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Developmental patterns of Korean EFL learners' English argument structure constructions

Hyunwoo Kim, Hyeyeon Choi, Hyun-Kwon Yang*

Department of English Language Education, Seoul National University, 1 Gwanak-ro, Gwanak-gu, Seoul 151 742, South Korea

Abstract

The present study aims to explore developmental patterns of constructional knowledge of Korean EFL learners. The study asked 120 Korean learners of English to carry out a sentence sorting and a translation task, and investigated how the participants at three different proficiency levels use their constructional knowledge to comprehend English sentences. The results from the sorting task showed that the learners in the beginner group relied more heavily on verb-centered sorting than the learners in the intermediate group. The results from the translation task revealed that the L2 learners' ability to comprehend complex constructions is highly correlated with their proficiency in the target language. The study suggests that L2 learners' constructional knowledge is acquired incrementally as their exposure to the target language extends, supporting one of the main premises of the usage-based approach to language and language acquisition.

Keywords: construction grammar; English constructions; sentence sorting; L2 development

1. Introduction

A number of studies in Construction Grammar have provided convincing evidence for the dominant role of construction in child’s L1 acquisition of English. For example, Childers and Tomasello [1] observed that acquisition of the transitive construction by English-speaking children is established around particular patterns or configurations rather than around specific verbs. Similarly, MacWhinny [2] confirmed that developmental patterns of children's syntax are heavily dependent on the acquisition processes of item-based constructions.

The role of constructions has been extensively examined in L2 acquisition inquiries as well. Several studies have focused on L2 learners of English from various L1 backgrounds, using sentence sorting tasks. They showed that L2 English learners use their constructional knowledge in processing English sentences. One of the intriguing features that these L2 studies share is that they focused on adult English learners.

The present study explores developmental patterns of constructional knowledge of Korean EFL learners at three different age groups. With this purpose in view, the study employed a sentence sorting and a translation task, and examined the learners' use of constructional knowledge in sentence comprehension.

* Corresponding author. Tel.:+82 10 4722 6295; fax: +82 2 880 7671
E mail address: yhkeun@snu.ac.kr

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2. Theoretical Background

2.1. Core ideas of construction grammar

According to the constructional view, each argument structure configuration, or construction, is a pairing of form and meaning, and the overall meaning of a sentence is often determined by construction rather than main verb. This view challenges the traditional understanding that main verb contributes to the overall meaning of a sentence.

The constructions shown in Table 1 are assumed to play a crucial role in language development. According to Fillmore [3] and Goldberg [4], the constructions represent the most basic propositions derived from human experience. Tomasello [5] further argued that since these constructions repeatedly appear in everyday communication, children acquire sentence patterns or configurations while being exposed to language input. For example, in the early stages of language acquisition, children experience similar patterns in concrete expressions or item-based constructions. As children are exposed to more language input, they experience specific patterns in more abstract constructions. Ultimately, language learners are able to process complex patterns with less effort, drawing on previously acquired constructional knowledge.

Table 1. English argument structure constructions

<table>
<thead>
<tr>
<th>Construction</th>
<th>Form</th>
<th>Meaning</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intransitive motion</td>
<td>Subj V Oblpath/loc</td>
<td>X moves Ypath/loc</td>
<td>The fly buzzed into the room.</td>
</tr>
<tr>
<td>Transitive</td>
<td>Subj V Obj</td>
<td>X acts on Y</td>
<td>The man pushed her.</td>
</tr>
<tr>
<td>Caused-motion</td>
<td>Subj V Obj Oblpath/loc</td>
<td>X causes Y to move Zpath/loc</td>
<td>Pat sneezed the foam of the cappuccino.</td>
</tr>
<tr>
<td>Ditransitive</td>
<td>Subj V Obj Obj2</td>
<td>X causes Y to receive Z</td>
<td>She faxed him a letter.</td>
</tr>
<tr>
<td>Resultative</td>
<td>Subj V Obj RP</td>
<td>X causes Y to become Zstate</td>
<td>She kissed him unconscious.</td>
</tr>
</tbody>
</table>

2.2. Previous studies using sentence sorting tasks

The role of constructions in language development has been explored in a significant number of empirical studies in both L1 and L2 contexts, by means of sentence sorting tasks. A pioneering study was carried out by Bencini and Goldberg [6], which investigated the use of constructional knowledge by English native speakers. In their study, participants were asked to sort 16 sentences into four categories based on the overall meaning of each sentence. Depending on whether subjects sorted the sentences according to main verb or construction, deviation scores were calculated from the verb-based and the construction-based sorting.

The deviation score from the verb-based sorting (Vdev) is obtained by counting the number of changes that are required for the completely verb-based sorting. Likewise, the deviation score from the construction-based sorting (Cdev) is obtained by counting the number of changes to be made for the fully construction-based sorting. For example, when a subject performed sentence sorting entirely by verb, the number of changes needed for verb-centered sorting is zero, and hence, Vdev is 0.

The results of the study by Bencini and Goldberg showed that the tendency of construction-based sorting (mean Cdev=3.2) was significantly stronger than that of verb-based sorting (mean Vdev=9.8). Subsequently, Bencini and Goldberg repeated the experiment with a different group, since the example sentences given in the first experiment were suspected to have biased the subjects toward the construction-based sorting. In the second experiment the subjects did not show a marked preference for either verb-based or construction-based sorting (Cdev=5.7, Vdev=5.5).

Following the study of Bencini and Goldberg [6], a number of L2 studies have provided convincing evidence for the existence of construction in L2 knowledge. First, Gries and Wulff [7] conducted a sentence sorting task with advanced German learners of English (n=22). The results showed that the mean score of construction-based sorting (Cdev=3.45) was significantly higher than that of verb-based sorting (Vdev=8.85). From the results, Gries and Wulff concluded that even L2 learners use argument structure constructions as “psychologically real linguistic
categories” in comprehension. Similarly, Valenzuela and Lopez [8] conducted a sentence sorting task with advanced Spanish learners of English (n=50). Very similar to the findings in Gries and Wulff [7], the results showed a strong tendency toward construction-based sorting (Cdev=3.52, Vdev=8.94). More intriguing evidence for L2 learners’ construction knowledge came from Liang [9], which carried out a sentence sorting task with adult Chinese learners of English at three different levels of English proficiency (46 beginners, 31 intermediate learners and 33 advanced learners). The study found that the sorting of the L2 learners became more heavily dependent on construction rather than verb as their proficiency became higher. A similar finding was reported in Shin [10] for the sorting patterns of adult Korean EFL learners: Cdev=4.82, Vdev=8.09.

The present study replicated the sentence sorting task with Korean EFL learners at three different age groups—middle school, high school and university students. The study aimed to explore the question whether L2 learners’ constructional knowledge improves incrementally as their exposure to the target language extends, exploring one of the main premises of the usage-based approach to language and language learning.

3. Method

3.1. Participants

A total of 120 Korean EFL learners participated in the present study. They were 41 middle school students in grade 7, 41 high school students in grade 10, and 38 university students majoring in English education in Korea. The results of a cloze test confirmed that these age groups are aligned with their proficiency levels, henceforth, beginner, intermediate and advanced groups (Table 2).

3.2. Materials

Following Gries and Wulff [7] and Valenzuela and Lopez [8], a set of sixteen sentences was prepared and the sentences were distributed by crossing four different verbs with four different English constructions (caused-motion, ditransitive, resultative and transitive). However, a change was made on the selection of verbs. While maintaining the three verbs (take, cut, and throw) among the four used in Gries and Wulff [7] and Valenzuela and Lopez [8] (take, cut, throw and get), the current experiment employed a group of nonce verbs which replaced the verb get. This was done under the assumption that if learners have acquired sufficient constructional knowledge, they would be able to do construction-based sorting even in the presence of nonce verbs. The experimental stimuli including specific constructions and verbs are presented in Table 3.

<table>
<thead>
<tr>
<th>Group</th>
<th>Number</th>
<th>Mean years studying in English speaking countries</th>
<th>Mean age</th>
<th>Cloze-test score (max=40)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginner</td>
<td>41</td>
<td>0</td>
<td>12.3</td>
<td>6.32</td>
</tr>
<tr>
<td>Intermediate</td>
<td>41</td>
<td>0</td>
<td>15.6</td>
<td>9.66</td>
</tr>
<tr>
<td>Advanced</td>
<td>38</td>
<td>1.5</td>
<td>22.7</td>
<td>22.08</td>
</tr>
</tbody>
</table>

Table 2. Learner group information
### Table 3. List of sentences used in the sorting task

<table>
<thead>
<tr>
<th>Verb</th>
<th>Transitive</th>
<th>Ditransitive</th>
<th>Caused-motion</th>
<th>Resultative</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAKE</td>
<td>Amy took the watch.</td>
<td>James threw Linda the pencil.</td>
<td>Robert took the flower into the house.</td>
<td>Rachel took the wall down.</td>
</tr>
<tr>
<td>CUT</td>
<td>Tom cut the bread.</td>
<td>Julie cut Daniel an apple.</td>
<td>Kevin cut the ham onto the plate.</td>
<td>Jim cut the watermelon open.</td>
</tr>
<tr>
<td>THROW</td>
<td>Mary threw the ball.</td>
<td>Paul took Sam a message.</td>
<td>Lee threw the key onto the roof.</td>
<td>John threw the box apart.</td>
</tr>
<tr>
<td>NONCE VERBS</td>
<td>Mike prinned the book.</td>
<td>Sarah doaked Kim a book.</td>
<td>Tony feened the ball into the net.</td>
<td>David greemed the balloon flat.</td>
</tr>
</tbody>
</table>

### 3.3 Procedure

Each subject was given sixteen sentences, as provided in Table 3. The participants were asked to translate the sentences in Korean and then sort them into four separate groups according to their overall meaning. They were told to make sure that each group of sentences contains exactly four sentences. The lexical meaning of the words in the sentences (except for verbs) was given on the test sheet. The task took approximately 30 minutes.

### 4. Results

#### 4.1. Analysis of Vdev and Cdev

For the purpose of finding the general tendency of the sorting, mean Vdev and Cdev scores were computed across the groups. Subsequently, a t-test for dependent samples was performed to compare Vdev and Cdev scores of each group. The results are summarized in Table 4.

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>Vdev</th>
<th>Cdev</th>
<th>t</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginner</td>
<td>41</td>
<td>3.63</td>
<td>9.51</td>
<td>6.287</td>
<td>.000*</td>
</tr>
<tr>
<td>Intermediate</td>
<td>41</td>
<td>6.02</td>
<td>7.71</td>
<td>2.042</td>
<td>.044*</td>
</tr>
<tr>
<td>Advanced</td>
<td>38</td>
<td>6.05</td>
<td>7.34</td>
<td>1.499</td>
<td>.138</td>
</tr>
</tbody>
</table>

* * p<.05

The groups showed different tendencies in the sorting task. First, the beginner-level learners showed a strong preference for verb-centered sorting. The Vdev of this group (3.63) was closer to 0 on the scale, while its Cdev (9.51) was closer to 12. The difference between these scores was statistically significant ($p=.000$). On the other hand, the intermediate-level learners showed no strong preference for either sorting. Although their Vdev (6.02) and Cdev (7.71) showed a significant difference ($p=.044$), both scores were located in the middle on the scale of 0-12, leaning slightly more toward 12 than 0. Finally, the results of the advanced group were similar to those of the intermediate group. The difference between their Vdev (6.05) and Cdev (7.34) was statistically insignificant ($p=.138$), and both scores were aligned on the scale between 6 and 7.

#### 4.2. Cluster analysis

In addition to the analysis of Vdev and Cdev, we performed a cluster analysis. Specifically, following Gries and Wulff [7] and Valenzuela and Lopez [8], we investigated how frequently each sentence clustered with the other fifteen sentences.

As a first step for the analysis, each of the sixteen sentences was distributed in a symmetric similarity matrix, mainly based on how often one sentence was grouped with the other sentences. Then, a hierarchical clustering
analysis was performed using Euclidean distance as a measure (clustering algorithm: Ward’s method). Figure 1 shows the dendrogram output, obtained from this procedure.

In the dendrogram, a cluster of sentences that are linked on the same line indicates that they were most frequently grouped together. For example, for the beginner group, sentences 9, 10, 13 and 14 were grouped together as the first cluster, sentences 1, 5, 8 and 12 as the second, sentences 3, 7, 11 and 15 as the third and sentences 2, 4, 6 and 16 as the last cluster. Interestingly, the sentences in each cluster share the same verb. This seems to indicate that the sorting by the beginner level learners is heavily verb-centered.

![Dendrogram for the sorting task](image)

Unlike the beginner group, the intermediate group showed mixed results, both verb-centered and construction-centered sorting. More specifically, the first four clusters (sentences 4-11, 3-6, 7-16 and 2-15) showed construction centered sorting, while the last two clusters (sentences 1-5-8-12 and 9-10-13-14) showed verb-centered sorting. Note that the verbs in the former include *take* and nonce verbs, whereas those in the latter are *cut* and *throw*. It seems that the intermediate-level learners paid more attention to construction than verb when the verb of an experiment sentence has less specific lexical meaning, whereas they focused on verb when an experiment sentence has a heavy verb such as *cut* and *throw*.

The results from the advanced learners look rather complicated. The first cluster has four sentences in which *cut* is used (sentences 9-10-13-14). However, all the other clusters showed mixed patterns. Some sentences are grouped by construction (sentences 2-5, 7-16 and 4-11), and others are grouped by verb (sentences 3-15). In contrast to the learners in the other two levels, the advanced learners showed less clear tendency in clustering pattern.

4.3. Analysis of the translation task

In addition to the sorting task, the participants were asked to translate the sixteen sentences that were used in the sorting task. Table 5 presents the statistical description of the results of the translation task. Across the three groups, the easiest construction was the transitive, and the most difficult one was the resultative. The highest score for the transitive construction of the beginner group (3.88) indicates that a simple construction such as transitives is developed relatively early in learning process. On the other hand, the lowest score for the resultative construction of
the advanced learners (2.45) shows that this construction is not fully acquired even for learners at later stages of development.

Table 5. Mean accuracy in the translation task

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>Transitive (max=4)</th>
<th>Ditransitive (max=4)</th>
<th>Caused-motion (max=4)</th>
<th>Resultative (max=4)</th>
<th>Total (max=16)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginner</td>
<td>41</td>
<td>3.88 (0.33)</td>
<td>2.07 (1.35)</td>
<td>3.07 (0.91)</td>
<td>2.02 (1.01)</td>
<td>11.05 (2.38)</td>
</tr>
<tr>
<td>Intermediate</td>
<td>41</td>
<td>3.88 (0.33)</td>
<td>2.90 (1.16)</td>
<td>3.39 (0.77)</td>
<td>2.31 (1.11)</td>
<td>12.49 (1.94)</td>
</tr>
<tr>
<td>Advanced</td>
<td>38</td>
<td>4.00 (0.00)</td>
<td>3.42 (0.72)</td>
<td>4.00 (0.00)</td>
<td>2.45 (0.86)</td>
<td>13.87 (1.07)</td>
</tr>
</tbody>
</table>

Note. The numbers in parentheses are standard deviations.

Fig. 2. Scores from the translation task
Note. The Figures on the bars represent the rate of correct translations in percentage.

One-way ANOVA was conducted to analyze the statistical differences among groups. The results showed that the groups differed significantly in the total score, \( F(2, 117)=21.944, p<.001 \). For individual constructions, significance was found in the ditransitive construction, \( F(2, 117)=14.745, p<.001 \), and in the cause-motion construction, \( F(2, 117)=17.992, p<.001 \). Since all groups received the highest scores in the transitive construction and the lowest in the resultative construction, there was little difference among groups in these two constructions.

Subsequently, a Tukey’s HSD post hoc test confirmed that the scores of the beginners were significantly lower than those of the others in the ditransitive construction (\( p<.01 \)), and that the advanced group received significantly higher scores than the other groups in the caused-motion construction (\( p<.01 \)). As for the transitive and the resultative construction, no single group is different from the other groups in the scores. These results are summarized in Table 6.

Table 6. Results of pair-wise comparisons of the scores in the translation task

<table>
<thead>
<tr>
<th>Compared groups</th>
<th>Transitive</th>
<th>Ditransitive</th>
<th>Caused-motion</th>
<th>Resultative</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginner vs. Intermediate</td>
<td>1.00</td>
<td>.003*</td>
<td>.102</td>
<td>.385</td>
<td>.002*</td>
</tr>
<tr>
<td>Beginner vs. Advanced</td>
<td>.122</td>
<td>.000*</td>
<td>.000*</td>
<td>.150</td>
<td>.000*</td>
</tr>
<tr>
<td>Intermediate vs. Advanced</td>
<td>.122</td>
<td>.102</td>
<td>.000*</td>
<td>.832</td>
<td>.004*</td>
</tr>
</tbody>
</table>

*p<.05

All in all, the between-group analysis for the translation task shows that except for the transitive construction, the scores for the constructions increase as the learners’ proficiency goes up. These results indicate that the constructional knowledge for the transitive construction is developed early in the course of language learning and
the knowledge for the other constructions develops incrementally as the learners become exposed extensively to the target language.

5. Discussion

The present study was designed to investigate L2 developmental patterns of constructional knowledge. It focused on Korean EFL learners at three different age groups and analyzed their performance in a sentence sorting and a translation task. The findings of these two tasks showed that the constructional knowledge of Korean EFL learners developed incrementally as their exposure to the target language extends.

In the sorting task, construction-based sorting became more predominant as the learners’ L2 proficiency improved. First, the beginner level learners showed predominant verb-centered sorting. This seems to indicate rather underdeveloped aspect of construction knowledge of these learners, which is harmonious with the finding in the translation task that they received the lowest scores in all but the transitive construction. The intermediate level learners, on the other hand, produced mixed results in the sentence sorting task. The cluster analysis revealed that these learners relied more strongly on verb than construction in the sentences containing heavy verbs, while paying greater attention to construction in the sentences containing light verbs. These results seem to be in accordance with the intermediate nature of their constructional knowledge in English. Similarly, the advanced level learners produced mixed results in sentence sorting. However, unlike the clusters of the intermediate level learners, the clusters of the advanced learners showed no clear context-dependent tendency toward either verb or construction.

A special remark is in order on the rather murky aspects of the advanced learners’ performance in the sorting task. The results may be attributable to their insufficient constructional knowledge, which is evidenced by their poor performance in translating ditransitive and resultative sentences. Another interpretation is equally possible, however, for the indeterminate aspects of their constructional knowledge. According to Bencini & Goldberg [6], even native speakers of English sometimes opt for verb-centered sorting and other times construction-based sorting. If this is the case, then the sorting pattern observed is what is expected of the advanced level learners.

The translation task, on the other hand, clearly showed the developmental patterns of the L2 learners. The beginner learners were in a very early developmental stage of constructional knowledge, while the intermediate learners were still in the process of developing constructional knowledge. The advanced learners showed better performance than the learners in the other groups, but their constructional knowledge is far from native-like, especially in the ditransitive and resultative constructions. By and large, the learners’ constructional knowledge developed incrementally as their exposure to the target language extends. It may also be noted that the development of their knowledge is construction-specific. The transitive construction was acquired at the earliest stage, followed by the ditransitive and the caused-motion construction. The acquisition of the resultative construction, on the other hand, was not completed even for the learners at the advanced level.

6. Conclusion

The purpose of this study was to provide a descriptive picture on the developmental patterns of constructional knowledge of Korean EFL learners at three different age groups. The study used a sorting and a translation task, and the results confirmed that the learners' constructional knowledge developed gradually as their exposure to the target language extends, which is harmonious with the basic assumption in the usage-based approach to language and language acquisition. It remains for further research to explore the causes of the indeterminate sorting patterns of the advanced level learners.

References


