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The Acquisition of English locative verbs by Korean native speakers

by

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A thesis submitted to:
the Faculty of Graduate Studies and Research
in partial fulfillment of
the requirements for the degree of

Master of Arts

School of Linguistics and Applied Language Studies

Carleton University

Ottawa, Ontario

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***The undersigned recommend to the Faculty of Graduate Studies
acceptance of the thesis***

***The Acquisition of English Locative Verbs by
Korean Native Speakers***

submitted by

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in partial fulfilment of the requirements for

the degree of Master of Arts

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ABSTRACT

This thesis investigated the acquisition of English locative construction by Korean speakers learning English in a learnability framework. The questions asked were 1) whether L2 learners acquire the language-specific knowledge of locative alternation, 2) whether L2 learners activate the universal affectedness linking rule and show the holism effect on the ground-object construction and 3) whether L2 learners acquire English locative construction by rules or by verb-specific learning. 25 advanced learners of English who speak Korean as their L1 and 16 English native speakers participated in the identical tasks; a production task, a picture-sentence matching task and a grammaticality judgment task. The production task and the picture-sentence matching task included artificial verbs to test the L2 learners' creativity and productivity of rules in their minds. The results showed that the Korean learners of English have strong preference for the ground-object construction matched with ground meaning picture. Also, the Korean speakers showed a high degree of accuracy when they judged the grammaticality of English sentences. It is hypothesized that Korean speakers learning English do know that the English locative structure carries its constructional meaning independent from the meaning of the verb. Moreover, although less advanced Korean learners of English showed a trace of their L1 knowledge, subjects showed strong evidence that they acquire knowledge of locative alternation in English eventually.

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Chapter 1

Introduction

1.1. The Lexicon and Second Language Acquisition (SLA)

The lexicon is no longer considered to be made up of a collection of purely idiosyncratic information but is seen as a system which is subject to universal constraints and a high degree of language-internal consistency (Grimshaw, 1994). The lexicon contains much information about syntactic representations of a language and, in particular, verbs determine the number of arguments and their syntactic category in a sentence. For that reason, the lexicon has been of central importance in many theories of linguistics. This has, in turn, focused interest on the language acquisition process.

It is easily imagined that learning the vocabulary of a second language for the learners is simply learning which words mean the same as ones in their L1. However, in recent studies, the acquisition of the lexicon is not considered to be this simple. Among many researchers, it is believed that there is a strong correlation between the meaning of a verb and its argument structure (Gropen et al 1991, Pinker 1989). Thus, learners cannot acquire a target language if they fail to map semantics onto syntax. Learning a verb's meaning and its associated syntactic structures poses a number of difficult problems for a learner. Especially for second language (L2) learners, the acquisition of the lexicon becomes more challenging, since their knowledge of first language (L1) lexicon might help or hinder the acquisition of L2 lexicon.

The fundamental question in language acquisition is how learners get started and

how they manage to achieve a mental grammar that is highly complex and systematic, even though it seems that the nature of input is not explicit enough (White 1989, Yip 1995). The acquisition of verb meanings is also linked to experience and perception and can also be shown to be underdetermined by the input (Juffs 1996a). The semantic representations for each verb are subtle and complex, so it becomes almost impossible to acquire them only through the input to the learners. Learnability theory explains this logical problem of language acquisition as the process of abstraction of regularity from linguistic input available to the language learner with the help of innate constraints (Pinker 1989, Wexler & Culicover 1980).

1.2. Locative verbs

Locative verbs express an event involving the transfer of content to or from a container (Gropen et al. 1991). English locative verbs are divided into three groups according to whether the content argument (figure-object construction), the container argument (ground-object construction), or either argument (alternator) can be encoded as the direct object in syntax.

- (1) a. John poured water into the glass. (figure-object construction)
 b. *John poured the glass with water.
- (2) a. *John filled water into the glass.
 b. John filled the glass with water. (ground-object construction)
- (3) a. John loaded apples onto the cart.
 b. John loaded the cart with apples.

The selection of a locative verbs' argument structure seems arbitrary, since the meanings are similar to each other but the locative verbs are expressed in different ways in their argument structures, as seen in the examples above. Hence, how does the learner know that

the verbs *pour* and *fill* do not allow alternation when they are expected to alternate as in the case of *load*? How do the learners know which argument should be encoded as the direct object in locative constructions and which locative verbs are allowed to alternate? Moreover, do L2 learners know that the sentence (3b) has the implicit meaning that the cart is completely filled with apples, which is not the case in (3a)? In addition, the syntactic distributions of the locative verbs are certainly not the same in each language. Would the acquisition of the verbs that are different from their L1 be more difficult for the L2 learners?

1.3. Research Questions

This study investigates the L2 acquisition of English locative argument structure by adult native speakers of Korean. The primary purpose of the study is to answer these questions:

1. How do Korean-speaking L2 learners acquire the English locative argument structures? Do they acquire English locative verbs by verb-specific learning or by setting rules in their minds?
2. Do L2 learners activate the constructional meaning of English locative structures and alternation? In other words, are L2 learners sensitive to differences in meaning implicit in different structures using the same verb?
3. Do L2 learners rely more on semantic cues or on syntactic cues to establish meanings of verbs?

Thus far, research regarding acquisition of the L2 lexicon has mainly focused on the acquisition of the constructional meaning of English locative structures. This study not only examines the acquisition of the constructional meaning by Korean speakers learning

English, but also looks into the productivity of the rules of the mental grammar of L2 learners, which may be one of the differences between L1 acquisition and SLA.

1.4. Overview of the Thesis

This thesis is organized as follows. In chapter 2, I will review the logical problem of language acquisition with reference to learnability theory and attempt to explain the initial stage of language acquisition by outlining the Bootstrapping hypothesis. Chapter 3 gives a general overview of the syntax and semantics of locative verbs. Also I will review the relevant research on English and Korean locative verbs and their acquisition by both children and adults. Chapter 4 describes the method and informants of the present study. The result will be presented in the later part of chapter 4 as well. In chapter 5, I will discuss the major findings in the present study based on the data in chapter 4. Finally in Chapter 6, I summarize the study and conclude the thesis.

Chapter 2

Learnability and Language Acquisition

This chapter is organized as follows. In the first section, I will discuss the logical problem of language acquisition according to learnability theory. Then, the Bootstrapping hypothesis will be discussed, focusing on syntactic and semantic bootstrapping.

2.1. The Logical Problem

Language learners have to make sense of input around them, which might be totally nonsensical at the beginning. Children master their first language within a limited amount of time without any formal instruction. However, they produce sentences that they have never heard in the input available to them and those sentences hardly have any grammatical mistakes (Bowerman 1987, Pinker 1989).

A language is an open-ended set, not a fixed list, so the child must generalize from these inputs to an infinite set of sentences that includes the input sample but goes beyond it. (Pinker 1989:5)

The claim that many properties of language are not available directly from input is known variously as ‘the poverty of the stimulus problem’, ‘the projection problem’, and ‘the logical problem of language acquisition’. The general approach to acquisition from this perspective is known as the ‘learnability’ approach (Pinker 1989:1).

2.1.1. A Learnability Paradox

Pinker (1989) describes a paradox in language acquisition with a small linguistic puzzle. Between the sentences, *He gave them a book*, and **He donated them a book*,

children have no way of knowing that **He donated them a book* is an ungrammatical sentence since adult native speakers of English never produce such sentences. In other words there is no clear evidence that indicates this is ungrammatical. Although the two verbs, *give* and *donate*, share a very similar meaning, they cannot be used in the same structures. The question arising here is how children discover that **He donated them a book* is unacceptable. How do children distinguish those two verbs and use them correctly in their speech? It is possible to guess that they make mistakes, like the ungrammatical sentence above, and are corrected by their caregivers. Evidence about ungrammaticality is known as *negative evidence*; this contrasts with *positive evidence*, which is about what is present in a language (White 1989).

A number of L1 researchers have argued that negative evidence is not reliably or systematically available to the child (Brown & Hanlon 1970; reference cited from White 1989, Bowerman 1987, Morgan et al. 1995, Pinker 1995, Wexler & Culicover 1980). Even though the parent tends to repeat and expand the child's ungrammatical utterances, most of the time the child ignores those corrections.

A possible explanation to the successful learning of language given the 'no-negative-evidence' problem is to assume that the learners follow some kind of constraints that force him/her to keep his/her hypotheses to a restricted set that includes only the correct hypothesis (Pinker 1989). Otherwise, children would have to test infinite numbers of hypotheses that are consistent with the input but are possibly different from the actual target language. The learners can note the differences or the similarities between the

predicted hypothesis and the input data. If the prediction of a hypothesis is not matched with the input, then the learner rejects the incorrect ones.

There are four possibilities that the child's hypotheses can be incorrect before learning is successful (Pinker 1989,1995, White 1990, Yip 1995; illustrations adopted from Pinker 1995). In Figure 1 (a) the child's hypothesized grammar (X) can be disjoint from the target language grammar (Y). In this case the utterance that the child produces is not grammatical at all, but any sentence in the input is sufficient to inform the child that the hypothesis is wrong. The next possibility is the case that (b) the child's hypothesis intersects the target language or (c) is a subset of the target language. In these cases, some of the language would have been mastered, but not all of it. Still, positive evidence consisting of sentences in the non-overlapping region of the target language is sufficient to force the child to replace the incorrect forms with correct ones. The final possibility is that (d) the child's hypothesis language is a superset of the target language. This case is where the child needs negative evidence. As described above, if a child's guesses are beyond the language, the input can never tell him that he/she is wrong. To avoid this apparent need for negative evidence, it has been proposed that the child must in some sense be a conservative learner (Pinker 1995, White 1989).

Figure 1. Four situations that a child could be in while learning a language

(a)

(b)

(c)

(d)

2.1.2. The Subset Principle

The Subset Principle is a principle of learnability based on the 'no negative evidence problem'. It is a particular attempt to guarantee that L1 acquisition is achieved with positive evidence only (White 1989). It assumes that grammars may stand in a subset-superset relation, that is, the grammar is narrowed and allows a smaller range of structures than another larger one, which contains everything permitted by the narrower grammar and more (Yip 1995). And this principle states that the language learner will start off with the narrower grammar and expand it to a larger one, proceeding from positive evidence only.

For the Subset Principle to work learners' grammars should meet a certain condition, namely, the Subset condition; the grammar that generates the sentences X also generates the sentences Y and Y is a proper subset of X (White 1989). If there is a proper subset-superset relation, Y sentences can be represented as the learner's current grammar and the target language grammar is represented as X. The Subset Principle assumes that the learners will adopt the most restricted grammar consistent with the input. When the learners hear input containing X sentences, they realize that their current grammar for X,

namely Y, is too restricted. Thus, this will lead to the expansion of Y and the subsequent adoption of the grammar yielding the superset X. For example, in these sentences:

- (4) Mary saw John.
- (5) Mary saw that John was tired.

The child will hear the input of (4) and assume that this sentence is grammatical and the verb *see* allows a direct object after it. But when the child hears a sentence such as (5), then he/she will notice that the verb *see* allows a sentential complement as well (White 1990). In other words, the child starts off with the restricted value for the verb entry and only given the positive evidence of (5) would the child revise the grammar to allow more than one type of complement. The Subset Principle is a logical explanation, given the assumption that negative evidence is neither available nor helpful.

2.2. Learnability and SLA

2.2.1. The logical problem in SLA

One can consider the same question for L2 acquisition of whether the input data alone are sufficient for L2 learners to work out the complex properties of the target language. There are some differences between L1 and L2 acquisition, such as the mother tongue influence, potential fossilization and the age effect. To put it differently, it is well known that adult language learners are generally not successful in acquiring a target language with native-like competence, unlike children (Bley-Vroman et al. 1988, Schachter 1990, White 1985, 1989, Yip 1995). This 'general failure' might imply that the logical problem does not actually exist in adult second language acquisition.

Nevertheless, as the logical problem derives from the consideration of the 'underdetermination' of the input, adult L2 learners still face the same logical problem in language acquisition as children do with their L1. In other words, it seems that the L2 input, again, is not sufficiently rich, but the underlying competence attained by adult second language learners provides evidence for a similar subtlety and complexity as that of native speakers (Gregg 1996, White 1989). Accordingly, even though the L2 learners' grammar is not as accurate as that of the native speakers, there is potentially an L2 equivalent to the projection problem, which requires an explanation.

Another issue to take into consideration is the lack of negative evidence. From the literature of L1, it appears that negative evidence does not play an important role in children's language acquisition¹. However, in adult SLA, the question of the role of negative evidence is more controversial (Yip 1995). For example, in second language classrooms, the teacher's correction might be considered as negative evidence that is available to the learners. Even in naturalistic settings certain forms of negative feedback, such as a clarification request, recasting and confirmation checks are available to L2 learners.

However, some researchers (Chaudron 1986, 1988, Long 1977) argue that these forms of negative feedback are not specific enough to draw the classroom learners' attention to their incorrect form. Although many teachers do explicitly 'correct' the L2 learners' errors, research has shown that the corrective feedback they provide is apparently

¹ This is a disputed issue. See Baker & Nelson (1984), Bohannon et al (1990) and Morgan et al (1995) for discussion.

erratic, ambiguous, ill-timed and ineffective in the short run (Larson-Freeman & Long 1990). Once again, for negative evidence to be effective it must be reliably available and it must be used. Not all L2 learners get such negative evidence and those who get it do not always take note of it (White 1990, Yip 1995). Moreover, the issue of availability of negative evidence to L2 learners might not be of importance, since it does not necessarily show that the internal mechanisms of language acquisition are fundamentally different from those of L1 acquisition.

2.2.2. The Subset Principle in SLA

If the Subset Principle is a learning principle which helps the L1 learner in making the correct choice between different values of the target language grammar, the question arises as to whether it is still available in L2 acquisition (White 1989). However, unlike the L1 context, L2 learnability is complicated by the interaction of at least two linguistic systems. The problem arises when the learner starts off with too general hypotheses due to L1 transfer. This will lead the L2 learners into the situation (d) in Figure 1, which requires negative evidence. If the L2 learner is in a situation where the L2 mental grammar has overgeneral values with respect to the target grammar, learning is expected to be difficult because of the lack of clear evidence to guide the learner to the target-like forms.

Several studies have examined the issue of the Subset principle and L2 acquisition. In Zobl (1988), Japanese learners of English first assume that English is not configurational, so that they violate the strict hierarchy of VP structure in English. In other words, Japanese learners of English will allow themselves to produce English sentences

with freer word order, as they have in their native language, in violation of the Subset Principle; they don't start off with the most conservative grammar.

Another linguistic aspect that has been investigated in SLA with regard to the Subset Principle is the Governing Category Parameter of Wexler & Manzini (1987: reference cited from White 1989). This parameter is related to the Principle A of the Binding Theory, which states that an anaphor must be bound in its governing category. Languages vary as to what counts as a governing category; there are five different governing categories and a Governing Category Parameter (GCP) with five values accounts it for.

In languages like English, a reflexive must be bound within the same clause, regardless of whether it is finite or non-finite;

- (6) a. John_(j) washed himself _(j).
- b. John _(j) said [that Fred _(f) washed himself _(f *j)].
- c. John _(j) wanted [Fred _(f) to wash himself _(f *j)].
- d. Keith _(k) said [that John _(j) said [that Fred _(f) washed himself _(f *j *k)]]

In (6b), (6c) and (6d), *himself* takes *Fred* as its antecedent but not *John* or *Keith*, since neither *John* nor *Keith* is in the same clause as the reflexive.

In Russian, the governing category must be finite. Sentences like (6b) and (6d) will behave the same as English, but in (6c) either *Fred* or *John* may be the antecedent of the reflexive. Other languages, like Korean and Japanese, allow an even wider range of antecedents. In Korean, in the equivalents of (6b) and (6c), either *Fred* or *John* may be the antecedent of the reflexive, and in (6d), *Keith* or *Fred* or *John* can be the antecedent². The

² The choice and understanding of antecedent in Korean depends highly on the context.

illustration (adopted from White 1989: 158) below shows that there is a subset/superset relationship for the GCP.

Figure 2. A Subset/Superset Relationship for the GCP

The results of several studies with regard to the GCP parameter (Finer & Broselow 1986, Finer 1989, Hirakawa 1989, Thomas 1989: reference cited from White 1989) showed that Korean and Japanese learners of English did not adopt the most restricted version of the GCP. In spite of that, those L2 learners did not treat English like their L1. There is no clear evidence that either the operation of L1 transfer or the Subset principle was solely the source of their knowledge. In the studies by Finer & Broselow (1986) and Finer (1989), the Korean speaking English learners seemed to adopt one of the intermediate values of the parameter, such as the one in Russian, and yet other studies, such as Hirakawa and Thomas, showed that the learners allowed the widest value. Interestingly, in Thomas and Hirakawa, some of the most advanced learners of English whose L1 was Korean or Japanese did give responses almost identical to those of the native-speakers of English. White (1989) suggested that this is due to the subjects' differences in the level of English in each study. It seems that at the early stage of acquisition the L1 value is transferred, but gradually the

learners are moving from a wider grammar to a narrower one and finally achieve the value of the GCP required by English. Based on the findings of the studies above, although the Korean learners of English are expected to have difficulties learning the GCP parameter, they eventually acquired the correct value. This suggests that even if learners pick the wrong value of the GCP during the course of acquisition, some of them are able to attain the correct L2 value, which is contrary to what the Subset Principle predicts.

The results above indicate that the Subset principle is not operating effectively in L2 acquisition compared with first language acquisition; L2 learners did not start out with the most restricted grammar but adopted an overgeneral value. Even so, the L2 learners are not inevitably 'stuck' with an inappropriate L2 grammar.

2.2.2.1. Subsets to Supersets

When a certain feature of L2 learners' mother tongue grammar is a subset of the target grammar, under the presumption of meeting the Subset condition, L2 learners might start off with the subset, although it might not be due to the Subset Principle. This can be the case of an English speaker who is learning the use of reflexives in Korean. In this case the positive evidence alone can be enough to change the current grammar of this learner to a more inclusive one.

2.2.2.2. Supersets to Subsets

Suppose that a Korean speaking English learner has chosen a GCP parameter for English which accords to the Korean one. The Subset principle has certainly not helped this learner and his/her interlanguage grammar will contain some overgeneralized forms of English. In principle the input to this learner should never tell him/her directly that such

sentences are ungrammatical. Moreover, in principle, noticing the nonoccurrence in the input of the overgenerated sentences should be near-impossible for the learner. In L1 acquisition, this kind of situation is predicted not to happen because of the Subset Principle, but L2 learners sometimes put themselves into the situation where negative evidence seems to be the only alternative. Thus, it is possible to predict that it is going to be more difficult to move from the superset to the subset, since it is easier to reset using positive rather than negative evidence (White 1989).

2.3 The Input of Language Acquisition

Any model of language acquisition must account for how learners end up with a fully functional grammar. It is equally important to examine how learners get started at the beginning. This also requires a theory which explains how the learner transforms the input of language learning, i.e. sentences heard in context, into the grammar of adult speech. In this section, I will present current theories explaining the initial state of language acquisition and the role of input in language acquisition.

2.3.1. Input and SLA

There has been a lot of research done on the representational endowment in the language learners' mind, but at the same time the research has not overlooked the vital role of stimuli and their interaction with the innate capacity to build a mental grammar. If a child is isolated from speech during the first ten years or so, he/she might not be able to speak (Gleitman & Newport 1995); so "language" itself is not innate. However, just as birds are not born flying, but do 'learn' how to fly because they have physical and

biological 'predispositions' to flying, language learners might also be predisposed to look for linguistic elements in the environment.

Kelly and Martin (1994) argued that all species tend to exhibit a preparedness to encode certain kinds of information. Preparedness to detect certain aspects of the signal might amount to an internal specification of input to learning. In this view, input is not only external to the learner but rather part of a complex specification of the internal representational capacities and possible mental states of a learner.

With regard to different kinds of cues in the given input, Moeser & Bregman (1972: reference cited from Carroll 1999) argued that structural properties of sentences, that is, syntactic dependencies, were easier to induce when they were paired with semantic information. Also Morgan & Newport (1981) found that learners could establish correspondences between conceptual representations and syntactic structures through a sort of semantic bootstrapping. In her own study on the acquisition of French gender by English monolinguals, Carroll (1999) showed that her subjects were more sensitive to certain kinds of abstract patterns, particularly semantic patterns, which is a disadvantage. This result also implies that, unlike children, the adults' sensitivity towards different types of input is different, thus perhaps providing an explanation for why language acquisition in adults is generally not as successful (Zobl, personal communication).

As the linguistic input is of different types in terms of its characteristics, the language learners show various degrees of sensitivity towards the given input. In the next section, I will have a closer look at two different types of input in language acquisition.

2.3.2. Bootstrapping Hypothesis

As has been noted, for every lexical entry, the learner must determine two kinds of information: its syntax and its semantics. It is widely assumed that there are consistent correspondences between verb meanings and verb syntax, and that knowledge of these correspondences may provide important help to the learner (Gleitman 1990, Grimshaw 1994, Gropen et al. 1991, Pinker 1989). With regard to these correspondences, a number of questions arise: Which of these two pieces of information precedes the other? Does the syntax of a word allow the learner to make certain assumptions about its meaning, is it the other way around, or do these two aspects interact in some way?

Bootstrapping is a term which describes the initial process in language acquisition of understanding a word's semantic and syntactic representation (Pinker 1987). This bootstrapping mechanism is expressed in a set of linking rules, which determine the relationships between semantics and syntax. The basic problem or question is how the learner determines the abstract rules for grammar from the linguistic and contextual input, i.e. how does the child "crack" the linguistic code. Pinker (1987) discussed four types of bootstrapping in his paper: correlational, prosodic, syntactic and semantic bootstrapping. These hypotheses require different conditions, but they all posit the same outcome: the bringing into motion of language acquisition. Among all, syntactic bootstrapping and semantic bootstrapping have been the topic of discussion in many studies.

2.3.2.1. Syntactic Bootstrapping Hypothesis

According to the *syntactic bootstrapping hypothesis*, the learner's syntactic analysis of the sentence makes it possible to determine parts of its semantics (Gleitman

1990). In other words, learners can deduce parts of the meanings from a word's syntax. With the help of innate constraints, a small amount of distributional analysis would be enough to yield the correct categorization of linguistic elements (Pinker 1987). The learner would not have to consider all the possible properties of a word before making a generalization as to its syntactic type and semantic representation. Moreover, the innate constraints on syntactic form would help the child to correctly identify constituents of abstract linguistic elements, such as noun, verb, NP, VP etc. Once the learner has identified constituents of these abstract linguistic elements, he or she can use them to generalize about future input. For example, in the sentence *People read books*, the innate constraints on syntactic form would, after a relatively small amount of distributional analysis was performed, prevent the learner from interpreting the constituents incorrectly (e.g. *people* as a verb or *read* as a noun) (Pinker 1987).

2.3.2.2. Semantic Bootstrapping hypothesis

The semantic bootstrapping hypothesis is the analysis of a contextual situation, which makes it possible to determine the meaning of a word, and the meaning of a word is what makes it possible to determine its syntax. According to this hypothesis, the learner uses the presence of semantic entities, such as thing, causal agent, predicate-argument relation, to infer that the input contains elements of the corresponding syntactic universals, such as noun, subject, auxiliary etc (Pinker 1987).

In this hypothesis, the innate knowledge is that there are syntactic functions, such as subject and object, and lexical and phrasal structures, like N,V,NP and VP, and a set of rules that link the two together, *the linking rules*. The learner in this hypothesis would use

the semantically inferred grammatical elements and Universal Grammar to build rules and discover parametric settings for the target language. This hypothesis assumes that the learner must be able to learn the meanings of content words independently of learning grammatical rules; he/she must construct a semantic representation of the input through context and individual word meanings.

Gleitman (1990) and Fisher et al. (1994) pointed out the limitations of semantic bootstrapping. One is that there are possibilities of multiple interpretations of a single event. For example, caretakers say something like *George pushes the truck* and George can be observed to be pushing the truck. Every time George pushes the truck, the truck will move. But a verb used by the caretaker to describe this event may represent 'push' or other ideas like 'move'. Also there are paired verbs that describe single events, such as 'flee' and 'chase', 'buy' and 'sell', and 'give' and 'receive', and so on. So Gleitman maintains that it's hard to learn a verb's meaning merely by observation of the situation. In addition, there are verbs that describe events which are not observable, e.g., *think, remember, believe* etc. These researchers believe that children's perceptual and conceptual capacities yield so many possibilities for interpreting any scene, but that the syntax acts as a kind of mental zoom lens for fixing on just the interpretation the speaker is expressing. According to the Syntactic Bootstrapping hypothesis, syntax not only guides the learner in predicting that an unknown word belongs to a certain category but also allows an initial approximation to the meaning of the new word.

However, it does not seem probable that the learner would be able to deduce the meaning of the word merely by observing its syntax, because subcategorizations are not

associated with meanings in the first place. For example, the learner can infer that the word *push* is a verb, but he/she would not know what *push* really means. Especially in the set of verbs, there are a large number of 'many-to-one' semantics-to-syntax mappings; the set of verbs that subcategorize for NP is so enormous that the fact that a verb takes an NP complement will not be very informative. Another problem is that arguments and adjuncts appear in the same syntactic environment but only arguments figure in subcategorization frames. In fact, Fisher et al. (1994) also admitted that:

one cannot converge on a unique construal from syntactic properties alone. Since the subcategorization properties of verbs are the syntactic expressions of their arguments, it is only those aspects of a verb's meaning that have consequences for its argument structure that could be represented in the syntax. Many -most- semantic distinctions are not formally expressed with this machinery. (p. 366)

Hence, it seems that either syntactic or semantic bootstrapping alone cannot explain children's first language acquisition successfully.

2.3.2.3. Lexical Reconciliation

Grimshaw (1994) suggests a theory in which the advantages of both ideas are preserved. She calls her theory *lexical reconciliation* and in this theory it is possible to use UG mapping principles to regulate syntax and, at the same time, use surface syntax to regulate semantic analysis. It uses semantic elements of a verb to map to a syntactic form and syntactic elements to constrain possible solutions. In her paper, she deals with how basic lexical representations are acquired, but the question of how learners would determine which verbs could alternate was not directly discussed in the case of locative verbs. The following is the eight-step process for language acquisition suggested by Grimshaw (1994: 423).

Table 1. Lexical Reconciliation

Pre-linguistic	1. The learner interprets a scene or situation, hears a sentence and detects the verb.
	2. The learner finds a relationship (R) among participants in the situation that is sensible given the interpretation of the observed situation.
	3. The learner checks that R involves participants consistent with the content of the expressions in the sentence, and rejects an R that does not meet this requirement.
Linguistic	4. The learner constructs a lexical conceptual structure, which is consistent with R, and assigns candidate argument expressions in the sentence to argument positions in the lexical conceptual structure.
	5. This lexical conceptual structure is fed through the semantics-to-syntax mapping principles of UG in their language particular instantiation.
	6. The s-structure predicted by step 5 is compared to the observed s-structure.
	7. If they do not match then no learning takes place.
	8. If they do match then morpheme is entered into the lexicon with the hypothesized lexical conceptual structure.

Whichever bootstrapping model one is in favor of, it certainly shows that there is a close interplay between the syntax and semantics when acquiring a lexicon.

The key to the bootstrapping mechanisms is the hypothesized set of *linking rules*, which map thematic representations to syntactic argument positions (Pinker 1989, Bowerman 1990; The description of thematic representation will be provided in the following chapter.). The presence of such linking rules allows the learner to produce an infinite set of sentences and word combinations from a limited amount of input; they allow for economy in language acquisition. In the next chapter, I will discuss the learner's possession of the linking rules and how thematic properties and syntactic positions are related to each other.

Chapter 3

The Locative Construction and Acquisition

Among many researchers, it is assumed that there is a strong correlation between the meaning of a verb and its argument structure (Pinker 1989, Gropen et al. 1991). In this chapter, I will present current linguistic proposals for English and Korean locative constructions with regard to the correlation between verb semantics and syntax. The later part of this chapter will review some of the studies regarding the acquisition of locative constructions.

3.1. Locative verbs

Locative verbs express an event involving the transfer of content to or from a container (Gropen et al. 1991). They are divided into three groups according to whether the content argument (figure verbs), the container argument (ground verbs), or either argument (alternator) can be encoded as the direct object in syntax. The examples are repeated here for convenience.

- (7) a. John poured water into the glass. (figure-object construction)
 b. *John poured the glass with water.
- (8) a. *John filled water into the glass.
 b. John filled the glass with water. (ground-object construction)
- (9) a. John loaded apples onto the cart.
 b. John loaded the cart with apples.

The selection of the locative verbs' argument structures seems arbitrary, since the meanings are similar to each other but the locative verbs are expressed in different ways in their argument structures, as seen in the examples above.

3.1.1. Syntax and Semantics of locative verbs

3.1.1.1. Thematic-syntactic hierarchy

Traditionally, the relationship between verb syntax and semantics has centered around thematic roles (Pinker 1989). *One-to-one mapping*, which is the simplest relation of verb syntax and semantics, represents a relationship where each thematic role – agent, patient/theme, goal/source/location – is linked to one of the grammatical roles- subject, direct object, oblique object, and so on. These thematic roles and the grammatical roles have a hierarchical structure of their own and the highest thematic role will be matched with the highest grammatical role available, e.g. “agent is linked to subject position”, “theme/patient is linked to direct object position” etc. This process goes on until all arguments have been assigned syntactic positions. The following is the model that bases linking rules on a thematic-syntactic hierarchy.

(10) Thematic roles:

Agent > Theme/ Patient > Location/ Goal/ Source

(11) Grammatical functions:

Subject > Object > Oblique object

Based on this thematic-syntactic hierarchy, the figure-object construction, which takes Theme as its direct object, is considered as canonical and unmarked and the ground-object construction is considered as marked, so ground-object constructions are rarer and, presumably, harder to learn. Interestingly, according to Rappaport and Levin (1985: quoted in Gropen et al. 1991), English displays the opposite pattern; among the non-alternators there are four times as many ground verbs as figure verbs in the total of 125 English locative verbs that they examined (19 figure verbs versus 73 ground verbs).

This has also become counterevidence to a proposal about children's verb acquisition by Bowerman (1982), which will be discussed later in this chapter.

According to the *one-to-one mapping* theory, the sentences in (9) above stem from a single lexical representation which somehow allows two distinct syntactic variants at s-structure. The problem of *one-to-one mapping* becomes more evident when one considers the locative alternation. This theory does not explain the so called *holism effect*. It is argued that constructions themselves carry meaning that exists independently of particular verbs. The cart in (9b) is understood to be wholly affected: the cart has to be fully loaded with apples, but on the other hand, (9a) does not necessarily imply this holistic interpretation. Even though (9a) and (9b) appear to be paraphrases of each other, there exist differences in the lexical-semantic representation of *load* in each argument structure. *One-to-one mapping* is not able to explain the difference of meaning in each construction. In addition, a body of experimental research data reveals that children and adults are sensitive to the change of state or the change of location in the locative construction.

3.1.1.2. Lexical Syntactic Relations

Hale & Keyser (1993) began their discussion by investigating English denominal verbs, such as *shelve* and *bottle*, and proposed that the operation of principles of syntax produces and constrains denominal verb formation.

- (12) a. She put her books on the shelf.
b. She shelved her books.

They explained that the verb *shelve* in (12b) is derived from the noun *shelf* in (12a) by a syntactic process, *incorporation*, when the noun phrase is the oblique object of the

sentence. They also pointed out that there are other syntactic principles that highly restrict this syntactic process to generate denominal verbs and they further argued that word formation in the lexicon is subject to principles already known to be operative in syntax (Hale & Keyser 1993:64).

Unfortunately, Hale & Keyser (1993) do not directly discuss the structures with locative verbs. Juffs (1996a) points out that this lexical syntactic relation does not explain the crosslinguistic differences and suggests that some semantics might be necessary to distinguish different kinds of verbs.

3.1.1.3. Predicate decomposition

By emphasizing the semantic structure of a verb and linking rules, Pinker (1989) suggested *decompositional theories*. In this theory, it is assumed that syntactic structure is triggered by the semantic features of a verb. Semantic features correspond to cognitive categories of certain types of events or relations and the semantic structure of each verb or sentence represents what semantic elements affect the formation of syntactic structure. He concluded that the lexical alternations are caused by changes in a verb's meaning.

For example, the verb *fill*, specifies only the manner or nature of the change or the properties of what has changed after the motion. The verb *pour* specifies how the agent initiates the motion or in what manner the object moves, but it does not indicate how the ground or surface changes as a result of putting something into or onto it. In the case of the verb *load*, both the manner of the motion and the change of state are described. So when *load*'s thematic core changes from "to cause X to go into or onto Y" into "to cause Y to change state by means of putting X into or onto it" by lexical rules, the argument structure is also transformed from (9a) to (9b) above. That is, the oblique

argument of the first sentence, namely Y, becomes the direct internal argument of the second sentence. Unlike *one-to-one mapping*, described previously, this theory captures the holism effect, since the argument, Y, that is specified as 'being caused to change by' X in the main event of a verb's semantic representation, is linked to the grammatical object (Pinker 1989). This predictability can be better explained by *the affectedness linking rule*:

An argument is encodable as the direct object of a verb if its referent is specified as being affected in a specific way in the semantic representation of the verb. (Gropen et al. 1991:118)

With regard to language acquisition problems, Pinker (1989) argues for semantic bootstrapping: children "can derive the semantic representation by nongrammatical means (attending to the situation, making inferences from the meanings of individually acquired words), and can thereby do a preliminary syntactic analysis of the first parental utterances they process" (p. 360). Thus, what language learners should do to acquire argument structures and their alternation is to notice if a verb specifies a certain manner or endstate or both.

However, these kinds of broad-range semantic constraints (the broad-range rules) described above, do not give sufficient conditions for whether a verb will alternate (Pinker 1989). To be able to use the argument structures of locative verbs correctly in a language, learners should have the narrow-range rules, which are specified in terms of manners and properties that each verb specifies. The narrow-range rules (Pinker 1989:126-127) are sensitive to narrow range semantic classes which predict what forms will exist in a language and are responsible for explaining which verbs may or may not alternate. For example, *spray* and *spill* are both figure verbs, but the narrow range rule

sensitive to ‘ballistic motion along a specified trajectory’ permits *spray* to alternate, whereas *spill* involves the ‘force of gravity’, and is thus excluded from alternation. Therefore, any verbs that contain the meaning of ‘ballistic motion along a specified trajectory’ will be in the same narrow-range group and be used with the same structure as *spray*. The following are some of the English locative verbs’ narrow-range rules and their classification as suggested by Pinker (1989: 126-127).

(13) The Content-oriented (figure) classes:

1. Alternating. Force is imparted to a mass, causing ballistic motion in a specified spatial distribution along a trajectory: *spray, sprinkle*.
2. Alternating. Mass is caused to move in a widespread or nondirected distribution: *scatter*
3. Nonalternating. A mass is enabled to move via the force of gravity: *pour, spill*.
4. Nonalternating. Verbs of attachment. They all imply the existence of an intermediate instrument object or substance holding objects together: *glue, nail*.
5. Nonalternating. Flexible object extended in one dimension is put around another object (preposition is *around*): *coil*

(14) The Container-oriented (ground) classes:

1. Alternating. A mass of a size, shape, or type defined by the intended use of a container is put into the container, enabling it to accomplish its function: *load, pack*.
2. Alternating. A mass is forced into a container against the limits of its capacity: *stuff*.
3. Nonalternating. A layer completely covers a surface: *cover, fill*
4. Nonalternating. Addition of an object or mass to a location causes an esthetic or qualitative, often evaluative, change in location: *pollute, decorate*.
5. Nonalternating. A mass is caused to be coextensive with a solid or layerlike medium: *soak*

3.2. Korean Locative Verbs

Pinker (1989) claimed that the assignment of verbs to narrow-range conflation classes seem to be language-specific. Indeed, some Korean locative verbs behave in different ways from their English counterparts. For example, the English verb *fill* is a non-alternating figure verb, whereas the Korean verb corresponding to *fill* belongs to the alternating group.

- (15) Younghee-ka mwul-ul kup-ey chaywuta.
 Younghee water a cup-into filled.
 *Younghee filled water into the cup.
- (16) Younghee-ka kup-ul mwul-lo chaywuta.
 Younghee a cup water-with filled.
 Younghee filled the cup with water.

I will present three different studies and classifications of Korean locative verbs: Lee (1997), Kim & Landau (1997) and Joo (2000). These researchers' classifications are based on judgments of Korean locative verbs by Korean native speakers. The following table is a comparison of the three classifications:

Table 2. The Classification of Korean Locative verbs

	Figure verbs	Ground verbs	Alternators
Lee (1997)	pusta (pour into), ttaluta (pour into), pwulita (spray, sow), nehta (put), sitta (load), tamta (put), mwuchita (dab), paluta (smear or plaster)	terephita (dirty), mewuta (plug)	chaywuta(fill), chilhata (paint)
Kim & Landau (1997)	pusta (pour into), ttaluta (pour into), pwulita (spray, sow), nehta (put), sitta (load), tamta (put), mwuchita (dab), kelta (hang), pwuchita (stick), hullita (spill), ssotta (spill), ssatta(pile)	terephita (dirty)	chaywuta(fill), chilhata(paint), tepta(cover), kamta (bandage), ceksita(soak),cangsik hata(decorate), paluta (smear or plaster), mewuta (plug)
Joo (2000)	pusta (pour into), ttaluta (pour), ephciluta(spill), sitta(load), hullita (spill), ssota (spill orpour), pwulita(spray),chita(season), thwikita (sprinkle), kkocta (put into), kkita (put between), muthita (stain), pwutita (attach), ssahta (pile), sitta (load),ollita (load), tamta (put in), nehta (put in), pakta (nail)	terephita (dirty), oyemsikhita (pollute), mewuta (plug) makta (plug), kkumita(decorate)	chaywuta(fill), chilhata(paint) tepta(cover),kamta (bandage),cangsikhat a(decorate),mukhta (bind), suiwuta(cover), kkalta(cover or pave), ssata(wrap or pack), kwulita(pack) paluta (smear or plaster)

Although these studies share a lot of similarities in their results, there are slight differences of classification for a few verbs, such as *paluta* 'smear' or 'plaster' and *mewuta* 'plug'. This is due to the dispersed judgments of the Korean native speakers in each study. For example, in the case of *mewuta* 'plug', 50% of the subjects in Lee (1997) judged it as grammatical in figure-object construction and 98% in ground-object construction. In Kim & Landau (1997), subjects showed a slight preference for the ground-object constructions for *mewuta* 'plug', but they also accepted figure-object constructions to a similar degree. Lee classified *mewuta* as a ground nonalternator, while Kim & Landau put this verb into the alternator group.

As seen in Table 2, there are several common features among the studies. Firstly, there are only a few ground verbs in each study: two verbs in Lee (1997), one in Kim & Landau (1997) and five in Joo (2000). One must note that *tereiphita* 'dirty' and *oyemsikhita* 'pollute' have the overt causative morphemes (-*hi* & -*sihki*). In addition, as stated above, there is disagreement over *mewuta* 'plug'. These facts suggest that pure ground verbs are extremely rare in Korean.

Secondly, as Kim & Landau (1997) point out, Korean locative verbs show strong preference for figure-object constructions. Figure verbs in Korean behave in the same way as their English counterparts and some of the equivalents of English alternator verbs are figure verbs in Korean. On the other hand, the equivalents of English ground verbs are alternating verbs in Korean. The following is the illustration of the syntactic patterns in English and Korean suggested by Kim & Landau (1997).

Figure 3. The Comparisons of syntactic pattern of English and Korean locative verbs (Kim & Landau 1997: 38)

Interestingly, Juffs (1996a) reported that Chinese also has a bias towards figure-object constructions, as well as Japanese, according to Fukui et al. (1985: adopted from Kim & Landau (1997)). In Japanese, there are eighteen figure verbs, two ground verbs and four alternators. This pattern seems to indicate that, similar to Korean, Japanese prefers locative verbs which encode manner of motion and in which the figure is encoded as a direct object. Kim & Landau (1997) and Joo (2000) assumed a universal linking rule that all manner of motion verbs are encoded as figure verbs in all languages. Based on this evidence, the following hypotheses were advanced by Kim & Landau (1997) and Joo (2000) with regard to Korean locative construction:

- (17) a. Set the figure-object construction as the default construction for a locative verb.
- b. Allow alternation, i.e. add the ground-object construction, if the verb specifies a change of state. If not, allow only the figure-object construction.

These hypotheses, however, do not seem to take care of the Korean pure ground verbs, such as *kumita* 'decorate'. Although the majority of Korean locative verbs are figure

verbs, there exist a few pure ground verbs. Thus the hypotheses above appear to be too strong.

The holism effect in Korean is a disputed issue. Joo (2000) claims that Korean locative construction also contains constructional meaning. In her experiment with Korean locative verbs, she found that the Korean native speakers showed a tendency of choosing figure meaning pictures for figure-object construction and ground meaning pictures for ground-object construction. Moreover, when the Korean native speakers were provided ground meaning pictures with alternating verbs, they chose ground-object constructions over figure-object constructions. For example, given the sentence *Minsu-ga chen-ul thakca-ey tep-ess-ta* 'Minsu covered cloth on the table', the Korean native speakers chose the picture in which the table is covered in part rather than the one in which the table is completely covered with the cloth. Conversely, for the sentence *Minsu-ga thakca-rul chen-uro tep-ess-ta* 'Minsu covered the table with cloth', the subjects selected the picture of the entire table being covered with the cloth. This shows that the Korean locative constructions have the constructional meaning, thus the holism effect.

However, some researchers (Choi & Lakshmanan 2002, Lee 1997) argue that the holism effect in Korean is determined not by the mapping of the argument structure onto the syntax but by the inherent semantics of the locative verb. The focus is the only difference existing between the two structures of an alternating verb in Korean. Choi & Lakshmanan claim that regardless of whether or not the Korean learners acquired native-like knowledge of English locative structures, they keep the spatial interpretations of their L1, hence, not showing any holistic interpretation in English locative structure.

It seems clear that Korean locative constructions do not entirely depend on the structure as in English; it involves many other factors such as the use of adverbs and verb serialization. The contrastive interpretation of the existence of the holism effect in the two studies by Joo (2000) and Choi (2001) seems to be partly due to the difference in the definition of the holism effect. Also the degree of the affectedness is a subjective matter. For example, the door can be completely painted without any spot unpainted, but the field cannot be entirely sprinkled by seeds, so that there is no space not covered by a seed. On the other hand, the Christmas tree can be decorated by just one star on it, if that is the decorator's aesthetic value. Similarly, a white coat can be ruined by a tiny spot of blue ink. In short, the degree of affectedness can be variable depending the nature of the ground. Therefore, it seems that the holism effect and *the affectedness linking rule* is also related to the interpretation and the preference of a speaker, not to the grammaticality of a sentence.

3.3. Previous Studies

3.3.1. First Language Acquisition of English Locative verbs

Several studies have been conducted on children's acquisition of locative verbs. Bowerman (1982) observed her two children and found that they overgeneralized the figure-object constructions and produced sentences such as *Can I fill some salt in the bear?* [bear-shaped salt shaker]. On the other hand, these children made fewer mistakes in the sentences with the ground as direct object than in the sentences with the figure. However, she also found that these children could somehow 'unlearn' these mistakes and showed a pattern of U-shaped development. She suggests that children might have set an

incorrect rule for mapping semantics into syntax and they reorganize this process after discovering the correct one, which is similar to the process of the acquisition of inflectional morphology for children. Bowerman posits that this is due to the dominance of the figure-object constructions in English for expressing locative events. When children hear 'fill the glass', they abstract the pattern and extend it to the ground-object constructions and produce sentences like 'fill the water'.

Gropen et al (1991) pointed out a few issues that weaken the suggestion of Bowerman (1982). According to Rappaport & Levin (1985:adopted from Gropen et al 1991), among 125 English locative verbs, the majority is the non-alternating container verbs (73/125), which makes Bowerman's argument almost implausible. In their experiments, Gropen et al found that children made more mistakes in the figure-object constructions than in the ground-object constructions, as Bowerman (1982) reported. However, their interpretation of this result is different. Gropen et al's (1991) proposal is that children use an *object affectedness linking rule* to map an argument to the direct object if it is specified as affected in a particular way in a verb's semantic representation.

In this theory, children have to learn which arguments of which verbs are specified as 'affected'. This overgeneralization happens because children tend to misinterpret a certain semantic representation for particular verbs, which leads to the syntactic errors. For example, children misinterpreted *fill* as specifying a manner of motion instead of a change-of-state. This is why children produce sentences like *I fill the water into the glass*, and similar patterns of misinterpretation occur with other verbs. They also found that individual children who are more likely to be sensitive to typical manners are more likely to make the predicted syntactic mistakes as well. They have

concluded that the manner bias of children's use of locative arguments is due to the saliency of the manner of motion and the errors made by children are systematic and closely related to the universal linking rules.

With regard to the question about the relation between syntactic and semantic cues for children's verb acquisition, Gropen et al (1991) argued against Landau & Gleitman (1985) who claimed that children use the syntactic properties of verbs to predict their meanings. By pointing out that children will not hear sentences containing *fill* with the figure as its direct object from their caregivers, Gropen et al asserted that those errors are self-generated and are evidence for the causal relation from semantics to syntax.

3.3.2. First Language Acquisition of Korean Locative Verbs

Choi & Bowerman (1991) examined English and Korean children's expression of motion events, in order to explore the relationship between nonlinguistic cognition and language input. They assumed that children learn how spatial information is organized in their target language. Following the theory of lexicalization pattern suggested by Talmy (1985), they found that English truly reflects the characteristics of languages that conflate motion with Manner (or Cause), while Korean verbs show mixed conflation patterns but mostly conflate motion with Path, which is the second class of languages in Talmy's typology. For example, *nehta* describes an action of putting something into a container and this verb implies the path of this movement. However, *nehta* alone is not enough to describe this action and its path, therefore one might add a helping verb to express the specific meaning of a certain action and form a combined verb, such as *cipe-nehta* 'pick up and put into', *tence-nehta* 'throw and put into' etc.

(18) John threw money into the basket.

John-un pakuni-ey ton-ul tence-neh-ess-ta.
 John basket-LOC money-ACC throw-put into-PAST.
 a combined verb

This means that each language has different systems of expressing the nonlinguistic cognition. They also observed that the children involved in their experiment are influenced by the semantic organization of their language from the beginning. In other words, English and Korean motion events are lexicalized differently and the children were sensitive to language-specific patterns when they express motion events.

Another study by Lee (1997) examined how the meanings of Korean locative verbs are understood and acquired by Korean learning children by focusing on the two meaning elements, manner and end-state. She reported that young Korean-speaking children overgeneralized *pour*-type verbs to *fill*-type verbs, which contrasts with the study of Gropen et al. (1991). Children in Lee's study seemed to pay more attention to the end-state of both 'pouring' water into the glass and 'filling' the glass with water. In both studies, by Lee (1997) and Gropen et al. (1991), these kinds of bias are decreasing as children are getting older. In short, English speaking children acquire 'manner verbs' first and 'end-state verbs' next, whereas Korean speaking children first acquire verbs that describe end-state and then 'manner verbs'. Lee explains that this is as the result of the differences in semantic organization of locative verbs in English and Korean, thus producing different developmental processes in learning L1 locative verbs. According to Lee, the Korean verb *pwutta* 'pour' does conflate [Motion + Manner + Path], when most Korean verbs are [Motion + Path], as described in Talmy (1985). Having more meaning elements in this verb might have caused difficulties for the Korean children to fully

understand the meaning of the verb. Although this study showed that children are sensitive to the meaning components of their language, she only observed this with a single verb *pwutta* 'pour', so it has limitations. In addition, Lee's explanation does not provide any account for why Korean children pay more attention to end-state first while English children do to manner first. It only explains why Korean children acquire *pwutta* 'pour' later than English children.

Lee (1997) also assumed that Korean *chawuta* 'fill' has similarities with the English verb *load* in terms of its syntactic use in sentences and discussed whether Korean also shows the constructional meanings as in English. For example, the sentence *kup-ul mwul-lo chaywu-ss-ta* 'filled the cup with water' does not necessarily imply that the cup is filled with water; the cup can be half-filled. However, if an adverb, *wanconhi*, 'fully', is added, the holistic interpretation becomes distinct. She asserted that this example does not refute Pinker's (1989) *object affectedness linking rule*, but it is due more to the characteristic of the Korean verb, *chawuta*. She notes that *chawuta* characterizes that the container is being filled gradually, where English *fill* describes the state that the container is not able to hold any more. In short, Lee argues that *the affectedness linking rule* is universal, but language-specific characteristics could override the universal rule.

Kim et al. (1999) suggested three hypotheses regarding the children's overgeneralization of figure-object constructions, which Bowerman (1982) observed initially. Firstly, in English there are many more figure verbs than ground verbs (Input Frequency Hypothesis: Bowerman 1982). Secondly, the overgeneralization of figure-object constructions is a result of the perceptual salience of moving objects (Object affectedness: Gropen et al. 1991). That is, children perceive moving objects more

saliently than stationary objects. Thirdly, English-speaking children think that their language contains some of the properties of Korean; container-oriented verbs take both goal-object and theme-object forms.

Kim et al (1999) tested the three assumptions above in their own experiment and found the following. First of all, they observed that both Korean and English children do not make errors with their non-alternating figure verbs and children used more figure-object construction than adults. However, they also state that this bias towards the figure-object construction was a small effect for both language groups. With regards to children's 'fill errors', they also noted that English speaking children use only the single verb *fill* incorrectly, so one should not 'overgeneralize' this finding to all other ground verbs in English (*cover*, *decorate* etc).

Regarding syntactic and semantic bootstrapping of children's first language acquisition, one can point out the limitation of the acquisition by event observation, as suggested by a group of researchers (Pinker 1989, Gropen et al 1991), based on the findings of Kim et al (1999). If children rely primarily on event observations to establish meanings or events plus the syntactic structures in which they hear verbs, then children learning either Korean or English should show the same structures for the same events. However, according to the result of this experiment, the children in both languages conform to the target language grammar and closely track the behavior of their mothers, which goes against the third assumption as well.

Instead, Kim et al (1999) assert the universal syntax-semantics correspondence, which is that manner of motion verbs allow the figure-object constructions. Then, each language falls into two basic classes: (1) in English-style languages, change-of-state

verbs always allow the ground-object construction and (2) in Korean-style languages, all locative verbs allow the figure-object construction, and there are no non-alternating ground verbs. They connect this classification with other linguistic phenomena of each language group, such as V-V compounding or verb serialization in Korean, Japanese, Thai etc.

In summary, the studies described indicate that children are sensitive to their L1 properties and are able to recover from overgeneralization of locative structures by testing incorrect hypotheses on locative verbs in their L1 environment.

3.3.3. Second Language Acquisition of English locative verbs

For L2 acquisition, one can consider the same question of whether L2 learners are able to acquire those subtle linguistic phenomena. There are two recent studies on Korean-speaking English learners by Bley-Vroman & Joo (2001) and Choi (2001). I will also present a study on Chinese learning English by Juffs (1996a,b) in order to consider crosslinguistic similarities and differences in the process of acquisition.

Juffs (1996a) investigated adult Chinese learners' knowledge of semantics-syntax correspondences in English within the Principles and Parameters framework and considered the difference between English and Chinese with respect to conflation¹ patterns for State and Cause features (Juffs 1996a: 92). According to Juffs, in English a ground verb contains a STATE-meaning component as part of the stored representation, thus allowing only the ground-object construction. Conversely, in Chinese the meaning components ACT and STATE can not incorporate into a root morpheme. In other words,

¹ 'Conflation' describes the situation where 'a set of meaning components, bearing particular relation to each other, is in association with a morpheme, making up the whole of the morpheme's meaning' (Talmy 1985:59)

since Chinese does not have such prevention existing as in English, it is possible for the ground verbs to alternate.

(19) John *covered* the bed with a blanket. [ACT[GO[STATE]]]

(20) a. ?Zhang San yong tanzi gai le chuang.

Zhang San use blanket cover bed

b. Zhang San yong tanzi gaiZHU le chuang.

Zhang San use blanket cover-'stop' bed

(21) *John *covered* the blanket onto the bed.

(22) Zhang San wang chuang shang gai le tanzi.

Zhang San to bed on cover blanket

Furthermore, the addition of a morpheme that has a STATE-meaning, ZHU, functions as a 'built-in' abstract counterpart to English, shown in (20b) above.

In this study, the Chinese learners of English could reset the parameter of Chinese by noticing that English conflates ACT and STATE in a root morpheme. In other words, adult learners show evidence of access to UG-type knowledge and achieve knowledge of L2 syntax-semantics correspondences which goes beyond the input (Juffs 1996a: 213). However, for some learners, L1 influences remain until the advanced stages of acquisition. This implies that positive L2 input does not really preempt learners' incorrect value of the target language which is due to the transfer from their L1.

Bley-Vroman & Joo (2001) looked into knowledge of the holism effect of English locative constructions by adult Korean learners of English. Their results showed that the learners might have knowledge of the broad properties of the locative constructional meaning, i.e. the holism effect, however, they didn't behave exactly the same as English native speakers in using the narrow class constraints.

Joo (2000) briefly discussed Pinker's (1989:247) three learning mechanisms as illustrated earlier. She remarked that children may use all three mechanisms

appropriately, but L2 learners do not have as many chances to adjust incorrect lexical semantic structures-*the Semantic Structure Hypothesis Testing* (Pinker 1989)- as do children. The subjects in her study were EFL learners who might not be able to observe the use of the verb's argument structure in real life communication; they might rely on context in reading or listening passages to learn lexical semantic structures. Thus EFL learners seem to depend more on *the Syntactic Cueing of Semantic Structure* (Pinker 1989) and begin with the acquisition of syntactic argument structures rather than semantic structures, which would go against a finding reported in several studies that adults rely on semantics more (Carroll 1999).

Choi (2001) pointed out that Bley-Vroman & Joo (2001)'s studies failed to answer whether L2 learners' holism interpretation of L2 locative structures results from L2 acquisition of the structure or whether the interpretation is due to transfer from their L1. Choi also pointed out that the methodology used by Bley-Vroman & Joo is problematic. They used a forced-choice picture-description task, which is a questionable instrument in behavioral human research, and there were some ungrammatical sentences in the task, which might have caused biased results as well (This has been pointed out by Schwartz et al (2002) as well).

In her study, Choi (2001) explained the conclusions with reference to the correlation between language specific spatial interpretations and locative structures. According to her study, Korean speakers show weaker holistic interpretation even for Korean verbs, since the linking rules of semantics and syntax of locative structures in Korean do not imply an obvious holistic meaning. Instead, adverbs denote a spatial interpretation-whether there is goal-object or the figure-object linking- thus, making the

holism effect clear when they are contained in the structures. For example, the adverb *kateuk* 'full' can add to the meaning of the container's being affected. This phenomenon has already been described in Lee (1997). Juffs (1996a,b) also reported similar effects in Chinese: the morpheme *man* 'full' makes it possible for figure verbs to enter the ground frame with the state semantic conflation. Also she claims that the inherent meaning of the verb plays an important role in determination of whether there is a holistic interpretation in Korean, which is also discussed in Lee (1997) with the verb *chawuta* 'fill' (See 3.3.2.).

Choi (2001) asserts that not only the transfer of the L1 interface of semantics and syntax but also the transfer of correlations between language and spatial interpretation occurs, which is in accordance with Choi & Bowerman (1991). She suggests two generalizations:

- (23) Linking of locative structures and spatial interpretation varies; the syntax of the locative structures plays a major role in the spatial interpretation of English (satellite-framed languages²), whereas semantics of the locative verbs or adverbs play a role in the spatial interpretation in Korean (verb-framed languages³).
- (24) L1 correlation between spatial interpretations and locative structures can be easily transferred to the spatial interpretations for L2.

Although Choi (2001) did not discuss the learnability issues related to the learning mechanisms in detail, she agreed that L2 learners have difficulty in applying the *Event-*

² Satellites are defined as immediate constituents of a verb root other than inflections, auxiliaries, or nominal arguments. They relate to the verb root as modifiers to a head (Talmy 1985:102). Satellite framed languages express the path in the satellite separated from the verb root : English, Indo-European (except Romance), Walpiri, Chinese etc.

³ Verb framed languages express the path in their verb: Romance, Japanese, Korean, Tamil etc (Talmy 1985).

Category Labeling and Semantic Structure Hypothesis Testing (Pinker 1989) to L2, as Joo (2000) argued. However, she also asserted that in L2 learning the *Syntactic cueing of Semantic Structures* mechanism might not affect L2 learners as it does children because L2 learners have already established the basic meanings of locative verbs from the first language. After undergoing stages of interlanguage, L2 learners are able to establish L2 parameters without 'interference' from their L1 parameters.

However, Choi (2001) believes that resetting the conflation properties of semantics and syntax of the English locative structures seems to be easier for the L2 learners than resetting the spatial interpretation conflated in the L2. This explains why the advanced Korean learners of English in her study acquired 'native-like knowledge' of the argument structure of the target language; in other words, they did learn the narrow-range rules in English, but those learners do not manifest the broad-range semantic properties, *the holism effect*. She claims that L1 knowledge is an initial source of knowledge for L2 learners. In the case of the holism effect, Korean cannot function as the source of knowledge. She briefly mentions resetting the parameter of the conflation properties, but does not explain in detail how these learners acquired 'native-like knowledge'.

It is interesting to note the contrasting differences in the results in Bley-Vroman & Joo (2001) and Choi (2001). Subjects in both studies were 'advanced' learners of English. While in Bley-Vroman & Joo (2001) the Korean learners did not show accuracy in the use of the narrow-range rules of English, in Choi (2001) the learners were able to use English locative verbs with a high degree of accuracy, which suggests that subjects possess the narrow-range rules. The difference appears in the learners' sensitivity to the

holism effect as well. Subjects in Bley-Vroman & Joo showed that they have knowledge of the holism effect; when given a ground-object structure, Korean speaking English learners and English native speakers ‘preferentially’ chose a ground-holism picture. Conversely, in Choi, although subjects did well on a grammatical judgment task, they did not show any sensitivity to object holism.

It is also important to consider the results of Choi (2001). According to what Pinker (1989) suggested in his broad and narrow-range rules and the issues of language acquisition, it would seem natural to have knowledge of the broad-range rules first and then acquire the narrow-range rules in the specific language. However, the subjects in Choi’s study used locative verbs correctly, in other words, they have knowledge of the narrow-range rules, but they did not have knowledge of the broad-range rules, i.e. holism effect, which is not natural. If her result is correct, it is possible that those learners acquired English locative verbs on a verb-by-verb basis. Another possibility is that the learners do have knowledge of the holism effect and the interpretation of Choi’s result is questionable. Or, as she also stated, the Korean learners are still in the process of acquisition of other properties which might trigger the holism effect in locative structures.

Based on all the findings on English and Korean locative verbs and their acquisition, my research questions are:

- (25) whether Korean learners of English acquire the constructional meaning of English locative structures and alternation.
- (26) whether they acquire English locative verbs by verb-specific learning.
- (27) whether they rely more on semantic cues or on syntactic cues to establish meanings of verbs.

3.4. Hypotheses for argument structure in SLA

In this section, I will summarize the observations and theories of semantics-syntax correspondences in Korean.

Firstly, the Korean lexical entries consist of semantic representations made up of universal meaning components as in English, such as manner and endstate etc. In addition, both L1 and L2 learners are sensitive to those meaning components in locative verbs.

Secondly, knowledge of the broad-range rules, such as *the affectedness linking rule*, is present in the L2 learners' mind, thus helping the learners to realize the holism effect in L2. In other words, Korean speaking English learners will prefer the English ground-object construction if the event representation indicates that the ground is affected by the figure.

Thirdly, in the process of L2 development, the narrow-range rules of L1, the rules of allowing alternation of a certain argument structure, will influence the acquisition of the narrow-range rules of the target language. In other words, the language-specific knowledge will be subject to transfer. Since there exist differences in the semantics-syntax correspondence between English and Korean, it is expected that the Korean speaking English learners will show some preference for a certain correspondence. However, the data from the two experimental SLA studies that I have presented above (Joo 2000, Choi 2001) showed contradictory results for the crosslinguistic influence, hence becoming the point in question.

In Chapter 4, more specific hypotheses regarding the superset and the subset relation between the English locative verbs and the Korean locative verbs will be

discussed. Also, the experiment which tests the hypotheses will be described in the following chapter.

Chapter 4

The Experiment

This chapter describes an experiment which tests the general hypotheses suggested at the end of Chapter 3. The general hypotheses and the selection of the verbs in the experiment will be specified in the early part of this chapter. The information about the participants and the procedure will follow. Finally, the statistical analysis and the results will be presented.

4.1. Research Questions

To present the research questions again, this study investigates the following questions with regard to the acquisition of English locative verbs: 1) whether L2 learners acquire English locative verbs by verb-specific learning or by setting rules in their minds; 2) whether L2 learners acquire the constructional meaning of English locative structures and alternation and 3) whether L2 learners rely more on semantic cues or on syntactic cues to establish meanings of verbs.

4.2. Hypotheses for Korean speaking learners of English

The basic research hypotheses are as follows (Chapter 3). Based on the following, I will present three hypotheses for the acquisition of English locative verbs by Korean native speakers.

- 1) The Korean learners are sensitive to the meaning components in locative verbs.
- 2) Knowledge of the broad-range rules, such as *the affectedness linking rule*, is available in the Korean learners' mind, thus helping the learners to realize the holism effect in English.

- 3) The L1-specific knowledge of alternation possibilities will be subject to transfer.

Hypothesis 1 makes it possible to predict that the L2 learners do notice the relation between the meaning components and syntactic distribution of a certain verb. The learner detects a verb's meaning components that can tell him/her if this verb takes the figure as its direct object or the ground with the help of universal linking rules, such as *the affectedness linking rule*. Basically the second hypothesis provides the same prediction. Especially when the learners encounter a situation where the ground is completely affected by the figure, it is predicted that they will realize that the ground must be in the position of the direct object in a sentence. Likewise, if a ground-object construction is presented to the L2 learners, they will assume that the ground is fully affected by the figure, while this is not necessarily the case for the figure-object construction.

The Subset principle described in Chapter 2 is a learning principle which helps the language learner to make the correct choice between different values of the target language grammar. I also illustrated the difference in the degree of difficulty in whether learners should expand or restrict the current grammar, i.e. going from the superset to the subset will be more difficult than from the subset to the superset due to the 'no-negative-evidence problem'¹. Given the third hypothesis, Korean speaking English learners will transfer L1 semantics-syntax correspondence to their L2 grammar at the early stage of their L2 acquisition.

This hypothesis, in turn, predicts three different situations that learners might face regarding the superset-subset relation of the syntactic distributions of English and Korean

¹ In this thesis it is assumed that the corrective feedbacks available to the L2 learners are not reliably taken note of. See Chapter 2 for the discussion.

locative verbs; 1) when the English grammar is the same as Korean, 2) when the English grammar is wider than Korean and 3) when the English grammar is narrower than Korean.

In the case of 1), an L2 learner will not have difficulty in using the English locative verbs correctly (Figure 4.1). The case 2) describes a situation in which English allows the alternation and Korean allows either figure-object construction or ground-object construction. Thus, the English grammar is a wider grammar than the Korean one for this group of verbs, as illustrated in Figure 4.2. In this case, positive evidence will be enough for the Korean speaking English learners to expand their restricted grammar into a more English-like one.

In the case of 3) the Korean verb group is a superset of the English one. This is where the Korean speaking English learners need negative evidence, as in Figure 4.3. Since the learners' L1 grammar is wider than that of the L2, some of the sentences that the learners produce will be overly general, resulting in ungrammatical sentences in English, such as *John filled the water into the glass*. Given the assumption that negative evidence is not reliably available to the L2 learners (c.f. Chapter 2), the learners would have the most difficulties with the verbs in this group. Also it is predicted to take longer to retreat from the overgeneralized grammar.

Figure 4. The syntactic distributions of English and Korean locative verbs

4.1) English = Korean

- (i) John poured water into the glass.
John-un mul-ul kup-ey pwu-ess-ta.
- (ii) * John poured the glass with water.
*John-un kup-ul mul-lo pwu-ess-ta.

4.2) English > Korean

- (i) John loaded the apples into the cart.
John-un sagwa-rul surae-ey sil-ess-ta.
- (ii) John loaded the cart with the apples.
*John-un surae-rul sagwa-ro sil-ess-ta.

4.3) English < Korean

- (i) John filled the glass with water.
John-un kup-ul mul-lo chawu-ess-ta.
- (ii) *John filled the water into the glass.
John-un mul-ul kup-ey chawu-ess-ta.

4.3. Methods and materials

In Pinker (1989), he presented evidence against Strict Lexical Conservatism in children's first language acquisition. In both spontaneous speech data and the results of experiments, children do set their own rules and use the rules *productively*; if they stick to only the structures they hear in the input, they would not be able to do this. The question one can ask is whether L2 learners are conservative as well. Do L2 learners learn the locative verbs by rules or by verb-specific learning? It is worthwhile to find out the differences/similarities between adult L2 learners and children L1 acquirers in terms of the learners' creative use of the rules.

To investigate this question, using made-up verbs was determined to be the most appropriate method. Given the context and the structure, if learners have their own rules,

then they might be able to apply the rules with consistency, but if they don't have the rules, their correct use of verbs in the structures would be random.

4.3.1. Tasks

The experiment contains three separate tasks. Made-up verbs are used in Task 1 and Task 2. Only in Task 3 are actual English verbs used. In Task 2, in particular, each sentence contains a made-up preposition in addition to a made-up verb. Across all the tasks, the rest of the words, such as nouns and articles, are provided in each question and they are real English words. The selection of the verbs and the prepositions used in this experiment will be presented in the next section with the list (4.3.2.). For samples of the questions in each task, see Appendix 1.

4.3.1.1. Task 1 ; A production task

This task is a production task using artificial English verbs. Subjects were provided with picture strips and a made-up verb, which describes the action of the picture in each question. Especially the second picture of each strip shows the scene after the action has been completed. After guessing the meaning of the made-up verb, subjects were asked to make one sentence or a maximum of two sentences containing the given verbs and nouns. To remind and draw the subjects' attention to the second picture that is showing how much the ground is affected, the sentence 'Each right hand picture shows the scene after the action is completed' was shown on the top of each page in the test booklet.

The result of this task is expected to show 1) the sensitivity to verb meaning based on Pinker's (1989) approach that meaning components of a verb determine the argument structure, i.e. the holism effect and the narrow-range rules of English and 2) knowledge

of the alternation possibility. Given the context and the structure, if learners have their own rules, then they might be able to apply the rules with consistency. However, if the learners did not internalize the rules yet, their use of verbs in the structures would be random. The number of verbs used in this task is 16.

4.3.1.2. Task 2 ; A picture-sentence matching task

In this task, subjects were asked to read the given sentences with different structures and draw a line connecting the sentence with the picture that matches it best. Made-up verbs and made-up prepositions were used in this task and the verbs used in this task are the same as in Task 1. In each question there are two individual pictures with the same grounds; the only difference is the degree to which the ground is affected by the figure. Ground meaning pictures describe that the ground is entirely affected by the figure and figure meaning pictures are the ones with the ground less affected, thus making the figure more salient. Also two different sentences with different syntactic structures were presented with the pictures in each question. Subjects are expected to draw a line connecting the ground-object sentence with the picture showing that the ground is more affected. Subjects had the option to choose both of the pictures for a single structure as long as they think that the sentence may describe both pictures.

This task is designed to see whether subjects recognize the connection between syntax and the holism effect. By providing made-up verbs and made-up prepositions, the role of verb-specific knowledge is minimized. The only source of information about the meaning of prepositions and the sentences is the structure of each sentence.

4.3.1.3. Task 3 ; A grammaticality judgment task

A grammaticality judgment task was included to see if the subjects have acquired English locative argument structures. 30 English sentences with actual English locative verbs were presented. The sentences were partly adopted from Juffs (1996a). Both English and Korean speakers were asked to judge the grammaticality of the sentences on a 5-point scale: a rating of -2 meant that the sentence is completely impossible, -1 impossible, 1 possible, and 2 completely possible. The scale 0 meant either that the learner is unable to decide or that the sentence was possible but it is never used by the native speakers.

4.3.2. The Selections of Locative verbs in the Experiment

The verbs were selected on the basis that they are commonly used in every day life, so that the Korean speaking English learners will have enough chances to hear them in the input or to use them in their speech production. In Task 1 and Task 2, the same sets of verbs are used in a different order. However, in Task 3, there are more verbs involved and some of the verbs are not included in the other two tasks. As described in section 4.2., the verbs used in this experiment fall into one of the three verb groups. In Task 3, the English verbs in the list are used as they are, but in Task 1 and Task 2, the English verbs are 'replaced' with the artificial verbs. The following is the list of the verbs classified into three groups in each task.

Table 3. Locative verbs in the experiment

	Task 1	Task 2	Task 3
Verb Group 1 (E=K)	pour/pwutta spill/hulita nail/motpakta stuff/chawuta pollute/oyemsikhita spray/chilhata ²	(blit) (tonk) (vate) (nook) (biff) (pilk)	pour/pwutta nail/motpakta spill/hulita vomit/tohata paint/chilhata block/makta throw/tenchita touch/kenderita
Verb Group 2 (E>K)	sprinkle/purita pack/ssata load/sitta scatter/purita	(xile) (spg) (birg) (nade)	spray/purita pack/ssata load/sitta splash/tukita
Verb Group 3 (E<K)	cover/tepta fill/chawuta glue/puthita soak/chuksita decorate/changsikhata coil/kamta	(moof) (nain) (yerp) (zank) (dirp) (kort)	cover/tepta decorate/changsikhata stain/muthita ³
Prepositions		Task 2 with (len) into, onto, in, on, around (li)	

4.3.3. Procedures

The idea of using picture strips in Task 1 is similar to the experiments conducted by Joo (2000). However, human figures in the second pictures seemed to be distracting, because participants in pilot testing produced sentences such as ‘Mary dirped the tree with stars and walked away’. Hence human figures were deleted for the actual test.

² The English verb *spray* can be either the Korean verb *chilhata* or *purita* depending on the context. In Task 1 and 2, the door was painted (*chilhata*) by a spray paint and the whole door is painted in the end. Yet, in Task 3, the tree was sprayed by insecticide and although the whole tree is covered with the figure it can only be sprayed (*purita*).

³ The English verb *stain* is ground nonalternator, whereas the Korean equivalent *muthita* is figure nonalternator. The rationale for the verb group 3 is that the verbs in this group have different syntactic distribution, thus makes learning difficult. Hence I placed these two verbs in the verb group 3.

Task 2 originally had three pictures with different degrees of affectedness on the ground. The result of pilot testing showed that the second picture was not necessary when subjects have to decide the connection between a sentence and a picture. Two pictures seemed to be enough to see whether subjects can interpret the ground-object construction with the holism effect. Moreover, reducing the choice to two pictures made the task itself easier for subject to perform, thus preventing the results from being distorted.

Task 1, Task 2 and Task 3 were presented in this order to the participants. During pilot testing it was found that there was no significant effect from the order of the tasks especially between Task 1 and Task 2. Task 3, which is the grammaticality judgment task with the actual English verbs, is placed at the end of the experiment to reduce the help of verb-specific knowledge when the subjects perform in Task 1 and 2. However, subjects were asked to stop after finishing Task 1 for the instructions for Task 2. This had two reasons; one was to explain the next task and the other was to provide a brief rest.

Task 1 was to examine knowledge of the narrow semantic rules and their application to new verbs. If the subject used the new verbs in an expected way, either allowed alternation or chose ground or figure-object construction, he/she got 1 point. For Task 2, the subject got 1 point if he/she matched the ground-object construction with the ground picture. Task 3 was the grammaticality judgment task with a 5-point scale. In this task, the subject's choice of minus numbers was considered to be the same, no matter which number he/she chose, either -2 or -1. It is the same for the plus numbers as well. If he/she chose 0, it is treated as a wrong answer.

4.3.4. Participants

The results of two groups are compared: a Korean group (adult Korean-speaking English learners) and an English native control group. The Korean group consisted of 25 Korean native speakers who speak English as their second language. They all started learning English as a foreign language in Korea through the public education systems which provide 6 years of English in the curriculum. Each member of the Korean group is currently attending university courses and/or the highest level of ESL classes in the Ottawa region. Their TOEFL scores are at least 550 or higher and they listen, speak, read and write in English in most areas of their daily lives.

The English control group has 16 English native speakers and they are undergraduate and graduate students at Carleton University, Ottawa.

4.4. Results

4.4.1. Descriptive

The SPSS version 9 was used for statistical analysis. The performance of the English native group and the Korean learners group was compared in two ways; 1) results for each task and 2) results for each verb group in each task. The descriptive statistics shows that both groups have underlying normality in their distribution, although they are slightly skewed negatively except for Task 1.

Table 4. Descriptive Statistics of the experiment (n=41)

	N Statistic	Minimum Statistic	Maximum Statistic	Mean Statistic	Std. Deviation Statistic	Variance Statistic	Skewness	
							Statistic	Std. Error
TASK1	41	3	14	8.63	2.33	5.438	.008	.369
TASK2	41	2	16	12.83	3.05	9.295	-1.327	.369
TASK3	41	8	30	24.83	4.06	16.495	-2.170	.369

TOTAL	41	23.00	58.00	46.2927	7.0578	49.812	-1.019	.369
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4a. English group (Descriptive Statistics) (n=16)

	N		Mean	Median	Mode	Std. Deviation	Variance	Minimum	Maximum
	Valid	Missing							
TASK1	16	0	10.25	10.50	11	2.02	4.07	7	14
TASK2	16	0	12.75	13.50	16	3.70	13.67	2	16
TASK3	16	0	27.38	27.50	28	1.50	2.25	24	30
TOTAL	16	0	50.3750	51.0000	51.00	5.1881	26.9167	39.00	58.00

4b. Korean group (Descriptive Statistics) (n=25)

	N		Mean	Median	Mode	Std. Deviation	Variance	Minimum	Maximum
	Valid	Missing							
TASK1	25	0	7.60	8.00	6	1.91	3.67	3	11
TASK2	25	0	12.88	13.00	16	2.64	6.94	7	16
TASK3	25	0	23.20	24.00	24	4.36	19.00	8	29
TOTAL	25	0	43.6800	45.0000	48.00	6.9265	47.9767	23.00	56.00

4.4.2. ANOVA

An analysis of variance (ANOVA) was used to assess differences between the performances of each language group in different tasks. The two factors within subjects were (1) the performance on the tasks and (2) the verb groups in each task. The alpha decision level was set at .05. All the scores had been transformed into percentages before running ANOVA, since the number of verbs in each task and each verb groups are variable.

In the results, the test of between-subjects effects shows that there was a significant effect for language; F value of $F=1$, df 39, is 10.029, $p = .003$. The main effect for the tasks and for the verb groups were statistically significant in the analysis of variance as well.

Table 5. ANOVA**Multivariate Tests**

Effect	Value	F	Hypothesis df	Error df	Sig.	Eta Squared
TASK	.774	65.182	2.000	38.000	.000	.774
TASK * LANGUAGE	.199	4.712	2.000	38.000	.015	.199
VERB	.398	12.540	2.000	38.000	.000	.398
VERB * LANGUAGE	.075	1.535	2.000	38.000	.229	.075
TASK * VERB	.695	20.498	4.000	36.000	.000	.695
TASK * VERB * LANGUAGE	.161	1.732	4.000	36.000	.164	.161

a Computed using alpha = .05

b Exact statistic

c Design: Intercept+LANGUAGE Within Subjects Design:
TASK+VERB+TASK*VERB

There was a significant effect of task, $F(2,38) = 65.182$, $p = .000$. η^2 was estimated in order to test the degree of association between the variables. The main effect of tasks was not only significant but it also accounted for 77% of the variance (η^2 data = .774). Task 1 was significantly different from Task 2 and Task 3. But there was no difference between Task 2 and Task 3 (See Appendix 2). Each task is testing different knowledge of the locative construction; Task 1 is testing knowledge of the narrow semantic classes and the ability to apply the rules to new verbs, Task 2 the holism effect and Task 3 verb-specific knowledge in English. Although the three kinds of knowledge of English locative constructions illustrated above are interrelated, the tasks in this research were designed to test each aspect separately, so a main effect for task is expected.

There was a significant effect for verb groups, $F(2, 38) = 12.540$, $p = .000$. Verbs also showed 40% of the variability in the test by the η^2 data of .398. Verb group 1 was significantly different from verb group 3, but not different from verb group 2. There was a significant difference between verb group 2 and 3 (See Appendix 3). A main effect of verb group was expected for the Korean-speaking group. Since the third group is the case where English verbs are used in a more restricted way (the Subset), the performance of the Korean group was expected to be different from that of the English group. For verb groups 1 and 2, the uses of the verbs are the supersets of the equivalents of Korean verbs, so the Korean speaking English learners were not expected to have difficulties in learning them.

There was a significant interaction between the tasks and language. The F-distribution with 2 and 38 degree of freedom is approximately 4.71, $p = 0.015$. The significant interaction effect indicates that the effect of a task is dependent on whether the subject's first language is English or Korean. Since there was an interaction effect between language and the tasks, the effect of language factor depended on the task factor; that is, the mean difference among the language groups is not constant across all the categories of the tasks. Comparing the mean score on each task for the performance of Korean and English groups, there was a big difference in Task 1 and Task 3, which were measuring the narrow semantic knowledge of English. However, the scores for Task 2 between the two language groups were quite close to each other. The scores of the Korean speaking subjects were even slightly higher than for the English group. This result was expected as well, because *the affectedness linking rule* is considered to be universal and the Korean learners of English possess and activate the rule in English

locative construction. In explaining that the scores of the Korean group were slightly higher than the English group, there might not have been much interference of verb-specific knowledge of English for the Korean speakers. In the case of the English speakers, they might have tried to replace the made-up verbs with the real English verbs. Doing so, it was expected that they would have found some ungrammatical sentences and that this obstructed the function of the affectedness linking.

The interaction between task and verb was significant as well, $F(4, 36) = 20.498$, $p = .000$. The task and verb interaction accounted for 70% of the variability which is a very strong relationship ($\eta^2 \text{ data} = .695$). Certain verb groups were easier or more difficult to do when they appeared in different tasks. Since Task 2 tested the holism effect, which is considered to be universal in human cognition, it is expected to be different from the other two tasks. No matter in which class a verb is classified, the ground-object construction is anticipated to be matched with the ground picture. This result shows that subjects in both the Korean and English language groups preferred the pictures in which the ground is more affected, when they encountered the ground-object constructions. Therefore, although the verbs in Task 2 were exactly the same as in Task 1, the performance of the subjects was shown to be different because of the nature of the tasks.

There is, however, no statistically significant interaction effect between verb groups and language, $F(2, 38) = 1.535$, $p = .229$. Thus, across all the verb groups, the mean difference of each language group remained the same. This result is quite unexpected. As illustrated earlier, each verb group is different in terms of its use in the structure. It was anticipated that the Korean speaking English learners might have

difficulty performing correctly, especially on verb group 3. Nevertheless, what the statistics showed was that the learners did not have problems with using the verbs in verb group 3.

The three-way interaction among language, task and verb groups did not show any statistical significance, $F(2, 36) = 1.732$, $p = .164$, which means that the pattern of the results between language and task was the same across all verb groups.

These results will be illustrated and discussed further in Chapter 5.

Chapter 5

Discussion

In this chapter, I will present the results of the experiment and discuss the findings. First I will illustrate the results of the tasks followed by the results of the verb groups. In the later part of this chapter, the answers to the research questions will be discussed.

5.1. The Results of the Tasks

5.1.1. Task 1

This task was a production task. Artificial verbs, instead of actual English verbs, were provided (Table 3, Chapter 4). The main purpose of this task was to see if the English speakers and the Korean learners of English would use the verbs in expected ways, when the key characteristics of a verb's meaning were provided in the picture. Especially, the second picture of each picture strip described the scene after the action was completed, so the sentences that the subjects make should show whether there is sensitivity to the affectedness of the ground.

Regardless of the language group, the results of Task 1 were significantly different from Task 2 and Task 3. In the results of Task 1, both English and Korean groups showed lower mean scores than in the other two tasks. Also there was a significant difference between the language groups. Task 1 might have been difficult to do for the subjects in both groups. According to the statistics, this task was comparatively more difficult than the other two tasks, however, the skewness (.008; Table 5, Chapter 4) was not great. The mean

scores of Verb Group 1 and 2 (VG1; VG 2) for both language groups were quite similar to each other. The ascending order of the verb groups is VG3, VG1 and VG2 for both of the language groups.

To discuss the main purpose of this task, applying the narrow-range rules of English to new verbs might be difficult for the Korean learners of English, if they failed to notice the meaning components of verbs and classify them correctly in English. In other words, it is possible for the learners to have acquired the English locative verbs on an item-by-item basis. Particularly for the VG 3, which is the group of English verbs that are non-alternators while the Korean equivalents allow alternation, the scores of Korean learners were much lower than the ones of English speakers, reaching only 20 per cent of correct use. Those verbs are *cover/tepta*, *fill/chawuta* etc (Table 3, Chapter 4). The lowest mean score occurs in the case of *decorate*: only 2 of 25 (8%) Korean speakers produced the ground-object sentence. Most of the Korean subjects allowed alternation for this verb just as in Korean. This can be interpreted as L1 transfer.

Another point to pay attention to is that the Korean learners of English in this experiment produced only figure-object construction when an alternating verb is provided, such as *spray* and *stuff*. Especially in the case of *stuff* and its Korean equivalent *chawuta*, although they are alternating verbs, only figure-object constructions were allowed in many responses of the Korean speakers. This is connected to the suggestion by several researchers (Kim & Landau 1997, Choi 2001) that the default structure for the locative construction in Korean is the figure-object construction and any verbs that contain the meaning of “change of state” allow alternation. Moreover, in the overall response of

Korean learners of English in Task 1, there was a bias towards the figure-object construction. A large number of the Korean speakers' responses were the figure-object constructions when the response consisted of a single sentence (127/150 for figure-object versus 33/150 for ground-object construction).

Interestingly, however, the highest mean score for the individual verb groups is VG 2, in which English is the superset of Korean. It was expected that VG 1 might show the highest mean score among all the verb groups, which did not turn out to be the case. Moreover, there was a significant difference between Task 1 and Task2, thus there might have been some kind of strategy when they performed on Task 1. The subjects could have simply allowed the alternation when they were not sure about the alternation possibility of the given verb. Since the Korean speakers did distinguish the alternators and the non-alternators in most of the questions in Task 1, this strategy might have been used only when the learners were not sure.

In general, the Korean learners of English in this experiment were not very accurate in using the 'new' English verbs. It means that the learners have not realized the meaning components in the given context and have not internalized the narrow-range rules of English. Therefore, they were not capable of applying the narrow-range rules for locative structures to the artificial verbs. The results do not allow us to reject the possibility that the Korean learners of English acquire English locative verbs on an item-by-item basis. It also seems that the Korean learners in this experiment are still relying on some part of their Korean knowledge of locative construction. This might be due to the fact that the Korean speakers are still in the process of acquiring the L2. Thus they tend to rely on their

L1 knowledge when they do not have the specific knowledge of the rules of alternation.

Figure 5. The results for verb groups and tasks for Korean (5a) and English (5b) group

5.1.2. Task 2

Artificial verbs were used in Task 2 as well. Unlike Task 1, which provides picture cues, Task 2 gives syntactic cues by presenting artificial verbs and artificial prepositions in sentences. When they are provided with the skeletal information of only the syntactic structure, subjects might show a tendency towards a certain picture, i.e. either ground meaning picture or figure meaning picture with a certain type of structure, i.e. either the ground-object construction or the figure-object construction.

The statistics show that there was no significant difference between the Korean group and the English group in the results. The mean scores in both groups were very similar to each other and consistent within the groups, ranging from 70 per cent to 90. There was no difference of mean scores among all the verb groups as well. As mentioned in Chapter 4, although the verbs in Task 2 were the same as in Task 1, the performance of the subjects was shown to be different because of the nature of the tasks. The results of Task 2 revealed that the Korean learners of English have shown the same degree of preference for the ground meaning pictures with the ground-object constructions as the English native speakers did. This indicates that the Korean learners realize that the construction carries its own meaning. In other words, the learners do possess *the affectedness linking rule* and activate it in the English locative construction.

The scores were given only when the ground-object constructions were matched with the ground meaning pictures, since the main purpose of this task was to test the learners' holistic interpretation in the ground-object construction. However, it is important to note that the English native speakers and Korean learners of English altogether have chosen both ground meaning picture and figure meaning picture for the figure-object

construction¹ in many cases. For example, *John naded the field len seeds* was matched only with the picture that the whole field was covered with the seeds, but *John naded seeds li the field* was connected to both the ground and figure meaning pictures. It indicates that the subjects are sensitive to the constructional meaning, thus determining that the figure-object constructions do not necessarily imply that the ground is entirely affected. This result accords to the finding of Choi (2001) that the holism effect is observed in the case of the ground-object construction but not in the case of the figure-object construction. This preference of choosing two pictures for the figure-object constructions was slightly stronger in the English native speakers' response. The advanced Korean learners of English also showed this tendency. The realization of and the sensitivity to the constructional meaning seem to be related to the proficiency of the learner.

Since this task was designed to capture the holism effect only, differences in the results across the verb groups were not expected; the classification of the verb groups is relevant to the narrow-range rules. The results thus showed that there was no statistical difference among the verb groups. The mean score of Korean learners of English in VG3 was even slightly higher than the one of English native speakers. As briefly described in Chapter 4, this might be due to the smaller influence from the verb-specific knowledge of English for the Korean speakers. Subjects might have focused only on the structural information to decide which picture is best fit for the sentence. In the case of English

¹ The subjects were allowed to choose as many pictures as they want as long as they think that the sentence matches both of the pictures. However, most of the subjects chose a single picture, especially for the ground-object construction.

native speakers, they might have tried to replace the artificial verbs with the actual English verbs, thus encountering some ungrammatical sentences. This could have obstructed the function of *the affectedness linking rule*.

5.1.3. Task 3

This task is the only task in this experiment that contains the actual English verbs, and it tests knowledge of the English narrow-range rules, as in Task 1. If the given sentence is ungrammatical, the correct answers will be either -2 or -1. If the sentence is grammatical, either 1 or 2 will be the correct answers. The subjects were given 1 point when they chose one of the correct numbers in each case. For the selection of the scale 0, the subjects were not given any points².

The mean scores of the English native speakers in each verb group stayed tightly together, ranging from 90 per cent to 95 and ascending from VG1 to VG2 and to VG3. In the results of the Korean group, there were some differences in the mean scores for verb groups; they were spread between 70 per cent and 85 per cent with the ascending order of VG3, VG2 and VG 1, which was the reversed order of the English group's.

Since all the verbs in this task appeared in both the figure-object construction and the ground-object construction, it was possible to examine each verb specifically to see how it was treated by the individual learner. *Decorate*, as in Task 1, was the verb that the Korean learners showed the lowest score on. On the whole, most of the learners (92%)

² If there are too many choices of the scale 0 in one subject's performance, the subject should be eliminated for the sake of research criteria; the Korean learners should be in advanced level. In the data, 6 was the highest number of the selection of the scale 0 by one Korean subject (outlier). However, it was not considered to cause a big change in the result, thus remained in the data.

accepted the sentence *The children decorated the tree with lights*, but 60% of the learners also judged **The children decorated the lights onto the tree* as grammatical.

Examining individual responses, only 8 of Korean speakers (32%) treated this verb as in English (ground nonalternator), rejecting the figure-object construction. 15 Koreans (60%) accepted the verb in both figure and ground-object constructions. None of the Korean subjects thought *decorate* is a figure nonalternator. In this case, the Korean learners think that *decorate* behaves the same as *changsikhata*, which allows alternation. This is exactly the same result as on Task 1.

The Korean speakers' response to the verb *stain* was interesting. As explained in Chapter 4, *stain* and *muthita* do not have the subset-superset relation; *stain* is a ground nonalternator, while *muthita* is a figure nonalternator. Only 3 of the Korean speakers (12%) judged the grammaticality as in Korean, clearly not a case of L1 transfer. 48% of the Korean speakers, which was the biggest subgroup of the Korean group, treated *stain* exactly as in English, allowing only the ground-object construction, which is quite the opposite result from the case of *decorate*. Another interesting point is that 8 of 25 Korean learners allowed both sentences, treating the verb as an alternator. The English verb *stain* can be matched with two different Korean verbs, *muthita* and *terephita*. *Terephita* is closer to *stain* in the sense that the quality of the ground is 'ruined' by the figure. However, in the sentence *Anne accidentally stained her new coat with coffee*, *stain* can be interpreted as *muthita*, since the adverb *accidentally* seems to move the focus to the action itself, not the result. The English native speakers' responses also show this kind of effect. When the English group reject ungrammatical sentences, it is usually with a high percentage, but it

was not the case for this verb; 25 % of English native speakers allowed this verb to take the figure as its direct object.

Although there was no statistical difference, the order of the verb groups in the results of the Korean group is interesting, since it is exactly the way it is predicted by the subset learning hypothesis. Recall the diagrams in Chapter 4 where the hypotheses suggest that VG3 will be the most difficult for the Korean speakers, since the acquisition process is from the superset to the subset. VG 1 was expected to be the easiest group of verbs for the Korean speakers, thus scoring the highest among the verb groups.

However, since there is no statistically significant difference between the verb groups, it means that the learners were successful in moving from the superset to the subset. These results accord with the findings in the studies on GCP parameter for Korean speakers by Hirakawa (1989) and Thomas (1989), as illustrated in Chapter 2.

5.2. Discussion

5.2.1. Acquisition of Language-specific Properties

Do Korean learners of English acquire English locative verbs by verb-specific learning or by setting rules in their minds?

This is the question relevant to the results of Task 1 and Task 3, which specifically test the narrow-range rules of English. To elaborate this question, the first one that should be answered is whether Korean learners of English acquire the language-specific narrow-range rules. The Korean learners were able to judge the grammaticality of the English sentences in Task 3 with a high degree of accuracy. So it seems that the learners did

acquire the English locative construction and the specific properties of locative verbs. The next question is how they acquire them: whether on an item-by-item basis or by setting rules. In the results of Task 1, which was with artificial English verbs, these learners did not show the same accuracy as in Task 3. The reason for using artificial verbs in this task was to see if the learners had internalized the narrow-range rules and were capable of applying the rules when they encountered new locative verbs. The results of the two tasks above suggest that the learners had difficulties when they have to produce sentences with a new verb and there was no sample sentence with that specific verb in the input.

One point that should be noted here is that the nature of Task 1 and Task 3 was different; Task 1, a production task and Task 3, a grammaticality judgment task. Judging the grammaticality of a sentence on a scale could be relatively easier than producing sentences. This could be why the Korean speakers did poorly on Task 1. In addition, the English speakers' response in Task 1 was also depressed, so it is hard to conclude that the Korean speakers' lower scores are simply due to the absence of internalized rules regarding the narrow semantic classes of English.

5.2.2. The Holism Effect

Are the Korean learners of English sensitive to differences in meaning implicit in different structures using the same English verb?

The answer to this question will be “yes”. In the results of the experiment, Korean learners of English acquire the constructional meaning of English locative structures and alternation. Task 2 specifically tested for the holism interpretation in the Korean learners of English and they consistently matched the ground pictures with the ground-object

constructions.

Gropen et al (1991) argues that the linking rules are universal. This experiment does not directly test whether *the affectedness linking rule* is crosslinguistically universal, but other studies, such as Lee (1997) and Joo (2000), support the existence of the holism effect in Korean. *The affectedness linking rule* is to link the argument that is specified as 'caused to change' in the main event of a verb's semantic representation to the grammatical object. In ground-object constructions, the ground is the entity that is affected in a specific manner which is encoded in the semantic representation of the verb, thus linked to the direct object of the verb. This linking rule induces the speakers to choose the ground as the direct object when the ground is completely affected rather than when the ground is partly affected. The two pictures provided in Task 2 were different only in the degree of the affectedness of the ground and the Korean learners showed a strong preference for the picture in which the ground is completely affected.

Consequently, it may not be clear whether the learners' knowledge of *the affectedness linking rule* is transferred from their L1 or whether it is due to the innate nature of *the affectedness linking rule*. And yet, the holism effect in Korean has been reported as not being as strong as in English and the different meanings are not expressed by changing argument structures as in English. As illustrated in Chapter 3, the holism effect in Korean locative constructions depends on other factors, such as the use of adverbs (Joo 2000, Lee 1997, for Chinese Juffs 1996a,b, for Japanese Fukui et al 1985) and verb serialization (Kim et al. 1999). The object affectedness is certainly 'universal', however, the way it is expressed seems to be different in each language. For that specific reason, if the Korean

learners showed a strong preference for the ground picture matched with the ground-object construction, it is clear evidence that the learners' possession of *the affectedness linking rule* is provided by their innate knowledge rather than by their L1.

5.2.3. Different Types of Cues

Do Korean learners of English show different degree of sensitivity to different types of input? Which information is more effective to the learners?

The results of this experiment suggest that the Korean learners had less difficulty when they performed Task 2, which was with the syntactic cues. Task 1, which was presented with the meaning components described in the picture, seemed to have given the learners too many possibilities. This accords with Gleitman's (1990) syntactic bootstrapping hypothesis. Partly, the various interpretations of the situation might be due to the pictures, since the graphics can be interpreted in various ways by each individual. However, the pilot testing showed that the pictures were successful in achieving a consensus interpretation by the English native speakers. In other words, the researcher's intended meanings for the pictures were close to the respondents' interpretations. The specific verbs that came to respondents' minds were presumably different, but as long as they belonged to the same narrow classifications as the intended verbs, they were accepted for use in the study. Assuming this, there was a clear difference in the performance of the Korean learners between Task 1 and Task 2, where different types of cues were given. In addition, the semantic information provided to the learners in Task 2 was highly limited; the sentences contained artificial verbs and artificial prepositions, such as *John dirped the tree len stars*. Some information about the action can be inferred from the pictures below the

sentences, but the pictures provide no more than information about the nature of the ground and the figure and the final scene when the action is finished. In spite of the limited situational information, the learners were successful at understanding the structures and finishing the task.

As discussed in Chapter 3, the adult Korean learners of English may not be using the three learning mechanisms that Pinker (1989) suggested: *Event-Category Labeling*, *Semantic Structure Hypothesis Testing* and *Syntactic Cueing of Semantic Structure*. The Korean learners in this experiment seem to rely more on the syntactic cues. This could lead to the ultimate difference in children's first language acquisition and adults' second language acquisition. While children use all three learning mechanisms appropriately, adults may not. In Joo (2000), it is argued that it is easier for the EFL (English as a Foreign Language) learners to learn verb meanings from argument structures from example sentences in context or in a dictionary, since they do not have many chances to observe the locative construction in real life situations. This may not only be due to the fact that the learners are not in the target language community. In the present experiment, the Korean learners of English are exposed to naturalistic linguistic input presumably containing examples of locative constructions in most of their everyday life. And yet, these learners showed a preference for a specific type of input, in this case syntactic information. This might be a reason for why adults' second language acquisition is slower and less successful.

If this is the case, it would appear to conflict with other findings (Carroll 1999) that with increasing age L2 learners rely on semantic cues. This seems to be a matter of further investigation.

5.2.4. The Subset Learning

Was the learning from the superset to the subset successful?

The VG 3 was expected to be the most difficult one and show the lowest score in the performance of the Korean learners of English, if the learners relied on their L1 knowledge of alternation. Korean verbs in this group allow two argument structures, but the equivalents in English allow only a single structure. If L1 transfer occurs, the learners will produce overgeneralized sentences with the verbs in this group. Since it is assumed that negative evidence is not reliably available to the learners, it was also predicted to take longer and harder to acquire them.

In the results of this experiment, Task 1 showed that the Korean learners of English produced the sentences incorrectly, especially for VG3. The results of Task 3, on the other hand, indicated that there was no difference among the verb groups, meaning that none of the verb groups in the experiment was particularly difficult for them. Task 2, especially, did not indicate any difference in the performance among the verb groups. Although there was a slight difference between the verb groups in Task 1, the difference was not significant in general.

There was evidence of L1 transfer, in other words, the Korean learners of English in this experiment adopted wider grammar for certain English verbs. Accordingly, one cannot hypothesize that the Korean learners of English initially started from the most restricted grammar, which contrasts to the Subset principle. However, the results of this experiment did suggest that the learners are successful at moving from the superset to the subset.

Chapter 6

Conclusion

In this chapter I will summarize the findings of this study and suggest some issues for future research.

6.1. Summary

One of the major questions of language acquisition is how the language learners succeed in the acquisition of the complex but highly systematic grammar of the target language from subtle and ambiguous input provided to the learners. The paradox starts with the 'no negative evidence' problem. Even though there is no explicit information about ungrammaticality of a certain form in the target input, learners successfully distinguish the possible and impossible structures and use them correctly. Learnability theory attempts to explain the mystery surrounding language acquisition. It explains the logical problem of language acquisition as the language learner's process of abstraction of regularities from linguistic input available to the learner with the help of innate constraints.

This thesis investigated the acquisition of English locative constructions by Korean native speakers in a learnability framework. This study also started from the logical problem of second language acquisition and the 'no-negative-evidence' problem; the second language learners are successful in acquiring the target grammar with seemingly insufficient input and inefficient corrective feedback. With regard to the linguistic theories of locative argument structure, the broad-range and the narrow-range rules

proposed by Pinker (1989) were adopted after considering various theories which explain semantics-syntax correspondences, since Pinker's suggestion seems to explain both linguistic theories and the language acquisition paradox.

The results of the experiment revealed that the second language learners showed the holistic interpretation in English locative construction. These second language learners realize that the structures can carry an additional meaning in English other than the meaning of a verb itself. It can be concluded that the learners are aware of *the affectedness linking rule* and activate it when it is applicable. Since Korean has different linguistic devices for expressing the holism effect than English, the Korean learners' possession of *the affectedness linking rule* cannot be claimed to be transferred from their L1.

Another finding in the experiment is that the L2 learners seem to possess knowledge of the language-specific narrow range rules, i.e. alternation possibility, of English. The L2 learners were equally sensitive to the affectedness of the object and distinguished the constructional meaning as the native speakers and also judged grammaticality of English sentences with a high degree of accuracy. However, the question of whether the L2 learners actually acquired the rules of narrow range classes or they learned alternation possibility item-by-item is not clear.

However, it takes a longer time for the second language learners to realize the narrow conflation classes in L2, although they are sensitive to the broad meaning components which mainly decide the kinds of direct object that the verb takes. Accordingly, the L2 learners were not as accurate as the native speakers when they have to decide whether a new verb alternates or not. It can also be claimed that deciding whether a

new verb can alternate or not is challenging for the L2 learners; the new verbs that the learners had never heard before caused them more difficulty in using them in sentences.

There was also evidence that the language-specific knowledge of the narrow-range rules were transferred, when the learners did not acquire the target-like rules. This might also be due to the fact that the learners are still in the process of their acquisition of locative construction, since the learners with different proficiency level showed differences in their performance.

With regard to the learning mechanisms of the second language learners, it seems that the learners are not making use of all the mechanisms that are used in children's first language acquisition. In the experiment of this research, the learners showed better understanding of locative construction when the syntactic information was provided compared to when the semantic information was given. This provides an explanation for the second language acquisition to be generally 'impaired'. However, this clearly needs further study.

6.2. Limitations and Suggestion for Further Research

Within the group of Korean learners of English, there was a slight difference in the way that each learner treated the narrow-range rules; more advanced learners judged grammaticality just as the English native speakers did and less advanced learners showed some features of L1 transfer. It seems that the learners can acquire the narrow conflation classes eventually, but this research does not provide the explanation of how. The purpose of using artificial verbs in the experiment was to see whether the learners have internalized

the broad-range and the narrow-range rules and whether they are able to use the rules creatively. The results only support the claim that *the affectedness linking rule* is universal and helps the L2 learners to realize the holism effect. However, it fails to show strong evidence that the learners acquire the language-specific semantic classes by the narrow-range rules. The second language learners do seem to be aware of the narrow-range rules of English, but their falling back on to their L1 was shown frequently.

To be able to closely examine the process of the acquisition of locative constructions, systematic and crosslinguistic investigation of Korean and English locative constructions is necessary, especially with regard to the holism effect both in English and Korean.

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Task 1

Look at the following pictures carefully. The picture strip describes the action of the verb given in each question. The second picture of each strip shows **the scene after the action** happened. The verb in each question has **one meaning only**.

Please make sentences that best describe the pictures.

Sentences **must** contain the words given at the beginning of each question.

Please use the prepositions, *with* and/or *onto/into* in each sentence.

You can make either one or two sentences. For example, with the verb, *load*, both

- 1) *I loaded the truck with the boxes and*
- 2) *I loaded the boxes onto the truck* are possible.

However, for some verbs you can make only one sentence. For example, *I stuck the pin into the board* is good, but **I stuck the board with the pin* does not sound natural in English.

Example 1. **loading**

truck
boxes

- 1) Mary loaded the truck with the boxes.
- 2) Mary loaded the boxes onto the truck.

Example 2. **sticking**

board
pin

- 1) Mary stuck the pin into the board.
- 2) Mary stuck _____.

1. blitting

glass

water

1) Mary blitted _____.

2) Mary blitted _____.

2. pilking

door

paint

1) Mary pilked _____.

2) Mary pilked _____.

3. moofing

table

cloth

1) Mary moofed _____.

2) Mary moofed _____.

4. tonking

table

water

1) Mary tonked _____.

2) Mary tonked _____.

5. naining

bottle

sugar

1) Mary nained _____.

2) Mary nained _____.

6. xiling

cake

chocolate

1) Mary xiled _____.

2) Mary xiled _____.

7. yerping

wall

stars

1) Mary yerped _____.

2) Mary yerped _____.

8. zanking

sponge

water

1) Mary zanked _____.

2) Mary zanked _____.

9. speging

suitcase

clothes

1) Mary spegged _____.

2) Mary spegged _____.

10. vating

wall

picture

1) Mary vated _____.

2) Mary vated _____.

11. dirping

tree

stars

1) Mary dirped _____.

2) Mary dirped _____.

12. birgging

cart

apples

1) Mary birgged _____.

2) Mary birgged _____.

13. **korting**

chain
pole

1) Mary korted _____.

2) Mary korted _____.

14. **nooking**

pillow
feathers

1) Mary nooked _____.

2) Mary nooked _____.

15. **nading**

field
seeds

1) Mary naded _____.

2) Mary naded _____.

16. **biffing**

lake
oil

1) People biffed _____.

2) People biffed _____.

Task 2

Read the sentences in each question and take a look at the pictures below.

Please draw a line connecting the sentences with the picture that matches it best.

If you think that both sentences are best described by one picture, you can connect both sentences to that picture. *len* and *li* are the prepositions.

Ex)	<u>Sentence</u>	<u>Sentence</u>
	1	2
	a)	b)

1. John dirped the tree len stars.

1

John dirped stars li the tree.

2

a)

b)

2. John zanked the sponge len water.

1

John zanked water li the sponge.

2

a)

b)

3. John blitted water li the glass.

John blitted the glass len water.

1

2

90

a)

b)

4. John xiled chocolate li the cake.

John xiled the cake len chocolate.

1

2

a)

b)

5. John nained the bottle len sugar.

John nained sugar li the bottle.

1

2

a)

b)

6. John tonked water li the table.

John tonked the table len water.

1

2

a)

b)

7. John birgged apples li the cart.

1

a)

John birgged the cart len apples.

2

b)

8. John pilked the door len paint.

1

a)

John pilked paint li the door.

2

b)

9. John vated a picture li the wall.

1

a)

John vated the wall len a picture.

2

b)

10. John moofed the table len a cloth.

1

a)

John moofed a cloth li the table.

2

b)

11. John spegged clothes li the suitcase.

1

a)

John spegged the suitcase len clothes.

2

b)

12. John yerped stars li the wall.

1

a)

John yerped the wall len stars.

2

b)

13. John korted the chain li the pole.

1

a)

John korted the pole len the chain.

2

b)

14. John nooked the feathers li the pillow.

1

a)

John nooked the pillow len the feathers.

2

b)

15. John naded the field len seeds.

1

a)

John naded seeds li the field.

2

b)

16. John biffed the lake len oil.

1

a)

John biffed oil li the lake.

2

b)

Task 3

The following is a list of English sentences.

Please read each sentence. After each sentence you will see 5 numbers.

Please circle only ONE of the numbers to show what you think of the sentence.

Use the numbers as follows.

-2 = completely impossible

-1 = impossible

0 = unable to decide

1 = possible

2 = completely possible

Do not go back and change your answers.

1. Peter splashed the floor with water.	-2 -1 0 1 2
2. John poured the water into the glass.	-2 -1 0 1 2
3. The children decorated the tree with lights.	-2 -1 0 1 2
4. The farmer blocked the tractor into the road.	-2 -1 0 1 2
5. John nailed the wall with the notice.	-2 -1 0 1 2
6. Anne accidentally stained her new coat with coffee.	-2 -1 0 1 2
7. The farmers sprayed the fruit trees with insecticide.	-2 -1 0 1 2
8. Anne packed the suitcase with clothes.	-2 -1 0 1 2
9. Jane poured the glass with water.	-2 -1 0 1 2
10. John nailed the notice onto the wall.	-2 -1 0 1 2
11. Sam loaded the truck with apples.	-2 -1 0 1 2
12. Anne threw the ball into the field.	-2 -1 0 1 2
13. Tom splashed water onto the floor.	-2 -1 0 1 2
14. The farmers sprayed the insecticide onto the fruit trees.	-2 -1 0 1 2
15. Sam spilled the floor with soup.	-2 -1 0 1 2
16. Tom carefully painted the door with varnish.	-2 -1 0 1 2
17. Sam suddenly vomited his lunch into the bowl.	-2 -1 0 1 2
18. Sam packed the clothes into the suitcase.	-2 -1 0 1 2
19. John loaded the apples onto the truck.	-2 -1 0 1 2
20. Jane threw the ball with the ball.	-2 -1 0 1 2
21. Sam touched his chopsticks onto the food.	-2 -1 0 1 2
22. Peter covered the bed with a blanket.	-2 -1 0 1 2
23. Tom accidentally stained coffee onto his new coat.	-2 -1 0 1 2
24. The farmer blocked the road with the tractor.	-2 -1 0 1 2
25. The children decorated the lights onto the tree.	-2 -1 0 1 2
26. John covered the blanket onto the bed.	-2 -1 0 1 2
27. Peter touched the food with his chopsticks.	-2 -1 0 1 2
28. Tom suddenly vomited the bowl with his lunch.	-2 -1 0 1 2
29. John spilled the soup onto the floor.	-2 -1 0 1 2
30. Jane carefully painted the varnish onto the door.	-2 -1 0 1 2

Appendix 2

Pairwise Comparisons : Tasks

		Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval for Difference	
(I) TASK	(J) TASK				Lower Bound	Upper Bound
1	2	-23.837	2.987	.000	-29.879	-17.795
	3	-26.654	2.543	.000	-31.798	-21.510
2	1	23.837	2.987	.000	17.795	29.879
	3	-2.817	3.247	.391	-9.386	3.751
3	1	26.654	2.543	.000	21.510	31.798
	2	2.817	3.247	.391	-3.751	9.386

Based on estimated marginal means

* The mean difference is significant at the .05 level.

a Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

Appendix 3

Pairwise Comparisons : Verb Groups

		Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval for Difference	
(I) VERB	(J) VERB				Lower Bound	Upper Bound
1	2	-3.464	2.537	.180	-8.596	1.668
	3	8.091	1.756	.000	4.540	11.643
2	1	3.464	2.537	.180	-1.668	8.596
	3	11.556	2.848	.000	5.796	17.315
3	1	-8.091	1.756	.000	-11.643	-4.540
	2	-11.556	2.848	.000	-17.315	-5.796

Based on estimated marginal means

* The mean difference is significant at the .05 level.

a Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

Appendix 4

Individual verb comparisons with the percentages of correct answers

(Numbers in front of each verb is the numbers in each task.)

Task 1

Verb Group 1 : English = Korean

1. pour pwutta (figure nonalternators)	E	9/16 (56%)
	K	12/25 (48%)
2. spray chilhata (figure alternators)	E	13/16 (81%)
	K	16/25 (64%)
4.spill hulita (figure nonalternators)	E	12/16 (75%)
	K	17/25 (68%)
10. nail motpakta (figure nonalternators)	E	15/16 (94%)
	K	14/25 (56%)
14. stuff chawuta (ground alternators)	E	14/16 (88%)
	K	22/25 (88%)
16. pollute oyemsikhita (ground nonalternators)	E	7/16 (44%)
	K	4/25 (16%)

Verb Group 2 : English > Korean

6. sprinkle (alternator) purita (figure nonalternator)	E	11/16 (69%)
	K	13/25 (52%)
9. pack (alternator) ssata (figure nonalternator)	E	14/16 (88%)
	K	21/25 (84%)
12. load (alternator) sitta (figure nonalternator)	E	11/16 (69%)
	K	21/25 (84%)
15. scatter (alternator) purita (figure nonalternator)	E	12/16 (75%)
	K	12/25 (48%)

Verb Group 3 : English < Korean

3. cover (ground nonalternator) tepta (alternator)	E	7/16 (44%)
	K	3/25 (20%)
5.fill (ground nonalternator) chawuta (alternator)	E	6/16 (38%)
	K	0/25 (0%)
7. glue (figure nonalternator) puthita (alternator)	E	11/16 (69%)
	K	16/25 (64%)
8. soak (ground nonalternator) chukshita (alternator)	E	10/16 (63%)
	K	10/25 (40%)
11.decorate (ground nonalternator) changshikata (alternator)	E	8/16 (50%)
	K	2/25 (8%)
13. coil (figure nonalternator) kamta (alternator)	E	4/16 (25%)
	K	2/25 (8%)

Task 2**Verb Group 1 : English = Korean**

3.pour pwutta (figure nonalternators)	E	12/16 (75%)
	K	16/25 (64%)
8.spray chilhata (figure alternators)	E	14/16 (88%)
	K	22/25 (88%)
6.spill hulita (figure nonalternators)	E	9/16 (56%)
	K	19/25 (76%)
9. nail motpakta (figure nonalternators)	E	10/16 (63%)
	K	15/25 (60%)
14. stuff chawuta (ground alternators)	E	13/16 (81%)
	K	17/25 (68%)
16. pollute oyemsikhita (ground nonalternators)	E	14/16 (88%)
	K	22/25 (88%)

Verb Group 2 : English > Korean

4. sprinkle (alternator) purita (figure nonalternator)	E	13/16 (81%)
	K	22/25 (88%)
11. pack (alternator) ssata (figure nonalternator)	E	14/16 (88%)
	K	19/25 (76%)
7. load (alternator) sitta (figure nonalternator)	E	13/16 (81%)
	K	21/25 (84%)
15. scatter (alternator) purita (figure nonalternator)	E	13/16 (81%)
	K	21/25 (84%)

Verb Group 3 : English < Korean

10.cover (ground nonalternator) tepta (alternator)	E	14/16 (88%)
	K	23/25 (92%)
5.fill (ground nonalternator) chawuta (alternator)	E	16/16 (100%)
	K	19/25 (76%)
12. glue (figure nonalternator) puthita (alternator)	E	12/16 (75%)
	K	22/25 (88%)
2. soak (ground nonalternator) chukshita (alternator)	E	12/16 (75%)
	K	22/25 (88%)
1.decorate (ground nonalternator) changshikata (alternator)	E	14/16 (88%)
	K	22/25 (88%)
13. coil (figure nonalternator) kamta (alternator)	E	11/16 (69%)
	K	22/25 (88%)

Task 3**Verb Group 1 : English = Korean**

pour	2. John poured the water into the glass.	E	16/16	(100%)
		K	23/25	(92%)
	9. Jane poured the glass with water.	E	13/16	(81%)
		K	21/25	(84%)
block	4. The farmer blocked the tractor into the road.	E	14/16	(88%)
		K	20/25	(80%)
	24. The farmer blocked the road with the tractor.	E	15/16	(94%)
		K	23/25	(92%)
nail	5. John nailed the wall with the notice.	E	11/16	(69%)
		K	11/25	(44%)
	10. John nailed the notice onto the wall.	E	16/16	(100%)
		K	20/25	(80%)
throw	12. Anne threw the ball into the field.	E	14/16	(88%)
		K	20/25	(80%)
	20. Jane threw the field with the ball.	E	16/16	(100%)
		K	21/25	(84%)
spill	15. Sam spilled the floor with soup.	E	16/16	(100%)
		K	19/25	(76%)
	29. John spilled the soup onto the floor.	E	16/16	(100%)
		K	21/25	(84%)
paint	16. Tom carefully painted the door with varnish.	E	15/16	(94%)
		K	23/25	(92%)
	30. Jane carefully painted the varnish onto the door.	E	12/16	(75%)
		K	17/25	(68%)
vomit	17. Sam suddenly vomited his lunch into the bowl.	E	15/16	(94%)
		K	23/25	(92%)
	28. Tom suddenly vomited the bowl with his lunch.	E	16/16	(100%)
		K	20/25	(80%)
touch	21. Sam touched his chopsticks onto the food.	E	11/16	(69%)
		K	20/25	(80%)
	27. Peter touched the food with his chopsticks.	E	16/16	(100%)
		K	22/25	(88%)

Verb Group 2 : English > Korean

pack	8. Anne packed the suitcase with clothes.	E	15/16	(94%)
		K	23/25	(92%)
	18. Sam packed the clothes into the suitcase.	E	15/16	(94%)
		K	21/25	(84%)
splash	1. Peter splashed the floor with water.	E	11/16	(69%)
		K	12/25	(48%)
	13. Tom splashed water onto the floor.	E	15/16	(94%)
		K	21/25	(84%)

spray	7.The farmer sprayed the fruit trees with insecticide.	E	16/16	(100%)
		K	12/25	(60%)
	14.The farmer sprayed the insecticide onto the fruit trees.	E	15/16	(94%)
		K	22/25	(88%)
load	11. Sam loaded the truck with apples.	E	16/16	(100%)
		K	21/25	(84%)
	19. John loaded the apples onto the truck.	E	15/16	(94%)
		K	19/25	(76%)

Verb Group 3 : English < Korean

cover	22.Peter covered the bed with a blanket.	E	16/16	(100%)
		K	21/25	(84%)
	26. John covered the blanket onto the bed.	E	15/16	(94%)
		K	15/25	(60%)
decorate	3. The children decorated the tree with lights.	E	16/16	(100%)
		K	23/25	(92%)
	25. The children decorated the lights onto the tree.	E	14/16	(88%)
		K	10/25	(40%)
stain	6. Anne accidentally stained her new coat with coffee.	E	16/16	(100%)
		K	20/25	(80%)
	23. Tom accidentally stained coffee onto his new coat.	E	12/16	(75%)
		K	14/25	(56%)