The L2 Acquisition of English Locatives by Korean Speakers

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Abstract

The acquisition of argument structure has recently received considerable attention in SLA. This study seeks to add its findings regarding the knowledge of English locative patterns attained by Korean L2 learners to this line of inquiry. Following Bley-Vroman & Joo (2001) and Schwartz et al. (2003), an acceptability judgment task was administered to a group of adult Korean learners of English as a second language and to a group of native English speakers. The task consisted of items representing three different sentence patterns in which locative verbs appear: (a) Locative Alternation, (b) PP-Omission, and (c) Raising-to-Subject; these patterns were used to test for knowledge of semantic verb classes and how they map to syntax. The results are inconclusive regarding (c), but do provide evidence that Korean L2 learners can come to have principled, target-like knowledge of English locative verb classes in patterns (a) and (b).

1 Introduction

Over the past two decades, the acquisition of argument structure has received considerable attention in SLA research. Many studies, theoretically based on Pinker (1989), have focused on so-called alternations in argument structure. While earlier studies investigated the dative alternation (Bley-Vroman & Yoshinaga, 1992; Inagaki, 1996; Wolfe-Quintero, 1992), more recent studies have looked at other alternations, such as the Locative Alternation (Joo, 2000; Bley-Vroman & Joo, 2001; Juffs, 1996; Choi & Lakshmanan, 2002). Research on this topic is of value to the field of SLA...
because it involves “such basic cognitive-linguistic concepts as acting, being affected, moving, changing, [and] causing,” (Bley-Vroman & Joo, 2001) as well as more general areas of inquiry such as syntax-semantics associations and L2 epistemology (Schwartz, Deky spotting & Sprouse, 2003). L2 knowledge and acquisition of locative verbs and their classes is the focus of this paper. After a discussion of what is known about English and Korean locative verbs, and a review of recent related studies, the current study will be presented, and the results will be discussed.

1.1 Locative Patterns

1.1.1 English locatives

Locative verbs are those which denote the change of position of a substance, material, or set of objects (hereafter referred to as FIGURE; elsewhere called ‘theme’ or ‘content’) from some initial position onto or into some surface or container (hereafter referred to as GROUND; elsewhere called ‘goal’ or ‘container’) (Pinker, 1989). Consider the following sentences containing locative verbs:

(1) Alternating GROUND-class  
   a. Kama packed clothes into the suitcase. (FIGURE Frame)  
   b. Kama packed the suitcase with clothes. (GROUND Frame)  

(2) Alternating FIGURE-class  
   a. Nicole squirted water onto the wall. (FIGURE Frame)  
   b. Nicole squirted the wall with water. (GROUND Frame)  

(3) Non-alternating GROUND-class  
   a. *Kama filled water into the bucket. (FIGURE Frame)  
   b. Kama filled the bucket with water. (GROUND Frame)  

(4) Non-alternating FIGURE-class  
   a. Nicole spilled coffee onto the floor. (FIGURE Frame)  
   b. *Nicole spilled the floor with coffee. (GROUND Frame)  

For Pinker (1989), the acceptability of the sentences in (1), (2), (3b), and (4a) and the unacceptability of (3a) and (4b) are explained by the relationship between lexical semantics and syntax. Argument structure is mentally represented by thematic cores, or “schematization[s] of a type of event or relationship that lies at the core of the meanings of a class of possible verbs” (73). The two possible thematic cores for locatives are:

(5) X moves Y into/onto Z  
(6) X causes Y to change its state by means of moving Z to Y

These schematizations can both be associated with two Broad Range semantic (conflation) classes of locative verbs: FIGURE-class and GROUND-class (Choi &
Lakshmanan, 2002). **FIGURE-class verbs** indicate the manner of motion by which the **FIGURE** moves into/onto the **GROUND**, but not necessarily the end-state of the **GROUND**. On the other hand, **GROUND-class verbs** indicate the end-state of the **GROUND**, after the **FIGURE** has been moved into/onto it. The associations between these two **Broad conflation classes** and the two possible thematic cores of locatives are mapped to syntactic structure via **linking rules**, which are “regular ways of mapping arguments onto grammatical functions ... by virtue of their thematic roles” (Pinker, 1989: 74). These linking rules, also known as **Broad Range rules**, can be clearly seen in (7) (adapted from Kim (1999)).

(7) Broad Range rules: Linking rules for locatives

a. Manner-of-motion meaning (**FIGURE-class**) $\leftrightarrow$ V NP$_{FIGURE}$ PP$_{GROUND}$

b. Change-of-state meaning (**GROUND-class**) $\leftrightarrow$ V NP$_{GROUND}$ PP$_{FIGURE}$

However, these associations are neither exclusive, nor without exceptions. To explain this, Pinker posits **lexical rules**, which associate one kind of lexical entry with another (in this case, argument structure (5) with (6)). It is the application of a lexical rule that associates the thematic core in (5) with the one in (6) and allows a verb to be linked to both of them. This ability of a verb to be linked to two thematic cores, thus two argument structures, and to appear in sentences with two different syntactic structures is what Pinker calls **locativization**, or the **Locative Alternation**. Some verbs are allowed to appear in both patterns, making them members of an alternating class, comprised of verbs from both **Broad conflation classes** mentioned above, while other verbs are allowed to appear in only one of the patterns, making them members of a non-alternating class, also comprised of verbs from both **Broad conflation classes**. The application of the lexical rule that produces the Locative Alternation is constrained by a verb’s membership in a more specific **Narrow conflation class**, a semantically cohesive subclass of verbs. These constraints, Pinker’s **Narrow Range rules**, delineate precisely which verbs can be linked to two argument structures, and thus be allowed to alternate.

One more look at the examples in (1) – (4) will illustrate the Locative Alternation more clearly. While the verbs **pack** and **fill**, in (1) and (3) respectively, are both members of the **Broad GROUND-class**, they are not members of the same **Narrow conflation class**. According to Pinker’s (1989) analysis, **pack** is a member of a subclass of verbs specifying roughly that a mass is put into a container, so that the container might perform its function. This subclass of verbs (e.g., **load** and **stock**) is one that allows the locative alternation. **Fill** on the other hand, also a **GROUND-class** verb, is a non-alternating verb due to its membership in the **Narrow class** of verbs specifying that a surface is completely covered by a layer, either liquid or solid (e.g., **douse**, **cover**, **pave**). The verbs **squirt** and **spill**, in (2) and (4) respectively, are both **FIGURE-class verbs**, but like **pack** and **fill**, are members of different subclasses. **Squirt** belongs to an alternating subclass of verbs sharing as part of their meaning the specification of ballistic motion of a mass in a specified spatial distribution, whereas **spill** belongs to a non-alternating subclass specifying that a mass is being enabled to move via gravity. Following Choi & Lakshmanan (2002), for simplicity, locative verbs can be divided.
into four groups, as seen in (1) – (4): Alternating FIGURE-class, Alternating GROUND-class, Non-Alternating FIGURE-class, and Non-Alternating GROUND-class.

1.1.2 Korean locatives
While Broad Range Rules and the constructional meaning of locative patterns exist cross-linguistically, Narrow Range rules and association of the Holism Effect\(^1\) with certain patterns is thought to be language-particular (Pinker, 1989; Joo, 2000; Bley-Vroman & Joo, 2001; Schwartz et al., 2003). Before proceeding further, a look at what is known about Korean locatives is necessary. In what they called a preliminary analysis, Bley-Vroman & Joo (2001) explained that their results showed the presence of a ‘FIGURE-meaning’ group, a ‘GROUND-meaning’ group, and an ‘alternating-meaning’ group, but that Korean locative verbs were not classified into these groups in the same way that English locatives are. They also claimed that the Holism Effect existed in Korean and that its interpretive effects seem to follow the same patterns as they do in English. Choi & Lakshmanan (2002) also investigated the acquisition of locatives by Korean learners of English. Table 1, adapted from their study, serves as a clear comparison of the differences in the syntax of locatives in English and Korean. Of significance is that Korean and English differ in which classes they allow to alternate.

<table>
<thead>
<tr>
<th>Table 1. Possible Locative patterns in English and Korean</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
</tr>
<tr>
<td>Alternating</td>
</tr>
<tr>
<td>FIGURE-class</td>
</tr>
<tr>
<td>GROUND-class</td>
</tr>
</tbody>
</table>

Note. Adapted from Choi & Lakshmanan (2002).

Examples of how Korean locatives pattern differently from English are seen in sentences in (8) and (9), also adapted from Choi & Lakshmanan (2002).

(8) FIGURE-class verbs
a. Yeonghee-ka namwu-ey mwul-ul ppwuli-ess-ta
   Yeonghee-NOM tree-LOC water-ACC spray-PAST-DECL
   ‘Yeonghee sprayed water onto the tree.’

\(^1\) Another feature of the Locative Alternation which needs to be addressed is its constructional meaning. The constructional meaning of locatives is often called the object-holism effect, or Holism Effect (Anderson, 1971; Bley-Vroman & Joo, 2001; Choi & Lakshmanan, 2002; Pinker, 1989), by which a GROUND-NP, but not a FIGURE-NP, in direct object position is to be interpreted as being entirely affected; this interpretation does not hold for GROUND-PP’s in locative patterns. For example, in (1b) Kama packed the suitcase with clothes, the suitcase is understood to be completely packed with clothes, while in (1a) Kama packed clothes into the suitcase, there may be room left for more clothes; in (1a), there is no sense of the extent to which the suitcase is full.
b. *Yeonghee-ka mwul-lo namwu-ey ppwuli-ess-ta
Yeonghee-NOM water-WITH tree-ACC spray-PAST-DECL
‘Yeonghee sprayed the tree with water.’

(9) GROUND-class verbs
a. Yeonghee-ka mwul-lo khep-ul chaywu-ess-ta
Yeonghee-NOM water-WITH glass-ACC fill-PAST-DECL
‘Yeonghee filled the glass with water.’
b. Yeonghee-ka khep-ey mwul-ul chaywu-ess-ta
Yeonghee-NOM glass-LOC water-ACC fill-PAST-DECL
*‘Yeonghee filled water into the glass.’

What we are seeing in (8) is that the GROUND-class verb ppwuli-ta (spray) is not allowed to alternate; it can only occur with FIGURE-NP in direct object position (i.e., with a FIGURE-frame). In English, spray is allowed to alternate. In (9), we can see that the FIGURE-class verb chaywu-ta (fill) is allowed to alternate; it can occur with a FIGURE-NP in direct object position or with a FIGURE-PP (i.e., with a FIGURE-frame or GROUND-frame, respectively). This may or may not cause problems for Korean speakers learning English, however, it does suggest that whatever knowledge of English locatives Korean-speaking L2ers do have does not come entirely from their L1.

2 Previous Studies

Given the complexity and the subtlety of the rules governing Locative Alternation, and that they differ cross-linguistically, one wonders whether L2 learners can acquire target-like use of locatives, and if so, how? A few of the related studies mentioned above have shed some light on these questions, however, in doing so they have raised yet more questions. Of interest here are Joo (2000), Bley-Vroman & Joo (2001), Choi & Lakshmanan (2002) and Schwartz et al. (2003).

Bley-Vroman & Joo (2001), based on research carried out by Joo (2000), investigated and discussed Korean speaking L2 learners’ acquisition of both the Holism Effect and of the Narrow Range Rules governing Locative Alternation. To examine their participants’ knowledge of these two features of locative patterns, two forced-choice picture-description tasks were used. These tasks consisted of matching sentences containing locative verbs to pictures which best depict the details of the sentence. The first task presented participants with a sentence containing a locative verb occurring in either a GROUND-frame or a FIGURE-frame. The participants were to read the stimulus sentence and then choose which set of two pictures (two sets were given) best illustrated the stimulus sentence. Both GROUND-class verbs and FIGURE-class verbs were used in both locative patterns (GROUND-frame and FIGURE-frame), so some sentences were
grammatical and some were ungrammatical. In the second task, participants were presented with only one set of pictures, but two sentences, and were to choose which sentence (GROUND-frame or FIGURE-frame) best represented the picture. Again, some sentences were grammatical and some were ungrammatical. The results of these two tasks are shown in Tables 2 and 3.

Table 2. Native speakers’ and L2ers’ Mean Choice of GROUND Pictures

<table>
<thead>
<tr>
<th>Verb Class</th>
<th>Sentence Type</th>
<th>Mean choice of GROUND picture</th>
<th>Mean choice of GROUND picture</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIGURE class</td>
<td>FIGURE frame</td>
<td>1.88</td>
<td>1.97</td>
</tr>
<tr>
<td>(pour, spill, glue, nail)</td>
<td>GROUND frame</td>
<td>0.59</td>
<td>2.83</td>
</tr>
<tr>
<td>GROUND Class</td>
<td>FIGURE frame</td>
<td>0.53</td>
<td>1.62</td>
</tr>
<tr>
<td>(fill, cover, decorate, pollute)</td>
<td>GROUND frame</td>
<td>3.65</td>
<td>3.46</td>
</tr>
<tr>
<td>Alternating Class</td>
<td>FIGURE frame</td>
<td>1.94</td>
<td>1.98</td>
</tr>
<tr>
<td>(spray, load, pack, sprinkle)</td>
<td>GROUND frame</td>
<td>3.35</td>
<td>2.98</td>
</tr>
</tbody>
</table>

Note. GROUND Pictures depicted a wholly-affected GROUND; adapted from Joo’s (2000) Task A results.

In Task A, the results of which are shown in Table 2, each of three verb classes was represented by four verbs, which each appeared in one FIGURE-frame sentence and one GROUND-frame sentence. In Table 2, the columns labeled “Mean Choice of GROUND Picture” show the mean number of choices of a picture showing a wholly affected GROUND, when given the type of sentence indicated in the “Sentence Type” column immediately to the left; the range is zero to four. As seen in Table 2, when the native English speakers were given a FIGURE-class verb in a GROUND-frame, an ungrammatical sentence, they selected a GROUND picture an average of 0.59 times. On the other hand, given the same sentence-type/verb-class pairing, the Korean-English L2ers selected a GROUND picture an average of 2.83 times. Furthermore, a two-way ANOVA showed a statistically significant effect for both verb class and sentence type in the native speakers’ results, but only for sentence type in the L2ers’ results. Joo concluded that while the native speakers showed knowledge of the verb classes and the Holism Effect, the L2ers had knowledge of only the Holism Effect.

The results of Task B are shown in Table 3. The difference between Table 3 and Table 2 is that in Table 3, the numbers in the third column represent the mean number of choices of a GROUND-frame sentence when given the picture type indicated in the second column.
As seen in Table 3, when given a FIGURE or a GROUND picture, the native speakers rarely chose an ungrammatical GROUND-frame sentence with a FIGURE-class verb, opting instead for “neither”, whereas the L2ers did so only for the FIGURE pictures; the L2ers chose an ungrammatical GROUND-frame with a FIGURE-class verb to represent a GROUND picture an average of 2.47 times (out of a possible 4 times). Furthermore, a two-way repeated measures ANOVA indicated a statistically significant effect for picture type and verb class in both the native speakers’ and the L2ers’ choices. However, in the native speakers’ choices, verb class accounted for more of the variability, whereas in the L2ers’ choices, picture type accounted for more of the variability. Therefore, Joo concluded that while both groups have knowledge of the Holism Effect, the native speakers only, and not the L2ers have knowledge of the verb classes.

On the basis of these results, Bley-Vroman & Joo (2001) concluded that their participants did have knowledge of the Holism Effect in English, but did not have target-like knowledge of the Narrow Range verb classes. Furthermore, they claimed that “Korean learners showed no effect for narrow verb class” (Bley-Vroman & Joo, 2001: 207) and “did not distinguish which group the verbs belonged to” (Joo, 2000: 56). If these conclusions are correct, it would be predicted, according to Schwartz et al. (2003), that locative verbs in Korean L2 learners’ Interlanguage all fall into one large alternating class. Schwartz et al.'s (2003) specific hypotheses regarding this conclusion are given in more detail in Section 3.

The task in Bley-Vroman and Joo (2001) worked very well in providing evidence relevant to the Holism Effect. However, testing two aspects of the Locative Alternation using a single task design (i.e., one that tests the Holism Effect) raises methodological concerns. Schwartz et al. (2003) point out a few areas of concern related to the task used in Joo (2000). They argue that it tests interpretive effects, but not grammaticality. More specifically, Schwartz et al. claim that the results provide “no direct evidence bearing on which sentences the L2ers take to be grammatical vs. ungrammatical” (6). A reexamination of the results showed that the participants did in fact make a distinction in their selection of GROUND/FIGURE frames in the second task, but not in the first task, which means that the two versions of the forced-choice picture-description task yielded different results. The final relevant point is the possibility that contextual coercion

<table>
<thead>
<tr>
<th>Verb Class</th>
<th>Picture Type</th>
<th>Native Speakers (n=17) Mean choice of GROUND frame SD</th>
<th>L2ers (n=59) Mean choice of GROUND frame SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIGURE class</td>
<td>FIGURE picture</td>
<td>0.12 0.33</td>
<td>0.79 0.95</td>
</tr>
<tr>
<td>(pour, spill, glue, nail)</td>
<td>GROUND picture</td>
<td>0.41 0.71</td>
<td>2.47 1.37</td>
</tr>
<tr>
<td>GROUND Class</td>
<td>FIGURE picture</td>
<td>2.41 1.37</td>
<td>0.67 1.09</td>
</tr>
<tr>
<td>(fill, cover, decorate, pollute)</td>
<td>GROUND picture</td>
<td>3.88 0.33</td>
<td>3.47 0.73</td>
</tr>
<tr>
<td>Alternating Class</td>
<td>FIGURE picture</td>
<td>0.29 0.47</td>
<td>0.68 1.10</td>
</tr>
<tr>
<td>(spray, load, pack, sprinkle)</td>
<td>GROUND picture</td>
<td>3.24 1.25</td>
<td>3.05 1.16</td>
</tr>
</tbody>
</table>

*Note. GROUND Frames denoted a wholly-affected GROUND; adapted from Joo’s (2000) Task A results.*
played a role in Joo’s participants’ picture-sentence matching task. Coercion, also seen in child L1 acquisition (Pinker, 1989), is a phenomenon in which context can force an expression to be used beyond the normal use restricted by its lexical semantic restrictions. This may play a role in adult L2 acquisition, for example, when a learner may have target-like representations of a verb, but uses it beyond its restrictions in certain situations such as forced-choice picture-description task. Schwartz et al.’s reanalysis serves as the major conceptual and methodological background for the current study.

The final relevant study that deserves attention is Choi & Lakshmanan (2002). In an investigation of the acquisition and interpretation of English locatives by Korean L2ers, Choi & Lakshmanan (2002) tested 20 Korean-English bilingual university students studying in the United States. Of primary relevance to the present study is their pre-test, which was used to determine which participants had acquired native-like knowledge of the verb classes. The task was a 40-item acceptability judgment task, in which the bilingual participants were presented with randomly ordered sentences containing locative verbs and asked to choose whether the sentences were acceptable or not. Of the 40 items, 20 were distracters. Verbs from each of the non-alternating classes appeared 6 times, and verbs from each of the alternating classes appeared 4 times. Choi & Lakshmanan reported that 9 of the 20 participants performed like the native-speakers on the task. They considered this bilingual group to have native-like knowledge of the Locative Alternation, and included them in the rest of their study. Table 4 shows a comparison of this advanced group’s judgments with those of the native speaker group. The values in the left column under each participant group represent the mean number of judgments which correspond to acceptability in terms of the verb classes.

<table>
<thead>
<tr>
<th>Table 4. Mean No. of Correct Responses to Choi &amp; Lakshmanan’s (2002) Locative Alternation GJ Task</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Group (n=9)</td>
</tr>
<tr>
<td>Mean</td>
</tr>
<tr>
<td>Non-alt. FIGURE (n=6)</td>
</tr>
<tr>
<td>Non-alt. GROUND (n=6)</td>
</tr>
<tr>
<td>Alt. FIGURE (n=4)</td>
</tr>
<tr>
<td>Alt. GROUND (n=4)</td>
</tr>
</tbody>
</table>

A comparison of the mean scores of each group shows striking similarities, and although the non-native-speaker group did not perform perfectly cohesively, a comparable level of variance can be seen in the native speaker group as well. These results clearly show the participants have, in fact, attained native-like knowledge of the verb classes. In this case, the grammaticality judgment task appears to have served its purpose.
3 Method

Given the differences between the methods, and the discrepancies in the results, of the studies described above, the verdict is still out regarding Korean L2 learners’ knowledge of English locatives. The questions still remain: What knowledge of English locative verbs do Korean native speakers learning English have? Do Korean native speakers learning English differentiate between the possible syntactic patterns of locative verbs in their IL, and if so, in what ways?

To answer these questions, Schwartz et al. (2003) argue that grammaticality judgment tasks should be used to investigate Korean L2 learners’ knowledge of rules governing the argument structure of locative verbs. They suggest looking beyond the heretofore examined knowledge of the Locative Alternation to other syntactic patterns of locative verbs, in order to further examine whether or not these verbs do in fact pattern like a class in terms of other possible syntactic constructions. These additional tests should provide evidence as to whether the L2ers have class-based knowledge of locative verbs that can be extended to or associated with other syntactic patterns. They might also indicate whether the patterns of grammaticality seen in the Locative Alternation are an effect of the realization of the entire argument structure, or of only certain arguments in certain positions. Two of the tests they suggest are below in (10) – (11), and are adapted from Kim (1999).

(10) Test 2: PP-omission
a. *Nicole dripped the floor (with juice).
b. Nicole dripped juice (onto the floor).
c. *Kama flooded water (into the basement).
d. Kama flooded the basement (with water).
e. Kama packed the suitcase (with clothes).
f. Kama packed clothes (into the suitcase).

(11) Test 3: Raising-to-Subject
a. *The floor dripped with juice.
b. Juice dripped onto the floor.
c. *The water filled into the basement.
d. The basement filled with water.
e. *The suitcase packed with clothes in a few minutes.
f. The clothes packed into the suitcase in a few minutes.

Thus, in addition to a test consisting of items similar to those in (1) - (4), which will examine the Locative Alternation, two tests composed of items similar to those in (10) and (11) will be administered in this study. The following hypotheses were chosen for two reasons. First, they serve as tests of the predictions made by Schwartz et al. (2003) regarding Bley-Vroman & Joo’s (2001) and Joo’s (2000) conclusions that for Korean speaking learners of English “principled knowledge of narrow [verb] classes is difficult or impossible to attain” (216). Second, they serve as a starting point for examining and
discussing the results of the two new tests of Korean L2 learners' knowledge of locatives. Hypothesis 1 is that no principled distinctions will be made among the classes of locative verbs on the "locative alternation" test items. This predicts the results of responses to test items like (1) – (4). Hypothesis 2 is that no principled distinctions will be made among the classes of locative verbs on the "PP-Omission" test items; both non-alternating FIGURE-class verbs and non-alternating GROUND-class verbs will be allowed to 'drop' the GROUND-PP and FIGURE-PP, respectively, as will both alternating classes. Participants will accept sentences like (10a) and (10c) just as they will (10b) and (10d-f). This predicts the results of responses to test items like (10). Hypothesis 3 is that no principled distinctions will be made among the classes of locative verbs on the "Raising-to-Subject" test items; these items will be acceptable with both non-alternating and alternating verb classes and will pattern like alternating verbs do (e.g., (11e-f)). This predicts the results of responses to test items like (11).

3.1 Participants
The L2 learner participants in this pilot study were five adult Korean learners of English. Five were graduate students at the University of Hawai‘i at Manoa. All reported having studied English for 9-11 years. Their average time spent in the U.S. was 1 year. TOEFL scores ranged from 600-650. A group of five adult native speakers of English from the continental United States were also included in order to provide native speaker judgments with which to compare the Korean L2 learners’ responses.

3.2 Materials
A pre-test consisting of a picture-verb matching exercise, was created to make sure that lack of knowledge or familiarity with the verbs was not a factor in the participants' task performance.2 A 72-item forced-choice acceptability judgment task was also created, in which each critical sentence appeared followed by a Likert scale from negative two to two. A list of test items appears in Appendix A. No "do not know" or "not sure" option was given. This scale was chosen over a simple acceptable/unacceptable choice to more accurately account for variability due to indeterminate intuitions. Zero was not an option either, as it is extremely difficult to interpret.3 This decision also reflects the fact that some sentences seem somewhat strange, especially without context, but are nonetheless acceptable. The test items were also presented in semi-random order, so that similar sentences were not grouped together.4 Twelve verbs were used on the test: three verbs for each of the four classes. There were three "tests", or sentence types, testing

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2 An anonymous reviewer correctly suggests that an additional pre-test for knowledge of the syntactic constructions being examined should be used, which, in the case of the Raising-to-Subject items in this study, might provide important information for interpretation of the mixed results.

3 In future studies, a Likert scale of all positive integers could be used to avoid this pitfall.

4 This was not easily avoided, however, and one participant reported having noticed groupings of similar sentences, since there were no distractors. That participant continued to explain that noticing similar sentences did not help her/his judgment because s/he “didn’t know which verb belonged to which class.” This potential problem is not taken lightly and reports on a large-scale study that employs a design in which items are presented independently using computer software, to avoid precisely this issue, is in preparation (Schwartz, Dekydspotter, Sprouse & Bullock, in prep).
each of the three patterns shown above: Locative Alternation, PP-Omission, and Raising-to-Subject. Each of the 12 verbs appeared in two sentences on each of three tests for a total of 72 items. Two items from test are shown in Figure 1. A questionnaire, which can be found in Appendix B, was also created to obtain information about participants’ language background and metalinguistic knowledge or awareness regarding the purposes of the task.

<table>
<thead>
<tr>
<th>Acceptable</th>
<th>Unacceptable</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>-1</td>
</tr>
<tr>
<td>2</td>
<td>-2</td>
</tr>
</tbody>
</table>

1. Kama filled the water into the bucket.
2. The truck loaded with apples in a few hours.

Figure 1. Sample Acceptability Task Items

3.3 Procedure
The participants were first given the pre-test, which they could complete in as much time as needed. They were then given the acceptability judgment task, in which they were asked to assign each item a degree of acceptability between -2 and 2. They were asked to read each sentence and make their judgment based on whether the sentence “sounded good” or “sounded bad.” They were given as much time as they needed to complete the test, but were encouraged to answer each item quickly and move on to the next; they were asked not to go back and change their answers after they had marked them. This request was made to ensure that participants did not change their judgments for one sentence to resemble their judgment of a similar sentence later on; it was desirable for the purposes of this test that each sentence be judged independently.

4 Results
After administering the task, the pre-test was scored first. Korean L2er number 1 (K1) incorrectly matched one verb, sprinkle, which was instead matched to an extra picture meant to represent scatter (a similar verb that happens to be in the same Narrow class as sprinkle). Korean L2er number 2 (K2) matched all 12 verbs with the correct pictures. K3 matched only eight correctly, choosing incorrect pictures for spray, sprinkle, glue, and pollute. K4 and K5 missed only one each, glue and sprinkle respectively.

The results of the acceptability judgment task were then tabulated. Judgments of 1 and 2 were counted as acceptances; judgments of -2 and -1 were counted as rejections.

5 The fact that there were no distracters presents a potential task-design problem (see also Footnote 3): participants might have been able to notice patterns among the items and compare items when making their judgments, even though they were instructed not compare sentences and to mark their answers as quickly as possible. No subject took longer than 11 minutes to complete the task, which suggests a maximum average of about 9.2 seconds per item. It seems unlikely that much comparing could happen at this rate, however, this issue is being dealt with in the design of a new instrument (Schwartz, Dekydspotter, Sprouse & Bullock, in prep), which will likely shed more light on this issue.

6 Mean Likert scale judgments by both groups (L2ers and NS) can be found in Appendix C.
As noted above, the starting point for discussing the findings will be Hypotheses 1-3. Although Hypothesis 3 was supported (because it was null), the results from the Raising-to-Subject items are not discussed here due to methodological problems with the item-design.7

The Korean L2ers not only made principled distinctions between locative verbs, they did so in patterns very similar those of the native speakers (NS). Hypothesis 1 was not supported. In terms of locativization, the L2ers made distinctions between alternating and non-alternating verbs, and they did so along lines that clearly follow the patterns predicted by verb classes (see Table 5). Table 5 shows the number of acceptances made by each of the L2ers and the NS on the Locative Alternation items. With few exceptions, the L2ers accepted sentences containing verbs from both alternating classes in both frames, as did the NS. They also made distinctions between the possible patterns in which the non-alternating verbs can occur based upon the GROUND/FIGURE distinction, as did the NS.8

A review of the individual participants' responses does not reveal any major exceptions, aside from that K4 seems to be quite accepting. However, considering the responses item-wise, it is notable that supposedly unacceptable Non-alternating GROUND verbs in FIGURE Frames were accepted eight times (five by the L2ers, three by the NS), four of which were of the sentence *Kama filled water into the bucket.9 Four of the five L2ers incorrectly accepted *Kama spilled the carpet with coffee.

---

7 Neither the NS nor the L2ers made any principled distinctions between alternating and non-alternating verbs, nor did they accept all the sentences with the causative-inchoative alternation (in which either the FIGURE-NP or the GROUND-NP is 'raised to subject' position) according to the pattern predicted in (11). The lack of conformity both within groups and between groups indicates the possibility of a flaw in the design of these test items. An anonymous reviewer correctly pointed out that not all of the ungrammatical Raising-to-Subject sentences sounded equally bad. In future studies, the provision of extended context, whether audio, video, pictures, or text, might help to alleviate this potential problem.

8 The notable exception is that the L2ers accepted five items with non-alternating FIGURE-class verbs in GROUND-frames (e.g. Kama spilled the carpet with coffee), whereas, the NS accepted none of these items. Because this category of items includes sentences containing the verb pour, this exception initially caused alarm. Kim (1999), in a cross-linguistic study of the L1 acquisition of locatives in 13 languages, proposed as a universal that pour-class (FIGURE) verbs allow only FIGURE frames (Kim, 1999). A closer look at the judgments of the items containing pour showed that none of the subjects accepted the ungrammatical pour-sentences or reject the grammatical ones. Of the five accepted ungrammatical sentences, four were sentences containing spill (a member of the same Narrow class as pour) and one contained glue (not a member of the same Narrow class as pour). Although both the L2ers and the NS judgments of pour sentences reflect the proposed universal, the L2ers judgments of spill sentences do not. If Kim’s proposal is in fact a universal, it appears not be in operation in these L2ers’ judgments.

9 Two L2ers and two NS participants accepted this sentence. Upon reflection, it does seem “not that bad.” Interestingly, fill is not included in any of the Narrow classes outlined in Pinker (1989), but he does suggest that it might be a member of one of the non-alternating GROUND classes, but with an extra semantic component. The importance of this finding is that when constructing tasks such as this one, it is better to use verbs from the same proposed Narrow class (see Schwartz, Dekydsporter, Sprouse & Bullock, 2003, in preparation).
Table 5. Number of Acceptances of Locative Alternation Items

<table>
<thead>
<tr>
<th>Verb Type</th>
<th>Frame Type</th>
<th>K1</th>
<th>K2</th>
<th>K3</th>
<th>K4</th>
<th>K5</th>
<th>N1</th>
<th>N2</th>
<th>N3</th>
<th>N4</th>
<th>N5</th>
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<tr>
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<td><strong>FIGURE</strong></td>
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<td>3</td>
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</tr>
<tr>
<td>(squirt, spray, sprinkle)</td>
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<td>2</td>
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<td>2</td>
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</tr>
<tr>
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<tr>
<td>(pack, cram, load)</td>
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<tr>
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<td><strong>FIGURE</strong></td>
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<tr>
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</tbody>
</table>

Notes. K=Korean L2er; N=Native Speaker; for all numeric cells, n=3.

Hypothesis 2 was not supported. As seen in Table 6, the L2ers appear to be making class-wise distinctions, as do the NS. In general, participants allowed alternating **GROUND**- and **FIGURE**-class verbs to occur in sentences with both **GROUND**-PPs and **FIGURE**-PPs omitted, as did the NS. Furthermore, there appears to be a pattern of differentiation between non-alternating **GROUND**- and **FIGURE**-class verbs. Participants generally accepted sentences containing **GROUND**-class verbs and **GROUND**-NPs in the Direct Object (DO) position (i.e., the **FIGURE**-PP is omitted) and sentences containing **FIGURE**-class and **FIGURE**-NPs in DO position (i.e., the **GROUND**-PP is omitted). Like the NS, the L2ers found it unacceptable to allow a “mismatch” between the class of the verb and DO when the verb is a non-alternator.

While this picture holds for the PP-Omission items generally, these results are less clear than those for the Locative Alternation items. One explanation for this might be that the verb classes, as outlined by Pinker (1989), are only directly associated with the full argument structures seen in (5) and (6) above. Thus when the verbs occur in sentences in which not all the arguments of (5) and (6) are realized, the classes are not relevant and class-wise patterns break down. This would not, however, explain why the pattern is generally the same on both PP-Omission and Locative Alternation items. Another explanation might be that with little or no context, the sentences can be construed in ways other than what was intended when they were created for this task, or might simply be rejected because they seem incomplete. This second explanation might account for the fact that three of the five NS, and two of the five L2ers, accepted *Matt glued the wall. Providing a context for the critical sentences in an acceptability judgment task may help to flesh out these possibilities (see Schwartz, Dekydsporter, Sprouse & Bullock, 2003, in preparation).
Table 7 provides each of the L2ers’ score by verb-class. Due to the mixed results and the potential item-design problems, the results for the Raising-to-Subject are not included in Table 7. The scores represent percentages of correct responses to items, where a correct response was determined by the NS results. Items on which less than four of the five NS agreed upon were not included. With few exceptions, the L2ers were generally above 80% accuracy. These overall results suggest that the Korean-speaking English learners had attained near-native-like class-based knowledge of English Locative verbs.

Table 7. L2ers’ Percent Correct on the Locative Alternation and PP-Omission Items

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Notes. K=Korean L2er; N=Native Speaker; for all numeric cells, n=3.

Table 6. Number of Acceptances of PP-Omission Items

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Notes. K=Korean L2er; N=Native Speaker; for all numeric cells, n=3.
5 Discussion

The findings in this study soundly disconfirm Hypotheses 1 and 2, and provide inconclusive evidence regarding Hypothesis 3. This lends support to the interpretation of Bley-Vroman & Joo (2001) by Schwartz et al. (2003).\(^{10}\) The Korean L2ers in this study did differentiate between alternating and non-alternating verbs along lines delineated by GROUND- and FIGURE-classes in terms of the patterns they license in tests of the Locative Alternation and PP-omission. The significance of these findings is that they show not only that it was possible for these Korean L2 learners to make principled distinctions among locative verbs and patterns, but that they were able to make very similar principled distinctions to those made by native English speakers.

While the objectives and scope of this study are limited to what knowledge Korean learners of English have of locative verbs, a brief discussion of two possible explanations is warranted. The first involves simple verb-by-verb learning. The assumption here is that learners learn each of the verbs and their argument structures by exposure to input and, likely, noticing the patterns in which the verbs occur. Since we do not have development data on the L2ers in this study, we could assume that their high accuracy rates are due to their having initially made the correct hypotheses regarding the syntax of English locatives. Although the participants did not demonstrate explicit knowledge of the specific Narrow classes of locative verbs and their syntactic patterns on the questionnaire, this does not necessarily rule out the verb-by-verb learning by noticing strategy. This explanation does, however, seem implausible considering the problem of either unlearning incorrect hypotheses, if made, or learning the impossibilities. As Bley-Vroman and Joo (2001) explain, the Narrow range constraints on locative patterns may not be perceived easily in the input and “the determination of [these constraints] may require something like noticing nonoccurrence” (216).

The second explanation, meant to be compatible with a UG framework, would resemble something like Pinker’s (1989) account of argument structure learning mechanisms (see Joo (2003) for an interesting discussion of these mechanisms as they pertain to L2 learning). If Pinker’s account is accepted, these results would be compatible with the Full Transfer/Full Access Hypothesis (Schwartz & Sprouse, 1996). In order to more thoroughly investigate the plausibility of this explanation, more data regarding locative verb classes and syntax in Korean is necessary, as are studies implementing either cross-sectional or long-term designs to examine development (Schwartz et al. 2003, in preparation). Based on the preliminary findings discussed in Table 1, one might predict that possible transfer effects for Korean L2ers would be high rejection rates of (Alternating) FIGURE-class verbs in GROUND frames, and low rejection rates for (Non-alternating) GROUND-class verbs in FIGURE frames. Further investigation

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\(^{10}\) This part of the conclusion must be tempered by two facts: 1) the task in Joo (2000) did not ask for acceptability judgments, and 2) the participants in the this study were different from those in Joo’s study in terms of proficiency (Joo’s participants’ TOEFL scores: 550-650; KSG group’s scores: 600-650) and exposure to the target-language environment (Joo’s participants were in Korea, whereas the participants in this study were in the United States).
into how knowledge of L2 argument structure is attained, what the course of development is like and what it involves, but for now the answer to whether or not target-like L2 knowledge of locative verbs can be acquired appears to be yes.

Acknowledgements

I would like to sincerely thank Bonnie D. Schwartz for her guidance, insight, and overtime seminars. I would also like to thank Dick Schmidt for his helpful suggestions, as well as Robert Bley-Vroman, Hye-ri Joo, and Akira Omaki for useful discussions. All errors are, of course, my own.

References


Appendix A

Locative Alternation

*Alternating Figure-class*

a. Nicole squirted water onto the wall.
b. Nicole squirted the wall with water.
c. Kama sprayed paint onto the door.
d. Kama sprayed the door with paint.
e. Ethan sprinkled sugar onto the cake.
f. Ethan sprinkled the cake with sugar.

*Alternating Ground-class verbs*

a. Kama packed the clothes into the suitcase.
b. Kama packed the suitcase with the clothes.
c. Nicole crammed the books into the backpack.
d. Nicole crammed the backpack with the books.
e. Ethan loaded the apples onto the truck.
f. Ethan loaded the truck with the apples.

*Non-alternating Figure-class verbs*

d. Ethan poured water into the glass.
c. *Ethan poured the glass.
f. Matt glued the pictures.
e. *Matt glued the wall.
h. Kama spilled coffee onto the carpet.
g. *Kama spilled the carpet.

*Non-alternating Ground-class*

d. *Nicole covered cloth.
c. Nicole covered the table.
f. *Ethan polluted oil.
e. Ethan polluted the lake.
h. *Kama filled water.
g. Kama filled the bucket.

Raising to Subject

*Alternating Figure-class*

b. The water squirted onto the wall for a few minutes.
a. *The wall squirted with water for a few minutes.
d. The paint sprayed onto the door for ten minutes.
c. *The door sprayed with paint for ten minutes.
f. The sugar sprinkled onto the cake in a few minutes.
e. *The cake sprinkled with sugar in a few minutes.

*Alternating Ground-class*

b. The clothes packed into the suitcase in ten minutes.
a. *The suitcase packed with clothes in ten minutes.
d. The books crammed into the backpack in one minute.
c. *The backpack crammed with books in two minutes.
f. The apples loaded onto the truck in a few hours.
e. *The truck loaded with apples in a few hours.

*Non-alternating Figure-class*

d. The water poured into the glass for one minute.
c. *The glass poured with water for one minute.
f. The pictures glued onto the wall in ten minutes.
e. *The wall glued with the pictures in ten minutes.
h. The coffee spilled on the carpet for one minute.
g. *The carpet spilled with coffee for one minute.

*Non-alternating Ground-class*

a. *The water filled into the bucket in five minutes.
b. The bucket filled with water in five minutes.
c. *The cloth covered onto the table in two minutes.
d. The table covered with cloth in two minutes.
e. *The oil polluted into the lake in one hour.
f. The lake polluted with oil in one hour.
Appendix B*

*In the participant version, more answer space was given.

Information Sheet:

(DO NOT WRITE YOUR NAME ON THIS SHEET)

1. Are you over the age of 18 (born during/after 1984)?
2. What is your first language?
3. What other languages do you speak (other than English)?
4. How many years have you studied English?
5. When was your first visit to an English-speaking country?
6. How long have you been in the United States?
7. What is your most recent TOEFL score? ________ TOEIC? ________
8. What was the purpose of today's test?
9. What strategies did you use to choose acceptable or unacceptable? (How did you make your choices?)
10. Did you notice any patterns in any of the sentences or answers?
Appendix C

Table 8.  
*Mean Judgments of Verb Classes by Frame Type for the Locative Alternation Items*  
<table>
<thead>
<tr>
<th>Verb Type</th>
<th>Frame Type</th>
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<th>NS (n=5)</th>
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</tbody>
</table>

Note: Judgment range: -2 to 2.

Table 9.  
*Mean Judgments of Verb Classes by Frame Type for the PP-Omission Items*  
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<td>sd</td>
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</tr>
</tbody>
</table>

Note: Judgment range: -2 to 2.

Table 10.  
*Mean Judgments of Verb Classes by Frame Type for the PP-Omission Items.*  
<table>
<thead>
<tr>
<th>Verb Type</th>
<th>NP in Subject Position</th>
<th>L2ers (n=5)</th>
<th>NS (n=5)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>m</td>
<td>sd</td>
</tr>
<tr>
<td>Alternating GROUND</td>
<td>GROUND</td>
<td>-0.80</td>
<td>0.40</td>
</tr>
<tr>
<td></td>
<td>FIGURE</td>
<td>1.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Alternating FIGURE</td>
<td>GROUND</td>
<td>0.13</td>
<td>0.42</td>
</tr>
<tr>
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<td>FIGURE</td>
<td>0.47</td>
<td>0.76</td>
</tr>
<tr>
<td>Non-alternating GROUND</td>
<td>GROUND</td>
<td>-0.93</td>
<td>0.31</td>
</tr>
<tr>
<td></td>
<td>FIGURE</td>
<td>-1.80</td>
<td>0.00</td>
</tr>
<tr>
<td>Non-alternating FIGURE</td>
<td>GROUND</td>
<td>-1.27</td>
<td>0.42</td>
</tr>
<tr>
<td></td>
<td>FIGURE</td>
<td>0.20</td>
<td>0.40</td>
</tr>
</tbody>
</table>

Note: Judgment range: -2 to 2.