Acquisition of Word Order in the Adjective-Added Korean Classifier Phrases

Kum- Jeong Joo
Woosong University
Kumjeong@hawaii.edu

This study explores the acquisition of internal orderings of adjective-added Korean classifier phrases. When a classifier phrase includes an adjective, two constraints rule out impossible orderings: adjectives occur before the noun they modify, and no modifying elements can intervene between the number and the classifier. An acceptability judgment experiment was conducted with native Korean-speaking adults and children to test their knowledge of the two constraints. The results indicate that, like adults, the children know the two constraints, disallowing impossible orderings. The results also show a ranking in the preference of the possible orderings. We suggest that semantic compositionality (i.e., A and N together) can account for the preferred internal orderings of Korean adjective-added classifier phrases.

Key words: word order, numeral classifier structure, Acquisition, Korean, semantic compositionality

1. Introduction

The acquisition of word order involves the acquisition of the grammatical rules of the target language. For example, (1a-d) illustrate what grammatical rules children must know in order to correctly map an adjective onto a Korean classifier phrase.

(1) a. chayk sey kwen
   book three CL

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The classifier phrase (1a) contains a noun, a numeral, and a classifier. When an adjective is placed in the phrase (1b), two rules—adjectives occur before the noun that they modify and no modifying elements can intervene between the numeral and the classifier—are required to rule out impossible orderings. (1c) and (1d) are ill-formed because they violate these constraints.

A question arises: Do young Korean-speaking children know these two constraints on Korean numeral classifier constructions? Only a handful of studies have looked at the acquisition of adjective-noun orderings (e.g., Li, Barner & Huang, 2008), and none of them were conducted with Korean-speaking children. In this novel research, we explore whether Korean-speaking children are able to narrow down the number of ways of forming adjective-added classifier phrases to the set of linguistically possible options.

The paper is organized as follows. Section 2 summarizes the background of the study. Section 3 describes the research questions. Section 4 presents the results of a corpus study to show the input environment for native Korean-speaking children. Section 5 presents the results of an acceptability judgment task (henceforth, AJT) with adults while Section 6 reports the results of an AJT with children. Lastly, Section 7 concludes the paper with a general discussion.

2. Background

2.1 Adjective Placement in Korean Numeral Classifier Phrases and Optimality Theory

Korean uses classifiers after numerals in order to quantify and categorize nouns. Phrases consisting of numeral classifiers with nouns are divided into
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two types according to whether the classifiers follow or precede the nouns: N+Num+CL (postnominal classifier constructions) and Num+CL_{gen}+N (prenominal classifier constructions), as in (2a-b) (Lee & Lee, 2002, p. 4).

(2) a. N+Num+CL

haksang sey-myung
student three-CL
‘three students’

b. Num+CL_{gen}+N

sey-myung-uy haksang
three-CL_{gen} student
‘three students’

When these constructions include an adjective, eight orders are mathematically possible: A+N+Num+CL, N+A+Num+CL, N+Num+A+CL, N+Num+CL+A, A+Num+CL_{gen}+N, Num+A+CL_{gen}+N, Num+CL_{gen}+A+N, and Num+CL_{gen}+N+A. Only three of these orders, however, are allowed in Korean: A+N+Num+CL, Num+CL_{gen}+A+N, and A+Num+CL_{gen}+N. 2 See (3a-c) for examples of the three possible orders.

(3) a. A+N+Num+CL

khun chayk sey-kwen
big book three-CL

b. Num+CL_{gen}+A+N

sey-kwen-uy khun chayk
three-CL_{gen} big book

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1 Abbreviations used in glosses in the present study are as follows: A: adjective; DEM: demonstrative; CL: classifier; GEN: genitive; N: noun; NUM: numeral.

2 The acceptability judgment task results in this study confirm that these are the only three orderings possible in Korean.
As can be seen in (3a), in postnominal classifier constructions, adjectives occur before the nominal positions that they modify. In contrast, in prenominal classifier constructions (3b-c), adjectives occur either before the noun they modify (3b) or outside of the classifier phrase (3c).

Why do native Korean speakers allow these three numeral word orders (A+N+Num+CL, Num+CL_{gen}+A+N, and A+Num+CL_{gen}+N) while they do not allow the other five word orders (*N+A+Num+CL, *N+Num+A+CL, *N+Num+CL+A, *Num+A+CL_{gen}+N, *Num+CL_{gen}+N+A)? This study considers Optimality Theory (henceforth, OT), a constraint-based grammar, as a possible explanation. Within OT, the use of multiple and simultaneous linguistic constraints is required in order to comprehend and produce sequences: The best candidate is the one that violates the least number of constraints (Hendriks, de Hoop, Krämer, de Swart & Zwarts, 2010).

Given this fact, with regard to the word order of Korean numeral classifier constructions with adjectives, there are two constraints: (a) adjectives must occur in the pre-nominal position and (b) the number+classifier unit cannot be broken. Both constraints would seem to apply to both postnominal and prenominal classifier phrases.

The first constraint, the [adjective+noun] constraint, is about semantic compositionality (Chomsky, 1975, cited in Boeckx, Fodor, Gleitman & Rizzi, 2009: 219). It is a universal phenomenon which could be easily observed in our general language usage. Groenendijk and Stokhof (2005) argued that the composition of NPs is shaped by a rule: The elements expressing properties of a noun tend to be closer to the noun. Thus, modifying adjectives should precede nouns, which is the canonical word order in the adjective-added noun phrase. As for the second constraint, no modifying elements can intervene between the number and the classifier. As Fukushima (1991, pp. 589–597) observed, Korean numeral classifiers cannot be interrupted by extraneous elements such as adjectives.

Applying these two constraints, of the five impossible orderings, *N+Num+A+CL is impossible because it violates both constraints;
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*N+A+Num+CL, *N+Num+CL+A, and *Num+CL_{gen}+N+A are impossible because they violate the first constraint; and *Num+A+CL_{gen}+N is impossible because it violates the second constraint. Then, how do the two constraints affect the three possible word orders for Korean adjective-added classifier phrases? See (4a-b).

(4)  a. Ordering 1
    \[[A+N+Num+CL]\] (✓)

    b. Ordering 2
    \[[Num+CL_{gen}+A+N]\] (✓)

    c. Ordering 3
    A+Num+CL_{gen}+N ( - )

In the cases of Ordering 1 (4a) and Ordering 2 (4b), the adjective is next to the noun. Also, there is no intervening element between the number and the classifier. They thus satisfy the requirements of both constraints. Ordering 3 (4c) also complies with the two constraints. However, note that in the case of Ordering 3, the adjective is further away from the noun. Since Ordering 3 does not fully satisfy the constraint for compositionality, a question arises as to whether Ordering 3 receives a different preference from Orderings 1 and 2 for native Korean speakers.

Recently, Joo (2015) investigated preferences for the internal ordering of noun phrases in Korean. She conducted both offline acceptability judgment tasks and online self-paced reading tasks, finding higher acceptability ratings and faster response times for dem+a+n+num and dem+num+a+n than for a+dem+num+n and dem+a+num+n, and claimed that semantic compositionality is one factor that could explain the preference for particular orderings. Joo’s (2015) findings suggest that there can be different preference rankings of the three adjective-added classifier phrases. This issue will be further discussed in Section 3.

2.2 Previous Acquisition Studies

Previous acquisition studies on the word order have heavily looked at the
orderings of subject, verb and object, reporting that children come to know their language’s canonical word order for subject, verb, and object at early ages. For example, Hirsh-Pasek and Golinkoff’s (1996) preferential looking paradigm with infants aged 16 to 19 months showed that even very young infants seem to comprehend word order and the meaning of familiar verbs. Pinker, Lebeaux, and Frost (1987) reported that when a novel verb was introduced in only one syntactic construction (i.e., the passive), children could produce it in a canonical active order even though they had never experienced that construction with the verb.

Relatively only a handful of studies have looked at children’s acquisition of adjective-noun orderings. Earlier studies with English native children found that young children make few errors in adjective production, whereas their comprehension of adjectives is not adult-like (Smith, Cooney & McCord, 1986; Tribushinina & Mak, 2016). More recently, Nicoladis and Rheintull’s (2011) study showed that English native children do not always correctly employ the canonical ordering of adjective and noun. In their study, children aged from two to four years old were taught novel adjectives in a prenominal or postnominal position, although adjectives are prenominal in the canonical word order for English. The results differed from those of the previous research on novel verbs: The children did not follow the canonical word order (i.e., adjective+noun). Not only two- and three-year-old children but also four-year-olds placed the new adjectives in the same order which they were taught. In light of the fact that even a relatively old age group did not seem to follow the canonical English prenominal order, it leaves a question on the acquisition of adjective-noun orderings.

When it comes to the acquisition of word order in classifier constructions with adjectives, Li, Barner, and Huang (2008) explored whether or not Chinese-speaking children exhibit syntactic sensitivity to the different placement of adjectives according to a mass and count classifier distinction. Chinese mass classifiers allow the insertion of adjectives between the numeral and the classifier, but the count classifiers do not, as shown in (5a-b).

(5) a. yi da ping jiu
   one big CL-bottle liquor
   ‘one big bottle of wine’
b. *yi da ge ren
   one big CL-individual person
   ‘one big person’

Their study of children’s syntactic sensitivity showed that four-year-olds had difficulty comprehending the different word sequences when adjectives were included, whereas six-year-olds understood the classifiers’ relationship to the phrases. This leaves room for the further question of why the success of comprehension appears at a relatively late age rather than at the early stages of language acquisition. One possible account worthwhile to consider is this: Compared with the English adjective-noun orderings, Chinese word order in classifier constructions with adjectives can be more challenging to acquire because it has one more constraint: The count classifiers cannot be inserted between the numeral and the classifier.

The current study is a novel research that focuses on Korean-speaking children’s acquisition of the adjective-added Korean classifier phrases. Just like the adjective-added Chinese classifier phrases, the adjective-added Korean classifier requires knowing two constraints for the target-like word order. This study asks whether young children can come to know the two constraints. More specifically, it explores whether five- and six-year olds are able to narrow down a number of ways of forming adjective-added classifier phrases to the set of linguistically possible options. With regard to the target of age of the participants, Kim (2009) reported that the most frequently used classifiers have been acquired at least by the age of five. In her picture-selection comprehension task, three- or four-year-olds showed chance or below chance performance while five- or six-year olds showed comprehension of classifiers above chance. This suggests that we are not able to test children below the age of five, because they have not acquired classifiers yet.

3. Addressing the research questions

The two research questions in this study are as follows: First, do native Korean-speaking children at ages five and six know the two constraints in the ordering of the adjective-added numeral classifier constructions?
With regard to the relationship between the constraints and word order acquisition, the addition of adjectives to the two classifier constructions may increase the complexity, and thereby perhaps also increase the difficulty children experience in correctly ordering their elements. The first question thus asks whether children at ages five and six can come to know the target grammar, overcoming such difficulty.

Second, of the three possible orderings, do native Korean-speaking adults and children prefer A+N+Num+CL and Num+CL_{gen}+A+N over A+Num+CL_{gen}+N? Groenendijk and Stokhof (2005) proposed that semantic compositionality is at the heart of syntactic structure. Furthermore, Joo (2015) argued that semantic compositionality plays an important role in determining the preference of the ordering of noun phrases (but, see Joo and Kim (2016) for a processing-based account). Based on these two studies, the current study predicts a preference for the first two constructions over A+Num+CL_{gen}+N, because the latter does not entirely follow the rule of semantic compositionality.

We conducted three studies to address these two research questions. The first is a corpus study, whose goals are twofold: The first is to learn about the input children receive, and the second is to understand adult native speakers’ intuition with regard to adjective-added classifier phrases. According to Biber and Reppen (2002), a true understanding of native speaker intuition requires examination of real language use in context. Specifically, it requires contextualized corpus analysis. A corpus study was therefore conducted in order to investigate the presence of adjectives within numeral classifier skeletons in everyday language.

The second study is an AJT with native Korean-speaking adults while the third study is an AJT with native Korean-speaking children (ages five to six). The AJTs aim to test knowledge of the two constraints on the adjective-added classifier structures as well as to assess the participants’ preference for particular orderings. We assume that the more preferred a word order is, the higher people will rate its acceptability.
4. Study 1: Corpus study

We utilized the Sejong Corpus, one of the largest of the Korean corpora. Corpus data were retrieved with MonoConc Pro (Version 2.0). Five of the most frequently occurring classifiers were chosen for the corpus analysis: the inanimate general classifier *kay*, the animate classifier *myeng*, and the inanimate classifiers *kwen*, *pyeng*, and *khep* (Lee & Lee, 2002, p. 7).

We first analyzed how frequently people use classifier structures with adjectives. We also analyzed the frequency with which people use such structures without adjectives for comparison. Table 1 summarizes the frequency of occurrence of the numeral classifier phrases with and without adjectives overall.

Table 1 shows that all five classifiers were more likely to occur without adjectives than with them. The proportions of classifier phrases occurring without adjectives were 98.4% for *kay*, 99.9% for *myeng*, 98.9% for *kwen*, 94.9% for *pyeng*, and 100% for *khep*. In sum, the findings of the corpus

<table>
<thead>
<tr>
<th>Type</th>
<th>With adjectives</th>
<th>Without adjectives</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Spoken</td>
<td>Written</td>
<td>Total</td>
</tr>
<tr>
<td><em>kay</em></td>
<td>4</td>
<td>20</td>
<td>24 (1.6%)</td>
</tr>
<tr>
<td><em>myeng</em></td>
<td>1</td>
<td>0</td>
<td>1 (0.1%)</td>
</tr>
<tr>
<td><em>kwen</em></td>
<td>0</td>
<td>2</td>
<td>2 (1.1%)</td>
</tr>
<tr>
<td><em>pyeng</em></td>
<td>2</td>
<td>1</td>
<td>3 (5.1%)</td>
</tr>
<tr>
<td><em>khep</em></td>
<td>0</td>
<td>0</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Total</td>
<td>7</td>
<td>23</td>
<td>30 (1.1%)</td>
</tr>
</tbody>
</table>

Note: The totals show the numbers of tokens preceding the percentages in parenthesis.

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The Sejong Corpus contains over 10 million words from written and spoken contexts. The written data consist of 10 genres: art, documentary, education, general, humanities, imaginary, life, news, science, and society. The spoken data contain natural spoken data as well as semi-spoken data from movies, plays, and TV dramas.
study clearly suggest that adjective-added classifier phrases are rarely used. In light of the extremely low frequency of classifier phrases with adjectives, children probably receive very little input of these structures.

Classifier phrases including adjectives were further analyzed in more depth in order to look at what kind of adjective-added classifiers were most frequently used in the corpus. Table 2 shows the results.

As Table 2 shows, both A+N+Num+CL and Num+CL_{gen}+A+N patterns were found in the corpus, although there are numerical differences in their frequency: Num+CL_{gen}+A+N is used more frequently than A+N+Num+CL (23 vs. 7 tokens, respectively). Note, however, that A+Num+CL_{gen}+N is not found in the corpus data at all. The absence of the A+Num+CL_{gen}+N pattern is noteworthy in that it is the very ordering that does not accord with semantic compositionality.

5. Study 2: Acceptability judgment task with adults

5.1 Participants
Seventy-two Korean adults, both male (30 participants) and female (42 participants), participated in the study. All of them were over the age of 20. They were undergraduate or graduate students at a university in Korea.

5.2 Materials and procedure
We used an AJT to examine adult native speakers’ judgments with regard to numeral classifiers containing adjectives. In the task, the adults were asked
to evaluate, on a scale from 1 (ungrammatical) to 5 (grammatical), how natural a particular phrase sounded. The three possible orderings as well as the five impossible orderings were used, thereby creating eight conditions. Each condition had four items, which yielded 32 test items in total. Each participant encountered a total of 98 phrases: two practice items, 32 test items, and 64 fillers. The critical items were presented in a Latin square design.

The participants were individually tested in a quiet room. They read the instructions explaining the goal and the procedure of the experiment, and then completed the two practice trials. They were then given a list of phrases and asked to rate the correctness of each phrase. The task and responses were in written format. Each session lasted less than 40 minutes.

5.3 Results
The acceptability score of each sentence was calculated with mean score and standard deviation across subjects. The average ratings of the eight classifier phrases with adjectives range from 4.6 to 0.3 out of 5. The average acceptability ratings of the three possible phrases are as follows: 4.6 for A+N+Num+CL, 4.5 for Num+CL_{gen}+A+N, and 3.7 for A+Num+CL_{gen}+N. In contrast, the five impossible phrases all had ratings of less than 1 (N+A+Num+CL: 0.5; N+Num+A+CL: 0.3; N+Num+CL+A: 0.4; Num+A+CL_{gen}+N: 0.8; Num+CL_{gen}+N+A: 0.7).

The findings of the AJT were further analyzed to answer the second research question, exploring different preferences among the acceptable phrases. Table 3 shows the average ratings of the three possible phrases. The mean rating scores for A+N+Num+CL and Num+CL_{gen}+A+N are similar, at 4.6 and 4.5, respectively. However, the score for A+Num+CL_{gen}+N is significantly lower at 3.6.

<table>
<thead>
<tr>
<th>Condition</th>
<th>A+N+Num+CL</th>
<th>Num+CL_{gen}+A+N</th>
<th>A+Num+CL_{gen}+N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ratings</td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
</tr>
<tr>
<td></td>
<td>4.6</td>
<td>.390</td>
<td>4.5</td>
</tr>
<tr>
<td></td>
<td>3.7</td>
<td>.545</td>
<td></td>
</tr>
</tbody>
</table>

Table 3. Adults’ Average Ratings of the Grammaticality of Classifier Phrases with Adjectives
A repeated measures ANOVA found that, overall, participants’ scores were not consistent across the three possible phrases \((F(2,142) = 183.861, p < .001)\). The results were then further analyzed using a paired samples \(t\)-test, and significant differences were found between \(A+N+\text{Num}+\text{CL}\) and \(A+\text{Num}+\text{CL}_{\text{gen}}+\text{N}\): \(t(71) = 13.673, p < .001\); and between \(\text{Num}+\text{CL}_{\text{gen}}+A+N\) and \(A+\text{Num}+\text{CL}_{\text{gen}}+\text{N}\): \(t(71) = 13.568, p < .001\). No significant difference was found between \(A+N+\text{Num}+\text{CL}\) and \(\text{Num}+\text{CL}_{\text{gen}}+A+N\): \(t(71) = .815; p = .418\). These findings suggest that although the average ratings of grammaticality of the three adjective-added classifier phrases are within the acceptable range of grammaticality, the \(A+\text{Num}+\text{CL}_{\text{gen}}+\text{N}\) construction is different from the other two in terms of preference, as the mean rating scores show. The results are consistent with the study’s prediction based on the semantic compositionality hypothesis.

6. Study 3: Acceptability judgment task with children

6.1 Participants
Kim (2009) reported that the most frequently used classifiers have been acquired at least by the age of five. In her picture-selection comprehension task, three- or four-year-olds showed chance or below chance performance while five- or six-year olds showed comprehension of classifiers above chance. This suggests that we are not able to test children below the age of five, because they have not acquired classifiers yet. For this reason, thirty-three children, aged 5;2 to 6;8 years (mean age 5;11), participated in the experiment. Data from three children were excluded from the analyses because their accuracy rates on the fillers were within the range of chance. The remaining 30 children were included in the data analysis. All children were from a kindergarten in Seoul, Korea and they had never been exposed to any other languages. All children were given a small gift as compensation.

6.2 Materials
This experiment was conducted with native Korean-speaking children in order to assess (a) children’s knowledge regarding the two constraints on where an adjective is inserted in the classifier constructions as well as (b)
their preference, if any, for particular constructions over others. However, the AJT with children was designed to be slightly different from the AJT with adults. First, considering the age of the participants, following Ambridge (2011), the AJT was conducted using a five-point “smiley-face scale”:

![Smiley-Face Scale](image)

The scale consists of five faces. Two frowning red faces denote “unacceptable”; the face in the middle of the scale has a straight line for a mouth and is split between the two colors, indicating uncertainty about the acceptability, and the two smiling green faces denote “acceptable.” As Ambridge (2011) did in his study, we first asked each child to choose between two options: a red counter (unacceptable) or a green counter (acceptable) in case the children were not able to provide an answer using the scale. We then asked the child to indicate a face for the degree of acceptability.

Second, considering children’s limited ability to pay attention, we reduced the number of test items. That is, while we used all eight test conditions for adults, we used only six conditions for children: the three possible orderings, A+N+Num+CL, Num+CL_{gen}+A+N, and A+Num+CL_{gen}+N and three impossible orderings, N+Num+A+CL, N+Num+CL+A, and Num+A+CL_{gen}+N. We chose the three impossible structures with which we could test the two constraints: the first constraint (i.e., an adjective precedes a noun; e.g., N+Num+CL+A) and the second constraint (i.e., a classifier phrase cannot be interrupted by an adjective; e.g., N+Num+A+CL and Num+A+CL_{gen}+N). The critical materials consisted of three practice items, 18 test stimuli, and nine fillers, resulting in 30 items in total. Each test
phrase contained an adjective, noun, classifier, and number. For consistency, we limited the items in each category. All phrases used the general classifier -kay. The adjectives expressed color (e.g., yellow, green, gray) or size (e.g., big, small), while the nouns were the names of fruit (e.g., bananas, apples) or typical daily objects (e.g., umbrellas, books). The numbers were between one and four. The order of presentation of the target stimuli and fillers was randomized.

6.3 Procedure
The experiment was composed of instruction, training, and main experiment sessions. The children were first told that they would play an interesting game and instructed in how to play it. They were also told that there would be some pictures to look at. An example of the instruction protocol, translated into English, is shown in (6).

(6) Hello. Today, we are going to play a very interesting game. Before we start, I am going to introduce new friends to you. They come from Hawai‘i and are learning Korean. We are going to play a game with a number of pictures, which is called “find a winner.” There will be a picture and each of them is going to describe what it is in Korean. However, since they are not good at Korean, they want you to tell them whether what they say is correct or not. In order to play the game, your help is very important. You can help them find out who said it best and who is the winner of the game. Can you help them out?

Next, there was a training session. The aim of the training session was to let the participants become accustomed to the experiment by exposing them to exactly the same procedure before participating in the main experiment. During that time, because it was not counted as part of the actual test, participants could ask the experimenter questions if they had trouble with anything.

In the experiment, the stimuli were presented with PowerPoint slides. A sample picture with the corresponding text is shown in Figure 1. The child saw an animal character, which appeared on the screen, and the
animal spoke out an adjective-added classifier phrase, which described the things right next to him/her. The child was then asked to judge whether the animal’s statement was correct or not. The pictures were presented one at a time in the center of a computer monitor in a quiet room, and the picture remained on the screen until the experimenter pressed a button to move on to the next item.

During the main experiment, some children wanted to confirm whether their answers from some of the trials were correct or not. In these situations, the experimenter always answered yes in order to continue the experiment. The session, including both the instruction and training, was kept to less than 20 minutes in order not to lose the children’s attention.

6.4 Results

Overall, the children’s ratings of the test items fall into two groups: three grammatical phrases and three ungrammatical phrases. See Table 4 for the results.

As shown in Table 4, the average acceptability ratings of the three grammatical phrases are 4.4 for A+N+Num+CL, 3.7 for Num+CL_{gen}+A+N, and 3.6 for A+Num+CL_{gen}+N, while the mean scores for the three ungrammatical phrases were as low as 1.4 for N+Num+A+CL, 1.3 for N+Num+CL+A, and 1.5 for Num+A+CL_{gen}+N. These findings strongly
suggest that the children know (a) that the Korean classifier phrase cannot be broken up by an intervening element, as the mean score for Num+A+CL_{gen}+N (1.5) shows, and (b) that an adjective should not modify the noun that is in the classifier phrase before it, as the mean scores for N+Num+A+CL (1.4) and N+Num+CL+A (1.3) show.

Taken together, these results demonstrate that the children are able to distinguish grammatical phrases from ungrammatical phrases, providing evidence for the presence of knowledge regarding the two constraints on the internal ordering of Korean classifier phrases with an adjective in young children’s grammar.

Figure 2 presents the children’s mean grammaticality scores of the three grammatical phrases, along with those of the adults for comparison.
As can be seen in the figure, adults rated two of the three grammatical phrases significantly higher than the third phrase: 4.6 for A+N+Num+CL, 4.5 for Num+CL_{gen}+A+N, and 3.7 for A+Num+CL_{gen}+N. However, unlike adults, children rated the mean grammaticality of A+N+Num+CL (4.4) significantly higher than that of the other two: Num+CL_{gen}+A+N (3.7) and A+Num+CL_{gen}+N (3.6).

With regard to the statistical analysis of the three possible orderings of the children, a repeated measures ANOVA found that, overall, participants’ scores were not consistent across the three possible phrases \((F(2,87) = 74.115, p < .001)\). The results were then further analyzed using a paired samples \(t\)-test, and significant differences were found between A+N+Num+CL and Num+CL_{gen}+A+N: \(t(29) = 9.918, p < .001\); and between A+N+Num+CL and A+Num+CL_{gen}+N: \(t(29) = 10.364, p < .001\). However, no significant difference was found between Num+CL_{gen}+A+N and A+Num+CL_{gen}+N: \(t(29) = 1.490; p = .147\).

### 7. General discussion and conclusion

The goal of the present study was to investigate whether Korean-speaking children are sensitive to linguistic constraints on the placement of adjectives in classifier constructions. The key questions we addressed were, first, whether Korean children are able to differentiate between possible and impossible adjective-added classifier constructions. Second, we also examined whether the children show different preferences for the three possible orderings.

The results of the AJT with the thirty Korean-speaking children revealed that they know the possible Korean adjective-added classifier word orders, A+N+Num+CL, Num+CL_{gen}+A+N, and A+Num+CL_{gen}+N. It is important to note that these constructions are rare in the input, as the corpus data showed (classifier phrases with adjectives: 1.1% vs. classifier phrases without adjectives: 98.9%). Despite the poor input, the children showed the syntactic mapping ability necessary for appropriately inserting adjectives into classifier phrases, which reflects children’s marvelous capacity for acquiring grammar (e.g., Chomsky, 2002; Lust, 2006; Pinker, 1994; among many others).
The results of the study, however, are not entirely consistent with our hypothesis in the sense that although both the adults and the children showed different preferences among the different adjective-added classifier constructions, the children’s preferences were not the same as the adults’. As we predicted based on the OT, adults preferred A+N+Num+CL (4.6) and Num+CL_{gen}+A+N (4.5), which both satisfy the requirement of compositionality—a closely linked adjective and noun—over A+Num+CL_{gen}+N (3.7), which does not. Meanwhile, the children preferred A+N+Num+CL (4.4) over the other two phrases, which they rated similarly, at 3.7 for Num+CL_{gen}+A+N and 3.6 for A+Num+CL_{gen}+N. Their mean grammaticality ratings suggest that the children seem to differentiate these adjective-added classifier structures based on compositionality, just like adults. However, the question now is why the children, unlike the adults, rated the Num+CL_{gen}+A+N construction so low. A possible account is children’s genuine non-preference for the phrase with a genitive. However, we cannot verify such account, leaving this issue for a further study.

Furthermore, as one of the reviewers correctly pointed out, the acceptability ratings might reflect a prosody effect, to some extent. For example, it is possible that an appropriate pause between A and Num results in a higher acceptability rating of the A+Num+CL_{gen}+N. A further study is required whether such prosody effect indeed affects the adults’/children’s acceptability ratings.

Despite such limitations, I believe that the current study offers an important experimental finding, being a study showing children’s marvelous capacity in language acquisition. The results from the three studies converge on one central conclusion: Korean-speaking children at ages 5 and 6 know the possible Korean adjective-added classifier word orders. Strikingly, they also know the two constraints that determine the target-like word order, despite very poor input.

References

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