Table 7 are obtained by examining sentences with obligatory transitive verbs such as *pull, get,* etc.. We excluded intransitive, optional transitive, and ditransitive verbs.

The only example of (possibly) non-3rd person null object is *"Mommy help"* in Eve 04, which can be acceptable as an intransitive in adult English. Thus, it can be said that null objects in child English are third person only. Note that it is not the case that children at this age never produce first or second person pronouns in object position. We find some occurrences of them in the files, as shown in TABLE 8.

TABLE 8:   Frequency of overt 1,2,3 person object pronouns.

File	*me*	*you*	*it/them/him/her*
EVE 01-10:	10	1	96
ADAM 05-14:	30	16	193

Some example sentences are given in (12).

(12)   Tickle me. (Adam 2;4)
        Doggie bit me. (Adam 2;5)
        See me. (Eve 1;8)
        I see me. (Eve 1;9)
        Mommy will have to take you down. (Adam 2;4)

This is in contrast to null subjects. Although we do not yet have quantitative data, it is clear from cursory examination of the data that null subjects can be of any person. Some examples are given in (13).

(13)   a. NS= 1st person
                Build house (Adam 2;5.12)
                Tomorrow go fishing (Adam 2;7.14)
                Drop a nut. (Eve 1;7)
        b. NS= 2nd person
                (S)cratch needle. (Adam 2;5.12)
                Need one? (Adam 2;5.12)
                Spilled eggnog. (Eve 1;6)
        c. NS= 3rd person
                Bite me boot. (NS= Doggie, Adam 2;5.12)
                Where go? (NS= Humpty Dumpty, Adam 2;7.14)
                Falled in the briefcase. (NS= doll, Eve 1;10)

        According to our proposal, the null object cannot be the same entity as the null subject, since PRO is blocked in object position. Hence, the differences between them are expected. As for the identity of the null object in child English, our hypothesis is that it is an empty category bound by a null topic. This would explain the invariant 3rd person status of null objects in contrast to null subjects, because operator bound elements are 3rd person, as discussed in Cardinaletti (1990), and as exemplified by cleft sentences such as (14).

(14)   a. It is me that is going downtown.
        b. It is those men that are going downtown.

(14a) shows that the operator bound element, which is the subject of the embedded clause, is third person even when the referent is 1st person. (14b) shows that the focus NP in the cleft agrees with the number of the operator bound element in the subject position of the embedded clause, hence the operator bound element in (14a) must have a relation with the focus NP *me*. Thus, the third person status of the operator bound element must be coming from the person of the operator and not from the expletive *it* or anything else.[13]

5. Shift to Adult Grammar and Typology of Null Subjects

A question which we have not yet addressed is how English speaking children move from this stage to a grammar which does not license null subjects. Another question concerns the universality of the phenomenon. That is, do children acquiring other languages go through a PRO stage? Since these issues are related, we discuss them in tandem.

What the English speaking child must learn is that I-features must be specified, as stated in (7). This will trigger verb raising to I, which will block PRO and exclude root non-finite sentences. We propose that the positive evidence for LF verb raising in English is provided by pleonastic *do*. We adopt the null hypothesis that principles of economy of derivation are available to children from the beginning: there are no unnecessary steps in the derivation. Thus, the presence of semantically empty *do* in a sentence such as "*I don't want tapioca*" signals to the child that I-features must be specified, since if I could be left unspecified, the most economical derivation for a negative sentence would not involve *do*-insertion (i.e., negation would be expressed roughly as "*I no want tapioca*"). The insertion of *do* into I is representationally equivalent to verb raising, in so far as it results in an illicit configuration for PRO. Alternatively, it might be that *do* undergoes expletive replacement by the verb at LF; hence the presence of *do* entails verb raising at LF which blocks PRO and triggers a reanalysis.[14]

We come finally to the cross-linguistic question. We make the natural assumption that children do not differ at the initial state and hence, that children acquiring languages other than English also go through an initial stage in which I may be unspecified, thereby licensing PRO.[15] However, if it is indeed V to I that excludes PRO and root non-finite sentences, then children acquiring languages with clear (that is, overt) evidence of V to I movement such as Italian, Spanish, Catalan, should not go through a protracted stage of PRO and root non-finite stage. As

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[13] It is still necessary to explain why null topics in child English cannot be first or second person. If a null topic is *me*, then the referent of a trace of a null operator is *me*, regardless of third person of the operator. What seems to be relevant is the fact that the referent of a first or second person pronoun is determined independently from the previous discourse, unlike third person pronouns. At any rate, we must leave this open here.

[14] Our triggering hypothesis makes the prediction that pleonastic *do* is lacking during the null subject stage. This is a topic for further investigation. See Sano (in preparation).

[15] Grinstead (1994) provides some preliminary evidence from very early Spanish and Catalan that supports the hypothesis of an early PRO stage in these languages.

we can see from Table 9, which reports the frequency of root infinitives in these languages, this hypothesis is confirmed. Root infinitives rarely occur, in marked contrast to their frequency in the Germanic languages, reported in Table 10.[16]

TABLE 9:   Frequency of root infinitives in V to I languages.

Italian	Diana	2;0	.00
(Guasti, 1992)	Martina	1;11	.16
		2;1	.04
Italian	Paola	2;0-2;5	.07
(Schaeffer, 1990)	Daniele	1;7-2;6	.08
	Massimo	1;7-2;6	.06
	Gabriele	1;7-2;6	.07
	Orietta	1;7-2;6	.05
	Elisabet.	1;7-2;5	.10
	Frances.	1;9-2;5	.05
Spanish	Damariz	2;6-2;8	.05
(Grinstead, 1993)	Juan	1;7-2;0	.12
		2;1-2;4	.10
Catalan	Guillem	1;11-2;6	.03
(Torrens, 1992)	Marti	2;0-2;5	.03
cf.			
English	Eve	1;6-1;10	.78

TABLE 10:   Frequency of root infinitives in V2 languages.

Swedish	Freja	1;11-2;0	.38
(Platzack)	Tor	1;11-2;2	.56
(from Guasti,1992)	Embla	1;8-1;10	.61
German	S	2;1	.46
(Weissenborn)		2;2	.40
(from Guasti, 1992)			
Dutch	Laura	1;8-2;1	.36
(Weverink,1989)	Tobias	1;10-1;11	.36
	Fedra	1;10-2;1	.26
cf.			
English	Eve	1;6-1;10	.78

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[16] A word about French. Although French is a V to I language and French children show early knowledge of V to I (Pierce, 1992), there is some evidence to suggest that they use root infinitives at a rate comparable to children acquiring Germanic languages. Data from Pierce show that Phillippe, from age 2;1-2;2 used root infinitives at a rate of .26. The difference with respect to root infinitives may be related to the distinction between French and other Romance languages in the morphological nature of stems and agreement affixes: in Italian and Spanish, for example, bare stems are not possible unlike in French (cf. Jaeggli and Hyams 1987). That is, Italian/Spanish children may set the I-feature parameter to the adult values without observing V-Neg ordering. However, further root infinitive data from other French speaking children is necessary before coming to any conclusions.

We assume that in a language such as Italian, the evidence for verb raising (from, for example, the position of negation - assuming an analysis along the lines of Belletti, 1990), is sufficiently robust that the child will quickly abandon the assumption that I may be unspecified. Though space prevents us from giving a more detailed presentation, we also assume a licensing condition on *pro* roughly as in (15).

(15)   *pro* is licensed under SPEC head agreement with a lexical head.

According to (15) *pro* is licensed not by AGR alone, but by a verbal head incorporating the I features, in other words by V to I. Thus, the acquisition of V to I by the Italian speaking child triggers an early switch from a big PRO/root non-finite grammar to an adult-like *pro*-drop one. As noted earlier, Italian children drop subjects in finite contexts (in contrast to English children), as illustrated in (16), thereby showing early knowledge of the adult system (Valian, 1991; Rizzi 1992). [17]

(16)   Ha preso a Pappa del bambino.
        'Has (3rd p. sing) taken the baby's food'
        Voio (1st per. sing.) andare casa.. sono stufo.
        '(I) want to go home..(I) am fed up'
        Hai visto che ho fatto.
        'Have (2nd. per.s ing) (you) seen what (I) have (1st per. sing.) done?'
        Andiamo vedere treno.
        '(We) go (1st per. plu.) see (the) train'

        (Antelmi, 1992)

A fundamental question in the typology of null arguments is why null subjects should be permitted either when there is rich agreement, as in Italian, or when there is no agreement at all, as in Japanese. The answer that emerges from our analysis is that what we are calling "rich agreement" is in fact verb raising to an AGR head, which licenses one kind of null argument, namely *pro*, while the lack of verb raising in non-finite contexts provides a licit context for another null argument, namely PRO.

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[17] The fact that in Italian infinitives also raise to I provides the child with evidence against PRO in control structures (cf. note 6) as well. Thus, Italian children will switch to *pro* in both finite and (eventually) non-finite embedded contexts, based on positive evidence, for example, the position of negative adverbs (cf. Belletti 1990 for discussion). We assume that in languages which do not provide evidence of raising in embedded infinitives, such as English, children adopt the unmarked analysis that infinitives do not raise and hence PRO continues to be licit in these contexts.

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