

THE ACQUISITION OF KOREAN PLURALIZER *-TUL*

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## ABSTRACT

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This thesis presents an experiment designed to test children's knowledge of the Korean pluralizer *-tul*. Acquisition of this pluralizer was investigated in two ways: as an Intrinsic Plural Marker (IPM) attached to nominals and as an Extrinsic Plural Marker (EPM) attached to non-nominals. First of all, the results show that eight-year-olds associated the IPM *-tul* as plural. Seven- and eight-year-olds, however, were more confident with a singular interpretation than with a plural interpretation. Such behavior is due to the optionality of *-tul*. If children are exposed to inconsistent input, and the interpretation is ambiguous, the acquisition can be delayed. Second, the results show that the IPM *-tul* plays the same role in subject and in indirect object. Eight-year-olds treated the IPM *-tul* equally, regardless of the place that it is attached to. Third, the results with adults' responses suggest that the EPM *-tul* is associated to a plural subject interpretation. Seven- and eight-year-olds seemed that they did not know the interpretation of the EPM. Fourth, the results show that the EPM is harder for seven- and eight-year-olds to acquire than the IPM. The IPM is attached more locally than the EPM in terms of its semantic effect. Lastly, the results clearly show that there were age differences in acquisition of the pluralizer *-tul*. Although eight-year-olds were not adult-like, they performed a lot better than seven-year-olds did since they were more likely to be exposed to the plural interpretations.

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# CHAPTER 1

## INTRODUCTION

Most studies on the acquisition of plural morphology have largely focused on English, which has obligatory plural morphology (Graves and Koziol, 1971; Brown, 1973; Barner and Snedeker, 2006; Zapf and Smith, 2007 & 2008; Musolino, 2009). There are relatively few studies focusing on the acquisition of plurality in languages with optional plural morphology. In this thesis, we examine children's interpretation of the optional pluralizer *-tul* in Korean, and investigate how optional plural morphology is acquired. Previous work (Munn et al., 2009; Nakano et al., 2009; Park, 2010) has shown that children have difficulties with optional pluralizers. In this study, we test children's ability to interpret *-tul* as the Intrinsic Plural Marker and as the Extrinsic Plural Marker, something that has never been tested before.

*-Tul* has some interesting properties that differ from those of a regular grammaticalized plural marker. First, *-tul* is optional. In Korean, noun phrases without a determiner or quantifier can appear in argument position and be interpreted as either singular or plural. Therefore, the pluralizer is not required to obtain a plural interpretation. Second, *-tul* can be used in two ways: either as an Intrinsic Plural Marker (IPM) or as an Extrinsic Plural Marker (EPM). The IPM *-tul* is morphologically attached to a noun and forces a plural interpretation of the noun. The EPM *-tul* is attached to non-nominal elements, such as verbs or adverbs, and forces a plural subject interpretation. Third, *-tul* is not allowed with inanimate nouns. It can only be attached to animate count nouns.

We ask the following questions: (1) how is optional plural morphology acquired? (2) do children associate the IPM *-tul* with plurality? (3) is the EPM *-tul* associated with subjects? (4) is the IPM acquired more easily than EPM?

This thesis is organized as follows. In chapter 2, we describe the semantic and syntactic properties of the Korean pluralizer *-tul* as an IPM and an EPM. In chapter 3, we present previous research on the acquisition of plural morphology. In chapter 4, we introduce our hypotheses and predictions and present our experiment with results, and in chapter 5, we review our hypotheses and predictions and draw some conclusions.



## CHAPTER 2

### LINGUISTIC BACKGROUND

This chapter offers a description of Korean pluralizer *-tul*<sup>1</sup> and presents an overview of the literature on this pluralizer.

#### 2.1 The Korean Pluralizer *-tul*

In English, a noun phrase has to be marked for plural or singular, and bare count nouns in argument position are only acceptable with a mass reading. In Korean, much like in other languages, noun phrases can appear in argument position in what appears to be its bare form (without determiners) and receive a plural or singular interpretation. As illustrated in (1), the noun phrase *thokki* ('rabbit') appears bare and can be interpreted as 'one rabbit' or 'more than one rabbit'. These noun phrases are called bare count nominals.

- (1)           Thokki-ka           canti-wi-ey           i-ss-ta.  
              rabbit-NOM       grass-on-LOC       be-PRS-DEC<sup>2</sup>  
              'A rabbit is on the grass. / Rabbits are on the grass.'

Chierchia (1998) introduces a semantic parameter called the Nominal Mapping Parameter to explain why bare nominals can appear in argument position in some languages, but not others.

Nouns come from the lexicon either as predicates ([+pred]) or as arguments ([+arg]). [+pred]

---

<sup>1</sup> The transcription of Korean follows the Yale Romanization system.

<sup>2</sup> The following abbreviations are used in the present paper: ACC = accusative, CL = classifier, CONJ = conjunctive, DAT = dative, DEC = declarative, GEN = genitive, IND = indicative, INS = instrumental, LOC = locative, NOM = nominative, PAS = passive, PL = plural, PRG = (present) progressive, PRS = present, PST = past, TOP = topic, Q = question.

nouns denote properties, and [+arg] nouns denote kinds. In a given language, nouns can be denoted as only predicates (e.g., French), only kinds (e.g., Korean) or both (e.g., English). Kinds are treated as mass-like entities. Since they are entities, they are allowed to occur in argument position. Also, there should be no grammatical plural marker since kinds are like mass nouns and therefore inherently plural. Thus, it is assumed that languages that allow bare nouns in argument position should have no plural morphology and should require a classifier to shift kinds into predicates that can be counted. This type of language is called a classifier language, which includes Korean, Japanese, and Chinese, among others.

However, the predictions that bare noun languages would have no plural morphology and that bare nouns would be interpreted as mass nouns has been challenged. In fact, many classifier languages also have pluralizers (e.g., Li, 1999; Chung, 2000).

Korean, for instance, has two pluralizers, *-tul* and *-ne*. As a pluralizer, *-tul* has the properties of distributivity (Song, 1997; Park, 2008), exhaustivity (An, 2007) or both (Joh, 2005). The other pluralizer, *-ne*, is a true associative plural marker. *X-ne* includes *x* and those associated with *x* in a context *c* (Madigan et al., 2008). Furthermore, the fact that all nouns in a language such as Korean require a classifier to be counted does not mean that they are necessarily mass nouns. Classifier languages make a distinction between count and mass nouns. For instance, the pluralizer *-tul* is sensitive to the count-mass distinction, and is attached only to count nouns. As illustrated in (2), *-tul* is acceptable only when it is attached to count nouns, such as *thokki* ('rabbit') or *salam* ('person'), as in (2a-b). It is unacceptable when attached to mass nouns, such as *wuyu* ('milk') or *seltang* ('sugar'), as in (2c-d).

- |     |    |            |    |                           |
|-----|----|------------|----|---------------------------|
| (2) | a. | thokki-tul | b. | salam-tul                 |
|     |    | rabbit-PL  |    | person-PL                 |
|     |    | ‘rabbits’  |    | ‘people’                  |
|     | c. | *wuyu-tul  | d. | *seltang-tul <sup>3</sup> |
|     |    | milk-PL    |    | sugar-PL                  |
|     |    | ‘milks’    |    | ‘sugars’                  |

The first property of *-tul* is that it obeys animacy restrictions. *-Tul* is not allowed with inanimate nouns. Choe (1987) argues that the plural marker *-tul* can be attached only to animate count nouns. As illustrated in (3), the IPM-*-tul* is attached to the animate noun *wensungi* (‘monkey’) in subject position and gives a plural interpretation to the noun phrase, which is acceptable. On the other hand, when *-tul* is attached to an inanimate noun, such as *panana* (‘banana’), the result in (3) is unacceptable. The example (4) is also unacceptable. In this case, the EPM-*-tul* is attached to the verb *ttelecssta* (‘fell’), and the subject cannot be associated to the EPM *-tul*, since it is inanimate. No agreement obtains here (see below for the EPM properties).

- |     |                               |                        |                                      |
|-----|-------------------------------|------------------------|--------------------------------------|
| (3) | *Wensungi-tul-i               | panana- <b>tul</b> -ul | mek-nun-ta.                          |
|     | monkey-PL-NOM                 | banana-PL-ACC          | eat-PRS-DEC                          |
|     | ‘Monkeys eat bananas.’        |                        |                                      |
| (4) | *Yelsoy                       | twu kay-ka             | patak-ey ttelec-ess-ta- <b>tul</b> . |
|     | key                           | two CL-TOP             | floor-LOC fall-PST-DEC-PL            |
|     | ‘Two keys fell on the floor.’ |                        |                                      |

---

<sup>3</sup> It should be noted that the examples (2c) and (2d) are also ruled out because these nouns are inanimate.

When a subject appears as a bare noun, and the EPM appears on the verb as in (5), the EPM on the verb disambiguates the bare noun and forces a plural interpretation of the subject, not the indirect object, as illustrated in (5a-b). The subjects, *thokki* ('rabbit') and *say* ('bird'), must be interpreted as plural in (5a) and (5b), respectively.

- (5) a. Thokki-ka      kepuki-eykey    usan-lul            ssu-ywecu-ko-**tul**  
 rabbit-NOM    turtle-DAT      umbrella-ACC    use-give-CONJ-PL  
 i-ss-ta.  
 be-PRG-DEC  
 'Rabbits are sharing an umbrella/umbrellas with a turtle/turtles.'
- b. Say-ka            namu    wi-eyse      saca-eykey    nolayha-ko-**tul**  
 bird-NOM    tree    on-LOC      lion-DAT      sing-CONJ-PL  
 i-ss-ta.<sup>4</sup>  
 be-PRG-DEC  
 'Birds are singing to a lion/lions on the tree/trees.'

Given that it shows animacy restrictions and is incompatible with classifiers, we suggest that it is, in fact, another classifier like an element, since classifiers show restrictions of this type.

The second property of the pluralizer *-tul* is optionality. In other words, the pluralizer is not required for a plural interpretation. Noun phrases can appear bare and be interpreted as either singular or plural. The third property of *-tul* is that it has two different interpretations and distributions: the Intrinsic Plural Marker (IPM) *-tul* and the Extrinsic Plural Marker (EPM) *-tul*.

---

<sup>4</sup> Sometimes speakers reject (5a) and (5b) because they may out of blue have decided on a singular interpretation for the subject, since it is not overtly marked for plurality.

The IPM *-tul* (e.g., Kang, 1994; Baek, 2002; Kim, 2005 and many others) is attached to a noun and pluralizes the noun associated to it. As seen in (6a), *-tul* is attached to the noun *thokki* ('rabbit') in subject position and it forces a plural interpretation of the noun phrase. The IPM *-tul* can also be attached to the direct object nominal in (6b) and to the indirect object nominal in (6c), forcing a plural interpretation of the direct object and the indirect object, respectively.

- (6) a. Thokki-**tul**-i      kepuki han-mali-lul      ttalaka-n-ta.  
 rabbit-PL-NOM      turtle one-CL-ACC      follow-PRS-DEC  
 'Rabbits follow one turtle.'
- b. Thokki han-mali-ka      kepuki-**tul**-ul      ttalaka-n-ta.  
 rabbit one-CL-NOM      turtle-PL-ACC      follow-PRS-DEC  
 'One rabbit follows turtles.'
- c. Thokki han-mali-ka      kepuki-**tul**-eykey      usan hana-lul  
 rabbit one-CL-NOM      turtle-PL-DAT      umbrella one-ACC  
 ssu-ywecu-n-ta.  
 use- give-PRS-DEC  
 'One rabbit shares one umbrella with turtles.'

The other type of *-tul* is the Extrinsic Plural Marker (EPM), which is attached to non-nominal elements such as verbs, adverbs or prepositions. For instance, *-tul* is attached to the verb *nalayhako* ('sing') in (7b), the adverb *khukye* ('loudly') in (7c), and the preposition *wieyse* ('on') in (7d). As an EPM, *-tul* does not pluralize the element to which it attaches. In all these examples, it is the subject that has a plural interpretation. So, *-tul* in these cases seems to be agreement

because the meaning is the same, whether *-tul* is attached to the verb or not when the subject is clearly marked for plurality. In (7a), the IPM *-tul* is attached to the subject *say* ('bird') and gives it a plural interpretation. In (7b), the EPM *-tul* co-occurs with *-tul* in the subject. These two sentences can be interpreted as meaning either that multiple birds are singing together or each bird is singing separately, and there does not seem to be a difference in interpretation between (7a), (7b), (7c), and (7d) respectively.

- (7) a. Say-**tul**-i            nolayha-ko    i-ss-ta.  
           bird-PL-NOM    sing-CONJ    be-PRG-DEC  
           ‘Birds are singing.’
- b. Say-tul-i            nolayha-ko-**tul**    i-ss-ta.  
           bird-PL-NOM    sing-CONJ-PL    be-PRG-DEC  
           ‘Birds are singing.’
- c. Say-tul-i            khukey-**tul**        nolayha-ko    i-ss-ta.  
           bird-PL-NOM    loudly-PL        sing-CONJ    be-PRG-DEC  
           ‘Birds are singing loudly.’
- d. Say-tul-i            namu    wi-eyse-**tul**    nolayha-ko    i-ss-ta.  
           bird-PL-NOM    tree    on-LOC-PL    sing-CONJ    be-PRG-DEC  
           ‘Birds are singing on the tree/trees.’

However, the EPM *-tul* is not just a morphological copy of the morpheme *-tul* on the subject. As illustrated in (8), the subject does not have the morpheme *-tul*, but it is acceptable to have the EPM on the verb, as in (8a). The reason is that the subject is a coordinated noun phrase, *John*

*and Mary*, which is inherently plural. In (8b), the subject is *John*, which is singular. In this case, the use of the EPM is unacceptable. The EPM on the verb forces a plural interpretation of the subject even if the subject is not marked as plural.

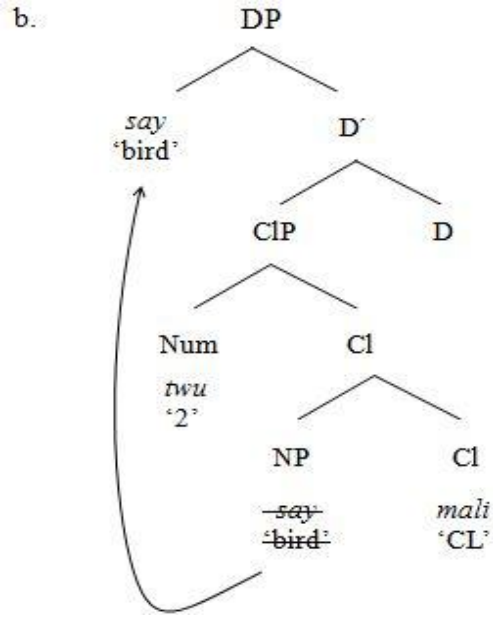
- (8) a. John-kwa-Mary-ka      namu    alay-eyse      nolayha-ko-tul      .  
           John-and-Mary-NOM    tree    under-LOC      sing-CONJ-PL  
           i-ss-ta  
           be-PRG-DEC  
           ‘John and Mary are singing under the tree/trees.’
- b. \*John-i                  naum    alay-eyse      nolayha-ko-tul      i-ss-ta.  
           John-NOM    tree    under-LOC      sing-CONJ-PL      be-PRG-DEC  
           ‘John is singing under the tree/trees.’

## 2.2 Syntax for *-tul*

### 2.2.1 Rough Syntax for *-tul*

With this basic description, we, now, provide a preliminary analysis for *-tul*. We start with the structure of noun phrases in Korean. The classifier projection is needed, and we assume that its specifier is the place for quantity expressions (number + classifier). Following Li’s (1999) work on Chinese, we assume that the syntactic structure of a noun phrase should look as in (9b) (we are assuming Korean to be a strict head final language). The structure for (9a) is illustrated in (9b). The noun *say* (‘bird’) is originally the NP complement of CIP, and the classifier *mali* is in CI head. The number *twu* (‘two’) is in the specifier of the CI head. Then, the NP moves to the specifier of the DP. This is necessary for the right word order to obtain.

- (9) a. Say **twu-mali**  
 bird 2-CL  
 ‘two birds’



*-Tul* is incompatible with a classifier. As illustrated in (10a-b) below, *-tul* appears to compete with the classifier ‘*mali*’. The example (10c) is unacceptable since both *-tul* and the classifier appear at the same time in a single DP. It can be acceptable only if NP-*tul* and the classifier are in two different DPs, as in (10d). In other words, *-tul* and a classifier are in the complementary distribution.

- |         |                           |    |                                |
|---------|---------------------------|----|--------------------------------|
| (10) a. | Say- <b>tul</b>           | b. | Say <b>twu-mali</b>            |
|         | bird-PL                   |    | bird 2-CL                      |
|         | ‘birds’                   |    | ‘two birds’                    |
| c.      | *Say- <b>tul-twu-mali</b> | d. | Say- <b>tul(-eul) twu-mali</b> |
|         | bird-PL-2-CL              |    | bird-PL(DAT) 2-CL              |
|         | ‘two birds’               |    | ‘two birds’                    |

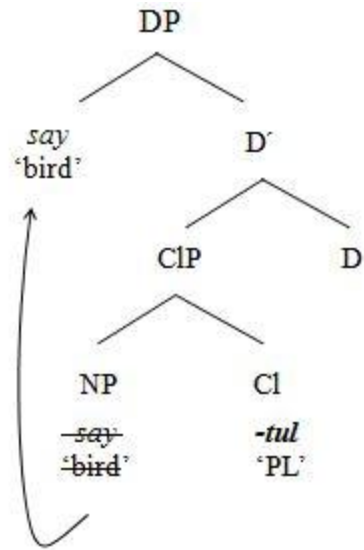


The Korean pluralizer *-tul* behaves much like the Chinese plural marker *-men* (Li, 1999). *-Men* cannot occur with the quantity (number + classifier) expression when it is attached to a common noun, as in (11).

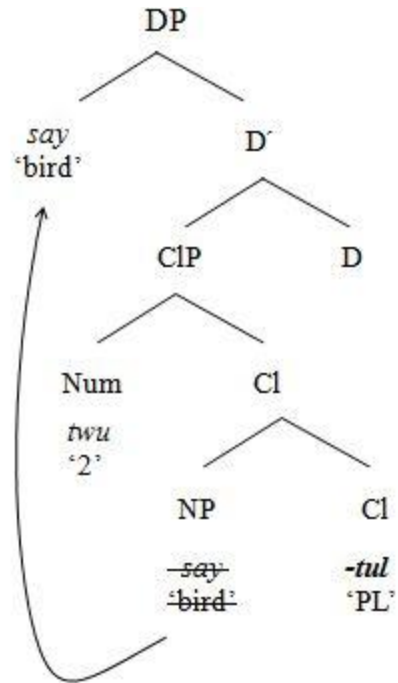
- (11)           \* sange        xuesheng-men  
                  three-CL    student-PL  
                  ‘three student + men’                           (Li, 1999, p.77)

Borer (2005) argues that the English plural morpheme *-s* works as a classifier inflection just as other classifier systems do. Following Borer’s (2005) argument, we can argue that *-tul* and classifiers appear in the same position with the same function in the DP structure. In (12), the structure of *say-tul* (‘birds’) is illustrated. We propose that when *-tul* is in the Cl head, CIP cannot have a specifier while it is allowed when a regular classifier is in the Cl head, as in (12a). If the specifier were allowed when *-tul* is in the Cl head, *say twu-tul*, should be possible, but it is not. This is illustrated in (12b).

(12) a.



b.\*



This may suggest that *-tul* may have more features than a regular classifier or a regular pluralizer. We leave this open for further research, since the goal of this thesis is the investigation of the plural interpretation of *-tul*.

### 2.2.2 The Syntactic Structure of the EPM *-tul*

First, we turn to the syntactic structure of *-tul* as an EPM. The EPM *-tul* appears with non-nominal phrases, but always forces a subject plural meaning. As seen in (13), the subject and indirect object are bare nouns, and the EPM *-tul* is attached to the verb. Its subject is interpreted as plural, 'birds'. On the other hand, its indirect object could be either singular or plural, 'one lion' or 'more than one lion', since it is a bare noun.

- (13) Say-ka namu wi-eyse saca-eykey nolayha-ko-**tul**  
 bird-NOM tree on-LOC lion-DAT sing-CONJ-PL  
 i-ss-ta.  
 be-PRG-DEC  
 ‘Birds are singing to a lion/lions on the tree/trees.’

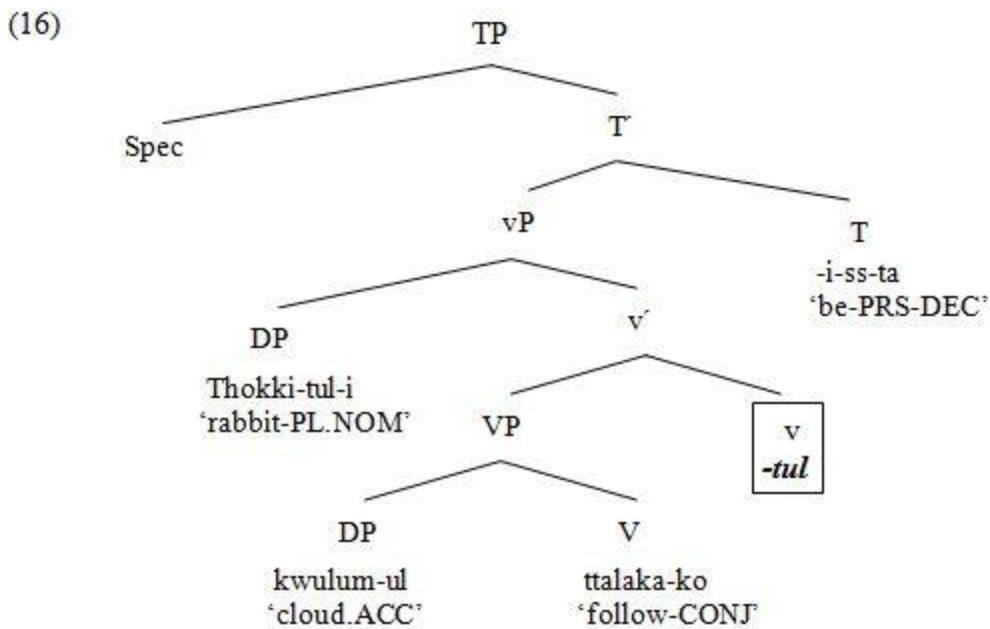
Koopman (2004) argues that *-tul* can be optionally attached to non-nominal elements as long as the subject is plural. As illustrated in (14), *-tul* is attached to the preposition and the verb in (14a) and to the adverb in (14b). The two examples are grammatical since their subjects are plural. As in (14a), there is no subject, but it is assumed that the subject is plural and just not overtly realized.

- (14) a. Hakko-eyse-**tul** wass-ni-**tul**  
 school-from-PL came-Q-PL  
 ‘Did they come from school?’
- b. Ai-tul-i kwaja-lul masitkey-**tul** mokotta  
 child-PL-NOM cookie-ACC taste-PL ate-DEC  
 ‘The children ate the cookies with gusto.’ (Koopman, 2004, p.31)

As discussed so far, on the basis of the subject-EPM relation, we propose the following syntactic structure of the EPM when it is attached to the verb phrase. We will not discuss how the pluralizer ends up realized on the adverbs or PPs. Here, the EPM *-tul* is in *v* and must enter an

agreement relation with a plural subject. It can be spelled-out on *v*, as illustrated in (15). This allows us to capture that *-tul* is only acceptable where the subject is plural and animate.

- (15) Thokki-tul-i      kwulum-lul      ttalaka-ko-**tul**      i-ss-ta.  
 rabbit-PL-NOM      cloud-ACC      follow-CONJ-PL      be-PRS-DEC  
 ‘Rabbits are following the cloud(s).’



## 2.3 Semantics for *-tul*

### 2.3.1 Semantic Properties of the IPM *-tul*

The IPM *-tul* has been considered as a plural marker (Kang, 1994; Baek, 2002; Kim, 2005). That is, it is attached to nominals and gives a plural interpretation. As in (16), the IPM *-tul* is attached to the subject nominal *salam* (‘person’), and the noun phrase is interpreted as plural (‘more than one person’). Here, the IPM *-tul* plays a role in pluralizing the phrase it

attaches to. However, its semantic properties are not clearly specified. Yim (2002) argues that a sentence with the IPM *-tul* triggers two readings: a distributive reading and a collective reading. The example (17a) and (17b) illustrates these functions of the IPM *-tul*. In (17a), the sentence can be interpreted as meaning that each person ran fast, or that all of the people ran fast together. Additionally, we can have a collective reading with the IPM *-tul*. In (17b), the sentence can be interpreted as meaning that all first-year-students built a raft together loudly. In other words, the sentence with the IPM *-tul* can have two readings at the same time, much like plurals in English, which allow both interpretations.

- (17) a. Salam-**tu**l-i                    ppalli        ttwi-ess-ta.  
           person-PL-NOM        fast        run-PST-DEC  
           ‘People ran fast.’
- b. Ilhaknyen    haks-aeng-tul-i                    sikkurupkke-**tu**l    ttaesmok-ul        .  
           first-year    student-PL-NOM        loudly-PL                raft-ACC  
           ciessta.  
           build-PST-DEC  
           ‘First-year students all built a raft all loudly.’        (Joh, 2005, p.174)

### 2.3.2 Semantic Properties of the EPM *-tul*

Given the syntactic structure of the EPM on *v*, some questions arise: Is the EPM only related to the subject, or is it related to the event and pluralizing the subject is the most straightforward way of achieving a plurality of event interpretations? It does not seem that the plurality of the event always occurs with the use of the EPM. Chung (2003) provides an example

to account for the relation between the event plurality and the EPM. As seen in (18a), the adverb *yele pen* ('several times') pluralizes the event. In (18b), however, it becomes unacceptable when *-tul* is attached to the prepositional phrase *mikwuk-ey* ('to America'). In this sentence, the event is interpreted as pluralized, but the EPM is impossible because the subject cannot be interpreted as plural. In other words, *-tul* on *v*' is not necessarily related to the event's plurality of the verb, but to the plurality of the subject.

- (18) a.   Nay-ka **yele** **pen**   mikwuk-ey   kapo-ess-ta.  
           I-NOM several times America-to   go-PST-DEC  
           'I have been to America several times.'
- b.   \*Nay-ka **yele** **pen**   mikwuk-ey-**tul**   kapo-ess-ta.  
           I-NOM several times America-to-PL   go-PST-DEC

(Chung, 2003, p.77)

Song (1997) proposes that the EPM signals distribution, more than plurality. His argument is that its semantic function is not to pluralize a noun phrase since the EPM can appear on non-nominal elements which cannot be pluralized. Instead, the EPM appears to distribute events, activities, or properties individually over the members of a set, rather than the whole set. One of the examples that he presents is the EPM attached to an adverb, as seen in (19) below. The adverbs *cal* ('well') and *yongkamha-key* ('bravely') cannot be possibly multiplied. Rather, the manner specified is attributed to the action accomplished by each of the subjects. As in (19a), each child of the set accomplished the action of 'playing well'. Therefore, according to him, the function of the EPM attached to an adverb is to promote a distributive reading.

- (19) a. Ai-tul-i            cal-**tul**    nol-ass-ta.<sup>5</sup>  
           child-PL-NOM    well-PL    play-PST-IND  
           ‘The children played well.’
- b. Ai-tul-i    yongkamhakey-**tul**    nase-ess-ta  
           child-PL    bravely-PL            leave-PST-IND  
           ‘The children came forward bravely.’            (Song, 1997, p.211)

Park (2008) also claims that *-tul* is not a simple plural marker since some examples cannot be entirely explained under the plural analysis. Much like Song (1997), she argues that EPM-*-tul* is a distributive marker. The example (20), according to Park, shows that *-tul* obligatorily appears in distributive contexts. In this case, every participant takes part in some action. *-Tul* with the subject, *haksayng* (‘student’), plays a role as the entity which is distributed to the locative ‘to a school’. The EPM attached to the locative gives a distributive interpretation to the sentence. The same event ‘going to school’ is distributed individually over the multiple agents. In this respect, she concludes that the EPM is associated with distributivity.

- (20)            Haksayng-tul-i            hakkyo-ey-**tul**<sup>6</sup>            kassta.  
                   student-PL-NOM    school-LOC-PL            go-PST-DEC  
                   ‘The students went to a school separately.’            (Park, 2008, p.284)

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<sup>5</sup> There is no difference in interpretation as follows: Both sentences are associated with distributivity.

<sup>6</sup> The EPM *-tul* is attached after a case marker while the IPM *-tul* is attached before the case marker.

Given the data, the EPM does trigger a distributive reading in some contexts. It seems acceptable in the given examples. His claim that the EPM must appear in distributive contexts, is, however, too strong, because the occurrence of the EPM is not necessary to obtain a distributive reading. In (21), the sentence only allows a collective reading. It can be interpreted as meaning that all students gathered in the hallway.

- (21)           Haksang-tul-i       pokto-ey-**tul**    moyessta.  
                   student-PL-NOM   hallway-in-PL   gather-PST-DEC  
                   ‘The students gathered in the hallway.’                   (An, 2007, p.7)

An (2007) seems to agree that the EPM carries a distributive sense. She points out, however, that the EPM does not need to be only associated with distributivity. Instead, the reading with the EPM is also associated with a collective reading. As illustrated in (22), the sentences have a collective reading as well as a distributive reading. That is, it can be interpreted as meaning that each subject performs the action, or that all subjects perform the action together. As in (22a), for instance, it can be interpreted as meaning that each boy carried a piano for an hour or all boys carried a piano together for an hour. In the examples (22a) and (22b), the EPM carries both a distributive and a collective reading.



- (22) a. Namcaay-tul-i piano-lul-**tul**<sup>7</sup> han sikan-tongan nallassta.  
 boy-PL-NOM piano-ACC-PL one hour-for carry-PST-DEC  
 ‘The boys carried the piano for an hour.’
- b. Yeccay-tul-i tteysmok-ul-**tul** mantulessta.  
 girl-PL-NOM raft-ACC-PL build-PST-DEC  
 ‘The girls built a raft.’
- c. Haksang-tul-i pokto-ey-**tul** moyessta.  
 student-PL-NOM hallway-in-PL gather-PST-DEC  
 ‘The students gathered in the hallway.’ (An, 2007, p.7)

The example (22c) only has a collective reading since the type of the predicate *moyessta* (‘gathered’) itself gives a collective meaning. In this case, the EPM cannot force a distributive interpretation to the sentence. She argues that *-tul* as an EPM can be used regardless of the type of the predicate and then proposes that the occurrence of the EPM finally leads to an exhaustive effect. In order to argue for this approach, she draws an analogy between the Korean EPM and English ‘*all*’. As one of the universal quantifiers, ‘*all*’ is used in both a distributive and collective reading and also has an exhaustive effect. The properties of the EPM are similar to English ‘*all*’. The reading with the EPM turns out to have an exhaustive effect. As illustrated in (23) below, the EPM *-tul* on the preposition phrase gives the exhaustivity to the interpretation of the given sentence. Therefore, according to her, the sentence is interpreted as meaning that all the girls must have jumped in the lake.

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<sup>7</sup> An (2007) proposes that the EPM *-tul* is attached after the case marker ‘*-lul*.’ However, some native Korean speakers do not like this sentence because they think that it is ungrammatical. Rather, they prefer to use *-tul* before the case marker ‘*-lul*’ as an IPM.

- (23) Yehaksayng-tul-i hoswu-ey-**tul** ttwietulessta.  
 girl-PL-NOM lake-in-PL jump-PST  
 ‘The girls jumped all in the lake.’ (An, 2007, p.18)

Some argue that the EPM is associated with both distributivity and exhaustivity. Combining the two semantic properties above, Joh (2005) suggests that the EPM should be treated as both distributive and exhaustive. The use of the EPM is not satisfactorily described by only one of the semantic components. The example (24) reasonably demonstrates her claim. As in (24a), the IPM *-tul* is attached to the subject *haksaeng* (‘student’) and allows a collective reading. The sentence can be interpreted as meaning that all first-year students built a raft together loudly. In (24b), however, *-tul* is attached to the adverb *sikkurupkke* (‘loudly’) as well as the subject and gives both a distributive and an exhaustive reading. The sentence can be interpreted as meaning that each first-year student built a raft loudly, or that all of the first-year students built a raft loudly.

- (24) a. Ilhaknyen haksang-tul-i sikkurupkke ttaesmok-ul  
 first-year student-PL-NOM loudly raft-ACC  
 ciessta.  
 build-PST-DEC  
 ‘First-year students built a raft loudly.’

- b. Ilhaknyen haksæng-tul-i sikkurupkke-**tul** ttaesmok-ul .  
 first-year student-PL-NOM loudly-PL raft-ACC  
 ciessta.  
 build-PST-DEC  
 ‘First-year students all built a raft all loudly.’ (Joh, 2005, p.174)

In this thesis, we investigate the IPM *-tul* as a pluralizer. Also, we investigate whether the interpretation of the EPM as a pluralizer or an agreement marker is always associated to a plural interpretation of the subject. In our experiment, we do not test distributivity and exhaustivity. Rather, we only focus on the plural subject interpretation of the EPM. Given the data, however, it seems that much like the plural in English, it allows both distributive and exhaustive reading.

I suggest that the IPM and the EPM play fundamentally the same role. That is, it is consistent that *-tul* gives a plural meaning even if it may have other additional interpretations. The only difference between the IPM and the EPM is the locus of the pluralization. In other words, the IPM gives a plural meaning to the NP to which it attaches. The EPM agrees with a plural subject, and, in cases of bare nouns, the EPM is still agreement, but it can be used to disambiguate the subject and force a plural interpretation of the subject. These circumstances raise questions about whether children know the use of the EPM and how they interpret it.

To summarize, this chapter briefly examined the semantic and syntactic properties of *-tul*. Three points are crucial for this thesis: *-tul* is optional, the IPM *-tul* pluralizes the NPs, and the EPM *-tul* is associated with a plural interpretation of the subject.

In the following chapter, we will discuss previous studies on the acquisition of plural morphology in some languages, including Korean.

## CHAPTER 3

### ACQUISITION BACKGROUND

In this chapter, we discuss previous research on the acquisition of plural morphology in English, Spanish, and Korean.

#### 3.1 Acquisition of Plural Morphology

The acquisition of plural morphology has been investigated in many languages. Using free speech and elicitation tasks, Berko (1958) tested children's production of the English plural morphemes in novel words. Subjects were preschoolers aged between four and five and first-grade students aged between five and a half and seven. In the experiment, picture cards that were colored and cartoon-like were presented with the novel words, and the relevant texts were read. Then, the children were asked to pluralize nouns. The text that described the card was read (e.g., "This is a *wug*. Now there is another one. There are two of them. There are two \_\_\_\_"). The results showed that before four years of age, children could apply the plural morpheme to the new words. Also, there were age differences in their ability to produce the plurals. First graders performed better than preschoolers.

Brown (1973) proposed an order of morpheme acquisition in English. He conducted a longitudinal study to test children's acquisition of English morphemes. He taped three children, Adam, Eve, and Sarah, who were native speakers of English. He found that the three children acquired English morphemes more or less in the same order, even if the rate of acquisition was different individually. Based on the findings, he suggested five stages of language development in terms of morphology and syntax. In stage I, children aged between 15 and 30 months produce about 1.75 morphemes ('that car' or 'give ball'). In stage II, children between 28 and 36 months,

learn to use ‘-s plurals’ as well as ‘-ing’, ‘in’ and ‘on’. In stage III, children between 36 and 42 months learn the ‘irregular past tense’, ‘-s possessives’ and ‘uncontractible copula’. In stage IV, children between 40 and 46 months learn ‘articles’, ‘regular past tense’, ‘third person regular’ and ‘present tense’. In stage V, children between 42 and 52 months learn ‘third person irregular’, ‘auxiliary’ and ‘contractible copula’. He argued that complexity in syntax and semantics affects the order of morpheme acquisition. More complex morphemes are acquired later. The plural morpheme was shown to be relatively easy and was produced in stage two between 28 to 34 months of age.

Recently, Ferenz and Prasada (2002) investigated how children use singular and plural forms of nouns. They tested 48 English-speaking children aged from 20 to 66 months. In one experiment, they used an elicited production task to test if children use either referential or syntactic information to interpret the form of count nouns. They used a stuffed Big Bird doll that performed certain actions and asked the children to help him remember what he had done. In a trial, the children had two rows of three small toy animals (e.g., three dogs and three cats). The experimenter performed some actions on the animals. (e.g., “Big Bird sang a song to this one, and then, he sang a song to this one, and then, he sang a song to this one”). Then, the experimenter asked the child to remember what Big Bird had done. The child was presented with a sentence fragment. (e.g., “Big Bird sang a song to each \_\_\_\_\_” or “Big Bird sang a song to one of the \_\_\_\_\_”). The results showed that at about two years of age children can use both referential and syntactic information to determine the form of count nouns. They found that infants began to produce the plural at around two years of age, based on both morpho-syntactic and referential properties.

In another experiment, they used an act-out task to test how children use referential information when they use singular and plural forms and how they understand properties of the quantifiers *one, two, three, each, all* and the determiner *the*. In the experiment, children were asked to play a game with Big Bird and helped him to get things for going to the park. For instance, there were three frogs and three sharks in a tray. The children were told what Big Bird wanted them to do (e.g., “Big Bird wants you to put the sharks in the tray” or “Big Bird want you to put the shark( $\emptyset$ ) in the tray”). In these two experiments, they investigated how children use linguistic information in singular and plural forms.

Kouider et al. (2006) used a preferential looking paradigm to test infants’ knowledge of the plural morpheme on nouns. They recruited 20- to 36-month-old children. In their four experiments, twelve novel objects (e.g., blanket) were used for experimental words (e.g., truck), and twelve known objects were used for fillers. Two arrays of objects were presented on two different monitors. A single object was presented in one monitor and a set of eight objects was presented in the other monitor. Then, infants were told a sentence which could be singular or plural and matched with one of the pictures. In experiment 1 and 2, they heard linguistic markers of number on the verb (*are* vs. *is*), on the quantifier (*a* vs. *some*), and on the noun (*-s* vs.  $\emptyset$ ). For example, one of the testing sentences with the novel words was “Look, there is a blicket” or “Look, there are some blickets”. In experiment 3 and 4, infants heard linguistic markers of number only on the noun (e.g., “Look at the blicketS” or “Look at the blicket”). Then, the two displays remained for six seconds in the two monitors after the first plural information in the sentence. The correct display danced on the screen to music and the other display disappeared. The results showed that 24-month-olds understood the singular-plural distinction with markers of number on the verb, on the noun and with quantifiers. 36-month-olds understood the singular-

plural distinction with markers of number only on the noun. In other words, before 24 months of age, infants understand the singular-plural distinction. It seems that various cues for plural or singular are helpful for 24-month-old children.

Wood et al. (2009) used a manual search paradigm to investigate the development of the distinction between English singular and plural. They recruited 20- and 24-month-old children. In their experiment, the children were presented with a box and four objects, two familiar objects (e.g., car/cat) and the other two novel objects (e.g., blicket/klog). Infants were shown the experimenter placing these four objects in the box. Then, the experimenter moved the box behind a curtain out of view of the child. The infants could reach but not see the objects in the box. Then, the experimenter pushed the box toward the child and asked them to get one of these (e.g., “Could you get the [car/cat/blicket/klog] for me?”). Infants heard a verbal description that described certain objects in the box, which could be either singular (e.g., “Could you get my car for me?”) or plural (e.g., “Could you get my cars for me?”). Lastly, the infants were allowed to search for these in the box for ten seconds. One of the findings in their study was that 24-month-old infants used plural markings to search for ‘more than one object’ in a box.

Based on the studies above, it is clear that the plural in English is acquired before three years of age. Miller (2007) argues that the acquisition of plural morphology is influenced by variable and inconsistent input. The idea is based on Yang’s (2002) Variation Model of language acquisition. If input is consistent and frequent, children learn early. If input is variable, children take longer to learn. That is, the more reliable the language to which the child is exposed, the quicker he or she will learn. Miller studied the acquisition of plural in two dialects of Spanish, Mexico City Spanish and Chilean Spanish. Plural is always marked in Mexico City Spanish while it is often omitted in Chilean Spanish due to syllable-final /s/ lenition.

In the experiments for production of plural morphology, children aged between four and five years old were recruited, and three different production tasks were conducted: a free speech task, a repetition task, and a naming task. In order to collect data, the free speech task was used since subjects could freely talk about topics of interest (e.g., cartoons for children / family for adults). In the repetition task, pictures were used, and subjects were asked to repeat statements that the experimenter made about each picture (e.g., some firemen are eating apples). In the naming task, sets of toys were used and subjects were asked to name the toys. Each question was *¿Qué son?* (“What are they?”) in which the existential verb shows no agreement. The results showed that Mexico City Spanish-speaking children, who were exposed to consistent input for plural morphology, systematically produce the plural morpheme. On the other hand, Chilean Spanish-speaking children, who were exposed to variable and ambiguous input for plural morphology, showed variable behaviors, sometimes producing the plural morpheme and sometimes omitting it. The results support Miller’s (2007) Variability Delay Hypothesis that variable input delays the acquisition of plural morphology.

In the experiments for comprehension of plural morphology, seven experimental studies were conducted: three act-out tasks, three picture matching tasks, an elicitation task. In study 1, an act-out task was used to investigate children’s interpretation of plural and singular indefinite noun phrases. Each child was presented with some sets of objects and asked children to place some items in a small box (e.g., *Pon pocas bolitas en la caja* “Put few marbles in the box”). In study 2 and 3, a picture matching task was used to test child comprehension of the singular and plural indefinites. In study 2, each subject was presented with pairs of pictures and asked children questions by pointing to the appropriate picture (e.g., *¿En cuál de las dos tarjetas hay unas botellas?* “In which of the two cards are there some bottles?”). In study 3, each subject was



presented with short narratives about some children taking a trip and asked questions with either plural indefinites *unos/unas* ‘some.M.PL/some.F.PL’ or singular indefinites *un/una* ‘a/one.M.PL/a/one/F.PL’. In study 4, an elicitation task was used to examine whether Chilean and Mexican children distinguish ‘one’ from ‘more than one’. Children were asked to name pictures of animals (e.g., *¿Qué hay aquí?* “What’s here?”). Study 4, in fact, is not a comprehension task, but it was placed in the chapter on comprehension, since the elicitation task, unlike the production tasks, involved naming plural and singular objects to test whether children use the plural morpheme to distinguish plural from singular. In study 5, a picture matching task was used to determine whether Chilean children associate the plural morpheme with an interpretation of ‘more than one’ by testing their comprehension of bare plural s vs. bare singulars. Children were presented with four short narratives about some children taking a trip and asked questions with either bare plurals *llaves/libras* ‘key.F.PL/books.M.PL’ or bare singular *llave/libro* ‘key.F.PL/book.M.PL’. In study 6, an act-out task was used to test definite noun phrases involving inalienable possession. Subjects were shown a doll and asked to do activities (e.g., *Tócale la/las rodilla* ‘Touch her knee/knees’). In Study 7, an act-out task was used to test Chilean and Mexican children interpretation of the plural morpheme in definite noun phrases with a referential interpretation. Subjects were presented with a display and asked do activities (e.g., *Dame la Muñeca/ Muñecas dormidas al lado la casa* “Give me the dolls (that are) asleep next to the house”). The findings of the comprehension studies show different results for three groups of children: 1) Mexican Working Class children (MexWC children), 2) Chilean Working Class children (ChWC children), and 3) Chilean Middle Class children (ChMC children). At age five, MexWC children associated plural morpheme to an interpretation ‘more than one’, and ChWC children did not. ChMC children, like MexWC children, associated the

plural morpheme to an interpretation of ‘more than one’, but they differently behaved from MexWC children on the plural indefinites *unos/unas* and the overt partitive *uno de los*. ChMC children paid attention to both lexical information of the determiner and the plural morpheme. It seemed that MexWC children and ChMC children were different in the development of plural morphology. In the experiments for comprehension, the results for Mexican children and Chilean children supported the Variability Delay Hypothesis.

Munn et al. (2009) showed similar results in acquisition for the Mandarin Chinese pluralizer *-men*, which behaves similarly to the Korean pluralizer *-tul*. Like Korean, Chinese is also a classifier language. The Chinese pluralizer is interpreted as both definite and plural and it is associated with an associative reading. The researchers tested children aged three- to ten-years-old to investigate whether the children knew both definiteness and plurality properties of *-men*. In a Truth Value Judgment Test set of experiments, they presented pictures and told a story related to the picture. Then, children were asked to respond with “Yes” or “No”. The results showed that the three age groups were different from each other. Mandarin Chinese speaking children at ages three and four did not recognize *-men* as plural or maximal. Five- and six-year-old children recognized *-men* as plural, but did not treat it as maximal. Seven- to ten-year-old children treated *-men* as plural and maximal, as adults do. Chinese children did not completely acquire the plural morpheme *-men* until sometime between the ages of seven and ten. Like Spanish and Korean, it seems that the acquisition of Chinese pluralizer is also delayed supporting the idea that unreliable input delays acquisition. Notice however that unlike the Spanish plural in Chilean which is just not overtly realized, the Mandarin *-men* is truly optional, except with pronouns. Furthermore, while the Spanish plural has no restrictions, *-men*, like Korean *-tul*, is restricted to animates. Finally, the Mandarin *-men* is also definite, unlike the Spanish plural.

Few studies have attempted to investigate the acquisition of Korean plural marking. Park (2010) studied the acquisition of two Korean pluralizers, the IPM *-tul* and *-ne*. In three experiments, a Truth Value Judgment Task (TVJT) was used to test four- and five-year-old children. In each experiment, pictures were presented along with stories. Then, target sentences were presented, which subjects had to accept or reject on the basis of the interpretation. For instance, “In the ocean, two whales swam. One of them went away to take a nap. The other one blew water”. Then, subjects decided if *Gore-tul-i mul-eul ppum-ess-da.* (‘Whales blew water’) or *Bada-e gore du-mari-ga suyeong-eul hago-iss-oss-da.* (‘In the ocean, two whales swam.’) was true or false. The goal was to investigate if children knew that the two pluralizers are associated with a plural interpretation, that *-tul* was associated with an exhaustive reading, and *-ne* is associated with an associative reading. The results showed that most children failed to interpret the two morphemes as plural, as most adults would. This would seem to indicate that they had not acquired these plural markings. The results supported the hypothesis that the acquisition of plural morpheme is delayed as a result of the input being unreliable and inconsistent. As with Spanish, the input for plural marking is not systematic because plurality is not obligatorily marked. Korean children had not acquired the plural by age five. Compared to English children, who learn obligatory plural morphemes by age three, they were hence much delayed.

Nakano et al. (2009) examined the acquisition of the Japanese pluralizer *-tati* with the Korean pluralizer *-tul*, since neither is always marked or has a definite interpretation. They recruited four and five year old children. A Truth Value Judgment Task (TVJT) was used to investigate if subjects associated these pluralizers with a plural interpretation, a maximality presupposition, and the associative reading. The findings of the Korean portion of the study were the same as Park’s (2010). The results also showed that, by the age of six, Japanese were not

adult-like in the interpretation of *-tati*, and that adults and children show no maximality effect and no preference for the associative interpretation for the pluralizer. In the perspective of the acquisition, their findings supported the hypothesis that the optionality of the pluralizer delays the acquisition of the morphology.

Since there have been few studies conducted on the acquisition of the Korean plural morphology, further studies on the Korean pluralizer that involve subjects who are older than five-year-old children, especially on the EPM *-tul*, are needed.

## CHAPTER 4

### A STUDY

In this chapter, we propose the hypotheses and present an experiment testing children's knowledge of the IPM and the EPM *-tul*. The study that we present here examines children of the ages of six, seven, and eight years old, since Park (2010) has already shown that children younger than these ages do not know the IPM *-tul*.

#### 4.1 Hypotheses & Predictions

Miller (2007), following Yang (2002), argues that when input is variable, acquisition is delayed. In her study of plural acquisition, Chilean Spanish children were delayed in acquiring the plural morpheme in comparison to Mexico City Spanish children, but were adult-like by the age of seven. The variability in Chilean Spanish with respect to plural marking is different from that in Korean. Plural marking is obligatory in Spanish, but the form is not always realized due to a phonological process that weakens syllable final *-s*. The Korean pluralizer, on the other hand, is truly optional and also has animacy restrictions and perhaps other restrictions since it is incompatible with numbers, which suggests that it is less frequent. We have seen that by the age of five, children have not yet acquired *-tul* (Park, 2010). This leads to our first hypothesis:

- H1) Optional realization of a morpheme delays acquisition. Korean children are exposed to less plural morphology than Chilean Spanish children, since there are many restrictions on the use of the pluralizer in Korean (it never appears on inanimate nouns and never with numbers). If frequency plays a role, Korean children will take longer than Chilean Spanish children to acquire the rule for

plurality.

- P1) Korean children will not acquire plural morphology that is adult-like until age seven.

As already discussed, the IPM *-tul* is associated with the noun to which it attaches and gives a plural interpretation to the noun. The interpretation of the IPM is quite consistently fixed as plural. The place to which *-tul* is attached does not affect its interpretation. In other words, *-tul* should force a plural interpretation to the noun to which it attaches, regardless of where it appears.

- H2) We hypothesize that once children learn the meaning of *-tul*, they will not make any distinctions between subject and indirect object position.
- P2) If children know the IPM properties, they would respond equally to the IPM *-tul* in subject and indirect object position.

Third, the literature presented in the previous chapter, in particular Chung (2003) and An (2007), indicates that there is a close relation between a subject and the EPM *-tul* in interpretation. The interpretation of the EPM is always related to the subject in a sentence. This idea leads to our third hypothesis about the use of the EPM as follows.

- H3) We hypothesize that since *-tul* is attached to a non-pluralizable element, it will be interpreted as agreement with the subject.

- P3) If children know the use of the EPM *-tul*, they will interpret sentences with the EPM on the verb as involving a plural interpretation of the subject.

Fourth, the Korean pluralizer *-tul* is used either as the IPM or as the EPM. As seen in the previous chapter, *-tul* as the IPM and the EPM gives a plural interpretation. The significant difference between them is the place at which it attaches. The IPM is attached to the nominal and pluralizes the NP to which it attaches. On the other hand, the EPM is attached to non-nominal (specifically verbs in our study) and pluralizes the subject in a sentence. That is, the IPM is most local while the EPM is less local to the place that is pluralized. Presumably, such a property of *-tul* could affect the acquisition. According to Brown (1973), the English plural morpheme *-s* (e.g., my cars) is consistently produced by three years of age. On the other hand, third person */s/* (e.g., “He swims” or “The man brings”) is produced at around age four. In accordance with Brown’s (1973) suggestion, Johnson et al. (2005) argue that children have a harder time using verbal morphology in interpretation. In the experiments, they recruited three- to six-year-old English speaking children. They focused on the comprehension of third person singular */s/* as a number agreement marker (e.g., The duck swims vs. The ducks swim $\emptyset$ ), rather than on the production. The results indicated that children under the age of five were not sensitive to third person singular verbal morphology as a clue to determine number on the subject, when the number on the subject is marked by the consonant of the following word, the verb in this case. As previous research has shown, the plural morphology acquired much earlier than verbal morphology.

- H4) The IPM and the EPM *-tul* are attached to different elements in the clause. The IPM pluralizes the NP locally while the EPM is an agreement with a plural subject. Therefore, it is reasonable to hypothesize that the IPM will be acquired before the EPM.
- P4) Children would learn the IPM earlier than the EPM.

Older children have been exposed to more plurals than younger children. Possibly, they could have more opportunities to evaluate their own grammar. This general observation leads us to the fifth hypothesis.

- H5) If there are some age differences in the acquisition of the linguistic ability, younger children will make more errors than older children. In other words, the older they are, the fewer errors they make.
- P5) Eight-year-olds will perform better than six- and seven-year-olds.

Based on the hypotheses and predictions above, we designed an experiment testing the IPM and the EPM. In the next section, we will introduce the materials used to test our hypotheses and results.



## 4.2 Experiment

### 4.2.1 Subjects

Subjects were 80 adult native speakers of Korean from Pukyong National University and 60 children, who were acquiring Korean as their native language in Busan, Korea. The ages of all subjects are illustrated in detail in Table 1 below. All adults were between the ages of 20 and 29 years old. All children were between six to eight years old. Children were separated into three groups according to their ages. Group 1 had 20 children, all of who were six years old. Group 2 had 20 children, all of who were seven years old. Group 3 had 20 children, all of whom were eight years old. In Korea, children generally start to attend schools at the age of seven. Hence, group 1 was comprised of preschool children and groups 2 and 3 of schoolchildren. All children were recruited from four different local childcare centers in Busan, Korea.

Table 1. Ages of subjects

	N	Mean	Range	Standard Deviation
Group 1 (6yrs)	20	5.9	5;5-6;4	.293
Group 2 (7yrs)	20	7.0	6;5-7;5	.264
Group 3 (8yrs)	20	8.0	7;5-8;4	.283
Adults (20-29yrs)	80	N/A	N/A	N/A

### 4.2.2 Design

We used a Truth Value Judgment Task (TVJT) as explained in Gordon (1996) and Crain and Thornton (1998). This task allows children to judge target sentences in the context of a short story. Also, experimenters can investigate children's grammar and interpretations. For instance, a child will agree to a target sentence if the interpretation of the target sentence is true in the context. The child will reject the target sentence if the interpretation is false in the context. In our experiment, all participants responded with "Yes" or "No" to a question regarding a situation. Children's understanding of target sentences with *-tul* could thus be evaluated.

Children were presented with short stories describing the events in the pictures. After the stories, images from the last picture remained in the display, and the target sentence was read. Then, participants made a decision regarding whether the target sentence was true or false. With this method, we examined the participants' interpretations of target sentences with *-tul*.

Each target sentence contained a ditransitive verb. The goal was to compare children's knowledge of the IPM and the EPM *-tul*. In a ditransitive sentence, there were three noun phrases that could be pluralized: a subject, an Indirect Object (I.O), and a Direct Object (D.O). In all the experimental sentences, the properties of the direct object remained constant. Subjects were either one-NP (e.g., one rabbit), NP-*tul* (e.g., rabbits), or NP-bare (e.g., rabbit), which can have a singular or a plural interpretation. Indirect objects also varied in that there could be one-NP, NP-bare, or NP-*tul*. Direct objects were always fixed as singular, one-NP. Verbs either had *-tul* or did not. The manipulation of subject, indirect object and verb allowed us to create six conditions. All the conditions are illustrated in Table 2 below.

Table 2. Six conditions of target sentences

	Subject	Indirect Object	Direct Object	Verb
Condition 1 ONE-ONE	one-NP (ex. one rabbit)	one-NP (ex. one turtle)	one-NP (ex. one umbrella)	bare (ex. share)
Condition 2 ONE-TUL	one-NP (ex. one dog)	NP- <i>tul</i> (ex. sheep)	one-NP (ex. way)	bare (ex. show)
Condition 3 TUL-ONE	NP- <i>tul</i> (ex. monkeys)	one-NP (ex. one squirrel)	one-NP (ex. one banana)	bare (ex. feed)
Condition 4 BARE-ONE-TUL	bare (ex. bear)	one-NP (ex. one owl)	one-NP (ex. one nest)	V- <i>tul</i> (ex. give- <i>tul</i> )
Condition 5 BARE-BARE-TUL	bare (ex. bird)	bare (ex. lion)	one-NP (ex. one song)	V- <i>tul</i> (ex. sing- <i>tul</i> )
Condition 6 TUL-BARE	NP- <i>tul</i> (ex. elephants)	bare (ex. mouse)	one-NP (ex. water)	bare (ex. sprinkle)

The six conditions show the subject, the indirect object, and the verb form. In Condition 1, ONE-ONE, both subject and indirect object are one-NP. In Condition 2, ONE-TUL, the subject is one-NP, and the indirect object is NP-*tul*. In Condition 3, TUL-ONE, the subject is NP-*tul*, and the indirect object is one-NP. In Condition 4, BARE-ONE-TUL, the subject is a bare noun, the indirect object is one-NP, and the verb is V-*tul*. In Condition 5, BARE-BARE-TUL, the subject and indirect object are bare nouns, and the verb is V-*tul*. In Condition 6, TUL-BARE, the subject is NP-*tul*, and the indirect object is a bare noun. For each condition, there were four test items. Two were expected to be true and two were expected to be false.

Each participant received 24 experimental sentences, divided into six conditions. Four items (pictures + stories) were used per condition. There were two versions of the test so that all experimental materials could be counterbalanced (see Appendix for Version 1 and 2). Each set-up consisted of four slides in a Power Point presentation as shown in Figure 1. Target Sentences had the following form: Subject, Indirect Object, Direct Object, Verb (S I.O D.O V).

Figure 1. One of the six items

(For interpretation of the references to color in this and all other figures, the reader is referred to the electronic version of this thesis.)




Pictures	Story & the following question
	<p>Story 1-1</p> <p>Mayu hwachanghan nal i-ta.            Very sunny day be-DEC            ‘It is a very sunny day.’</p> <p>Kepuki-tul-i sanchay-ul nawa-ss-ta.            Turtle-PL-NOM walk-ACC go-PST-DEC            ‘Turtles are going out for a walk.’</p>
	<p>Story 1-2</p> <p>Kapcaki pi-ka nayliki sicakha-n-ta.            all of sudden rain-TOP falling start-PRS-DEC            ‘All of sudden, it starts to rain.’</p>
	<p>Story 1-3</p> <p>Kepuki twi-ey thokki-ka natana-n-ta.            turtle beyond-LOC rabbit-NOM appear-PRS-DEC            ‘Right beyond turtles, a rabbit(s) appears.’</p> <p>Thokki-un usan-ul tulko o-n-ta.            Rabbit-NOM umbrella-ACC with come-PRS-DEC            ‘It is coming with an umbrella/umbrellas.’</p>

Figure 1. (cont'd)



Question 1 for Condition 1

Thokki	han mali-ka	kepuki	han mali-eykey	usan
rabbit	one CL-NOM	turtle	one CL-DAT	umbrella
hana-lul	ssu-ywecu-ko	i-ss-ta.		
one-ACC	use-give-CONJ	be-PRG-DEC		

‘One rabbit is sharing one umbrella with one turtle.’

**Predicted correct answer** → True / False

Note. All items are seen in Appendix.

### 4.2.3 Conditions

#### *Condition 1\_ONE-ONE*

In Condition1, ONE-ONE, both subject and indirect object are one-NP, which must receive a singular interpretation. This condition, ONE-ONE, was used as a control to investigate if children understood one-NP as referring to a single object. A noun phrase should be interpreted as singular when the number *one* and the related classifier are attached to the noun. In Condition 1, two noun phrases, the subject and the indirect object, should be interpreted as singular. The sentence should be judged True in Item1 and False in Item 2, provided the implicature of ‘exactly one’ was calculated. If not, then it could also be true when the interpretation ‘at least one’ was also available.<sup>8</sup>

<sup>8</sup> Huang et al. (2004) discussed the interpretation of number words by young children to account for the semantic meanings of number words. They pointed out that the acquisition of number words has been largely understood by two viewpoints: 1) numbers have exact semantics (*two* means EXACTLY TWO) and 2) numbers have lower-bounded semantics (AT LEAST TWO). In their experiments, they found that two- and three-year-olds interpreted *two* to mean *exact two* at an early stage of development. They concluded that numbers have exact meanings.

Figure 2. Four items for Condition 1\_ONE-ONE

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**Item 1: Rabbit & Turtle**

---

**Picture**



---

**Target sentence**

Thokki han mali-ka kepuki han mali-eykey usan hana-lul  
rabbit one CL-NOM turtle one CL-DAT umbrella one-ACC  
ssu-ywecu-ko i-ss-ta.  
use-give-CONJ be-PRG-DEC  
'One rabbit is sharing one umbrella with one turtle.'

---

**Predicted correct answer** →  True /  False

---

---

**Item 2: Dog & Sheep**

---

**Picture**



---

**Target sentence**

Kay han mali-ka yang han mali-eykey kil-ul annayhaycu-ko i-ss-ta.  
dog one-CL-NOM sheep one-CL-DAT way-ACC show-CONJ be-PRG-DEC  
'One dog is showing the way to one sheep.'

---

**Predicted correct answer** → True /  False

---

Figure 2. (cont'd)

---

**Item 3: Monkey & Squirrel**

---

**Picture**



---

**Target sentence**

Wensungi han mali-ka    talamcwi han mali-eykey    panana han kay-lul    mekyecu-ko  
monkey one-CL-NOM    squirrel one-CL-DAT    banana one-CL-ACC    feed-CONJ  
i-ss-ta  
be-PRG-DEC  
'One monkey is feeding one banana to one squirrel.'

---

**Predicted correct answer** →  True /  False

---

---

**Item 4: Bear & Owl**

---

**Picture**



---

**Target sentence**

Kom han mali-ka    puengi han mali-eykey    tungci han kay-lul    cu-ko    i-ss-ta.  
bear one-CL-NOM    owl one-CL-DAT    net one-CL-ACC    give-CONJ    be-PRG-DEC  
'One bear is giving one net to one owl.'

---

**Predicted correct answer** → True /  False

---

Condition 1, ONE-ONE, has two true and two false as target answers for four different items.

The same was done for all five other conditions (see Appendix for all the conditions and items in the second version of the experiment).

Condition 2\_ONE-TUL

In Condition 2, ONE-TUL, the subject has ‘one’, which is singular, and the indirect object has *-tul*, which is plural. This condition, ONE-TUL, tested whether children knew the interpretation of the IPM *-tul* when it was attached to the indirect object. In this case, the indirect object should refer to a plurality. For instance, the subject should refer to ‘one dog’, and the indirect object should refer to ‘sheep’, as seen in Figure 3.

The comparison between the answers for Condition 1, ONE-ONE, and Condition 2, ONE-TUL, tested whether children knew the difference between one-NP and NP-*tul*. If they knew that one-NP is interpreted as singular, and NP-*tul* is interpreted as plural, they should have the same behavior as adults and accept a picture with a multiplicity of nouns in indirect object position and reject it when the indirect object in the picture was a singleton, as illustrated in Figure 3 below.

Figure 3. Condition 2\_ONE-TUL (One Dog-Sheep)

---

**Picture**



---

**Target sentence**

Kay han mali-ka yang-tul-eykey kil-ul annayhaycu-ko i-ss-ta.  
dog one-CL-NOM sheep-PL-DAT way-ACC show-CONJ be-PRG-DEC  
‘One dog is showing the way to sheep.’

---

**Predicted correct answer** → True / **False**

---





### *Condition 3\_ TUL-ONE*

In Condition 3, TUL-ONE, the subject is pluralized with *-tul*, and the indirect object is one-NP, singular. Here, the subject is plural and the indirect object is singular. The comparison between Condition 2, ONE-TUL, and Condition 3, TUL-ONE, tested whether there was any difference when *-tul* was attached to the subject as opposed to the indirect object. The IPM *-tul* should pluralize the closest NP to which *-tul* is attached, rather than simply any NP in the clause. The logic, here, is simple. The subject should be interpreted as plural when *-tul* is attached to the subject. And, the indirect object should be interpreted as plural when *-tul* is attached to the indirect object. If children know this, they should reject the target sentence with the picture in Figure 3 for Condition 2, ONE-TUL. In Figure 3, there is ‘one dog’ and ‘one sheep’. For the target sentence in Condition 2, ONE-TUL, however, the subject should be interpreted as ‘one dog’ and the indirect object should be interpreted as ‘more than one sheep’ since *-tul* is attached to the indirect object. In Figure 2, the picture and the target sentence do not match.

In Condition 3, TUL-ONE, if children knew the interpretation of subject-*-tul*, they should accept the picture with the target sentence in Figure 3 below. In the picture, there are ‘two monkeys’ as the subject and ‘one squirrel’ as the indirect object. For the target sentence in Condition 3, TUL-ONE, the subject, should be interpreted as referring to a plural set, ‘more than one monkey’, since *-tul* is attached to the subject. The indirect object should be interpreted as singular, ‘one squirrel’. The target sentence is correctly matched with the picture to the left, but not with the one on the right.

Figure 4. Condition 3\_ TUL-ONE (Monkeys-One Squirrel)

<b>Picture</b>	
	
<b>Target sentence</b>	
Wensungi-tul -i monkey-PL-NOM	talamcwi han mali-eykey squirrel one-CL-DAT
mekyecu-ko i-ss-ta. feed-CONJ be-PRG-DEC	panana han kay-lul banana one-CL-ACC
'Monkeys are feeding one banana to one squirrel.'	
<b>Predicted correct answer</b> → <input checked="" type="checkbox"/> True / False	<b>Expected answer</b> → True / <input checked="" type="checkbox"/> False

*Condition 4\_ BARE-ONE-TUL*

Now, what happens when *-tul* is attached to the verb, rather than to the noun phrase, as in the previous cases? In Condition 4, BARE-ONE-TUL, the subject is a bare noun, the indirect object is singular, and *-tul* is attached to the verb. In this condition, the subject would be expected to be interpreted as a plural since *-tul* attached to the verb signals a plural subject. For instance, the subject should be interpreted as 'more than one bear', and the indirect object should be 'one owl'. Condition 4, BARE-ONE-TUL, should be interpreted identically to Condition 3, TUL-ONE. That is, *-tul* attached to the verb and *-tul* attached to the subject give the same interpretation of plurality of the subject. In these two conditions, the subjects should be interpreted as plural, and the indirect object should be interpreted as singular.

*Condition 5\_ BARE-BARE-TUL*

In Condition 5, BARE-BARE-TUL, the subject and indirect object are both bare nouns that could be either singular or plural, and *-tul* is attached to the verb. In this condition, the subject should be interpreted as plural, not the object, since *-tul* attached to the verb is associated

to its plural subject, just like Condition 4, BARE-ONE-TUL. Therefore, only the subject is obligatorily plural.

Both Condition 4, BARE-ONE-TUL, and Condition 5, BARE-BARE-TUL, tested how children dealt with *-tul* when it is attached to the verb. If children knew that *-tul* attached to the verb gave a plural subject interpretation, they should reject the picture with the target sentence in Figure 5 below. Condition 4, BARE-ONE-TUL, differs from Condition 5, BARE-BARE-TUL, in that there are two potential noun phrases with which the EPM-*tul* could agree.

Figure 5. Condition 4\_ BARE-ONE-TUL (Bear-One Owl-give-*Tul*)

---

**Picture**




---

**Target sentence**

Kom-i puengi han mali-eykey tungci han kay-lul cu-ko-tul i-ss-ta.  
 bear-NOM owl one-CL-DAT net one-CL-ACC give-CONJ-PL be-PRG-DEC  
 ‘Bears are giving one net to one owl.’

---

**Expected answer** → True / **False**

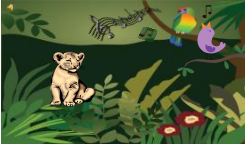

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In the picture, there is ‘one bear’ and ‘one owl’. In the target sentence, ‘bear’ is a bare noun, and it could be singular or plural. The bear, however, should be interpreted as plural since *-tul* is attached to the verb. The picture does not match with the target sentence, since there is only ‘one bear’.

In the same way, if children knew about the interpretation of *-tul* attached to the verb, they should accept the picture with the target sentence in Figure 6 below. There are ‘two birds’ singing to ‘one lion’ in the picture. In the target sentence, the subject should be interpreted as ‘more than one bird’ since *-tul* is attached to the verb ‘sing’. The indirect object could still be

interpreted as either ‘one lion’ or ‘more than one lion’ since it is a bare noun. Finally, the plural subject in the target sentence corresponded with ‘two birds’ in the picture.

Figure 6. Condition 5\_ BARE-BARE-TUL (Bird-Lion-sing-*Tul*)

<b>Picture</b>	
	
<b>Target sentence</b>	
Say-ka      saca-eykey   nolayha-ycu-ko-tul      i-ss-ta. bird-NOM   lion-DAT   sing-give-CONJ-PL      be-PRG-DEC ‘Birds are singing a song to one lion/lions.’	
<b>Predicted correct answer</b> → <input checked="" type="checkbox"/> True / False	<b>Predicted correct answer</b> → True / <input checked="" type="checkbox"/> False

*Condition 6\_ TUL-BARE*

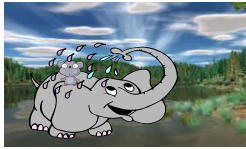
Lastly, Condition 6, TUL-BARE, the subject has *-tul*, the indirect object is a bare noun, and the verb is bare. That is, the only thing that should be obligatorily pluralized is the subject. For instance, the subject should be ‘more than one elephant’, and the indirect object could be either ‘one mouse’ or ‘more than one mouse’.

Condition 6, TUL-BARE, tested whether children knew that it should be treated exactly the same as Condition 5, BARE-BARE-TUL. If children know both the IPM and the EPM, they should reject the picture with the target sentence in Figure 6. In the picture, there is ‘one elephant’ and ‘one mouse’ in the lake. The target sentence, however, should give a meaning of ‘more than one elephant’ as the subject since *-tul* is attached to the subject. The indirect object could be either ‘one mouse’ or ‘more than one mouse’ since it is a bare noun. In Figure 7 below, the picture does not correspond to the target sentence. In this condition, the subject must be

obligatorily interpreted as plural, and the indirect object, which is bare, could be either singular or plural. Finally, the interpretation of Condition 6, TUL-BARE, is the same as Condition 5, BARE-BARE-TUL.

Figure 7. Condition 6\_ TUL-BARE (Elephants-Mouse)

**Picture**



**Target sentence**

Khokkili-tul-i            cui-eykey    mwul-ul            ppuly-ecu-ko            i-ss-ta.  
 elephant-TUL-NOM    mouse-DAT    water-ACC            sprinkle-give-CONJ    be-PRG-DEC  
 ‘Elephants are sprinkling water to one mouse/mice.’

**Predicted correct answer** → True / **False**

As seen above, a total of six conditions were used in our experiment to assess how the position of *-tul* influences children’s ability to interpret it as plural. Under these conditions, the experiments were performed to investigate how children interpreted the use of *-tul*.

**4.2.4 Method**

Each child was tested in a small isolated room, in order not to be disturbed by others. The child sat next to the experimenter, and they watched the computer screen together. The trial was recorded with a video camera in front of the child. Before the experiment started, a simple question was given with a picture of an animal to warm up. For example, the child was shown a picture with a rabbit on the grass. “Look, there is a rabbit on the grass. Do you think it is right? Or is it a turtle on the grass?” The experimenter encouraged them to answer either true or false and explained what was going to be done. The child was expected to match the picture with the

sentence of the question. They did not indicate any sign of confusion or misunderstanding. All of them answered the warm-up questions correctly.

In the experiment, the stories were told by the experimenter. The pictures were seen in the screen. The last picture remained in the screen while the target sentence was being read. Children answered true or false. The participants were separated into two groups that got different target sentences in the same stories. Therefore, all the materials were counterbalanced. Figure 8 below shows one example of the testing materials. For Group 1, the target sentence was “A rabbit is sharing an umbrella with a turtle”. The subject was ‘one rabbit’, and the indirect object was ‘one turtle.’ For Group 2, the target sentence was, “A turtle is sharing an umbrella with a rabbit.” Here, the subject was ‘one turtle’ and the indirect object was ‘one rabbit’.

Figure 8. An example of switching the subject and the indirect object



<b>Group A: Rabbit &amp; Turtle</b>			
<b>Picture</b>			
			
<b>Target sentence</b>			
Thokki han mali-ka rabbit one-CL-NOM i-ss-ta. be-PRG-DEC	kepuki han mali-eykey turtle one-CL-DAT	usan-han a-lul umbrella one-CL-ACC	ssu-ywecu-ko use-give-CONJ
‘One rabbit is sharing one umbrella with one turtle.’			
<b>Predicted correct answer</b> → <b>True</b> / False		<b>Predicted correct answer</b> → True / <b>False</b>	

Figure 8. (cont'd)

---

**Group B: Turtle & Rabbit**

---

**Picture**




---

**Target sentence**

Kepuki han mali-ka thokk han mali-eykey usan-hana-lul ssu-ywecu-ko  
 turtle one-CL-NOM rabbit one-CL-DAT umbrella one-CL-ACC use-give-CONJ  
 i-ss-ta.  
 be-PRG-DEC  
 ‘One turtle is sharing one umbrella with one rabbit.’

---

**Predicted correct answer** → **True** / False

**Predicted correct answer** → True / **False**

---

All the experimental sentences were the same for both adults and children, except for how they were presented. The difference was that, for children, the stories and questions were repeated when they did not understand, did not respond at all, or kept changing answers. However, the questions were said only once for adults. Moreover, 48 filler questions were used for adults, so the purpose of the experiment was not apparent to them. The filler questions were all about weather, colors, heights, or actions, which were not related to plurality at all. The target questions and filler questions are in the ratio of 1:2.

**4.2.5 Predictions**

Miller (2007) proposes the Variability Delay Hypothesis. She argues that variable input will delay the acquisition of grammatical morphology since the variability brings about ambiguity. In the case of Korean, children will take more time compared to English children, who master the plural morpheme before three years of age because the input of the plural morpheme is consistent. Also, Korean children will take longer to learn plural morphology than

Chilean Spanish children, according to our hypothesis. In Spanish, plural marking is obligatory, but it is not always realized due to a phonological process. On the other hand, the Korean pluralizer is truly optional and has animacy restrictions. Thus, the use of the Korean pluralizer is less frequent than that of Spanish.

Second, the IPM *-tul* is associated with the noun to which it attaches and gives a plural interpretation to the noun. If children know the interpretation of *-tul*, they will interpret it as plural. Also, *-tul* plays the same role in subject and indirect object position. If children know the role of *-tul*, they will perform well when it is attached either to the subject or the indirect object.

Third, based on the observation of the use of the EPM *-tul*, it is expected that the EPM *-tul* is associated with its subject in a sentence. If the use of the EPM is related to its subject, adults' interpretation will confirm this hypothesis. If children understand this relation between the subject and the EPM, they will exhibit similar interpretations.

Fourth, researchers have found that each inflection is acquired at different stages by young children (Brown, 1973; Hsieh et al., 1999; Johnson et al., 2005). For instance, verb inflections are harder to acquire than noun inflections in the case of English. Comparing the understanding of the IPM and the EPM *-tul*, the EPM will be harder to master since it pluralizes the subject in a sentence wherever it is attached. The EPM can be close or far from the pluralized element, the subject, which is less local. The IPM may be a lot easier for children since it pluralizes the closest NP, which is most local.

Lastly, age differences will be found in terms of the linguistic ability. Six-year-old children will perform differently from eight-year-old children. Over years, children will become more adult-like.



#### 4.2.6 Results

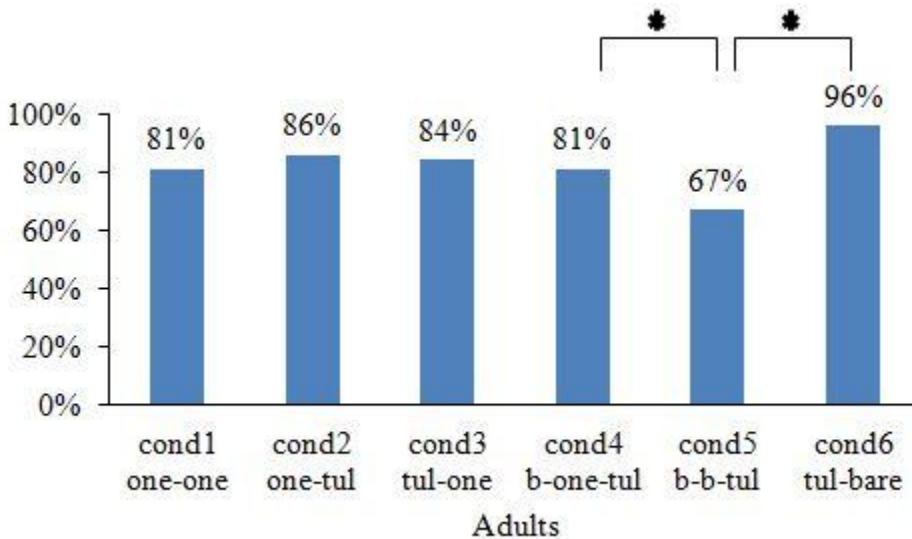
We used the responses of adults as a control group to compare three different age groups, six, seven, and eight-year-old children. Descriptive statistics for adults' responses are illustrated in Table 3 below. In order to analyze the results, we only extracted expected correct "No" responses from our data. Conroy (2009) discusses the Principle of Charity, a widespread assumption on using the True Value Judgment Task, and which proposes that children tend to assent to the truth of a sentence if they can. In a scenario, for instance, a target sentence is true even if it is ambiguous in such a way that the scenario makes only one reading of the sentence true. By using correct "No" responses, we can evaluate children's grammatical knowledge with more accuracy.

Table 3. Percentage of predicted correct responses by adults

	All ("Yes" and "No") responses	Only "No" responses
Cond 1 ONE-ONE	87% (278/320)	81% (129/160)
Cond 2 ONE-TUL	84% (268/320)	86% (138/160)
Cond 3 TUL-ONE	83% (264/320)	84% (134/160)
Cond 4 BARE-ONE-TUL	73% (232/320)	81% (130/160)
Cond 5 BARE-BARE-TUL	68% (219/320)	67% (107/160)
Cond 6 TUL-BARE	87% (279/320)	96% (154/160)

Note. N = 80.

Figure 9. Percentage of predicted correct “No” responses by adults  
 (The asterisk indicates that participants show a significant different behavior in two conditions.)



As a control, Condition 1, ONE-ONE, was anticipated to be the cleanest of all conditions since it tests if participants know that one-NP refers to singular. Adults correctly responded 81% of the time to the statements containing one-NP. The responses show that adults associate one-NP with singular. Rather, some adult participants in group B did not like the singular interpretation in the experimental items, which should be interpreted as singular. They seemed to have interpreted ‘one’ to mean ‘at least one’. The reason for this is unclear although not unacceptable. As a result, their incorrect responses affected the percentage of Condition 1, ONE-ONE. The result was lower than expected.

Condition 2 and Condition 3, ONE-TUL and TUL-ONE, were used to test if participants understood the interpretation of *-tul* when it is attached to a noun. Adults gave correct responses 86% and 84% of the time. The responses show that adults associate NP-*tul* with plurality. If subjects understood the interpretation of NP-*tul*, they would behave the same in Condition 2, ONE-TUL, and Condition 3, TUL-ONE. To compare these two conditions, a paired-samples t-

test was conducted. Adults did not show any significantly different behaviors in Condition 2 (mean proportion correct = .86, SD = .22) and Condition 3 (mean proportion correct = .84, SD = .26);  $t(79) = .66$ ,  $p = .508$ . Given adults' responses, our first prediction, that *-tul* plays the same role in subject and indirect object position, was confirmed.

Condition 4, BARE-ONE-TUL, was used to test the use of EPM. The subject is a bare noun, and the indirect object is singular. The subject would be interpreted as plural, since *-tul* attached to the verb forces a plural interpretation to the subject. The prediction is that the interpretation of Condition 4, BARE-ONE-TUL, has the same interpretation with Condition 3, TUL-ONE. These two conditions should be interpreted as a plural subject and a singular indirect object. Here, adults did not show significantly different behaviors in Condition 3 (mean proportion correct = .84, SD = .26) and Condition 4 (mean proportion correct = .81, SD = .31);  $t(79) = .59$ ,  $p = .559$ . The results suggest that adults gave the same interpretations (a plural subject and a singular indirect object) with different forms (with the IPM and with the EPM, respectively).

If the use of the EPM is related to its subject, adults' interpretation will confirm our third hypothesis. The interpretation of the EPM is tested in Condition 4 and Condition 5, BARE-ONE-TUL and BARE-BARE-TUL. In these two conditions, the subjects are bare nouns that can be either singular or plural, but they would be interpreted as plural since the EPM *-tul* on the verbs forces a plural subject. In Condition 4, BARE-ONE-TUL, adults responded correctly 81% of the time to statements containing the EPM-*tul*. They seem to interpret the EPM *-tul* as associated with a plural subject. In Condition 5, BARE-BARE-TUL, adults seem to be less confident about associating the EPM *-tul* with a plural subject. They gave correct responses 67% of the time, compared to 81% of the time for Condition 4, BARE-ONE-TUL. There was a significant

difference in Condition 4 (mean proportion correct = .81, SD = .31) and Condition 5 (mean proportion correct = .67, SD = .39);  $t(79) = 3.00$ ,  $p = .004$ , marked by asterisks in Figure 9. The results suggest that subjects have more difficulty interpreting the EPM in Condition 5 than the EPM in Condition 4.

If Condition 5, BARE-BARE-TUL, requires a plural subject interpretation, it should have the same interpretation as Condition 6, TUL-BARE. Adults gave correct responses 96% of the time in Condition 6, TUL-BARE, while they gave correct responses 67% in Condition 5, BARE-BARE-TUL. There was a significantly different behavior in Condition 5 (mean proportion correct = .67, SD = .39) and in Condition 6 (mean proportion correct = .96, SD = .13);  $t(79) = -6.52$ ,  $p = .000$ . Sentences with the IPM (Condition 6) are differently treated from ones with the EPM (Condition 5). The results suggest that sentences with the IPM are easier for adults to interpret than sentences with the EPM.

The results of the adults showed that they associated one-NP to the singular interpretation and NP-*tul* to the plural interpretation. However, the interpretation of the EPM-*tul* did not clearly show that they associated it to a singular subject. In Condition 4, BARE-ONE-TUL, adults tended to associate the EPM -*tul* to a plural subject interpretation. In Condition 5, BARE-BARE-TUL, it seemed that adults had a harder time to interpret the EPM on the verb. Some people seemed not to like a bare noun in subject and in indirect object with the EPM-*tul*.

Let us now consider children's performance on each condition. Descriptive statistics for children's responses are illustrated in Table 4 below.

Table 4. Percentage of predicted correct all (“Yes” and “No”) responses by children

	All (“Yes” and “No”) responses		
	6 yrs	7yrs	8yrs
Cond 1 ONE-ONE	55% (44/80)	79% (63/80)	84% (67/80)
Cond 2 ONE-TUL	49% (39/80)	65% (52/80)	80% (64/80)
Cond 3 TUL-ONE	53% (42/80)	78% (62/80)	71% (57/80)
Cond 4 BARE-ONE-TUL	61% (49/80)	60% (48/80)	81% (65/80)
Cond 5 BARE-BARE-TUL	49% (39/80)	55% (44/80)	59% (47/80)
Cond 6 TUL-BARE	46% (37/80)	65% (52/80)	74% (59/80)

Note. N = 60 (20 per age group)

Table 5. Percentage of predicted correct “No” responses by children

	Only “No” responses		
	6 yrs	7yrs	8yrs
Cond 1 ONE-ONE	20% (8/40)	58% (23/40)	68% (27/40)
Cond 2 ONE-TUL	15% (6/40)	35% (14/40)	63% (25/40)
Cond 3 TUL-ONE	18% (7/40)	65% (26/40)	50% (20/40)
Cond 4 BARE-ONE-TUL	30% (12/40)	45% (18/40)	73% (29/40)
Cond 5 BARE-BARE-TUL	8% (3/40)	25% (10/40)	30% (12/40)
Cond 6 TUL-BARE	10% (4/40)	35% (14/40)	48% (19/40)

Note. N = 60 (20 per age group)

Figure 10. Percentage of predicted correct “No” responses by six-year-olds

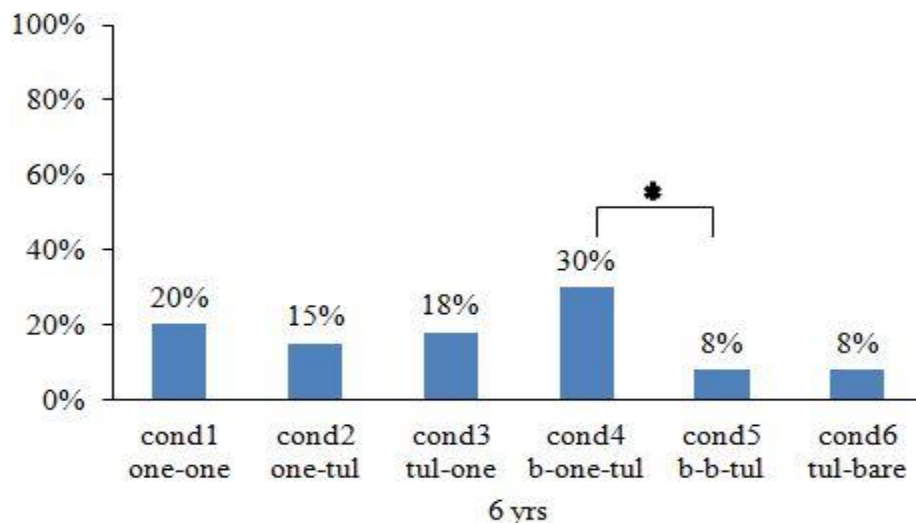


Figure 11. Percentage of predicted correct “No” responses by seven-year-olds

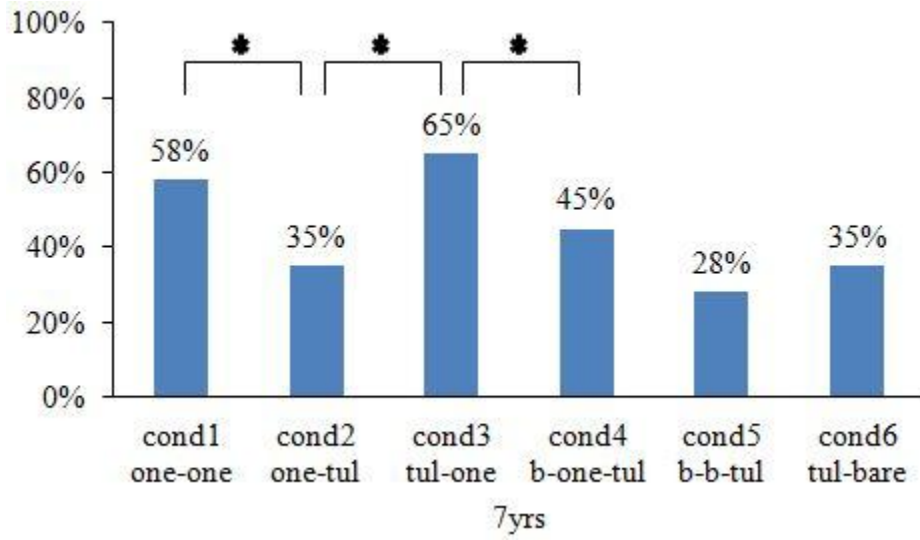


Figure 12. Percentage of predicted correct “No” responses by eight-year-olds

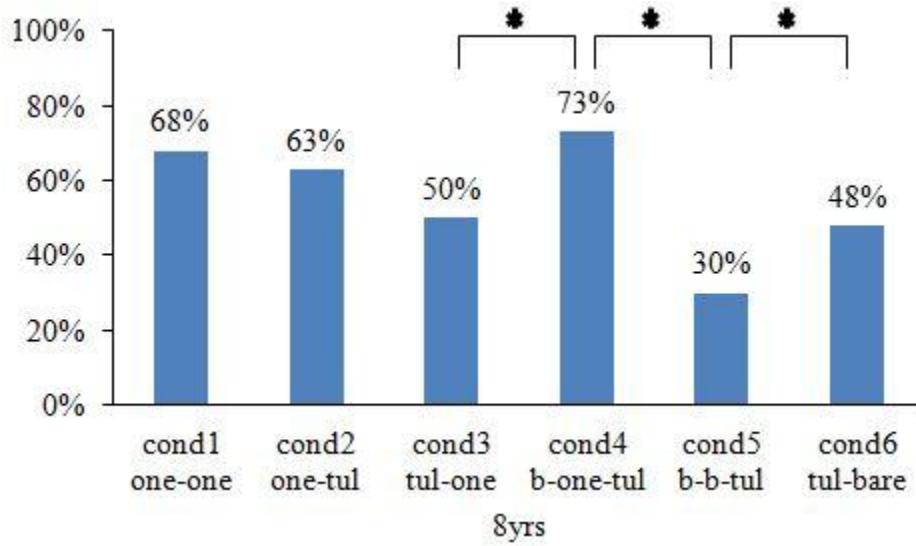
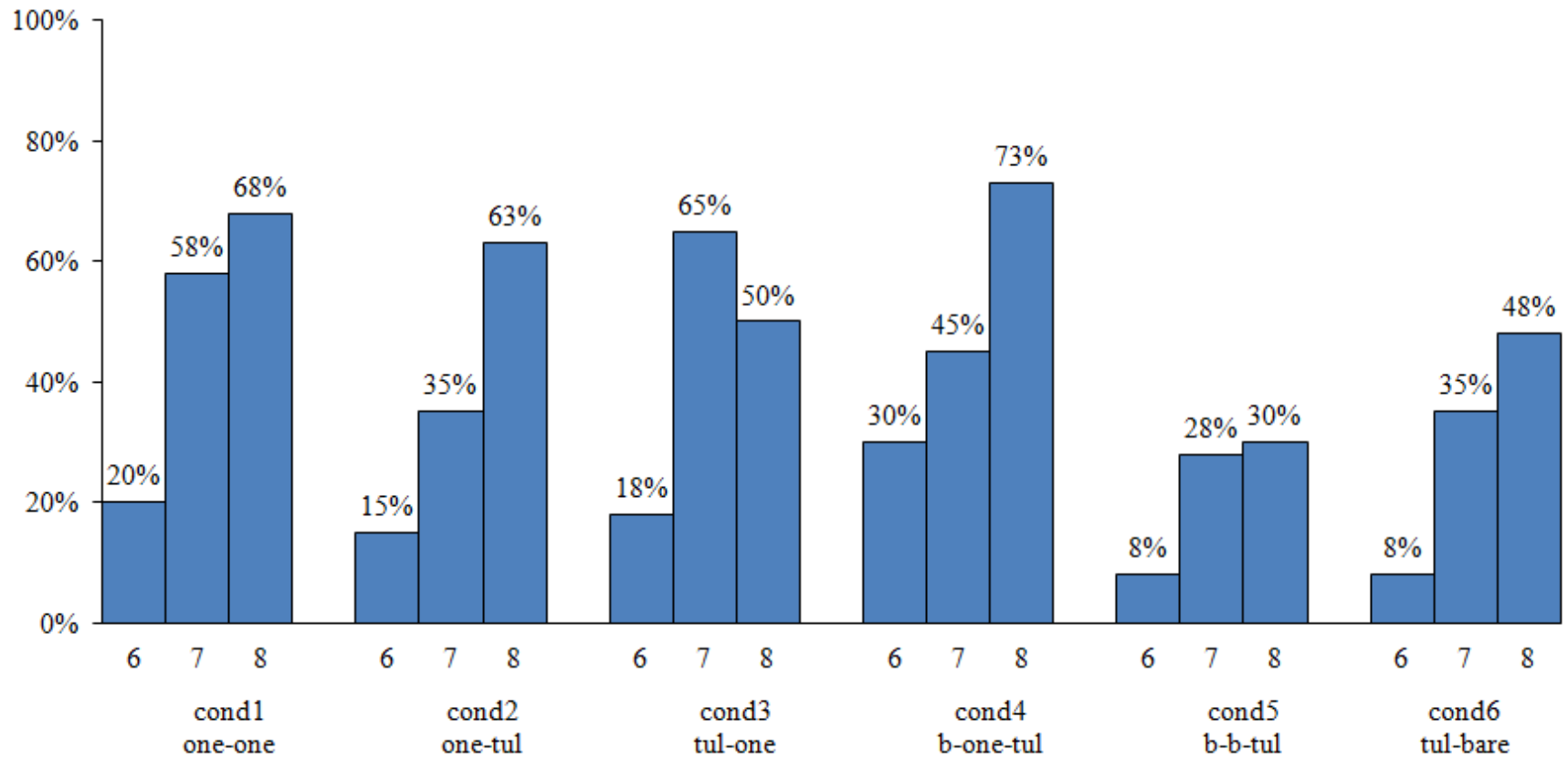


Figure 13. Percentage of predicted correct “No” responses by all children per each condition



In all conditions, we found that the youngest children, six-year-olds, had a strong “Yes” bias<sup>9</sup> to true responses, and they were significantly different from other groups. So, we cannot confirm the performance of the six-year-olds, and will not discuss them any further. We, next, compare seven- and eight-year-old children and adults.

In Condition 1, ONE-ONE, seven- and eight-year-olds correctly responded 58% and 68% of the time to the statements containing one-NP, respectively. First, a one-way between subjects ANOVA was conducted to compare the effect of ages on Condition 1, ONE-ONE. There was a significant effect of ages on this condition at the  $p < .05$  level ( $F(3,136) = 18.733$ ,  $p = .000$ ). Next, post hoc comparisons using the Tukey HSD test indicated that the mean score of seven-year-olds (mean proportion correct = .58, SD = .37) did not significantly differ from that of eight-year-olds (mean proportion correct = .68, SD = .37). However, seven-year-olds were significantly different from adults (mean proportion correct = .80, SD = .28), while the mean score of eight-year-olds (mean proportion correct = .68, SD = .37) did not significantly differ from that of adults (mean

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<sup>9</sup> A paired-samples t-test was conducted to compare predicted correct “Yes” and “No” responses in each condition. In Condition 1, ONE-ONE, there was a significant difference in predicted correct “Yes” responses (mean proportion correct = .90, SD = .26) and “No” responses (mean proportion correct = .20, SD = .41);  $t(19) = 5.272$ ,  $p = .000$ . In Condition 2, ONE-TUL, there was a significant difference in predicted correct “Yes” responses (mean proportion correct = .83, SD = .34) and “No” responses (mean proportion correct = .15, SD = .24);  $t(19) = 6.469$ ,  $p = .000$ . In Condition 3, TUL-ONE, there was a significant difference in predicted correct “Yes” responses (mean proportion correct = .88, SD = .28) and “No” responses (mean proportion correct = .18, SD = .29);  $t(19) = 6.294$ ,  $p = .000$ . In Condition 4, BARE-ONE-TUL, there was a significant difference in predicted correct “Yes” responses (mean proportion correct = .93, SD = .24) and “No” responses (mean proportion correct = .30, SD = .38);  $t(19) = 5.225$ ,  $p = .000$ . In Condition 5, BARE-BARE-TUL, there was a significant difference in predicted correct “Yes” responses (mean proportion correct = .90, SD = .21) and “No” responses (mean proportion correct = .08, SD = .18);  $t(19) = 11.000$ ,  $p = .000$ . In Condition 6, TUL-BARE, there was a significant difference in predicted correct “Yes” responses (mean proportion correct = .83, SD = .34) and “No” responses (mean proportion correct = .10, SD = .21);  $t(19) = 8.542$ ,  $p = .000$ . The results suggest that seven- and eight-year-olds tend to choose “Yes” responses, rather than “No” responses, in all conditions.



proportion correct = .80, SD = .28). The results suggest that in Condition 1, ONE-ONE, adults and eight-year-olds associate one-NP as singular, better than seven year-olds, which is intriguing.

In Condition 2, ONE-TUL, seven- and eight-year-olds correctly responded 35% and 63% of the time to the statements containing NP-*tul*, respectively. First, a one-way between subjects ANOVA was conducted to compare the effect of ages on Condition 2, ONE-TUL. There was a significant effect of ages on this condition at the  $p < .05$  level ( $F(3,136) = 47.134$ ,  $p = .000$ ). Next, post hoc comparisons using the Tukey HSD test indicated that the mean score of seven-year-olds (mean proportion correct = .35, SD = .37) was significantly different from eight-year-olds (mean proportion correct = .63, SD = .36) and adults (mean proportion correct = .86, SD = .22). Eight-year-olds (mean proportion correct = .63, SD = .36) were significantly different from adults (mean proportion correct = .86, SD = .22). The results suggest that in Condition 2, ONE-TUL, seven and eight-year-olds treat NP-*tul* differently than adults.

In Condition 3, TUL-ONE, seven- and eight-year-olds correctly responded 65% and 50% of the time to the statements containing NP-*tul*, respectively. First, a one-way between subjects ANOVA was conducted to compare the effect of ages on Condition 3, TUL-ONE. There was a significant effect of ages on this condition at the  $p < .05$  level ( $F(3,136) = 30.276$ ,  $p = .000$ ). Next, post hoc comparisons using the Tukey HSD test indicated that the mean score of seven-year-olds (mean proportion correct = .65, SD = .29) did not significantly differ from eight-year-olds (mean proportion correct = .50, SD = .40) and adults (mean proportion correct = .84, SD = .26). However, eight-year-olds (mean proportion correct = .50, SD = .40) were significantly different from adults (mean proportion correct = .84, SD = .26). The results show that in Condition 3, TUL-ONE, seven-year-olds treat NP-*tul* as adults do, but eight-year-olds not. It is not consistent

with what was found in Condition 2, ONE-TUL, which both seven and eight-year-olds treat NP-*tul* differently than adults do.

Condition 4, BARE-ONE-TUL, was used for testing the use of EPM. The subject would be interpreted as plural since *-tul* attached to the verb forces a plural interpretation of the subject. The prediction is that the interpretation of this condition should be identical to Condition 3, TUL-ONE. In Condition 4, BARE-ONE-TUL, seven- and eight-year-olds correctly responded 45% and 73% of the time to the statements containing the EPM *-tul*, respectively. First, a one-way between subjects ANOVA indicated that there was a significant effect of ages on Condition 4, BARE-ONE-TUL, at the  $p < .05$  level ( $F(3,136) = 15.193, p = .000$ ). Next, post hoc comparisons using the Tukey HSD test indicated that the mean score of seven-year-olds (mean proportion correct = .45, SD = .39) did not significantly differ from that of eight-year-olds (mean proportion correct = .73, SD = .38). However, seven-year-olds were significantly different from adults (mean proportion correct = .81, SD = .31). Eight-year-olds did not significantly differ from adults (mean proportion correct = .81, SD = .31). The results show that in Condition 4, BARE-ONE-TUL, eight-year-olds associate EPM-*tul* with a plural subject in Condition 4, as adults do.

In Condition 5, BARE-BARE-TUL, seven- and eight-year-olds correctly responded 25% and (30%) of the time to the statements containing the EPM *-tul*, respectively. First, a one-way between subjects ANOVA indicated that there was a significant effect of ages on Condition 5, BARE-BARE-TUL, at the  $p < .05$  level ( $F(3,136) = 19.646, p = .000$ ). Next, post hoc comparisons using the Tukey HSD test indicated that the mean score of seven-year-olds (mean proportion correct = .25, SD = .41) did not significantly differ from eight-year-olds (mean proportion correct = .30, SD = .34). Seven- and eight-year-olds were significantly different to

adults (mean proportion correct = .67 SD = .39). The results suggest that in Condition 5, BARE-BARE-TUL, seven- and eight-year-olds do not treat the EPM *-tul* as adults do.

In Condition 6, TUL-BARE, seven- and eight-year-olds correctly responded 35% and 48% of the time to the statements containing NP-*tul*, respectively. First, a one-way between subjects ANOVA indicated that there was a significant effect of ages on Condition 6, TUL-BARE, at the  $p < .05$  level ( $F(3,136) = 73.308, p = .000$ ). Next, post hoc comparisons using the Tukey HSD test indicated that the mean score of seven-year-olds (mean proportion correct = .35, SD = .43) did not significantly differ from eight-year-olds (mean proportion correct = .48, SD = .47). However, seven- and eight-year-olds were significantly different to adults (mean proportion correct = .96 SD = .13). The results suggest that in Condition 6, TUL-BARE, seven- and eight-year-olds do not treat NP-*tul* as adults do.

Now, we compare each condition in interpretation. Condition 2, ONE-TUL, and Condition 3, TUL-ONE, were used to test if children knew NP-*tul* is interpreted as plural independent of syntactic position. A paired-samples t-test was conducted to compare the difference between Condition 2 and Condition 3. For seven-year-olds, there was a significantly different behavior in Condition 2 (mean proportion correct = .35, SD = .37) and in Condition 3 (mean proportion correct = .65, SD = .29);  $t(19) = -3.94, p = 0.001$ . The results show that seven-year-olds prefer NP-*tul* in subject position than indirect object position. Eight-year-olds, on the other hand, did not show significantly different behaviors in Condition 2 (mean proportion correct = .63, SD = .36) and in Condition 3 (mean proportion correct = .50, SD = .40);  $t(19) = 1.75, p = .096$ . The results show that eight-year-olds equally treat NP-*tul* in subject and indirect object, which is consistent with what was found in adults' responses.

Next, Condition 3, TUL-ONE, and Condition 4, BARE-ONE-TUL, are compared, since these conditions are interpreted as a plural subject and a singular indirect object. A paired-samples t-test was conducted to compare the difference in Condition 3 and Condition 4. For seven-year-olds, there was a significant difference between Condition 3 (mean proportion correct = .65, SD = .29) and Condition 4 (mean proportion correct = .45, SD = .39);  $t(19) = 2.990$ ,  $p = 0.008$ . For eight-year-olds, there was also a significant difference between Condition 3 (mean proportion correct = .50, SD = .40) and Condition 4 (mean proportion correct = .73, SD = .38);  $t(19) = -2.44$ ,  $p = .025$ . The results suggest that seven- and eight-year-olds treat the IPM in Condition 3 and the EPM in Condition 4 differently. We assume that the IPM would be easier than the EPM. Surprisingly, eight-year-olds correctly responded 50% of the time in Condition 3, TUL-ONE, and performed best (73%) in Condition 4 with the EPM, which was unexpected.

Third, Condition 4, BARE-ONE-TUL, and Condition 5, BARE-BARE-TUL, were used to test the EPM *-tul*. If the EPM-*tul* forces a plural subject interpretation, children should perform the same in Condition 4, BARE-ONE-TUL, and Condition 5, BARE-BARE-TUL. A paired-samples test was conducted to compare Condition 4 and Condition 5. Seven-year-olds did not show significant different behaviors in Condition 4 (mean proportion correct = .45, SD = .39) and in Condition 5 (mean proportion correct = .28, SD = .41);  $t(19) = 1.677$ ,  $p = .110$ . The results suggest that seven-year-olds seemed not to know exactly how to interpret the EPM *-tul* in Condition 4 and Condition 5. For eight-year-olds, there was a significant difference between Condition 4 (mean proportion correct = .73, SD = .38) and Condition 5 (mean proportion correct = .30, SD = .34);  $t(19) = 5.667$ ,  $p = .000$ . The results suggest that eight-year-olds seem to prefer the EPM with a plural subject interpretation in Condition 4, BARE-ONE-TUL. However, they

did not show the same behavior in Condition 5, BARE-BARE-TUL. So, we cannot conclude that eight-year-olds associate the EPM with a plural subject interpretation.

Fourth, Condition 6, TUL-BARE, should be interpreted as Condition 5, BARE-BARE-TUL. In these two conditions, both subjects are interpreted as plural, and indirect objects are interpreted as either singular or plural. A paired-samples t-test was conducted to compare the difference in Condition 5 and Condition 6. Seven-year-olds did not know significantly different behavior between Condition 5 (mean proportion correct = .28, SD = .41) and Condition 6 (mean proportion correct = .35, SD = .44);  $t(19) = -.809, p = .428$ . The results suggest that seven-year-olds did not know the EPM *-tul*, rather than showing that they have the same interpretation in Condition 5 and Condition 6. For eight-year-olds, there was a significant difference between Condition 5 (mean proportion correct = .30, SD = .34) and Condition 6 (mean proportion correct = .48, SD = .47);  $t(19) = -2.333, p = .031$ . The results suggest that eight-year-olds seemed to have a harder time interpreting the EPM in Condition 5 than the IPM in Condition 6. Overall, however, the means are too low for further conclusions.

To summarize, we found that there is an age difference in conditions. Eight-year-olds performed better in most conditions since, we assume, they have had much more exposure to the IPM and the EPM *-tul* than seven-year-olds. In Condition 2, ONE-TUL, seven- and eight-year-olds correctly responded at chance (35%) and above chance (63%), respectively. Eight-year-olds are more likely to seem that they associate NP-*tul* as an IPM to plural. In Condition 3, TUL-ONE, seven- and eight-year-olds correctly responded above chance (65%) and at chance (50%), respectively. Only in this condition, seven-year-olds performed better than eight-year-olds. They seemed to associate NP-*tul* as plural in Condition 4, TUL-ONE, but not to know NP-*tul* as plural in Condition 2, ONE-TUL. We assume that seven-year-olds prefer NP-*tul* in subject position

than indirect object position, while eight-year-olds treat NP-*tul* in both subject and indirect object as adults do. In Condition 4, BARE-ONE-TUL, seven- and eight-year-olds correctly responded below chance (45%) and above chance (73%), respectively. Seven-year-olds seemed to have no idea how to interpret the EPM while eight-year-olds associated the EPM to a plural subject interpretation. In Condition 5, BARE-BARE-TUL, seven- and eight-year-olds correctly responded below chance (28%) and (30%), respectively. In this condition, they all seemed to have no idea of the EPM. We cannot conclude that the EPM forces a plural subject interpretation from the responses of seven- and eight-year-olds. Lastly, we assume that the IPM is easier than the EPM. The findings relating to Condition 5, BARE-BARE-TUL, seemed to support this idea since seven- and eight-year-olds performed most poorly (28%) and (30%), respectively. In Condition 4, BARE-ONE-TUL, however, we cannot say that the IPM is easier than the EPM. since eight-year-olds correctly responded above chance (73%) of the time in Condition 4 with the EPM, which is the most highest in all conditions and unexpected.

#### **4.2.7 Discussion**

Based on the results of all three age groups, Korean children seemed to have difficulty interpreting the IPM and the EPM *-tul* even by age eight. Nevertheless, we found a clear developmental pattern such that eight-year-olds performed better than seven-year-olds. Performances of seven- and eight-year-olds were still not adult-like in many conditions. For instance, eight-year-olds were significantly different from adults in Condition 2, 3, 5 and 6. Seven-year-olds were significantly different from adults in Condition 1, 2, 4, 5 and 6.

As expected, the acquisition of plural morphology is delayed since plural marking is truly optional, and the input is variable. In the case of Chilean Spanish, children also take some time to

master plural morphology, but they master it by age seven since plural marking is optional, and the input is variable only due to a phonological process. In our experiment, we observed that Korean children were not adult-like by age eight in Condition 2, 3, 5 and 6. Thus, Hypothesis 1, that Korean children may have a harder time learning plural morphology than Chilean Spanish children do, is confirmed. Obviously, the variability in Korean is different to that in Chilean Spanish.

In our experiment, Condition 1, ONE-ONE, was meant as a simple control, and we expected the best performance. Adults should have performed perfectly. In the experiment, however, adults gave correct responses 81% of the time, which was not as high as expected. In Condition 1, ONE-ONE, four items were used, two true and two false. We only extracted two correct “No” responses for our results. As illustrated below, one of these is Item 2 (Dog-Sheep) in which adults correctly responded 82% of the time. The other is Item 4 (Bear-Owl) in which adults correctly responded 81% of the time.

Figure 14. Item 2 in Condition 1\_ONE-ONE (in Version 1)

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**Item 2: Dog & Sheep**

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**Picture**




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**Target sentence**

Kay han mali-ka yang han mali-eykey kil-ul annayhaycu-ko i-ss-ta.  
 dog one-CL-NOM sheep one-CL-DAT way-ACC show-CONJ be-PRG-DEC  
 ‘One dog is showing the way to one sheep.’

---

**Predicted correct answer** → True / **False**

---

Figure 15. Item 5 in Condition 1\_ONE-ONE (in Version 2)

---

**Item 5: Owl & Bear**

---

**Picture**



---

**Target sentence**

Puengi han mali-ka kom han mali-eykey tungci han kay-lul cu-ko i-ss-ta.  
owl one-CL-NOM bear one-CL-DAT net one-CL-ACC give-CONJ be-PRG-DEC  
'One owl is giving one net to one bear.'

---

**Predicted correct answer** → True / **False**

---

One reason that the rate of correct responses in Condition 1 was not quite as high would be that adults treated singular as meaning 'at least one'. In Figure 13, for instance, this could mean that the picture could be seen as "There is a dog which is showing the way to a sheep, and there is another sheep standing right next to his friend". It seemed that some adults said "Yes" to the target sentence with one-NP since a dog is showing the way to 'at least one sheep'. The other reason could be that the experimental picture gave an incorrect representation. As illustrated in Figure 14, for instance, "There is an owl which is giving a net to two bears". However, it could be seen as "There are two bears which are giving a net to an owl", since the net originally belongs to the owl according to the relevant context. In other words, the subject and the indirect object could be switched due to the presentation of the picture when interpreting. But if this was the case, there should have been more "No" responses. Therefore, we believe the first explanation to be correct, i.e. adults accepted the 'at least one' interpretation.



Figure 16. Item 3 in Condition 6\_TUL-BARE (in Version 1)

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**Item 5: Monkey & Squirrel**

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**Picture**



---

**Target sentence**

Wensungi-tul-i      talamcwi-eykey    panana han kay-lul      mekyecu-ko      i-ss-ta.  
monkey-PL-NOM    squirrel-DAT      banana one-CL-ACC    feed-CONJ      be-PRG-DEC  
'Monkeys are feeding one banana to one squirrel/squirrels.'

---

**Predicted correct answer** → True / **False**

---

Next, we observed the role of *-tul* either in subject or in indirect object position in Condition 2, ONE-TUL, and Condition 3, TUL-ONE. Adults did not show significantly different behaviors. Also, eight-year-olds did not show significantly different behaviors in Condition 2 and Condition 3. Adults and eight-year-olds seemed not to be influenced by the place in which *-tul* appeared. Therefore, in our experiment with the responses of adults and eight-year-olds, Hypothesis 2 could be confirmed. However, for seven-year-olds, there was a significant difference in behavior in Condition 2, ONE-TUL, and Condition 3, TUL-ONE. Seven-year-olds seemed to prefer the IPM in subject position to the IPM in the indirect object position. They may focus more on the subject interpretation than on the indirect object interpretation. We do not exactly know the reason for this. With time, children seem to learn that the IPM *-tul* plays the same role in subject and indirect object position. Further research could investigate this issue.

For the analysis of the interpretation of the EPM *-tul*, adults and eight-year-olds seemed to interpret the EPM *-tul* as being associated with a plural subject in Condition 4, BARE-ONE-TUL. Adults correctly responded 81% of the time, and eight-year-olds did 73% in this condition. On the other hand, in Condition 5, BARE-BARE-TUL, adults correctly responded 67% of the

time, and eight-year-olds gave correct responses 30% to statements containing the EPM-*tul*, which is much lower than the one in Condition 4, BARE-ONE-TUL.

In conditions with the EPM, adults seem to be more confident about interpreting the EPM *-tul* in Condition 4, BARE-ONE-TUL, than in Condition 5, BARE-BARE-TUL. In Condition 4, BARE-ONE-TUL, the subject could be interpreted as either singular or plural since it appears bare, and the indirect object is interpreted as singular. Then, there is only one noun phrase in the subject position that the EPM *-tul* affects. In Condition 5, BARE-BARE-TUL, on the other hand, there are two noun phrases that could be pluralized since both subject and indirect object are bare nouns. In this respect, Condition 4, BARE-ONE-TUL, would be easier to interpret if subjects knew that the EPM is associated with the plural subject. Besides, adults also showed that they were a little more confident about interpreting the EPM in Condition 4, BARE-ONE-TUL (81%) than in Condition 5, BARE-BARE-TUL (67%). Some adults did not like the target sentences when bare nouns appear with the EPM. They seemed to think that the EPM should be in agreement with an already plural subject. Hypothesis 3 could thus be confirmed in the adult group. Eight-year-olds showed a greatly different behavior in Condition 4 (73%) and Condition 5 (30%). We cannot confirm that the EPM forces a plural interpretation, based on the responses of eight-year-olds. Besides, seven-year-olds gave correct responses 45% of the time in Condition 4 and 28% of the time in Condition 5, since the percentage correct is too low to draw a conclusion.

Comparing the IPM and EPM, it seems that the IPM is easier for children to understand in Condition 5, BARE-BARE-TUL. Seven-year-olds gave correct responses 65% of the time in Condition 3 with the IPM and 28% of the time in Condition 5 with the EPM. Eight-year-olds gave correct responses 50% of the time in Condition 3 with the IPM and 30% of the time in Condition 5 with the EPM. Adults also showed that they gave correct responses 84% of the time

in Condition 3 with the IPM and 67% of the time in Condition 5 with the EPM. Thus, we can conclude that our Hypothesis 4 is proven in terms of Condition 5, BARE-BARE-TUL. However, in the other condition with the EPM, Condition 4, BARE-ONE-TUL, seven- and eight-year-olds correctly responded 45% and 73% of the time, which are higher percentages than in Condition 2 (35% and 63%). Hence, we cannot confirm that the IPM is easier than the EPM on the basis of the responses in Condition 4, BARE-ONE-TUL.

Lastly, the developmental patterns are clearly observed even though the youngest children, six-year-olds, have a strong “Yes” bias. They seemed to have little idea what they were dealing with in the experiment. Seven-year-olds clearly performed better than six-year-olds did. Eight-year-olds performed better than seven-year-olds and the closest to what adults did of the three age groups. The oldest groups were more confident about distinguishing the difference between singular and plural than two other younger groups. The older they were, the fewer errors they made. Nevertheless, eight-year-olds seem to need more time to master the pluralizer *-tul*. Therefore, our Hypothesis 5 regarding age differences in the acquisition of plurality is confirmed.

Table 6. A summary table of hypotheses and results

Hypotheses	Results		
	7yrs	8yrs	Adults
H1) Korean children may have a harder time learning plural morphology than Chilean Spanish speaking children do.	<b>Confirmed</b>	<b>Confirmed</b>	N/A
H2) The IPM <i>-tul</i> plays the same role in subject and indirect object.	Unconfirmed	<b>Confirmed</b>	<b>Confirmed</b>
H3) The EPM <i>-tul</i> is associated with the subject in a sentence.	Unconfirmed	Unconfirmed	<b>Confirmed</b>
H4) The IPM will be acquired earlier than the EPM.	<b>Confirmed in Cond 5</b> (Unconfirmed in Cond 4)	<b>Confirmed in Cond 5</b> (Unconfirmed in Cond 4)	<b>Confirmed</b>
H5) The older they are, the fewer errors they make.	<b>Confirmed</b>	<b>Confirmed</b>	<b>Confirmed</b>

## CHAPTER 5

### CONCLUSION

The Korean pluralizer *-tul* has some interesting properties: (1) it is not obligatory, but optional; (2) it attaches to non-nominal elements (the EPM) as well as nominals (the IPM); and (3) it has animacy restrictions. Our study was designed to investigate children's knowledge of *-tul* as forcing a plural interpretation. We examined how children interpret the IPM and the EPM *-tul*.

First, we found that NP-*tul* (as an IPM) is associated with a plural interpretation in accordance with Kang's (1994) and Baek's (2002) argument. In our experiment, adults showed that they interpreted NP-*tul* (as an IPM) as plural. Seven- and eight-year-olds seemed to interpret NP-*tul* as plural, but they were still not completely adult-like.

Overall, seven- and eight-year-olds seemed to be more confident with a singular interpretation than with a plural interpretation. This may be because of the optionality of *-tul*. The basic idea is that if children are exposed to variable input, and the interpretation is ambiguous, the acquisition of grammatical morphology is delayed. The results in our experiment clearly show the effect of variability in the input of plurality. If *-tul* were obligatorily marked, and the input is consistent, Korean children would probably acquire this pluralizer earlier. Moreover, we found that Korean children have a harder time acquiring plural morphology than Chilean Spanish-speaking children do. In Korean and Chilean Spanish, because the input for plural is variable, and the interpretation is ambiguous, the acquisition is delayed. However, other properties of plural morphology are different in these two languages. Korean plural marking is truly optional while Chilean Spanish plural marking is obligatory, but the form is not always

realized due to a phonological process of lenition. Also, the Korean plural is restricted to animate nouns while Chilean Spanish has no restrictions. Consequently, Korean children, who do not behave as adults by eight, take longer to master plural morphology, compared to Chilean Spanish-speaking children who behave like adults by age seven. Rather, Korean children behave more like Chinese and Japanese children than Chilean Spanish-speaking children.

Also, we observed children's behavior when the IPM *-tul* appears in subject and indirect object position. If children know the role of *-tul*, they should perform well wherever it is attached to. In our study, seven-year-olds showed different behavior and seemed to be more confident about interpreting *-tul* in subject position. The reason for this might be frequency or the fact that the EPM affects subjects. Seven-year-olds disconfirmed our Hypothesis 2, but we do not exactly know why. This issue should be examined in further research. Interestingly, eight-year-olds did not show different behavior when *-tul* was in subject or the indirect object. They treated *-tul* equally regardless of the place to which it is attached, which is also observed in adults' responses.

Third, based on the adult responses, we confirmed that the interpretation of the EPM *-tul* is related to the subject in a sentence. To study the EPM as agreement, the data for the EPM should be collected in free speech. This would allow us to determine whether the IPM and the EPM are equally frequent or not.

Fourth, we compared the IPM and the EPM *-tul*. The IPM *-tul* is attached more locally than the EPM *-tul* in terms of its interpretative effect. The IPM *-tul* gives a plural interpretation to the noun phrase to which it is attached. The IPM *-tul* modifies the closest NP in a sentence. On the other hand, the EPM *-tul* forces a plural subject interpretation wherever it is attached. That is, the EPM *-tul* cares about the subject. Relying on this point, we assume that the IPM *-tul*

will be easier to learn than the EPM *-tul*. We found that seven- and eight-year-olds had more difficulty learning the EPM *-tul*, compared to the IPM *-tul*. Even adults showed that they were more confident about interpreting the IPM *-tul* than the EPM *-tul*, perhaps because it has more restrictions for certain speakers.

Fifth, in the perspective of the acquisition of plurality, we conclude that there are clear developmental patterns. The oldest children performed best and the youngest did worst. The six-year-olds had a “Yes” bias, and we cannot, obviously, talk about them, except to say that it shows a delay. The seven-year-olds made more mistakes than the eight-year-olds did. The improvement of the linguistic ability can be seen throughout the results of our experiment. The eight-year-olds’ responses were most close to adults’, but they were still not entirely adult-like. Over years, children undergo trial and error and try to make their linguistic ability perfect.

To summarize, the results of our experiment demonstrate that the IPM *-tul* is associated with a plural interpretation and that the EPM *-tul* is associated with a plural subject interpretation. Korean children by age eight are still not adult-like. It seems that the properties of the pluralizer *-tul* are semantically complicated, besides optional.

## APPENDICES



APPENDIX A

Version 1. Items for Group A

1. Item 1 (Rabbit & Turtle)

Picture 1



Picture 2



Picture 3



Mayu            hwachanghan        nal        i-ta.  
 Very            sunny                    day        be-DEC

‘It is a very sunny day.’

Kepuki-tul-i            sanchay-ul            nawa-ss-ta.  
 Turtle-PL-NOM        walk-ACC            go-PST-DEC

‘Turtles are going out for a walk’

Kapcaki            pi-ka            nayliki        sicakha-n-ta.  
 all of sudden        rain-TOP        falling        start-PRS-DEC

‘All of sudden, it starts to rain.’

Kepuki            twi-ey            thokki-ka            natana-n-ta.  
 turtle            beyond-LOC        rabbit-NOM        appear-PRS-DEC

‘Right beyond turtles, a rabbit/rabbits appear/appears.’

Thokki-un            usan-ul            tulko        o-n-ta.  
 Rabbit-NOM        umbrella-ACC        with        come-PRS-DEC

‘It is coming with an umbrella/umbrellas.’

Picture 4



Question 1.

Thokki            han mali-ka            kepuki    han mali-eykey    usan        hana-lul  
 rabbit            one CL-NOM        turtle    one CL-DAT        umbrella    one-ACC

ssu-ywecu-ko            i-ss-ta.  
 use-give-CONJ        be-PRG-DEC

‘One rabbit is sharing one umbrella with one turtle.’

2. Item 2 (Dog & Sheep)

Picture 1



Picture 2



Picture 3



Yang-tul-i mokcang-ey yeki ceki i-ss-ta.  
 sheep-PL-TOP pasture-LOC here there be-PRS-DEC  
 ‘Sheep are here and there in the pasture.’

Yang-tul-i huyn tamcang-ul ttala ket-ko i-ss-ta.  
 sheep-PL-NOM white fence-ACC along walk-CONJ be-PRG-DEC  
 ‘They are walking along the white fence.’

Myechmyech-un nuli-ta.  
 some-TOP slow-DEC  
 ‘Some of them are slow.’

Kutul-eun tuchyeci-n-ta.  
 they-TOP fall behind-PRS-DEC.  
 ‘They fall behind others.’

Mellise kay-ka tuchecin yang-ul po-ko i-ss-ta.  
 from a distance dog-NOM fallen sheep-ACC watch-CONJ be-PRG-DEC  
 ‘From a distance, one dog/dogs watch/watches one sheep/sheep which fall/falls behind.’

Picture 4



Question 2

Kay han mali-ka yang han mali-eykey kil-ul annayhaycu-ko i-ss-ta.  
 dog one-CL-NOM sheep one-CL-DAT way-ACC show-CONJ be-PRG-DEC  
 ‘One dog is showing the way to one sheep.’

Question 3

Kay han mali-ka yang-tul-eykey kil-ul nnayhaycu-ko i-ss-ta.  
 dog one-CL-NOM sheep-PL-DAT way-ACC show-CONJ be-PRG-DEC  
 ‘One dog is showing the way to sheep.’

3. Item 3 (Monkey & Squirrel)

Picture 1



Picture 2



Picture 3



Paykophunp wensungi-tul-un meki-lul chac-ule naka-ss-ta.  
 hungry monkey-PL-NOM food-ACC find-CONJ go out-PST-DEC  
 ‘Hungry monkeys are out to find some food.’  
 Kutul-un haypyen-eyse panana namu-lul palkyenha-n-ta.  
 they-NOM beach-LOC banana tree-ACC find-PRS-DEC  
 ‘They find some banana a tree/trees in the beach.’  
 Kutul-un panana-lul tta-ss-ta.  
 they-NOM banana-ACC pick-PST-DEC  
 ‘They picked up a banana/bananas.’  
 Kutul-un panana-lul kaciko cip-ey ka-n-ta.  
 they-NOM banana-ACC with home-LOC go-PRS-DEC  
 ‘They are going home with a banana/bananas.’  
 Kutul-un paykophunp talamcwi-lul manna-n-ta.  
 they-NOM hungry squirrel-ACC run into-PRS-DEC  
 ‘They run into one monkey/monkeys who is/are hungry too.’

Picture 4



Question 4

Wensungi han mali-ka talamcwi-tul-eykey panana han kay-lul  
 monkey one-CL-NOM squirrel-PL-DAT anana one-CL-ACC  
 meyecu-ko i-ss-ta  
 feed-CONJ be-PRG-DEC  
 ‘One monkey is feeding one banana to squirrels.’

Question 5

Wensungi-tul-i talamcwi han mali-eykey panana han kay-lul  
 monkey-PL-NOM squirrel one-CL-DAT banana one-CL-ACC  
 meyecu-ko i-ss-ta  
 feed-CONJ be-PRG-DEC  
 ‘Monkeys are feeding one banana to one squirrel.’

4. Item 4 (Bear & Owl)

Picture 1



Picture 2



Kom-tul-i sup-eyse yaku-lul ha-ko i-ss-ta.  
 bear-PL-NOM forest-LOC baseball-ACC do-CONJ be-PRG-DEC

‘Bears are playing baseball in the forest.’

Kayki-ka kkuthnan hu motu cip-ulo tolaka-n-ta.  
 game-TOP finish after all-NOM home-LOC go back-PRS-DEC

‘After finishing the game, all of are going back to home.’

Cip-ulo katencung kom-un sup-eyse tungi han kay-lul palkyenha-n-ta.  
 home-LOC on the way bear-NOM forest-LOC nest one-CL-ACC find-PRS-DEC

‘On the way home, one bear/bears find/finds nest in the forest.’

Picture 3



Question 6

Kom-tul-i pungi han mali-eykey tungci han kay-lul cu-ko i-ss-ta.  
 bear-PL-NOM owl one-CL-DAT net one-CL-ACC give-CONJ be-PRG-DEC

‘Bears are giving one net to one owl.’

Picture 4



Question 7

Kom-i pungi han mali-eykey tungci han kay-lul cu-ko-tul i-ss-ta.  
 bear-NOM owl one-CL-DAT net one-CL-ACC give-CONJ-PL be-PRG-DEC

‘Bears are giving one net to one owl.’

5. Item 5 (Bird & Lion)

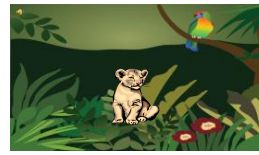
Picture 1



Picture 2



Picture 3



Say-ka namu wi-ey anca issupnita.  
bird-TOP tree top-LOC sit is-PRG-DEC

‘One bird/birds is/are sitting on a branch/branches.’

Hay-ka cin hu aki saca-ka say kunche-ey natana-ss-ta.  
sun-TOP go after baby lion-TOP bird near-LOC appear-PST-DEC

‘After the sun goes down, a baby lion/lions appears/appear near the bird/birds.’

Ku saca-nun say yep-ulo kakkai takao-n-ta.  
the lion-NOM bird to-LOC closely come-PRS-DEC

‘The lion/lions is/are coming close to the bird/birds.’

Picture 4



Question 8

Say-ka saca han mali-eykey nolayha-ycu-ko-tul i-ss-ta.  
bird-NOM lion one-CL-DAT sing-give-CONJ-PL be-PRG-DEC

‘Birds are singing a song to one lion.’

Question 9

Say-ka saca-eykey nolaha-ycu-ko-tul issupnita.  
bird-NOM lion-DAT sing-give-CONJ-PL be-PRS-DEC

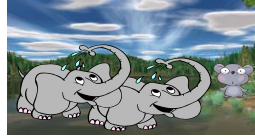
‘Birds are singing a song to one lion/lions.’

6. Item 6 (Elephant & Mouse)

Picture 1



Picture 2



Enu yelumnal khokkili-tul-i hosu-ey i-ss-ta  
 one summer day elephant-PL-TOP lake-LOC is-PRS-DEC

‘One summer day, there are elephants in the lake.’

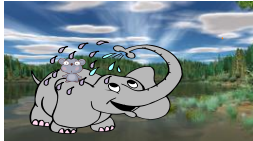
Kutul-un kh-lo mwul-ul ppume syawe-lul ha-n-ta.  
 they-NOM nose-INS water-ACC sprinkle shower-ACC do-PRG-DEC

‘They are sprinkling water with their trunk and taking a shower.’

Cui yeksi nemu tep-ta  
 mouse-NOM too very hot-DEC

‘One mouse/mice is/are very hot, too.’

Picture 3



Question 10

Khokkili-ka cui-eykey mul-tul ppuly-ecu-ko-tul i-ss-ta.  
 elephant-NOM lion-DAT water-ACC sprinkle-give-CONJ-PL be-PRG-DEC

‘Elephants are sprinkling water to one mouse/mice.’

Picture 4



Question 11

Khokkili-tul-i cui-eykey mul-ul ppuly-ecu-ko i-ss-ta.  
 elephant-PL-NOM mouse-DAT water-ACC sprinkle-give-CONJ be-PRG-DEC

‘Elephant are sprinkling water to one mouse/mice.’



Question 12

Thokki-tul-i            kepuki-eykey    usan-hana-lul            ssu-ywecu-ko            i-ss-ta.  
 rabbit-PL-NOM        turtle-DAT        umbrella one-CL-ACC    use-give-CONJ        be-PRG-DEC  
 ‘Rabbits are sharing one umbrella with one turtle/turtles.’



Question 13

Wensungi            han mali-ka            talamcwi han-mali-eykey            panana han kay-lul  
 monkey            one-CL-NOM            squirrel one-CL-DAT            banana one-CL-ACC  
 meyecu-ko            i-ss-ta  
 feed-CONJ            be-PRG-DEC  
 ‘One monkey is feeding one banana to one squirrel.’

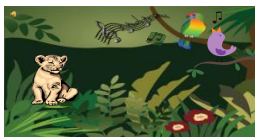


Question 14

Kom han mali-ka            puengi han mali-eykey            tungci han kay-lul            cu-ko            i-ss-ta.  
 bear one-CL-NOM        owl one-CL-DAT            net one-CL-ACC            give-CONJ            be-PRG-DEC  
 ‘One bear is giving one net to one owl.’

Question 15

Kom han mali-ka            puengi-tul-eykey            tungci han kay-lul            cu-ko            i-ss-ta.  
 bear one-CL-NOM        owl-PL-DAT            net one-CL-ACC            give-CONJ            be-PRG-DEC  
 ‘One bear is giving one net to owls.’



Question 16

Say han mali-ka            saca-tul-eykey            nolayha-ecu-ko            i-ss-ta.  
 bird one-CL-NOM        lion-PL-DAT            sing-give-CONJ            be-PRG-DEC  
 ‘A bird is singing a song to lions.’

Question 17

Say-tul-i            saca han mali-eykey            nolayha-ecu-ko            i-ss-ta.  
 bird-PL-NOM            lion one-CL-DAT            sing-give-CONJ            be-PRG-DEC  
 ‘Birds are singing a song to one lion’



Question 18

Khokkili-tul-i      cui han mali-eykey      mul-ul      ppuly-ecu-ko      i-ss-ta.  
 elephant-PL-NOM      mouse one-CL-DAT      water-ACC      sprinkle-give-CONJ      be-PRG-DEC  
 ‘Elephants are sprinkling water to one mouse.’



Question 19

Khokkili-ka      cui han mali-eykey      mul-ul      ppuly-ecu-ko-tul      i-ss-ta.  
 elephant-NOM      mouse one-CL-DAT      water-ACC      sprinkle-give-CONJ-PL      be-PRG-DEC  
 ‘Elephants are sprinkling water to one mouse.’

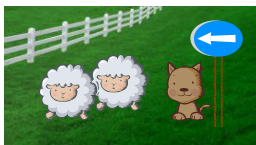


Question 20

Thokki-ka      kepuki han mali-eykey      usan-hana-lul      ssu-ywecuko-tul      i-ss-ta.  
 rabbit-NOM      turtle one-CL-DAT      umbrella one-CL-ACC      use-give-PL      be-PRG-DEC  
 ‘Rabbits are sharing one umbrella with one turtle.’

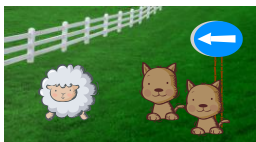
Question 21

Thokki-ka      kepuki-eykey      usan-hana-lul      ssu-ywecu-ko-tul      i-ss-ta.  
 rabbit-NOM      turtle-DAT      umbrella one-CL-ACC      share-give-CONJ-PL      be-PRG-DEC  
 ‘Rabbits are sharing one umbrella to one turtle/turtles.’



Question 22

Kay-ka      yang-eykey      kil-ul      annayhaycu-ko-tul      i-ss-ta.  
 dog-NOM      sheep-DAT      way-ACC      show-CONJ-PL      be-PRG-DEC  
 ‘Dogs are showing the way to one sheep/sheep.’



Question 23

Kay-tul-i      yang-eykey      kil-ul      annayhaycu-ko      i-ss-ta.  
 dog-PL-NOM      sheep-DAT      way-ACC      show-CONJ      be-PRG-DEC  
 ‘Dogs are showing the way to one sheep/sheep.’





Question 24

Wensungi-tul-i      talamcwi-eykey    panana han kay-lul      mekyecu-ko      i-ss-ta.  
monkey-PL-NOM    squirrel-DAT      banana one-CL-ACC    feed-CONJ      be-PRG-DEC  
'Monkeys are feeding one banana to one squirrel/squirrels.'

APPENDIX B

Version 2. Items for Group B

1. Item 1 (Turtle & Rabbit)

Picture 1



Picture 2



Picture 3



Mayu hwachanghan nal i-ta.  
Very sunny day be-DEC

‘It is a very sunny day.’

Thokki-tul-i sanchay-ul naw-ass-ta.  
rabbit-PL-NOM walk-ACC go out-PST-DEC

‘Rabbits are going out for a walk’

Kapcaki pi-ka nayliki sicakha-n-ta.  
all of sudden rain-TOP falling start-PRS-DEC

‘All of sudden, it starts to rain.’

Thokki twi-ey kepuki-ka natana-n-ta.  
rabbit beyond-LOC rabbit-NOM appear-PRS-DEC

‘Right beyond rabbits, one turtle/turtles appears/appear.’

Kepuki-nun usan-ul tulko o-n-ta.  
turtle-NOM umbrella-ACC with come-PRS-DEC

‘It is coming with one turtle/turtles.’



Question 1

Kepuki han mali-ka thokki han mali-eykey usan-hana-lul  
turtle one-CL-NOM rabbit one-CL-DAT umbrella one-CL-ACC

ssu-ywecu-ko i-ss-ta.  
use-give-CONJ be-PRG-DEC

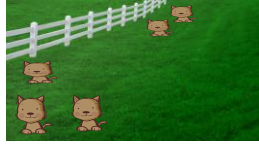
‘One turtle is sharing one umbrella with one rabbit.’

2. Item 2 (Sheep & Dog)

Picture 1



Picture 2



Picture 3



Kay-tul-i mokcang-ey yeki ceki i-ss-ta.  
 dog-PL-TOP pasture-LOC here there be-PRS-DEC

‘Dogs are here and there in the pasture.’

Kay-tul-i huyn tamcang-ul ttala ket-ko i-ss-ta.  
 dog-PL-NOM white fence-ACC along walk-CONJ be-PRG-DEC

‘They are walking along the white fence.’

Myechmyech-un nuli-ta.  
 some-TOP slow-DEC

‘Some of them are slow.’

Kutul-eu tuchyeci-n-ta.  
 they-TOPM fall behind-PRS-DEC.

‘They fall behind others.’

Mellise yang-i tuchecin kay-lul po-ko i-ss-ta.  
 from a distance sheep-NOM fallen dog-ACC watch-CONJ be-PRG-DEC

‘From a distance, one sheep/sheep watch(es) a dog/dogs which fall behind.’

Picture 4



Question 2

Yang han mali-ka kay han mali-eykey kil-ul annayhaycu-ko i-ss-ta.  
 sheep one-CL-NOM dog one -CL-DAT way-ACC show-CONJ be-PRG-DEC

‘One sheep is showing the way to one dog.’

Question 3

Yang han mali-ka kay-tul-eykey kil-ul annayhaycu-ko i-ss-ta.  
 sheep one-CL-NOM dog-PL-DAT way-ACC show-CONJ be-PRG-DEC

‘One sheep is showing the way to dogs.’

3. Item 3 (Squirrel & Monkey)

Picture 1



Picture 2



Picture 3



Paykophunp    talamcwi-tul-un    meki-lul    chac-ule    naka-ss-ta.  
 hungry       squirrel-PL-NOM    food-ACC    find       go out-PST-DEC

‘Hungry squirrels are out to find some food.’

Kutul-un       haypyen-eyse    panana namu-lul    palkyenha-n-ta.  
 they-NOM       beach-LOC       banana tree-ACC    find-PRS-DEC

‘They find some banana trees in the beach.’

Kutul-un       panana-lul       tta-ss-ta.  
 they-NOM       banana-ACC       pick-PST-DEC

‘They picked them up.’

Kutul-un       panana-lul       kaciko    cip-ey       ka-n-ta.  
 they-NOM       banana-ACC    with       home-LOC    go-PRS-DEC

‘They are going home with bananas.’

Kutul-un       paykophun       wensungi -lul    manna-n-ta.  
 they-NOM       hungry            monkey-ACC    run into-PRS-DEC

‘They run into one monkey/monkeys who is/are hungry too.’

Picture 4



Question 4

Talamcwi    han mali-ka       wensungi-tul-eykey    panana han kay-lul    mekyecu-ko    i-ss-ta  
 squirrel    one-CL-NOM    monkey-PL-DAT    banana one-CL-ACC    feed-CONJ    be-PRG-DEC

‘One squirrel is feeding one banana to monkeys.’

Question 5

Talamcwi-tul-i       wensungi han mali-eykey    panana han kay-lul    mekyecu-ko  
 squirrel-PL-NOM    squirrel one-CL-DAT    banana one-CL-ACC    feed-CONJ

i-ss-ta.

be-PRG-DEC

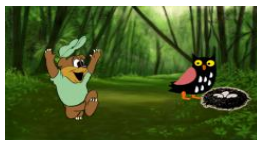
‘Squirrels are feeding one banana to one monkey.’

4. Item 4 (Owl & Bear)

Picture 1



Picture 2



Kom-tul-i sup-eyse yaku-lul ha-ko i-ss-ta.  
 bear-PL-NOM forest-LOC baseball-ACC do-CONJ be-PRG-DEC

‘Bears are playing baseball in the forest.’

Kayki-ka kkuthnan hu motu cip-ey tolaka-n-ta.  
 game-TOP finish after all-NOM home-LOC go back-PRS-DEC

‘After finishing the game, all of are going back to home.’

Cip-ulo katencung kom-un tungi han kay-lul kacin puengi-lul palkyenha-n-ta.  
 home-LOC on the way bear-NOM nest one-CL-ACC with owl-ACC find-PRS-DEC

‘On the way home, one bear/bears find/finds one owl/owls with a nest.’

Sanyang-ul nakalyeten puengi-nun tungi-lul kom-eyke mathki-ko sip-ta.  
 hunt-ACC going owl-NOM nest-ACC bear-DAT leave-CONJ want-DEC

‘The owl which was going to hunt is going to leave the net/nets to the bear.’

Picture 3



Question 6

Puengi-tul-i kom han mali-eykey tungci han kay-lul cu-ko i-ss-ta.  
 owl-PL-NOM bear-one-CL-DAT net one-CL-ACC give-CONJ be-PRS-DEC

‘Owls are giving one net to one bear.’

Picture 4



Question 7

Puengi-ka kom han mali-eykey tungci han kay-lul cu-ko-tul i-ss-ta.  
 owl-NOM bear one-CL-DAT net one-CL-ACC give-CONJ-PL be-PRG-DEC

‘Owls are giving one net to one bear.’

5. Item 5 (Lion & Bird)

Picture 1



Picture 2



Saca-tul-i namu alay-eyse swi-ko i-ss-ta.  
 bird-PL-TOP tree under-LOC take a rest -CONJ be-PRG-DEC

‘Lions are taking a rest under the tree/trees.’

Hay-ka cin hu saca kunch-ey aki say-ka natana-ss-ta.  
 sun-TOP go after lion near-LOC baby bird-NOM appear-PST-DEC

‘After the sun goes down, one baby bird/birds appears/appear near the lion/lions.’

Ku say-nun saca yep-ulo kakkai takao-n-ta.  
 the bird-NOM lion to-LOC closely come-PRS-DEC

‘The bird is coming closely to the lion/lions.’

Picture 3



Question 8

Saca-ka say han mali-eykey nolayha-ycu-ko-tul i-ss-ta  
 lion-NOM bird one-CL-DAT sing-give-CONJ-PL be-PRG-DEC

‘Lions are singing a song to one bird.’

Picture 4



Question 9

Saca-ka say-eykey nolayha-ycu-ko-tul i-ss-ta  
 lion-NOM bird-DAT sing-give-CONJ-PL be-PRG-DEC

‘Lions are singing a song to one bird/birds.’

6. Item 6 (Elephant & Mouse)

Picture 1



Picture 2

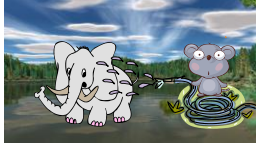


Enu yelumnal cui-ka hosu-lo mwul-ul ppum-ko i-ss-ta  
 one summer day mouse-NOM hose-INS water-ACC sprinkle-CONJ be-PRG-DEC  
 ‘One summer day, one mouse/mice is/are sprinkling water with a hose/hoses.’

Khokkili-ka hosu-ey natana-ss-ta.  
 elephant-NOM lake-LOC appear-PST-DEC  
 ‘One elephant/elephants appears/appear in the lake.’

Nal-i tewese khokkili-nun syawe-lul ha-ko sip-ta.  
 day-TOP hot elephant-NOM shower-ACC do-CONJ want-DEC  
 ‘The elephant wants to take a shower since it is very hot.’

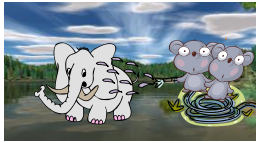
Picture 3



Question 10

Cui-ka khokkili-eykey mul-ul ppuly-ecu-ko-tul i-ss-ta.  
 Mouse-NOM elephant-DAT water-ACC sprinkle-give-CONJ-PL be-PRG-DEC  
 ‘Mice are sprinkling water to one elephant/elephants.’

Picture 4



Question 11

Cui-tul-i khokkili-eykey mul-ul ppuly-ecu-ko i-ss-ta.  
 mouse-PL-NOM elephant-DAT water-ACC sprinkle-give-CONJ be-PRG-DEC  
 ‘Mice are sprinkling water to one elephant/elephants.’



Question 12

Kepuki-tui            thokki-eykey    usan-hana-lul            ssu-ywecu-ko            i-ss-ta.  
 turtle-PL-NOM    rabbit-DAT    umbrella one-CL-ACC    use-give-CONJ    be-PRG-DEC  
 ‘Turtles are sharing one umbrella with one rabbit/rabbits.’



Question 13

Talamcwi han mali -ka            wensungi han mali-eykey            panana han kay-lul            mekyecu-ko  
 squirrel one-CL-NOM            monkey-one-CL-DAT            banana one-CL-ACC            feed-CONJ  
 i-ss-ta  
 be-PRG-DEC  
 ‘One squirrel is feeding one banana to one monkey.’

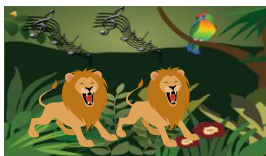


Question 14

Puengi han mali-ka            kom han mali-eykey            tungci han kay-lul            cu-ko            i-ss-ta.  
 owl one-CL-NOM            bear one-CL-DAT            net one-CL-ACC            give-CONJ            be-PRG-DEC  
 ‘One owl is giving one net to one bear.’

Question 15

Puengi han mali-ka            kom-tul-eykey            tungci han kay-lul            cu-ko            i-ss-ta.  
 owl one-CL-NOM            bear-PL-DAT            net one-CL-ACC            give-CONJ            be-PRG-DEC  
 ‘One owl is giving one net to bears.’



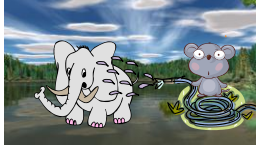
Question 16

Saca han mali-ka            say-tul-eykey            nolayha-ycu-ko            i-ss-ta.  
 lion one-CL-NOM            bird-PL-DAT            sing-give-CONJ            be-PRG-DEC  
 ‘One lion is singing a song to birds.’

Question 17

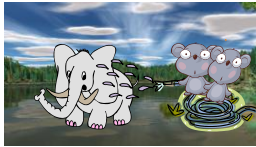
Saca-tul-i            say han mali-eykey            nolayha-ycu-ko            i-ss-ta.  
 lion-PL-NOM            bird one-CL-DAT            sing-give-CONJ            be-PRG-DEC  
 ‘Lions are singing a song to one bird.’





Question 18

Cui-tul-i khokkili han mali-eykey mul-ul ppuly-ecu-ko i-ss-ta.  
 mouse-PL-NOM elephant one-CL-DAT water-ACC sprinkle-give-CONJ be-PRG-DEC  
 ‘Mice are sprinkling water to one elephant.’



Question 19

Cui-ka khokkili han mali-eykey mul-ul ppuly-ecuko-tul i-ss-ta.  
 Mouse-NOM elephant one-CL-DAT water-ACC sprinkle-give-CONJ-PL be-PRG-DEC  
 ‘Mice are sprinkling water to one elephant.’



Question 20

Kepuki-ka thokki han mali-eykey usan-hana-lul ssu-wyecu-ko-tul i-ss-ta.  
 turtle-NOM rabbit one-CL-DAT umbrella one-CL-ACC use-give-CONJ-PL be-PRG-DEC  
 ‘Rabbits are sharing one umbrella with one turtle.’

Question 21

Kepuki -ka thokki-eykey usan-hana-lul ssu-ywecu-ko-tul i-ss-ta.  
 turtle-NOM rabbit-DAT umbrella one-CL-ACC use-give-CONJ-PL be-PRG-DEC  
 ‘Rabbits are sharing one umbrella with one turtle/turtles.’



Question 22

Yang-i kay-eykey kil-ul annayhaycu-ko-tul i-ss-ta.  
 sheep-NOM dog-DAT way-ACC show-CONJ-PL be-PRG-DEC  
 ‘Sheep are showing the way to one dog/dogs.’



Question 23

Yang-tul-i kay-eykey kil-ul annayhaycu-ko i-ss-ta.  
 sheep-PL-NOM dog-DAT way-ACC show-CONJ be-PRG-DEC  
 ‘Sheep are showing the way to one dog/dogs.’



Question 24

Talamcwi-tul-i      wensung-eykey      panana han kay-lul      mekyecu-ko      i-ss-ta.  
squirrel-PL-NOM      monkey-DAT      banana one-CL-ACC      feed-CONJ      be-PRG-DEC  
'Squirrels are feeding one banana to one monkey/monkeys.'

## APPENDIX C

### Filler sentences for Group A and B

#### 1. Item 1 (Rabbit & Turtle)

- (1) Canti wi-lo pi-ka nayli-ko i-ss-ta.  
grass on-LOC rain-TOP fall-CONJ be-PRG-DEC  
'It is raining on the grass.'
- (2) Kepuki-ka thokki poda te khu-ta.  
turtle-TOP rabbit than more tall-DEC  
'The turtle is taller than the rabbit.'
- (3) Thokki-ka phalan usan-ul tul-ko i-ss-ta.  
rabbit-NOM blue umbrella-ACC hold-CONJ be-PRG-DEC  
'The rabbit is holding a blue umbrella.'
- (4) Thokki-ka kepuki poda te khu-ta.  
rabbit-TOP turtle than more tall-DEC  
'The rabbit is taller than the turtle.'
- (5) Thokki wa kepuki-ka ttwieka-ko i-ss-ta.  
rabbit and turtle-NOM run-CONDJ be-PRG-DEC  
'The rabbit and the turtle are running.'
- (6) Kepuki-ka thokki poda aphse ka-n-ta.  
turtle-TOP rabbit than ahead go-PRS-DEC  
'The turtle is going before the rabbit.'
- (7) Thokki wa kepuki-ka san-ul olu-ko i-ss-ta.  
rabbit and turtle-NOM mountain-ACC climb-CONJ be-PRG-DEC  
'The rabbit and the turtle are climbing the mountain.'
- (8) Thokki-ka honca usan-ul ssu-ko i-ss-ta.  
rabbit-NOM alone umbrella-ACC use-CONJ be-PRG-DEC  
'The rabbit is holding one umbrella/umbrellas alone.'

## 2. Item 2 (Dog & Sheep)

- (1) Kay wa yang-un ppalkan tamcang-i issnun mokcang-ey i-ss-ta.  
dog and sheep-TOP red fence-TOP with pasture-LOC be-PRS-DEC  
'The dog and the sheep are in the pasture with the red fence.'
- (2) Kay wa yang-i khi-ka pisusha-ta.  
dog and sheep-NOM height-TOP similar-DEC  
'The dog is as tall as the sheep.'
- (3) Kay-nun huynsak i ko yang-un kalsak i-ta.  
dog-TOP white be and sheep-TOP brown be-DEC  
'The dog is white and the sheep is brown.'
- (4) Kay wa yang-i phulun candi uy-ey i-ss-ta.  
dog and sheep-TOP green grass on-LOC be-PRS-DEC  
'The dog and the sheep are on the green grass.'
- (5) Kay-ka yang-eykey cicko i-ss-ta.  
dog-NOM sheep-DAT bark be-PRG-DEC  
'The dog is barking at the sheep.'
- (6) Kay wa yang-i ultali an-ey i-ss-ta.  
dog and sheep-TOP fence in-LOC be-PRS-DEC  
'The dog and the sheep are in the fence.'
- (7) Phyciphan-ey hwasalphyo-un oluncok-ul hyangha-ko i-ss-ta.  
sign-LOC arrow-TOP right-ACC point-CONJ be-PRS-DEC  
'The arrow in the sign is pointing to the right.'
- (8) Kay wa yang-i ultali-lul nemeka-ko i-ss-ta.  
dog and sheep\_NOM fence-ACC cross-CONJ is-PRG-DEC  
'The dog and the sheep are crossing the fence.'

### 3. Item 3 (Monkey & Squirrel)

- (1) Wensungi wa talamci-ka haypye-ye i-ss-ta.  
monkey and squirrel-TOP beach-LOC be-PRG-DEC  
'The monkey and the squirrel are at the beach.'
- (2) Wensungi-un talamci poda te khu-ta.  
monkey-NOM squirrel than more tall-DEC  
'The monkey is taller than the squirrel.'
- (3) Wensung wa talamci-ka pam-ey manna-ss-ta.  
monkey and squirrel-NOM night-at meet-PST-DEC  
'The monkey and the squirrel met at night.'
- (4) Wensungi wa talamci-nun motu kalsayk i-ta.  
monkey and squirrel-TOP all brown be-DEC  
'The monkey and the squirrel are all brown.'
- (5) Namu-ey panama-ka manhi tally-e-i-ss-ta.  
tree-LOC banana-TOP many hang-PAS-be-PRG-DEC  
'Bananas are hanging in the tree.'
- (6) Wensungi wa talamci-ka panana-lul mek-ko i-ss-ta.  
monkey and squirrel-NOM banana-ACC eat-CONJ be-PRG-DEC  
'The monkey and the squirrel are eating one banana/bananas.'
- (7) Wensungi wa talamci-nun muinto-ey i-ss-ta.  
monkey and squirrel-TOP island-LOC be-PRS-DEC  
'The monkey and the squirrel are in an island.'
- (8) Wensungi-nun honca panana-lul mek-ko i-ss-ta.  
monkey-NOM alone banana-ACC eat-CONJ be-PRG-DEC  
'The monkey is eating one banana/bananas alone.'

#### 4. Item 4 (Bear & Owl)

- (1) Kom kwa puengi-ka sansok-ey i-ss-ta.  
bear and owl-NOM mountain-LOC be-PRS-DEC  
'The bear and the owl are in the mountain.'
- (2) Tungci-ey han kay-uy al-i i-ss-ta.  
net-LOC one CL-GEN egg-TOP be-PRS-DEC  
'There is an egg in the net.'
- (3) Kom kwa puengi-ka ssau-ko i-ss-ta.  
bear and owl-NOM fight-CONJ be-PRG-DEC  
'The bear and the owl are fighting.'
- (4) Kom-i puengi poda te cak-ta.  
bear-NOM owl than more short-DEC  
'The bear is shorter than the owl.'
- (5) Kom-un kalsayk i ko puengi-nun kemcengsak i-ta.  
bear-TOP brown be and owl-TOP black be-DEC  
'The bear is brown and the owl is black.'
- (6) Puengi-ka kom wi-lo nal-ko i-ss-ta.  
owl-NOM bear over-LOC fly-CONJ be-PRG-DEC  
'The owl is flying over the bear.'
- (7) Kom kwa puengi-ka saykki puengi wa nol-ko i-ss-ta.  
bear and owl-NOM baby owl with play-CONJ be-PRG-DEC  
'The bear and the owl are playing with one baby owl/owls.'
- (8) Kom kwa puengi-ka namukaci wi-ey i-ss-ta.  
bear and owl-NOM branch on-LOC be-PRS-DEC  
'The bear and the owl are on the branch.'

5. Item 5 (Bird & Lion)

- (1) Saca wa say-nun kamanhi anc-a i-ss-ta.  
lion and bird-NOM still sit-CONJ be-PRG-DEC  
'The lion and the bird are sitting still.'
- (2) Saca wa say-ka nunonun sup-eyse nol-ko i-ss-ta.  
lion and bird-NOM snowing forest-LOC play-CONJ be-PRG-DEC  
'The lion and the bird are playing in the snowing forest.'
- (3) Saca-ka say poda te kyu-ta.  
lion-TOP bird than more tall-DEC  
'The lion is taller than the bird.'
- (4) Saca-ka say cupyen-eyse nol-ko i-ss-ta.  
lion-NOM bird around-LOC play-CONJ be-PRG-DEC  
'The lion is playing around the bird.'
- (5) Say wa saca-ka ulii-ey kathye i-ss-ta.  
bird and lion-TOP cage-LOC trapped be-PRS-DEC  
'The bird and the lion are trapped in one cage/cages.'
- (6) Say wa saca-ka kangka-ey se i-ss-ta.  
bird and lion-TOP riverside-LO stand be-PRG-DEC  
'The bird and the lion are standing by the riverside.'
- (7) Saca wa say-ka namu-wi-ey i-ss-ta.  
lion and bird-TOP tree-on-LOC be-PRS-DEC  
'The lion and the bird are on the tree.'
- (8) Say-nun saca poda te khu-ta.  
bird-TOP lion than more tall-DEC  
'The bird is taller than the lion.'

6. Item 6 (Elephant & Mouse)

- (1) Khokkili-nun cwi poda te khu-ta.  
elephant-TOP mouse than more tall-DEC  
'The elephant is taller than the mouse.'
- (2) Cwi-nun khokkili tung wi-ey i-ss-ta.  
mouse-TOP elephant back on-LOC be-PRS-DEC  
'The mouse is on the elephant's back.'
- (3) Khokkili-nun hoysak i ko cwi-nun kalsak i-ta.  
elephant-TOP gray be and mouse-TOP brown be-DEC  
'The elephant is gray and the mouse is brown.'
- (4) Khokkili-ka kho-lo mul-ul ppuli-ko i-ss-ta.  
elephant-NOM nose-INS water-ACC sprinkle-CONJ be-PRG-DEC  
'The elephant is sprinkling with its nose.'
- (5) Cwi-nun khokkili mith-eyse nol-ko i-ss-ta.  
mouse-NOM elephant under-LOC play-CONJ be-PRG-DEC  
'The mouse is playing under the elephant.'
- (6) Khokkili wa cwi-nun motu hoysak i-ta.  
elephant and mouse-TOP all gray be-DEC  
'The elephant and the mouse are all gray.'
- (7) Khokkili wa cwi-nun palampunun pataska-ey i-ss-ta.  
elephant and mouse-TOP windy beach-LOC be-PRS-DEC  
'The elephant and the mouse are in the windy beach.'
- (8) Khokkili wa cwi-nun naccam-ul ca-ko i-ss-ta.  
elephant and mouse-NOM nap-ACC take-CONJ be-PRG-DEC  
'The elephant and the mouse are taking a nap.'



## BIBLIOGRAPHY

## BIBLIOGRAPHY

- An, Y. (2007). Re extrinsic –tul. Qualifying Paper in Stony Brook University.
- Baek, M. (2002). “Handkwuke pokswu uymi yenkwu [A study on Korean plural senses].” *Discourse and Recognition*, 9(2), 59-78. Seoul, South Korea.
- Barner, D., & Snedeker, J. (2006). Children’s early understanding of mass-count syntax: individuation, lexical content, and the number asymmetry hypothesis. *Language learning and development*, 2(3), 163-194.
- Berko, J. (1958). The Child's Learning of English Morphology. *Word*, 14, 150- 177.
- Borer, H. (2005). Structuring Sense I. Oxford: Oxford Press.
- Brown, R. (1973). A First Language: The Early Stages, Harvard University Press, Cambridge, MA.
- Chierchia, G. (1998). Reference to Kinds across Languages. *Natural Language Semantics*, 6, 339-405.
- Choe, J. (1987). Anti-Quantifiers and a Theory of Distributivity, Ph.D. dissertation, University of Massachusetts at Amherst.
- Chung, D. (2003). Dummy *tul* in Gapping Construction, A paper presented at the Conference of Generative Grammar in Korea.
- Chung, S. (2000). On reference to kinds in Indonesian. *Natural Language Semantics*, 8, 157-171.
- Conroy, A. (2009). Equal Treatment for All Antecedents: How Children Succeed with Principle B. *Linguistic Inquiry*, 40(3), 446-486.
- Crain, S., & Thornton, R. (1998). Investigations in Universal Grammar: A guide for experiments on the acquisition of syntax and semantics. MIT press.
- Ferenz, K. S., & Prasada, S. (2002). Singular or plural? Children’s knowledge of the factors that determine the appropriate form of the count nouns. *Journal of Child Language*, 29, 49–70.
- Gordon, P. (1996). The truth-value judgment task. In *Methods for assessing children’s syntax*. Cambridge, Mass: MIT Press.
- Graves, F.M., & Koziol, S. (1971). Noun plural development in primary grade children. *Child Development*, 42, 1165-1173.

- Hsieh, L., Leonard, B. L., & Swanson, L. (1999). Some differences between English plural noun inflections and third singular verb inflections in the input: the contributions of frequency, sentence position, and duration. *Journal of Child Language*, 26, 531-543.
- Huang, Y., Snedeker, J., & Spelke, E. (2004). What exactly do numbers mean? Poster presented at the 26th annual meeting of the Cognitive Science Society. Chicago, IL.
- Joh, Y. (2005). A semantic analysis of the Korean plural marker *TUL*. In *Proceedings of SuB9*, Emar Maier, Corien Bary, and Janneke Huitink (eds.), 170-182.  
[www.ru.nl/ncs/sub9](http://www.ru.nl/ncs/sub9)
- Johnson, V., de Villiers, J., & Seymour, H. (2005). 'Agreement without understanding? The case of third person singular /s/' , *First Language*, 25, 317-330.
- Hsieh, Li., Leonard, L. B., & Swanson, L. (1999). Some differences between English plural noun inflections and third singular verb inflections in the input: the contributions of frequency, sentence, position, and duration. *Journal of Child Language*, 26, 531-543.
- Li, Y. A. (1999). Plurality in a classifier language. *Journal of East Asian Linguistics*, 8, 75-99.
- Kang, B. (1994). Plurality and other semantic aspects of common nouns in Korean. *Journal of East Asian Linguistics*, 3, 1-24.
- Kim, C. (2005). The Korean Plural Marker –tul and its implications. Ph. D. dissertation, University of Delaware.
- Koopman, H. (2004). Korean (and Japanese) morphology from a syntactic perspective. *Linguistic Inquiry*, 36 (4), 601-633.
- Kouider, S., Halberda, J., Wood, J., & Carey, S. (2006). Acquisition of English number marking: The singular-plural distinction. *Language Learning and Development*, 2(1), 1–25.
- Li, Y. A. (1999). Plurality in a classifier language. *Journal of East Asian Linguistics*, 8, 75-99.
- Madigan, S., Yamada, M., & Peng, A. (2008). Inclusive Reference in Korean: Implications for a Theory of Plurality. Proceedings of Harvard ISOKL 2007.
- Miller, K. L. (2007). Variable input and the acquisition of plurality in two varieties of Spanish. Ph. D. dissertation, Michigan State University.
- Munn, A., Zhang, X., & Schmitt, C. (2009). Acquisition of plurality in language without plurality. *Merging Features: Computation, Interpretation and Acquisition*. Oxford University Press. 310-327.
- Musolino, J. (2009). The logical syntax of number words: Theory, acquisition and processing. *Cognition*, 111(1), 24-45.

- Nakano, N., Park, H., & Schmitt, C. (2009). A Comparative Study of the Acquisition of Plural Morphemes in Japanese and Korean. Proceedings of The 11th Tokyo Conference on Psycholinguistics. (in press).
- Park, H. (2010). The acquisition of plural morpheme in Korean. Master's thesis, Michigan State University.
- Park, S. (2008). Plural marking in classifier languages: a case study of the so-called plural marking *-tul*. *Toronto Working Papers in Linguistics* 28, 281-295.
- Song, J. (1997). The so-called Plural Copy in Korean as a marker of distribution and focus. *Journal of Pragmatics*, 27, 203-224.
- Wood, J. N., Kouider, S., & Carey, S. (2009). Acquisition of Singular-plural morphology. *Developmental psychology*, 45(1), 202-206.
- Yang, C. D. (2002). Knowledge and learning in natural language. Oxford University Press, Oxford.
- Yim, C. (2002). The semantics of non-nominal *tul* in Korean. *Korean linguistics*, 11, 183-202.
- Zapf, J. A., & Smith, L. B. (2007). When do children generalize the plural to novel nouns? *First Language*, 27, 53-73.
- Zapf, J. A., & Smith, L. B. (2008). Meaning matters in children's plural productions. *Cognition*, 108, 466-476.