The Roots of Root Infinitive Analogues: The Surrogate Verb Forms Common in Adult and Child Grammars*

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1. Introduction

It has been observed that children at around two years of age produce non-finite verb forms in matrix clauses, as exemplified in (1) through (3), alongside correctly inflected forms.

(1) Eve sit floor (1;7) (English)

(2) Peter bal pakken (2;1) (Dutch)
Peter ball get-INF 'Peter (wants to) get the ball.' (Blom and Wijnen 2000)

(3) Dormir petit bébé (1;11) (French)
sleep-INF little baby 'A little baby sleeps.' (Guasti 2004)

In child English in (1), the verb, *sit*, lacks the subject agreement, and an infinitive or a bare verb is used in a root clause. In (2), in child Dutch, *pakken* 'to get,' an infinitive, is used in the final position in a matrix clause, while it is not allowed in adult Dutch. Just like in the English and Dutch examples, in child French, *dormir* 'to sleep,' an infinitive, is used in a matrix clause, as shown in (3).

This phenomenon is called Root Infinitives (RIs), and it is well known that there are some salient properties.[1] One of them is the Modal Reference Effect (Hoekstra and Hyams 1998, among others). It is observed that RIs typically have a modal or irrealis interpretation, as shown in (4).

(4) a. Niekje buiten spelen. (Dutch)
Niekje outside play-INF 'Niek (=speaker) wants to play outside.'
b. Papa ook boot maken
Papa also boat make-INF
'Papa must also build a boat.' or 'I want Papa to also build a boat.' (Hoekstra and Hyams 1998)

In (4a), *spelen* 'to play,' an infinitive instead of the finite form, is used in a root clause, expressing the speaker's request in child Dutch. Likewise, in (4b), *maken* 'to make' appears in a root clause, expressing the child's request. It is argued that RIs are very rare in *pro*-drop languages (Guasti 1993/1994, Sano1995, Bar-Shalom and Snyder 1997, among others). However, some researchers have proposed that there is a Root Infinitive Analogue (RIA) stage in *pro*-drop languages, and the stage corresponds to an RI stage. For example, Salustri and Hyams (2003, 2006) propose that Italian has RIAs and the form is an imperative, and Varlokosta, Vainikka and Rohrbacher (1996) and Hyams (2005) also propose that Greek has RIAs, and the form is a bare perfective.

As for Japanese, which is also a discourse *pro*-drop language, it has been argued that there is no RI stage (Sano 1995,

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[1] Some of the RI properties are listed in (i).
(i) a. RIs are optional: RIs occur side by side with fully inflected verbs.
b. RIs are tenseless verbs in root contexts. c. RIs occur predominantly with null subjects.
d. RIs generally do not occur in wh-questions. e. RIs occur in modal contexts (Modal Reference Effects (MREs)).
f. RIs are restricted to event-denoting predicates (Eventivity Constraint).
g. RIs are very rare in *pro*-drop languages. (Adopted from Deen 2002, Hyams 2005, Salustri and Hyams 2003)

1999, Kato, Sato, Takeda, Miyoshi, Sakai and Koizumi 2003, among others). However, Murasugi, Fuji and Hashimoto (2007) and Nakatani and Murasugi (2009), among others, propose that there is an RIA stage in Japanese and the form in question is V + *ta* form (verb + past tense morpheme) and/or Verb + *tyatta* form (verb + perfective morpheme) at the later stage. They propose that the RIA stage in Japanese is, just like Korean and Italian, found much earlier than the RI stage in European languages; even at one year of age, and the form is initially used 100% of the time in the full range of environments. As for the syntactic status of the V + *ta* form, Murasugi (2009a) and Nakatani and Murasugi (2009) propose that those RIA forms in child Japanese are the non-past form, or the "surrogate verbal forms" in Cinque's (2004) term, and the surrogate forms, which look like morphologically finite, are in fact, infinite. (See also Murasugi (2009b) and Murasugi and Fuji (2008, 2009) for the discussion of RIAs in Japanese.)

In this paper, we first give supportive evidence for the proposal that there is an RIA stage in Japanese, based on the longitudinal observation of two Japanese-speaking children. The form which appears at the stage is V + *ta* form, the past-tense form, and at the later stage, V + *tyatta* form, the perfective form, is also used in child Japanese. We name the very early non-finite verbs, Surrogate Infinitives.

Then, based on the comparative syntactic analysis, we propose that children acquiring [-bare stem] languages, such as Korean (Kim and Phillips 1998), Italian (Salustri and Hyams 2003, 2006), Greek (Varlokosta, Vainikka and Rohrbacher 1996, Hyams 2005), Turkish (Aksu-Koç and Ketrez 2003), Romanian (Nicoleta 2006) Arabic (Aljenaie 2000) and K'iche' Maya (Pye 2001), go through an RIA or a Surrogate Infinitive stage. And the forms are "surrogate forms of non-finite verbs" as Cinque (2004) proposes. We show that the children, even at around the age of one, know that the verb stem in their target languages cannot stand alone, and they pick up the most unmarked form to make the verbal stem a well-formed morphological word, as Murasugi (2009a) and Nakatani and Murasugi (2009) propose.

2. Root Infinitive Analogues (RIAs) in Japanese

2.1. Verb Forms in Adult Japanese and Stem Parameter (Hyams 1986, 2008)

Before we go into RIAs in child Japanese, let us briefly explain Japanese verbal conjugation systems. In adult Japanese, the bare stems of the verbs cannot appear without tense or aspect morphemes, as shown in (5).

(5) a. *tabe 'to eat'
b. tabe-**ta** 'ate' (past/ perfect)
c. tabe-**ru** 'eat' (present/ future)
d. tabe-**te (i)ru** 'is eating/ have eaten' (present progressive/ result state)
e. tabe-**te (i)ta** 'was eating/ had eaten' (past progressive/ perfect)
f. tabe-**tyatta** 'have eaten' (perfective)
g. tabe-**te** 'please eat' (request)

As in (5a), the verb stem, *tabe* 'to eat,' itself is not allowed in Japanese. Some morpheme must attach to the verb stem as shown in (5b-g). The stem is followed by the past tense morpheme *ta* in (5b), and the present tense morpheme *ru* in (5c). In (5d), the aspect morpheme *tei*, which has either progressive or perfect interpretation, is attached to the verb stem and it is followed by the present tense morpheme *ru* to refer to a present progressive event or a result state. In (5e), the past tense morpheme *ta* attaches to the aspect form, and the form has an either past progressive or a perfect interpretation. In (5f), the verb stem is followed by the perfective morpheme *tyatta*, and in (5g), by the request morpheme *te*.

In fact, whether or not the verb stem can stand by itself without being associated with the bound morphemes seems to show the linguistic variation. The *pro*-drop languages, such as Italian or Japanese, seem to share the property that the stem cannot stand by itself. According to Hyams (1986, 2008), languages are parameterized (the Stem Parameter) with respect to whether or not their verbal stem constitutes a well-formed word. For example, as shown in Table 1, in English, a verbal stem, *speak*, is a well-formed word and it can stand as a stem. However, in Italian, as shown in Table 2, a verbal stem, *parl-* 'to speak,' is ill formed. Without any agreement morphemes, the stem of the verb cannot appear in Italian.

Table 1: English: *speak*

	Singular	Plural
1p	-	-
2p	-	-
3p	-s	-

Table 2: Italian *parl-* (to speak)

	Singular	Plural
1p	-o	-iamo
2p	-i	-ate
3p	-a	-anno

(Hyams 1986)

According to Hyams (1986, 2008), inflectional morphology in a language like Italian represents a "core" property of the

language, and it is closely related to the setting of a particular parameter. On the other hand, in English, the Stem Parameter specifies that verbs are uninflected and so the acquisition of the 3rd person, past tense, and progressive morphemes represents a "departure" from the core grammar of English. This proposal is confirmed by the fact that English-speaking children acquire those morphemes late (Brown 1973, among others), whereas Italian-speaking children acquire verbal inflection relatively very early (Hyams 1986).

Assuming the Stem Parameter, Murasugi, Fuji and Hashimoto (2007) propose that children acquiring [-bare stem] languages produce RIAs, since the bare stem itself is not a well-formed word in those languages. They argue that Japanese-speaking children attach a past tense morpheme *ta* to the verb stem for volition and irrealis meaning as well as for past/perfect events, and therefore, the past tense V + *ta* form is the RIA. In the next section, we will show that Murasugi, Fuji and Hashimoto's (2007) proposal is empirically supported.

2.2. V + *ta* Forms as Root Infinitive Analogues (RIAs) (Murasugi, Fuji and Hashimoto 2007, Murasugi and Fuji 2008, 2009, Murasugi 2009a, b, Nakatani and Murasugi 2009)

In this section, based on the analysis of the longitudinal and observational data of Yuta, and the corpus analysis of the longitudinal data of Sumihare (Noji 1973-1977, also available in the CHILDES), we show that Japanese-speaking children choose the past tense V + *ta* form as RIAs, which show some parallel properties with RIs. Importantly, V + *ta* form is initially used 100% of the time with various meanings.

Sumihare and Yuta both used V + *ta* form for volition and request as in (6) and (7). This indicates that the RIAs in Japanese have the Modal Reference Effects just like other languages. First, let's observe Sumihare's data in (6).

(6) a. *Atti i-ta (1;6) (adult : volition/ request *ik-u*/*ik-e*)
there go-Past '(I) go there / (You) go there.'

b. *Atti. Atti i-ta (1;6) (adult :volition/request *ik-u*/*ik-e*)
there there go-Past '(I) go there / (You) go there.'

c. *Sii si-ta (1;7) (adult : volition *si-tai*)
pee do-Past '(I) want to pee.'

d. *Sii si-ta-naa (1;7) (adult : volition *si-tai*)
pee do-Past-Mood '(I) want to pee.'

e. *Baba pai-ta (1;8) (adult: request *si-te*)
muddy discard-Past 'Please throw (it) away.'

(Murasugi, Fuji and Hashimoto 2007, Murasugi and Fuji 2008, 2009)

In (6a), Sumihare intended to mean 'I want to go there,' or 'You go there.' According to Sumihare's father (Noji 1973-1977), he went out with Sumihare, with Sumihare on his back. The father tried to go back home, but Sumihare pointed to a different direction and angrily uttered *atti i-ta* 'there go-Past.' (6b) is a similar example. It is described that Sumihare produced like this when he wanted to go somewhere. In (6c) and (6d), when he wanted to pee, Sumihare uttered *sii si-ta*, using an onomatopoetic expression, *sii*, which means 'to pee.' In adult grammar, the form should be *si-tai* 'want to do,' but Sumihare used the past-tense *ta*-form. In (6d), *ta* is attached to another onomatopoetic expression, *pai*, which means throw away. The situation was that Sumihare had a potato in his hands, and asked his mother to remove mud from the potato. In this context, the request V + *te* form should be used, but V + *ta* form is used instead.

Exactly the parallel phenomenon was found with another Japanese-speaking child, Yuta, as shown in (7).

(7) a. *Ai-ta. Ai-ta (1;7) (adult: volition/request *ake-ru*/*ake-te*)
open-Past open-Past '(I) want to open (the cabinet) / (You) open (the cabinet).'

b. *Hai-ta. Hai-ta (1;7) (adult: volition/request *hak-u*/*hak-ase-te*)
wear-Past wear-Past '(I) want to wear (the shoes) / (You) put (the shoes) on (me)

c. *Hait-ta. Hait-ta (1;7) (adult: volition/request *ire-ru*/*ire-te*)
enter-Past enter-Past '(I) want to put (this notebook in this bag) / (You) put (this notebook in this bag).'

d. *Tot-ta (1;7) (adult: volition/request *to-ru*/ *to-tte*)
take-Past '(I) want to take (the soap) / (You) take (the soap).' (Nakatani and Murasugi 2009)

In (7a), Yuta used the past tense V + *ta* form, when he wanted to open the cabinet or he wanted to ask his grandmother to open the cabinet. In this context, he should have used the present form, *ake-ru*, or the imperative form, *ake-te*, but instead, he produced the past tense *ta* form. In (7b), he used *hai-ta*, V + *ta* form, when he wanted to wear shoes or he wanted to ask his grandmother to put shoes on him in order to go out. In (7c), Yuta produced *hait-ta*, intending to mean 'I want to put this notebook into this bag,' or 'You put this notebook in this bag.' He used V + *ta* form to express his

volition or request. Lastly in (7d), *tot-ta* was produced instead of the present form, *to-ru*, or the imperative form, *tot-te*, intending to mean 'I want to take the soap,' or 'You take the soap,' since Yuta could not reach the soap which he wanted to play with.

V + *ta* form is used not only for volition and request, but also for progressive and result state. It is used instead of the correct aspectual form, such as V + *teiru* and V + *teita*, which have either progressive or result state interpretation. Some examples taken from the Sumihare Corpus are given in (8).

(8) a. *Baba tui-ta (1;6) (adult: result *tui-teiru*)
thread stick-Past 'The thread stuck (to my finger).'
b. *Sii si-ta (1;6) (adult: progressive *tui-teiru*)
pee do-Past '(She) is peeing.'
c. *Buu maimai-ta (1;10) (adult: progressive *si-teiru*)
plane round-Past 'A plane is going round.'
d. *Akatyan gaaze oti-ta (1;11) (adult: result *oti-tei-ta*)
baby gauze drop-Past
'Baby's gauze was on (the floor).'
(Murasugi, Fuji and Hashimoto 2007, Murasugi and Fuji 2008, 2009)

In (8a), Sumihare found a thread on his finger, and intended to inform his mother of this. In this context, an aspectual morpheme, *teiru*, should be attached to the verb stem, but Sumihare uttered *tui-ta*, using V + *ta* form. In (8b), Sumihare employed V + *ta* form instead of V + *teiru* form for the progressive event where one of his friends was peeing. In (8c), he saw a plane flying around and wanted to explain the situation. He used the onomatopoetic expression *maimai*, which means something goes around, and attached the past tense morpheme, *ta*, to it, instead of the progressive *teiru*. In (8d), he found a baby's gauze on the floor and picked it up. In this context, the past perfective form, *teita*, should have been used as *oti-teita*, but he uttered *oti-ta*.

Our longitudinal study also found that Yuta used V + *ta* form instead of V + *teiru* form for the progressive and result state when he was a late one-year-old, just as Sumihare had done.

(9) a. *Tui-ta (1;3) (adult: result *tui-teiru*)
on-Past '(The light) is on.'
b. *Oti-ta otyoto oti-ta (1;7) (adult: progressive *otosi-teiru*)
drop-Pas outside drop-Past '(I) am dropping (this doll) outside.'
c. *Tui-ta (1;6) (adult: result *tui-teiru*)
stick-Past '(The rice) stuck (to my hand).'
d. *Oti-ta oti-ta (1;7) (adult: result *oti-teiru*)
drop-Past drop-Past '(A case of video tapes) is on (the floor).'
(Nakatani and Murasugi 2009)

As in (9a), *tui-ta* was produced as early as 1;3. *Tui-ta* is one of the very first verbs that he produced, and the verb was employed in V + *ta* form 100% of the time until V + *tyatta* form appeared at 1;6. He uttered *tui-ta* when he was watching the light while Yuta was lying on the sofa. In (9b), Yuta used *oti-ta*, while dropping a doll outside. He seemed to intend to mean 'I am dropping the doll outside.' In this context, he should have used the aspectual morpheme, *teiru*, but he used *ta*, instead. In (9c), he uttered *tui-ta* instead of *tui-teiru*, when he found rice on his hand. We analyze that this utterance has the result interpretation, because the rice had already been stuck on his hand for a while when he found it. Likewise, in (9d), Yuta also used past tense *ta* form instead of aspectual *teiru* form for result state.

As Murasugi, Fuji and Hashimoto (2007), Nakatani and Murasugi (2009), among others, point out, T-related items, such as nominative Case and copulas, or C-related items, such as wh-questions, are not produced at the RIA stage. At the stage, some of the features in T are underspecified, as pointed out by many researchers (Rizzi 1993/1994, Wexler 1994, among others).

2.3. V + *tyatta* Forms (perfective verb forms) Produced by Yuta as Surrogate Infinitives (Nakatani and Murasugi 2009a)

Yuta also used V + *tyatta* form, a perfective form, as RIAs at the late stage of the very early non-finite verb stage. V + *tyatta* form appeared at 1;6, after the stage where V + *ta* form had been used 100 % of the time. Just like V + *ta* form, V + *tyatta* form has the Modal Reference Effect, and shows the properties of RIAs, as shown in (10).

(10) Kippu kippu kippu *ai-ta. *ai-ta. *ai-tyatta. *ai-tyatta. (1;7)
clips clips clips open-Past open-Past open-Perfective open-Perfective
'(I) want to / (You) open this box of clips.' (adult: volition/request *ake-tai/ake-te*)

In (10), *ai-ta* and *ai-tyatta* were produced in the same context, and they both had the same intended meaning 'I want to open this box of clips,' or 'You open this box.' Hence, V + *tyatta* forms are used for volition and request as well as V + *ta* forms.

V + *tyatta* forms are also used for the result state.

(11) *Tui-tyatta (1;7) (adult: result *tui-teiru*)
stick-Perfective '(The rice) stuck (to my hand).' (Nakatani and Murasugi 2009)

In (11), Yuta uttered it when he found the rice on his hand. In this context, he should have used *teiru* form, but instead, he used *tyatta* form. Note that the V + *ta* form, *tui-ta*, was used in the similar context in (9c). V + *tyatta* form and V + *ta* form are used in the same manner to express the result state.

Interestingly enough, unlike the case of V + *ta* forms, Yuta never used V + *tyatta* form with the meaning of progressive. We analyze that these *tyatta* forms were produced when Yuta found out that *tyatta* is another morpheme that can be attached to the verb stem as well as *ta*, in order to make the stem morphologically well-formed. *Tyatta* is perfective in adult Japanese, but we conjecture that Yuta used these V + *tyatta* forms as non-finite verbs as well as perfective, and this is the first "adult inflection" that the child learned after the stage of non-finite V + *ta* forms used as RIAs.

2.4. Parallelism and Differences between Sumihare's and Yuta's RIA Stage

The statistic figures also confirm the predominance of V + *ta* form and V + *tyatta* form at the RIA stage. The number of verbal forms and the overall proportion of the verbal forms produced by Sumihare between 1;5 and 2;1 are shown in Figure 1 and 2, respectively.

Figure 1: Number of Verbal forms (Sumihare)

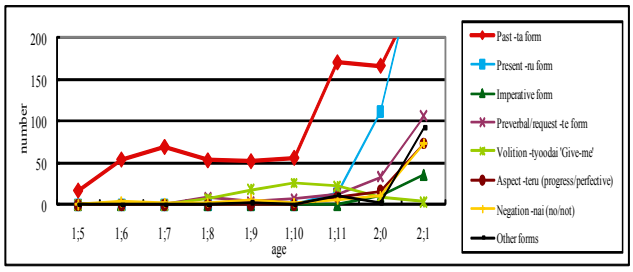
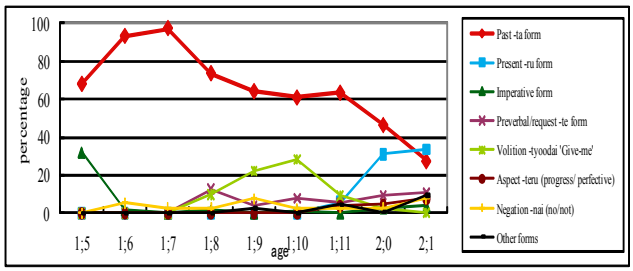


Figure 2: Percentage of Verbal forms (Sumihare)



(Murasugi and Fuji 2008, 2009)

The past tense V + *ta* form is predominantly used until 1;11, and it is used almost 100% of the time at 1;6 and 1;7. The RIA stage seems to end at around 1;11, when the present form and other forms appear. Sumihare distinctively used *tyoodai* 'give me' form between 1;9 and 1;10 in order to express volition and request (e.g., *Pai-tyoodai* 'please throw away'). Interestingly, when *tyoodai* form increases, V + *ta* form decreases. This would be because volition and request are expressed by *tyoodai* forms, and V + *ta* form is not used for those meanings anymore.

Importantly, Yuta and Sumihare show the parallel curve in the acquisition of the verbal conjugation. The results of our analysis of Yuta's production between 1;3 and 1;10 are shown in Figure 3 and Figure 4.

Figure 3: Number of Verbal forms (Yuta)

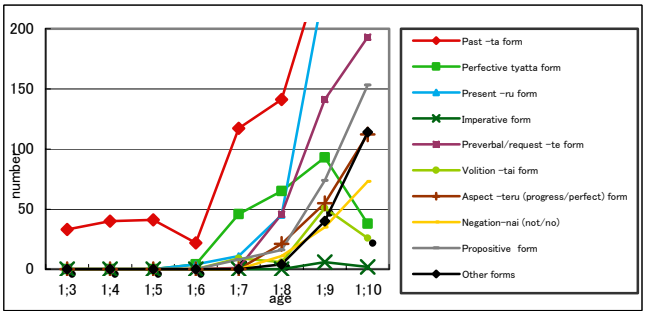
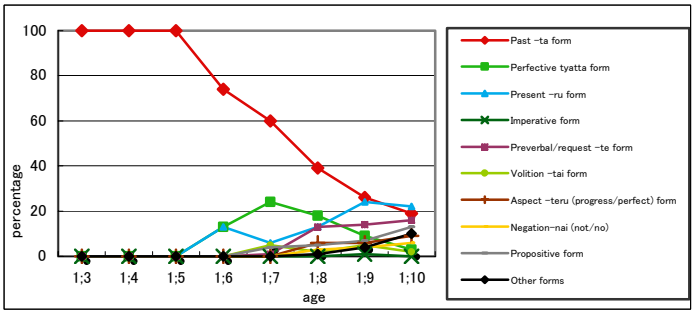


Figure 4: Percentage of Verbal forms (Yuta)



As for Yuta, the past tense V + *ta* form appeared at 1;3, and it is predominantly used until 1;8. It is also notable that the perfective V + *tyatta* form appears from 1;6 and the form is the second most predominant until 1;7. Just like Sumihare, the RIA stage for Yuta came to an end when the present form and other forms started to appear at around 1;8. On the other hand, Yuta produced the perfective V + *tyatta* form, the volition V + *tai* form, and the propositive form more frequently than Sumihare did.

In this section, we argued that child Japanese has the RIA stage, and V + *ta* and/or V + *tyatta* is chosen as the form. Those forms have the Modal Reference Effect and are predominantly used until the other verbal forms appear. In the following section, we discuss why Japanese-speaking children go through an RIA stage, but not an RI stage.

3. The Surrogate Form of Infinitives in Adult Grammar

The answer to the question regarding why RIAs, instead of RIs, appear in Japanese is found in Cinque's (2004) proposal that there are surrogate forms of infinitives in adult Salentino of Brindisi, and Serbo-Croatian. In this section, we introduce Cinque's (2004) argument.

In the argument over clitic climbing out of finite complements of restructuring verbs in Brindisi Salentino and Serbo-Croatian, Cinque (2004) proposes that there are non-finite "surrogate" verbs that have apparently finite forms, which are derived by an operation to make the verbal stems the well-formed morphological words in the target grammars.

As shown in (12) and (13), clitic placement can span over two clauses when the matrix verb is either a modal, an aspectual, or a motion verb and the complement is non-finite. He explains that the "transparency effects" are obtained when the "restructuring" verbs are functional verbs in a mono-clausal configuration, as in (14).

(12) a. ***Lo**$_i$ detesto [vedere **t**$_i$ in quello stato] '(I) him detest seeing in that state.' (Italian)
b. ***Lo**$_i$ ammentto [di conoscere **t**$_i$ appena] '(I) him admit to barely know.' (Cinque 2004)

(13) a. **Lo**$_i$ volevo [vedere **t**$_i$ subito] '(I) him wanted to see immediately.' (modal) (Italian)
b. **Lo**$_i$ finisco [di vedere **t**$_i$ domani] '(I) it finish to see tomorrow.' (aspectual)
c. **Lo**$_i$ vengo [a prendere **t**$_i$ domani] '(I) it come to fetch tomorrow.' (motion) (*Ibid*.)

(14) $[_{CP}\ldots[_{FP}\ldots[_{FP}\ V_{restr}\ [_{FP}\ldots\ [_{VP}\ V]]]]]$ (*Ibid*.)

However, in Salentino of Brindisi and Serbo-Croatian, the clitic can be extracted out of apparently finite complement, as shown in (15) and (16).

(15) a. Voggyu(ku) lu kkattu b. Lu voggyu (*ku) kkattu (Salentino)
(I) want Mood it buy (I) it want Mood buy 'I want to buy it.' (*Ibid*.)

(16) a Milan želi da ga vidi (Serbo-Croatian)
M. want-3sg Particle him see-3sg 'M. wishes to see him'
b. ?Milan ga želi da vidi
M. him want-3sg Particle see-3sg (*Ibid*.)

In (15b), when the mood particle *ku* is missing, a clitic *lu* can climb out of the apparently finite complement and cliticize the restructuring verb. A similar situation is found with a clitic *ga* in (16).

Cinque (2004) argues that (15) and (16), despite their appearances, involve the extraction of a clitic from a non-finite clausal complement, pointing out that there is severe restriction on the form of the apparently finite embedded verb both in Salentino and Serbo-Croatian, as shown in (17).

(17) a. *Lu vulia kattavu (Salentino)
it wanted-1sg bought-1sg 'I wish I bought it.'
b. *Ja bih ga voleo da sam posetio (Serbo-Croatian)
I would him like Particle be-1sg visited 'I would like to have visited him.'

b'. Ja bih voleo da sam ga posetio (without clitic climbing)
'I would like to have visited him.' (*Ibid*.)

In (17a) and (17b), with clitic climbing, only the present tense form can appear, and no past or periphrastic tense forms are possible. However, as in (17b'), without clitic climbing, the past tense form can appear.

Thus, Cinque (2004) analyzes that (15) and (16) appear to be bi-clauses, but in fact, they are mono-clauses. He proposes that particle + stem agreement in (15) and (16) is treated as a surrogate form of infinitive to make the stem a well-formed morphological word.

In line with Cinque (2004), Kawai (2006), discussing the subject raising to object construction in Japanese, proposes that the complement of (18b) is a small clause which is tenseless or aspectless, and homophonic with the finite complement.

(18) a. Kanozyo-wa [sono otoko-ga sagisi da to] sinziteiru
she -Top the man-Nom swindler is C believes
'She believes that the man is a swindler.'
b. Kanozyo-wa sono $otoko_i$-o [t_i sagisi da to] sinziteiru
she -Top the man-Acc swindler is C believes
'She believes the man to be a swindler.' (Kawai 2006)

He gives examples in (19) as a piece of evidence for his proposal.

(19) a. Kanozyo-wa sono otoko-o [sagisi **da**$_{[-past]}$ to] sinziteiru
she -Top that man -Acc swindler is C believes
'She believes that man to be a swindler.'
b. *?Kanozyo-wa sono otoko -o [sagisi **datta**$_{[+past]}$ to] sinziteiru
she -Top that man-Acc swindler was C believes (*Ibid*.)

Raising Object (RO) from an apparently finite clause in Japanese is not entirely free. As shown in (19a), *sono otoko* 'that man' can be raised from the [-past] complement. However, as in (19b), when it is raised from the [+past] complement, the sentence becomes ungrammatical.

Kawai (2006) proposes that a Japanese RO complement is a small clause as in (20a), and it is parallel with the English counterpart in (20b).

(20) a. John-wa [$_{AgroP}$ $Mary_2$-o [$_{PredP}$ t_2 [kawaik/tensai de-[$_{Pred}$ aru] to sinziteiru]]]
John-Top Mary-Acc cute/genius was C believes
'John believes Mary cute/ a genius.'
b. … [$_{VP'}$ consider [$_{AgroP}$ $Mary_2$ [$_{Agro'}$[$_{PredP}$ t_2[$_{Pred}$ e] cute]]]] (*Ibid*.)

A small clause is phonetically ambiguous with its non-past finite counterpart because of the impoverished verbal morphology of Japanese.

In sum, Cinque (2004) and Kawai (2006) analyze that particle + verbal stem agreement is treated as a surrogate form of infinitives in adult Salentino/ Serbo-Croatian and Japanese, respectively. Following their analysis, it is natural to explain that children acquiring Japanese use V + *ta* form as RIAs (Murasugi, Fuji and Hashimoto 2007, Murasugi and Fuji 2008, 2009, Murasugi 2009a, and Nakatani and Murasugi 2009). Although it appears to be finite, it is non-finite.

4. V+ *ta* as an Adult Non-finite Verb Form

Then, why is the past tense V + *ta* form chosen as an RIA? Murasugi (2009a) argues that there are several pieces of evidence to indicate that V + *ta* form is, in fact, the most unmarked non-finite form in adult Japanese.

It is well known that the non-finite V + *ta* form is found in complex NPs in adult Japanese (Teramura 1982, Abe 1993, among others). The past tense morpheme, *ta*, displays the result state interpretation as well as the past tense interpretation in a relative clause, as in (21).

(21) a. [boosi-o kabut-ta] hito
hat-Acc wear-Past person
(i) 'the person who wore a hat'
(ii) 'the person who is wearing a hat'

b. [Taroo-ga kabut-ta] boosi
-Nom wear-Past hat 'the hat which Taro wore'
(Abe 1993)

According to Abe (1993), in (21a), the past tense V + *ta* form in a relative clause containing a gap in the subject position, denotes not only the past tense reading as in (i), but also the result state reading as in (ii). In (21b), the result state reading disappears if a position other than the subject is relativized.

However, Abe (1993) further provides following examples in (22), which do not contain a subject gap.

(22) a. [yude-ta] tamago
boil-Past egg 'eggs that are boiled'

b. [tiisaku kit-ta] daikon
small cut-Past radish 'radish cut into small pieces' (*Ibid.)*

In (22a) and (22b), although the simple past event reading can be detected, the preferred interpretation is the result state. Abe argues that (22a) and (22b) have the structures in (23b) and (24b), respectively, and that the position indicated by NP* is a non-θ-position.

(23) a. [NP* e_i yude-INFL] $tamago_i$ b. [NP* e_i tiisaku kir-INFL] $daikon_i$ (*Ibid*.)

Furthermore, Murasugi (2009a) shows the non-finite status of V + *ta* form in the non-NP context as well in adult Japanese, discussing such examples as (24) through (26). Murasugi (2009a) argues that V-*ta* form is used as the strong imperatives in Japanese as in (24c) just like Italian infinitives (24a) in a root clause.

(24) a. Partire Immediatamente! (Strong Imperatives in Italian)
go immediately 'Go back (somewhere) immediately!' (Rizzi 1993/1994)
b. Kaer-e
go back-Imperative
c. Sassa to kaet-ta ! kaet-ta ! (Strong Imperatives in Japanese)
immediately go back-Past go back-Past (Murasugi 2009a)

According to Rizzi (1993/1994), infinitives can appear in a root clause as imperatives in a special context in adult Italian. Similarly, in Japanese, as shown in (24c), V + *ta* form, *kaet-ta*, can be used to express the imperative force instead of the imperative form, *kae-re*, as in (24b).

In (25), two conjuncts are conjoined by the verbal conjunct with V + *ta* forms, and the form is unspecified regarding tense.

(25) a. tabe-ta ri non-da ri su-ru/-ta
eat-Past drink-Past do-Pres/Past
'We eat/ate, and we drink/drank.'

b. it-ta ri ki-ta ri de taihen da/ dat-ta
go-Past come-Past by troublesome is/ was
'It is/was troublesome (of you) to go back and forth.'
(Murasugi 2009a)

In (26), V + *ta* form is used with irrealis meaning. Murasugi argues that these facts (24c-26) indicate that V + *ta* form would be non-finite as well in adult Japanese.

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

Thus, V + *ta* form is the most unmarked surrogate form in both adult and child Japanese, and Japanese-speaking children, even at one year of age, naturally and voluntarily pick up the non-finite form as a default verbal form of their languages, and use it as an RIA, as Murasugi (2009a) and Nakatani and Murasugi (2009) propose.

5. The Stem Parameter and the Cross-Linguistic Variation: The Surrogate Infinitives in [-Bare stem] Child Languages

The discussion so far indicates that the very young children speaking Japanese, a typical [-bare stem] language, go through the RIA or the Surrogate Infinitive stage. Then, how about the other languages sharing the property of [-bare stem]? In this section, based on the description available in the previous researches, we will argue that children acquiring such [-bare stem] languages as those shown in (27), in fact, undergo an RIA stage as well.

(27) Child Languages that have Surrogate Forms as Root Infinitive Analogues
Italian, ASL&LSB, Kuwaiti Arabic, Spanish, Catalan, Greek, Romanian, Turkish, Korean, K'iche' Maya

The data described in the previous literature on the independent grounds can be reinterpreted that the children speaking [-bare stem] languages at around the age of two, attach some morpheme to the verb stem to make a "surrogate form." Since the verb stem itself is not a well-formed word in the language, the very young children pick up the unmarked morpheme in the target language.

For example, in Italian, Salustri and Hyams (2003, 2006) propose that Italian-speaking children go through the RIA stage, and the form is an imperative such as (28).

(28) dammi! (1;10)
give-to mecl 'give it to me.' (Salustri and Hyams 2003)

According to Salustri and Hyams (2003, 2006), children begin to use imperatives with appropriate morphology before the age of two, and the rate of imperatives is considerably higher for children than for adults. Salustri and Hyams also show that Italian-speaking children use imperatives much more frequently than the children speaking German, which is a non-*pro*-drop and an RI language, in the same age. In American Sign Language (ASL) and Brazilian Sign Language (LSB), Lillo-Martin and Quadros (2009) provide supportive evidence for Salustri and Hyams (2003, 2006), based on the acquisition data in ASL and LSB. Those 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 subject or object. Lillo-Martin and Quadros (2009) show that both children produced notably more imperatives with agreeing verbs than with plain verbs.

Salustri and Hyams' (2003, 2006) analysis is further confirmed by a study of child Arabic. Arabic is a synthetic language with rich bound morphology. Aljenaie (2000) describes that children at the ages of one or two typically produce verbs which lack present and past tense, and mark the stem with another inflection, as shown in (29).

(29) *Eh xalis (1;11-2;5) (adult form: xalis-at (finish-3f))
yes, finished 'Yes, it is finished.' (Aljenaie 2000)

According to Aljenaie (2000), Kuwaiti Arabic-speaking children never leave the form uninflected as it does not constitute a well-formed word, but alternatively, they chose another infix. Although the example in (29) may look like omission of 3rd feminine suffix, what was produced is homophonous with the masculine imperative form in adult Kuwaiti Arabic.

In Spanish, it is reported that children, at the age of two to three, overuse the 3rd person singular verb form to refer to a non-third person subject (Grinstead 1994, Pratt and Grinstead 2007), as shown in (30).

(30) a. *Es yo (2;0) (adult form: Soy yo)
Copula-3rdSg I-Nom
'Is I."

b. *Yo quiere hacerlo (3;0) (adult form: Yo quiero)
I-Nom want-3rdSg do-INF-CL-Acc-Sg-Masc
'I wants to do it.' (Grinstead 1994)

In (30), although the subject is 1st person singular, the child uses the 3rd person singular copular *es* in (30a), and the 3rd person singular verb form in (30b). This is also the case in Catalan as shown in (31).

(31) *beu aigua (1;11) (adult form: bec aigua (drink-1sg water))
drink-3sg water 'S/he drinks water.' (Torrens 1995)

In (31), according to Torrens (1995), the context requires the 1st person singular verb form *bec*, but the child uses the 3rd person singular form *beu* instead.

Greek is a typical language that lacks infinitives. Greek has perfective and imperfective stems and the verbs are marked for person and number agreement. In Greek, as discussed by Varlokosta,Vainikka, and Rohrbacher (1996) and Hyams (2005), the bare perfective is an RIA. Greek-speaking children produce perfective verb forms without the tense or modal particle as in (32).

(32) *Pio vavási [δiavási] (1;10) (adult form: θa/na δiavási (future read-Perf-3Sg))
Spiros read-Perf,3Sg 'Spiros is going to/ want to read.' (Stephany 1997)

Similarly, Nicoleta (2006) reports that Romanian-speaking children produce the past participle form without the auxiliary as in (33b), although the non-finite past participle is used as part of compound tense with the auxiliary, like *have* in English, as in (33a) in adult grammar.

(33) a. A plecat ieri la prânz.
Have-3SG leave-past part. yesterday at noon 'He left yesterday at noon.'
b. *Acolo pus tanti Jeni coajă (1;11)
there put-Part aunt Jeni shell 'Aunt Jeni has put the/a shell there.' (Nicoleta 2006)

Turkish is an agglutinative language in which both inflection and word formation are mainly realized by means of suffixation, and Turkish inflectional morphology is very regular. According to Aksu-Koç and Ketrez (2003), the inflectional morphology emerges quite early, and, as in (34), the definite past (*-DI*) appears the earliest.

(34) Ka:k-ti (1;5)
get-up-Past (adult form: kalktim (get up-Past-1Sg)) (Aksu-Koç and Ketrez 2003)

In (34), the 1st person singular suffix is omitted, but the definite past suffix is attached to the verb. It is reported that the child, at around 1;5, used 13 different verbs, but only past marker *–DI* is used productively then.

Korean is a head-final, agglutinative language, and bare verb stems are impossible. According to Kim and Phillips (1998), Korean-speaking children, at the early age of two, attach a mood marker *e* to the verbal stem, and use the form in the full range of environments, almost 100% at the early stage. In adult Korean, the mood marker *e* functions as a default mood marker. However, as in (35), the child uses Verb + *e* form where it is not allowed in adult grammar.

(35) 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))
babby look-Decl 'Baby (I) will look at it.' (Kim and Phillips 1998)

In (35a), instead of the propositive morpheme, the child erroneously attaches the mood marker *e* to the verb stem. Likewise, in (35b), instead of the presumptive morpheme, *e* is used. Kim and Phillips (1998), in fact, analyze *e* as a mood marker used as RIAs. Probably, *e* is a default suffix that closes off the sentence to satisfy Morphological Closure (Kang 1988). (See Murasugi and Fuji (2008) for the parallelism in Korean and Japanese RIAs.)

Pye (2001) reports that K'iche' Maya-speaking children also add some morpheme to the verb stem, while they omit tense and agreement morpheme. K'iche' verbs have a complex inflectional morphology. Finiteness is marked by the combination of aspect and agreement prefix as well as the termination suffixes. However, those prefixes, and even part or all of the verb stem, are sometimes omitted, while the verb termination is productively used in child grammar.

(36) a. nan, φ φ loq' φ ech wa? (Al Tiyaan 2;1) (Bare verb + Term)
naan, k -∅-qa /loq' q-ee-ch wa (adult form)
mama Asp-3A-4E /buy 4E-out-Term Emph 'Mama, let's buy our own.'

b. φ ? ik (Al Tiyaan 2;1) (Part of the verb stem + Term)
k -Ø /wa? -ik (adult form)
Asp-3A/shine-Antipassive-Term 'It eats.' (Pye 2001)

In (36a), the aspect morpheme and the 4th ergative morpheme are omitted.[2] However, the termination morpheme is attached to the verb stem. In (36b), again, the aspectual morpheme is omitted and part of the verb is also omitted. However, the termination morpheme is correctly used.

The data independently found based on the detailed longitudinal study can be put together under the analysis presented here. At a very early nonfinite stage, children who are acquiring [-bare stem] languages attach a default morpheme to make a Surrogate Infinitive form, just like Japanese-speaking children use V + *ta* form as the form. (See also Nakatani and Murasugi 2009, and Murasugi 2009b for the details.)

6. Conclusion

It has been argued that in some languages, such as Italian and Greek, children go through an RIA stage instead of an RI stage. In this paper, following Murasugi, Fuji and Hashimoto (2007), we argued that [-bare stem] language-speaking children produce RIAs since the verb stem itself is not a well-formed word in their target languages, and they employ "the surrogate forms of nonfinite verbs" (Cinque 2004).

We presented the acquisition data based on our longitudinal observation of Yuta and the corpus analysis of the longitudinal data of Sumihare (Noji 1973-1977), and proposed that RIAs in Japanese, a [-bare stem] language, are realized as V + *ta* (past morpheme) form (Murasugi, Fuji and Hashimoto 2007, Murasugi and Fuji 2008, 2009, Nakatani and Murasugi 2009) and V + *tyatta* (perfective morpheme) form at the later stage of the very early non-finite verb stage (Nakatani and Murasugi 2009), since the form is the most unmarked form in adult Japanese as proposed by Murasugi (2009a).

We also provided the cross-linguistic evidence for our proposal, showing that children acquiring [-bare stem] languages, such as Korean (Kim and Phillips 1998), Italian (Salustri and Hyams 2003, 2006), Greek (Varlokosta, Vainikka and Rohrbacher 1996, Hyams 2005), Turkish (Aksu-Koç and Ketrez 2003), Romanian (Nicoleta 2006), Arabic (Aljenaie 2000) and K'iche' Maya (Pye 2001) go through the Surrogate Infinitive Stage. In these languages, instead of RIs, children employ the surrogate form of infinitive, attaching some morpheme to the verb stem.

Our analysis here bridges the child RIAs and the adult syntax. The [-bare stem] language-speaking children know verbs in their target languages cannot surface as bare stems, and naturally and voluntarily pick up the most unmarked surrogate form in adult grammar even at one year of age.

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[2] To be more precise, as the 3rd absolutive is realized with zero morpheme, it is unclear whether or not the morpheme is omitted.

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