

# The Syntax and Interpretation of Dropped Categories in Child Language: A Unified Account

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## 1. Introduction

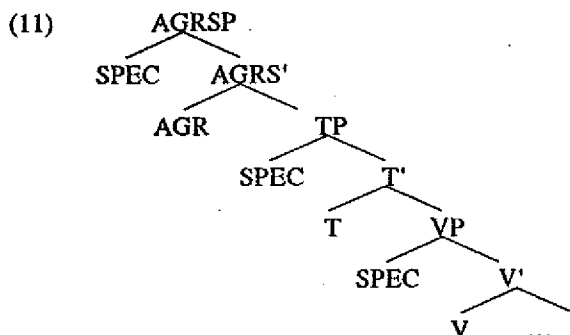
In this paper we shall try to provide a unified account for three properties of early language, illustrated in (1)-(3): root infinitives (henceforth RIs), certain types of null subjects, and the absence of determiners in obligatory contexts. These phenomena occur in languages in which in the adult form finiteness, overt pronouns, and determiners are obligatory. Yet, in the child's grammar these are only optionally expressed at the relevant stage of development.

### (1) Root infinitives

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|--|--|
| a. Papa schoenen wassen.<br>Daddy shoes wash(inf.)<br>Ik ook lezen.<br>I also read.<br>(Dutch, Weverink 1989)                | c. Pas manger la poupée<br>Not eat(inf.) the doll<br>Michel dormir.<br>Michael sleep.<br>(French, Pierce 1992) |
| b. Eve sit floor.<br>Where penny go?<br>That truck fall down.<br>(English, CHILDES, MacWhinney<br>and Snow 1985, Brown 1973) | d. Thorstn das haben.<br>Thorstn that have(inf.)<br>Zahne putzen.<br>Teeth brush.<br>(German, Wexler 1994)     |



The Japanese results are of particular interest because they bear on two alternative analyses of the RI-phenomenon. The first is the hypothesis mentioned above that the RI-phenomenon results from an underspecification of Tense. If this hypothesis were correct, it would certainly predict RIs for Japanese, as Japanese is the only language among those we have discussed which actually always marks Tense morphologically. Neither can the Japanese situation easily be accommodated by a truncation analysis of the sort proposed in Rizzi (1994). According to Rizzi, RIs occur when the clause is truncated below the TP level. RIs will not occur in languages such as Italian in which the verb is forced to raise to a position higher than T, for example, to AgrSP (= NumP, PerP as in (4) above). The presence of the higher projections entails the presence of TP and hence excludes RIs, as illustrated schematically in (11).



Japanese, however, does not have morphological extensions for projections higher than Tense, and hence, nothing to force the presence of Tense.<sup>6</sup>

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the fact that it disappears in the presence of passive *-s* (cf. Norwegian *jeg valger* 'I choose', *jeg valges* 'I am chosen'), which, however, combines freely with an overt past tense marker (cf. *jeg valgte* 'I chose', *jeg valgte<sub>s</sub>* 'I was chosen'). There is therefore no incompatibility between Tense and *-s* which would account for the disappearance of *-er*. Thus we maintain that *-er* in fact instantiates Number even though it does not express a number distinction. On the disappearance of *-er* in the past tense, see note 2.

<sup>6</sup> Truncation is allowed, according to Rizzi, because children lack the axiom that the root clause is a CP. This axiom is a requirement in the adult grammar, which then forces all lower projections to be available as well. Since this axiom is missing, children may have root clauses consisting of any level of functional projection.

### 3. The Interpretation of Root Infinitives

We turn now to matters of interpretation. Before addressing the question of how RI's are interpreted, we will lay out our assumptions concerning the interpretation of Tense in finite clauses.

In a finite clause the event time in Tense is fixed relative to the speech time, which is itself represented in the C-domain, for example in the form of a deictic operator (Enç 1987; Guéron and Hoekstra 1994). The value of Tense fixes the event time as either prior to speech time, i.e. the past, or as identical to speech time, i.e. the present. Hence there is an interdependence between C and T/V and it is through this interdependence that the event is situated. As we noted earlier, when Tense is not morphologically expressed, it takes on the unmarked [-past] value through the specification of the higher functional heads, Number and Person. Thus, the temporal interpretation of a finite clause depends on a chain which links T/V to C. There are various ways we might execute this idea. For example, we may think of this in terms of an extended chain, as in Chomsky (1986), that is, that marking of F-heads creates a chain between the C and the V (or between the spec of C and the spec of V/T).<sup>7</sup> Crucial, however, is that finiteness, in whichever head expressed, is instrumental in creating a link between C and T. If such a chain is established, T is a pronominal variable, bound by the operator in C.

What happens in RI's? We propose that the lack of specification of Number breaks the chain. No effects of a C-operator are visible in infinitives. For example, they do not occur with a *that* complementizer, nor do they ever undergo V-second. In RIs Tense is still pronominal, but no longer a pronominal variable. This means that its interpretation is not fixed grammatically, but rather is fixed in the manner of a deictic pronoun, i.e. it is interpreted discursively. So, we take it that children make use of underspecification in the grammar, and this yields a direct discourse interpretation. This squares well with the general idea that children are more discourse-dependent than adults.

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<sup>7</sup> The element in [SPEC,T] might be considered an event argument or a temporal argument (Zagona, 1988; Stowell, 1995) which, having the status of a null pronominal argument, functions as the pronominal variable. For the purposes of the present discussion these questions are immaterial.

#### 4. The nominal system

The analysis just outlined extends straightforwardly to the nominal system. We will argue that D-drop (which includes the determiner drop and null subjects) in early language illustrated in (2) and (3), is the nominal analogue of RIs.

Although widely studied, the internal syntax of nominal phrases is much less understood at present than that of clauses. Also, much less is known about the crosslinguistic distribution of determiner-drop in early grammars than about the RI phenomenon. Hence, we have less solid ground to stand on here than in our discussion of clause structure. Yet, there is some amount of consensus on a number of points. In particular, the internal structure of nominal phrases would be strongly parallel to that of clauses, i.e. CPs, with a determiner like *the* parallel to a complementizer like *that*. In between the D and the lexical noun, a number of functional categories must be assumed, including Number, as proposed by Ritter (1989) and Valois (1991). Let us assume that parallel to the clause structure in (12b), we have a DP structure as in (12a). We leave the nature of X open at this point, noting that it is the nominal counterpart of T, which may be identified with the lower D in Szabolsci's (1994) analysis of Hungarian.

- (12) a.      OP D    NUM [XP X    [NP N ]]  
      b.      OP C    NUM [TP T    [VP V ]]

Parallel to the dependence between C and T/V expressed by finiteness, there is a dependence between D and X/N which is expressed by nominal 'finiteness', i.e. a specification of one or more of the intermediate functional heads. The establishment of such a D-N relationship yields nominal specificity. The parallelism between D and C is clear in such languages as Arabic, where N may move to the D-position in a way which is essentially analogous to V-to-C movement in clausal structures. Also, the interdependence of NUM and D is evident in the Romance languages where the determiner inflects for Number agreement. Our hypothesis predicts that the absence of a Number specification in the nominal system has the same effects on the D-N chain as it has in the clausal domain: the chain is broken. Morphosyntactically, this leads to the absence of a determiner, as in (2), as well as a lack of plural marking on N. The interpretation of the DP is similarly not grammatically determined via a D-N relationship. Rather, since X is not linked to D, it has the status of a pure pronominal, rather than a pronominal variable and as a pure pronominal, it is interpreted

discursively.<sup>8</sup>

These assumptions immediately carry over to pronouns. We assume the same basic structure for adult pronominal DPs as the one given in (12a), with the difference that N may be empty. The effect of lack of Number specification then likewise leads to X being a pure pronominal. In effect, we have a radically empty DP, with the status of a free pronoun.

## 5. Why adults don't drop

An immediate question that arises is why do adults not have the option of a direct discourse interpretation of T/V and X/N and hence use RIs and determinerless DPs. We believe that this follows from a general pragmatic condition formulated by Reinhart (1983; —her Rule I), which makes discourse interpretations of pronouns unavailable if such interpretations are possible though binding. It is well-known that children are unaware of this bleeding relationship between grammar and discourse interpretation, allowing a wider use of discursively interpreted pronouns (the familiar principle B mistakes) (Wexler & Chien 1989 and Grodzinsky and Reinhart 1992). The option of direct discourse interpretation of functional heads, and hence RIs and D-drop disappears with the development of the pragmatic system.

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<sup>8</sup> As in the clausal structure, languages may vary in which functional heads are morphosyntactically manifest, e.g. Gender, Agreement, and Number. Limitations of space prevent us from discussing this issue here.

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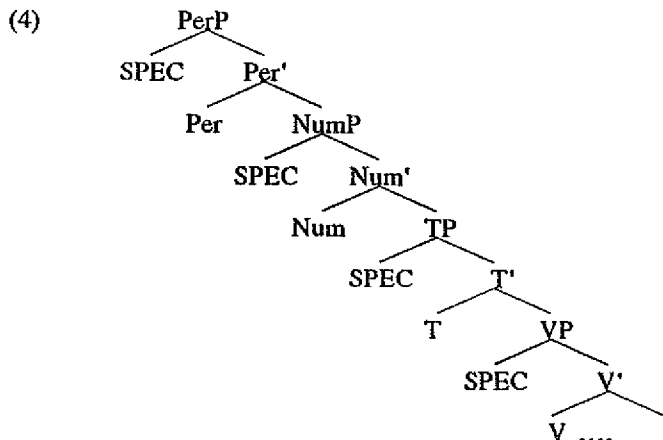
as A and B:

- A. The optionality of finiteness, lexical subjects, and determiners should receive a unified account within linguistic theory.
- B. The interpretation of the 'dropped' elements should be analyzed by an appeal to pragmatic principles (by direct discourse interpretation) in the child's system; this option should not be available to adults under normal circumstances.

We propose specifically that in the early grammar the functional head Number may be left unspecified. Since Number is represented both in the nominal and in the verbal system, its underspecification induces cross-categorical effects. Pro-drop and determiner drop result from an underspecification of Number in DP, while RIs arise when Number is underspecified in IP. The assumption that number is at play in the RI-phenomenon will also account for the linguistic variation which is found with respect to this phenomenon in early grammars. We turn to this variation below.

## 2. Root Infinitives and the Underspecification of Number

Before embarking upon our argument, let us start by summarizing our assumptions on clause structure which are relevant to the present discussion. We assume, following proposals in Johnson (1990) that Person, Number (and Gender, cf. Shlonsky 1990) head their own projections, which are hierarchically arranged as in (4). (See Johnson for justification of this arrangement in Germanic.) [For the purposes of this discussion we can ignore GenderP, as well as the lower functional projections such as AgrOP.]



We also adhere to a strong universalist basis, as per Chomsky (1992), according to which languages do not vary with respect to absence or presence of functional categories, but rather the variation comes about as a function of the morphological extensions for the values of the different categories, which may yield different word order patterns. In particular, we shall show below that inflectional paradigms can be differentiated in terms of which values of which heads are directly represented in the morphosyntax. The range of variations we will consider is plotted out in (5):

(5)	Person	Number	Tense	V
a.	m	--	Ø	--
b.	Ø	m	Ø	--
c.	Ø	Ø	m	--

In this chart, m stands for 'marked in the morphosyntax'. For instance, Platzack and Holmberg (1989) argue that the difference between varieties of Scandinavian can be captured in terms of absence vs. presence of a Person distinction in the language. Icelandic, having Person oppositions, belongs to type a, whereas the mainland Scandinavian languages lack Person distinctions in their paradigm, while they may or may not show Number distinctions, depending on the particular dialect, and hence belong to type b. Japanese is a language in which verbs are neither inflected for Person, nor for Number, but tense is marked in the morphosyntax by an overt extension, hence type c.

Let us flesh this out by looking at the inflectional paradigm of the finite verb in Dutch present tense, given in (6):

(6)	Dutch <i>spreken</i> 'speak'	
	Ik spreek	Wij spreken
	Jij spreekt	Jullie spreken
	Hij/zij/het spreekt	Zij spreken

The morphosyntactic marking shows three distinct extensions: Ø, *-t*, and *-en*. There is no person distinction in the plural, so *-en* marks only Number. Making the assumption that first person may just be unmarked, the *-t* extension found with second and first person singular marks singular Number, rather than Person.<sup>2</sup> There is no extension for Tense either, which

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<sup>2</sup> If *-t* is indeed a marker for singular number, one might expect it to also mark singular past tense verbs parallel to the marking of plural *-en* on past tense forms, cf. *wandel-de-n* 'walk-past-plural.' Yet, the singular past tense forms have no overt extension for number, cf. *wandel-de* 'walk-past.' This is parallel to the absence of

gets the unmarked value interpretation, i.e. non-past. The paradigm thus instantiates (5b).

English is like Dutch, if we follow Kayne (1989) in assuming that *you* is grammatically plural: first person singular is unmarked, *-s* marks singular Number, while plural is expressed by the bare form. This, by the way, suggests that Number agreement on the verb, which involves the same morphological extension as Number marking in the nominal system, viz. *-s*, is actually an instance of anti-agreement.

In contrast, the Italian verb displays Person distinctions, as shown in the paradigm in (7). Italian, then, instantiates (5a): there is again no marking of Tense, like in Dutch and English, which again yields present tense as its value. For the purposes of this discussion we can remain neutral on the question whether Italian verbs are marked for Number: if there is marking for Number, it exists only in the plural. Like Italian are Catalan and Spanish.

- (7) Italian *parlare* 'speak'
- |           |              |
|-----------|--------------|
| io parlo  | noi parliamo |
| tu parli  | voi parlate  |
| lui parla | loro parlano |

French is somewhat different, which may be the reason for its non-pro-drop status. Although the paradigm marks person distinctions in the plural, it does not in the singular, as is shown in (8):

- (8) French *parler* 'speak'
- |           |                          |
|-----------|--------------------------|
| [jə parl] | [nu parl <sup>õ</sup> n] |
| [tu parl] | [vu parle]               |
| [il parl] | [il parl]                |

French thus constitutes a mixed system, and is typologically rather surprising in view of Greenberg's (1963) implicational universal which says that languages which show person marking in the plural also show person marking in the singular.

Let us now turn to the distribution of the RI-phenomenon across child language. Although RIs occur in many child languages (cf. Wexler 1994 for

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number marking on English past tense verbs, cf. *walked*, *\*walksed/walkeds*. Blocking of morphological extensions of higher functional heads by overt lower heads is a general phenomenon in Germanic as observed by Johnson (1990) and Campbell (1991).

review), they are not universal. As can be seen in Table 1, the RI phenomenon does not really show up in the Romance pro-drop languages; the average rate of RIs in these languages is 6%. Although not included in the table, Japanese is also a language that does not show an RI-effect. Sano (in prep) reports that in the data of five Japanese children (ages 1;11 to 2;11) he observed no RIs.

**TABLE 1: Frequencies of root infinitives in child language.**  
(from Sano and Hyams, 1994)

<i>non-RI lgs.</i>	<i>child</i>	<i>age</i>	<i>%RI</i>	<i>RI lgs.</i>	<i>child</i>	<i>age</i>	<i>%RI</i>
Italian	Diana	2;0	.00	French	Nathalie	1;7-2;11	.76
(Guasti 1992)	Martina	1;11	.16	(Pierce 1992) <sup>3</sup>	Daniel	1;5-2;5	.60
		2;1	.04	English	Eve	1;6-1;10	.78
Italian	Paola	2;0-2;5	.07	Swedish	Freja	1;11-2;0	.38
(Schaeffer 1990)	Daniela	1;7-2;6	.08	(Guasti 1994,	Tor	1;11-2;2	.56
	Massimo	1;7-2;6	.06	based on	Embla	1;8-1;10	.61
	Gabriele	1;7-2;6	.07	Platzack 1990)			
	Orietta	1;7-2;6	.05	German	S	2;1	.46
	Elisabet.	1;7-2;5	.10	(Guasti 1994,		2;2	.40
	Frances.	1;9-2;5	.05	based on			
Spanish	Damariz	2;6-2;8	.05	Weissenborn 1990)			
(Grinstead 1994)	Juan	1;7-2;0	.12	Dutch	Laura	1;8-2;1	.36
		2;1-2;4	.10	(Weverink 1989)	Tobias	1;10-1;11	.36
Catalan	Guillem	1;11-2;6.03			Fedra	1;10-2;1	.26
(Torrens 1992)	Marti	2;0-2;5	.03				

The languages where we do see a robust RI-effect are the Germanic languages and French, with rates ranging from 26% to 78% depending on the particular child and the particular language. It seems to us that the correct descriptive generalization is that RIs are produced only by children acquiring the b-type languages, i.e. languages which in their adult form show only an obligatory Number specification. This generalization is captured under our hypothesis that RIs result from an underspecification of Number in the early grammar.

Consider first Dutch and English as examples of b-type languages. In these languages, when Number is left unspecified, there is simply no finite

<sup>3</sup> Pierce also includes figures for Philippe age 3.05 to 4.15. His proportion of non-finite verbs was 26%, substantially lower than the other children. We have not included Philippe's figures in the table because he is much older than the other children and hence already on his way out of the RI stage.

morphology, and hence the infinitive surfaces. Table 1 shows that the rate of RIs is high in both languages. The virtual absence of RIs in pro-drop languages follows, as well, since in these languages the verb will always carry Person marking.

The inclusion of two languages in the RI-group requires further comment here, viz. French, which has, as we said, a mixed system, and yet, it patterns with the b-type languages, and German, which would appear to be an a-type language in that the verb inflects for Person, but nevertheless German child language shows the RI-phenomenon. We shall discuss these languages in turn, but we first have to consider one additional point of general relevance, which we might call 'the avoid plural phenomenon'.

As noted in Hyams (1983) and Guasti (1992), Italian children have productive Subject-Verb agreement from the earliest stages. Pizzuto and Caselli (1992) provide quantitative data confirming this claim, and further observe that productive agreement is restricted to the singular verb forms. Pizzuto and Caselli report that between the ages of 1;4 and 1;9 the three children they studied (Claudia, Francesco and Marco) productively used the singular forms (1st, 2nd, 3rd person); plural forms did not appear until much later.<sup>4</sup> Similarly, Grinstead (1994), based on examination of three Catalan and three Spanish speaking children, shows results parallel to the Italian ones just described. Grinstead isolates an early stage at which the children have only singular verb forms. The proportions of singular and plural verb forms in Spanish and Catalan are given in Table 2.

TABLE 2. Number and proportion of singular and plural verb forms in Spanish and Catalan speaking children (adapted from Grinstead 1994)

	<i>Singular verbs</i>	<i>Plural verbs</i>
Laura (1;7-2;2)	68 (52%)	4 (3%)
Pep (1;3-2;2)	93 (55%)	5 (3%)
Gisela (1;1-2;1)	52 (78%)	0
Guillem (1;0-1;10)	43 (44%)	0
Juan (1;7-2;1)	32 (73%)	0

As we see in Table 2, the overwhelming majority of verb forms are singular (1st, 2nd, 3rd, though 2nd person is rather infrequent, a point to which we return). The remaining verbs (those that make up the 100%) were imperatives and the very few non-finite forms (see Table 1). Grinstead's

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<sup>4</sup> Overall, errors in verb morphology were under 4%, and included overregularizations, agreement errors, wrong auxiliary, but not RIs.

interpretation of this result is that in the absence of contrasting plural forms, Number must be assumed to be unspecified. Person, on the other hand, is marked from the earliest stages.

Given the avoid plural phenomenon, the issue of how French should fit in the total picture is again straightforward: as plural forms do not take part in the child's system, an observation which has been reported for early French (cf. Ferdinand 1994), we are left with the singular forms, which, as we showed in (8), show no person distinctions. Thus, early French qualifies as an instantiation of (5b) and RIs are therefore expected. As shown in Table 1, this hypothesis is correct.

Let us now turn to German. The adult agreement paradigm is given in (9):

- (9) German *spazieren* 'walk'
- |                 |               |
|-----------------|---------------|
| ich spazier(e)  | wir spazieren |
| du spazierst    | ihr spaziert  |
| er/sie spaziert | sie spazieren |

German shows Person agreement, so our hypothesis wrongly predicts the absence of the RI-phenomenon in early German. However, more can be said. At the early stages, according to Clahsen et al. (1994), children do not have the plural forms, as expected now, nor do they have the 2nd person singular affix *-st*. In fact, Clahsen uses the acquisition of the 2nd person affix as criterion for acquisition of the head AgrS, which he argues is initially absent. Thus, up to the point that *-st* is acquired, the child's system is like Dutch, as in (6); children use *0*, *(e)* and *t*. We might say, roughly following Clahsen et al.'s (1994) idea, that although Person is a specified head in adult German, German children initially misanalyze their language as being Dutch-like, i.e. Personless but with a specification for Number. But since in the early grammar, Number is optionally specified, as in the other Germanic languages, RIs surface when Number is left unspecified. A prediction follows; once the children acquire *-st*, that is, they learn that Person is a specified head in German, the number of RIs should drop to Italian-like levels. Clahsen (p.c.) and Duffield (1992) confirm that with the acquisition of *-st* there is a dramatic decrease in the number of RIs. So, under this construal, German children behave as expected under our hypothesis.

This may not be the end of the story, though, as one might raise the further question of why, for example, Italian children do not likewise initially ignore the Person agreement, and hence optionally use RIs. Given that this is not the case, we are led to assume that not just any F-cat may be underspecified, but rather that if Person agreement is found in the target language, children should converge on that instantaneously. Only under the

assumption that the underspecification option is limited to Number are we able to make the fine-grained crosslinguistic predictions that seem to be required. So, what is it about German that misleads the child or allows her to overlook the fact that the adult language has Person agreement?

We offer two pieces of speculation here. First, adult German does not seem to be well-behaved for a language with Person inflection. As Platzack and Holmberg's (1989) study referred to earlier shows, Person agreement is an adequate predictor of V-raising to a relatively high position (let's say, to PersP in terms of the configuration in (4)). Yet, this expected correlation does not hold for German. With respect to V-raising, German rather seems to correspond to a b-type language, like Dutch. Second, Person inflection would appear to correlate with the phenomenon of null-subjects of the Italian variety, a property which children apparently acquire quite early in Italian (cf. Rizzi 1994). Adult German, however, does not have null-subjects Italian-style: rather, null subjects seem to instantiate Topic-drop of some sort (cf. Cardinaletti 1990; Rizzi 1994; for more elaborate discussion), but no genuine null-subjects licensed by rich agreement. So, neither postverbal null subjects (i.e. following the finite verb in V-second position) nor embedded null subjects are allowed in German. Given the absence of such correlations with Person agreement in the adult system, the child may decide on that basis that she is in a b-type language, and hence ignore the Person inflection. It is interesting to note, as documented in Duffield (1992) and Hamann (1994), that the acquisition of Person agreement (i.e. the -st form for second person) appears to yield an intermediate stage in which argumental pro-drop is found, i.e. null subjects occur in postverbal position in the manner of a true pro-drop language. This stage is short-lived and basically disappears after sentential embedding becomes robust.

A further point to make concerns a difference in the agreement systems of the Romance pro-drop languages and that of German. In a system with Person agreement, one of the extensions may be a zero-form, i.e. one person may be the unmarked form. In the German system, first person singular is unmarked, while in the Romance languages, the third person is the unmarked form:

(10)	1	3	
	u	m	German
	m	u	Italian

This difference may be important for the following reason: in both systems, there is a formal opposition. However, an extension for 1 person must be Person, rather than Number, i.e. if the extension marked singular number, it would also occur in the third person. An extension for third person (as in

German) is compatible with both Number and Person marking (cf. *-s* in English, which does mark singular, not third person). Since second person reference is unreliable as a predictor, as such reference may be grammatically third person (cf. Spanish *usted*), or plural (cf. French *vous*, English *you*), the opposition between first and third plays a more vital role. The Italian system gives an unambiguous indication of Person agreement, while the German system does not. Whether this imbalance in the morphological oppositions is a crosslinguistically valid predictor of the Person Agreement correlations (i.e. pro-drop and V-raising) remains a question for future investigation.

An important observation to make here is that in none of the languages just discussed does the verb bear an extension for the value of present tense: rather, it is through the specification of a higher functional head, say Person or Number, that Tense takes on the unmarked value of the tense opposition, i.e. present or non-past. This observation is of particular relevance when we consider the RI phenomenon. One hypothesis as to why children have RIs is that in the early grammar, in contrast to the adult grammar, Tense may be unspecified (Guilfoyle-Noonan 1989; Radford 1990; Wexler 1994; Rizzi 1994; Haegemann 1994). However, the underspecification of Tense does not really distinguish the child's from the adult's system in these languages at the level of morpho-syntax. So, not only does this 'underspecification of Tense' assumption fail to provide a basis for the crosscategorical generalization that we seek to capture, since DP does not contain Tense, it is also an assumption which is hard to understand at the level of morphology—precisely, the realm where linguistic variation, including that between adult and child grammars, is supposed to be located.

Let us finally turn to c-type languages, such as Japanese. In these languages the verb inflects solely for Tense. Since these languages have no Number agreement, we predict that RIs should not occur. As we reported above, this is indeed the case for Japanese as Sano (in prep) shows. The situation in Japanese is parallel to the Italian/Catalan/Spanish one; RIs do not surface in the pro-drop languages because Person must be expressed, and they do not surface in Japanese because Tense must be expressed.<sup>5</sup>

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<sup>5</sup> One might expect that the Mainland Scandinavian languages such as Swedish would behave like Japanese on the assumption that the *-er* suffix marks present tense. As can be seen in Table 1, however, Swedish shows a robust RI effect. Similar results are reported for Norwegian and Danish (Plunkett and Strömquist 1990). However, the overt marking of present tense would be surprising in a Germanic language. Rather, we would argue that the uniform *-er* suffixation in the Scandinavian languages is the result of the erosion of former Person and Number agreement markings. An indication that *-er* indeed does not mark present tense is