

## **Korean Learners' Rule Learning Under Incidental, Rule-Search, and Instructed Conditions**

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This study aimed to examine Korean learners' language development under four different learning conditions with the aid of input enhancement. Four types of learning conditions were carefully manipulated: (1) more incidental, (2) less incidental, (3) rule-search, and (4) instructed. The two incidental groups were told to understand the meaning of the passage, while the rule-search group was asked to find the embedded rule while reading. The instructed group received explicit rule instruction before the reading task. A total of 141 11<sup>th</sup> grade high school students in South Korea participated in this study and took pre/post grammatical judgment tests, a reading comprehension test, and a guided sentence composition test. The findings indicated that incidental rule learning in Korean EFL was possible while their attention was on meaning. In addition, the degree of rule learning and output was maximized when explicit instruction was presented. However, there was no significant difference in the participants' overall reading comprehension. Along with pedagogical implications, the three interface positions are also discussed.

**Key words:** implicit learning, explicit learning, incidental learning, focus on form, input enhancement, interface positions

### **1. INTRODUCTION**

For a long time, there has been controversy as to how languages are learned. Since Reber's (1976) pioneering study, which represents the possibility of artificial grammar learning under implicit learning conditions in cognitive psychology, scholars have been searching for ways in which second language learners can acquire language just as children acquire their native language. When the issue involved language acquisition, scholars have proposed two different learning mechanisms: implicit and explicit learning. Implicit learning refers to learning language without consciousness so learners usually cannot

verbalize the rule they implicitly learned, while explicit learning refers to learning language with consciousness such that learners usually can verbalize what they have learned.

For the implicit-explicit interface, the non-interface, strong interface, and weak interface positions were proposed by scholars. Each position has a different point of view of how implicit and explicit learning exists and how they play a role in second language learning. To better understand this, related concepts such as awareness, attention, and noticing were proposed, and numerous studies have identified the role of feedback (Adams, Nuevo, & Egi, 2011; R. Ellis, Loewen, & Erlam, 2006; Lyster & Ranta, 1997), uptake (R. Ellis, Basturkmen, & Loewen, 2001; Loewen, 2004), implicit instruction (Doughty & Williams, 1998), explicit instruction (de Graaff, 1997; Spada, 2011), and typological input (White, 1998) so far.

Implicit and explicit issues can be seen from different views with or without the absence of intention—i.e., incidental and intentional. In incidental learning, learners acquire linguistic feature(s) through massive exposure as a subsidiary attribute, although they were not aiming to learn the features. In contrast, in intentional learning, learners acquire linguistic feature(s) intentionally as in a regular learning procedure. Previous studies have concentrated heavily on incidental vocabulary acquisition (Hulstijn, 2003). However, little is known about incidental grammar learning in English as a foreign language (EFL) environment, although some scholars have reported on the possibility of incidental grammar learning in English as a second language (ESL) classes (R. Ellis, 1984; Loewen, 2003; Loewen & Reissner, 2009; Zhao & Bitchener, 2007).

Regardless of these two learning modes, however, input also plays a crucial role in the learning processes. When input is received, learners' attention and awareness do not go to all the input, but rather they pay more attention to certain aspects and pick up the more salient features. In this way, learners' cognitive attention is essential for processing input for better acquisition (Tomlin & Villa, 1994). Emphasizing the attribution of awareness during input processing, Smith (1991, 1993) coined the term *input enhancement* and many studies have investigated its effectiveness in order to devise means of more effective approaches in presenting form(s) or vocabulary items to ESL or EFL learners (VanPatten & Cadierno, 1993).

Among the various attention-raising techniques, textual enhancement and input flood have received much attention because they are unobtrusive methods that draw learners' consciousness, thereby allowing them to acquire the target form more implicitly. Previous studies employed different kinds of target forms, such as Spanish present perfect/relative pronouns (Shook, 1994) and English plural markers (Simard, 2009). These studies reported positive effects of textual enhancement on target form acquisition (Alanen, 1995; Doughty, 1991; Jourdenais, Ota, Stauffer, Boyson, & Doughty, 1995; Shook, 1994; White, 1998).

However, these techniques were mostly employed in grammar learning experiments, and only a few studies ever included reading comprehension as a construct in their study designs (Lee, 2007; Leow, 2001; Wong, 2003). Additionally, when these input enhancement techniques are used in various learning conditions, such as implicit and explicit or incidental and intentional, how their presence influences learners' form-meaning mappings have received relatively attention.

Previous studies employed input flood and textual enhancement in combination with implicit and explicit learning; however, to date, very few studies have investigated the gradual continuum from implicit to explicit in the written mode for meaning-focused reading comprehension. Thus, this study aims at investigating clear causal connections from input through noticing and comprehension and to output based on the input-enhanced reading materials that allow learners to do dual-tasking, the simultaneous form-meaning processes.

## 2. LITERATURE REVIEW

### 2.1. Implicit and Explicit Learning

Implicit learning refers to “acquisition of knowledge about the underlying structure of a complex stimulus environment by a process that takes place naturally, simply and without conscious operation,” whereas explicit learning refers to “a more conscious operation where the individual makes and tests hypotheses in search for a structure” (N. Ellis, 1994, p. 2). However, Hulstijn (2005) defines implicit leaning as “an absence of intention,” while he defines explicit learning as input processing “to discover the rules” (p. 133). In a similar vein, N. Ellis (1994) states that the difference between implicit and explicit learning is the existence of “conscious operations” (p. 1). Implicit learning naturally occurs in the first language learning environment, while explicit learning condition occurs in formal education settings.

Since Reber's (1976) implicit artificial letter strings study (e.g., MXRMXT, VMTRRR), scholars have been debating the *interface questions* and working on how implicit and explicit exist together (N. Ellis, 2011) in order to answer whether implicit second language (L2) learning is possible, similar to how children acquire their mother tongue (L1) naturally (N. Ellis, 2007). Three positions have been proposed: non-interface, strong interface, and weak interface models. The non-interface position is strongly supported by Krashen (1982), arguing that explicit grammar teaching is useless since second language learning can be naturally derived from implicit processes as in L1 acquisition. The strong interface position argues that implicit knowledge can become explicit knowledge and vice

versa by dint of procedural and automatized practicing (DeKeyser, 1998). Along these lines, the weak interface position attempts to reconcile the two positions, arguing that explicit knowledge contributes to the formation of implicit knowledge and implicit knowledge can be derived from explicit knowledge through noticing<sup>1</sup> (N. Ellis, 1994).

In addition to the non-interface position, which denies the close or interchangeable relationship between implicit and explicit knowledge, and the strong interface position, which highlights mechanical or communicative practices, the weak interface model has been highlighted in second language acquisition (SLA), since the model underscores the facilitative role of explicit instruction in the process of explicit to implicit transfer. The popularity of the weak interface may lie in the multiple roles of language instruction in the process of “noticing”, “noticing the gap”, and “guided output practices” (N. Ellis, 2011, p. 43). This is because many features of L2 input are “infrequent, non-salient, and communicatively redundant” (Schmidt, 2001, p. 30); thus, intentional instruction seems necessary in order to make this input more salient and meaningful.

Similarly, supporting the weak interface model, R. Ellis (2003) proposed a conceptual model explaining the role of explicit instruction in the process of an implicit learning mechanism. He stated that explicit instruction first generated explicit knowledge, and that explicit knowledge aids both ‘noticing’ in the process of intake and ‘noticing the gap’ in the process of monitoring, respectively. ‘Noticing’ aids intake for short-term memory and then it moves to implicit knowledge for long-term memory, while ‘noticing the gap’ functions internal monitoring in order to assist learners who realize the gap between what they consciously know and the output. It is questionable, nevertheless, whether R. Ellis’ model actually works in the classroom environment or in instructed models.

Recently, scholars have been tried to investigate the role of explicit instruction both in cognitive psychology and in SLA (Goo, Granena, Yilmaz, & Novella, 2015; Schmidt, 1990; Spada, 2011; Radwan, 2005). In cognitive psychology, Reber, Kassin, Lewis, and Cantor (1980, Experiment 1) reported on learners’ out-performance of artificial letter string learning through instruction. In SLA, de Graaff (1997) investigated the effects of explicit instruction in the implicit learning processes. He adapted grammar complexity, morphology, and syntax with the aid of textual enhancement in an artificial language, *eXperanto*. Evidence was found that explicit instruction facilitated the learners’ L2 grammar learning, as a proof supporting the weak interface model.

However, the role of explicit instruction has yielded somewhat contradictory findings although meta-analysis (Goo et al., 2015; Norris & Ortega, 2000) has highlighted the superiority and durability of explicit instruction over implicit instruction. The effect of

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<sup>1</sup> “The ‘Noticing Hypothesis’ states that what learners notice in input is what becomes intake for learning” (Schmidt, 1995, p. 20).

explicit teaching was emphasized by Swain (1985), as she reported that even in the sufficient input-provided condition at a Canadian French immersion school, learners still had difficulty in mastering certain grammar features (e.g., masculine/feminine articles and verb tense markings). Thus, explicit instruction was regarded as of great importance. However, negative evidence for explicit information has been found as well (VanPatten & Oikkinen, 1996; Wong, 2003). For instance, Sanz and Morgan-Short (2004) studied computer-assisted Spanish word order learning in the absence or presence of rule explanation and feedback. They found that it was the form-function-meaning mapping that promoted language learning, not the explicit information of the target form. Therefore, locating different learning conditions with or without the presence of explicit instruction in one study design warrants further investigation.

Although implicit and explicit are dichotomous, one view claims that they are associated and have strong interactions with each other. From this perspective, N. Ellis (2005) mentioned that “the interface is dynamic...The primary conscious involvement in L2 acquisition is the explicit learning involved in the initial registration of pattern recognizers for constructions that are then tuned and integrated into the system by implicit learning during subsequent input processing” (p. 305). Thus, scholars argue that the combination of implicit and explicit may yield better results (Mathews et al., 1989; Reber et al., 1980, Experiment 2). For instance, Reber et al. (1980) blended implicit and explicit learning modes in one study design. They gave memorization instruction to the implicit group and rule-searching instruction to the explicit group, and divided the participants into five groups: explicit only, implicit only, implicit-explicit, explicit-implicit, and implicit-explicit-implicit. The results revealed that the latter three implicit-explicit combination groups outperformed the explicit-only or implicit-only groups. Hence, in order to see the effects of the two dynamic learning modes, blending or comparing the two learning modes in an experimental design will yield interesting results.

One issue that arises from the implicit and explicit learning experiments is the adaptation of meaningful tasks, since previous studies in cognitive psychology employed only artificial grammar (Reber, 1976) or artificial languages (de Graaff, 1997). Thus, there is still much room for improvement in broadening the study scope to be more meaning-bearing rather than non-meaningful (DeKeyser, 1994). In one experiment, on a form-meaning relationship, Williams (2005) substituted artificial letter strings and showed full sentences with four determiners: *gi*, *ro*, *ul*, and *ne*, signifying animacy and distance; implicit form-meaning connection reportedly occurred in the experiment. Although his study presented form-meaning mapping sentences, a finer-grained approach with communicative tasks is preferable in order to see whether learners can implicitly learn rules while building meanings (i.e., reading a passage), not by reading discrete sentence fragments. In light of this, Paciorek and Williams (2015) argue that both noticing of

meaning and noticing of form are necessary in implicit learning.

However, considering the second language framework of input, intake, internal system, and output processes (Leow, 2015), the importance of output should be considered very carefully. This concept concurs with Loschky and Bley-Vroman's (1993) proposal that structure-based production tasks should be used in the second language teaching. Similarly, Williams (2005) also questioned whether learners can make generalizations about rules they have learned and use these in new situations. Furthermore, previous studies have employed different output measures. For example, Leow (2001) used a crossword puzzle and a written production task; Alanen (1995) used sentence completion and rule statement tasks; Izumi (2002) used sentence combination, picture-cued sentence completion, and interpretation tests to measure learning outcomes. From this perspective, 'task essentialness', whereby learners must acquire in order to successfully complete a task, should be considered, since if learners cannot use the target in their production, then they have not yet internalized the form (R. Ellis, 2003).

## 2.2. Implicit and Incidental Learning

Incidental learning is defined as an absence of intention to learn with some conscious attention to certain linguistic features during exposure to a second language. However, when incidental learning comes into the implicit domain, it becomes more difficult to make a clear-cut distinction, since they are not easily separable. This is because neither implicit nor incidental learning involve any intentionality, but "incidental acquisition may involve awareness, while implicit learning definitely does not, as even implicit learning may involve awareness at the level of noticing" (Loewen, Erlam, & Ellis, 2009, p. 263). Thus, in order to distinguish between learners' awareness and noticing, previous studies gave prototypical tasks such as "learning of one thing (e.g., grammar) while learner's primary object is to do something else" (Schmidt, 1994, p. 16). Usually, learners in the incidental condition were not advised of the target form or purpose of the study. In addition, they were taught about certain features, but they were tested on 'other' target features under input-flooding conditions without pre-warning that they were to be tested (Loewen et al., 2009).

According to Hulstijn (2003), incidental vocabulary, phonetics, and phonology learning were quite commonly-observed cases, but incidental grammar learning was very limited. Schmidt (1990) also clearly noted that "incidental learning is certainly possible when task demands focus attention on relevant features of the input" (p. 149). Incidental focus on form has been espoused by several researchers (Cho, 2008; Loewen, 2003; Loewen et al., 2009; Reinders & Ellis, 2009; Robinson, 1996; Shintani, 2015; Zhao & Bitchener, 2007; Zyzik & Polio, 2008). For instance, Loewen (2003) witnessed incidental focus on form

while observing 32 hours of ESL classes in New Zealand. He concluded that incidental focus on form occurred but there were significant differences in frequencies and characteristics. Yet previous incidental focus on form studies were mostly performed in class observations (Kim, 2015; Loewen, 2003; Zhao & Bitchener, 2007; Zyzik & Polio, 2008), and little is known about what and how learners pick up untaught forms during tasks. In answering this, a more rigorous study design is required in order to engage learners in the target feature naturally while drawing their attention to the meaningful task as the gist of the incidental.

In this vein, previous studies also evidenced incidental focus on form learning in different age groups (Kim, 2015; Loewen, 2003; Robinson, 2005; Zhao & Bitchener, 2007). For instance, Loewen (2002) observed adult ESL classes and witnessed many instances of incidental form learning and its effects lasting over two weeks. Children's incidental L2 learning has also been reported. Recently, Shintani (2015) found that Japanese six-year-old children with no experience in learning English language acquired the plural *-s* incidentally during a five-week-long focus on form series of classes. Adults' incidental grammar learning was reported in Korea as well. Kim (2015) observed 11 hours of adult EFL lessons from five classes and found that students' successful uptake was observed in the preemptive focus on form, and that their intake was greater in learner-initiated cases. Nevertheless, whether incidental learning can occur in between (e.g., among teenagers) even in EFL settings has not yet been answered.

In investigating incidental acquisition of forms, the appearance of target grammar is one important issue to consider, since most of the studies have employed input flood in their study designs but yielded somewhat different results. Loewen et al. (2009) tested whether learners could acquire the third person *-s* incidentally while receiving regular explicit grammar instruction on the indefinite article. The results indicated that the learners failed to develop implicit knowledge of the third person *-s* although they were exposed to flooded input during the lesson. The author pointed out that the results were due to the low saliency of the third person *-s* and the dual-task issue (attending to the third person *-s* and the indefinite article at the same time). Adapting an input flood technique in his research design, Robinson (2005) replicated Knowlton and Squire's (1996) study using Samoan (a novel language for them). He exposed the Japanese university students to 150 tokens of Samoan, but he asked them to understand the meaning of the tokens as much as possible. Results showed that the participants displayed positive evidence for the target form learning. However, if other studies focus on different tasks (e.g., form-meaning mapping) in order to prevent learners from dealing with two forms in one class and manipulate the amount of flood, the discrete role of incidental form learning will be better captured.

### 2.3. Input Enhancement<sup>2</sup>

Input enhancement refers to a deliberate attempt to make specific language features more salient in order to draw learners' attention to the features (Smith, 1991, 1993). Thus far, in order to raise learners' attention and noticing, scholars have devised some techniques and tasks which can be used during focus on form instruction. Among the input enhancement techniques, input flood and text enhancement were used considerably since they are unobtrusive techniques that do not interrupt learners' communication; Yet they raise learners' consciousness (Doughty & Williams, 1998). Text enhancement refers to typologically enhanced inputs such as boldfaced, italicized, or underlined, while input flood refers to a high number of exposures to target forms. Both techniques are employed in implicit form-learning conditions to bring about learners' consciousness of target forms or vocabulary while handling given tasks with enhanced text.

Previous studies have yielded somewhat inconsistent results on the effectiveness of input enhancement techniques. For instance, a meta-analysis which delineated the previous 16 studies with input enhancement techniques showed slight positive effects (Lee & Huang, 2008). In contrast, some negative evidence was also reported. Alanen (1995), Jourdenais et al. (1995), and Rosa and O'Neill (1999) argued that input flood alone was insufficient for learners' language learning. Accordingly, they concluded that instruction conditions were proven to be superior to input flood only.

Despite the inconsistency of the positive and negative effects of input enhancement, important to note is that only a handful of studies ever included both form-learning and comprehension as dependent variables. According to VanPatten's (1996) input processing<sup>3</sup>, learners handle form and meaning at the same time while they read. Previous input enhancement studies included comprehension as a variable, but they showed inconsistent results such as no effects on reading comprehension (Leow, 2001; Wong, 2003) or a trade-

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<sup>2</sup> Scholars use "input enhancement" as an umbrella term including both typological (written) and intonational (oral) enhancement (Doughty & Williams, 1998; VanPatten, 2003). However, in this paper, input enhancement only refers to the written mode of enhancement, since the current study uses a reading task with the input-flooded and textually enhanced passage in written mode.

<sup>3</sup> In input processing theory, especially P1, P1(a-c), and P2 are related to form-meaning mapping in second language input processing. "P1. Learners process input for meaning before they process it for form. P1(a). Learners process content words in the input before anything else. P1(b). Learners prefer processing lexical items to grammatical items (e.g., morphological markings) for semantic information. P1(c). Learners prefer processing "more meaningful" morphology before "less" or "nonmeaningful morphology." P2. For learners to process form that is not meaningful, they must be able to process informational or communicative content at no (or little) cost to attention" (VanPatten, 1996, pp. 14-15).



off between form and meaning acquisition (Lee, 2007). Since the purpose of the focus on form instruction is on meaningful communication, rather than including the target form in an isolated manner, consolidating the form and meaning simultaneously in one lesson seems viable.

Recently, both input flood and textual enhancement have been applied in an implicit and explicit learning experiment. Reinders and R. Ellis (2009) investigated the effects of two different types of input on intake and form acquisition. They designed two learning conditions with: (1) *enriched input* (input flood) catering to incidental learning, and (2) enhanced input (instruction asking students to pay attention on the target structure) promoting explicit learning. The results demonstrated that because of the difficulty of the target structure (negative adverbs with inversion of subject and auxiliary), the learning conditions did not yield any difference in the acquisition of rules and intake. In addition, the input flood alone seems insufficient to draw learners' attention. In this stance, Wong (2003) proposed a combination of input flood and textual enhancement in one study design because the combination increases the possibility of saliency.

The above studies showed that learners' attention and input saliency highly affected learning outcomes. Thus, a combination of task instruction (Reinders & Ellis, 2009; Robinson, 1996) and consciousness-raising input enhancement techniques (Alanen, 1995; Doughty, 1991; Jourdenais et al., 1995; Shook, 1994; White, 1998) will create a more fine-grained research design. Moreover, the effect of learning condition on rule learning needs to be closely examined by manipulating the level of implicitness and explicitness. Furthermore, considering that focus on form instruction should primarily aim to focus on meaning (N. Ellis, 2011; R. Ellis et al, 2001), a meaning-focused activity is needed in the study design.

Thus, the purpose of this study is twofold: first, to investigate the effect of four different learning conditions—more/less implicit learning conditions with the presence or absence of explicit instruction—for Korean learners' form learning; and second, to investigate the effectiveness of these conditions for reading comprehension and sentence composition. Three research questions generated are:

- (1) To what degree do learning conditions, i.e., implicit and explicit, affect development of Korean EFL learners' form learning?
- (2) To what degree do learning conditions, i.e., implicit and explicit, affect Korean EFL learners' reading comprehension?
- (3) To what degree do learning conditions, i.e., implicit and explicit, affect Korean EFL learners' sentence composition?

### 3. METHOD

#### 3.1. Participants

A total 141 2<sup>nd</sup> year high school students at a boys' high school in Gyeonggi Province participated in this study. The students were enrolled in a general high school, which was neither a specialized nor foreign language high school. Four intact classes were randomly assigned to one of the learning conditions and completion of the tests. They had been learning English for nine years, beginning in the 3<sup>rd</sup> grade of elementary school, and they were currently taking four hours of English classes each week. According to the school's English teacher, no students were reported to have any kind of learning disability.

#### 3.2. Target Form

Motivated by Reinders and R. Ellis (2009), a negative adverb with inversion of subject-auxiliary (e.g., *Never have I encountered such rudeness*) was chosen as the target form. According to R. Ellis' (2006) difficulty criteria, this target form is reportedly a difficult structure in both implicit and explicit knowledge. For the implicit knowledge, he set criteria for *input frequency*, *saliency*, *functional value*, *regularity*, and *processability*. He noted that negative adverbs' appearance is relatively low in the British National Corpus, and the form is less salient since the auxiliary is unstressed. This target form is also functionally redundant and regular when compared to other inverted forms for time, place, and manner; thus, it is acquired relatively late. For explicit knowledge, he set conceptual *clarity* and *metalanguage* as the determined target form with its different auxiliary form uses and difficult metalanguage (e.g., *adverb*, *auxiliary*) uses in articulation (as cited in Reinders & R. Ellis, 2009, pp. 290-291).

Similarly, Reinders and R. Ellis (2009) also noted that without instructional information, learners easily fail to acquire this form. Azar (2002) also mentioned that "Beginning a sentence with a negative word is relatively uncommon in everyday usage" (p. A20 in appendix). Robinson (1996), on the other hand, designated negative adverbs an 'easy' rule but the pseudo-cleft as a 'hard' rule in his study. For Korean high school learners, this target form seems difficult, since the frequency of negative adverbs in the textbooks is relatively low. According to Jung (2006), the average frequency of inverted sentences in the high school English textbook is 3.8%. Among these inversions, only 0.29% (9 out of 3,059 sentences) were classified as negative inversion, and these cases consisted of the adverbs *only* and *no sooner*. Furthermore, the likelihood of participants' exposure to the target form is very rare in the Korean context; thus, learning the target through experiments will be clearly evident. Four negative adverbs—*never*, *rarely*, *seldom*, *hardly*—were

chosen as in the Reinders and R. Ellis' (2009) study.

### 3.3. Reading Passage

An authentic reading passage entitled *This 911 operator may have saved a man's life—with an avocado* was adopted from the *Reader's Digest* magazine. The narrative passage was about a 911 operator who saved a starving patient who could not move around freely. The passage contains 334 words and has 11.5 words per sentence on average. The context was measured by Flesch-Kincaid Reading Ease Readability Formula. The average grade level was 6.0, and the readability score was 72.8, which was equivalent to the reading level of a 6<sup>th</sup> grade student in the US. According to Jeon's (2014) study investigating 8 Korean textbook publishers, the average Flesch-Kincaid reading ease score of the Korean high school English textbooks was 71.23 and the Flesch-Kincaid grade level was 6.78.

In total, seven sentences were manipulated with the target form and then enlarged, boldfaced and underlined, as in Appendix A. In order to enhance the frequency for the input flood technique, following Leow, Egi, Nuevo, and Tsai (2003), a ratio of 1/21 (one out of every 21 words) was adopted. In order to enhance the target form, the textual enhancement was only applied to subjects and verbs exactly following Reinders and R. Ellis' (2009) study. However, the names of the character and the town were altered to more common names for reading ease. The seven target sentences were distributed throughout each paragraph in order not to interfere with the flow of the story.

### 3.4. Design

The experiment was carefully designed with four different learning conditions by manipulating the degree of implicitness and explicitness. First, for the input enhanced reading passage, G1, the more incidental group<sup>4</sup>, received the least implicit grammar instruction with the input flood only in a plain (unenhanced) text. However, G2, the less incidental group, was provided both flooded and bolded text; G3, the rule-search group, and G4, the instructed group, also read the same text as G2. A summary of reading instructions, input enhancement

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<sup>4</sup> In this study, the incidental condition is categorized under the implicit domain, following R. Ellis (2009a) and Schmidt (1994). For instance, R. Ellis (2009a) noted that Robinson's (1996) instructional conditions can be defined as: (1) implicit, including both the sentence memorization group and the incidental group, and (2) explicit, including both the rule-search and the instruction group as explicit (for more details, see R. Ellis, 2009a, p. 19). Schmidt (1994) also mentioned that incidental learning is "learning of one thing ... when the learners' primary objective is to do something else..." (p. 16). However, in the current study, a sentence memorization (implicit) group was not used and only two incidental groups are included under the implicit domain.

techniques, and explicit instruction are summarized in Table 1.

**TABLE 1**  
**Summary of the Reading Instruction, Input Enhancement, and the Form Instruction (N = 141)**

	G1 (n = 36)	G2 (n = 29)	G3 (n = 38)	G4 (n = 38)
	Implicit		Explicit	
	More Incidental <sup>5</sup>	Less Incidental	Rule Search	Instructed
Reading instruction				
For comprehension	+	+	+	+
For rule-search	-	-	+	-
Input enhancement technique				
Input flood	+	+	+	+
Textual enhancement	-	+	+	+
Explicit instruction	-	-	-	+

All the experimental groups were to ‘*read to understand the meaning of the context.*’ However, for the rule-search group, G3, the following instruction was added: *While reading it, try to find out the rules operating around the highlighted parts of the sentences.* These instructions were verbally given by the researcher before the reading task and also appeared in the reading passage in written format. For G4, the instructed group, the researcher delivered a general mini lesson about inversion and the target form target form of this study using metalinguistic language. After the explanation, the students practiced the target form with a couple of sample sentences on a blackboard.

### 3.5. Test Battery

#### 3.5.1. Pre-GJT

For the pre-test grammar judgment test (GJT), 10 sentences with target forms were generated by referring to Azar (2002) and Loewen’s (2009) study. The pretest was composed of a total of 30 sentences with 20 distractors and 10 target sentences with a randomly distributed order. All 30 sentences contained one grammatically incorrect

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component in each sentence; the students were asked to underline the ungrammatical section and then correct it. One sample question was provided as a model answer for the detection and correction task. Participants were allowed 15 minutes to complete the test.

### 3.5.2. Reading comprehension

Based on the contents of the passage, six multiple choice questions related to main idea, details, and inference were created. Because vocabulary was not the target of the current study, eight vocabulary items were glossed at the bottom of the reading passage. During the reading comprehension test, they were not allowed to return to the passage to refer to the passage contents; six minutes were allowed for solving the questions.

### 3.5.3. Post-GJT (Untimed)<sup>6</sup>

The post-GJT contained 20 sentences that were composed of 10 target sentences and 10 distractors. These sentences were recycled from the pre-GJT, and key content words were switched to new words with mixed order. For the post-GJT, in order to measure learners' metalinguistic (explicit) knowledge, the learners did not have time restrictions (Loewen, 2009; Reinders & Ellis, 2009). However, all of the students finished the test within ten minutes.

### 3.5.4. Guided sentence composition

Four guided sentence composition tasks were created as an output test. The task was to compose English sentences by referring to pre-given Korean equivalent sentences. Some useful expressions (e.g., complement and verb root form) were given so that the learners could refer to them for their own compositions. The students were given the choice of using the given expressions. In addition, the four target negative adverbs *never*, *rarely*, *seldom*, and *hardly* were given as the initial words in each answer to prevent the students from making subject-verb order sentences in their answers. Eight minutes were allowed for this output task.

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<sup>6</sup> R. Ellis (2009b) introduces five tests measuring implicit and explicit knowledge: (1) implicit knowledge measures: elicited oral imitation test, oral narrative test, and timed grammatical judgment test, and (2) explicit knowledge measures: untimed grammatical judgment test, and metalinguistic knowledge test. In the current study, the untimed GJT and guided sentence composition test were used to measure learners' explicit knowledge.

### 3.6. Procedure

At the beginning of the experiment, the participants were given a pre-test to measure their prior knowledge of the target form. Then G1, G2, and G3 read the reading passage based on the directions given. As soon as they finishing reading, they took the reading comprehension test, followed by the untimed post-GJT, and then the sentence composition test at the end. However, only G4 received explicit form instruction before reading the passage, and the explicit instruction was carried out using metalinguistic language. After the rule explanation, the students had a short practice session with five negative inversion sample sentences step-by-step. The general procedure was summarized in Table 2.

**TABLE 2**  
**General Procedure of the Study**

Order	G1 (n = 36)	G2 (n = 29)	G3 (n = 38)	G4 (n = 38)
1			Pre-GJT	
2	N/A	N/A	N/A	Explicit instruction
3		Reading the provided passage		
4		Reading comprehension test		
5		Post-GJT		
6		Guided sentence composition test		

The author delivered the explicit instruction in Korean, and the English teacher at the school presented and administered the sessions. The tests were carried out by paper-and-pencil, and the experiment was completed within a regular 50-minute-long class.

### 3.7. Scoring

For the pre- and post-GJT, only 10 target sentences were scored, excluding the distractors in each test. For both tests, negative adverb inversion sentences earned points and sentences with subject-verb order did not receive any points, even if they were grammatically correct, in order to isolate the treatment effect. In addition, the students who underlined the incorrect element and corrected it accurately received 1 point. However, when no answer or the wrong answer was given, 0 points were given. A maximum score of 10 was given for both the pre- and post-GJT.

*Ex) Never had I see such a beautiful lady.*

Learner 1: *see* -> underlined and corrected into *seen* (1 point)

Learner 2: *see* -> underlined but no correct answer (0 points)

Learner 3: *I have never seen such a beautiful lady* (0 points)

Learner 4: no underline or no answer (0 points)

For the reading comprehension test, 1 point was given for each correct answer. No partial points were allowed, and the maximum score was 6 points. For the guided sentence composition task, when the target form was included in the composition, 1 point was allowed for each question regardless of verb tense. Students who provided an incorrect form of the main verb or auxiliary also received partial points (0.5) since the target of the experiment was to see the subject-verb inversion acquisition rather than the verb tense learning. However, again, as in the pre- and post-GJT, subject-verb order sentences and double negation sentences did not receive any points. A maximum of 4 points was allowed for the guided sentence composition task. A second rater who holds a Ph.D. degree in education was hired to assist the scoring, and he scored 10% of the tests in each section. The reported inter-rater reliability is 0.90.

*Ex) Never \_\_\_\_\_.*

*Learner 1: Never had I seen such a smart student. (1 point)*

*Learner 2: Never have I seen such a smart student. (1 point)*

*Learner 3: Never have I see such a smart student. (0.5 point)*

*Learner 4: Never has I seen such a smart student. (0.5 point)*

*Learner 4: I have never seen such a smart student. (0 point)*

*Learner 5: Never have I don't seen such a smart student. (0 point)*

### 3.8. Analysis

To answer the above three research questions, the descriptive statics first show the general performance of the participants in all the tests. To explain the effectiveness of each learning condition, a repeated measures (RM) ANOVA<sup>7</sup> will first show how much the learners learned the target form before and after the reading task, and a paired samples *t*-test will show how much the groups gained from pre-GJT to post-GJT. A one-way ANOVA for reading comprehension and sentence composition will then test group performance by learning condition. For the analysis, SPSS 21 was used.

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<sup>7</sup> According to Nimon and Williams (2009), "repeated measure provides practitioners and researchers a more sophisticated tool to analyze the impact of education over time or interventions that employ concurrent tests to measure a particular set of knowledge, skills, or attitudes" (p. 1). In the current study, a within-group factor (i.e., time) and a between-group factor (i.e., learning conditions) were both observed.

## 4. RESULTS

The descriptive statistics in Table 3 show how the Korean high school students performed on each test in this study. The results indicated that the participants had a slight knowledge of the target form ( $M = 1.67$ ,  $SD = 2.53$ ) before the experiment. However, after reading the passage, the participants learned the target form ( $M = 3.62$ ,  $SD = 3.97$ ), while the instructed group, G4, learned much more than the other groups ( $M = 7.24$ ,  $SD = 3.25$ ). For the reading comprehension test, the Korean students answered 4.11 questions correctly on average out of 6 questions with sufficient variation ( $SD = 1.66$ ). For the guided sentence composition test, the participants composed 1.89 sentences correctly out of a maximum score of 4 on average; however, the instructed group, G4, performed better ( $M = 2.82$ ,  $SD = 1.56$ ) than the other groups on the composition task.

**TABLE 3**  
Descriptive Statistics for Test Variables ( $N = 141$ )

		<i>M</i>	<i>SD</i>	Min	Max	Possible Max
Pre-GJT	G1	1.22	1.87	0.0	7.0	10.0
	G2	1.52	2.35	0.0	8.0	10.0
	G3	1.55	2.84	0.0	9.0	10.0
	G4	2.32	2.83	0.0	8.0	10.0
	Total	1.67	2.53	0.0	9.0	10.0
Post-GJT	G1	2.33	3.14	0.0	10.0	10.0
	G2	2.34	3.48	0.0	10.0	10.0
	G3	2.21	3.52	0.0	10.0	10.0
	G4	7.24	3.25	0.0	10.0	10.0
	Total	3.62	3.97	0.0	10.0	10.0
Reading Comprehension	G1	4.00	1.93	0.0	6.0	6.0
	G2	4.03	1.61	0.0	6.0	6.0
	G3	4.24	1.60	0.0	6.0	6.0
	G4	4.13	1.55	0.0	6.0	6.0
	Total	4.11	1.66	0.0	6.0	6.0
Sentence Composition	G1	1.53	1.84	0.0	4.0	4.0
	G2	1.83	1.92	0.0	4.0	4.0
	G3	1.37	1.72	0.0	4.0	4.0
	G4	2.82	1.56	0.0	4.0	4.0
	Total	1.89	1.83	0.0	4.0	4.0

To confirm any difference in pre-GJT scores exist among the four groups, one-way ANOVA was conducted as shown in Table 4. The one-way ANOVA results revealed a statistically non-significant effect for groups,  $F(3, 137) = 1.272$ ,  $p = .286$ , which indicated no difference in pre-GJT score among the four groups.



**TABLE 4**  
**One-Way ANOVA Results for Pre-GJT Scores**

	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Between Groups	24.264	3	8.088	1.272	.286
Within Groups	871.069	137	6.358		
Total	895.333	140			

Although there was no difference in pre-GJT score among four groups, as a next step, repeated-measures (RM) ANOVA was conducted to examine development in the post-GJT. The RM ANOVA revealed significant main effects for time  $F(1,137) = 91.189, p = .000, \eta^2_p = .400$ ; for group  $F(3, 137) = 10.629, p = .000, \eta^2_p = .189$ ; and a significant time x group interaction effect,  $F(3, 137) = 28.471, p = .000, \eta^2_p = .400$ , as shown in Table 5. Further post hoc Scheffé tests also revealed that the instructed group, G4, learned much more than the other groups, which indicated that the instruction group had significant development between the pre- and post-GJT. Specifically, there were mean differences in the gain score (post-GJT minus pre-GJT) between G4 and G1 (mean difference = 2.999), between G4 and G2 (mean difference = 2.845), and between G4 and G3 (mean difference = 2.895).

**TABLE 5**  
**Repeated Measures ANOVA at Different Times and Groups**

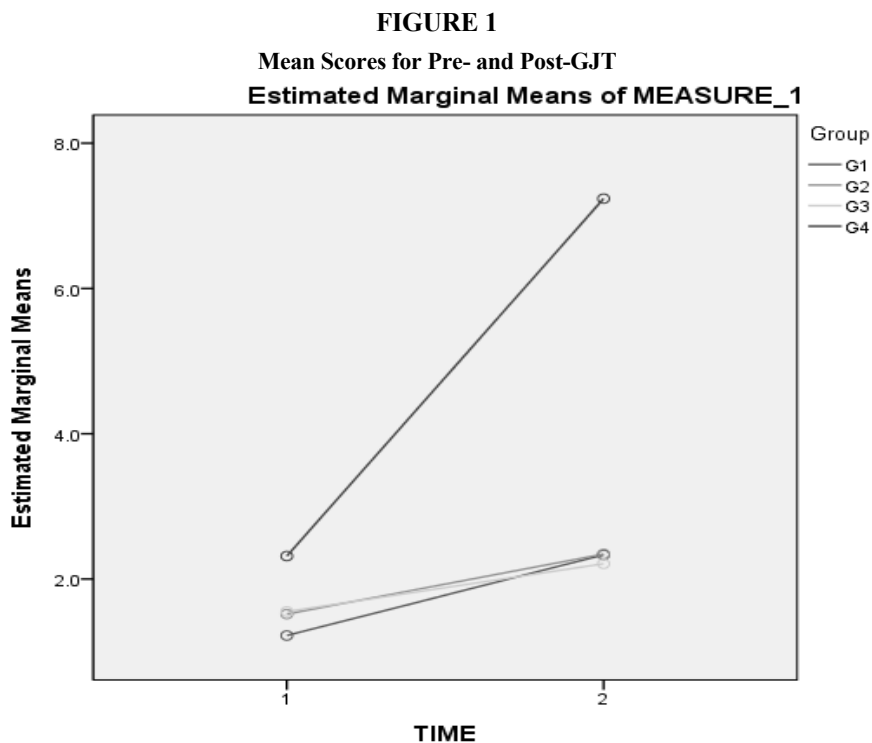
Source	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>
Within Subject Effects				
Time	245.948	1	245.948	91.189***
Time x Groups	230.368	3	76.789	28.471***
Error(time)	369.505	137	2.697	
Between Subject Effects				
Groups	473.239	3	157.746	10.629***
Error	2033.300	137	14.842	

\*\*\*  $p < .001$

In addition, the significant interaction effect between time and group indicated that pre- and post-GJT and the four different learning groups interplayed as shown in Figure 1. The RM ANOVA and Scheffé analyses of the pre- and post-GJT scores demonstrated that all of the groups improved their grammaticality scores after the treatment; in addition, their pre- to post-improvement was mainly due to G4, the instructed group's substantial improvement over time.

As a next step, to identify each group's gain scores from pre-GJT to post-GJT (post-GJT minus pre-GJT), a paired samples *t*-test was run, as shown in Table 6. The results indicated that all the four groups earned statistically significant gains in scores, and G4, the instructed group, showed the most learning ( $M = 4.92, SD = 3.21$ ) compared to the other groups. For the participants' reading comprehension, the one-way ANOVA results shown

in Table 7 indicated statistically non-significant mean differences in the reading comprehension test scores among the four groups ( $F(3,137)=.145, p=.993$ ).



**TABLE 6**  
**Paired Samples *t*-Test for Gain Scores**

	<i>M</i>	<i>SD</i>	<i>SEM</i>	<i>df</i>	<i>t</i>
G1 ( <i>n</i> = 36)	1.11	1.77	0.29	35	3.768 ***
G2 ( <i>n</i> = 29)	0.83	1.98	0.37	28	2.247 *
G3 ( <i>n</i> = 38)	0.66	1.94	0.31	37	2.095 *
G4 ( <i>n</i> = 38)	4.92	3.21	0.52	37	9.456 ***

\* $p < .05$ , \*\*\* $p < .001$

**TABLE 7**  
**One-Way ANOVA Results for Reading Comprehension Scores**

	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Between groups	1.228	3	.409	.145	.933
Within groups	386.176	137	2.819		
Total	387.404	140			

Table 8 shows the four groups' guided composition test scores. The one-way ANOVA

results demonstrates that that there was statistically significant mean differences in the earned scores for the composition test among the four groups ( $F(3,137) = 5.170, p = .002$ ).

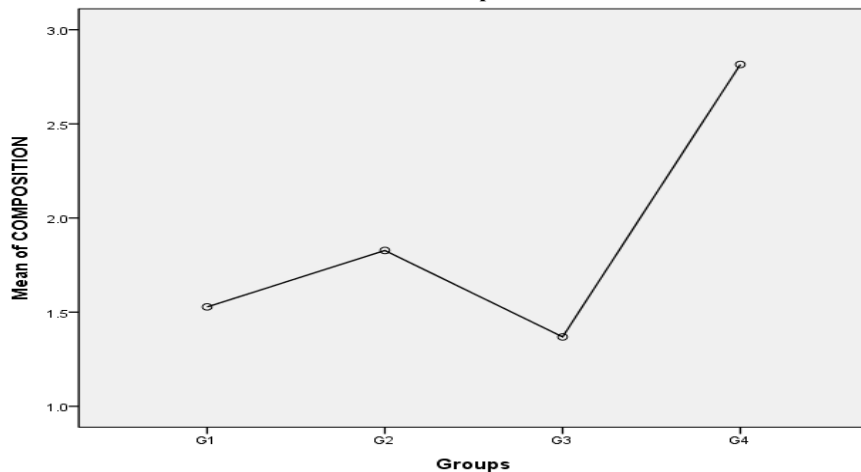
**TABLE 8**  
**One-Way ANOVA and Scheffé Results for Composition Scores**

	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	Scheffé
Between groups	47.741	3	15.914	5.170**	.002	G4 > G1*
Within groups	421.663	137	3.078			G4 > G3**
Total	469.404	140				

\* $p < .05$ , \*\* $p < .01$

A post-hoc Scheffé test also found a significant mean difference for the composition test scores between G4 and G1 (mean difference = 1.288) and between G4 and G3 (mean

**FIGURE 2**  
**Mean Scores for Composition Test**



difference = 1.447), as shown in Figure 2. The guided composition results indicated a group difference among the four groups. However, G4, the instructed group did much better than G1, the more-incidental group, and G3, the rule-search group.

## 5. DISCUSSION

The current study investigated implicit and explicit learning conditions with the aid of implicit focus of form techniques (input flood and textual enhancement). As a form of an implicit learning condition, incidental target form learning was expected, while participant

attention was on reading for meaning purposes. Two incidental learning conditions were generated: (1) a more incidental group (G1), who read the passage with input flood only, and (2) a less incidental group (G2), who read the combination of input flooded and textually enhanced passage. Two explicit learning conditions were also created: (1) a rule-search group (G3), who were asked to find the operating rules from the flooded and enhanced sentences in the reading passage, and (2) an instructed group (G4), who received explicit grammar instruction before reading the flooded and enhanced passage. The overall results indicated that the instructed group outperformed the other groups on the rule-learning task. For reading comprehension, no statistical difference was found among the four learning conditions. In the guided sentence composition task, the instructed group also performed better than the other three groups.

For the first research question about rule learning under the four different learning conditions, the explicit instruction provided for the instructed group made a difference in the results. Their outperformance from pre- to post-GJT may be due to the synergistic effect of the two learning modes. Before reading the passage, they were instructed in the target form explicitly, followed by implicit processing of the target form while reading. In this case, it can be said that the “instruction may have a priming effect, increasing the likelihood of noticing features in input through the establishment of expectations” (Schmidt, 1990, p. 143). This result corresponds to the weak interface position, in that explicit L2 knowledge of the rule may have served as a facilitator in the process of implicit knowledge development (N. Ellis, 2005; R. Ellis, 1994). Thus, they benefited both from implicit and explicit learning conditions when the symbiosis was maximized (N. Ellis, 2007). The argument for the weak interface position is witnessed in the current study because the explicit instruction actually accelerated development in the instructed group, as shown in the other experimental studies (de Graaff, 1997; Radwan, 2005; Robinson, 1996).

For the learning continuum design, from more/less implicit to more/less explicit, the results corresponded to Robinson’s (1996) findings, as he reported that the rule instruction group outperformed the implicit, incidental, and rule-search groups on easy rules. In his study, he included rule complexity, whereas in the current study, input enhancement techniques were included as a construct. However, in both studies the instructed group outperformed the other learning groups no matter how difficult the rules were and no matter which enhancement was used. This result also coincides with Norris and Ortega’s (2000) meta-analysis showing that explicit instruction was more effective ( $d = 1.13$ ) than implicit instruction ( $d = 0.54$ ). According to R. Ellis’ (2009a) interpretation, explicit instruction had a “large” effect size, while implicit instruction had a “medium” effect size, thereby bolstering the merit of explicit instruction (p. 20).

Yet the success of the instructed group should be observed with careful attention. This is because that Schmidt (1990) argues that “studies of the global role of instruction in second

language learning indicate that it is facilitative but such studies do not say whether such effects are due to increased learner understanding as a result of instruction, or increased salience of forms leading to awareness only at the level of noticing” (p. 146). The current study included both incidental and instructed groups in one study, which varies the degree of implicitness and explicitness. The instructed group’s performance would be the synergistic effect coming from both noticing and instruction, while the incidental groups’ performance would be due to the noticing effect and saliency of the target form. Accordingly, their learning must be attributed to different sources.

As such, the improvement within the two incidental groups after reading the meaning-focused passage should also be closely examined. The more incidental group read the input flood only passage, while the less incidental group read the flooded plus a textually enhanced passage. Although the degree of their incidental learning was not as substantial as in the instruction group, it is noteworthy that incidental learning actually occurred while the EFL learners were doing a meaningful reading task in a short period of time. Although Kim (2015) reported on Korean adult learners’ incidental learning and uptake during teacher-learner interactions, this finding merits attention, since the participants were able to incidentally pick up the target form though their attention was on another task—reading for meaning. The possibility of their incidental learning can be concluded for two reasons; first, the target form, negative adverbs with inversion of subject-auxiliary (e.g., *Never have I encountered such rudeness*), might have been easy for the students. Although R. Ellis (2006) defines this target form as complex, Robinson (1996) defines this target form as easy in his study. Second, it is plausible that the Korean high school students could have been ready for the target form, so their instant incidental pick up could have been easier while simultaneously performing the reading task (Han, Park, & Combs, 2008; Lee, 2007).

For the input enhancement, it seems that the techniques aided learners’ form learning under all learning conditions. However, for the less- and more-incidental conditions, not much statistical difference was found compared to the instruction group. In addition, the rule-search group also showed positive evidence in learning the target, just as in the incidental groups. To manipulate implicitness and explicitness, different input enhancement techniques were used for the more- and less-incidental and the rule-search groups. However, the effort did not yield any learning differences. That is, no matter what saliency was offered, the likelihood of learning the uninstructed target rule by chance was almost the same across these three groups. Although Wong (2003) suggested use of both input flood and textual enhancement in one study design, this was not the case in the current study. This means that the text enhancement used in the incidental groups and the rule-search group could draw learners’ consciousness to a certain degree, but they were still insufficient for promoting considerable development, although the two techniques were combined. Hence, as Spada (2011) argues, “explicit form focused instruction (FFI) is

more effective than implicit FFI in communicative and content-based classrooms” (p. 227); for better noticing and consciousness-raising, use of other implicit FFI deserves consideration.

For the second research question involving reading comprehension depending on learning conditions, the results showed no difference in the participants’ comprehension scores. Thus, the kinds of input enhancement techniques and the explicit instruction did not influence the learners’ understanding of the text. In addition, the reading instructions given to the learners also did not lead to great differences. The rule-search group was asked to find the rule, but they paid attention to the meaning first, as their scores showed similar comprehension across all four groups. This is indicative of VanPatten’s (1996, 2004) Input Processing theory, in that when linguistic input is received, learners first try to map meaning to the input, and then move to the intake stage. In this process, with limited resources, only when working memory capacity remains can they process form as a next step; otherwise, their process stops before entering the rule learning. This result is also found in the Korean EFL learners’ form-meaning trade-off, as Lee (2007) reported that the participants in his study failed to pay attention both to the form and comprehension, although they were told to do so.

For the third research question related to learning condition effects on participants’ output, the guided sentence composition task, explicit instruction also made a difference. In this study, in order to measure learners’ evidence of intake, an output task was used. The instructed groups’ superior performance in the production test mainly lies in the explicit rule explanation session, as with the rule-learning. The treatment increased the participants’ awareness of the target form and they might have “monitor(ed) their output using the explicit knowledge” (R. Ellis et al, 2006, p. 362) that they just earned during the explicit instruction. The instructed group’s high performance can be explained by R. Ellis’ (2003) model, in which explicit instruction first generates explicit knowledge and aides in ‘noticing’ the target form. Simultaneously, the explicit knowledge might have triggered ‘noticing the gap’ about the form and ‘monitored’ their sentence production processes, thus allowing the learners to safely arrive at the output.

Their high performance on the output task can also be found by practice. Consciousness is epiphenomenal; however, while practicing the target form with novel instances through the transfer task, they were able to register the targets in their memories. Subsequently, the reinforcing experience may have enhanced the registering processes itself by repeating the target form. In addition, the target form seemed relatively easy for the students. In a given sentence, they could simply switch the positions of the subject and auxiliary and a combination of the rule-learning that they gained from the explicit instruction and the item-based learning that they gained from practice might have made them successfully apply their explicit knowledge to the new examples.

Given the results of the current study, several pedagogical implications are proposed. First, based on the implicit-explicit synergy effect shown in the explicitly instructed group, teachers' form-focused instruction is suggested when metalinguistic awareness is necessary through cogent explanation. This is also evidenced in students' significant production errors in an immersion program (Lightbown, Spada, & White, 1993; Swain, 1985). Second, given the possibility of incidental learning, well-designed task-based instruction which allows students to benefit from incidental language learning through massive exposure is needed. For this, use of conscious-raising techniques which can enhance learners' noticing of linguistic input such as input-flood or textual enhancement should be considered. Third, teachers can provide a chain of language learning processes from input to output when conducting form-focused classes. Since the prime purpose of focus on form teaching is improvement of learners' communicative competency, the adoption of real-life-related speaking or writing output tasks is encouraged. This agrees with the claim of Swain's (1985) pushed output and will indeed foster students' 'noticing' and 'noticing-the-gap' opportunities while learning the target form implicitly. Furthermore, instead of meaningless drills, integrating grammar into more meaningful communication tasks should be always at the heart of the lesson (N. Ellis, 2011).

## 6. CONCLUSION

The current study demonstrates that explicit instruction is more effective than the implicit learning condition alone. The main findings are: (1) explicit instruction facilitated implicit rule learning to a large extent, demonstrating a synergistic effect between implicit and explicit learning; (2) input enhancement techniques (input flood and textual enhancement) were beneficial for both incidental and explicit rule learning, but its effectiveness was much greater under the explicit learning condition; (3) there was no group difference in the learners' reading comprehension, which means that learners prioritized meaning before rule(s) in input processing; and (4) explicit instruction also accelerated the sentence composition task, suggesting that the instruction facilitates the link between input and output processes.

The present study attempted to shed light on the interface issues regarding whether explicit instruction influences implicit learning and how they work symbiotically with each other (N. Ellis, 2007). This study has contributed to the literature of implicit and explicit learning by adding evidence of dynamic interplay between the two domains in classroom settings. Moreover, this study is significant, as Korean EFL learners' incidental form-learning was witnessed while dealing with a comprehension task. The success of input enhancement techniques should not be abandoned, since they actually raised the learners'

consciousness, especially for the instructed group, thereby leading them to safely arrive by ‘noticing’ and ‘noticing the gap’ while learning the form implicitly.

Nonetheless, the current study has limitations. The length of the treatment was short since the experiment was done within a regular classroom hour. Thus, the long-term effects of implicit and explicit grammar lessons should be observed in a longer period of time followed by delayed posttests. In addition, other types of output tasks, such as dictogloss or passage construction, could be used in order to gain an accurate picture of input, intake, and output processes. Future studies can fill the gap by adopting different study designs by adding a control group (e.g., an instruction-only group without reading) and state-of-art techniques such as eye movement (Godfroid & Winke, 2015; Park, Choi, & Lee, 2012) or computer-based self-learning programs (Robison, 1997). Moreover, a wide variety of different learner proficiencies with other target forms will also open the door to identifying Korean learners’ implicit learning processes from different perspectives. These studies can serve as a stepping stone to examining another possibility of Korean EFL learners’ rule learning in implicit and explicit learning conditions.

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## APPENDIX

Last May, Michael Smith, 81, returned to his Anaheim, California, apartment after months in the hospital for lung cancer treatment. Rarely **had he** been away from his apartment. Upon arrival, he found his refrigerator and pantry were nearly empty.

Applicable levels: Secondary

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