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*Edited by Audrey Li, Andrew Simpson,*

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# Chinese Syntax in a Cross-Linguistic Perspective

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*and*

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*Essays in honor of Professor C.-T. James Huang*

# Root Infinitive Analogues in Chinese and Japanese and the Emergence of Full Syntactic Structure

KEIKO MURASUGI

## 1. Introduction

Children are born with an innate knowledge of grammar and manifest linguistic competence that is equivalent to the adult speakers of their mother tongue in just a few years. According to Chomsky's hypothesis of Universal Grammar (UG) (e.g., Chomsky 1965, 1995), all human languages are similar when considered from an abstract level, and the hypothesis explains the logical problem of language acquisition, that is, the question of why it is the case that children acquire their first language without being taught, despite that the language system is complex.

There is a lot of evidence indicating that the child knows the grammatical, morphological, and phonological properties of many important elements of his or her mother language at the earliest observable stages. Erbaugh (1992), for example, reports that Chinese-speaking children (1;10–3;10) adhere strictly to canonical SVO word order. The longitudinal study reported there shows that the word order in the target language is acquired very early. Guo, Foley, Chien, Chiang, and Lust (1996) find, based on the experimental study of VP ellipsis in Mandarin Chinese, that Mandarin-speaking children, even at around three years of age, know the ambiguity in the sloppy identity structure, and argue that the binding relation between an operator and a variable is part of the innate language faculty, in accord with a theory of UG.

Generative Grammar makes crucial use of the fact that UG should be powerful enough to enable the child to acquire a first language and at the same time flexible enough to account for all different human languages. Within the Principles and Parameters approach to UG, the process of language acquisition is interpreted as the process of fixing the values of parameters in one of the permissible ways (Chomsky 1995). Generative Grammar suggests that children are equipped with a UG that supports language acquisition by sharply constraining "grammar space." Children innately know this space, reducing their task to one of selecting among a highly limited set of candidate grammars that UG admits, based on their input data. Under this

view, the data from child language can (in principle) be quite valuable in evaluating the parameters proposed through the investigations of comparative syntax. In particular, it should be noted that children produce a possible human language that is not the language spoken in their language community at any given time. That is, one might expect to find some “errors” or “ungrammatical strings in the target adult grammar” that caretakers never produce, because children try out other possible values of parameters.

If this expectation is empirically confirmed, it provides strong support for UG. The present study attempts to demonstrate this point through the examination of the development of syntactic structure in child Chinese and Japanese. In particular, we suggest that both Chinese- and Japanese-speaking children (i) go through the Root Infinitive Analogue stage, (ii) produce sentence-final particles earlier than tense/aspect-marked verbs, and argue that this is consistent with the Truncation Hypothesis proposed by Rizzi (1993/1994) for children’s early syntactic structure.

## 2. Grammatical Tense Deficits in Children

### 2.1. ROOT INFINITIVES

It has been found that in languages with relatively “rich” morphology, such as Dutch, German and French, children are found to optionally use the infinitive forms of inflection (e.g., affix) on the verbs, rather than finite ones, in the root clause.

- (1) a. Mama radio aan doen (Dutch) (2;00)  
mummy radio on to-do  
‘Mummy switch on radio.’ (Wijnen, Kempen and Gillis 2001)
- b. Thorsten Caesar haben (German) (2;01)  
Thorsten Caesar to-have  
‘Thorsten has [the doll] Caesar.’ (Poeppel and Wexler 1993)
- c. Voir l’auto papa (French) (2;02)  
to-see the car daddy (Intended meaning: ongoing activity) (Pierce 1992)

In languages that are relatively “poor” in inflectional morphology like English, on the other hand, the bare verb forms appear in finite (root) contexts. In adult English, infinitive forms are generally the bare stems, and English-speaking children produce the bare stems within the age range of 20–36 months, as shown in (2).

- (2) a. Papa have it (English) (Eve, 1;06)
- b. Cromer wear glasses (English) (Eve, 2;00)

The non-finite verb forms employed by children in finite (root) contexts are termed Root Infinitives (RIs), and their properties have been extensively examined in child language research.

It has been pointed out that RIs/Root Infinitive Analogues (= RIAs) are associated with certain morpho-syntactic and semantic properties (see Deen 2002, among others).

(3) Properties common among RIs /RIAs

- a. At the RI stage, no T-related/C-related items are found.
- b. RIs are produced to describe events in real time, that is, as an ongoing activity in the past, present, or future that the child is involved in.
- c. RIs occur in modal contexts (Modal Reference Effects).
- d. RIs are restricted to event-denoting predicates (Eventivity Constraint).
- e. Head Merger is not available during the RI(A) stage.

As noted in (3a), at the stage where non-finite verbs are used in finite (root) contexts, C-related elements such as *wh*-phrases and complementizers (Haegeman 1995), and T-related elements such as *be*-copula and auxiliaries are not found. In addition, two peculiar types of contextual interpretations have been identified. One type refers to the so-called extensional contexts, whereby RI(A)s are produced to describe events in real time, that is, ongoing activities in the past, present, or future that the child is involved in. For example, the non-finite forms in child French like (1c) are produced to describe an ongoing activity. The other type of interpretation refers to the so-called intentional contexts, whereby RI(A)s are produced to express children's intention, desire, or volition in various "irrealis" modal contexts. This is termed the Modal Reference Effects (MREs) (Hoekstra and Hyams 1998). In addition, RIs, in general, are largely restricted to eventive predicates (Hoekstra and Hyams 1998), and the head merger between V and T is not available during the stage of RI(A)s, as proposed by Phillips (1995, 1996).

Chinese is a heavily isolating language that has commonly been considered not to manifest morphological tense-marking or infinitives. However, one might nevertheless wonder whether there is still any analogue of the RI phenomenon in Chinese and other similar morphologically impoverished languages, given that, for example, case-related phenomena seem to show up in languages that do not exhibit overt morphological case. Before we discuss the RIAs in Chinese in section 2.3, let us briefly discuss the related issues in another argument-drop language, Japanese, in section 2.2.

## 2.2. SURROGATE VERBS IN CHILD JAPANESE: VERB + *TA* FORM

Like Chinese, Japanese is a language that does not have a specifically infinitive suffix. Japanese is an agglutinating language where bare stems cannot stand alone without, for example, tense or aspect morphemes, as shown in (4). Japanese is, like Italian and Spanish, a [-stem] language whose verbs cannot surface as bare forms.

- (4) a. \*tabe- (to eat)  
 b. \*suwar- (to sit)

Unlike Italian and Spanish, however, Japanese does not have rich verbal inflection (agreement) that indicates number and gender. Japanese verbs inflect for tense, negation, aspect, and mood.

The conjugations in Japanese are acquired at an early stage, at around the beginning of age two. Murasugi, Fuji, and Hashimoto (2007), Murasugi and Fuji (2008a, b) Murasugi, Nakatani, and Fuji (2010), and Murasugi (2009), based on the corpus analysis of Sumihare (Noji 1973–1977, CHILDES) and the longitudinal study with Yuta (Nakatani and Murasugi 2009), argue that the RI state is found among Japanese-speaking children as well. According to them, some of the typical properties of RIs given in (3) are also observed in Japanese in early non-finite verbal forms: (i) T-related (e.g., Nominative Case, copulative elements, and verbal conjugation) and C-related items (e.g., *to*, the complementizer that heads a Report Phrase (Saito 2009)) are *not* observed with the early non-finite verbs, and tense is underspecified; (ii) the past-tensed adjectives are not produced; (iii) Verb-*ta* forms (past-tensed verb forms) are produced to describe an ongoing activity; (iv) Verb-*ta* forms (past-tensed verb forms) are used in matrix clauses for the irrealis or volition meaning (MRE); (v) Verb-*ta* forms are restricted to event-denoting predicates; and (vi) *no* merger of heads inside the verbal projection are observed at the RIA stages, as Phillips (1995, 1996) proposed.

Sumihare, a Japanese-speaking child, at around 1;06 through 1;11, for example, used the Verb-*ta* form in a different way from adults, semantically denoting the meaning of volition (desire) or request.

- (5) a. Atti Atti Atti *i-ta* (1;06) (irrealis/volition) (adult form: *ik-u/ik-e*)  
 there there there go-TA  
 'I want to go there./Go there.'
- b. Tii *si-ta* (1;07) (irrealis/volition) (adult form: *si-ta-i*)  
 onomatopoeia (pee) do-TA  
 'I want to pee.'
- c. Baba *pai-ta* (1;08) (request) (adult form: *pai-si-te*)  
 mud onomatopoeia (throw away)-TA  
 'Throw (the mud) away.'

Noji (the observer) describes that *i-ta* in (5a)<sup>1</sup> means *ik-u* (go-Pres), and states, "Sumihare uttered *i-ta* as he could not say *ik-u*" (Noji 1973–1977: I: 195). Noji also writes important comments for (5b), which convinces us of the MREs at the early stage of Japanese acquisition: Sumihare used *tii-si-ta* in a volition context when he wanted to pee. As for (5c), Sumihare produced *pai-ta*, attaching -*ta* on the onomatopoeia *pai* (to throw away), in order to ask his mother to remove mud from a potato.

The percentage of V-*ta* forms decreases with age. At 1;06–1;07, he used the V-*ta* form almost 100% of the time. RIAs are not "optional infinitives" in Japanese-type languages.

<sup>1</sup> The context for (5a) is the following: Sumihare's father (Noji, the observer) went out for a walk with Sumihare on his back. Noji tried to go back home, but Sumihare pointed to a different direction and produced "atti (there)" twice. Frustrated, Sumihare said, "atti *i-ta* (there go-Past) = (Literal meaning: I went, Intended meaning: I wanna go there)" angrily repeatedly (Noji 1973–1977).



Parallel data are found in a longitudinal study with another Japanese-speaking child, Yuta, as in (6) (Nakatani and Murasugi 2009).

- (6) a. *Ai-ta Ai-ta* (1;07.1) (irrealis/volition) (adult form: *ake-te*)  
 open-TA open-TA  
 'I want to open this cabinet. / Open this cabinet.'
- b. *Hait-ta Hait-ta* (1;07.16) (volition) (adult form: *ire-tai*)  
 enter-TA enter-TA  
 'I want to put this notebook into this bag.'
- c. *Oti-ta Otyoto(=Osoto) Oti-ta* (1;07.13) (progressive)  
 drop-TA outside drop-TA (adult form: *otosi-teiru*)  
 'I am putting this doll outside.'
- d. *Oti-ta Oti-ta Oti-ta* (1;07.5) (result) (adult form: *oti-teiru*)  
 fall-TA fall-TA fall-TA  
 'A container of the videotape is lying there.'

Very young children under two years of age consistently use *V-ta* form to denote intentional meaning as exemplified in (6a) and (6b), and extensional meaning as exemplified in (6c) and (6d). This fact suggests that the verbal conjugation, that is, the merger of *V* and inflection, is not yet available then. It is the stage where a default morphological form in the target language is used as the first verbal form by a child, and the past-tense form, *V-ta*, which children pick as an RIA, is most unmarked among the possible forms in Japanese.<sup>2</sup>

In adult Japanese, two conjuncts unspecified for tense, for example, are conjoined with *-ta* forms as in (7a, b), and *-ta* forms can be used for future as in (8a, b) and with irrealis meaning as well, as exemplified in (8c).

- (7) a. *Tabe-ta ri non-da ri si-yoo/su-ru/si-ta*  
 eat-TA drink-TA let's do/do-Pres/do-Past  
 'We eat/ate, and we drink/drank.'
- b. *It-ta ri ki-ta ri de taihen da/dat-ta*  
 go-TA come-TA for troublesome is /was  
 'It is/was troublesome to go back and forth.'
- (8) a. *Asu-wa nani-o suru-no-dat-ta-ka-na?*  
 tomorrow-Top what-Acc do-Nom-Cop-TA-C-Speech Act  
 'What am I going to do tomorrow?'
- b. *Sooda! Asu-wa paatii-dat-ta!*  
 so-Cop Tomorrow-Top party-Cop-TA  
 'Aha! Tomorrow is a party!'

<sup>2</sup> Non-finite verb forms are found in embedded clauses in adult Japanese. The past verbal inflection *-ta* lacks tense interpretation (but it is rather aspectual) in such relative clauses as "*yude-ta tamago*" (boil-past egg, meaning boiled egg (property reading)) in adult Japanese.

- c. Mosimo watasi-ga ie-o      tate-ru/-ta      nara tiisana  
 if      I-Nom    house-Acc build-pres/TA then small  
 ie-o      tate-ru/-ta      (deshoo)  
 house-Acc build-pres/-TA (would)  
 'If I built a house, I would build a tiny one.'

Furthermore, just like infinitives in Italian (Rizzi 1993/1994), V-*ta* forms in adult Japanese can be used as non-finite surrogate forms to express strong imperatives, as shown in (9).

- (9) a. Partire immediatamente!  
 go      immediately      (Rizzi 1993/1994)
- b. Sassato      Kaet-ta!      Kaet-ta!  
 immediately go back-TA    go back-TA  
 'Go back immediately.'

Thus, the *ta*-form seems to function as a non-finite form as well as a past-tense form in adult Japanese. Children, without being taught by caretakers, even at one year of age, choose the non-finite V-*ta* form as the surrogate form, attaching a "default" morpheme *ta* to the verb stem, before they fully acquire the conjugation system of the verbs.

Suppose that the unmarked surrogate form in Japanese is the non-finite V-*ta* form in adult Japanese, then agglutinative language-speaking children, even at the age of one year, know the morphological property that verbal stems *cannot* stand *without* tense/aspect morphemes in their target language. And when Tense Phrase is not projected, the unmarked verbal suffix(es) is (are) chosen for the surrogate form(s), that is, the RIA(s).<sup>3</sup>

### 2.3. IMPERATIVES (BARE VERBS) IN CHILD CHINESE

The discussion so far indicates that if a language L has verbs whose stem cannot stand alone, children speaking L would produce the "surrogate infinitival" forms (e.g., as in Japanese) or infinitival form (e.g., as in Italian). Then, what about an isolating pro-drop, or more precisely, isolating argument-drop language, Chinese?

The history of the research on RI(A) has revealed that the phenomenon is very much related to the imperative. For instance, the bare stem of the verb in English, the Japanese V-*ta*, and infinitives in European languages are generally used as imperatives as well. In fact, there are a lot of cross-linguistic studies reporting that the first non-finite verbal form that children produce is imperative (Salustri and Hyams 2003,

<sup>3</sup> Note here that RIAs with the so-called "surrogate infinitives" are found at around age one year, much earlier than RIs are found in European languages, and the non-finite form is not optionally used either. The non-finite form is initially (at around 1;06–1;07) used 100% of the time in a full range of environments, and there is no correlation between null subjects and non-finite verb forms in Japanese, for example, unlike the case of European RIs. As we briefly mention in note 5, the sharp contrast indicates that the so-called "Root Infinitive (Analogue) stage" is actually twofold: tense-truncated stage and tense-unspecified stage (which is termed Optional Infinitives).

2006 for Italian; Bar-Shalom and Snyder 2001 for Russian; Lillo-Martin and Quadros 2009 for ASL). Chinese is not an exception.

Chien (2009), based on the corpus analysis of two children (1;9–3;1, 1;11–3;0) and two adults from Tsing-Hua Mandarin Child Language Corpus, argues that children speaking Mandarin use imperative forms as RIAs. The imperative RIAs are exemplified in (10).

- (10) a. (ni) qu chi mian-bao (2;05)  
(you) go eat bread  
'You go to eat the bread.'  
(Context: The child (= speaker) asks the adult to eat the bread.)
- b. (ni) yong na ge he cha (2;06)  
(you) use that CL drink tea  
'You use the one to drink tea.'  
(Context: The child (= speaker) asks the adult to use that cup to drink tea.)
- c. Ni bao ta (2;05)  
you hold it  
'You hold it.'  
(Context: The child (= speaker) asks the adult to hold a toy.)
- d. Ni qian ge-ge (2;05)  
You pull along brother  
'You pull along my brother.'  
(Context: The child (= speaker) asks the adult to pull along his/her brother.)

Chien's (2009) finding has striking parallels with Salustri and Hyams's (2003, 2006) proposal that Italian RIAs are imperatives. The evidence is elicited based on the criterion given in (11):

- (11) a. In null subject languages, imperatives will occur significantly more often in child language than in adult language.  
b. In child language, imperatives will occur significantly more often in the null subject languages than in the RI languages.

(Salustri and Hyams 2003, 2006)

Chien (2009) finds that the frequency of imperatives in child Mandarin is higher than the frequency of imperatives in the adult speech, and argues that the results obtained in her study are consistent with those of Salustri and Hyams (2003, 2006). According to Salustri and Hyams (2003, 2006), Italian-speaking adults use only about 5.6% imperative forms; while Italian-speaking children use about 16.4% to 31.1% imperative forms (and use only 0% to 2.8% infinitive forms). In contrast, in German, a typical RI language, adults use 35.6% imperatives, and children use about 10% imperatives. Chien's (2009) data is basically parallel with those of Salustri and Hyams (2003). For example, according to Chien's (2009) counting, Mandarin-speaking adults use only about 10% imperatives; while a Mandarin-speaking child, at 2;05, uses about 47% imperatives. A closer examination of Chien's (2009) findings indicates that the contrast between child and adult imperatives is much more salient in

Chinese than in the Italian case. For a Mandarin-speaking child at 1;11, her study shows that 60% of the utterances are in imperative form. Thus, just like Salustri and Hyams (2003, 2006), Chien's (2009) finding suggests that there is an RIA stage in Chinese, and the form is imperative in Mandarin Chinese (see also Su 2012).

Given Chien's (2009) finding, then we predict that the very young children producing imperatives as their RIAs would produce the strings that lack tense as well. And there is a piece of evidence that suggests that this prediction is correct.

According to Lin (2008), Mandarin Chinese has TP, and the head T can be finite or nonfinite and the clauses exhibits a finite and non-finite contrast, although there is no specifically morphological tense in the language. According to Lin (2006, 2008), epistemic and obligation modals take a finite TP complement and can only appear in finite contexts. By contrast, future and other types of root modals take a non-finite TP complement and can occur in finite and non-finite clauses.<sup>4</sup> As shown in (12a) and (12b), he argues that epistemic modals always scope over *le* since *le* can be licensed within their finite TP complements. Conversely, root modals always scope under *le* because *le* cannot be licensed within their non-finite TP complements. If *le* is to appear, it must be generated in the matrix Asp and takes the modal verb as its complement. The perfect *le* does not occur inside the scope of the root modals because it does not get licensed by T. This is also true for the preverbal progressive auxiliary *zai* as shown in (12c) and (12d). *Zai* may occur in the TP complement of the epistemic modals, but not in the TP complement of the root modals.

- (12) a. Zhangsan<sub>Tf</sub> [AspP [vP keneng [TP ti<sub>Tf</sub> [AspP [vP qu Taipei] le]]] Ø]  
 Zhangsan likely go Taipei Prf Stc  
 'It is likely that Zhangsan has gone to Taipei.'
- b. Zhangsan<sub>Tf</sub> [AspP [vP nenggou [TP PRO<sub>Tnf</sub> [AspP [vP qu Taipei] Ø]]] le]  
 Zhangsan able go Taipei Stc Prf  
 'Zhangsan has (become) able to go to Taipei.'
- c. Zhangsan keneng [zai chi hanbao]  
 Zhangsan be-likely-to PRG eat burger  
 'It is likely that Zhangsan is eating a burger.'
- d. \*Zhangsan nenggou [zai chi hanbao]  
 Zhangsan be-able-to PROG eat burger  
 'Zhangsan is able to go to be eating a burger.'

What matters for the argument here is the fact that the sentence-final particles *le* (and the progressive aspect marker *zai*) in adult Mandarin distinguishes finite sentences from non-finite ones. Given the adult grammar, the perfect sentence particle *le* (and *zai*) is (are) predicted to be (at least optionally) absent at the stage of RIAs in child Mandarin.

<sup>4</sup> As a result, Lin (2006) proposes that modals that take finite TP must precede modals that take a non-finite TP, and Lin thereby sets up the following hierarchy of modals in Mandarin Chinese.

(i) Necessity > Possibility/Obligation > Future > Ability/Permission/Volition

Crucially, Liu (2009) observes that Mandarin-speaking children do drop the perfective sentence particle *le* at a very early stage of language acquisition. HY (1;09), for example, dropped *le* in the obligatory context as shown in (13). In (13), the child dropped *le* even when repeating what his mother has said to him.

- (13) Mom: Xie huir, lei le  
           rest a-bit tired LE  
           ‘Let’s rest a bit; you are tired.’  
       HY (1;09): Xie huir, lei Ø

A similar example in (14) is found in the production of BB (1;10).

- (14) BB (1;10): Nainai qu nar Ø  
           grandma go where  
           ‘Where does Gramma go?’  
           (Intended meaning: ‘Where did Gramma go?’)  
       Mom: Ta nainai qu Hangzhou le.  
           his grandma go LE  
           ‘His Gramma went to Hangzhou.’

As shown in (15), the achievement verb *po* (to be torn, worn out) should be marked with the perfective marker *le* in adult Mandarin, but a child, LC (1;09), dropped it.

- (15) LC (1;09): po Ø  
           wear-out  
           ‘It’s worn out.’

Needless to say, we need to confirm that the Mandarin-speaking children using imperatives as RIAs *also* drop *le* at the same time. We also need to examine carefully whether or not the typical RI(A) properties listed in (3) are found in Mandarin Chinese. However, the fact that Mandarin-speaking children dominantly use imperatives (as RIAs) and drop the perfective marker *le* at the age of one year suggests that there is an intermediate stage where the sentence lacks the independent Tense elements, even in the acquisition of a typical argument-drop language, Mandarin Chinese.

To sum up the argument so far, children acquiring Japanese and Chinese, typical pro-drop or argument-drop languages, go through the RI(A) stage. Non-finite verbs in finite (root) contexts are common in very young child production cross-linguistically, and the early verbal forms in child languages reflect the core morphological properties of the adult grammar.

### 3. The Truncation Model

The findings discussed so far show that the RIAs in Japanese and Chinese are the verbs that very young children produce when (independent) Tense elements are missing.

A potential question, however, still remains unsolved. What does it exactly mean that Tense is missing in the child syntactic structure? What are RI(A)s?<sup>5</sup>

The stage of RIA, in fact, can be explained by the Truncation Hypothesis proposed by Rizzi (1993/1994). The Truncation Hypothesis states that children's structures can be as complex as adult structures, but child grammar allows the choice of optionally truncate structures. To be more concrete, adults build their phrase structure all the way to CP because CP is the root of all clauses, while children might build just a VP or an IP (TP) and stop. According to Rizzi (1993/1994), the axiom that "CP is the root of all clauses" is part of adult grammar. Children also project the phrase structure, but they lack the specific knowledge that every well-formed clause is CP in adult grammar (until the initial stage of RI stage in our term ends). Until children "acquire" the axiom, they hypothesize that phrase structures can only go partway up to CP.

This hypothesis naturally explains why the children's non-finite verbs do not move to I (T): There is no place for them to move to. This would also explain why auxiliary-related items never occur with RIs, if we assume that auxiliary-related items start in I (T). Under the Truncation Hypothesis, we also expect that there are no elements above IP (TP) that are produced by the children at the RI stage. If RIs are missing IP (TP), then they should be missing CP as well, and the hypothesis naturally explains why C-related items are not observed at the stage in question.

The Truncation Hypothesis can also account for the licensing of null subjects in child grammar. RIs are likely to occur with null subjects because the infinitive is a non-finite form, which lacks Tense, and hence it can license null subjects of the type PRO.

Furthermore, we conjecture that the Truncation Hypothesis can also elegantly explain the reason that English-speaking children go through an early stage of acquisition during which subjects are base-generated within VP and may optionally stay in their original position located internal to the predicate (Déprez and Pierce 1993).

<sup>5</sup> The RI(A)s found before around the age two years are the default verb forms in the target language, and they are used either when Tense Phrase is not projected, as the Truncation Hypothesis (Rizzi 1993/1994) predicts, or when there are no functional categories, as Radford (1990, 1991) and Galasso (2011) propose. In fact, Galasso (2011) finds that the stage where D is missing (as in *\*Jim book* (= Jim's book)) comes before the Root Infinitive stage where T is optionally morphologically realized and non-nominative subjects appear in the subject position (as in *\*Her eat it* (She eats it.)).

Then, at around the age of two, children speaking Japanese start producing several conjugated verb forms as well as "erroneous" genitive/dative subjects just like English-speaking children do. At this stage, non-nominative subjects optionally appear in the subject position (e.g., *\*Her eat it* (She eats it) in English). Just like English-speaking children, children speaking Japanese, for example, optionally mark the subject of the sentence "erroneously" with genitive or dative (Murasugi and Watanabe 2009; Sawada and Murasugi 2011; Sawada, Murasugi, and Fuji 2010).

The sharp contrast found between the two phases of "RIs" shown above indicates that the so-called "RI(A) stage" actually has two stages. A natural hypothesis for the first stage would be, as we will discuss in this section, to suppose that the sentences in which the (default) verb is not tensed might be those where TP is missing in the child structure as Truncation Hypothesis (Rizzi 1993/1994), for example, predicts. And the RIAs found at a later stage after the age of two would correspond to the so-called Optional Infinitives. Optional Infinitives, or the infinitives optionally used in the matrix clauses, are produced when T is there, but Tense and Agreement features are still "underspecified," as ATOM (Schütze and Wexler 1996) predicts.

It is very well known that English-speaking children, at around the age of two, produce negative sentences in which the negative element occurs to the left of the subject, as shown in (16).

- (16) a. No mommy doing. David turn. (2;00)  
 b. No lamb have it. No lamb have it. (2;00)  
 c. No Leila have a turn. (2;01)  
 d. Never Mommy touch it. (2;01)  
 e. Not man up here on him head. (2;02)

Déprez and Pierce (1993) argue that the pre-sentential negative element (e.g., *no*, *never*, *not*) is an instance of sentential negation. According to Déprez and Pierce (1993), there is a parameter of nominative Case assignment, and young children start producing such examples as (16) based on the assumption that the nominative Case may be assigned under government by Infl (rather than the assumption that the nominative Case is assigned in the Spec-head relation with Infl). Thus, children produce the sentence-initial negative element as sentential negation, as shown in (16). According to Déprez and Pierce's (1993) analysis, the structure children hypothesize for (16a) is (17):

- (17) [<sub>IP</sub> \_\_\_\_\_ [<sub>NegP</sub> no (negative element) [<sub>VP</sub> mommy doing]]]

Then, why is it the case that subject remains in the VP-internal position in child grammar? In the adult grammar, the arguments of the verb appear within the Verb Phrase, but they may be forced to leave that position by different principles of grammar. If the principles are part of UG, then, we expect that the principles should be applied once the sentence in question (meeting the theta theory) is produced. However, children produce subjects VP-internally without raising it to the Spec of IP (TP).

Given UG, a possible explanation for the acquisition stage of VP-internal subjects in child grammar would be that there is no IP (TP), the position for the subject, to move to. Thus, during the stage where the phrase structure is truncated, children produce such sentences as (16).

This proposal is further supported by the fact that the verbs that children produce exemplified in (16) are bare forms, or RIs. The fact that children producing subjects VP-internally without raising them to the Spec of IP (TP) also produce RIs would support the hypothesis that there is no I (T) projection at the stage.

However, a detailed analysis of child Chinese indicates that the case might not be so simple. As we noted above, if RIAs are missing IP (TP), then they should be missing the syntactic heads above IP (TP) as well. Children, however, do produce sentence-final particles at the earliest observable stage. Lee (2000), for example, using the longitudinal data from a Cantonese-speaking child (MHZ), finds that a very young child (1;7–1;11) productively used sentence-final particles. The child (1;7–1;11) produced 77 utterances with sentence-ending particles out of 553 utterances, and one-third of the child's (2;0–2;8) utterances ended with a final particle (Lee 2000: 11).

How could the three mysteries in child Chinese we have discussed so far—the productive use of imperative forms (RIAs), a stage of missing tense/aspect *le*, and the productive use of sentence-final particles—be explained in acquisition theory? No unifying theoretical explanation has thus far been provided in research on Chinese acquisition.

We cannot fully discern intermediate stages in language acquisition just by looking at one language. However, comparative acquisition studies may perhaps be better positioned to discover solutions to mysteries such as the above. In fact, just like Chinese, Japanese also has rich sentence-ending particles in adult syntax. And interestingly enough, very young Japanese-speaking children produce sentence-ending particles, just as Chinese-speaking children do. Even during the Japanese RIA stage, sentence-final particles, which should reside in the position up above the CP layer in adult grammar, are apparently added on to the “truncated” structure. Observe an example given in (18).

- (18) Buuwa tui-ta ne ne (Sumihare, 1;09)  
 candle light-ta Sentence-final particle Sentence-final particle  
 Intended meaning: Please light the candle.  
 Literal meaning: The candle lit, didn't it?

Example (18) is quite important because the Japanese-speaking child Sumihare produces (i) the intransitive form *tuite* instead of the transitive form *tukete*; (ii) the V-*ta* form (RIA) instead of imperative form V-*te*; and crucially, (iii) the sentence-final particle *ne* following *tuita*, the RIA. In the following section, assuming that sentence-final particles are Speech Act heads, it is argued that the early appearance of sentence-final particles does not constitute a counterexample to the Truncation Hypothesis.

## 4. The Co-Occurrence of Sentence-Final Particles with RIAs

Just like Chinese, sentence-final particles are in fact produced often at a very early stage of Japanese acquisition. Okubo (1967), based on her longitudinal study with a Japanese-speaking child, finds that sentence-final particles such as *ne* are acquired much earlier than Case particles such as *ga*. Murasugi and Fuji (2008b) report that the Modal Reference Effects of RIAs are often observed with the sentence-final particle *na*, as shown in (19).

- (19) a. Pan naa (1;05)  
 bread Sentence-final particle  
 'I want a piece of bread.'  
 b. Sii si-ta naa (1;07) (adult: volition *si-tai*)  
 pee do-TA Sentence-final particle  
 '(I) want to pee.'



- c. Rii        na        na (1;07)  
go down Sentence-final particle  
'I want to go down.'

Context: Sumihare is on his father's shoulder. (Murasugi and Fuji 2008b)

Volitional modality in the early stages of acquisition is expressed by the *-ta* form with the sentence-final particle *-na*.

There are languages that have sentence-ending particles which are used to establish discourse relations between the speaker and the hearer. Languages in Asia are particularly well known that they have rich sentence-ending markers such as *nhe* and *nhi* in Vietnamese.

However, it seems that they are not only productively found in the Asian languages. According to Haegeman and Hill (2011), in West Flemish, a dialect of Dutch, for example, there are sentence-initial and sentence-final discourse markers, which encode the speaker's attitude with respect to the (content of the) speech act and/or with respect to the addressee (Haegeman and Hill 2011). The discourse markers are optional in that an utterance remains grammatical even if they are removed, but their deletion results in a change in interpretation. There are some "rules" that sentence-final discourse markers in West Flemish obey.

First, sentence-final discourse markers in West Flemish co-occur only in a specified order. When sentence-final discourse marker *né* and *wè* co-occur, *né* must be to the right of *wè*, as shown in (20a) and (20b).

- (20) a. Men artikel is gedoan wè né.  
b. \*Men artikel is gedoan né wè.  
My paper is done  
'My paper is finished.' (Haegeman 2010)

When sentence-final discourse markers *zè* co-occurs with *né* or *wè*, *né* follows *zè*, as shown in (21a, b), but *wè* precedes *zè*, as in (22a, b).

- (21) a. Men artikel is gedoan zè né.  
b. \*Men artikel is gedoan né zè.  
(22) a. Men artikel is gedoan wè zè.  
b. \*Men artikel is gedoan zè wè. (Haegeman 2010)

Second, West Flemish has just two positions for discourse markers. Though *né* can co-occur with *zè* as in (21a) and with *wè* as in (20a), and though *wè* can also co-occur with *zè* as in (22a), the three discourse markers cannot co-occur, regardless of the order, as we can see in (23).

- (23) a. \*Men artikel is gedoan wè zè né.  
b. Men artikel is gedoan wè zè. Né! (Haegeman 2010)

(23b) is acceptable because *né* is clearly set off from the preceding segment.

Sentence-final discourse markers in West Flemish are not clause typers, and they co-occur with clauses that are independently typed. Though some of them are insensitive to clause type, others are sensitive to the type of the sentence. For example, *zè* (and its variant *ghè*) co-occurs mainly with declaratives and with some imperatives. With regard to interrogatives, only rhetorical questions can co-occur with *zè/ghè*.

The properties found in West Flemish are shared by Japanese sentence-final particles. Japanese has sentence-initial and sentence-final discourse markers, such as *ne*, which encode the speaker's attitude with respect to the (content of the) speech act and/or with respect to the addressee. The discourse markers are optional in that an utterance remains grammatical even if they are removed, but their deletion results in a change in interpretation.

There are also "rules" that sentence-final discourse markers in Japanese obey, just as in West Flemish. The sentence-final particles such as *ne*, *na*, and *yo*, among others, are pragmatic markers used to profile the speaker-hearer relationship in Japanese. The particles are involved in the licensing of vocatives. The initial vocative has an "appeal" or attention-seeking function, aiming at establishing a discourse relation; the final vocative consolidates the already established relation of the speaker with an "addressee." Examples are shown in the following:

- (24) a. Nee Nee Otoosan, torampu siyoo                      yo (Koko, 8;03)  
           NE NE Daddy    card        do-Vocative Sentence-final particle  
           'Hey, Daddy, let's play cards.'
- b. Kono kootya-wa oisii                      ne (Koko, 8;03)  
           this tea    -Top yummy-is NE  
           'This tea is tasty, isn't it?'

Just like West Flemish, the sentence-final particles display rigid ordering restrictions as shown in (25).

- (25) a. Kobe-no pan-wa oisii yo ne/yo na.  
           Kobe-Gen bread-Top tasty  
           'Kobe's bread is tasty.'
- b. \*Kobe-no pan-wa oisii ne yo/na yo.

The sequences, *yone* and *yona*, are grammatical, but *neyo* or *nayo* are ungrammatical, as shown in (25b). When sentence-final discourse markers *yo* and *ne* co-occur, *ne* must be to the right of *yo*.

Second, just as in West Flemish, Japanese basically only has two positions for discourse markers. Though *yo* can co-occur with *ne* (26a) and with *na* (26b), the three discourse markers cannot co-occur, regardless of the order, as we can see in (27):

- (26) a. Taro-wa mikan -o taberu yo ne.  
           Taro-Top orange-Acc eat

- b. Taro-wa mikan-o taberu yo na.  
Taro-Top orange-Acc eat

- (27) \*Taro-wa mikan-o taberu yo ne na.  
Taro-Top orange-Acc eat  
'Taro eats oranges.'

(27) is only acceptable when *na* is clearly set off from the preceding segment.<sup>6</sup> Just like sentence-final discourse markers in West Flemish, Japanese sentence-final particles are basically not clause-typers either, and they co-occur with clauses that are independently typed. For example, *yo* co-occurs mainly with declaratives and imperatives.

Now, the important question to be addressed here is whether the discourse markers are part of the CP system or not. In fact, it has been pointed out that the property of the right periphery of Japanese parallels with that of left periphery in head-initial languages, such as Italian, in many respects (Saito 2009), and the discourse markers such as *ne*, *na*, and *yo* all seem to reside outside the CP system.<sup>7</sup>

According to Saito (2009), *to* is the complementizer that heads a Report Phrase, which expresses paraphrases or reports of direct discourse in the sense of Plann (1982); *ka* is a head of Force Phrase (ForceP), for questions. And *no* is the complementizer that heads a Finite Phrase, for propositions. The structure is schematized in the following example.

- (28) a. [CP [CP ... [CP ... Finite (*no*)] Force (*ka*)] Report (*to*)]  
b. [CP ... [CP ... [CP ... [CP ... Finite (*no*)] (Topic\*)] Force (*ka*)] Report (*to*)]  
c. [CP ... [CP ... [CP thematic topic [C' [CP [TP ...] Finite (*no*)] Topic]] Force (*ka*)]  
Report (*to*)]

And the discourse markers *ne*, *na*, and *yo* follow *ka*, which is the sentence-typer.

- (29) a. [Force[Fin[TP Taro-wa unagi-o taberu] no ] *ka*] *ne*  
-Top eel-Acc eat Finite Force Sentence-final particle  
'I wonder whether or not Taro eats eels.'  
b. [Force[Fin[TP Taro-wa unagi-o taberu] no] *ka*] *na*  
c. [Force[Fin[TP Taro-wa unagi-o taberu] no] *ka*] *yo*

ForceP is a sentence typer, and if the sentence is interrogative, *ka* appears in the head of ForceP. As (29a–c) indicate, sentence-final particles follow *ka*, and this shows that the discourse markers are above ForceP at least. And children acquire such discourse markers as *ne* and *na* earlier than *no* or *ka*. Okada and Grinstead (2003), in fact, show

<sup>6</sup> Three sentence-final particles are allowed only when *wa* comes first.

(i) Anata Asita gakko-ni iku wa yo ne.  
You tomorrow school-Dat go WA YO NE  
'You are going to school tomorrow, aren't you?'

<sup>7</sup> Properties of sentence-ending particles such as *ne*, *ma*, *ba*, and *ah* have been examined in detail by Li (2006), and the papers cited therein, for Chinese.

that *ne* appears at 1;11, while *no* and *te* appear later (at 2;02), and *ka* appears even later (at 2;04), based on the corpus analysis of Aki (CHILDES).

Sumihare at 1;06, for example, produces *na* quite clearly when he tries to speak to the addressee, and the observer (Noji) states that it is around then that the social and communicative skills of the child become noticeable. *Ne* is also a discourse marker observed at a very early stage of Japanese acquisition. Sumihare, for example, distinguishes *ne* from *na* just like adults do: he employs *na* when he talks to himself, while he employs *ne* when he talks to the addressee who holds him, as the contrast between (30b) and (30c) indicates:<sup>8</sup>

- (30) a. ...*ne* (1;07)  
Sentence-final particle  
'isn't it?' (Sumihare pronounces *ne* clearly.)
- b. Tyun mien naa (talking to himself) (1;09)  
the plane is-not-visible sentence-final particle  
'(I) cannot see the plane.'
- c. Tyun mien ne (talking to father, the addressee who holds him)(1;09)  
the plane is-not-visible sentence-final particle  
'(I) cannot see the plane.'

Here, most crucially, as shown in (31), the discourse markers are observed at the RIA Stage, before the full conjugation of the verbs appears in the production. The examples in (31) indicate that the discourse markers follow nominal elements, RIAs, and mimetic/onomatopoeic expressions. Note here that *na* is used in the adult way as a separate item, as shown in (31f) as well (just like *ne* in (30a)).

- (31) a. Onbu na (1;08)  
Hold-me-on-your back Sentence-final particle  
'Please hold me on your back.'
- b. Atti i-ta na (1;07) (volition) (talking to his mother, the addressee)  
over there go-TA Sentence-final particle  
'(I) want to go over there'
- c. Pan naa (1;05)  
bread Sentence-final particle  
'I want a piece of bread.'
- d. Sii si-ta naa (1;07) (adult: volition *si-tai*)  
pee do-TA Sentence-final particle  
'(I) want to pee.'

<sup>8</sup> It has been noted by many researchers that some of the discourse markers are acquired at a very early stage of language acquisition. Shirai, Shirai, and Furuta (1999), for instance, based on the corpus analysis of four Japanese monolingual children's longitudinal data (Aki 1;05–3;00, Ryo 1;03–3;00, Ari 1;0–3;00 and Kok 1;09–3;00 from CHILDES) (MacWhinney 2000) observe that every child began to use sentence-final particles when their MLU (Mean Length of Utterances) was below 1.2.

- e. Rii        na        na (1;07)  
 go down Sentence-final particle  
 'I want to go down.'  
 Context: Sumihare is on his father's shoulder. (Murasugi and Fuji 2008b)
- f. ....na (talking to his daddy) (Sumihare, 1;05)  
 Sentence-final particle

Now, the question is why it is the case that such sentence-final particles as *ne* and *na* follow any syntactic constituent so productively. Crucially, it is intriguing that the sentence-final particles are produced as separate items, that is, *ne* and *na*, follow null phrases (as (30a) and (31f)) in child Japanese.

Here, note that the difference between the discourse markers in adult West Flemish and adult Japanese resides in the fact that the former has them at the sentence-initial or final position only,<sup>9</sup> but the latter allows the discourse markers to be attached basically on any syntactic constituent.

- (32) Neko(-ga) ne, yane-kara ne, otita ne  
 Cat (-Nom) roof-from fell  
 'The cat fell from the roof.'

Japanese discourse markers can follow NPs, PPs, and VPs, and so on, as far as the structure constitutes a well-formed syntactic constituent. Then, the co-occurrence of RIA with a sentence-final particle in child grammar would indicate that a discourse marker or a Speech Act element can be preceded by the truncated element or a child's syntactic constituent, even if there is no T head, and even if there is no phonetically realized sentence.

If Speech Act elements are acquired earlier than TP and CP, then, as we noted before, we expect that the sentence-final particles are acquired earlier than complementizers. In fact, this predication is borne out. Although it is well known that *no*, the head of FiniteP in the CP layer, is acquired at a very early stage of language acquisition, it appears in child production later than such discourse markers as *na* and *ne*.

- (33) a. Nenne ta noo (Sumihare, 1;10)  
 sleep Past NO  
 '(I) am sleeping with my daddy.'
- b. Katai no (Sumihare, 1;10)  
 is-hard NO  
 '(This candy) is (very) hard.'
- c. Katai yo zya no (talking to his mother, the addressee) (1;10)  
 hard is NO  
 '(It) is very hard and difficult to take.'
- d. Teen no (talking to his mother, the addressee) (1;10)  
 mimetic NO  
 (Context: sitting on the Kotatsu)

<sup>9</sup> Thanks to Lillian Haegeman (p.c.) for the information.

- e. Tantan-wa? Tantan-wa, **no**, **no** (talking to his mother, the addressee) (1;10)  
 Tantan-top tantan-top NO NO  
 (Context: putting a pencil on the floor near the window)

The observer Noji states that he does not understand the intended meaning of (33d) and (33e). However, the data at least show that *no* indicates the end point of the sentence. And they appear only after 1;10, much later than the stage at which the discourse markers are produced. Furthermore, Sumihare produces such discourse markers as *ne* and *na* earlier than the head of ForceP *ka*, too. Sumihare starts producing *ka* at 2;03, much later than *ne* and *na*, and even after *no*.<sup>10</sup> Interestingly enough, sequences of two discourse markers (or sentence-final particles) such as *yo ne* start to appear a bit before *no* does in the production. Observe examples in (34).

- (34) a. Atui yo ne (Sumihare, 1;09)  
 hot YO NE  
 'It is hot, isn't it?'  
 b. Hairan yo ne (Sumiare, 1;09)  
 doesn't fit YO NE  
 '(The feet) do not fit (in the socks).'  
 c. Oimo oiti yo ne. (Sunmiare, 1;10)  
 potato delicious YO NE  
 'The potatoes (are) delicious, aren't they?'  
 d. Toofu kita yo ne. (Sumihare, 1;11)  
 Tofu came YO NE  
 'A man selling Tofu came over, didn't he?'

At around the time children discover the broader adult-like properties of sentence-final particles (e.g., *yo*, *ne*), that is, that more than one sentence-final particle can be attached to a phrase, the head of FinP and the verbal conjugations start to appear.

Given these descriptive findings, let us come back to our original question. Does the early appearance of sentence-final particles constitute a counterexample to the Truncation Hypothesis because sentence-final particles are the uppermost element above CP? A detailed analysis of child Japanese indicates that it is not the case.

Japanese-speaking children do produce sentence-final particles at the RIA stage, and sentence-final particles look as if they are added on the "truncated" structures, or phases, as shown in (18), repeated in (35):

- (35) (= (18)) Buuwa tui-ta **ne** **ne** (Sumihare, 1;09)  
 candle light-ta Sentence-final particle Sentence-final particle  
 Intended meaning: Please light the candle.  
 Literal meaning: The candle lit, didn't it?

<sup>10</sup> See the parallel finding by Okada and Grinstead (2003) based on the corpus analysis of Aki (CHILDES).

However, given that sentence-final particles follow any syntactic constituent in adult Japanese, and given the fact that child discourse markers not only follow various constituents but also appear as separate items as shown in (30a) and (31f), the child structure of the sentence-final particles following such a truncated phrase as an RIA would be something like (36).

- (36) [<sub>XP</sub> \_\_\_\_\_] *ne/na*  
 X= Syntactic Constituent

XP is a well-formed syntactic constituent, and can be phonetically realized as zero in the argument-drop language Japanese. Children produce truncated sentences or a phonetically null form, followed by a discourse particle that links the speaker and the addressee. Tense Phrase is projected only at around the stage where two particles come to appear in a sequence, as in (34), and several conjugation forms of verbs come to be used.

The analysis presented here assumes that discourse markers and elements above the CP layer are directly attached to children's RIAs. It should be mentioned here, however, that adult RIAs or tense-less phrases encoding a speech act are somehow difficult to be selected by the discourse markers. In Japanese, the strong imperative *-ta* forms is an RIA for both child grammar and adult grammar. Even in the adult grammar, the strong imperative *ta*-forms such as "*Kaetta! Kaetta!* (Go back! Go back!)" given in (9b), for example, cannot be directly followed by such discourse markers as *ne* and *na*.

- (37) a. Sassato      Kaet-ta!      Kaet-ta!  
                  immediately go back-TA   go back-TA  
                  'Go back immediately.'
- b. \*Sassato      Kaet-ta      ne/na!                      Kaet-ta ne/na!  
                  immediately go back-TA   Sentence-Final Particle  
                  'Go back immediately.'

It is quite intriguing that children, unlike adults, use sentence-final particles such as *ne* and *na* with RIAs at the age of one year, as shown in (18). Given our analysis so far, the co-occurrence of child RIAs and sentence-final particles would be explained naturally by assuming that children do not yet fully know the (adult) syntactic properties of sentence-final particles at this stage, although they know the pragmatic properties associated with them.

Now, given the argument so far, let us get back to the acquisition of Chinese to see if the analysis is supported. As we mentioned before, Lee (2000) observes the emergence of discourse markers at a very early stage of Cantonese-speaking children's grammar acquisition. Yang (2010), based on the analysis of BJCELA (Beijing Chinese Early Language Acquisition) corpus, argues that Mandarin-speaking children show that sentence-ending particles such as *ne*, *ma*, *ba*, and *a* all emerge very early and well before two years of age. According to Yang (2010), for example, a very young child (1;04) produces the sentence-ending particle *a* in natural contexts even at around the age of one, as shown in (38).

- (38) Qui a (1;04)  
       ball Discourse-marker  
       'It is the ball.'

The fact that discourse markers are produced very early, probably earlier than the RIA (the imperative form) and the tense/aspect marker *le* in Chinese, provides a strong piece of evidence to support the analysis presented in this chapter.<sup>11</sup>

Children's phrase structures are truncated. However, the Truncation Hypothesis does not entail that young children do not know the semantic/pragmatic properties of the uppermost elements in phrase structure. The evidence from Japanese and Chinese indicates that children in fact know the semantic/pragmatic properties of the discourse elements and use them just like adults, even at the age of one year. Just like a jigsaw puzzle, children assemble the border pieces first to get a defined area to work in. Information regarding discourse relations can thus guide the child to identify the missing tense-related items between the Speech Act Phrase and the truncated structure. This leads us to suggest that "discourse bootstrapping" should be probably added to the child's toolkit.

## 5. Conclusion

In this chapter, we argued that RIs (RIs) and RI Analogues (RIAs) are non-finite (infinitival) verbal forms that children at around one to two years of age use in matrix (root) clauses. We presented evidence for the Truncation Hypothesis proposed by Rizzi (1993/1994) for children's early syntactic structure, based on the analysis of Chinese and Japanese.

Note here that the forms of child RI(A)s per se are not different from those of adults. As we noted earlier, UG constrains "grammar space". As Akmajian (1984) first drew attention to "mad magazine sentences," infinitive constructions are used in matrix contexts in adult English and adult Spanish, for example.

- (39) a. Me go to that party?! I would never do such a thing! (English)  
       b. John go to the movies?! No way, man!
- (40) ¿Yo ir a esa fiesta? ¡Jamás! (Spanish) (Etxepare and Grohmann 2005)  
       I to-go to that party? Never!  
       'Me going to that party? Never!'

Mad magazine sentences, or adult RI(A)s, consist of two overtly expressed parts: the RI proper, orthographically indicated by '?!' (evoking a question-like exclamation), and the Coda (a further exclamation that seems to deny the true value of the mad magazine sentences) (Etxepare and Grohmann 2005). Child Chinese RIAs are in fact imperatives in adult Chinese; child Japanese RIAs are strong imperatives (and past declaratives) in adult Japanese. Child RIAs are possible "well-formed" verbs in the adult grammar.

<sup>11</sup> See Murasugi and Nakatani (2005, 2007) and Dejima, Nakatani, and Murasugi (2009) for evidence based on their longitudinal studies that the properties of Speech Act Phrase are found even at the babbling stage in Japanese acquisition.



The very young children's use of non-finite verbs in root contexts can be suggested to be a universal phenomenon. Whether or not the target language is *pro*-drop or argument-drop, children can be suggested to universally go through the very early non-finite verb stage. Yet, there are morphological variations: RI(A)s can be infinitives (e.g., German, Dutch, French, among others), bare verbs (e.g., Chinese, English, among others), or certain (surrogate) full forms (e.g., Japanese, Korean, Turkish, Kuwaiti Arabic, among others). The morphological parameter that determines whether or not the stem can stand by itself is acquired at the very early stage of language acquisition. This finding indicates that even during the stage where the phrase structure is truncated, very young children know the morphological properties of the target language. Without being directly taught by caretakers, children voluntarily express intentional and extensional meanings by picking up their first verbal forms among the possible non-finite forms in their mother tongue. The early emergence of morphological knowledge constitutes further important support for the proposal of inborn grammatical principles, parameters, and UG (Chomsky 1965; Huang 1982).

The difference between child grammar and adult grammar resides in that the child root clause is not CP like adults', but the phrase structure may be truncated, as Rizzi (1993/1994) argues, at a very early stage of grammar acquisition until around age two or so. With regard to the trigger for children to attain the adult axiom that "CP is the root of all clauses," it was suggested in this chapter that acquiring the possible selection of sentence-final particles might bootstrap the children's knowledge of the missing part in their syntactic structure.

The cross-linguistic analysis of child Chinese and Japanese led us to a suggestion for learnability theory. For children to acquire their mother tongue, "discourse bootstrapping" may be employed to acquire the full syntactic structure. Syntactic and semantic bootstrapping would be useful tools for children to acquire language in a bottom-up way, while discourse bootstrapping would be a useful tool for children to acquire the full syntactic structure.

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