The Acquisition of V-Stranding VP-Ellipsis in Japanese*

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1 V-Stranding VP-Ellipsis

This paper attempts to see whether Japanese children know V-stranding VP-ellipsis, using null-adjunct sentences as a probe. Funakoshi (2014, 2016) observes that an adjunct cannot be included in the interpretation when it is the only one that is null, while it can be when a clause-mate object is also null. Example (1) illustrates this point.

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(1) Bill-wa teineini kuruma-o arat-ta kedo,
Bill-TOP carefully car-ACC wash-PAST but
'Bill washed the car carefully, but…'

a. John-wa _____ kuruma-o araw-anak-atta.
John-TOP car-ACC wash-NEG-PAST
*Null-adjunct reading: 'John didn't wash the car carefully.'
No-elided-adjunct reading: 'John didn't wash the car at all.'

b. John-wa _____*e*_____ araw-anak-atta.
John-TOP wash-NEG-PAST
Null-adjunct reading: 'John didn't wash the car carefully.'
No-elided-adjunct reading: 'John didn't wash the car at all.

(Funakoshi 2016: 119)

In (1a), only the adjunct phrase *teineini* 'carefully' is deleted from the preceding sentence. The only interpretation for (1a) is what I call the no-elided-adjunct reading, that is, John did not wash the car at all. In (1b), the adjunct as well as the object is elided. In such a sentence, adjuncts can be included in the interpretation. Thus, (1b) can mean that John did wash the car but not in a careful way. This is what I call the null-adjunct reading. The unacceptability of the null-adjunct reading in (1a) suggests that adjuncts cannot be elided by themselves in Japanese although they can be null when their clause-mate object is also elided, as in (1b). Funakoshi argues that the null-adjunct reading in (1b) is derived through V-stranding VP-ellipsis (Otani and Whitman 1991) as shown in the derivation in (2).

(2) a. Subj [$_{VP}$ Adj Obj t_V] V (by V-movement)
b. Subj ~~[$_{VP}$ Adj Obj t_V]~~ V (by ellipsis of VP)

In (2), the VP is elided after the verb moves out of VP. Note that the null-adjunct reading cannot be derived by assuming a null pronoun *pro* (Kuroda 1965), or argument ellipsis as proposed by Oku (1998) and illustrated in (3). The derivation in (3) assumes that the null object is derived by either applying argument ellipsis or positing *pro* and then eliding the adjunct, which is prohibited in Japanese as we saw in (1a).

(3) a. Subj Adj ~~Obj~~/*pro* V (argument ellipsis or *pro*)
b. *Subj ~~Adj~~ ~~Obj~~/*pro* V (*adjunct ellipsis)

Thus, the null-adjunct reading provides evidence that Japanese has V-stranding VP-ellipsis.[1]

Many studies have investigated ellipsis in child Japanese (Matsuo 2007; Otaki 2014; Otaki and Yusa 2009, 2012; Sugisaki 2007, 2009, 2012, 2013, to appear), but most of them have tried to see children's knowledge of argument ellipsis.[2] This study focuses on children's acquisition of V-stranding VP-ellipsis in Japanese and shows that Japanese-speaking children around age 5 have already acquired it.

This paper is organized as follows. Section 2 reviews Sugisaki (2013), which shows that four- and five-year-old children disallow ellipsis of adjuncts in Japanese. In light of this result, Section 3 experimentally investigates whether children can access a null-adjunct reading when both adjunct and object are null. Section 4 discusses implications of the finding of this study. Section 5 concludes this paper.

2 The Ban on Adjunct Ellipsis in Child Japanese

In order to determine whether preschool children are sensitive to the unavailability of adjunct ellipsis in Japanese, Sugisaki (2013) conducted an experiment with a Truth Value Judgment Task (Crain and Thornton 1998). Fourteen Japanese-speaking children from 3;9 to 5;8 (mean age 5;1) participated. He tested two sentences with adjuncts such as (4a) and two sentences without adjuncts like (4b).

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[1] One might argue that the V-stranding VP-ellipsis analysis incorrectly predicts that the null adjunct reading in (1a) is grammatical through a derivation like (i).

(i) a. Subj [$_{VP}$ Adj Obj t_V] V-I (by V-movement)
b. Subj Obj [$_{VP}$ Adj t_{Obj} t_V] V-I (by object scrambling)
c. Subj Obj ~~[$_{VP}$ Adj t_{Obj} t_V]~~ V-I (by ellipsis of VP)

Funakoshi (2014, 2016) argues that this derivation is possible, but just like English pseudogapping, an extracted object from the ellipsis site must be contrastively focused as shown in (ii).

(ii) $Bill_i$-wa teineini syatyou-no kuruma-o arau.
Bill-TOP carefully president-GEN car-ACC wash-PRES
'Bill washes the president's car carefully.'
Demo, pro_i *e* hukusyatyou-no kuruma-wa araw-ana-i.
but vice.president-GEN car-TOP wash-NEG-PRES
Null-adjunct reading: 'But he doesn't wash the vice-president's car carefully.'
No-elided-adjunct reading: 'But he doesn't wash the vice-president's car at all.'

[2] Matsuo (2007) attempts to study acquisition of VP-ellipsis in Japanese, or in present terms V-stranding VP-ellipsis. However, it is unclear whether her study actually bears on children's knowledge of VP-ellipsis in Japanese, since the children's perfomance can be accounted for under either an argument-ellipsis or a *pro* analysis.

(4) Kaerusan-wa ringo-o isoide tabe-ta kedo,
frog-TOP apple-ACC quickly eat-PAST but
'The frog ate an apple quickly, but…'

a. Risusan-wa ringo-o isoide tabe-nakat-ta yo.
squirrel-TOP apple-ACC quickly eat-NEG-PAST PRT
'The squirrel did not eat an apple quickly.'

b. Risusan-wa ringo-o _____ tabe-nakat-ta yo.
squirrel-TOP apple-ACC eat-NEG-PAST PRT
*Null-adjunct reading: 'The squirrel did not eat an apple quickly.'
No-elided-adjunct reading: 'The squirrel did not eat an apple at all.'
(Sugisaki 2013: 429)

In (4b), the null-adjunct reading is not allowed although the preceding sentence in (11) contains the adverb *quickly*. The sentence in (4b) just means that the squirrel did not eat an apple and cannot mean that the squirrel did not eat an apple quickly. A sample story for (4) is shown in (5).

(5) Sample story:
When Frog and Squirrel were about to go out to play soccer, Frog's mother came out from the house and brought them some nice apples. Frog wanted to play soccer now, so he ate his apple very quickly. Squirrel also wanted to play soccer now, but he was not good at eating fast, so he decided to go out without eating his apple. Looking at it, Frog said to Squirrel, "I can wait for you, so you can take your time to finish up your apple." Squirrel ate his apple slowly, and then they went out to play soccer.
(Sugisaki 2013: 429)

In the situation above, (4a) is true, while (4b) is false because the squirrel does eat an apple. If children were not sensitive to the ban on adjunct ellipsis, they should accept (4b) in the situation where the null-adjunct interpretation becomes true.

The result is as follows. Children correctly rejected (4b) at the rate of 85.7 percent (24/28), while they accepted (4a) 92.9 percent of the time (26/28). This suggests that Japanese preschool children around age 4 and 5 already know that adjunct ellipsis is not allowed in Japanese.

3 Experiment[3]

3.1 Participants and Experimental Design

In order to see whether Japanese preschool children have knowledge of V-stranding VP-ellipsis, I conducted an experiment with a TVJT, using null-adjunct readings as a probe. Twelve Japanese-speaking children (age 5;1 - 6;4/ mean 5;8) participated. The experiment consisted of 2 practice items, 1 filler, four test sentences with a null object and adjunct. As practice items, I used sentences like (6), where two sentences are conjoined, in order to see whether chidren can reject a stimulus sentence even when the first conjunct sentence is true.

(6) Saru-wa banana-o huta-tsu to-tta kedo,
monkey-TOP banana-ACC 2-CL take-PAST but
'The monkey took two bananas, but…,'
Buta-wa _____*e*_____ tor-anak-atta.
pig-TOP take-NEG-PAST
'The pig did not.'

Sentence (6) was tested in a situation where the monkey as well as the pig took two bananas. Thus, although the first conjunct sentence matches the situation, the sentence in (6) as a whole is false. All of the 12 children correctly answered the practice items.

There are two types of test sentences. Sample test items are shown in (7) and (8). In the second conjunct sentence in (7) and (8), an object as well as an adjunct is null. The potential suffix *-e* is attached to the verb to make a null-adjunct reading sound natural. The adjunct is preceded by the object in (7) and (8), following the test sentences used in Sugisaki's (2013) experiment (cf. 4).

(7) Raion-wa kureyon-o motodoorini sima-e-ta kedo,
Lion-TOP crayon-ACC same.as.before put.away-can-PAST but
'Lion was able to put away crayons the same as before, but...'
Kaeru-wa _____*e*_____ sima-e-nakat-ta.
Frog-TOP put.away-can-NEG-PAST
Null-adjunct reading: 'Frog could not put away crayons the same as before.'
No-elided-adjunct reading: 'Frog could not put away crayons at all.'

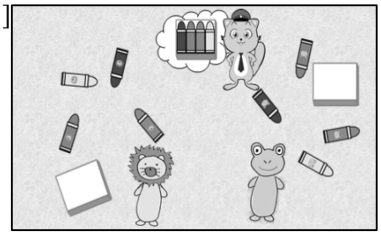
[3] The main finding of this experiment is also reported in Fujiwara (to appear).

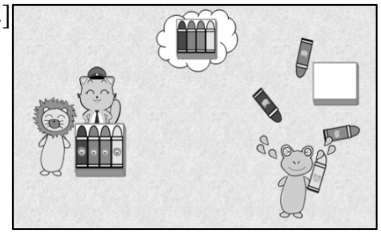
(8) Raion-wa kureyon-o motodoorini sima-e-ta si,
Lion-TOP crayon-ACC same.as.before put.away-can-PAST and
'Lion was able to put away crayons the same as before, and…'
Kaeru-mo *e* sima-e-ta.
Frog-also put.away-can-PAST
Null-adjunct reading: 'Frog was also able to put away crayons the same as before.'
No-elided-adjunct reading: 'Frog was also able to put away crayons.'

A sample story for (7) and (8) is presented in the following:

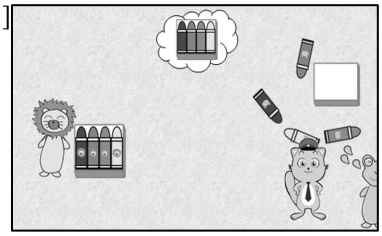
(9) A lion and a frog draw pictures with their crayons. A teacher-cat tells them to put their crayons in the box the same as before. The lion puts his crayons in the box very neatly, but the frog cannot. The frog is about to leave without putting crayons in the box. The teacher tells him to finish putting his crayons in the box, even if it's messy. The frog puts his crayons in the box messily.

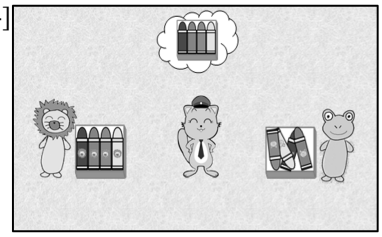
[1] [2]





[3] [4]





In this story, the null-adjunct reading in (7) is true, while the no-elided-adjunct reading is not. On the other hand, the null-adjunct reading in (8) is false, whereas the no-elided-adjunct reading is true. If children know V-stranding VP-ellipsis, then they should be able to access the null-adjunct reading. On the other hand, if they do not, they should assign the test sentences a no-elided adjunct interpretation.

3.2 Results and Discussion

The results are summarized in Table 1. There were two sentences like (7) and two sentences like (8) for each child. The acceptance rates for (7) were 87.5 percent, while the rejection rates for (8) were 83.3 percent.[4] These results indicate that Japanese preschool children around age 5 can access the null-adjunct reading when both object and adjunct are null.

	Sentence (7)	Sentence (8)
Null-adjunct reading	Acceptance	Rejection
No-elided-adjunct	Rejection	Acceptance
Results	87.5% acceptance (21/24)	83.3% rejection (20/24)

Table 1: Results

This finding suggests that 5-year-old children have already acquired V-stranding VP-ellipsis in Japanese.

One may wonder why children rejected (8) even though it becomes true under the no-elided-adjunct interpretation. I speculate that this is due to the parallelism requirement imposed by the particle *-mo* 'also' attached to the subject (Funakoshi 2014, 2016). This particle seems to impose the maximal parallelism between the antecedent sentence and the ellipsis sentence. Therefore, the null-adjunct reading was strongly preferred in (8).

However, note that this does not nullify the effect of the V-stranding VP-ellipsis in children's responses to (8). The parallelism requirement of *-mo* is not so strong that undeletable items such as adjuncts are included in the interpretation. Thus, in a situation like (9), even if *-mo* is attached to the subject, it is hard to reject a sentence like (10) that is missing the adjunct. This is because ellipsis of adjuncts is prohibited in Japanese.

(10) Raion-wa kureyon-o motodoorini sima-e-ta si,
Lion-TOP crayon-ACC same.as.before put.away-can-PAST and
'Lion was able to put away crayons the same as before, and…'
Kaeru-mo kureyon-o _____ sima-e-ta.
Frog-also crayon-ACC put.away-can-PAST
'Frog was also able to put away crayons.'

[4] The contrast is significant by Wilcoxon Signed-Rank Test ($n_{s/r}$=11, W=53, two-tailed p=.0198).

Thus, it seems that children's rejections of (8) under the null-adjunct interpretation actually resulted from their knowledge of ellipsis, that is, V-stranding VP-ellipsis. However, in order to establish this argument, it is necessary to demonstrate that Japanese children, in fact, reject a sentences like (10) in situations like (9). I would like to leave this for a future study.

4 Implications

The results of the experiment indicate that Japanese children around age 5 already have knowledge of V-stranding VP-ellipsis, as illustrated below.

(11) a. Subj [$_{VP}$ Obj V] I
b. Subj [$_{VP}$ Obj t_V] V-I
c. Subj ~~[$_{VP}$ Obj t_V]~~ V-I

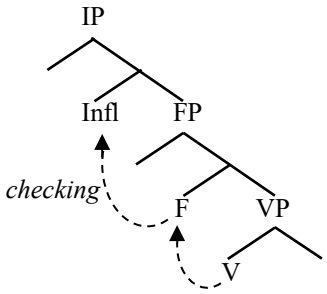
The derivation in (11) has a VP that is elided after its head has moved out of it. In this section, I would like to point out two implications of the acquisition of V-stranding VP-ellipsis in Japanese; acquisition of V-movement and headless XP-ellipsis.

4.1 V-Movement

Given that V-stranding VP-ellipsis contains V-movement, the children's success in the experiment suggests that Japanese preschool children have already acquired it, even though it does not change word order in an SOV language like Japanese. However, given Bobaljik and Thráinsson's (1998) approach to V-movement, string-vacuous V-movement is still learnable.

These authors propose that in a split IP language, V-movement occurs to check V's formal features with Infl, as ilustrated in (12). According to these authors, the split IP languages are characterized by two kinds of empirical data: they allow (i) multiple specifier positions in the IP complex and (ii) multiple inflectional affixes in the verb system. This is expected since the split IP provides additional positions for specifiers and for inflectional morphemes expressed in heads, given that inflectional morphemes correspond to inflectional heads in the syntax.

(12) Split IP language



Japanese seems to have both properties. First, Japanese allows multiple subjects as in (13).

(13) Bunmeikoku-ga dansei-ga heikinzyumyou-ga mizika-i.
Civilized.countries-NOM male-NOM average.life.span-NOM short-PRES
'It is civilized countries where the male population has a short life-span.'
(Kuno 1973: 34)

Second, Japanese inflected verbs can express multiple morphemes as in (14). In (14), a polite-marker *-masi* and a past tense marker *-ta* are attached to the verb.

(14) John-ga ki-masi-ta.
John-NOM come-POL-PAST
'John came.'

Thus, the split IP Parameter approach to V-movement makes it possible to acquire string-vacuous V-movement in an SOV language like Japanese. Under this approach it is predicted that children who know V-movement should also know about multiple specifiers or multiple inflections in the verb system. In fact, Sugisaki (2003) observed that Japanese children around age 4 already know multiple nominative constructions like (15).

(15) Kumasan-ga ichiban mimi-ga ooki-i.
Bear-NOM best ear-NOM large-PRES
'The bear has the biggest ears.'

Although it is expected that Japanese children around this age also know multiple inflections on the verb system, I would like to leave this for a future study.

4.2 Headless XP-Ellipsis

The second implication of the acquisition of V-stranding VP-ellipsis is that Japanese children know that a phrase whose head has moved out of it can be elided in Japanese. Lasnik (1999) argues that in a language like English, such headless XP-ellipsis is prohibited. He proposes that English pseudogapping constructions like (16) are derived through VP-ellipsis after object shift.

(16) Mary hasn't dated Bill, but she has Harry$_i$ ~~[$_{VP}$ dated t$_i$]~~.
(Lasnik 1999: 147)

In order to account for the ungrammaticality of (17) under this approach, he hypothesizes a constraint on ellipsis in (18).

(17) *Mary gave Susan a lot of advice, and John will give Bill ~~[$_{VP}$ t$_{give}$ t$_{Bill}$ a lot of advice]~~. (Lasnik 1995: 155)
(18) XP-ellipsis is prohibited if XP has lost its head. (Lasnik 1995: 158)

In (17), the elided VP does not contain its head, which is banned in violation of (18). Note that if the V stays in situ as shown in (19), the sentence becomes grammatical.

(19) ?John gave Bill a lot of money, and Mary will Susan ~~[$_{VP}$ give t$_{Susan}$ a lot of money]~~. (Lasnik 1995: 142)

He also pointed out that the fact that Infl cannot move out of the ellipsis site of sluicing is consistent with (18).

(20) a. Mary saw someone.
b. *Who did ~~[$_{IP}$ Mary t$_{Infl}$ see]~~?
(Lasnik 1995: 158)

In contrast to English, Japanese allows headless XP-ellipsis as shown for V-stranding VP-ellipsis in (11), repeated below.

(21) a. Subj [$_{VP}$ Obj V] I
b. Subj [$_{VP}$ Obj t$_V$] V-I
c. Subj ~~[$_{VP}$ Obj t$_V$]~~ V-I

Funakoshi (2012, 2014) argues that the availability of headless XP-ellipsis is parametrically determined and it follows from the availability of multiple

specifiers.[5] As we saw in Section 4.1, Sugisaki (2003) reports that Japanese preschool children around age 4 have already acquired multiple specifiers in Japanese, which contributes to the acquisiton of V-stranding VP-ellipsis in Japanese.

5 Conclusion

This study investigated whether Japanese-speaking children know V-stranding VP-ellipsis, using null-adjunct interpretations as a probe. The results of the current experiment showed that Japanese children around age 5 indeed know V-stranding VP-ellipsis, which has two implications for children's acquisition of Japanese. First, it suggests that Japanese preschool children have successfully acquired V-movement even though it does not change word order. According to Bobaljik and Thráinsson (1998), such a string-vacuous V-movement is still learnable since acquisition of V-movement can be followed by acquisition of a split IP configuration. Second, the acquisition of V-stranding VP-ellipsis suggests that Japanese children know that headless XP-ellipsis, which is banned in English (Lasnik 1999), is possible in Japanese. Funakoshi (2012, 2014) attributes the availability of headless XP-ellipsis in Japanese to multiple specifiers. These parametric approaches give children more detectable evidence to learn V-stranding VP-ellipsis in Japanese.

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[5] Although the mechanism of the availability of headless XP-ellipsis proposed by Funakoshi is different from the split IP parameter approach to V-movement (Bobaljik and Thráinsson 1998), they are not incompatible. Of course, assuming both of the approaches seems to be redundant, but the interesting question of whether they can be unified goes beyond of the scope of this study. I would like to leave this for future research.

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