

The Acquisition of Transitivity in Japanese and Korean Children*

SHIN FUKUDA & SOONJA CHOI

University of California, San Diego & San Diego State University

1. Introduction

Children demonstrate a clear understanding of transitivity by the time they are four years old, if not earlier (Pye 1983, Berman 1993, Brooks and Tomasello 1999). However, exactly how they achieve such a state is far from clear. First of all, there is a question of how they start the process of acquiring transitivity. One might think that intransitive verbs would be the first to be acquired, since they require only one argument, instead of two for transitive verbs or three for ditransitive verbs. In fact, this appears to be the path that children acquiring Japanese take, as studies on acquisition of verbs in Japanese have repeatedly shown that Japanese children's early verbs are predominantly intransitive (Nomura and Shirai 1997, Tsujimura 2006).¹

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However, it turns out that intransitive verbs are not the ‘preferred’ transitivity of children acquiring Albanian, English, Hindi or Korean, as they have been shown to use more transitive verbs than intransitive verbs in their early production of predicates (Choi 1999, Fukuda 2005, Budwig et al. 2006, Cenko and Budwig 2006). This is not surprising, however, given the claim that prototypical transitive events are salient to children (Slobin 1981: 197).

Despite the apparent cross-linguistic variability in the ‘preferred’ transitivity of children, the current study presents evidence that children across languages use more intransitive verbs than their caregivers. Our evidence comes from spontaneous caregiver-child interactions of Japanese and Korean children from 1 year 11 months (1;11) to 2 year 6 months (2;6) of age. Our study shows that while Japanese and Korean children’s use of differing transitivity is clearly influenced by the input they receive, they consistently use higher percentages of intransitive verbs than their caregivers. We argue that this is due children’s inclination toward encoding events intransitively.

2. Previous Studies

Recent studies on acquisition of Japanese verbs have consistently shown that Japanese children use more intransitive verbs than transitive verbs in their early stages of acquisition of verbs. Nomura and Shirai (1997) analyzed a longitudinal corpus of a male Japanese child from 1;11 to 2;4. They found that intransitive verbs generally outnumber transitive verbs in both type and token. In fact, all the verbs used by the child from 1;5 to 1;7 were intransitives (Nomura and Shirai 1997; 235). More recently, Tsujimura (2006) analyzed a longitudinal corpus of another male Japanese child from 1;6 to 3;0. She divides these 18 months into five different phases and analyzed the child’s use of transitivity and found that the child consistently produced more tokens of intransitive verbs than transitive verbs except for the first phrase (1;6-1;9) (Tsujimura 2006;110).

Interestingly, however, Choi (1999) found that Korean children from 1;1 to 2;1 use more transitive verbs than intransitive verbs (Choi 1999, 251). This is somewhat surprising given that Japanese and Korean share a number of linguistic features (agglutinating morphology, morphological case marking, pro-drop, scrambling etc.). Why do Japanese and Korean children differ in their acquisition of transitivity? A reasonable hypothesis about the origin of the difference is the input they receive, as both Nomura and Shirai (1997) and Choi (1999) suggest. In this study, we examine the role of input in the acquisition of transitivity by comparing the use of predicates with different transitivity by Japanese and Korean children and their respective caregivers.

¹ The only exception to the pattern appears to be Rispoli (1987), which found that one of two Japanese children he studied used more transitive verb types than intransitive verb types.

We also compare the use of predicates with differing transitivity between children and caregivers within a single language to examine possible correlations between the input and children's speech.

3. Data and Methods

3.1. Data

We examined caregiver-child interactions of four Japanese children and four Korean children. The Japanese data come from the CHILDES database and consist of recordings of spontaneous interactions between four male Japanese children (Aki, Jun, Ryo and Tai) and their caregivers from 1;11 to 2;6. For Korean, we used data collected by two researchers, one of whom is a co-author of this study. The Korean data consist of three male children (JW, JK, and TJ) and one female child (JS). The age range of the data from two of the children is the same as the Japanese children's (JK and JS), while that of two other children was from 2;0 to 2;6 (JW and TJ). This particular age range was chosen under an assumption that acquisition of transitivity takes place sometime in the first 3 years of the child's life (see references above).

3.2. Analysis

We analyzed only and all spontaneous utterances made by children with a verb or adjective as the main predicate. Adjectival predicates were included in the study because they are so frequent in Japanese children's early speech (see section 6 for a relevant discussion). We did not analyze predicates as pre-nominal modifiers, auxiliary verbs, predicates in subordinate clauses, or copular verbs. We included repetitions of their own utterances, while immediate repetitions of caregivers' utterances by children were excluded. Finally, we performed analyses with both token and type frequency.

3.3. Coding

Once predicates were identified, each predicate was coded for its syntactic category (verb or adjective) and transitivity (intransitive or transitive) based on morpho-syntactic criteria. Japanese predicates can easily be classified into verbs and adjectives based on inflection morphemes that they take.

- (1) a. tabe 'eat' (transitive verb)
b. tabe -ru (present)
c. tabe -ta (past)

- (2) a. ooki 'large' (adjective)
b. ooki -i (present)
c. ooki -katta (past)

However, verbs and adjectives are much harder to distinguish in Korean, in which the inflectional system does not distinguish them. Still, one way in which most of the verbs are different from adjectives is that verbs can be marked for the progressive aspect (3a), while adjectives cannot be (3b).²

- (3) a. Yonghi-ga pap-ul mek-nun-ta
 Y-NOM rice-ACC eat-PRG-PRT
 ‘Yonghi is eating rice’
- b. *Yonghi-ga ki-ga cak-nun-ta
 Y-NOM height-NOM small-PRG-PRT

While the *nun*-test helps distinguish adjectives from eventive verbs, it does not distinguish stative verbs from adjectives (if there is a distinction). Since there appears to be no clear way to separate them in Korean, we decided to classify Korean stative predicates either as verbs or adjectives based on their Japanese counterparts’ syntactic category. For instance, *komap-ta* ‘be thankful’ was classified as a verb, since its Japanese counterpart, *kanshas*, inflects as a verb (i.e. *kanshashi-ta* for past). On the other hand, *caymiss-ta* ‘be interesting’ was classified as an adjectival predicate, because its Japanese counterpart, *omoshiro*, inflects as an adjective (i.e. *omoshiro-katta* for past).

Transitivity of verbs is determined based on their availability to take an accusative case marked argument. Based on this criterion, the verb ‘eat’ is a transitive verb in both Japanese and Korean ((4a) and (5a)), while the verb ‘need’ is an intransitive verb in both languages ((4b) and (5b)):

- (4) a. Taro-ga sushi-o tabe -ta
 T-NOM sushi-ACC eat -PST
 ‘Taro ate sushi.’
- b. Taro-ga kane-*o/ga ir -u
 T-NOM money-*ACC/NOM understand -PRS
 ‘Taro needs money.’
- (5) a. Chelswu-ga sushi-lul mek -ess -ta
 C-NOM sushi-ACC eat -PST -PRT
 ‘Chelswu ate sushi.’

² Abbreviations: ACC = accusative, DAT =dative, NOM = nominative, PRS =present, PRT =sentence final particle, PST = past

- b. Chelswu-eykey ton*-ul/i philyoha -ta.
 Chelswu-DAT money-*ACC/NOM need -PRT
 ‘Chelswu needs money.’

4. Results

4.1. Japanese vs. Korean

Let us first discuss comparison between the data from Japanese and Korean. First of all, both Japanese and Korean children used predicates from all three categories during the period of the recordings. Some examples of transitive verbs that were used by both Japanese and Korean children are ‘eat’, ‘do’ and ‘see’. As for intransitive verbs, ‘exist’, ‘come’ and ‘go’ were used by both Japanese and Korean children, and ‘not exist’ was the only adjective used by both Japanese and Korean children.

A comparison between Japanese and Korean children revealed that they are both different and similar. Korean children’s speech has significantly higher percentages of transitive verbs than Japanese children’s speech, and Japanese children’s speech has significantly higher percentages of adjectives than Korean children’s. Interestingly, however, percentages of intransitive verbs fail to show a significant difference between them.

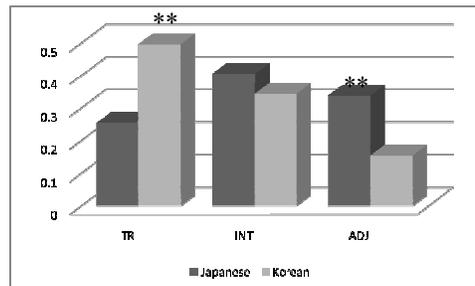


Figure 1: Percentages of the three categories in children’s speech by type

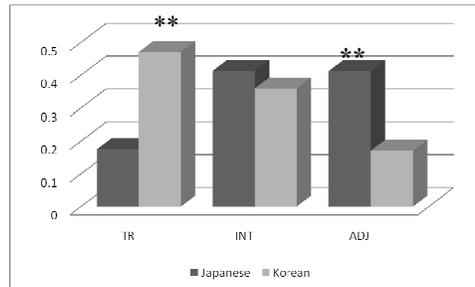


Figure 2: Percentages of the three categories in children’s speech by token

In caregivers' speech, percentages of all three categories are significantly different in both predicate type and token:

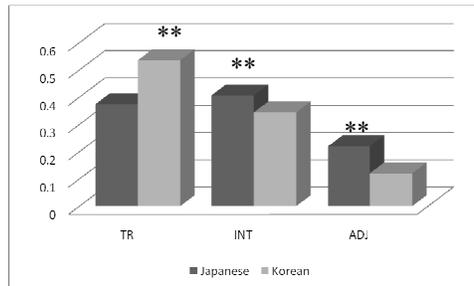


Figure 3: Percentages of the three categories in caregivers' speech by type

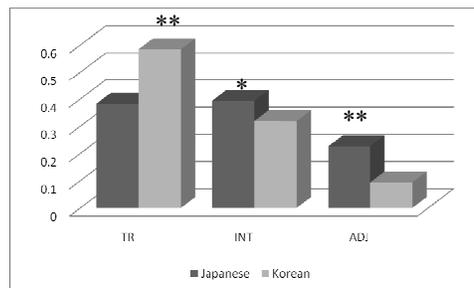


Figure 4: Percentages of the three categories in caregivers' speech by token

4.2. Children vs. Caregivers

In order to examine correlations between children's speech and caregivers' speech for use of predicates, we analyzed the data for Pearson correlations.

With *token* frequency, we found significant correlations between children's and caregivers' use of predicates in both Japanese and Korean:

Table 1: Pearson correlations between children's and caregivers' use of three categories by token frequency:³

| | Transitive | Intransitive | Adjective |
|----------|------------|--------------|-----------|
| Japanese | .410* | .472* | .452* |
| Korean | .696** | .500** | .586** |

³ ** = correlation is significant at the .01 level (2-tailed)

* = correlation is significant at the .05 level (2-tailed)

However, with predicate type, it was not the case. In particular, children and caregivers' percentages of use of *intransitive* verbs fail to show significant correlations.

Table 2: Pearson correlations between children's and caregivers' use of three categories by predicate types:

| | Transitive | Intransitive | Adjective |
|----------|------------|--------------|-----------|
| Japanese | .309 | -.059 | .484* |
| Korean | .642** | .141 | .574** |

4.3. The Difference in Input

So far the results of the present study generally confirm the findings in previous studies and support the claim that use of predicates with different transitivity by children reflects that of their caregiver's, at least where token frequencies are concerned.

However, neither previous studies nor the current study provides us with an answer to the question of why Japanese and Korean input are different in the use of differing transitivity. Needless to say, answering this question requires considering a number of ways in which Japanese and Korean may be different linguistically and culturally, and it is clearly beyond the scope of this study. However, here we would like to make a point in showing that the difference we found is unlikely to be the product of idiosyncratic characteristics of the recordings that were analyzed in this study.

On face value, it is not inconceivable that we found a difference between Japanese children's speech and Korean children's speech because the situations in which the recordings were done are different. For instance, the Korean recordings consisted of situations in which transitive verbs are likely to be used (i.e. activities that are naturally described as caused by external forces) while the Japanese recordings consisted of situations in which intransitive verbs are likely to be used (i.e. activities that are naturally described as simply happening without external forces).

If the difference we found is due to idiosyncratic characteristics of particular situations, it is expected to disappear in situations which can be characterized as more or less the same. In order to test this hypothesis, we searched for similar situations in Japanese and Korean data and found multiple occasions in which a child and his/her caregiver play with vehicles, such as toy cars and trains. Figure 5 shows use of three categories by one of the Korean caregivers during interactions involving toy cars and trains. As can be seen, percentages of transitive verbs are consistently higher than those of intransitive verbs, except for 2;0:

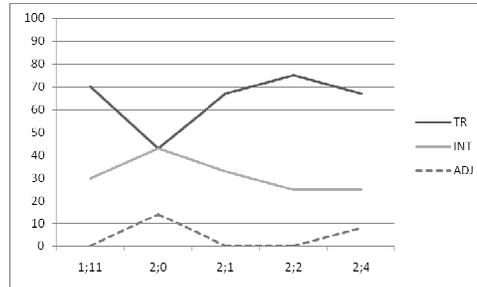


Figure 5: Percentages of the three categories in a Korean caregiver's speech during toy car/train situations

Figure 6 shows the percentages of use of three categories during toy car/train situations from one of the Japanese caregivers. In a clear contrast with the data from the Korean caregiver, percentages of intransitive verbs are consistently higher than these of transitive verbs between 1;11 and 2;1. The percentages of intransitive and transitive verbs become almost equivalent by 2;2, and the order is reversed at 2;4:

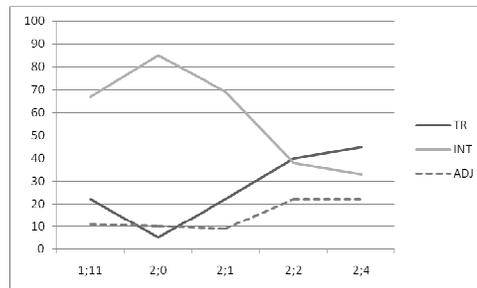


Figure 6: Percentages of the three categories in a Japanese caregiver's speech during toy car/train situations

These results suggest that the difference in the input frequencies in transitivity between Japanese and Korean that we found is unlikely to be due to idiosyncratic characteristics of the recordings. In other words, the difference in use of predicates with differing transitivity is likely to be inherent to these two languages, whether it is due to linguistic or cultural factors.

5. Discussion

While our findings generally confirm previous studies, they also revealed some previously unnoticed findings. First, we found that Japanese children and caregivers use more adjectives than Korean children and caregivers. Second, while children's speech generally reflects the tendency in their caregivers' use of predicates with differing transitivity, our results show that the correlation between children and caregivers' speech breaks down when

we compare their use of intransitive verbs. While there are significant correlations between children and caregivers use of intransitive verbs with token frequencies, there is no correlation found with predicate types. Thus, use of intransitive verbs between children and caregivers appears to be qualitatively different in both Japanese and Korean.

Moreover, as a follow-up study, we also examined Japanese and Korean caregivers' input in similar situations in order to eliminate the possibility that the difference in the predominant transitivity in the caregivers' input that we found is a by-product of idiosyncratic characteristics of the recordings. Our examination of situations where a child and a caregiver play with vehicles showed that a Japanese and a Korean caregiver' use of predicates with differing transitivity is strikingly different with each other even in situations that are similar.

The important finding of the current study is that both Japanese and Korean children's speech has higher percentages of intransitive verbs than their respective caregivers' speech. This resulted in the lack of significant difference between Japanese and Korean children's speech in percentages of intransitive verbs. It is also responsible for the lack of correlation between children and caregivers' speech in each of the two languages in percentages of intransitive verbs. We hypothesize that both Japanese and Korean children used more intransitive verbs than their caregivers did because young children in general are biased toward the use of intransitive verbs. We call this hypothesis the INTRANSITIVITY BIAS HYPOTHESIS.

If children are biased toward using intransitive verbs, such a bias would result in the greater differences between proportions of transitive verbs and intransitive verbs in Japanese children's speech compared to their caregivers' speech, since the bias has an effect of exaggerating the difference that already exists in the input. On the other hand, the same bias would result in the smaller difference between proportions of transitive verbs and intransitive verbs in Korean children's speech compared to their caregivers' speech, since the bias has an effect of boosting the proportions of intransitive verbs that are relatively low in the input.

Why should children be biased toward encoding events intransitively? We would like to suggest a couple of possible reasons why children may be biased toward intransitive verbs. One possible reason for the intransitivity bias is performance limitation. It has been argued that English speaking children omit subjects, which are obligatory in adults' grammar, due to limited processing resources (Bloom 1990, Valian 1991, Aronoff 2003). One may speculate that Japanese and Korean children use intransitive verbs rather than transitive verbs to reduce processing demand, creating the difference between children and caregivers' use of intransitive verbs that we found.

Alternatively, one may argue that young children use more intransitive verbs than transitive verbs because events with one participant are cognitively less complex than events with two participants or more. The literature on young children's ability to alternate transitivity of verbs seems to support this hypothesis. Although it has been shown that the direction of overextension errors with verbs with fixed transitivity is not unidirectional (Lord 1979, Braine et al. 1990, Morikawa 1990), the attested instances of overextension are overwhelmingly biased toward transitivization of intransitive verbs (Bowerman 1974, Maratsos et al. 1987, Nomura and Shirai 1997, Naigles and Lehrer 2002). Nomura and Shirai (1997) found 22 tokens of overextension of intransitive verbs to transitive use in the speech of the Japanese child that they examined, as opposed to 6 tokens of overextension of transitive verbs to intransitive use. This is what one would expect if children first learn to encode events intransitively. In the experimental settings too, young children show bias toward transitivizing intransitive verbs as opposed to intransitivizing transitive verbs. Berman (1993) found that Hebrew speaking children are more successful in changing novel verbs from intransitive to transitive forms than the other direction. Brooks and Tomasello (1999) found that 14.6% of English speaking children participating in their experiments used intransitively introduced nonce verbs transitively, while 6.7% of them used transitively introduced nonce verbs intransitively.

From the perspective of event complexity, another finding of the current study is interesting. As mentioned earlier, we found that use of adjectives in Japanese children's speech is prominent, especially in the early months. Some examples of adjectives that were used frequently by Japanese children are *nai* 'not exist', *ii* 'good', and *ookii* 'large'. As can be seen in Figure 7 below, adjectives have the highest percentages in the first two months of the recordings, and they gradually subside as percentages of transitive and intransitive verbs increase:

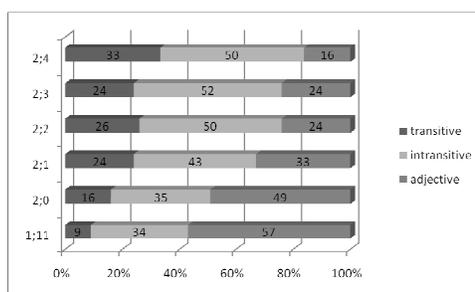


Figure 7: Average percentages of the three categories in Japanese children's speech by type

Thus, the data from Japanese children's speech suggest that adjectives may play an important role in acquisition of predicates. For instance, it may be the case that Japanese children begin the acquisition of predicates with stative predicates such as adjectives, which denote possibly the least complex situations, and gradually move on to more complex situations, such as events with a single participant and events with multiple participants.

6. Conclusions

We examined acquisition of transitivity in Japanese and Korean children between 1;11 and 2;6. While our findings confirm that children's use of predicates with differing transitivity is largely influenced by the input that they receive, our data also reveal that children produce higher proportions of intransitive verbs than their respective caregivers', even with Korean children who received input in which transitive verbs are the more prominent transitivity. Based on these findings, we hypothesized that young children have an inclination toward encoding events intransitively regardless of the input they receive (INTRANSITIVITY BIAS HYPOTHESIS). We suggested two potential reasons for the intransitivity bias of young children: performance limitation and event complexity.

Finally, our findings suggest that one may be able to gain more insights into the acquisition of transitivity by examining correlations between the input and children's speech. For instance, re-examination of the data from the languages in which children were shown to use more transitive verbs than intransitive verbs may lead to findings that are similar to those of this study. Our findings also suggest that studying the acquisition of adjectival predicates may shed new light into our understanding of how children acquire the transitivity of predicates.

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