# The L1 Acquisition of the Imperfective Aspect markers in Korean: a Comparison with Japanese\*

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**Abstract.** This study investigates the L1 acquisition of the Korean imperfective aspect markers -ko iss- and -a iss-, and attempts to identify language-general and language-specific acquisition patterns through comparison with Japanese. In cross-linguistic research on the acquisition of tense-aspect marking, children have been observed to associate progressive marking with activity verbs in early stages of development. This study aims to test whether or not Korean children will actually follow the acquisition pattern and acquire progressive marking with activity verbs earlier than resultative marking with achievement verbs. Longitudinal interaction data from three Korean boys was collected and analyzed. The results indicate that there was no common pattern in the three children's acquisition, which differences from the results of similar tests with Japanese children. This suggests that neither universal predisposition nor the distribution bias hypothesis can explain the L1 acquisition of Korean aspect markers, and that individual variation plays a much larger role.

**Keywords:** First language acquisition, Korean imperfective aspect markers, the Aspect Hypothesis, the distribution bias hypothesis, individual variation

#### 1. Introduction

The acquisition of tense-aspect morphology has shown an interesting universal pattern in both first and second language acquisition (Andersen and Shirai, 1996). This universal tendency is referred to as the Aspect Hypothesis (Andersen and Shirai, 1994; Robison, 1995), which claims that there is a universal developmental sequence of tense-aspect markers: past tense forms start with achievement verbs, and progressive forms start with activity verbs.

Correlations between tense-aspect markers and the inherent aspect of verbs have been verified in the first language acquisition of various languages (for example, Bloom *et al.* 1980 in English, Antinucci and Miller 1976 in Italian, Bronckart and Sinclair 1973 in French, Weist *et al.* 1984 in Polish, Stephany 1981 in Greek, Aksu-koc 1988 in Turkish). However, only a few studies were conducted on the L1 acquisition of Asian languages, such as Shirai (1993, 1998) and Shirai and Suzuki (in print) for Japanese, and Seda and Lee (2002) for Korean. In their study on the L1 acquisition of Korean, Seda and Lee (2002) found that both Korean and Turkish children use past marking predominantly with accomplishment and achievement verbs first, supporting the Aspect Hypothesis. However, they only focused on the acquisition of past tense. Further research is needed to verify the Aspect Hypothesis completely, including the acquisition of the progressive tense.

This study tests whether the universal developmental pattern proposed by Andersen and

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Shirai (1996) holds true for the L1 acquisition of Korean, and also compares it to the L1 acquisition of the Japanese imperfective marker *-te i-* in order to discover what determines children's acquisition of aspect: universal predisposition, the distribution bias hypothesis or individual variation.

# 2. The Imperfective Aspect System in Korean

Imperfective aspect markers in Korean can express two meanings: the progressive and the resultant state (Lee, 1993; Martin, 1992). When expressing an action-in-progress meaning, Korean takes -ko iss- as the progressive marker. Meanwhile, when expressing a resultant state meaning, Korean takes -ko iss- or -a iss-. Syntactically, when expressing a resultative state, both -ko iss- and -a iss- are used, depending on the transitivity of the main verbs. As shown in Table 1, -ko iss- is used with transitive verbs, whereas -a iss- is used with intransitive verbs (Lee, 1991).

**Table 1** Imperfective markers -ko iss- and -a iss-

	Intransitive verbs	Transitive verbs
The progressive marker	-ko	iss-
The resultant marker	-a iss-	-ko iss-

-ko iss- has been generally treated as a progressive marker similar to the English progressive marker be -ing, as shown in (1a). However, it is not obligatory to employ the Korean -ko iss- to describe an ongoing event, unlike with be -ing in English and -te i- in Japanese. The simple present form in Korean, in fact, can encode an ongoing event like the Romance languages as well as others, as shown in (1a) and (1b).

- (1a) Pap-ul mek-<u>ko iss</u>-ta (AN 1;11) lunch-Acc eat-Prog-Dec "He(or She) is eating a lunch"
- (1b) Pap-ul mek-<u>nun</u>-ta lunch-Acc eat-Prs-Dec "He(or She) is eating a lunch"

In addition to its progressive meaning, -ko iss- can also describe a resultant state with transitive verbs, such as verbs of wearing, carrying, and body posture (Ahn, 1995; Kim, 1993; Lee, 1991).

- (2) Wangkwan-ul ssu-ko iss-eyo (JONG 1;11) crown-Acc wear-Resl-Dec "He(or She) is wearing a crown." or "He(or She) is putting on a crown"
- In (2), -ko iss- can be interpreted either as an ongoing event or as a resultant state. This is because in the case of transitive verbs, only -ko iss- can be chosen as the imperfective aspect marker in both the describing of the progressive and the resultant state.

-a iss- has been defined as the resultative marker in Korean (Ahn, 1995; Lee, 1993; Martin, 1992). However, whereas -ko iss- is compatible with all transitive verbs, -a iss- can only be used with intransitive verbs in describing a persisting state resulting from a completed action, as in (3) (Lee, 1991).

(3) Khokkili anc-<u>a iss</u>-e (JONG 1;11) elephant sit-Resl-Dec "The elephant is sitting."

Since we compare the results of Korean L1 acquisition with those of Japanese L1 acquisition, it is necessary to describe the aspectual system of Japanese. It has an aspectual system quite similar to Korean in that the Japanese imperfective marker -te i- can denote both progressive and stative meanings. Generally speaking, the meaning of -te i- is dependent on the inherent aspectual value of the verbs to which -te i- is attached. Dynamic durative verbs (i.e. Vendler's (1957) activity and accomplishment verbs) combine with -te i- to express progressive meanings, whereas punctual change of state verbs (Vendler's achievement verbs) express a resulting state. The Korean imperfective marker -a iss-, which covers the resultative state meaning denoted by -te i- with achievement verbs in Japanese, is attached almost exclusively to intransitive change-of-state verbs. On the other hand, The Korean imperfective marker -ko iss-, which denotes progressive meaning with activity and accomplishment verbs as in Japanese, can have resultative meaning with transitive achievement verbs, as Shown in Table 2.

Table 2 Comparison of Japanese and Korean imperfective aspect markers						
	Progressive	Resultative				
Japanese	-te i-		e i-			
	Activity, Accomplishment	Achie	vement			
Korean	-ko iss-	-ko iss-	-a iss-			
	Activity, Accomplishment	transitive	intransitive			
	· -	Achievement	Achievement			

#### 3. Previous studies on the acquisition of aspect

Previous studies on the acquisition of tense/aspect have claimed that the development of tense/aspect morphology in language acquisition is strongly influenced by the inherent semantic aspect of the verbs to which the inflections are attached. This hypothesis, generally referred to as the Aspect Hypothesis (Andersen and Shirai, 1994, 1996; Shirai, 1991; Bardovi-Harlig, 1999, 2000; Li and Shirai, 2000; Salaberry and Shirai, 2002), claims the following:

- 1. Learners use (perfective) past marking on achievement/accomplishment verbs, eventually extending use to activity and stative verbs.
- 2. In languages that encode the perfective/imperfective distinction morphologically, the imperfective past appears later than the perfective past, and the imperfect past marking begins with stative and activity (i.e., atelic) verbs, then extends to accomplishment and achievement (i.e., telic) verbs.
- 3. In languages that have a progressive aspect, progressive marking begins with activity verbs, and then extends to accomplishment/achievement verbs.
- 4. Progressive marking is rarely incorrectly overextended to stative verbs (in L1 acquisition).

Although researchers generally agree on this descriptive observation (e.g. Shirai, Slobin and Weist, 1998), the explanation for this observation is not fully understood. One important hypothesis appeals to a universal predisposition (e.g., Bickerton, 1981), which presupposes that children have a bias to map tense-aspect markers with particular semantic content. Namely, he argued that children use past tense marking to denote punctuality, or telicity in aspectology, and progressive/imperfective marking to mark the lack of telicity, because the Punctual-NonPunctual Distriction (PNPD) is a distinction that has a special status in his bio-program hypothesis.. Meanwhile, the Distributional Bias Hypothesis (e.g. Shirai and Andersen, 1995) argues that children make particular associations based on input frequency. In other words, it

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<sup>&</sup>lt;sup>1</sup> Korean -a iss- is often treated as perfective (e.g. K-D. Lee 1980; Sohn 1995; McClure 1993). This is in a sense understandable because there is a close affinity between resultative, perfect, and perfective. However, in this paper, resultative markers are treated as imperfective markers that focus on the duration after the punctual point of change-of-state, following Shirai (1998).

suggests that associations in acquisition are based on a skewed distribution of such combinations in input, which was supported by analyzing input data of mother-child interaction in English(Shira and Andersen, 1995).

Seda and Lee (2002) focused on the development of tense-aspect morphology in L1 Korean acquisition. Their data was collected from thirty Turkish children and three Korean children. They found that (i) both Korean and Turkish children use past marking predominantly with accomplishment and achievement verbs first, (ii) the same children frequently used verbs involving telicity in their past references and (iii) Turkish children start using adverbs predominantly with accomplishment verbs. Their results suggest that the L1 acquisition of past markers shows similarity cross-linguistically. However, there has been no study focused on the development of Korean imperfective aspect markers.

In Japanese, which is known to be very similar to Korean in morphology, syntactic structures, and other typological criteria, this predicted developmental pattern has not been observed (Shirai 1993, 1998, Shirai and Suzuki, in print). Shirai (1993) surveyed whether the universal acquisition pattern holds true for the Japanese progressive -te i- and past tense -ta-. He found that the Japanese children in his study followed the same universal pattern found in previous studies. However, Shirai (1998) reported different results from Shirai (1993). Shirai (1998) investigated the emergence and later development of three tense-aspect markers in Japanese: -ta (past), -te i- (durative), and -ru (non-past). This data was taken from three Japanese children. He found that the emergence of tense-aspect morphology in Japanese does not necessarily follow the prediction of the Aspect Hypothesis, but is mediated by typological factors of Japanese, and that there is individual variation in the acquisition of the morphology. Shirai and Suzuki (in print) investigated the acquisition of -te i- again, including an analysis of the caretaker's speech data. The results indicated that there is no preponderance of activity verbs and thus progressive meaning does not occur more frequently. For all three children, the use of te i- with achievements was more frequent than with activities. They suggested that frequency is more important than universal predisposition in the acquisition of tense-aspect markers, thus supporting the distribution bias hypothesis, and the usage-based model in general.

This paper is a contribution to the existing literature in two respects. First, research done so far has been predominantly on the L1 acquisition of aspect morphology of Indo-European languages. The Aspect Hypothesis states that in languages that have a progressive aspect, progressive marking begins with activity verbs, and then extends to accomplishment/achievement verbs. This has been confirmed in research on Indo-European languages. However, Shirai and Suzuki (in print) reported that in Japanese, the progressive marking of *-te i-* emerges with achievement verbs rather than with activity verbs. This suggests that early use of *-te i-* is associated with activity verbs to mark non-punctuality, contrary to the universal prediction , and that children's use of *-te i-* is more strongly associated with achievements. In order to claim universal status for the Aspect Hypothesis, more evidence from non-Indo-European languages is needed. The current study offers vital information about how the Korean tense/aspect system is acquired, which until now has not been studied in depth, and will be the first attempt to clarify the developmental process of the imperfective aspect morphology for L1 Korean.

Second, this study will provide evidence to address the issue of whether tendencies in tense-aspect acquisition can be attributed to universal predisposition or input. Bickerton (1981, 1984) attributed such universal tendencies to his proposed bio-program, assuming that children's language acquisition is influenced by innate tendencies such as the PNPD (the Punctual-NonPunctual Distinction). Shirai and Andersen (1995) proposed an alternative account for the phenomena, which they called the Distributional Bias Hypothesis, based on the analysis of input frequency in child-directed speech. Shirai and Suzuki (in print) suggest that contrary to the bio-program hypothesis, -te i- was not associated with activities by Japanese children, and they argue that children follow the distributional pattern observed in the input language. In this paper, we investigate not only the children's use of the imperfective markers -ko iss-/-a iss-, but also the mother's use of them, in order to verify the validity of the Distributional Bias Hypothesis.

The research questions addressed in this study are:

- (1) Is children' use of -ko iss-/-a iss- associated more with activity verbs than with achievement verbs?
- (2) Is caretakers' use of -ko iss-/-a iss- associated more with activity verbs than with achievement verbs?
- (3) Does the input in the child-directed speech influence the distributional pattern of imperfective aspect marking in the children's speech?

## 4. Study

#### 4.1 Method and Participants

The Korean data used for the purpose of this study consists of longitudinal video-recoded speech samples from three children, as shown in Table 3 below. The data collection period was one and a half years. All data was taken from video-recordings during adult-child interaction at the children's homes. Videos were recorded every two weeks. The length of each session was 30min.

Table 3 Children for the Longitudinal Data

Children	Age range	Sex and Sibling	Age of first use
AN	1;7~3;1	M, no siblings	1;11
JONG	1;3~2;6	M, no siblings	1;11
YUN	2;3~3;9	M, no siblings	2;7

This data covered an extended period of acquisition, and includes relatively early stages of development, which was necessary to see the emergence and subsequent development of aspectual marking in both children's speech and child-directed speech. The child-directed speech (input) includes the utterances from all of the caretakers, including not only their parents but also their grandparents. In total, about 56hr of data was analyzed. The total number of utterances was 22,642: 10,361 utterances from the child YUN, 7,952 from JONG, and 4,329 from AN. The total number of utterances in the caretakers' speech was 48,240: 17,028 utterances from input to YUN, 17,821 to JONG, and 13,391 to AN (see Table 4).

## 4.2 Data Analysis and Results

The three children produced 114 predicate tokens with the imperfective aspect markers -ko iss-/a iss-, and their caretakers produced 1173 tokens. Table 4 is a summary of the tokens we analyzed.

**Table 4** Tokens of -ko iss-/-a iss- Produced by Children and Caretakers

	Targe	t Tokens	Total	Tokens	Frequency (target/total)			
	child	caretaker	child	caretaker	child	caretaker		
AN (1;7~3;1)	20	229	4,329	13,391	0.005	0.017		
JONG(1;3~2;6)	26	287	7,952	17,821	0.003	0.016		
YUN (2;3~3;9)	68	657	10,361	17,028	0.007	0.039		

The frequency (the mean number of imperfective aspect markers per utterance) was 0.005~0.007 for the children and 0.016~0.039 for the caretakers. These figures suggest that both the children and the adults overall used imperfective aspect markers quite infrequently across all contexts. YUN and his caretaker use -ko iss-/-a iss- more frequently than other two children and their caretakers. The frequency of imperfective aspect marker usage by YUN and his

caretaker was almost two times that of the other two children and their respective caretakers. This could suggest that if a child's caretakers use -ko iss-/-a iss- very frequently, the child may also use them frequently because the child is getting adequate input to acquire aspectual marking properly.

#### 4.2.1 RQ1: Children's Use of -ko iss-/-a iss-

Table 5 shows the usage of the three imperfective markers by the children and caretakers. We can see the longitudinal development of -ko iss-/-a iss- over time. We also separated the caretaker usage into "pre-emergence" and "post-emergence" in the table. YUN and JONG use not only the progressive -ko iss-, but also the resultative -ko iss-/-a iss- from early stages of development (Table 5.) JONG even uses the resultative -ko iss-/-a iss- predominantly more than the progressive -ko iss-. However, for over 1 year AN uses only the progressive -ko iss- from the first emergence of his use of imperfective markers. The results indicate that there was no common pattern in three children's acquisition. This can be seen in the fact that YUN and JONG didn't seem to associate imperfective aspect marking more with activity verbs, while AN exhibited a tendency to use imperfective aspect marking with activity verbs.

**Table 5** Use of the three imperfective markers by the children and caretakers (token count)

	Pre-emergence		Post-emergence													
AN	Child	caretakers							Ch	ild						caretakers
	1;7-1;10	(percentage)	1;11	2;0	2;1	2;3	2;4	2;5	2;6	2;7	2;8	2;9	2;10	3;1	sum(%)	(percentage)
PRG-ko iss-	N/A	38(64)	2	0	0	4	0	6	0	1	0	0	7	0	20(100)	121(71)
RSL-ko iss-	N/A	5(8)	0	0	0	0	0	0	0	0	0	0	0	0	0	17(10)
RSL-a iss-	N/A	16(27)	0	0	0	0	0	0	0	0	0	0	0	0	0	32(19)
Sum	0	59(100)	2	0	0	4	0	6	0	1	0	0	7	0	20(100)	170(100)

	nergence	Post-emergence										
JONG	Child	caretakers				Ch	ild					caretakers
	1;3-1;10	(percentage)	1;11	2;0	2;1	2;2	2;3	2;4	2;5	2;6	sum(%)	(percentage)
PRG-ko iss-	N/A	53(66)	2	1	2	0	0	2	0	0	7(27)	92(44)
RSL-ko iss-	N/A	7(9)	3	1	2	3	0	0	0	0	9(35)	26(13)
RSL-a iss-	N/A	20(25)	2	3	2	1	0	2	0	0	10(38)	89(43)
Sum	0	80(100)	7	5	6	4	0	4	0	0	26(100)	207(100)

	Pre-en	nergence								Post-	emerge	nce					
YUN	Child	caretakers								Child							caretakers
	2;3-2;6	(percentage)	2;7	2;8	2;9	2;10	2;11	3;0	3;1	3;2	3;5	3;6	3;7	3;8	3;9	sum(%)	(percentage)
PRG-ko iss-	N/A	35(42)	1	3	4	1	1	2	1	6	0	1	7	3	0	30(44)	289(50)
RSL-ko iss-	N/A	15(18)	4	0	0	2	2	0	2	0	0	0	0	0	0	10(15)	79(14)
RSL-a iss-	N/A	33(40)	0	1	0	0	2	2	0	0	2	9	2	9	1	28(41)	206(36)
Sum	0	83(100)	5	4	4	3	5	4	3	6	2	10	9	12	1	68(100)	574(100)

*Note.* In the Tables, PRG = Progressive, RSL = Resultative. The token frequency is in parentheses. In the data of AN, 2;2, 2;11, 3;0 was not recorded.

#### 4.2.2 RQ2: Caretakers' Use of -ko iss-/-a iss-

Caretaker speech also showed the same tendencies as that of the children. Table 6 shows the usage of the three imperfective markers by the caretakers. YUN and JONG's caretakers use progressive -ko iss- and resultative -ko iss-/-a iss- equally (use of progressive -ko iss-: 49% for YUN and 51% for JONG). However, AN's caretaker uses the progressive -ko iss- more frequently than the resultative -ko iss-/-a iss- (use of the progressive -ko iss-: 69%). The results indicate that there was no common pattern in three caretakers' speech and that they did not use more progressive marking with activity verbs than resultative marking with achievement verbs.

**Table 6** Use of the three imperfective markers by the caretakers (token count)

	YUN's	caretaker	JONG's	s caretaker	AN's caretaker			
	token	percentage	token	percentage	token	percentage		
PRG-ko iss-	324	49%	145	51%	159	69%		
RSL-ko iss-	94	14%	33	11%	22	10%		
RSL-a iss-	239	36%	109	38%	48	21%		
Sum	657	100%	287	100%	229	100%		

#### 4.2.3 RQ3: Relationship Between Caretakers and Their Children

Figure 1 shows the children's and caretakers' use of -ko iss-/-a iss-. YUN's usage closely reflects the frequency of his caretaker, although YUN uses the resultative -a iss- 8 % more frequently than his caretaker. JONG uses the resultative -ko iss- 3 times more than his caretaker, and the progressive -ko iss- less (51% vs. 27% for the progressive -ko iss-). Thus, JONG's usage of imperfective aspect markers leaned more towards resultative markers than his caretaker. AN, however, uses only the progressive -ko iss- for over 1 year from the first emergence of imperfective markers. His caretaker's also shows a very high percentage of progressive marker usage compared to the other caretakers (69% vs. 51% and 49%). However, in the English data, the initial restriction of the past tense form to achievements is almost absolute (95% or higher), whereas in the mothers' speech the association is about 60% (Shirai and Andersen, 1995). Thus, the results found in this experimentation are quite striking, even though some differences between English and Korean must be accounted for.

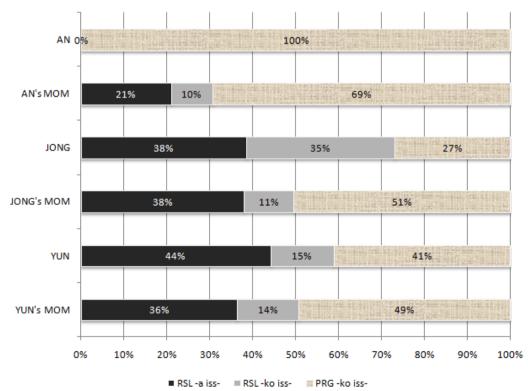


Figure 1 Children's and Caretakers' Usage pattern of the imperfective markers

Looking at the relationship between the caretakers and their children, two patterns can be observed in our experimentation. One pattern, as in the case of YUN and JONG, shows caretakers using resultative and progressive marking equally, in which case their children also

show a tendency to use resultative marking with achievement verb. The other pattern shows caretakers using progressive marking predominantly (almost 70%), in which case the children show a tendency to use progressive marking with activity verbs. It is undeniable in the results of this experiment that children will show an overall distribution of *-ko iss-/-a iss-* similar to their caretakers. Thus, we can conclude that the input a child receives plays a decisive role in their use of imperfective aspect markers.

#### 5. Discussion

The results obtained in this study answer the research questions stated earlier, as follows:

- (1) There was no association found between children's use of -ko iss-/-a iss- and activity or achievement verbs.
- (2) There was no association found between caretakers' use of -ko iss-/-a iss- and activity or achievement verbs.
- (3) The input from the child-directed speech given by the caretaker seems to influence the distributional pattern of imperfective aspect marking in the children's speech.

The results found in our experimentation show that there was no universal pattern in the three children's acquisition. Two of them associated imperfective aspect marking with achievement verbs early on, but one child associated imperfective aspect marking with activity verbs. Thus, our results don't support the Aspect Hypothesis. We also suggest that the acquisition of the Korean imperfective aspect cannot be explained by the universal predisposition. We did, however, found that caretaker speech showed the same tendencies as that of their children. The analysis of the overall input indicates that if input is skewed in one direction or the other, children will show the same usage preference. Thus, frequency in the input appears to be more important in the acquisition of tense-aspect markers than any universal predisposition. Children were not observed to associate progressive marking with activity verbs at the early stages of development as the Aspect Hypothesis would predict. Rather, it would seem that there is a large amount of individual variation in the acquisition of morphology, as suggested by Budwig (1996) in his study of pronominal case acquisition in English. His research showed that of the six children he tested, half of them underwent a different acquisition order than the other half.

We suggest, for a number of reasons, that the main cause of the differences in acquisition seen in our experimentation is the input the children receive. We make this claim for a number of reasons. First, Shirai and Suzuki (in print) indicate that in L1 Japanese acquisition, there is a tendency for the resultative state to be acquired first. However, we achieved different results in Korean L1 acquisition in our study. They mention that because of the frequency in the input, children use -tei- with achievements more than with activities. According to their results, caretaker speech showed a skewed distribution, exhibiting more frequent use of achievements. This differs from the results of our study in Korean as well as those reported in Shirai (1993) and (1998). If we look at the total results of Shirai and Suzuki (in print), Shirai (1993), and Shirai (1998), we can see that three of nine children showed some preference for linking activity verbs to the progressive, while five of them showed some preference for linking achievement verbs to the resultative, and one didn't show any preference at all. In looking at the overall results of these three studies, individual variation can be observed in Japanese as it was in Korean in our experiments. In addition, if we look at the combined results of the three studies in Japanese mentioned above, it shows that the children's aspectual preferences coincide with that of their caretakers. This leads us to believe that the emergence of imperfective aspect markers in Korean and Japanese does not follow the predictions of the Aspect Hypothesis, and that there is individual variation in the acquisition of morphology, the distributional pattern of which is highly influenced by the input received.

#### 6. Conclusion

This study investigated the acquisition of the imperfective aspect markers -ko iss-/-a iss- in Korean to address the issue of whether or not Korean children would actually follow the acquisition pattern predicted by the Aspect Hypothesis: progressive marking with activity verbs being acquired earlier than resultative marking with achievement verbs. The results clearly indicate that contrary to the Aspect Hypothesis, there was no common pattern in our test subject's acquisition, and that individual variation is plays a larger role in the early acquisition of tense-aspect markers than universal predisposition.

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# **APPENDIX 1**Verbs of the first 10 samples of imperfective aspect marker usage by each child

Child	Word	Meaning
AN	먹다(4) mek-ta	'eat'
	치다(4) chi-ta	'hit'
	주다(1) cwu-ta	'give'
	뜯다(1) ttut-ta	'(the cattle) graze'
JONG	낙시하다(1) naksiha-ta	'fish'
	타다(2) tha-ta	'ride'
	앉다(1) anc-ta	'sit'
	쓰다(1) ssu-ta	'wear'
	되다(2) toy-ta	'become'
	붙다(1) pwuth-ta	'stick'
	하다(1) ha-ta	'do'
	밀다(1) mil-ta	'push'
YUN	타다(1) tha-ta	'ride'
	모르다(1) molu-ta	'do not know'
	하다(1) ha-ta	'do'
	가다(3) ka-ta	ʻgoʻ
	울다(1) wul-ta	'cry'
	쓰다(1) ssu-ta	'write'
	사다(1) sa-ta	'buy'
	놀다(1) nol-ta	ʻplay'