

Does the 'Intransitive Stage' Exist in Japanese-Speaking Children?: Acquisition of Morphologically-Related Transitive and Intransitive Verbs in Japanese

日本語母語児の自動詞への偏りの有無：
日本語の自動詞他動詞ペアの習得について

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1. Introduction

It has been reported that young Japanese-speaking children show a bias toward intransitive verbs (VIs) (Ito 1990). Ito examined the production of Japanese-speaking children (age 2;04-7;02) and found that they go through 4 stages of acquiring the use of transitive verbs (VTs). In the first stage, children mostly uttered VIs and misused them as VTs;

- 1) *isu* **doi-te* (*doke-te*) (Ito 1990, p.70)
 chair move-Request
 'move the chair'

The verb in the above example, *doite*, is a request form of *doku*, a VI. The child wanted a chair to be moved, and the correct verb form is *dokete*, the transitive counterpart of the VI. Ito stated that, since children had not yet acquired VTs in this stage, they would use the intransitive counterparts instead. He called this the 'intransitive stage' and suggested that children use VIs only due to their cognitive developmental stage (i.e., the egocentric stage). In the second stage, they acquire the causative suffix *-sase* and use it with VIs in place of VTs. In the third stage, *-sa* in the causative suffix drops. Finally children acquire VTs and use them correctly. Ito argued that children were not able to produce VTs correctly until the last stage in his four-stage model.

Nomura and Shirai (1997) examined longitudinal data from a Japanese-speaking child, Sumihare (1;04-2;04). Contra to Ito, they hypothesized that the child would use both VIs and VTs early, and that the overextension of VI to VT would be reflective of the distribution of input. In their data, however, Sumihare's verb production showed a bias toward VIs (75-100%) from the age of 1;05 to 1;07, supporting Ito's claim: the child's verbs are predominantly intransitive at an early stage. This tendency was more prominent in morphologically-related VI-VT pairs, such as *kowareru* [to break] and *kowasu* [to break something]. Sumihare only used the intransitive sides of the pairs up to 1;07. On the other hand, Sumihare's overextension of VIs to VTs was rare in comparison to the correct use of VI-VT pairs. Thus, Nomura and Shirai's study did not support Ito's four-stage model, though it supported the notion of the intransitive stage in the child's language development. In addition to Sumihare's data, they analyzed adults' speech addressed to him, and found that adults' use of VIs was higher than 70% in proportion up to 1;07 but 50-70% after 1;08, which approximates Sumihare's use of VIs. Nomura and Shirai suggested that Sumihare's frequent use of VIs at an early stage was a reflection of the input distribution patterns.

Tsujimura (2008) also investigated morphologically-related VI-VT pairs produced by a Japanese-speaking child, Aki (1;06-3;00), in a longitudinal study. She also found that Aki produced more VIs than VTs from the age 2;03 (when he started productively uttering verbs) to 3;00. It is also reported that the dominance (over 60%) of VIs was observed in the input language throughout the observation periods. However, she argued that Aki's VI dominance was not a simple reflection of the distribution patterns of VIs and VTs in the input. She pointed out that Aki showed relative ease in learning morphologically-related VIs because the number of new VIs used by Aki increased from the age of 2;03, although such a sharp increase of VTs was not observed until much later. Tsujimura reported that many of the child's morphologically-related VIs were motion verbs with a specific path or goal and argued that the child learns from the input patterns a language-specific principle of Japanese verbs where 'results' rather than 'process' is focused in describing an event. According to Tsujimura, this principle affects the child's conceptualization of an event, and thus the child initially learns morphologically-related VIs, which denote motion and ending location, before morphologically-related VTs, which denote process.

Both Nomura and Shirai's and Tsujimura's studies investigated only one child, and their results may not be generalized without further investigation.

2. Morphologically-related verb pairs in Japanese

Before going into the current study, let us observe morphologically-related verb pairs in Japanese. Unlike English in which some verbs can function as a VI and a VT, such as *break*, *drop*, etc., Japanese employs a number of VI-VT pairs, most of which share identical roots (in many cases, the first two segments).

- 2) a. omocha-o kowashita
 toy-ACC broke
 '(I, you, they, he) broke a toy'
- b. omocha-ga kowareta
 toy-NOM broke
 'a toy broke'

In the above examples, the verb in (2a) is transitive, and the one in (2b) is intransitive. The distinction is clear from the use of case particles, *-o* or *-ga*. However, in casual spoken Japanese, particles tend to be omitted, and they are frequently omitted when mothers speak to their children. This means that children are often exposed to the input that lacks grammatical particles, such as the examples below.

- 3) a. omocha kowashita
 toy broke
 '(I, you, they, he) broke a toy'
- b. omocha kowareta
 toy broke
 'a toy broke'

The verbal arguments in the examples (3a) and (3b) do not have case particles following them, and children will not have any clues for whether the verb is transitive or intransitive upon hearing them. Moreover, the same situation can be described by either sentence, in which a toy broke by accident or not. This creates a problem for children to determine whether the verb is transitive or intransitive. Thus, morphologically-related verb pairs can pose a challenge in children's verb acquisition.

Jacobsen (1992) listed rules to form VIs from VTs or vice versa. In Jacobsen's list, there are 15 such rules in addition to miscellaneous pairs, and transforming a VI to a VT (or a VT to a VI) is not straightforward. Therefore, it is not likely that children can automatically produce a VI (or a VT) if they know the counterpart of a verb pair using these rules.

3. The study

In the present study, we investigate whether VIs are more readily used than VTs in young Japanese-speaking children when they start uttering verbs. If this is the case, we further investigate whether the input is an important factor for children's acquisition of morphologically-related VI-VT pairs.

3.1 Participants

We examined longitudinal data from three monolingual Japanese-speaking children and their mothers. The children were typically-developing and resided in Japan. Child 1 and Child 3 were girls, and Child 2 was a boy. All children were first-born in their family and received Japanese-only input from birth. The data were taken at six time periods at their homes, when the children were 0;10, 1;09, 2;01, 2;06, 2;08, and 3;01. For Child 3, data from some time periods were unavailable, and her data set contains data at 1;03 instead of 0;10 and 2;11 instead of 3;01. For Child 1, unfortunately, there was no data available at 2;01 because her mother had just given birth to the second child at the time.

3.2 Data collection

The mother-child interaction was videotaped at home for 60 minutes at each period. During each session, mother-child pairs interacted naturally and played with their toys, such as dolls, bricks, puzzles, and picture books. Most of the time, the video camera was placed on a tripod for recording. Sometimes the father held the video camera, but he did not interact with the child or the mother. No investigator was present during the recording.

3.3 Transcription and coding

After the video-recording, all utterances were transcribed in JCHAT (Japanese Codes for the Human Analysis of Transcripts) format (Oshima-Takane, MacWhinney, Sirai, Miyata, & Naka, 1998) by native speakers of Japanese. After each transcript was created, it was checked against the video by one or two native speakers of Japanese for accuracy. Apparent transcription errors were fixed, and if there were any discrepancies between the transcribers, the discrepancies were added as alternatives on the transcripts. The CHILDES MOR program (MacWhinney, 2000) was performed on each transcript in order to calculate the children's general language measures such as MLU in morphemes, total number of utterances, total number of verbs (tokens), and total number of different

verbs (types). In order to examine how children and mothers used morphologically-related VI-VT pairs, we analyzed VI-VT pairs based on Jacobsen's (1992) list of morphologically-related verb pairs by looking into MOR verb tags listed by the FREQ program. We counted the frequency of VIs and VTs (tokens) and the number of different VIs and VTs (types) by time periods for each participant. We also counted the number of different verb pairs used together within the same time period. Book reading, reciting, singing songs, and imitating/repeating the other participant's utterances were excluded from the coding. If the production of VIs (or VTs) exceeds over 60 percent of all the morphologically-related verbs, it is considered as a VI (or VT) bias based on Tsujimura's study (2008).

4. Results

Table 1 summarizes the age, MLU value, total number of utterances, type and token number of all VIs and VTs, *including* morphologically-related verb pairs, produced by children in each time period. Although Child 3's MLU value was higher than the other children at 1;09, all three children reached the same MLU stage at the last observation period (at around three years of age). None of the children produced any verbs at the earliest observation period (0;10 for Child 1 and 2, 1;03 for Child 3) but the rates of acquiring verbs differed each other. The time period when Child 1 produced more than 30 verb types (more than 10 VI and VT types each) was at 2;06, Child 2 at 2;08, and Child 3 at 1;09. More than 50 verb types (more than 20 VI and VT types each) were produced by Child 2 only at 3;01, while the other two children did so much earlier (Child 3 at 2;06 and Child 1 at 2;08). These results suggest that Child 3 acquired verbs faster than Child 1 who did so faster than Child 2.

Table 1. Children's age, MLU, total number of utterances, and types and tokens of VI and VT by period

	Age	MLU	Total utterances	Verb types (VI, VT)	Verb tokens (VI, VT)
Child 1	0;10	0	0	0 (0, 0)	0 (0, 0)
	1;09	1.27	233	5 (4, 1)	24 (21, 3)
	2;06	2.72	503	34 (13, 21)	117 (31, 86)
	2;08	2.55	731	51 (27, 24)	159 (82, 77)
	3;01	3.10	510	35 (11, 24)	121 (38, 83)
Child 2	0;10	0	0	0 (0, 0)	0 (0, 0)
	1;09	1.18	159	3 (2, 1)	25 (24, 1)
	2;01	1.26	359	4 (4, 0)	17 (17, 0)
	2;06	1.60	552	21 (13, 8)	65 (34, 31)
	2;08	1.95	687	34 (19, 15)	115 (78, 37)
	3;01	3.18	720	52 (24, 28)	222 (114, 108)
Child 3	1;03	1.00	52	0 (0, 0)	0 (0, 0)
	1;09	2.09	431	33 (18, 15)	109 (65, 44)
	2;01	2.61	437	36 (19, 17)	115 (71, 44)
	2;06	2.52	761	51 (26, 25)	152 (67, 85)
	2;08	2.58	789	54 (25, 29)	179 (78, 101)
	2;11	3.06	627	59 (30, 29)	192 (110, 82)

We first examined whether children showed a VI bias at early stages of their language development as reported in Nomura and Shirai (1997) and Tsujimura (2008). Figure 1 illustrates the frequency of morphologically-related VIs and VTs (tokens). Comparing the results of three children, it is observed that they did not exhibit the same developmental patterns. According to our criterion of a VI/VT bias (more than 60%), Child 2 showed a VI bias only at 2;08 (62.5%), and yet showed a VT bias at 2;06 (62.9%), earlier than a VI bias. Child 1 and Child 3, on the other hand, exhibited a VT bias at 2;06 (75%) and 3;01 (97%), and at 2;06 (60.5%) respectively. Neither of them showed a VI bias throughout the observation periods.

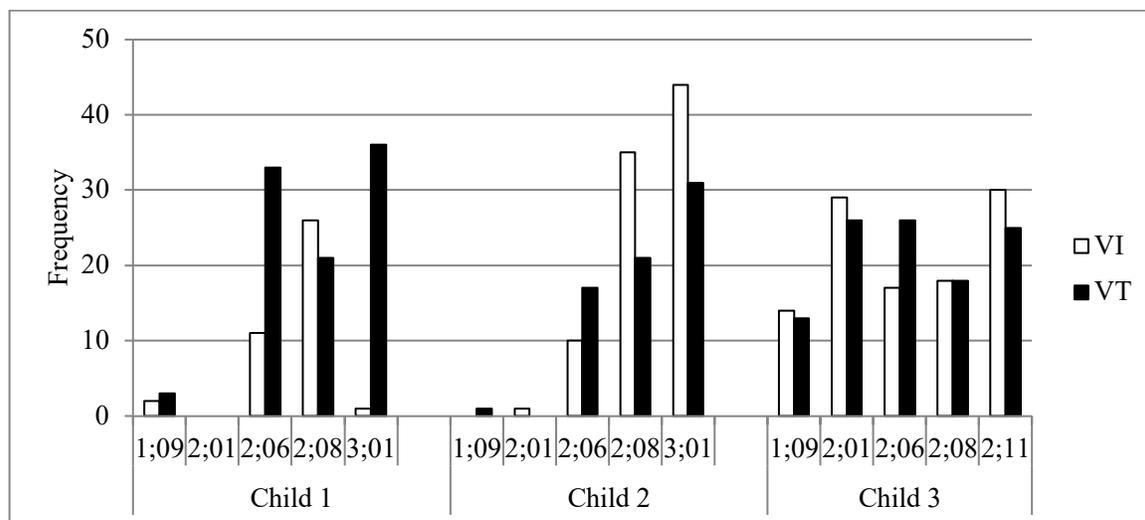


Figure 1. Frequency (token count) of morphologically-related VIs and VTs produced by children. *VI*: morphologically-related intransitive verbs, *VT*: morphologically-related transitive verbs. Child 1's data from 2;01 were unavailable. None of the children produced verbs at the earliest time period.

Figure 2 shows the type count of morphologically-related VIs and VTs produced by children at each time period. None of the children showed a VI bias consistently throughout the observation periods and their developmental patterns were not uniform. Child 1 produced more VT types than VI types or the same number except at 2;08, when she showed a VI bias (65.2%). In addition, she showed a VT bias at 3;01 (85.7%). Child 2 showed a VI bias at later time periods only: 2;06 (62.5%) and 2;08 (75%). Child 3 consistently used a similar number of VIs and VTs before she showed VI bias at 2;08 (62.5%) and 2;11 (60%).

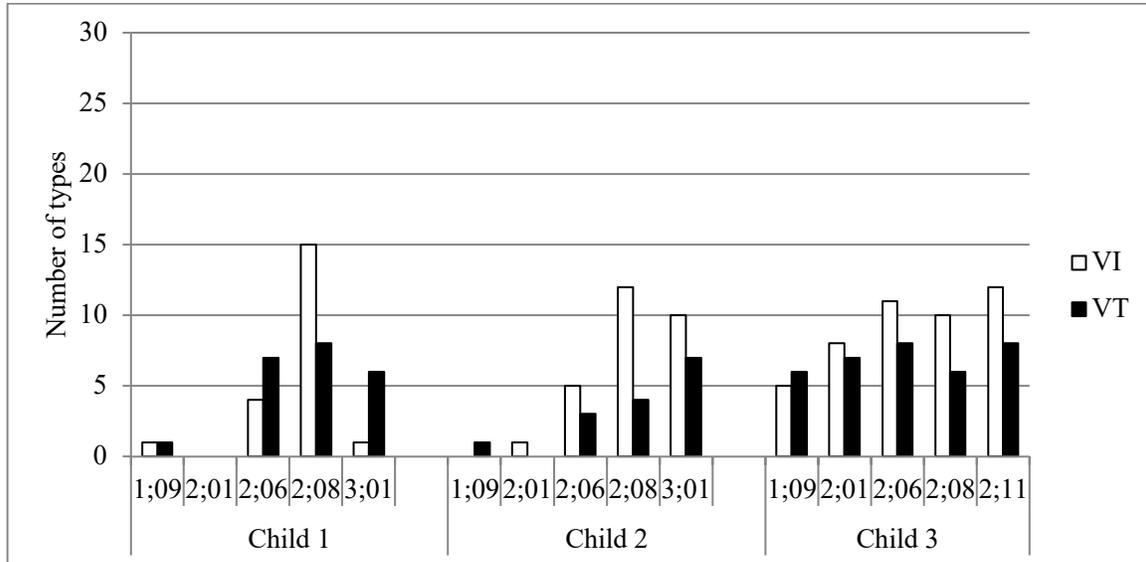


Figure 2. Type count of morphologically-related VIs and VTs produced by children. None of the children produced verbs at the earliest time period. Note that Child 1's data from 2;01 were unavailable.

We also examined VI-VT pairs (ex. *kowasu-kowareru*) used within the same time period. Table 2 below presents the type count of morphologically-related VI-VT pairs used together at each time period. Child 3 used one or three VI-VT pairs together throughout the observation periods. Child 1 and Child 2, on the other hand, started doing so at 2;06. The type count of VI-VT pairs that Child 1 used increased to four at 2;08, but she did not produce any VI-VT pairs together at 3;01. Child 2 produced one or two VI-VT pairs together from 2;06 to 3;01.

Table 2. Number of morphologically-related VI-VT pairs (types) used together by children at each time period.

	1;09	2;01	2;06	2;08	3;01
Child 1	0	-	1	4	0
Child 2	0	0	2	2	1
Child 3	1	3	3	1	3 (2;11)

We now examine mothers' production of VI-VT pairs. Figure 3 illustrates the frequency of morphologically-related VIs and VTs (tokens). Three mothers did not show uniform patterns in the use of the verbs, though a VI bias was commonly observed at the earliest time period. Child 2's mother showed a VI bias at 0;10 (81.5%), 2;06(75%) and 2;08 (64.6%). Child 1's mother showed a VI bias only at 0;10 (80.6%) and a VT bias at 3;01 (78.9%). Child 3's mother showed a VI bias at 1;03 (66.4%). At other observation periods, none of the mothers showed a clear bias.

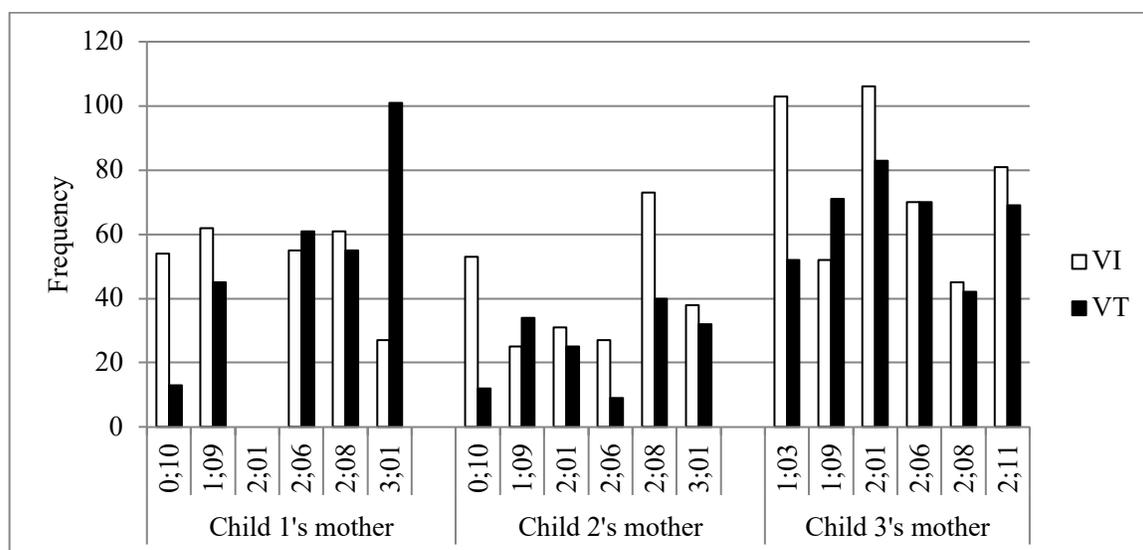


Figure 3. Frequency (token count) of morphologically-related VIs and VTs produced by mothers. Child 1's mother's data from 2;01 were unavailable.

Figure 4 shows the type count of morphologically-related VIs and VTs by mothers at each time period. AVI bias was seen in 0;10 (83%), 1;09 (62.5%), and 2;08 (62.8%) in Child 1's mother, and 0;10 (66.7%), 2;01 (76.9%), and 2;06 (66.7%) in Child 2's mother. Child 3's mother, on the other hand, produced a similar numbers of VI and VT types except 2;11, when she showed a VI bias (62.5%).

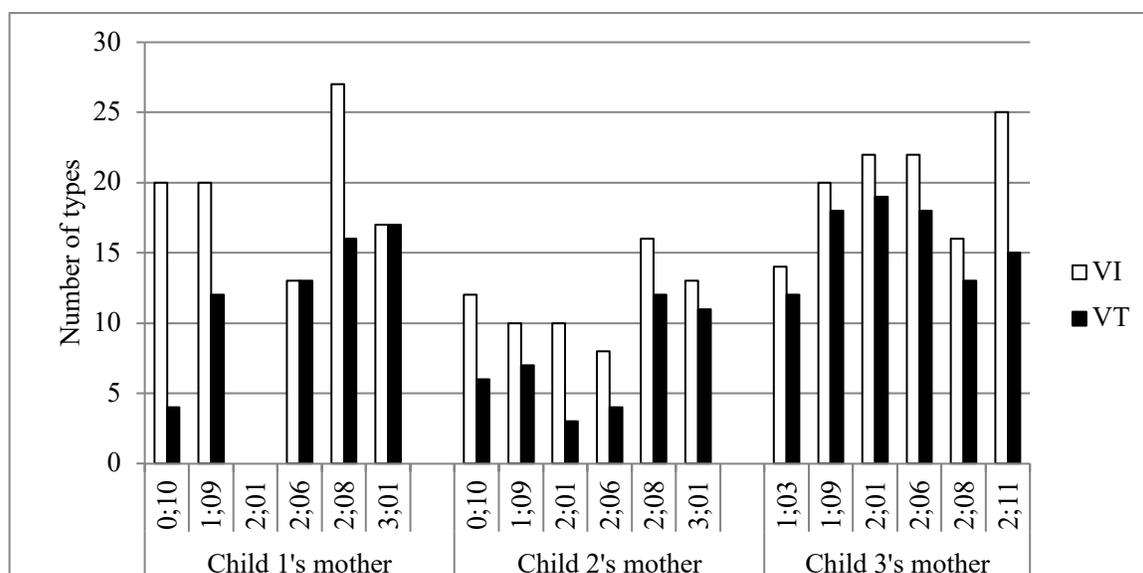


Figure 4. Type count of morphologically-related VIs and VTs produced by mothers. Note that Child 1's mother's data from 2;01 were unavailable.

Table 3 presents the type count of morphologically-related VI-VT pairs used together by mothers at each time period. Child 3's mother used 5 to 12 morphologically-related VI-VT pairs together throughout the observation periods. Child 1's mother, on the other hand, used a fewer VI-VT pairs together at earlier time periods (1 or 4 pairs), but

her use of pairs increased at later time periods (6 to 10 pairs). Child 2's mother used fewer than 5 VI-VT pairs together throughout the observation periods, except at 2;08 (6 pairs).

Table 3. Number of morphologically-related VI-VT pairs (types) used together by mothers at each time period.

	0;10	1;09	2;01	2;06	2;08	3;01
Child 1's mother	1	4	-	6	10	6
Child 2's mother	4	2	1	2	6	3
Child 3's mother	8 (1;03)	9	12	6	6	5 (2;11)

5. Discussion and Conclusion

Children's results did not provide clear evidence showing that they undergo the intransitive stage. Three children in the present study exhibited different developmental patterns from each other in the production of morphologically-related VIs and VTs from the earliest stage and none of them showed a consistent VI bias in either token or type count. Child 2 and Child 3 produced more types of VIs than VTs in two consecutive periods (2;06 and 2;08, and 2;08 and 2;11 respectively), but a VI bias was not consistently observed in token count at these time periods. In fact, Child 2 showed a VT bias at 2;06 in token count and Child 3 did not show any bias at both time periods. The present data did not conform to the previous studies, where a clear VI bias was observed from 1;05 to 1;07 in Nomura and Shirai (1997) and from 2;03 to 3;00 in Tsujimura (2008).

Furthermore, we did not find a consistent VI bias in the input as reported in Nomura and Shirai (1997) or Tsujimura (2008). Just like children, three mothers in our study did not show a uniform pattern in the use of morphologically-related verbs. Child 1's and Child 2's mothers showed similar patterns in type count, using more VI types at earlier time periods, while Child 3's mother used a similar number of VI and VT types at most of the observation periods. By comparing children's and mothers' morphologically-related VI-VT use, we found that children's patterns resembled those of their mothers, as suggested by Nomura and Shirai (1997).

As we examined the use of morphologically-related VI-VT pairs, an interesting tendency emerged; Child 3, whose mother used the pairs together most often from early periods, produced various types of VIs and VTs as well as VI-VT pairs together earlier than the other children. In contrast, Child 2, whose mother used morphologically-related VI-VT pairs together fewer than other mothers, produced fewer types of VIs and VTs as well as VI-VT pairs at early periods. This suggests that the frequent use of morphologically-related VIs and VTs together in the input may provide an important clue for VI-VT distinctions.

Let us go back to the examples (3a) and (3b). When morphologically-related VI-VT pairs such as (3a) and (3b) are used together, children may realize that they are different verbs though they sound similar. Children may speculate that one of them is a VT (3a) if they happen to hear the subject of the sentence. This helps them to figure out that the other of the pair is a VI. In this way, they learn both VTs and VIs together. However, if verb pairs are not used together in the input, children might not have a chance to go through the process of trying to determine the transitivity of verbs and may not be able to figure out which verb is a VI or a VT, and a sentence like the example (1)

could be uttered in such cases. Based on the present findings, we suggest that morphologically-related verb pairs used together in the input provides an important clue for children to learn verb transitivity.

The present study showed that Japanese-speaking children did not exhibit a clear intransitive stage during their language development. Rather, children's developmental patterns of the production of VI-VT pairs closely followed their mothers'. It should be noted, however, that Sumihare in Nomura and Shirai's (1997) study produced VIs only from 1;04 to 1;07, whereas the present study lacked children's data during this period except for Child 3's at 1;03, when she did not produce any verbs at all. Furthermore, Sumihare's data are diary data, while the present data are video-recorded. Thus, there may be a possibility that children show a VI bias if diary data were examined earlier than 1;09. Future research is required to investigate children's data earlier than 1;09 (ideally between 1;04 to 1;08) in order to confirm that children do not show a VI bias. We should also examine additional mother-child pairs to see whether the similarity between children's verb production patterns and the input is observed with a larger sample and whether VI-VT pairs used together in the input facilitates children's acquisition of VI-VT distinctions.

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