TWO TYPES OF CAUSATIVES IN JAPANESE AND JAPANESE SIGN LANGUAGE: A STUDY IN SYNTAX AND ACQUISITION[*]

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1. Introduction

It is well known that English has two types of causatives as shown in (1) and (2).

(1)   a.   I caused John to go.
        b.   I made John go.

(2)   a.   I opened the window.
        b.   I put a pair of shoes on John.

Causative verbs such as 'make,' 'cause,' 'let,' and 'have' express causative meanings by themselves. They form a causative sentence with an independent non-causative predicate which expresses a resultive event. This kind of causative is productive, and is derived by syntactic processes. Therefore, causatives in (1) are called syntactic causatives. In syntactic causatives, both of a causer 'I' and a causee 'John' behave as agents. Thus, syntactic causatives have biclausal structures.

On the other hand, the causatives in (2) are called lexical causatives. In (2), transitive verbs, 'open' and 'put,' function as causative verbs. The causative and the resultive event are contained in the lexical item itself. In lexical causatives, only a causer 'I' behaves as an agent. Therefore, they have a mono-clausal structure.

In this paper, we will discuss two types of causatives: syntactic and lexical causatives, in Japanese and Japanese Sign Language (JSL). We will present supportive evidence for Murasugi and Hashimoto's (2004) (Henceforth, M&H) v-VP frame analysis on the acquisition of agentive verbs and two types of causatives in Japanese, and suggest that the property of small v is acquired very early. Together with the analysis of causatives in Japanese Sign Language, we will conclude that v is universal.

In the following section, we will briefly go over two types of Japanese -*(s)ase* causatives.

Then, in Section 3, we will overview M & H's v-VP frame analysis, which gives an elegant account of the acquisition process of complex predicates. In Section 4, we will present additional evidence for their analysis. The evidence was found in CHILDES longitudinal database. We will examine the Sumihare data (Noji, 1973) in detail, and show that it exhibits almost the same acquisition pattern as Akkun's. We will also discuss the results of an experimental study in section 5. We will show the results are compatible with M&H's analysis. The investigation of JSL causatives is presented in Section 6. Section 7 concludes the paper.

2. Two Types of Japanese *-(s)ase* causatives: syntactic and lexical causatives

2.1. Syntactic causatives

As is the case in English, Japanese also has both syntactic causative, namely *-(s)ase* causatives, and lexical causatives (Miyagawa, 1980; Shibatani, 1973, 1976 among others). Japanese morphological causatives are formed by attaching the causative suffix *-(s)ase* to the verb stems. Example (3) shows that the causee can be marked either with dative or accusative Case when the base verb is intransitive (unergative).

(3) a.   Taroo$_i$-ga   Hanako$_j$- o /ni benkyoo-sase   -ta
          Taro -Nom   Hanako -Acc /Dat study   -Cause -Past

          'Taro made / had Hanako study.'

     b.   Taroo -ga   Hanako-ni / *-o   nimotu-o   mot -(s)ase -ta
          Taro -Nom   Hanako-Dat/ *-Acc luggage-Acc carry -Cause-Past

          'Taro made Hanako carry the luggage.'

In (3a), the causee, *Hanako* is marked with accusative Case, *-o*, and it is marked with dative Case, *-ni*, in (3b). When a base verb is intransitive as in (3a), *-(s)ase* causatives have four possible readings (Shibatani, 1973). The four readings are illustrated in (4).

(4)   ┌── coercive ('make…do…')
        inducing ───┤
                              └── persuasive ('persuade… to do…')
                              ┌── explicit ('give…permission to do…')
        permissive ───┤
                              └── implicit ('let…do…)   (Matsumoto, 2000)

These four readings are first divided into 'inducing causatives' and 'permissive' causatives, and then each of them are again divided into two different readings. With the coercive meaning, the causative sentence in (3a) has an interpretation as in (5a). With the

persuasive meaning, (3a) has an interpretation as in (5b). With the explicit meaning, (3a) has an interpretation as in (5c). With the implicit meaning, (3a) has an interpretation as in (5d).

(5) a.   Taro ordered Hanako to study. She understood and she studied.
     b.   Taro persuaded Hanako to study. She said "OK" and she studied.
     c.   Taro made sure that Hanako wanted to study. He said "I don't mind" and she studied.
     d.   Taro noticed Hanako wanted to study. He thought "I don't mind" and she studied.

However, this distinction cannot be seen when the verb is transitive as in example (3b) since the causee can be marked only with dative Case.

2.2.   Lexical Causatives

As is the case in English, there are some (di)transitive verbs which function as causative verbs. Some of the verbs which function as causative verbs are listed in (6) below together with their unaccusative counterparts.

(6)   (di)transitives   unaccusatives
     a.   mi-se-ru (= show-pres.)   mi-ru (= see-pres.)
     b.   utu-s-(r)u (= copy-pres.)   utu-r-(r)u (= be copied-pres.)
     c.   todok-e-ru (= deliver-pres.)   todok-(r)u (=be delivered-pres.)
     d.   os-ie-ru (= teach-pres.)   os-owar-(r)u (= be taught)
     e.   ki-se-ru (= put on)   ki-ru (=wear)
     f.   kasan-e-ru (pile up)   kasan-ar-(r)u (=be piled up) (Matsumoto, 2000)

Japanese is different from English in that the form of (di)transitive verbs and unaccusative verbs are different. The (di)transitive verbs in (6) form a lexical causative. Example (7) is a lexical causative with the ditransitive verb *kiseru* (put…on).

(7)   Hanako-ga   Taroo-ni yoohuku-o   ki-se -ru
      Hanako-Nom Taro -Dat clothes -Acc dress-Pres

      'Hanako puts the clothes on Taroo.'   (M & H, 2004)

The sentence (7) does not mean 'Taro wears the clothes,' rather it means 'Hanako put them on Taro.' Thus, only *Hanako* is an agent. *Taroo* is not an agent but behaves as a goal. Hence, the lexical causative in (7) has a mono-clausal structure.

It has been recognized that Japanese morphological *-(s)ase* causatives are biclausal. This is supported by the examples in (8) and (9).

(8)   Taroo_i -ga   Hanako_j -ni zibun_{i/*j} -no   koto -o   hanasi -ta
        Taro   -Nom Hanako -Dat self   -Gen things-Acc tell   -Past

        'Taro told Hanako (things) about himself.'

(9)   Taroo_i -ga   Hanako_j -o   /ni   zibun_{i/j} -no   heya-de benkyoo-sase   -ta
        Taro   -Nom Hanako -Acc/Dat   self   -Gen room-in study   -Cause -Past

        'Taro made / had Hanako study in self's room.'

In Japanese, it is widely generalized that the self reflexive *zibun* (self) is subject oriented (Kuroda, 1965). Thus, in (8), only *Taroo* is a subject. However, in (9), *zibun* can take either *Taroo* or *Hanako* as its antecedent. This implies that both *Taroo* and *Hanako* function as subjects. Hence, the sentence in (9) has a biclausal structure.

However, Matsumoto (2000) suggests that when the causative suffix *-(s)ase* is attached to verbs listed in (10), the sentence is ambiguous.

(10) a.   haku   'put…on one's own lower body'   g. siru   'come to know'
      b.   matou 'put…on, wrap oneself in'   h. kiku   'hear'
      c.   taberu 'eat'   i. motu   'come to have'
      d.   kuu   'eat'   j. nigiru 'grasp'
      e.   nomu 'drink'   k. suu   'suck'
      f.   ou   'carry…on one's back, bear'

                                                            (Matsumoto, 2000)

(11a) and (11b) are *-(s)ase* causatives with verbs *taberu* (eat) and *kiru* (wear).

(11) a.   Taroo-ga   Hanako-ni   pan -o   tabe -sase -ta
            Taro -Nom Hanako-Dat bread -Acc   eat   -Cause -Past

            'Taro made Hanako eat some bread.'

      b.   Taroo-ga   Hanako-ni   ongaku-o   kik   -(s)ase -ta
            Taro -Nom Hanako-Dat bread -Acc listen -Cause -Past

            'Taro made Hanako listen to music.'

(11a) and (11b) are ambiguous; *Hanako* bahaves as an agent in one reading, and as a goal in another reading. The two different readings are shown in (12) and (13).

(12) a.   Taro ordered Hanako to eat some bread.

      b.   Taro fed Hanako with some bread.

(13) a.   Taro gave an order to Hanako and Hanako listened to music.

    b.   Taro played music toward Hanako.

In (12a) and (13a) *Hanako* is interpreted as an agent, but as a goal in (12b) and (13b).

In addition, Matsumoto (2000) suggests that this ambiguity of the sentence disappears when the causee is not capable of the caused or permitted actions by himself or herself. The relevant examples are shown in (14).

(14) a.   Hahaoya -waakatyan-ni   kutusita-o   hak   -(s)ase -ta
          mother -Topbaby -Dat socks -Acc   put-on -Cause -Past

          'The mother put the socks on the baby's feet.'   (Mastumoto, 2000)

    b.   Hahaoya –wa akatyan -ni   miruku -o   nom -(s)ase -ta
          mother -Top baby   -Dat milk   -Acc drink -Cause -Past

          'The mother fed the baby with the milk (in a bottle).'   (*Ibid.*)

The interpretation 'the mother ordered and the baby to wear the socks or to drink the milk by himself / herself' is pragmatically unnatural for (14). The only possible readings are the ones indicated by the English translations. In these readings, the causee behaves as a goal. Thus, the sentence has a mono-clausal structure.

The mono-clausality of (14a) is supported by the sentence in (15).

(15)   Hanako$_i$-ga umaretabakari-no   akatyan$_j$ -ni   zibun$_{i*/j}$ -no   kutusita -o
        Hanako -Nom new born -Gen   baby -Dat self   -Gen   socks   -Acc
        hak -(s)ase -ta
        put on -Cause -Past

        'Hanako put self's socks on a new born baby.'   (M&H, 2004)

As mentioned before, Japanese self refrexive pronoun, *zibun*, is self oriented. In (15), it cannot take *akatyan* (the baby) as its antecedent. This indicates that only *Hanako* is an agent and (15) is mono-clausal. Matsumoto (2000) named these *-(s)ase* causatives which have a mono-clausal structure "lexical *-(s)ase* causatives."

2.3. Support for Matsumoto's (2000) Hypothesis

Matsumoto's (2000) hypothesis is supported by the acquisition data of a Japanese-speaking child, Akkun studied by Murasugi, Hashimoto and Kato (2003, 2005) (Henceforth M, H & K). They report that lexical *-(s)ase* causatives are acquired earlier than syntactic causatives. The fact that there are two stages in acquiring *-(s)ase* causatives suggests that *-(s)ase* causatives are indeed divided into two; syntactic and lexical causatives.

Based on Matsumoto's (2000) hypothesis, M & H propose structures of these two types of *-(s)ase* causatives under VP-Shell Hypothesis.

(16) a.   syntactic causative   b.   lexical *-(s)ase* causative
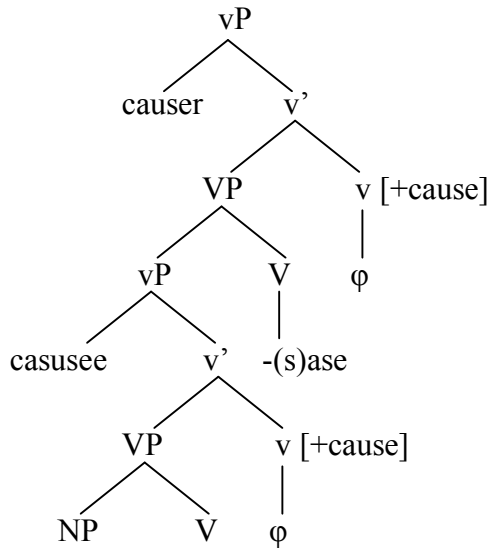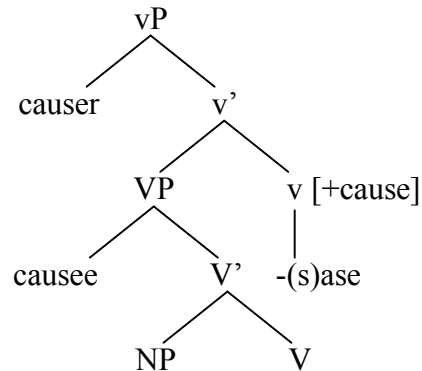
(M&H, 2004)

In syntactic causatives, both a causer and a causee behave as agents. Therefore, they are in the spec of vP as shown in (16a). The causative morpheme *-(s)ase* appears in the head of the higher VP.

On the other hand, in lexical causatives, a causee functions as a goal, not an agent. Thus, it appears in the spec of VP, not vP. The head of vP is realized as *-(s)ase* and it assigns an agent role to its spec. Lexical causatives have the same structures, and [+cause] small v is realized with other morphemes such as *-s*, or *-se*.

3.   Murasugi and Hashimoto (2004)

M&H provides more detailed analysis of a Japanese-speaking child Akkun, and suggest that there are actually four steps of acquiring morphological *-(s)ase* causatives. In this section, we will overview their v-VP frame analysis on the acquisition of two types of causatives and agentive verbs.

3.1.   Stage I: The Acquisition of Ditransitives

According to M&H Akkun produced sentences without overt verbs at around the age of 2. Examples are shown in (17a) and (17b).

(17) a.   Motto koe buubu φ   (2;1)
          more   this water

       '(I will give) more water to this.'

b. Koe Papa hai doozyo φ (2;0)
This Daddy yes please

'This one. (I want give it) to Daddy.' (M&H, 2004)

In (17a), *ageru* (give) is missing. In (17b), Akkun produced *hai doozyo*. *Hai* means 'yes' and *doozyo* means 'please,' but the phrase *hai doozyo* means 'Here you are,' so M&H conjecture that Akkun used this phrase to express the meaning of 'give.' However, this is not a verb. Therefore, a verb is missing in (17b) as well.

After this period, it is reported that Akkun started to place *tiyu/tita/tite* at the end of his utterances. Examples are shown in (18).

(18) a. Mama Akkun hai doozyo **tiyu** (2;5)
Mommy yes please do

'Akkun (/I) will give it to Mommy.'

b. Koko maamoi maamoi **tiyu**[1] (2;9)
here circular circular do

'(Please) draw a circle here. '

c. Kotyan koe Akkun hai doozyo **tita** (2;7)
this yes please did

'Kotyan gave this to Akkun (/me).' (M&H, 2004)

M & H suppose that Akkun used *tiyu/tita/tite* instead of a ditransitive verb to express the agentivity since the adult usage *suru* (do) can assign the agent role. They also argue that *tiyu/tita/tite* correspond to v because according to Chomsky (1995), v assigns an agent role. The structure proposed by M & H to the sentence in (18a) is illustrated in (19).

(19)
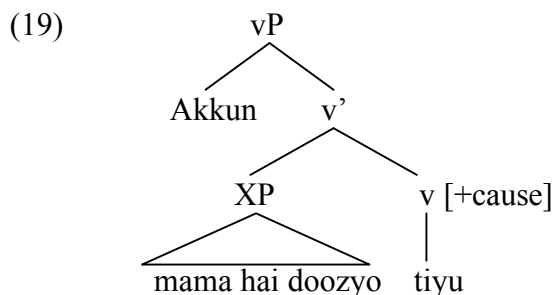
```
              vP
             /  \
        Akkun    v'
                /  \
              XP    v [+cause]
             / \      |
   mama hai doozyo   tiyu                        (M&H, 2004)
```

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[1] *Tiyu/tita/tite* are *suru/sita/site* in adult speech, and they correspond in meaning to 'do/did/doing' in English. (M&H 2004; 4)

Since *hai doozyo* is not a verb, the complement of the vP is indicated as XP. If this hypothesis is on the right track, a child has already acquired v in this stage and realize it as *tiyu/tita/tite* phonetically.

3.2.   Stage II: The Acquisition of the Lexical Items for Ditransitives

M&H report that while Akkun used verbs in the same way as an adult would, he also produced some interesting "errors". Sentences in (20) are examples of correct usage of verbs.

(20) a.   dango   -ga   uta   pakan   tite,   dango   -ga   **atta**   (2;9)
dumpling -Nom   lid   *onomatopoeia*   doing   dumpling -Nom   there-be

'There was a dumpling (when I) opened the lid of the dumpling (box).'

b.   Mama   tyotto   **ageyu**   (2;7)
Mommy   a little   give

'Mommy, (I will) give you a little bit.'   (M&H, 2004)

In (20a) an unaccusative verb is correctly used, and in (20b) a ditransitive verb is used correctly. However, it is reported that Akkun often used unaccusative verbs for transitive or ditransitive verbs. Relevant examples are shown in (21).[2]

(21) a.   Koe   ziityan   ni   *miyu*   (2;9)
this   Grandfather   to   see

'I show this to Grandfather.'

b.   Kore,   *ai*   -toku   kara   saa   (4;5)
this   open (unaccusative) -keep   as   Int.

'(I will) open this and keep it open.'

c.   *Todok*-ok-ka,   ano   hito   ni   *todok*-(y)oo   *todok*-(y)oo   (4;8)
arrive -let's   that   person   to   arrive-let's   arrive-let's

'Let's send (it). Let's send (it) to that person.'

In (21a), although a ditransitive verb, *miseru* (show), must be used in this context, Akkun produced an unaccusative verb, *miyu*[3] (see), "by mistake." The same "error" can be seen in (21b). Akkun used the unaccusative verb, *aku* (be open), instead of a transitive verb, *akeru* (open). In (21c), a transitive from, *todokeru* (deliver something) should be used in the adult usage, but Akkun used an unaccusaive verb, *todoku* (be deliverd) instead.

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[2]   The italicise letters indicates that they are used in a different way from adult usage.

[3]   *Miyu* is *miru* in adult usage

M&H hypothesize that Akkun produced these errors because he assumed [±cause] v to be zero.

The sentences in (22) are verb pairs of unaccusative and transitive in adult grammar.

(22) a. Hanako -ga   hon -o   Taroo -ni   todok-e -ru   (transitive)
              -Nom book-Acc   -Dat   deliver -pres.
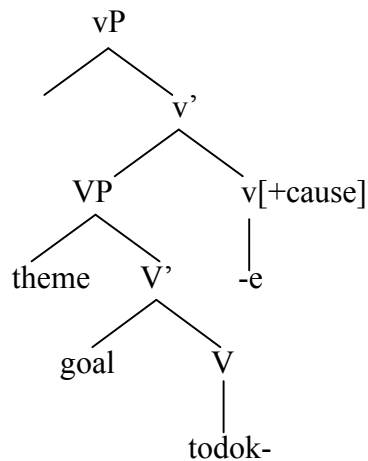
        'Hanako delivers a book to Taroo.'

      b. Hon -ga   Taroo -ni   todok-∅   -(r)u   (unaccusative)
          book-Nom   -Dat   be delivered-pres.

        'A book is delivered to Taroo.'   (M&H, 2004)

Sentences in (22) have structures in (23a) and (23b) respectively.

(23) a.   transitive verbs   b. unaccusative verbs
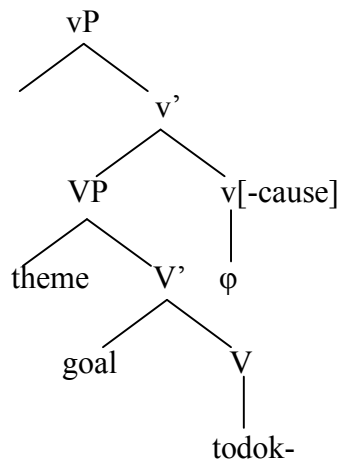
```
            vP                                    vP
           /  \                                  /  \
              v'                                    v'
             /  \                                  /  \
           VP    v[+cause]                       VP    v[-cause]
          /  \      |                           /  \      |
     theme   V'     -e                     theme   V'     φ
            /  \                                  /  \
        goal    V                             goal    V
                |                                     |
             todok-                                todok-      (M & H, 2004)
```

In (23a) which includes the transitive verb, [+cause] v is realized as *-e* but in (23b) which includes the unaccusative verb, [-cause] v is not realized phonetically.

Now, let us consider the sentence in (21a). The sentence in (24) is the "correct from" of (21a).

(24) Kore ziityan   ni   miseru
       this   Grandfather to   show

       'I show this to Grandfather.'

In (24), a ditransitive verb, *miseru* (show) is used in the adult grammar. The structure of (24) is supposed to be the one in (25).

(25)

```
              vP
             /  \
                 v'
                / \
              VP    v[+cause]
             /  \      |
          koe   V'    -se
               /  \
             PP    V
       ziityan-ni  mi-
```
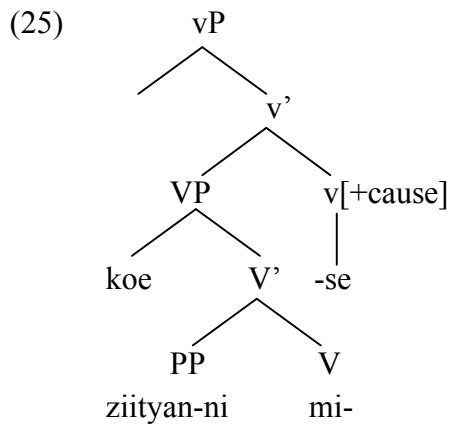
However, if Akkun hypothesized that [±cause] v was zero, the structure which Akkun had in his mind is the one in (26).

(26)

```
              vP
             /  \
                 v'
                / \
              VP    v[+cause]
             /  \      |
          koe   V'     φ
               /  \
             PP    V
       ziityan-ni  mi-                                    (M&H, 2004)
```
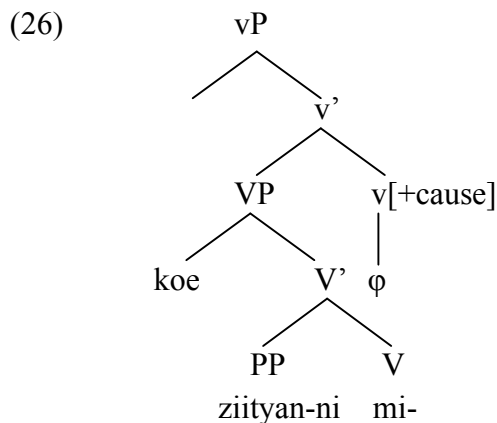
In (26), v is not realized phonetically. Thus, Akkun intended to produce the ditransitive verb, *miseru*, but he produced the unaccusative verb *miyu*. It is reported that Akkun often used unaccusatives for (di)transitives, but never vice versa, and this type of errors continued for two years.

3.3. Stage III: The Acquisition of the Lexical *-(s)ase* Causatives

Akkun produced causative sentences without causative suffix *-(s)ase* like in (27) (M&H, 2004).

(27)   Mama   Akkun   ***non*** *-de* (2;8)
         Mommy   drink -Request

         'Mommy, please feed me (with milk).'   (M&H, 2004)

M&H mention that Akkun intended to convey the causative meaning with (27). Then, the adult grammar should be the causative form *nomasete*. However, Akkun omitted *-(s)ase* and produced *nonde*. Therefore, he intended to say 'Mommy, please feed me,' but the meaning of what actually he said is 'Mommy, drink Akkun.'

Sentences with the causative suffix, *-(s)ase*, are observed at around the age of 3;5. An example is shown in (28).

(28)   Akkun -ni   **tabe -sase**-tee   (3;6)
                -Dat   eat   -sase –Request

        'Please feed Akkun (/me) (with food).'   (M&H, 2004)

The causative in (28) can be considered to be a lexical *-(s)ase* causative. If (28) is the syntactic causative, the meaning of the sentence should have been something like 'You will permit me to eat some food, please', but (28) does not have this meaning. Instead, the meaning of (28) is 'You feed some food to me,' and with this interpretation, the word *Akkun* behaves as a goal. Therefore, (28) is the lexical -(s)ase causative.

3.4. Stage IV: The Acquisition of Syntactic Causatives

Syntactic causatives were observed at around the age of 5 (M&H, 2004). An example is shown in (29).
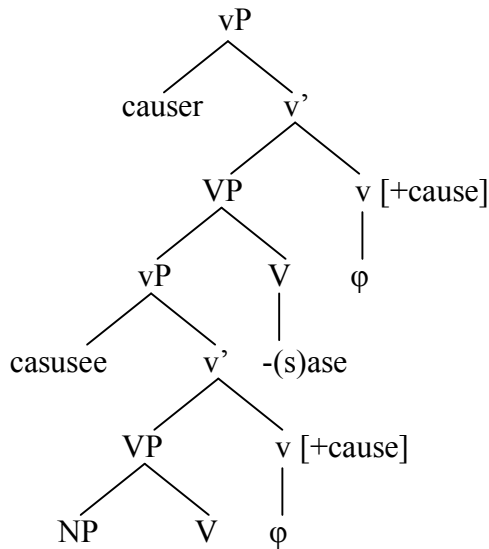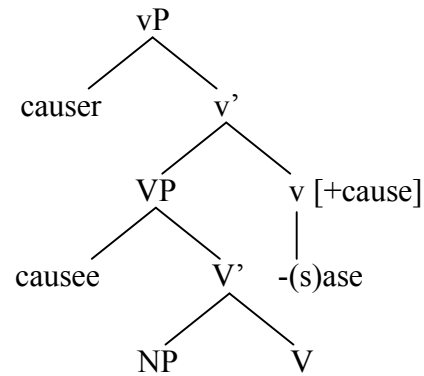
(29)   Obaatyan-no toko -de   tabemas -u   Att, iiru dake   nom -(s)ase -te
        Grandma-Gen place-at   eat   -Pres Int   beer only   drink -let   -Req.
        kudasai   (5;3)
        please

        '(I will) eat (a dinner) at Grandma's room. Eh, only beer, allow me to drink beer, please.'   (M&H, 2004)

In (29), Akkun does not ask his mother to feed him, but asks her to let him drink beer. Thus, although the causee, *Akkun* is not overtly produced, it is agentive. Hence, causative in (29) is considered to be a syntactic causative.

3.5. v-VP frame analysis

Why did Akkun produced causatives without the causative suffix, and why were lexical causatives acquired earlier than syntactic causative? M&Hs v-VP frame analysis gives an elegant explanation for these two puzzles, too. They hypothesize that syntactic causatives have the structure in (16a) while lexical causatives have the structure in (16b). (16a) and (16b) are repeated in (30a) and (30b) respectively.

(30) a. syntactic causative

```
                vP
              /    \
         causer    v'
                  /   \
               VP      v [+cause]
              /  \        |
            vP    V       φ
           /  \   |
      casusee  v'  -(s)ase
              /  \
            VP    v [+cause]
           /  \      |
         NP    V     φ
```

b. lexical -(s)ase causative

```
                vP
              /    \
         causer    v'
                  /   \
               VP      v [+cause]
              /  \        |
         causee  V'    -(s)ase
                /  \
              NP    V
```

(M&H, 2004)

Recall here the "errors" of unaccusative and transitive pairs in (21). These "errors" and the causative sentences without *-(s)ase* were observed in the same period. Therefore, M&H hypothesize that Akkun produced the sentence such as in (27) because he thought *-(s)ase* appears in the head of vP but v is not realized phonetically. When he started to produce transitive and ditransitive verbs and lexical *-(s)ase* causatives correctly, he started to realize v as an overt lexical item. However, since *-(s)ase* appears in the head of VP, syntactic causatives were acquired later.

As a whole, M& H (2004) explain three interesting acquisition phenomena in uniform way by employing the v-VP frame. Their argument is that Akkun hypothesized that v was zero at one point. Therefore, he produced "errors" of unaccusative and transitive pairs and causatives without the causative suffix *-(s)ase*. Lexical *-(s)ase* causatives were acquired earlier than syntactic causatives. This is because the causative suffix *-(s)ase* appears in the head of vP in lexical *-(s)ase* causatives but it appears in the head of VP in syntactic causatives. Proposing this analysis, M&H present supportive evidence for v-VP frame structure.

4. Evidence for Murasugi and Hashimoto (2004) from CHILDES: Sumihare's data

In the previous section, we overview M&H's v-VP frame analysis on the acquisition of complex predicates. In this section, we will present some additional evidence for their analysis. We will show that Sumihare goes through exactly the same stages as Akkun.

4.1. Stage I: The Acquisition of Ditransitives

In the first stage, as is the case of Akkun, Sumihare produced sentences without overt verbs. Examples are shown in (31).

(31) a.   Ta- ta- φ   (1;7)
          socks

          'Please put my socks on me.'

   b.   Kaatyan   hai   φ   (1;9)
        Mommy   yes

        'Mommy (I) will give you.'

   c.   Mother (=M):   Sumihare-tyan   jorijori   si -ta   ne
                                       cut (onomatopoeia) do-Past Int.

                    'Sumihare, I cut your hair.'
        Sumihare (=S): Jorijori   φ   (1;7)
                       cut (onomatopoeia)

                    '(You) cut (my) hair.'

In (31a), the causative form of *haku* (put on), that is, *hakasete* is missing. In (31b), though the subject is dropped, an indirect object *kaatyan* (mommy) is pronounced. Thus, it can be conjectured that a ditransitive verb, *ageru* (give), is missing. In (31c), even after his mother produced a verb, *suru* (do), he did not produce it.

After this period, Sumihare started to put *tiyu/tita/tite* at the end of sentences just as Akkun did. In Sumihare's utterances, *tiyu/tita/tite* is *tyuru/sita/site*. Relevant examples are given in (32).

(32) a.   Taabi pai   **si -ta**   (1;11)
          tabi   throw (onomatopoeia) do-Past

          'I took off (a pair of) tabi.'

   b.   Totyan,   ojityan-ga   dondon   **si-ta**   yo   (1;11)
        Daddy   a man -Nom   beat (onomatopoeia) do-Past Int

        'Daddy, a man beat a wall.'

   c.   Kaatyan   ombu   **tyuru** yo   (2;0)
        Mommy   piggyback   do   Int

        'Mommy, (I will) give you a piggyback.'

   d.   Kaminari-tyan gorogoro   **tyuru** yo   (2;1)
        thunder   thundering (onomatopoeia)do   Int.

        'It is thundering.'

In (32a) and (32b), *sita* (did) is attached to the end of the sentences, and in (32c) and (32d), *tyuru* (d0) is attached to the end of the sentences.

4.2. Stage II: The Acquisition of the Lexical Items for Ditransitives

In the second stage, while using verbs correctly, Sumihare also made some errors of unaccusative and transitive pairs. In (33a) and (33b), unaccusative and transitive verbs are used correctly. A ditransitive verb is also used correctly in (33c).

(33) a.   Ototyan syuppoppo **too -tta** ne   (1;11)
       Daddy   train   pass -Past Int.

       'Daddy, a train passed.'

    b.   Pantyu   hitori **hai -ta**   (2;0)
        underpants alone   wear-Past

        'I wore (my) underpants by myself.'

    c.   Mama   tyotto **ageyu**   (2;7)
        Mommy a little give

        'Mommy, (I will) give you a little bit.'   (M&H, 2004)

However, at the same time, he used unaccusatives for transitives "by mistake" as shown in (34).

(34) a.   Baatyan   ***ai***   -te   (2;0)
       Grandmother   be opened -Request

       Intended meaning: '(Please) open the door, grandmother.'
       Literal meaning: '(Please) be open, grandmother.'

    b.   Koko oite ***tyameru***   (2;1)
        here   put   get cold

        Intended meaning: 'I put (a cup of tea) here and make it cold.'
        Literal meaning: 'I put (a cup of tea) here and it gets cold.'

    c.   Kaatyan taitai   ***agat*** -te   Boku -no ***agat*** -te
        Mommy a carp streamer go up-Request   I   -Gen go up -Request
        Agat -te   ya   (2;2)
        go up -Request Int

        Intended meaning: 'Mommy, please make my carp streamer go up higher. Make it higher. Higher.'
        Literal meaning: 'Mommy, please go up my carp streamer. Go up mine. Go up.'

d.   Empetyu ***noi***-te   timbun   ***noi***-te   (2;2)
     a pencil   be away   newspaper   be away

Intended meaning: '(Please) get a pencil away.   (Please) get newspaper away.'
Literal meaning: '(Please) be away a pencil.   (Please) be away newspaper.'

In (34a), adult usage should be a transitive verb, *akeru*, but Sumihare used an unaccusative verb *aku*. In (34b), in adult usage, a transitive verb *samasu* should be used, but he used an unaccusative verb *tyrameru*[4]. The same type of "errors" are observed in (34c) and (34d). In (34c), a transitive verb *ageru* should be used, but he used an accusative verb *agaru*. In (34d), Sumihare also used an unaccusative verb *noku* instead of a transitive verb *nokeru*. Thus, not only Akkun but also Sumihare used unaccusatives for transitives.

More interestingly, Sumihare used transitives for unaccusatives. The related examples are shown in (35).

(35) a.   ***Nui***-ta   koko   (2;1)
      pull-PAST   here

Intended meaning: '(This) is out from here.'
Literal meaning: 'I pulled (this) here.'

b.   Koko kara   hi -ga   ***dasun***   ze   (2;6)
     here   from   sun -Nom   take out   Int.

Intended meaning: 'The sun rises from here.'
Literal meaning: 'The sun takes out from here.'

In (35a), adult usage should be an uccusative verb, *nuketa*, but Sumihare used a transitive verb *nuku*. In (35b), he used a transitive verb *dasu* instead of an unaccusative verb *deru*.

Note here that these "errors" were not observed in M&H. The "errors" that Akkun produced were always one way, unaccusatives for (di)transitives. It may appear that (35a) and (35b) contradict their argument. However, these "errors" are in fact compatible with it.

(36a) and (36b) are verb pairs of transitive and unaccusative in adult grammar, and structures of them are illustrated in (37a) and (37b) respectively.

(36) a.   Taroo -ga   Hanako -o   syasin -ni   utu-s-(r)u   (transitive)
        -Nom   -Acc   picture -in   copy-Pres.

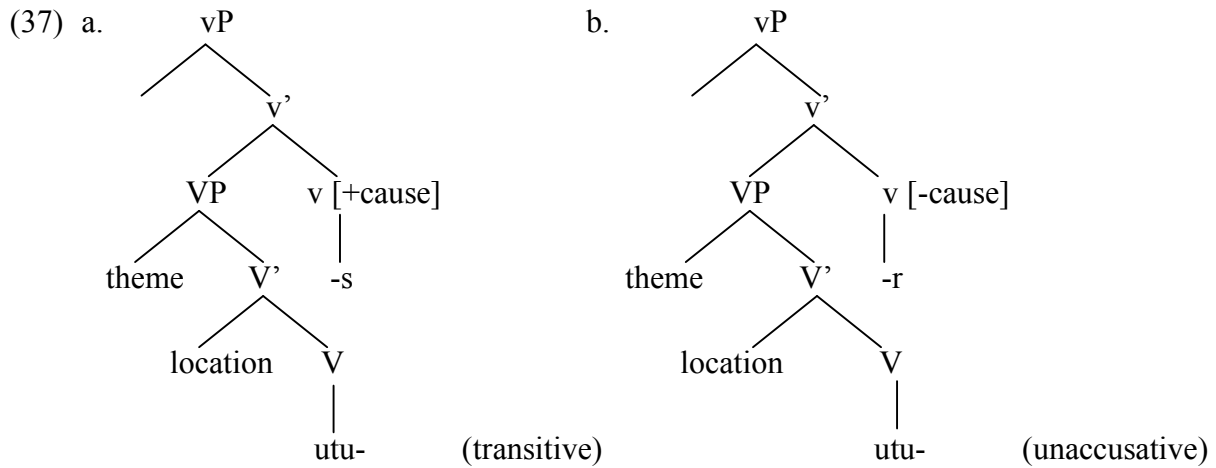'Taro takes a picture of Hanako.'

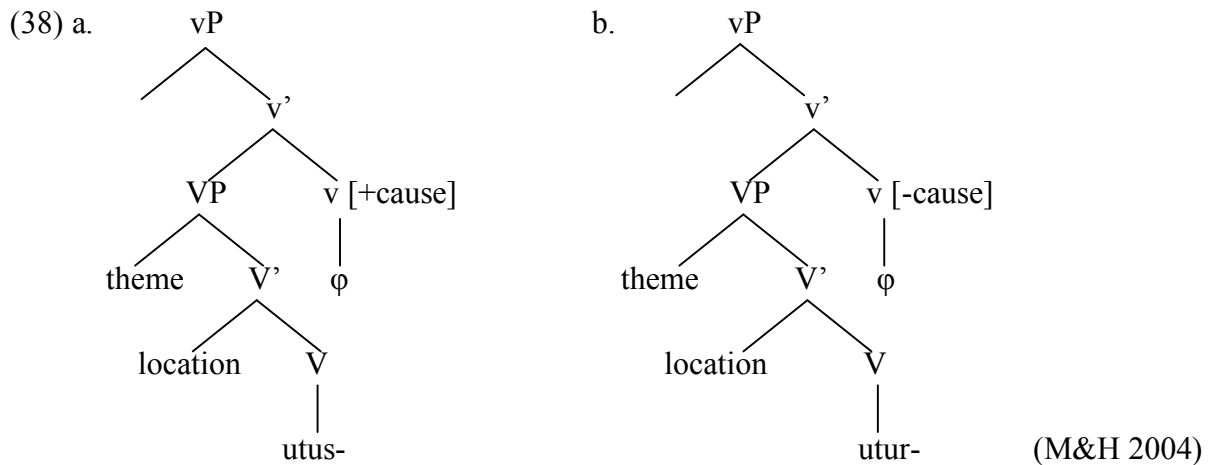4   *Tymeru* is child speech of *sameru*.

b.   Hanako-ga   syasin-ni   utu-r   -(r)u.   (unaccusative)
        -Nom   picture-in   be copied -Pres.

'Hanako appears in a picture.'   (M&H 2004)

(37) a.

However, if [± cause] v is asuumed to be zero, the structures that a child seems to have in mind to the sentences in (36a) and (36b) are those shown in (38a) and (38b).

(38) a.

Since both [+cause] v and [-cause] v are not realized phonetically, a child does not distinguish (38a) from (38b). However, since s/he never hears the verb without morphemes -*s* or -*r*, s/he probably put those morphemes to V randamly. Then, the possibility that a morpheme, -*s*, or -*r* is produced "by mistake" should be the same. Therefore, errors of unaccusative and transitive pairs cannot always be one way. If the errors of using transitives for unaccusatives are never produced, it suggests that a child does not hypothesize that [-cause] v is zero.

Hence, not only "errors" in (34), but also those in (35) indicate that Sumihare's [±cause] v is also hypothesized to be zero at that stage. Although M&H's argument is on the basis of Akkun's errors of using unaccusatives for transitives, the fact that Sumihare showed both

"errors," using unaccusatives for transitives and using transitives for unaccusatives, gives stronger evidence for their argument.

4.3. Stage III: The Acquisition of the Lexical *-(s)ase* causatives

In the third stage, as in the case of Akkun, causatives without suffix *-(s)ase* were observed in Sumihare's speech. This example is shown in (39).

(39)   Kutyu   ***hai*** -te   (2;1)
         a pair of shoes   put on -Request

         Intended meaning: '(Please) put the pair of shoes on me.'
         Literal meaning: '(Please) wear the pair of shoes.'

In the context of (39), the causative form *hakasete* should be used, but Sumihare used *haite*, an unaccusative form. We believe, thus, (39) presents additional evidence that a child hypothesizes that the suffix *-(s)ase* appears in the head of vP, but s/he omits it since [±cause] v is assumed to be zero in this stage.

Sumihare produced lexical causatives at about the age of 3. Examples are shown in (40).

(40) a.   Okaatyan **hak** **-asi** -te   (3;0)
          Mommy   put on -Cause -Request

          'Mommy (please) put (a pair of shoes) on me.'

     b.   Okaachan   kore   terukityan-ga   **sina -si**   -tan yo   (3;4)
          Mommy   this   -Nom die -Cause -Past Int.

          'Mommy, Terukityan made this die.'

In (40a) and (40b), causatives were correctly produced. In (40a), though an indirect object is not present, Sumihare ordered his mother to put a pair of shoes directly on him. Thus, in this case, it seems that the indirect object *Sumihare* functions as a goal but not as an agent. That means (40a) is mono-clausal. In (40b), *kore* (this) referred a fly in the actual situation. It is not natural to think that the causee, a fly, died because it wanted to do so.   Thus, it is not an agent, and (40b) also has a mono-clausal structure. Since Sumihare spoke one of Kansai directs, he uttered *hakasite* and *sinasita* instead of *hakasete* and *sinaseta*. However, with this utterances it is not clear whether the causative suffix *-(s)ase* is attached or the lexical causative suffix *-as* is attached. Therefore, (40a) and (40b) might be lexical *-(s)ase* causatives but might be not. However, it is clear that Sumihare acquired lexical causatives in this stage.

4.4. Stage IV: The Acquisition of the Syntactic Causatives

As in the case of Akkun, syntactic causatives like the sentence in (41) were observed relatively late.

(41)   Mou   gohan   tabe -sasen   yo   (4;9)
        more   dish   eat -Cause   Int.

        '(I) won't let you eat dinner any more.'

Sumihare said this sentence to his father. Therefore, the agent of the action, *taberu* (eat), is his father. That indicates that (41) has two agents. Thus, we regard (41) as a syntactic causative.

4.5. Discussion

In this section, we examined the acquisition data of a different Japanese-speaking child, Sumihare. By comparing his data with Akkun's data by M, H & K and M&H, we found out that their acquisition pattern is significantly similar. The order of acquisition stages was the same, and even the "errors" that they produced were the same type.

Though only Sumihare, not Akkun produced "errors" of using unaccusatives for transitives, this is not surprising under M&H's argument. The "errors" rather provide strong evidence for their argument. Therefore, their analysis is applicable not only to Akkun but also to Sumihare. Actually Sumihare's data was collected in 1960s. On the other hand, Akkun's was collected in 2000s. Since the two children brought up in the different era and the different place showed the same acquisition pattern, it is quite plausible to suppose that other Japanese-speaking children acquire verbs and causatives in the same way. Therefore, we believe that the analysis proposed by M&H is convincing.

5. Another evidence for M&H (2004) from an experimental study

In this section, we will discuss an experimental study which was conducted to show that M&H's analysis is also supported from an experimental study. While the longitudinal study aims to look at Sumihare's production of complex predicates, the experimental study aims to look at the children's comprehension of causative sentences.

5.1. Subject

Thirty-nine monolingual Japanese-speaking children ages from 2;10 to 6;6 participated in the study. They are all from Shinsei nursery school[5]. These children are divided into four groups according to the classes they actually belong to. Group 1 consists of 6 children whose ages range from 2;10 to 3;6. Group 2 has 11 children whose ages range from 3; 11 to 4;7. Group 3 has 11 children whose ages range from 4;8 to 5;7. Group 4 has 11 children whose ages range from 5; 10 to 6; 6. All the children showed no signs of neurological developmental difficulties, and no socio-emotional behavioural problems.

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[5] We would like to thank the people, adults and children, in Shinsei Nursery School for letting us hold the experiment.

5.2. Procedure

The sentence in (42) is tested with the act-out task and the confirmation task.

(42)   Inu -ga   kuma -ni   miruku -o   nom -(s)ase -ta
         dog -Nom bear -Dat   milk   -Acc   drink-Cause -Past

         'A dog fed a bear with the milk.

The causative sentence in (42) is ambiguous; it has syntactic causative reading as in (43a) and a lexical causative reading in (43b).

(43) a.   A dog ordered a bear to drink milk and the bear drank it.

      b.   A dog fed a bear with the milk.

First, the experimenter asked children to move the dolls and objects as described by (42). Then, almost all children from Group 1 through Group 4 showed the lexical causative reading in (43b).

Next, the experimenter conducted the confirmation task. For those children who interpreted (42) as a lexical *-(s)ase* causative, the experimenter showed them the syntactic causative reading by moving the toys, and asked them whether the action is also consistent with (42). For those children who interpreted (42) as a syntactic causative, the experimenter showed them the lexical *-(s)ase* causative reading and asked them whether the action also consistent with (42).

5.3.   Results

Children in Group 4 judged that both the syntactic and lexical *-(s)ase* causative readings are possible for (42) as adults. On the other hand, children from Group 1 through Group 3 judged that the syntactic causative reading is not possible for (42).   In other words, the results indicates that younger children understand (42) only in the lexical *-(s)ase* causative reading, whereas, elder children interpreted that (42) has both the syntactic and the lexical causative readings as adults.

The data obtained in this experimental study is compatible with our CHILDES data-base analysis, and the original proposal by M&H. Hence, their v-VP frame analysis on the acquisition of complex predicates and the agentive verbs is supported from both longitudinal observational study and cross-sectional experimental study.

6.   JSL causatives with v-VP frame analysis

In section 3 and 4, we presented some additional evidence for M&H's v-VP frame analysis on complex predicates acquisition, and it seems that their analysis is on the right

track. Then, we will examine Japanese Sign Language (JSL) causatives by employing v-VP frame.

6.1. JSL causatives

Sign languages are natural languages used by deaf people, but they are still misunderstood by many people, and some people think that sign languages do not have complex grammar. However, recently many researchers have studied sign languages. For example, Diane Lillo-Martin (1991) shows that the Principle and Parameters approach can be applied to the analysis of particular syntactic phenomena, such as topicalization in American Sign Language[6]. Moreover, it is reported that the acquisition process of sign language and spoken language is the same[7] (Bellugi and Fischer, 1972; Newport and Meier, 1985; Masataka, 2001; Fuji, 2004 among others).

Ichida in his studies (1994, 1998, 2000, 2005a, 2005b) also states that JSL has its own grammar, and proposes that JSL has causative sentences which are different from Japanese causative sentences. Ichida suggests that sentences in (45) correspond to Japanese *-(s)ase* causative in (44).

(44)　　　Taroo-ga　Hanako-ni　　miruku-o　　nom -(s)ase-ta
　　　　　　-Nom　　　　-Dat　　milk　-Acc　drink -Cause-Past

　　　'Taro made Hanako drink the milk.'

(45) a.　　Taroo　Hanako$_i$ ■□ miruku　nom -(r)u　▲　　wakar -(r)u ▼
　　　　　　　　　　　　　　　　milk　　drink-Pres.　　　understand-Pres.
　　　　miruku　　nom -(r)u　owar-(r)u　PT3$_i$
　　　　milk　　　drink-Pres.　finish-Pres.　third person

　　'Taro made Hanako drink the milk.'
　　Direct Interpretation 'Taro ordered Hanako to drink the milk. She said "I understand"
　　　　　　　　　　　　and she drank it.'

---

[6]　Example (i) is ungrammatical.

(i)　　　　　　　　　　____t____
　　　*[$_{CP}$[$_{TOP}$ $_a$MOTHER$_i$], [$_{IP}$ $_f$PRONOUN DON'T-KNOW [$_{CP}$ "WHAT" [$_{IP}$　e$_i$　$_a$LIKE]]]]

　　　'Mother$_i$, I don't know what she$_i$ likes.'　　　　　　　　　　　　(Lillo-Martin, 1990; 58)

In (i), the trace in the most deeply embedded clause is not properly governed.　Therefore, the sentence (i) violates the ECP.

[7]　However, some researchers report that the first sign is acquired earlier than the first word.

b.　Taroo　Hanako_i■□ miruku　　nom -(r)u ●　　kamawa -nai ▼
　　　　　　　　　　　　milk　　drink-Pres.　mind　-not

miruku　 nom -(r)u　owar-(r)u　PT3_i
milk　　 drink-Pres. finish-Pres.　third person

'Taro recommended Hanako to drink the milk.
Direct interpretation:'Taro recommended Hanako to drink the milk. She said
　　　　　　　　　　　　"OK" and she drank it.'

c.　Taroo　Hanako_i■□ miruku　nom -(r)u　(kiboo) ■　　kamawa -nai▼
　　　　　　　　　　　　milk　　drink-Pres. (want)　　　mind　-not

miruku　 nom -(r)u　owar-(r)u　PT3_i
milk　　 drink-Pres.　finish-Pres.　third person

'Taro permitted Hanako to drink the milk.'
 Direct interpretation: 'Taro made sure that Hanako wanted to drink the milk and
　　　　　　　　　　　　he said "I don't mind." So she drank it.'

d.　Taroo　Hanako_i■□　miruku　　nom -(r)u ■　kamawa-nai ▼
　　　　　　　　　　　　　milk　　　drink-Pres.　mind　-not

miruku　　 nom -(r)u　 owar-(r)u　PT3_i
milk　　　 drink-Pres.　finish-Pres. third person

'Taro let Hanako drink the milk.'
Direct interpretation:　'Taro noticed Hanako wanted to drink the milk and he
　　　　　　　　　　　　thought "I don't mind." So she drank it.'
　　　　　　　　　　　　　　　　　　　　　　　　　　(Ichida, 2002, 2005b)

All signals such as ▼ and ■ express non manual signals. In sign languages, facial expression and movement of head and shoulder are very important grammatical elements, and they are called "Non Manual Signals" (NMS). Here following Ichida, ▲ means 'nod up', ▼means 'nod down', ■ means 'head hold', ● means 'shaking head', and □ means 'a small nod after ■.' The word *owaru* (finish) functions as an aspect marker which expresses the past tense. The same signing position is used for both *Hanako* and 'PT3' to indicate that 'PT3' refers to *Hanako*.
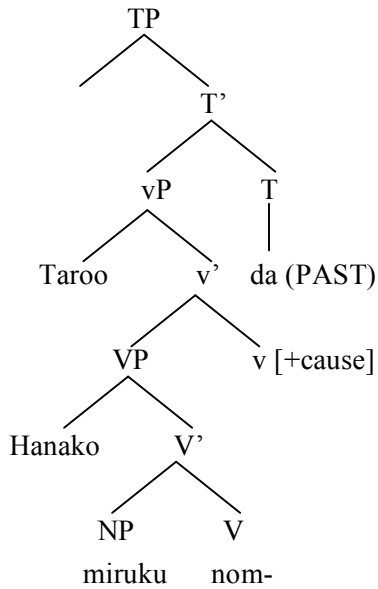
6.2.　Lexical Causatives in JSL

In addition to (45), we propose here that (46) also corresponds to (44). The Japanese causative sentence in (44) is ambiguous; it has a syntactic and a lexical causative reading. The lexical causative reading is 'Taro fed Hanako with the milk.' (46) seems to correspond to this lexical causative reading.

(46)   Taroo▼ Hanako   miruku   <u>nom -(r)u</u>   owar -(r)u
                              milk   drink-Pres.   finish-Pres.

        'Taro fed Hanako with milk.'

In (46), with a plain verb *nomu* (drink), 'Role Shift'[8] is used to show the direction of the action. In JSL Role Shift is expressed with special eye-gaze. It may appear that (46) means 'Taro drank milk by himself,' but the person who actually drank milk is Hanako. It is obvious that the word *Hanako* behaves as the goal. Hence, we hypothesize that (46) has the same structure as lexical causatives in Japanese as shown in (47).

(47) a.   Japanese lexical causative   b. JSL lexical causative
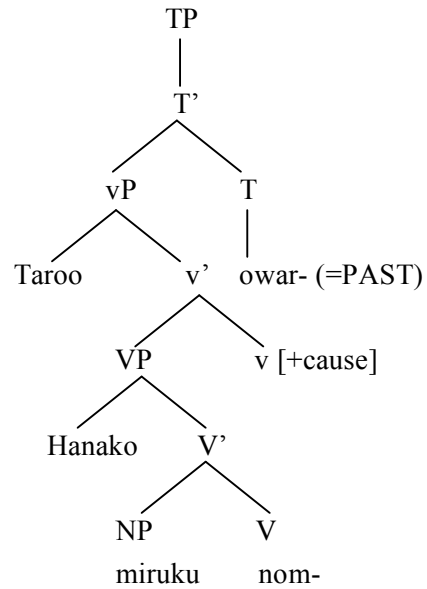
Since the word *Hanako* behaves as a goal, it appears in the spec of VP, not vP. *Taroo* is assigned an agent role by the head of v. The head of vP is not realized as an overt sign. It is realized, however, as the direction of the action. A causer and a causee can be shown with signing direction in JSL. The direction seems to convey the causative meaning, and functions in the same way as *-(s)ase* in Japanese. Hence, we conjecture that [± cause] v is realized as the direction in JSL.

6.3.   Syntactic Causatives in JSL

Then, are causatives in (45) syntactic causatives? In section 2, we mentioned that there are four possible readings in Japanese syntactic causatives. They are repeated in (48).

---

[8]   'Role Shift' indicates that the following discourse should be understood from the point of view of the referent associated with the shift (Emmorey, 2002).

(48)

```
                        ┌──── coercive ('make…do…')
        inducing ───────┤
                        └──── persuasive ('persuade… to do…')
                        ┌──── explicit ('give…permission to do…')
        permissive──────┤
                        └──── implicit ('let…do…)
```
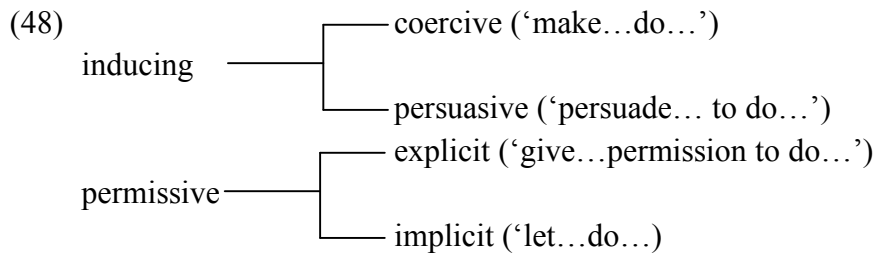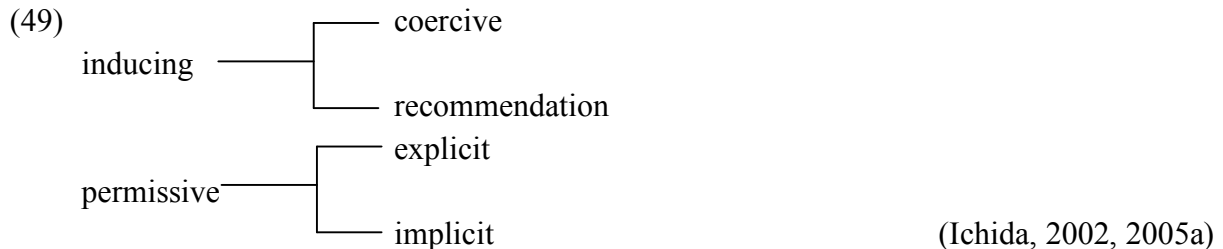
Interestingly, Ichida independently points out that the causatives in (60) have almost the same meaning as Japanese syntactic causatives. These four readings are illustrated in (49).

(49)

```
                        ┌──── coercive
        inducing ───────┤
                        └──── recommendation
                        ┌──── explicit
        permissive──────┤
                        └──── implicit                    (Ichida, 2002, 2005a)
```

As in the case of Japanese, these four readings are divided into inducing and permissive causatives depending on the subject of *wakaru* (understand) and *kamawanai* (do-not-mind). In (45a), the subject of *wakaru* is *Hanako*, and in (45b), the subject of *kamawanai* is *Hanako*. On the other hand, in (45c) and (45d), the subject of *kamawanai* is *Taroo*. According to Ichida (2002, 2005a), (45b) has an interpretation of "recommendation." However, we consider that this recommendation reading is similar to persuasive interpretation[9].

Therefore, four readings in (49) correspond to dour readings of a Japanese syntactic causative. In (5), with the four possible readings of a syntactic causative in (3a), we put dotted line under some words. (3a) and (5) is repeated in (50) and (51).

(50)   Taroo$_i$-ga   Hanako$_j$ -o   /ni   benkyoo-sase-ta
             -Nom   Hanako -Acc/Dat   study   -Cause-Past

'Taro made / had Hanako study.'

(51) a.   Taro ordered Hanako to study.   She understood and she studied.
      b.   Taro persuaded Hanako to study.   She said "OK" and she studied.
      c.   Taro made sure that Hanako wanted to study.   He said "I don't mind" and she studied.
      d.   Taro noticed Hanako wanted to study.   He thought "I don't mind" and she studied.

In JSL, these words are actually expressed with manual signs or non manual signals. Therefore, causatives in (45) have the same character as Japanese syntactic causatives

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9   Ichida (2005a) notes that (45b) has no corresponded Japanese causative sentence.

concerning with their interpretation.

Biclausality is the important character of syntactic causatives. However, it is worthy to explain some basic grammar of JSL before discussing biclausality of JSL causatives.

The basic word order of JSL is SOV. Let us consider sentences in (52).

(52) a.　Tanaka　pan　taber-(r)u　　　　(SOV)
　　　　　　　　bread eat -Pres.

　　　'Mr. Tanaka eats (a slice of) bread.'

　　b. * Tanaka taber-(r)u　　pan[10]　　　(SVO)
　　　　　　　　　eat -Pres. bread

　　　'Mr. Tanaka eats (a slice of) bread.'

　　c. *Pan　　taber-(r)u　　Tanaka[11]　　(OVS)
　　　　bread　eat -Pres.

　　　'Mr. Tanaka eats (a slice of) bread.'　　　　　　　　(Ichida, 2005a)

In (52), with the meaning of 'Taro eats bread,' only (52a), SOV order is grammatical. However, (52b), SVO order, and (52c) OVS order can be grammatical when a certain non manual signals co-occur as shown in (53a) and (53b).

(53) a.　Tanaka　taber-(r)u　■(□)　pan　(SOV)
　　　　　　　　　eat -Pres.　　　　bread

　　　'Mr. Tanaka eats (a slice of) bread.'

　　b.　Pan　taber-(r)u　■(□)　Tanaka　　(OVS)
　　　　bread eat -Pres.

　　　'Mr. Tanaka eats (a slice of) bread.'　　　　　　　　(Ichida, 2005a)

In this case, "head hold" which is expressed as ■ functions as a topic marker. According to Ichida (2005a), head hold also functions as a marker of an embedded clause.

The sentence in (54) is an example of complex sentence.

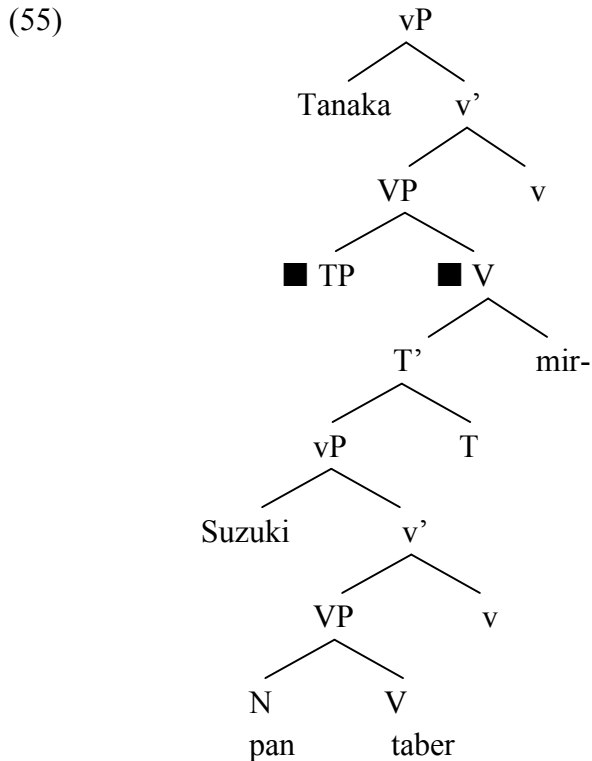[10] (64b) is grammatical with the meaning of 'the bread which Mr. Tanaka eats' (Ichida, 2005a).

[11] (64c) is grammatical with the meaning of 'Mr. Tanaka who eats (a slice of) bread' (Ichida, 2005a).

(54)   Tanaka■Suzuki pan taber-(r)u■mir-(r)u
           bread eat -Pres. see-Pres.

    'Mr. Tanaka sees that Mr. Suzuki eats (a slice of) bread.'   (Ichida, 2005a)

In (54), "head hold" is expressed as a ■, and two ■s indicate that the sentence between them is the embedded clause. Thus, 'Suzuki pan taberu' (Mr. Suzuki eats bread) is the embedded clause in (54). The structure of (54) is illustrated in (55).

(55)

```
                            vP
                          /    \
                    Tanaka      v'
                              /    \
                           VP       v
                          /   \
                    ■ TP      ■ V
                              /    \
                          T'       mir-
                         /   \
                       vP      T
                      /  \
                Suzuki    v'
                         /  \
                       VP     v
                      /  \
                    N     V
                   pan   taber
```

In (55), both *Tanaka* and *Suzuki* behaves as agents. Thus, the higher v assigns an agent role to *Tanaka*, and the lower v assigns an agent role to *Suzuki*.

  (56a) and (56b) are the examples of relative clauses.

(56) a. Tanaka■Suzuki bentoo   tukur -(r)u■ taber-(r)u
          a packed lunch prepare-Pres. eat -Pres.

    'Mr. Tanaka will eat the packed lunch which Mr. Suzuki prepares.'

  b. Tanaka■Suzuki tukur -(r)u bentoo ■   taber-(r)u
          prepare-Pres. a packed lunch eat -Pres.

    'Mr. Tanaka will eat the packed lunch which Mr. Suzuki prepares.' Ichida, 2005a)

According to Ichida (1998, 2002, 2005a) JSL has two types of relative clauses. (56a) is head-internal relative clause and (56b) is head-external relative clause. Nevertheless, this difference is not so important here. The point here is that the embedded clause 'Mr. Suzuki

prepares' is marked by ■ (head hold) in (56), too.

The sentence in (57) is an example of conjoined sentence.

(57)   Tahnaka■ Suzuki ■ bentoo   tukur-(r)u▼   taber-(r)u
                                a packed lunch   prepare-Pres.   eat -Pres.

        'Mr. Tanaka and Mr. Suzuki prepare a packed lunch and will eat it later.'

Comparing (57) and (56a), only NMS is different. In (57), ■s, "head hold", function as a topic marker, and 'nod down' which is expressed as ▼ indicates conjunction. On the other hand, in (56a), "head hold" functions as an embedded clause marker. This fact suggests that non manual signals are the marker of the sentence structure.

Now, let us consider the sentences in (45) which is repeated in (58).

(58) a.   Taroo Hanako$_i$■□ miruku nom -(r)u▲   wakar-(r)u▼
                                milk   drink-Pres.   understand-Pres.
        miruku nom -(r)u   owar-(r)u   PT3$_i$
        milk   drink-Pres.   finish-Pres.   third person

        'Taro made Hanako drink the milk.'

    b.   Taroo Hanako$_i$■□ miruku nom -(r)u● kamawa -nai▼
                                milk   drink-Pres.   mind   -not
        miruku nom -(r)u   owar-(r)u   PT3$_i$
        milk   drink-Pres.   finish-Pres.   third person

        'Taro recommended Hanako to drink the milk.

    c.   Taroo Hanako$_i$■□ miruku   nom -(r)u (kiboo)■ kamawa -nai▼
                                milk   drink-Pres.(want)   mind   -not
        miruku   nom -(r)u   owar-(r)u   PT3$_i$
        milk   drink-Pres.   finish-Pres.   third person

        'Taro permitted Hanako to drink the milk.'

    d.   Taroo Hanako$_i$■□ miruku   nom -(r)u■ kamawa -nai▼
                                milk   drink-Pres. mind   -not
        miruku   nom -(r)u   owar-(r)u   PT3$_i$
        milk   drink-Pres.   finish-Pres.   third person

        'Taro let Hanako drink the milk.'

In all sentences, ▼ (nod down) after *wakaru* (understand) or *kawamanai* (do-not-mind) express conjunction. ■ (head hold) after *Hanako* seems to function as a marker of an embedded clause. However, in (58a) and (58b), the different NMS appear after *miruku nomu* (drink milk). We conjecture that these NMS also function as an embedded clause marker.

These NMS need to convey a certain meaning, that is, 'order' in (58a) and 'recommendation' in (58b). Therefore, in (58a) and (58b), the embedded clause 'drink milk' is marked by those NMS together with ■. In (58c) and (58d), the embedded clause is marked by ■. Hence, all sentences in (58) contained the embedded clause. That means causatives in (58) have biclausal structure.

Taken together, causatives in (58) have the character of syntactic causatives in respect of interpretation and biclausality.　However, unlike English, in which causative verbs such as 'make' and 'let' express causative meanings, in JSL syntactic causatives, they are expressed by manual signs (understand or do-not-mind) together with non manual signals.

6.4. Structures of Syntactic Causatives with v-VP frame

The structures of (58a), (58b), (58c) and (58d) are as in (59a), (59b), (59c), and (59d), respectively under the v-VP frame hypothesis (Murasugi and Fuji, 2005).
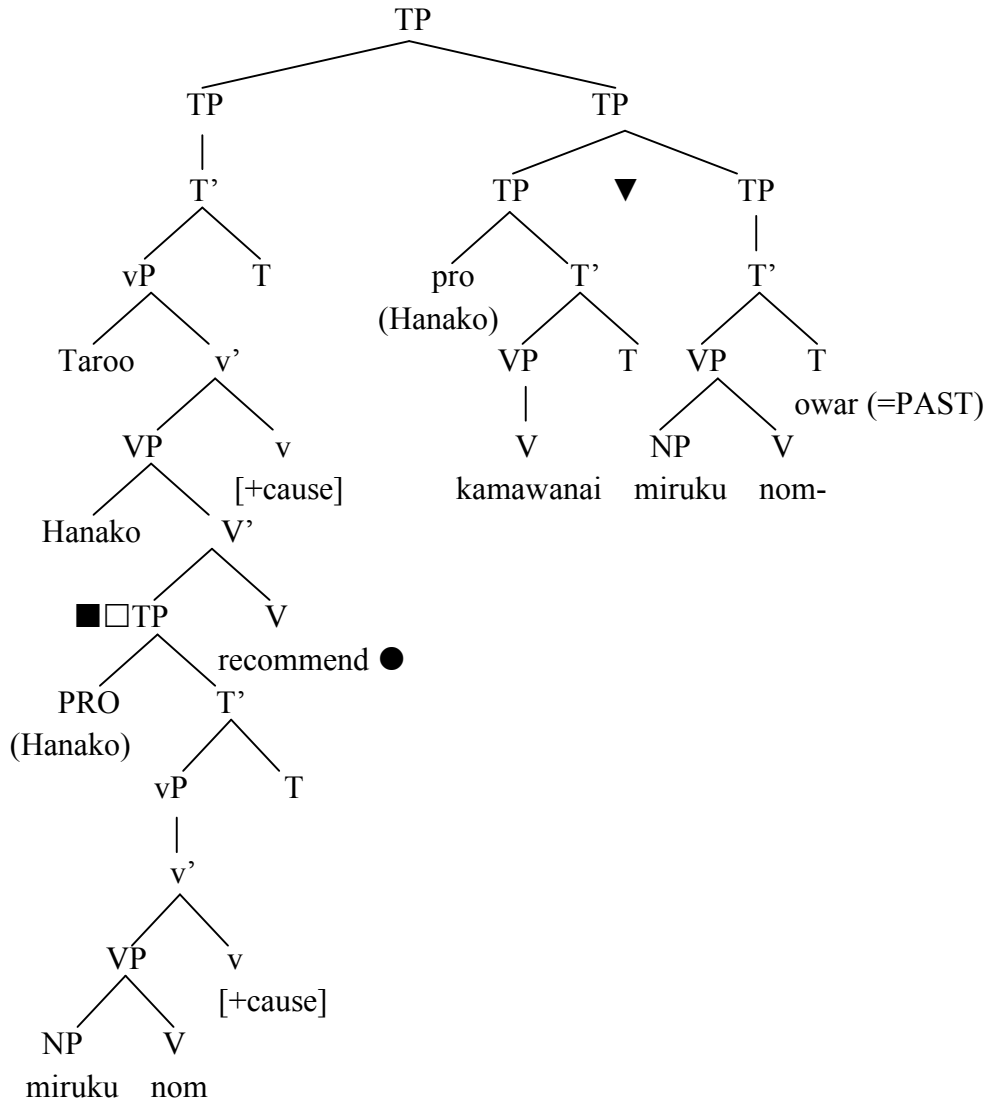
(59) a.　　Taroo Hanako$_i$ ■ □ miruku nom-(r)u ▲wakar -(r)u ▼miruku nom -(r)u
owar-(r)u PT3$_i$
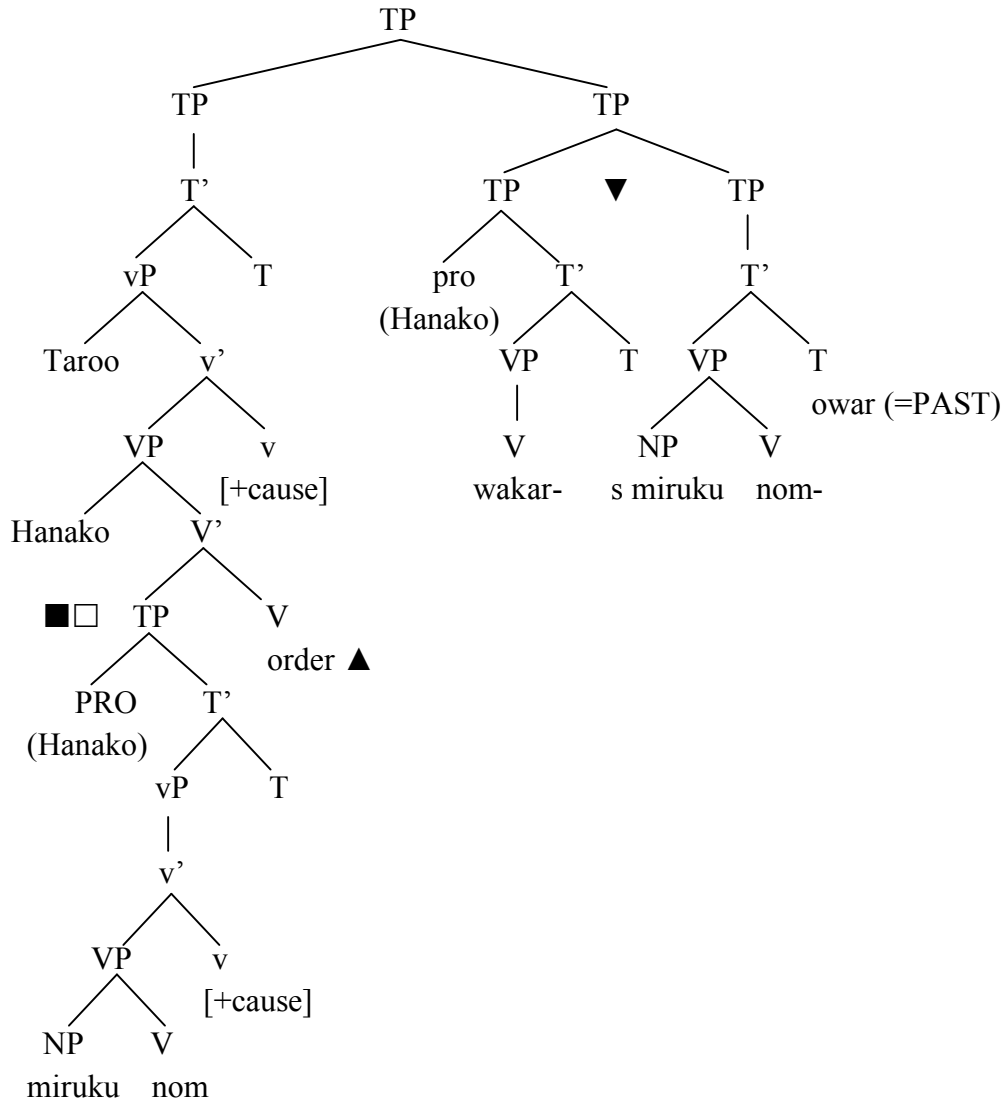
In (58a), the sentence is divided into two parts: 'Taro ordered Hanako to drink milk' and 'Hanako understood and drank it.' *Taroo* appears in the head of vP and *Taroo* is assigned an agent role by v. The causative V is realized as 'order' associated with NMS. *wakaru* (understand) is in the adjunct position of conjoined TP, and the agent of *wakaru* is *Hanako*.
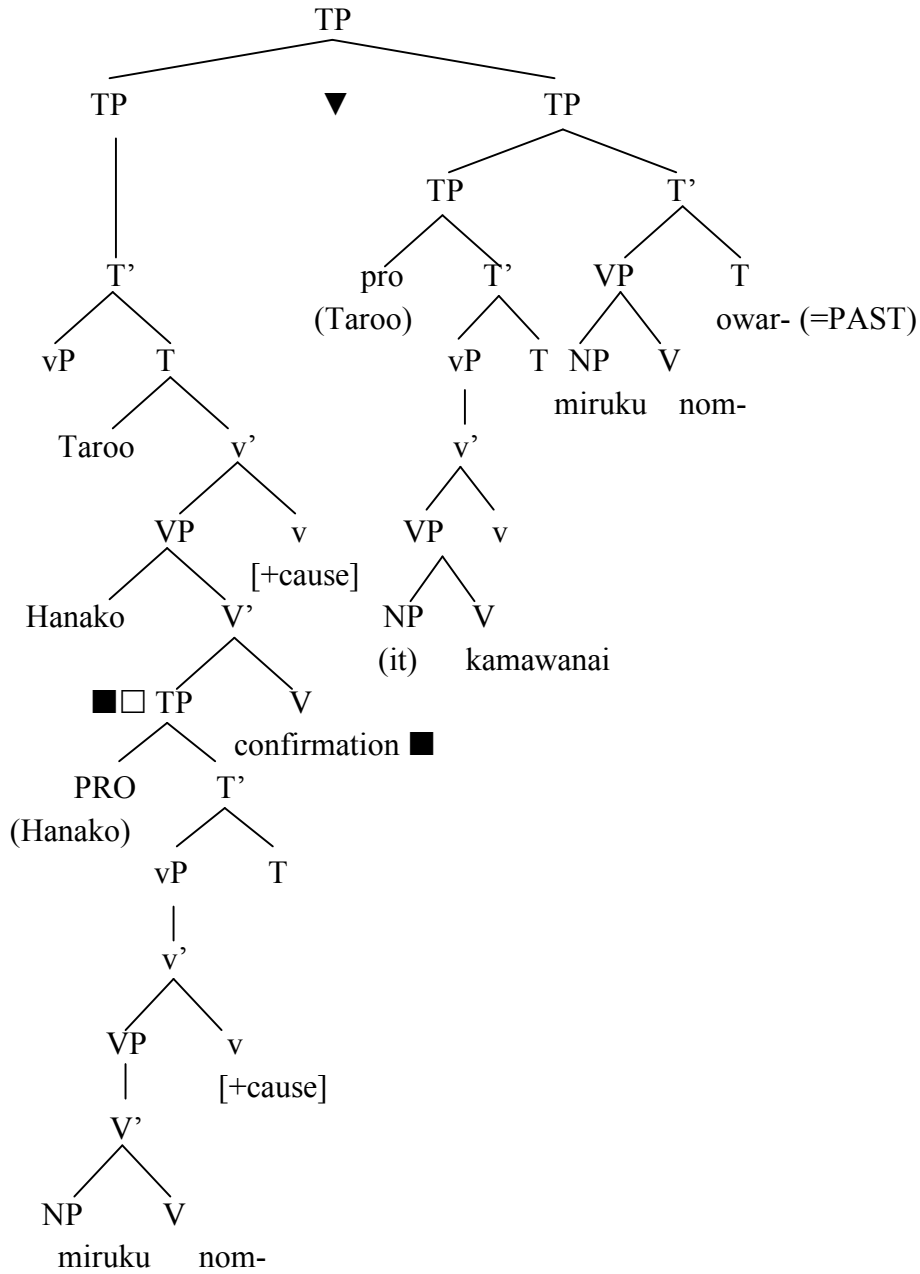
The structures in (59b) is aomost the same as (59a).

(59) b.　Taroo　Hanako$_i$ ■ □ miruku nom-(r)u ● kamawa-nai ▼ miruku nom-(r)u owar-(r)u PT3$_i$

The difference between (59a) and (59b) is that the causative V is realized as 'recommendation' associated with NMS, and that *kamawanai* appears as the spec of TP instead of *wakaru*.

(59) c.　　Taroo Hanako$_i$ ■ □ miruku nom-(r)u (kiboo) ■ kamawa-nai ▼ miruku nom-(r)u owar-(r)u PT3$_i$

In (59c), the subject of *kamawanai* is *Taroo*, so the structure is different from (59a) and (59b).　The former part of the sentence means 'Taro confirmed that Hanako wanted to drink milk and he did not mind it', so the left most TP is an adjunct. The causative V is realized as 'confirmation' associated with NMS.

The structure of (58d) is similar to that of (58c).

(59) d.   Taroo Hanako$_i$ ■ □ miruku nom-(r)u ■ kamawa-nai ▼ miruku nom-(r)u
owar-(r)u PT3$_i$

```
                                    TP
                  ┌─────────────────┼─────────────────┐
                 TP                 ▼                 TP
                  │                          ┌─────────┴─────────┐
                 T'                          TP                 T'
          ┌───────┴───────┐            ┌─────┴─────┐        ┌────┴────┐
         vP               T           pro         T'       VP        T
    ┌─────┴─────┐                    (Taroo)   ┌───┴───┐  ┌──┴──┐  owar- (=PAST)
  Taroo        v'                              vP      T  NP    V
          ┌─────┴─────┐                        │          miruku nom-
         VP           v                        v'
    ┌─────┴─────┐   [+cause]               ┌────┴────┐
  Hanako       V'                         VP         v
          ┌─────┴─────┐              ┌─────┴─────┐
        ■□ TP          V            NP           V
      ┌───┴───┐   confirmation ■   (it)       kamawanai
    PRO       T'
  (Hanako) ┌───┴───┐
          vP        T
           │
          v'
      ┌────┴────┐
     VP         v
      │       [+cause]
     V'
  ┌───┴───┐
 NP       V
miruku  nom-
```
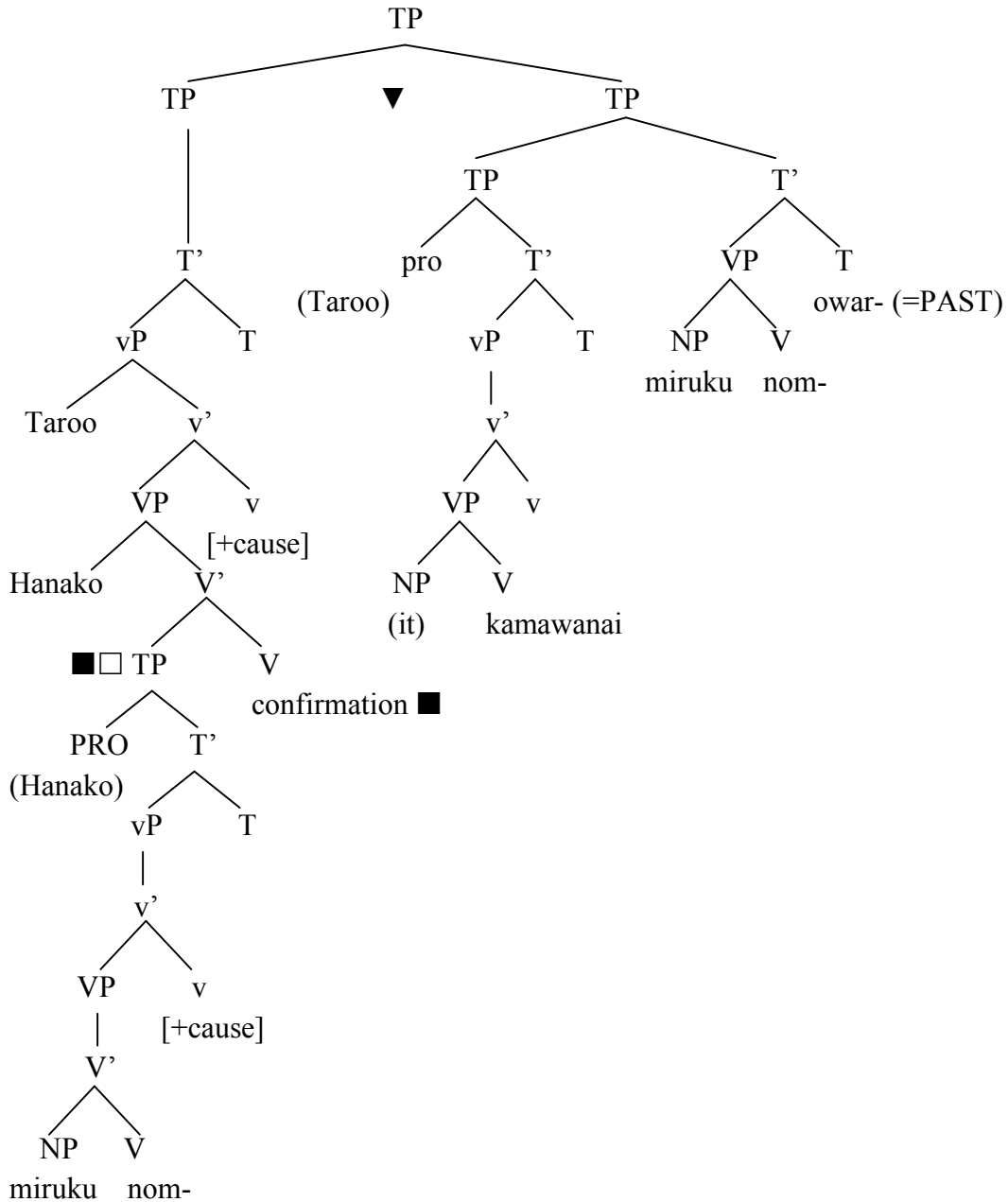
(59d) is the same structure as (59c) except that the causative V is realized as 'awareness' associated with NMS.

6.5.   Discussion

By employing v-VP frame structure, we propose that JSL has lexical causatives as Japanese. However, JSL syntactic causatives are probably different from Japanese and English syntactic causatives. In Japanese, causative V is realized as *-(s)ase*. In English, causative V is realized as "make" and "let", for example. In JSL, it is realized as manual signs,

'understand' or 'do-not-mind' and non manual signals: order, recommendation, confirmation and awareness.

7. Conclusion

In this paper, we overviewed Murasugi and Hashimoto's (2004) v-VP frame analysis on the acquisition of agentive verbs and two types of causatives. Then, we presented another Japanese-speaking child, Sumihare's data, and showed that the acquisition pattern of Sumihare is significantly similar to that of Akkun. We also briefly mentioned the results of the experimental study and stated that we obtained the parallel data. Children acquire structures including small v in the very early stage.

Then, we examined the JSL causatives under v-VP frame hypothesis, and proposed that JSL lexical causatives have the same structures as Japanese lexical causatives. Therefore, we concluded that their v-VP frame analysis and the VP-shell hypothesis have the explanatory power. However, JSL syntactic causatives are probably different from Japanese syntactic causatives, because the way of the lexical realization of the causative V is not the same among languages.

All of these discussions converge to suggest that [± cause] v is universal while the realization of causative V is different depending on languages. If this analysis is on the right track, we predict that JSL-speaking children acquire the lexical causatives earlier than the syntactic causatives. We also expect that JSL children exhibit the stages in which they have difficulty in lexically realizing [±cause] v. We would like to examine these hypotheses in the next project.

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