

**STEPS IN THE EMERGENCE OF FULL SYNTACTIC STRUCTURE
IN
CHILD GRAMMAR ***

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1. Introduction

Between the ages of 11 and 19 months, the first utterances (or holophrases) make their appearance in child language. It has generally been believed that children's knowledge of syntactic structure is not well developed during the initial period of language acquisition. Japanese-speaking children, just like children speaking other languages, start with the holophrase stage, followed by the two-word stage and the multi-word stage. But children do not necessarily start just with nouns and verbs. They also produce the uppermost elements that link the speaker and the addressee, or discourse markers/sentence-final particles, at a very early stage of language acquisition as well. This paper explores two topics pertaining to children's early syntactic structure, Root Infinitives and the acquisition of discourse markers.

In this paper, we report the finding that Japanese- (and Chinese-) speaking children produce sentence-final particles earlier than tense-marked verbs, but argue that this is consistent with the Truncation Hypothesis proposed by Rizzi (1993/1994) for children's early

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syntactic structure. We show that a Japanese-speaking child at around 1;05 through 1;08 produce Root Infinitive (Analogues) such as the Verb+*ta* form with speech act heads such as *ne*, and later, at around 1;10, the complementizer *no*, which is the head of a Finite Phrase for propositions, productively. The empirical fact that it is only after 1;11 when the full conjugation of the verbs and Nominative Case marker start to appear suggests that children do not simply construct the phrase structure in a bottom-up way. Rather, very young children's syntactic structures are truncated, and the sentence-final particles or discourse markers bootstrap the acquisition of their full syntactic structure.

2. Grammatical Tense Deficits in Children

2.1. Root Infinitives

Young children have troubles with tense-marking. It has been found that in languages with relatively "rich" morphology such as Dutch, German and French, children may optionally use the infinitival 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.' (Poepel and Wexler 1993)
- c. Voir l'auto papa (French) (2;02)
to-see the car daddy (Intended meaning: On-going activity) (Pierce 1992)

In languages which 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) (1;06)
- b. Cromer wear glasses (English) (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 some morpho-syntactic and semantic properties.

- (3) Properties common among Root Infinitives/Root Infinitive Analogues
 - 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 on-going 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 shown 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, on-going 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 on-going 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 the eventive predicates (Hoekstra and Hyams 1998), and the head merger between V and T is not available during the stage of RI(A)s (Phillips 1995, 1996; Murasugi and Fuji 2008b).

Deen (2002) argues that Swahili also has an RIA, whose form is a bare verb just like English. He argues that Swahili-speaking children omit prefixes in a pattern quite consistent with Schütze and Wexler's (1996) Agreement and Tense Omission Model (ATOM). According to ATOM, subjects need to check both tense and agreement features for adults, but for kids, only one is possible. Either T or Agr is left out, and hence, the case errors (e.g., *Him want it*) and the RIs are both observed at around 2 to 3 years old. Crucially, tense and agreement have distinct properties and play distinct roles in licensing the subject and inflection. Table 1 summarizes the possible combinations of the features of INFL. When agreement is fully specified in English, nominative Case must be assigned. When agreement is underspecified, nominative Case cannot be assigned, and hence, a default case, accusative Case, may arise. When tense is underspecified, the verb appears as a bare verb. When tense and agreement are both underspecified, subject is marked with genitive Case with a bare verb.

Table 1: Summary of possible features of INFL and the Case on Subject

| INFL features | Subject | English Examples |
|------------------------|---------------------|----------------------------------|
| +Tense, +agreement | NOM-Case marking | <u>he</u> cries |
| +Tense, - agreement | ACC-Case marking | <u>him</u> cry, <u>him</u> cried |
| -Tense, +agreement | NOM-Case marking | <u>he</u> cry |
| -Tense, - agreement | GEN-Case marking | <u>his</u> cry |

(Schütze and Wexler 1996)

Accordingly, young children speaking Swahili omit functional elements such as tense and subject agreement, as shown in (4).

- (4) Swahili RIAs: Bare Verbs (Deen 2002)
- a. Child: mimi \emptyset -na -ruk -a (2;10)
 Adult: mimi ni -na -ruk -a (present tense)
 SA1s -pres -jump -IND
 ‘I jump down.’
- b. Child: ni \emptyset -kw -ambi -a (1;10)
 Adult: ni -na -kw -ambi -a
 SA1s -pres -OA2s -tell -IND
 ‘I am telling you.’
- c. Child: \emptyset \emptyset -tak -a tuwadh -a (2;06)
 Adult: ni -na -tak -a tuwadh -a
 SA1s -pres -want -IND bathe -IND
 ‘I want to bathe.’

(4a) is a clause which lacks subject agreement; (4b) is a clause which lacks tense. (4c) shows that the child uses the bare stem of the verb which lacks both subject agreement and tense.

Deen (2002) typologically classifies child languages into three types: languages that allow “true” RIs such as German and French, languages that have no RI phenomenon such as Italian and Japanese, and languages like Swahili whose very early non-finite verb forms appear as bare verbs. Deen’s typology has been supported, in part, by the tendency of subject NPs being phonetically null at the RI(A) stage in the non-pro-drop languages in general, and the empirical findings that Italian-speaking children (e.g., Martina (1;08-2;07), Diana (1;10-2;06), Guglielmo (2;02-2;07)) (Guasti 1993/1994) and Japanese-speaking children (e.g., Toshi (2;03), Ken (2;08-2;10), Masanori (2;04)) (Sano 1995) produce inflected forms in the

adult way at an early stage of language acquisition. It has been considered that children acquiring pro-drop languages do not go through the RI(A) stage.

Table 2: Typology of Root Infinitives (Deen 2002)

| True RI Languages | Non-RI Languages | Bare Verb Languages |
|-------------------|------------------|---------------------|
| German | Italian | English |
| Swedish | Japanese | Quechua |
| French | Spanish | Sesotho |
| Icelandic | Catalan | Inuktitut |
| Dutch | | Siswati |
| Russian | | Swahili |

In the next section, we argue that there is an RI stage in Japanese, and the languages categorized as Non-RI languages above are, in fact, the languages which have surrogate verb forms as the Root Infinitive Analogues.

2.2. Surrogate Verbs in Child Japanese: Verb+*ta* Form

Japanese is an agglutinating argument-drop language where bare stems cannot stand alone without, for example, tense or aspect morphemes, as shown in (5). Japanese is, like Italian and Spanish, a [-stem] language whose verbs cannot surface as bare forms.

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

Unlike Italian and Spanish, however, Japanese does not have rich verbal inflection that indicates number and gender. Japanese verbs inflect for tense, negation, aspect and mood. The following are some inflections for the verb “to eat,” which has the root *tabe-*.

- (6) a. *tabe-ru* (eat) present/dictionary form
b. *tabe-ta* (ate) past
c. *tabe-(a)nai* (not eat) negation
d. *tabe-(i)te iru* (is eating) progressive¹

¹ The abbreviated *V-teru/-teta* forms are used as colloquial expressions in Adult Japanese.

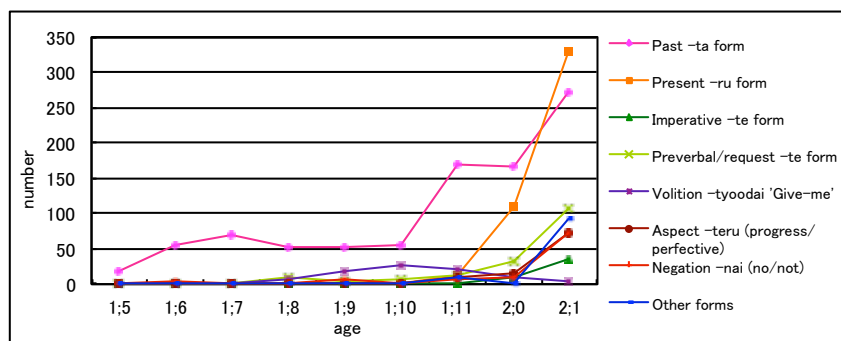
- (i) *Tabe-te-ru/-ta*
eat-Asp-Pres/-Past
‘(I) have/had eaten.’ / ‘(I) am/was eating.’

e. *tabe-te* (eat) imperative

The verb stem *tabe-* (to eat) is followed by the present-/past-tense morphemes as in (6a-b), and it is followed by the aspectual morpheme *-te-i* to indicate either an ongoing process or a result state of the event as in (6d). For request or imperative, the *-te* form is employed as in (6e).

The conjugations in Japanese are acquired at an early stage, at around the beginning of age two. The numbers of each verbal forms in Sumihare (Noji 1973–1977) are shown in Figure 1.

Figure 1: Frequency of verbal forms in Sumihare's corpus



Murasugi, Fuji and Hashimoto (2007), Murasugi and Fuji (2008a, b) and Murasugi, Nakatani and Fuji (2010), based on the corpus analysis of Sumihare (CHILDES) and the longitudinal study with Yuta, a Japanese-speaking child, argue that there is a stage of RIAs in Japanese acquisition. 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 and copula) and C-related items are not observed with the early non-finite verbs, and tense is underspecified, (ii) the past-tense morpheme is not found with adjectives (i.e., only present-tensed adjectives are produced), (iii) Verb-*ta* forms (past-tensed verb forms) are produced to describe an on-going activity, (iv) Verb-*ta* forms (past-tensed verb forms) are used in matrix clauses for the irrealis or volition meaning (Modal Reference Effects (=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 Phillips (1995) proposes.

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

- (7) a. Atti Atti Atti *i-ta* (1;06) (irrealis/volition) (Adult form: *ik-u/ik-e*)
 there there there go-TA

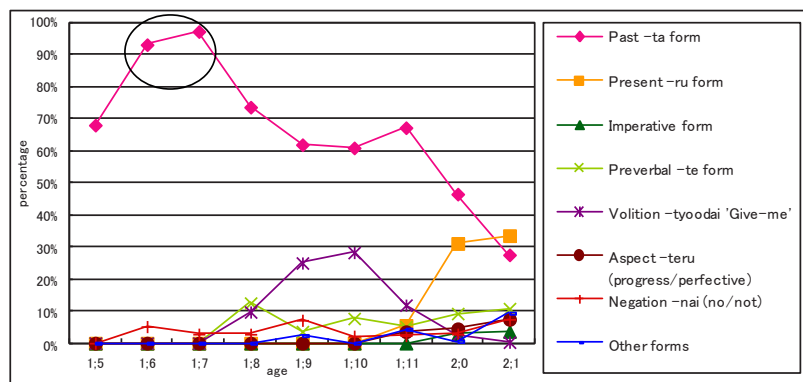
‘I want to go there. / Go there.’

- 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 (7a)² 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 (7b), which convinces us of the Modal Reference Effects at the early stage of Japanese acquisition: Sumihare used *tii-si-ta* in a volition context when he wanted to pee. As for (7c), 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, as is clear from Figure 2. 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.

Figure 2: The overall proportion of verbal forms in Sumihare’s corpus at each stage.



Parallel data are found in a longitudinal study with another Japanese-speaking child, Yuta, as in (8) (Nakatani and Murasugi 2009).

- (8) a. Ai-*ta* Ai-*ta* (1;07.1) (irrealis/volition) (Adult form: ake-*te*)
 open-TA openPast
 ‘I want to open this cabinet./ Open this cabinet.’

² The context for (7a) 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. Sumihare got frustrated and said, “atti i-ta (there go-Past)=(Literal meaning: I went, Intended meaning: I wanna go there)” angrily again.

- 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 out 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 video tape is lying there.’

The empirical evidence that *V-ta* forms, but not the other verbal forms such as present-tensed forms, are consistently used by the very young children under two to denote intentional meaning exemplified in (8a) and (8b) and extensional meaning exemplified in (8c) and (8d), suggests that the verbal conjugation, i.e., the merger of V and inflection, is not yet available then. This is the stage where a default morphological form in the target language is used as the first verbal form by a child.

Then, why is it the case that *V-ta* form is chosen as the RIA in Japanese by different children out of several inflected forms, despite the fact that each child receives different input? Here arises a bridge between child language and syntactic theory. Murasugi (2009) proposes that *V-ta* is the default infinitive form in both child and adult Japanese.

Cinque (2004) and Kawai (2006), for adult Syntax, propose that there are non-finite “surrogate” verbs that look like finite verbs, and the surrogate forms are derived by an operation to make the verbal stems well-formed morphological words in the adult grammar of Salentino/Serbo-Croatian and Japanese, respectively. Furthermore, there is evidence that the past-tense form, *V-ta*, which children pick as an RIA is most unmarked among the possible forms in Japanese.³

Two conjuncts unspecified for tense, for example, are conjoined with *-ta* forms as in (9a-b), and *-ta* forms can be used for future as in (10a-b) and with irrealis meaning as well, as exemplified in (10c).

- (9) 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.’

³ Non-finite verb forms are found in the 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.

- 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.’
- (10) 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!’
- 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), Japanese *V-ta* forms can be used as non-finite surrogate forms to express strong imperatives as shown in (11).

- (11) 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 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 old, 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. The agglutinative language-speaking children, even at the age of one, 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), i.e., the RIA(s).

2.3. Typology in Root Infinitives Revisited

There are in fact a lot of important cross-linguistic studies reporting that very young children produce verbs which appear to be finite, but are, in fact, non-finite. For example, as

shown in (12), Kim and Phillips (1998) find that Korean-speaking children, at the beginning of age two, attach a mood marker *-e* and the form is used in the full range of environments almost 100 percent just like Japanese *-ta*. According to Kim and Phillips (1998), in adult Korean, *-e* functions as a default mood marker. And their subject uses the Verb+*e* form in all contexts, even in contexts where the V-*e* form is not allowed in the adult Korean.⁴

(12) Korean RIAs: Stem + Mood particle *-e(/a)* form (Kim and Phillips 1998)

- a. *mek-e emma* (2 yrs) (adult form: *mek-ca* (eat-Propositive))
eat-Decl mommy

‘Let’s eat, Mommy.’

- b. *ayki pwo-a* (2 yrs) (adult form: *pwo-l-kkeya* (look-Presumptive))
baby look-Decl

‘Baby (I) will look at it.’

In (12a) instead of the propositive morpheme, and in (12b) instead of the presumptive morpheme, *a(e)* is used. Just like Japanese, T-related (e.g., Nominative Case) and C-related items are not observed with the early non-finite verbs, and tense is underspecified. Table 3 summarizes the child languages that have what we call “the surrogate verbs”.

Table 3: Child languages that have Surrogate Infinitives

| | ±bare stem | Forms | Source |
|----------------|------------|--|--|
| Italian | – | Imperative form | Salustri and Hyams (2003, 2006) |
| Kuwaiti Arabic | – | Masculine imperative form | Aljenaie (2000) |
| Spanish | – | 3rd person singular form | Grinstead (1994), Pratt and Grinstead (2007) |
| Catalan | – | 3rd person singular form | Grinstead (1994), Torrens (1995) |
| Romanian | – | Verb+Past participle form | Nicoleta (2006) |
| Greek | – | Bare perfective form | Varlokosta, Vainikka and Rohrbacher (1998), Hyams (2005) |
| Turkish | – | Verb+ <i>-di</i> (Past tense marker) | Aksu-Koç and Ketrez (2003) |
| K’iche’ Maya | – | Stem+ <i>ch/ik</i> (sentence terminator) | Pye (2001) |
| Korean | – | Stem+Mood particle <i>e(/a)</i> form | Kim and Phillips (1998) |

For example, Arabic is a synthetic language with rich bound morphology. As shown in (13),

⁴ See Murasugi and Fuji (2008a) for the details.

Aljenaie (2000) finds that Kuwaiti Arabic-speaking children at around the age of two typically produce verbs which lack present and past tense, and mark the stem with another inflection.

(13) Kuwaiti Arabic ([-bare stem]) RIAs: Masculine imperative form

Eh xalis (1;11-2;05) (adult form: *xalis-at* (finish-3f))

yes, finished

‘Yes, it is finished.’ (Aljenaie 2000)

Children never leave a verb uninflected as it does not constitute a well-formed word in Kuwaiti Arabic, but alternatively, children choose a default masculine imperative form as the surrogate verb form. Many children, who speak the languages whose verb stems cannot stand alone, produce surrogate verbs at around late one or very early two years old. These children consistently use the default “apparently conjugated” infinitive form during the RIA period.

Note here that RIAs with the so-called “surrogate infinitives” are found at around age one, 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 and Korean, for example, unlike the case of European RIs.

The sharp contrast indicates that the so-called “Root Infinitive (Analogue) stage” is actually twofold: tense-truncated stage and tense-unspecified stage. The RI(A)s found before two 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 is no functional categories as Radford (1990, 1991) and Galasso (2011) propose.⁵ 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.)).

RIAs found at a later stage after two correspond to the so-called Optional Infinitives. Optional Infinitives, the infinitives optionally used in the matrix clauses, are produced when features in Tense and Agreement are underspecified as ATOM (Schütze and Wexler 1996) predicts. In fact, just like English-speaking children, children speaking Japanese⁶, for example, also optionally mark the subject of the sentence “erroneously” with genitive or dative after the verbal conjugations are acquired after two or so, and this is the stage observed

⁵ Rizzi (1993/1994) presents “the truncation model”, under which very young children may “stop early” as they are building up the phrase structure. Adults build their trees all the way to CP as a root, but children might not.

⁶ See Radford (1990, 1999) and Galasso (2011) for the detailed analysis of non-nominative subjects in Child English. And see Murasugi and Watanabe (2009), Sawada, Murasugi and Fuji (2010) and Sawada and Murasugi (2011) for the analysis of non-nominative subjects in child Japanese. See also Mahajan (2004) for the syntax of non-nominative subjects.

in a lot of languages.⁷

2.4. 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? Adult Chinese is an isolating language which does not have the so-called “infinitives”. Do Chinese-speaking children go through the RIA stage? If so, which form do Chinese-speaking children use as their RIA?

Given the argument so far, we would predict that Chinese-speaking children would use the bare forms as the RIAs. In what follows, we will present a piece of evidence to indicate that the prediction might be accurate.

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

Salustri and Hyams (2003) observe that the proportion of imperatives is significantly higher than that of RIs. According to Salustri and Hyams (2003, 2006), Italian-speaking children begin using imperatives before the age of 2, and the verbs have appropriate morphology.

(14) dammi! (1;10)

give-to me_{cl}

‘give it to me.’ (Salustri and Hyams 2003)

There are cases where two forms are observed even in a single language as RIs. For instance, Bar-Shalom and Snyder (2001) report that children speaking Russian produce two forms of RIs: infinitives and imperatives. Dutch has been considered a typical RI language, but still, there are some mysterious descriptions. As shown in (15), Wijnen, Kempen and Gillis (2001) report that verbal forms resembling imperatives are found, in addition to the infinitive forms, at the early two-word stage. If this is the case, then Dutch-speaking children

⁷ The absence of agreement is connected with the parameter of argument-drop (Saito (2007), Takahashi (in press)). Japanese is a language that allows argument ellipsis, and argument ellipsis in Japanese is proposed to arise from the absence of overt agreement. Mamoru Saito (p.c.) suggested a possibility that when the agreement system is not fully acquired at around two, the English-speaking children may allow argument ellipsis as well, just like Japanese. His suggestion may naturally explain the well-known empirical fact that robust null subjects are observed at the stage of “Root Infinitives” when the features of Tense and Agreement are not fully specified, and the subject NPs are marked with either nominative, genitive or dative optionally at around two in a lot of languages including English.

produce the imperative forms as well as the infinitive forms as their first verbs.

- (15) “...Starting with the early two-word stage, forms resembling imperatives were discarded from the analyses, as it is unclear whether they are finite or non-finite.”
(Wijnen, Kempen and Gillis 2001)

The findings independently obtained from Russian, Italian and Dutch given above may not be coincidental. The very early non-finite verbs do not necessarily appear in a single form per language. Furthermore, the imperative forms, it seems, are chosen as the RIAs in more than a few languages.

Lillo-Martin and Quadros (2009) also argue that imperative forms are RIAs in American Sign Language (ASL) and Brazilian Sign Language (LSB). These languages have both agreeing verbs which move from one location to another associated with their arguments, and plain verbs which do not require modification to indicate the subject or the object. Lillo-Martin and Quadros (2009) argue that children produce notably more imperatives with agreeing verbs than with plain verbs, and further, that the ratio of imperatives is quite high. Grinstead (1998), Bel (2001) and Montrul (2004) find that imperatives are quite frequent in the early stage and decrease over time in Spanish and Catalan. In child Hungarian and Slovenian, the imperative forms are reported to start out very high and decrease with age, too (Londe 2004, Rus 2004).

As for Chinese, 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 RIA is exemplified in (16):

- (16) 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’ (2003, 2006) proposal that Italian RIAs are imperatives. The evidence is elicited based on the criterion given in (17):

- (17) 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% imperative. Chien’s (2009) data is basically parallel with Salustri and Hyams’ (2003). For example, according to Chien’s (2009) counting, Mandarin-speaking adults use only about 10% imperative; while a Mandarin-speaking child, at 2;5, use 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 the Italian case. For a Mandarin-speaking child at 1;11, her study shows that 60% of the utterances is in imperative form. Thus, just like Salustri and Hyams (2003, 2006), Chien’s (2009) finding suggests that there is a RIA stage in Chinese, and the form is imperative in Mandarin Chinese.

Now, given Chien’s (2009) finding, we predict that the very young children producing imperatives as their RIAs would produce the strings that lack or are underspecified with tense. And there is a piece of evidence to suggest that this might be correct.

Lin (2008) argues that there is a finite and non-finite contrast in adult Mandarin. 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.⁸ He argues that epistemic modals always scope over *le* since *le* can be licensed within their finite TP

⁸ 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

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. See (18) (Lin 2006).

- (18) a. Zhangsan_i T_F [AspP [VP keneng [TP t_i T_F [AspP [VP qu Taipei] le]]] Ø]
 Zhangsan likely go Taipei Prf Stc
 ‘It is likely that Zhangsan has gone to Taipei.’
- b. Zhangsan_i T_F [AspP [VP nenggou [TP PRO T_{NF} [AspP [VP qu Taipei] Ø]]] le]
 Zhangsan able go Taipei Stc Prf
 ‘Zhangsan has (become) able to go to Taipei.’

What crucially matters for the argument here is the fact that the sentence-final particles *le* (and the progressive aspect marker *zai*, according to Lin (2008)) in adult Mandarin distinguishes finite sentences from non-finite ones. Given the adult grammar, the perfect sentence particle *le* (and *zai*) is predicted to be (at least optionally) absent/underspecified at the stage of RIAs in child Mandarin.

Liu (2009), interestingly enough, observes that Mandarin-speaking children 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 (19). In (19), the child dropped *le* even when repeating what his mother has said to him.

- (19) 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 (20) is found in the production of BB (1;10).

- (20) 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 (21), 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.

(21) 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 observed 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 suggests that there is an intermediate stage where the sentence is underspecified with or lack tense even in the acquisition of a typical argument-drop language, Mandarin Chinese.

To sum up the argument so far, we have addressed two questions: (i) “what” question, i.e., the descriptive adequacy of the claim that the pro-drop language-speaking children do not go through the RI(A) stage, and (ii) “how” question, i.e., why it is the case that there are cross-linguistic variations in the form of RIAs. We argued that children acquiring Japanese, Korean and Chinese, typical pro-drop or argument-drop languages, do go through the RI(A) stage. Non-finite verbs in finite (root) contexts are common in the very young child production cross-linguistically, and the early verbal forms in child languages reflect the core morphological properties of the adult grammar.

In particular, we argued that *V-ta*, or the past-tense/strong imperative form, *V-e*, or verb followed by the default mood, and the imperative form (or the bare form), are the RIAs in Japanese, Korean and Chinese, respectively. Child language reveals that Japanese and Korean are grouped together as the “surrogate”-RI(A)-type language just like Turkish and Kuwaiti-Arabic. Child Chinese, on the other hand, indicates that the RIA in Chinese is the imperative form just like Italian and ASL. Interestingly enough, the imperative form in Chinese is the bare form just like English and Swahili at the same time. Chinese-speaking children, thus, naturally pick up the imperative form, or the bare form of verbs as their first verb, i.e., an RIA.

3. The Truncation Model

Then, what are Root Infinitives and Root Infinitive Analogues? What does it exactly mean that T in child grammar is not marked for tense or agreement? The findings discussed so far show the RIAs in Japanese, for example, are the verbs very young children produce when Tense element is missing. Japanese-speaking children under two, consistently, not optionally, produce just a single verb form, i.e., *V-ta* form. Just like other languages, no auxiliary-relative items or C-related items appear then. No nominative Case markers are produced either. The adverbials related to time such as *kinoo* (yesterday) are not used with the RIAs. These empirical facts lead us to conjecture that this is the stage where TP is missing. There are languages that do not project Tense such as Dravidian languages (Amritavalli and Jayaseelan 2005). According to Amritavalli and Jayaseelan (2005), the tense morphology that

appears on verbs in some clauses is more appropriately labeled aspect.

At around two, in contrast, 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. Interestingly enough, this stage is observed in a lot of languages.

The sharp contrast found between the two phases of “Root Infinitives” shown above indicates that the so-called “Root Infinitive (Analogue) stage” actually has two stages. A natural hypothesis for the first stage would be 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 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 underspecified as ATOM (Schütze and Wexler 1996) predicts.

The former stage of RIA can be explained neatly by the Truncation Hypothesis. The Truncation Hypothesis (Rizzi 1993/1994) states that children’s structures can be as complex as adult structures, but child grammar allows the option of optionally truncating 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, however, lack the specific knowledge that every well-formed clause is CP in adult grammar (until the initial stage of Root Infinitive stage in our term ends). Until children “acquire” the axiom, they hypothesize that phrase structures can only go partway up to CP.

This hypothesis clearly 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 Root Infinitives, 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 Root Infinitive stage. If Root Infinitives 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. Root Infinitives 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 why 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).

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

- (22) a. No mommy doing. David turn. (2;00)
 b. No lamb have it. No lamb have it. (2;00)
 c. No lamb have a chair either (2;00)
 d. No dog stay in the room . Don't dog stay in the room. (2;01)
 e. No Leila have a turn. (2;01)
 f. Never Mommy touch it. (2;01)
 g. Not man up here on him head. (2;02)
 h. No my play my puppet. Play my toys. (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 (22) based on the assumption that nominative Case may be assigned under government by Infl (rather than the assumption that 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 (22). According to Déprez and Pierce's (1993) analysis, the structure children hypothesize for (22a) is (23):

- (23) [_{IP} _____ [_{NegP} no (negative element) [_{VP} 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 Universal Grammar (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 the UG, a possible explanation for the acquisition stage of VP-internal subject in child grammar would be that there is no position for the subject, which is VP-internally base-generated, to move to. Children start producing subject in the VP-internal position because there is no IP (TP).⁹ This is because the phrase structure children hypothesize is

⁹ For a different analysis, see Sugisaki (2013).

truncated then. Thus, during the stage where the phrase structure is truncated, children produce such sentences as (22).

This proposal is further supported by the fact that the verbs that children produce exemplified in (22) are bare forms, or Root Infinitives. The fact that children producing subjects VP-internally without raising it 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 Japanese indicates that the case might not be so simple. As we noted above, if Root Infinitives (Analogues) are missing IP (TP), then they should be missing the syntactic heads above IP (TP) as well. Japanese-speaking children, however, do produce sentence-final particles at the RIA stage. The sentence-final particle, which resides in the position up above the CP layer in the adult grammar is apparently added on the “truncated” structure. Observe, for instance, (24).

- (24) 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?

(24) is quite interesting 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* followed by *tuita*, the RIA. Then, does such empirical evidence as (24) indicate that the RIA phenomenon cannot be explained by the Truncation Hypothesis? In the following section, based on the analysis that sentence-final particles are Speech Act heads, we argue that the early appearance of sentence-final particles does not constitute a counter example to the Truncation Hypothesis.

4. The Co-occurrence of Sentence-final Particles with RIAs

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 (25).

- (25) 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)

The volition or modal in the early stage are expressed by the *-ta* form with the sentence-final particle *-na*.

There are languages that have particles (derived from a verb whose full lexical meaning has been lost) which are used to establish discourse relations between the speaker and the hearer (Haegeman and Hill 2011). 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. 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* shown in (26a) and (26b).

(26) 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 (27a,b) but *wè* precedes *zè* as in (28a,b).

(27) a. Men artikel is gedoan zè né.

- b. *Men artikel is gedoan né zè.

(28) 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 (27a) and with *wè* as in (26a), and though *wè* can also co-occur with *zè* as in (28a), the three discourse markers cannot co-occur, regardless of the order, as we can see in (29).

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

(29b) 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 below:

- (30) 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 (31).

- (31) 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 (31b). When sentence-final discourse markers *yo* and *ne* co-occur, *ne* must be to the right of *yo*.

Second, just like West Flemish, Japanese basically only has two positions for discourse markers. Though *yo* can co-occur with *ne* (32a) and with *na* (32b), the three discourse markers cannot co-occur, regardless of the order as we can see in (33):

- (32) 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

- (33) *Taro-wa mikan -o taberu yo ne na.
 Taro-Top orange-Acc eat
 ‘Taro eats oranges.’

(33) is only acceptable when *na* is clearly set off from the preceding segment.¹⁰ 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.

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 below.

¹⁰ Three sentence-final particles are allowed only when *wa* comes first.

- (i) Anata asita gakkō-ni iku wa yo ne.
 You tomorrow school-Dat go WA YO NE
 ‘You are going to school tomorrow, aren’t you?’

- (34) 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.

- (35) a. [Force[Fin[TP Taroo-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 Taroo-wa unagi-o taberu] no] ka] **na**
 c. [Force[Fin[TP Taroo-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 (35a-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 that *ne* appears at 1;11, while *no* and *te* appear later in 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 becomes 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 (36b) and (36c) indicates:

- (36) 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.'

In fact, it has been noted by many researchers that some of the discourse markers are

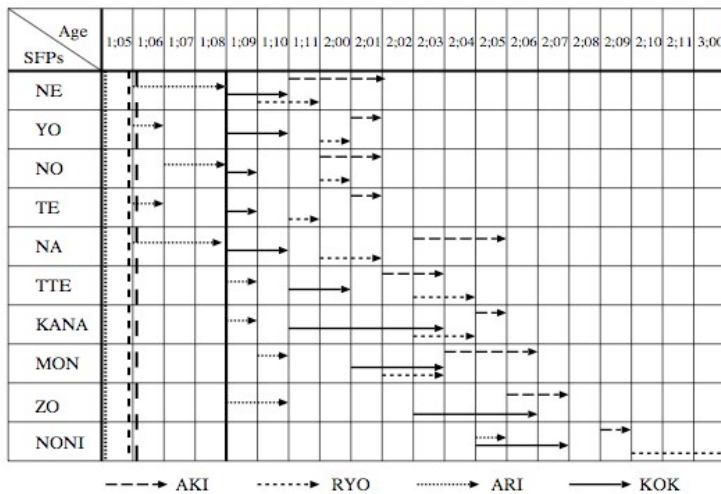
acquired at a very early stage of language acquisition. Shirai, Shirai and Furuta (1999), for instance, based on the corpus analysis of four Japanese monolingual children's longitudinal data (Aki 1;05-3;00, Ryo 1;03-3;00, Ari 1;06-3;00 and Kok 1;09-3;00 from CHILDES), observe that every child began to use sentence-final particles when their MLU (Mean Length of Utterances) was below 1.2 as shown in Table 4.

Table 4: Sentence-final particles each child began to produce (Shirai, Shirai and Furuta 1999)

| Name | Age | MLU | SFPs |
|------|------|-----|---------------------------|
| AKI | 2;00 | 1.1 | <i>ne, no</i> |
| RYO | 1;10 | 1.1 | <i>Ne</i> |
| ARI | 1;06 | 1.2 | <i>ne, yo, te, na</i> |
| KOK | 1;09 | 1.1 | <i>ne, no, yo, te, na</i> |

Figure 3 shows when the four children came to use sentence-final particles and when they productively came to use them. The onset is marked by the root of an arrow, and the productive use is marked by the head.

Figure 3: The onset of sentence-final particles (Shirai, Shirai and Furuta 1999)



Here, most crucially, as shown in (37), the discourse markers are observed at the RIA Stage, before the full conjugation of the verbs appears in the production. The examples in (37) 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 (37f) as well (just like *ne* in (36a)).

- (37) 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.’
- 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) (Sumiahre, 1;05)

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, i.e., *ne* and *na* follow null phrases (as (36a) and (37f)) 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 only¹¹, but the latter allows the discourse markers to be attached basically on any syntactic constituent.

- (38) 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

¹¹ Thanks to Lillian Haegeman (p.c.) for the information.

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*.

- (39) 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)
- 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 (39d) and (39e). 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 where the discourse markers are produced. Furthermore, Sumihare produces such discourse markers as *ne* and *na* earlier than the head of ForceP *ka*, too. Exactly like what Okada and Grinstead (2003) find based on the corpus analysis of Aki (CHILDES), Sumihare starts producing *ka* at 2;03, much later than *ne* and *na*, and even after *no*.

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 (40).

- (40) a. Atui yo ne (Sumihare, 1:09)
hot YO NE
‘It is hot, isn't it?’
- b. Hairan yo ne (Sumiare, 1;09)
dosn'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 find out the nature of sentence-final particles, i.e., 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 the sentence-final particles constitute a counter example to the Truncation Hypothesis because the 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 the sentence-final particles look as if they are added on the “truncated” structures, or phrases, as shown in (24), repeated below:

- (41)=(24) 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?

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 (36a) and (37f), the child structure of the sentence-final particles following such a truncated phrase as an RIA would be something like (42).

- (42) [_{XP} _____] **ne/na**
X= Syntactic Constituent

XP is a well-formed syntactic constituent, and can be phonetically realized null in such an argument-drop language as 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 (40) and several conjugation forms of verbs come to be used.

The analysis given above presupposes that the discourse markers or the elements above the CP layer are directly attached on the child RIAs. It should be mentioned here, however, that adult RIAs or tense-less phrases with strong speech act is somehow difficult to be selected by the discourse markers. In Japanese, the verb-*ta* form is RIA for both child grammar and adult grammar. Even in the adult grammar, V-*ta* forms, such as “*Kaetta! Kaetta!* (Go back! Go back!)” given in (11), for example, cannot be directly followed by such discourse markers as *ne* and *na*.

- (43) 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 such sentence-final particles as *ne* and *na* with RIA at the age of one as shown in (25). Given our analysis so far, the co-occurrence of the child RIA and the sentence-final particles would be explained naturally by assuming that children do not fully know the syntactic properties of the sentence-final particles at the stage yet, although they know the pragmatic properties associated with them.

Before closing this section, it might be worth mentioning that a cross-linguistic data in support of the analysis presented so far can be also found. The emergence of discourse markers at a very early stage of language acquisition is commonly observed in child Chinese. According to Yang (2010), for example, Chinese-speaking children start producing discourse markers (sentence-final particles) such as *a* at around the age of one.

- (44) Qui a (1;04)
 ball Discourse-marker

‘It is the ball.’

The fact that the discourse markers are probably produced earlier than the RIA (the imperative form) and the tense/aspect marker *le* supports the analysis presented in this

paper.¹²

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 element in the phrase structure. The evidence from Japanese 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. Just like a jigsaw puzzle, children would 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 paper, based on children's production of discourse markers and RIAs in Japanese and Chinese, we presented evidence for the Truncation Hypothesis proposed by Rizzi (1993/1994) for children's early syntactic structure.

We argued that Root Infinitives (RIs) and Root Infinitive Analogues (RIAs) are non-finite (infinitival) verbal forms which children at around one to two years of age use in matrix (root) clauses, where they are not possible in their adult grammar, and that there are two stages: (i) the stage where there is no T-projection, and (ii) the stage where TP is projected, but the features of Tense/Agreement are yet underspecified.

Note here that the forms of child RI(A)s *per se* are not different from adult ones. 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.

(45) a. Me go to that party?! I would never do such a thing! (English)

b. John go to the movies?! No way, man!

(46) Yo ir a esa fiesta?! Jamás! (Spanish) (Etxepare and Grohmann 2005)

Mad magazine sentences or adult RI(A)s consist of two overtly expressed parts: the Root Infinitive proper, orthographically indicated by '?!' (evoking a question-like exclamation), and the Coda (a further exclamation that seems to deny the truth 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 Korean RIAs are modal phrases in adult Korean. Child RIAs are possible "well-formed" verbs in the adult grammar.

¹² 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 is a universal phenomenon. Whether or not the target language is *pro*-drop or argument-drop, children universally go through the very early non-finite verb stage. Yet, there are morphological variations: RI(A)s can be infinitives, bare verbs, participles, or certain (surrogate) full forms. 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 property of the target language. Without being directly taught by caretakers, children voluntarily express the 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 the morphological knowledge would constitute an important ground for the proposal of the inborn grammatical principles, parameters, and the Universal Grammar (Chomsky 1965, Huang 1982).

The only difference between child grammar and adult grammar is in that (i) 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 two or so, and (ii) even after TP comes to be projected after the age of two, features in Tense/Agreement are underspecified initially, thereby genitive subjects or quirky subjects (which are not possible in the adult target grammar) are optionally used with the optional infinitives, as Schütze and Wexler (1996) suggest. With regard to the trigger for children to attain the adult axiom that "CP is the root of all clauses", we suggested in this paper that acquiring the possible selection of sentence-final particles might bootstrap the children's knowledge of the missing part in their syntactic structure.

The argument led us to a suggestion for the learnability theory. For children to acquire their mother tongue, "discourse bootstrapping" would be employed to acquire the full syntactic structure. Syntactic and semantic bootstrapping would be useful toolkits for children to acquire language in a bottom-up way, while discourse bootstrapping would be a useful toolkit for children to acquire the full syntactic structure in a top-down way.

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