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Explicit Grammar Instruction and Development of Implicit Knowledge

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This study investigates the effects of explicit L2 knowledge obtained through explicit grammar instruction to development of implicit L2 knowledge. Forty-five Korean-speaking adult learners of English participated in the study and were randomly assigned to one of the two experimental groups, who received (1) explicit grammar instruction plus incidental L2 exposure (EI) or (2) incidental L2 exposure only (I), or one control group, who did not receive any instruction. Learning was assessed by an untimed grammaticality judgment task (UGJT), a primary measure for explicit knowledge, and an oral elicited imitation task (OEIT), a primary measure for implicit knowledge. The analyses found that the EI group showed superior performance on the UGJT as well as OEIT whereas no superior performance was found from the I group. Therefore, this result suggests that the outcome of explicit grammar instruction positively affect development of implicit L2 knowledge, and the incidental L2 exposure alone does not offer a sufficient condition to develop implicit knowledge.

[explicit grammar instruction/implicit knowledge/explicit knowledge/untimed grammaticality judgment task/oral elicited imitation task]

I. INTRODUCTION

A great body of research in the field of second language acquisition (SLA) (e.g., De Graaff, 1997; DeKeyser, 1995; N. Ellis, 1993; Fotos, 1993; Fotos & R. Ellis, 1991; Kim, 2007, 2010; Spada & Lightbown, 1993) has empirically shown that explicit grammar instruction promotes the second language (L2) learning. More recently, the positive effect of explicit grammar instruction has been identified in learning various specific aspects of L2, namely, morphology (Muranoi, 2000) and syntax (Radwan, 2005). This entails that the

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effectiveness of explicit grammar instruction is not limited to selected linguistic structures, but that it plays a significant role in acquiring various aspects of an L2 overall.

While it was quite clearly concluded that the additional use of explicit grammar instruction promotes learners' gain of accurate grammatical knowledge, the previous research does not offer a clear picture whether the accurate grammar knowledge subsequently drives development of implicit knowledge, which is a primary component of L2 competence. The previous studies limited their utilization of assessment measures to those tapping explicit knowledge such as the grammaticality judgment task and the untimed L2 production task in spoken/written format. Due to this, it is hard to conclude that those learners' superior task performance was derived from their internalized use of implicit L2 knowledge, which is the goal of L2 learning. Acknowledging the current research gap, the present study aimed to investigate possible relationships between explicit knowledge and implicit knowledge, particularly whether the acquisition of explicit rule knowledge can facilitate development of implicit knowledge of L2. The investigation was conducted by comparing performances on the implicit knowledge measure of the two groups who received (1) explicit grammar instruction and incidental L2 exposure and (2) incidental L2 exposure only.

II. LITERATURE REVIEW

1. Definitions and Characteristics of Implicit and Explicit Knowledge

Many theories distinguish implicit knowledge and explicit knowledge. Implicit knowledge of language is often characterized as intuitive and tacit (Bialystok, 1981). R. Ellis (1994, p. 85) further claims that implicit knowledge is "intuitive, in the sense that the learner is unlikely to be aware of having ever learnt it and is probably unaware of its existence." In this view, L2 learners are not conscious of the knowledge that they possess. Because implicit knowledge is subconscious, the knowledge cannot be directly reported. Rather, implicit L2 knowledge only becomes apparent when learners are using and producing language. According to Krashen (1994), the acquisition of implicit L2 knowledge is a spontaneous and incidental process of rule internalization that results from natural language use. Therefore, within the context of SLA, implicit knowledge can be developed effectively under an incidental L2 learning condition such that the learner's attention is focused on meaning rather than forms. The processing of implicit knowledge is thought to be proceduralized (Anderson, 1993) and automatized (McLaughlin, Rossman, & McLeod, 1983), so easy and rapid access is possible. Consequently, learners who have implicit knowledge know *how* to use a language (Ryle, 1949), and it composes the basis of

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unplanned and fluent communicative language (Krashen, 1994).

In contrast, explicit knowledge is broadly defined as knowledge *about* language (Ryle, 1949). It is a more conscious type of knowledge that is learned with intention and deliberate effort (R. Ellis, 1994). Therefore, in the context of SLA, explicit knowledge is gained through formal L2 study (Krashen, 1994) with use of an instructional method directing learners' attention to forms, namely, explicit grammar instruction. When learners have explicit L2 knowledge, they can verbalize a metalinguistic reason as to why a certain sentence is grammatical or ungrammatical. Unlike implicit knowledge that is accessed through automatized processing, explicit knowledge exists as declarative facts (Anderson, 1993), and it is generally accessible only through controlled processing (McLaughlin et al., 1983). Therefore, use of explicit knowledge is possible when there is a sufficient amount of time to access the relevant declarative facts. Due to this, explicit knowledge is not readily available in an unplanned and spontaneous speaking condition (Krashen, 1994).

The explicit grammar instruction, where students are explicitly taught L2 forms, is likely to serve as a plausible condition in which learners can acquire explicit L2 knowledge. Because the primary objective of grammar instruction is to build explicit knowledge of the language structure, learners become aware of linguistic information targeted during the instruction. For this reason, use of grammar instruction necessarily involves a conscious process of L2 learning that promotes explicit learning of L2.

2. The Relationship of Implicit and Explicit Knowledge

Traditionally, the relationship between implicit knowledge and explicit knowledge is discussed with regard to the absence or presence of interface, which enables the interaction between the two types of knowledge. This section offers three very different theoretical answers to the interface question: (i) the non-interface position, (ii) the strong interface position; and (iii) the weak interface position. These positions agree with the idea that L2 competence comprises automatic and proceduralized processing of implicit knowledge. However, they predict different roles for explicit knowledge in the acquisition of implicit knowledge, and thus, they provide different pedagogical implications for grammar instruction.

1) The Non-interface Position

The non-interface position views implicit knowledge and explicit knowledge as entirely independent mechanisms that have separate acquisitional processes and storage (Krashen, 1994; Paradis, 1994, 2004). Assuming no interaction between the two types of knowledge, it rejects the idea that explicit knowledge can be converted into implicit knowledge, and

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vice versa. Therefore, according to this position, implicit knowledge of an L2 cannot come into existence as the direct result of explicit knowledge, nor can it indirectly be influenced by explicit knowledge of that language.

The non-interface position was first proposed by Krashen in his Learning-Acquisition hypothesis (Krashen, 1994). According to Krashen, there are two distinct and independent ways of developing L2 knowledge; one is language *acquisition* that develops implicit knowledge and the other is language *learning* that develops explicit knowledge. These two learning processes coexist in adult language learners, but the outcomes are fundamentally different. In Krashen's work (1982), *language acquisition* is defined as a process "similar to the way children develop ability in their first language" (p. 10). The process of language acquisition takes place subconsciously, informally, and naturally. In other words, language acquisition is an implicit and incidental process. Therefore, acquisition of implicit knowledge occurs unconsciously in informal environments such as natural conversation. The second way of developing L2 knowledge is *language learning*. In contrast to language acquisition, language learning is a conscious and intentional process that results in explicit L2 knowledge. For instance, explicit processes of learning take place in formal L2 learning contexts by means of explicit correction and grammar instruction.

Krashen (1994) separates the roles of implicit knowledge and explicit knowledge in L2 competence. According to Krashen, implicit knowledge dominates in the competence of L2 performance, while explicit knowledge is used only as a monitor (i.e., an editor to correct output after it has been initiated by the acquired system). Thus, the implicit knowledge is the utterance initiator, while explicit knowledge performs the role of a planning, editing, and correction function. Krashen mentions that explicit knowledge, unlike implicit knowledge, acts only under a specific condition; when the L2 learner has sufficient time at her disposal, focuses on form or thinks about correctness, and uses explicit knowledge of grammar rules. As a result, in Krashen's proposal, the role of explicit learning and instruction is minor in L2 competence because it is used only to correct deviations from grammatical speech.

In the context of SLA, implicit L2 knowledge is available automatically in the unconscious process whereas explicit L2 knowledge is controlled and can only be used consciously. Therefore, implicit L2 knowledge is considered to be stored in procedural memory while explicit L2 knowledge from deliberate learning is thought to be stored in declarative memory. Paradis (1994, 2004) agrees with the theoretical claim that explicit metalinguistic knowledge does not become implicit procedural knowledge. He argues that "what becomes automatic is not what the learners focus their attention on, or are even aware of" (p. 402) so even "practice does not convert explicit knowledge to implicit competence" (p. 403). From his perspective, automatic use of language, or implicit language competence, is not developed from explicit rule knowledge. Rather, learners

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develop the implicit competence, through practice, independently from explicit knowledge. Thus, what gradually changes into automatic skilled processes is not knowledge of metalinguistic rules itself but the application of the rules. In sum, as a proponent of the non-interface position, Paradis (1994) states that not only are implicit and explicit knowledge of language subserved by different cerebral memory systems, but they have different contents, and hence one cannot become the other, or be converted and transferred to the other.

According to the non-interface position, implicit knowledge cannot be acquired through the acquisition of explicit knowledge. As a result, formal instruction, such as explicit grammar instruction, has little or no effect on acquisition of implicit L2 knowledge. Incidental or implicit L2 learning plays a considerable role in acquiring implicit knowledge and L2 competence. Therefore, under this claim, such pedagogical practices as natural L2 exposure and meaning-focused instruction are promoted as effective instructional methods because these methods permit learners to learn an L2 incidentally while their focus is on meaning. In contrast, explicit formal instruction, such as form-focused methods including grammar explanation and error correction, which delivers explicit rule knowledge, is not considered to be an effective pedagogical method in developing L2 competence, as explicitly learned knowledge does not influence the acquisition of implicit L2 knowledge.

2) The Strong Interface Position

The strong interface position argues for a direct interface of implicit knowledge and explicit knowledge (e.g., Bialystok, 1978; DeKeyser, 1998; Sharwood Smith, 1981); implicit knowledge emerges from explicit knowledge directly. This position draws on the literature on skill acquisition discussed in Anderson's Adaptive Character of Thought (ACT) theory (Anderson, 1993; Anderson, Fincham, & Douglass, 1997). This theory views skill learning as involving the development of procedures that transform declarative knowledge into procedural knowledge. According to Anderson (1993), this transition takes place in three stages: (i) the declarative stage with factual knowledge, (ii) the proceduralized stage where general rules can be applied to particular instances, and (iii) the automatized stage in which procedures become increasingly efficient and automatic.

Anderson notes that declarative facts disappear entirely when the last stage is reached, and automatization of knowledge can be facilitated by repetitive practice. Accordingly, learners who arrive at the automatized stage may lose the ability to verbalize knowledge. This implies that initially declarative representations of knowledge can be converted into procedural representations by the effort of practice. The significance of practice in skill acquisition, in other words, proceduralization of memory, is emphasized by Temple (1995). He explains the development of procedural memory as the result of changes in neuronal

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structure that happen through repetition of the same experience or repetitive practice. This suggests that practice is a key factor that enables explicit knowledge existing as declarative facts to be converted into proceduralized implicit knowledge. This position implies that explicit declarative facts of linguistic information, just like any other type of acquirable skill, can be transferred to implicit procedural knowledge that can be accessed automatically by repetitive practice. Hence, this position assumes a direct interface between implicit and explicit knowledge.

In SLA, the application of the ACT model can be found in Bialystok's early work (1978). Bialystok's model illustrates implicit and explicit knowledge directly interacting with each other. While these two sources of knowledge are separated from each other in this model, it assumes that formal practice (the broken line in the model) permits explicit knowledge to become implicit knowledge via automatization (Bialystok, 1978, p. 77). As a result, Bialystok's model supports the existence of a strong interface between the two sources of knowledge by claiming that explicit knowledge can be converted into implicit linguistic knowledge, and practice (such as pedagogical activities in an L2 class) makes the conversion possible.

The strong interface position was formally advanced by Sharwood Smith (1981), who argues that "most spontaneous performance is attained by dint of practice" (p. 166). He defines practice as planned activities that learners participate in repeatedly. By performing the activity in the target language and putting together utterances in a completely conscious manner, the learner gains the necessary control over the structures that the learner can access quickly without reflection. Sharwood Smith (1981) suggests that the interaction of explicit knowledge and implicit knowledge takes place as explicitly learned knowledge provides feedback for implicit knowledge. In other words, explicit knowledge can be produced as output, and this output can become auto-input, which in turn contributes to implicit learning mechanisms. Thus, this position implies that not only can explicit knowledge be derived from implicit knowledge, but also explicit and declarative facts synthesize to become implicit proceduralized facts through practice. In this model, explicit knowledge does not negatively affect the acquisition of implicit knowledge. Nevertheless, explicit knowledge positively influences implicit knowledge development.

Within the context of SLA, this position suggests that the acquisition of implicit L2 knowledge can be driven by explicit knowledge. The conversion of knowledge is facilitated when plentiful practice opportunities are given. In SLA, practice refers to "engaging in an activity with the goal of becoming better at it" (DeKeyser, 1998, p. 50). In other words, by producing targeted structures in controlled and free language use, learners can proceduralize explicit facts of linguistic knowledge. Pedagogically, this indicates that explicit grammar instruction may prompt the development of implicit knowledge by allowing for an ample amount of practice opportunities. As a result, the strong interface

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position views formal instruction not as a fruitless procedure, but as one that can promote acquisition of implicit knowledge.

3) The Weak Interface Position

While assuming the possibility that explicit knowledge can support the acquisition of implicit knowledge, the weak interface position posits conditional constraints on when and how it can take place. According to the weak interface position, explicit knowledge may take part in the acquisition of implicit knowledge when learners are ready to accommodate the new knowledge in their interlanguage system. As a result, this position assumes that explicit knowledge is useful in developing implicit knowledge only if learners are developmentally ready to acquire the linguistic form (R. Ellis, 1993). This claim seems to be triggered by the learnability issue suggested by Pienemann (1989). Pienemann's (1989) Processability Theory proposes that learners might not be able to internalize new structural knowledge unless they are ready to do so. Based on this idea, the weak interface position emphasizes that explicit knowledge can only facilitate the acquisition of implicit knowledge when it is provided at the stage at which learners can process the particular linguistic targets. Otherwise, the explicit linguistic knowledge would not be useful. As a result, explicit knowledge cannot be incorporated into their interlanguage system unless the learners are developmentally ready.

The facilitative role of explicit knowledge in acquiring implicit knowledge is further discussed by R. Ellis (2003). In his view, explicit knowledge about L2 forms makes "relevant features [become] salient" and enables learners "to notice them and to notice the gap between the input and their existing competence" (p. 144). In other words, explicit knowledge helps learners compare what they currently know and do not know, notice the gap between them, and comprehend and produce L2 input correctly through their own cognition (R. Ellis, 2003). In this way, the weak interface position suggests that explicit learning processes facilitate the implicit process of learning.

This model was conceptualized in an SLA context by R. Ellis (1993). According to his conceptualization, implicit knowledge can be internalized (i) by deriving intake from the input and (ii) by obtaining explicit knowledge. More specifically, in addition to the monitoring function, explicit knowledge provided by formal instruction can help learners to notice features and meaning in the input (see R. Ellis, 2006 for empirical discussion). Furthermore, explicit knowledge may help learners to incorporate linguistic features into their implicit interlanguage grammar by facilitating the process; this process may involve learners' comparison between their existing representations of a grammatical feature with what they actually observed in the input.

Pedagogically, the weak interface position argues that the acquisition of implicit knowledge of an L2 can be facilitated by explicit knowledge. Proponents of this position

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believe that explicit grammar instruction may help L2 processing by drawing learners' attention to targets, by helping learners establish robust L2 form-meaning connections, and by promoting rule generalizability in different contexts. Eventually, it may facilitate acquisition of implicit knowledge. While the use of explicit instruction is encouraged in L2 classrooms, it is still unclear how much explicit instruction can influence the acquisition of implicit L2 knowledge, and how their symbiosis can be optimized.

4) The study

Although explicit knowledge on L2 is found to contribute to accurate grammatical knowledge of L2 (Laufer & Girsai, 2008; Nassaji & Fotos, 2011), studies in SLA have not reached consensus on the relationship and possible interaction of implicit knowledge and explicit knowledge. At this point, identifying their relationship is a significant task because it offers pedagogical implications of whether the implementation of grammar instruction should be maintained or replaced by other instructional method. Given the current inquiry and controversy upon the relationship between explicit knowledge and implicit knowledge, the present study posed the following research question(s).

1. Does explicit grammar instruction provided within the context of incidental L2 exposure positively affect learners' gain of L2 knowledge:

- when it was assessed by a primary measure for explicit knowledge (i.e., untimed grammaticality judgment task)?
- when it was assessed by a primary measure for implicit knowledge (i.e., oral elicited imitation task)?

III. RESEARCH DESIGN

1. The Participant

A total of forty-five Korean-speaking learners of English as a foreign language (EFL) participated in the present study (12 male, 33 female). All of the participants were majoring in English language and literature at a university in Korea. On a background questionnaire administered on the first day of the experiment, all participants reported only Korean as a native language. All of the participants have learned English only in a formal classroom context in Korea, and none of them had had short-term and/or long-term English learning experiences outside of Korea.

All participants were randomly assigned to one of the three groups: (1) a group who received explicit grammar instruction and incidental exposure to L2 (EI = 15); (2) a group

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who received no explicit grammar instruction but incidental exposure to L2 only (I = 15); and (3) a group who did not receive any instructional intervention (control = 15). The age of the participants ranged from eighteen to thirty-two (M = 21.75, SD = 1.68). They began learning/studying English at age of 9.53 (SD = 2.34) and studied English for 11.45 years (SD = 2.01) on average. The self-rated English proficiency measured by the five-point Likert scale (0 = beginner; 1 = low intermediate; 2 = intermediate; 3 = high intermediate; 4 = advanced; 5 = near native) indicated that the participants have an intermediate or high intermediate level of proficiency in English.

TABLE 1
Learner Characteristics by Group

	Gender		Age		Onset[a]		Length[b]	
	Male	Female	*M*	*SD*	*M*	*SD*	*M*	*SD*
EI (n = 15)	4	11	21.80	2.49	9.40	2.32	11.73	2.28
I (n = 15)	4	11	21.33	1.00	9.53	2.50	11.75	2.08
Control (n = 15)	4	11	22.13	1.55	10.93	2.19	10.87	1.68

[a]Onset means the age when they first began to learn English either at school or at home.

[b]Length means the number of years they have studied English.

2. Target Form

In this study, English *that*-trace filter was used as a target. In syntax, *that*-trace filter refers to the obligatory deletion of the complementizer *that* operated in the long distant *wh*-movement from the subject position (Table 2). Its theoretical explanation is derived from the Empty Category Principle (ECP). According to the ECP, an empty category (or a trace, in this case) must be either theta-governed (governed and theta-marked by a head) or antecedent-governed (governed by a co-indexed XP) (Chomskey, 1986, cited in Haegeman, 1994). In other words, a trace not governed by a proper governor violates ECP, and it makes the sentence ungrammatical. Although the targets are one of the frequently used interrogative forms in the real-life situation, *that*-deletion in this structure is neither taught in ESL/EFL grammar books nor explicitly instructed in L2 classroom contexts. Therefore, the use of the English that-trace filter may control for learners' prior knowledge while maintaining ecological validity and pedagogical benefits.

TABLE 2
Description for the English *That*-trace Filter

Transformational rules	Example Sentences
Original sentence	Mary believes that John teaches math.
1. do-support	a. Does Mary believe [$_{CP}$ t_i that [$_{IP}$ John teaches math]]?
2. wh-movement	b. Who$_i$ does Mary believe [$_{CP}$ t_i that [$_{IP}$ t_i teaches math]]?
3. that-deletion	c. Who$_i$ does Mary believe [$_{CP}$ t_i ___ [$_{IP}$ t_i teaches math]]?

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3. Procedure

The study employed a repeated-measures design. All experimental participants (i.e., EI and I) completed a pretest, three sessions of treatment, an immediate posttest, a one-week delayed posttest, and a one-month delayed posttest for the linguistic target, as well as questionnaires for bio-data information and language background. The control group did not receive any treatment sessions but participated in the pretests and the immediate, one-week, and one-month posttests in addition to the questionnaires. The participants were randomly assigned to one of the two experimental groups or the control group. All test and treatment sessions in this research were computer-based and individualized.

4. Experimental Design

There were two experimental groups in this study who received (1) explicit grammar instruction and incidental L2 exposure (the EI group) and (2) incidental L2 exposure only (the I group) (Table 3). As a result, until they reached the end of the experiment, the I group had not been informed about the existence of underlying rules. Also, there was a control group who did not receive any treatment but participated in the pretest and the posttests. The control group served an untrained control group to ensure learning only appears from the treatment (i.e., explicit grammar instruction and/or incidental L2 exposure), not from the tests.

TABLE 3
Experimental Design

	Treatment 1	Treatment 2	Treatment 3
EI (n = 15)	Explicit Instruction Incidental Exposure	Incidental Exposure	Incidental Exposure
I (n = 15)	Incidental Exposure	Incidental Exposure	Incidental Exposure
Control (n = 15)	--	--	--

5. Treatment Materials

1) Explicit Grammar Instruction

In explicit grammar instruction, the participants were explicitly instructed with the English *that*-trace filter. The grammar rules were presented with example sentences so that the participants were able to notice how the rules work in the language. In order to ensure that the participants understood the rules, they were asked to change three original declarative sentences into interrogative sentences complying with the rules. If they were

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not able to complete the comprehension task successfully, the rules were taught again individually until they could complete the comprehension task. The instruction was delivered in learners' L1 (Korean). This session took approximately five minutes for each participant.

2) Incidental L2 Exposure

The incidental L2 exposure was provided by means of an auditory meaning-focused task, which was designed to draw learners' primary focus to L2 meanings, not L2 forms. In this task, the participants were asked to listen to a question and select a picture that could be the best answer for the question. The task consisted of 60 grammatical sentences, which employed the English *that*-trace filter. The same 60 target sentences were used for the three treatment sessions. In order to reduce fatigue caused by task repetition, different pictures were used from treatment to treatment. The sentences were read out by a female native speaker of American English, and digitally recorded on Praat. This session last approximately 30 minutes for each participant.

6. Test Materials

The same test batteries were employed for the pretest, the immediate posttest (Posttest 1), the one-week delayed posttest (Posttest 2), and the one-month delayed posttest (Posttest 3). Each test primarily consisted of two tasks, such as an untimed grammaticality judgment task and an oral elicited imitation task, which were designed to capture explicit knowledge and implicit knowledge, respectively (R. Ellis, 2005). The tests employed new sentences that were not used in the treatment sessions. To minimize learning effects, the tests were administered in the order of (1) the oral elicited imitation task, and (2) the untimed grammaticality judgment task.

1) The Oral Elicited Imitation Task (OEIT)

Twenty-four sentences were created for this task. The twelve target sentences and twelve fillers were then equally distributed across the grammaticality (six grammatical and six ungrammatical sentences). The test items were read out by a female native speaker of American English, and digitally recorded on Praat.

In this task, the twenty-four sentences were coupled with relevant background information. The background information was presented visually (e.g., *You believe that John met his aunt*), and the target sentences were presented aurally either in a grammatical or ungrammatical structure (e.g., *Who do you guess that John met?* or **Who do you guess*

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that John met her?). In this task, the participants were required to answer the content-based question (e.g., *his aunt*) orally first so they could focus on meaning of L2 sentences. After providing an answer, they were asked to repeat the question sentences in correct English (e.g., *Who do you guess that John met?*). All of the participants' responses were audiorecorded.

2) The Untimed Grammaticality Judgment Task (UGJT)

Twenty-four sentences (twelve target sentences vs. twelve fillers) were created for this task. The sentences were created in the same method as the OEIT. In this task, learners were asked to listen to each sentence and judge the grammaticality of the sentence as quickly as possible by pressing one of the designated keys ("/" for grammatical; "z" for ungrammatical) in the keyboard.

7. Scoring

1) The Oral Elicited Imitation Task (OEIT)

The analysis of the OEIT replicated R. Ellis (2005). The participants' responses were analyzed by identifying obligatory occasions for the use of the target structures. As the OEIT was designed to assess whether learners can reproduce target sentences without violating what they have learned while focusing on meaning, the answers were scored as correct (one point) as far as the answer on a background question was correct and the primary grammatical points of those two targets (e.g., *do*-support, *wh*-movement, and obligatory *that*-deletion) were not violated. Therefore, learners' use of *do* instead of *does* (or vice verse) and/or use of *think* instead of *guess* (or vice versa) were/was considered as correct as long as they are placed correctly. The errors on non-targeted L2 forms, such as tense, third person singular *–s* morpheme, and definite/indefinite articles, were not counted, either. Also, slight alternation of non-targeted content words, for example, using *light* for *lamp*, *couch* instead of *sofa*, *Sarah* instead of *Jessica*, were all considered as correct answers because main meanings of the original sentences are still maintained in what they produced.

On the other hand, participants' failure to answer background questions and imitate a sentence at all or reproduce it with one or more violations on primary grammar points were coded as incorrect (zero points). Scores were later computed as percentage correct.

2) The Untimed Grammaticality Judgment Task (UGJT)

The analysis on the grammaticality judgment was run across all groups (experimental

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and control groups) because performance of the experimental versus control groups provides the evidence of learning effect. The participants' endorsement of grammatical sentences and rejection of ungrammatical sentences were considered as correct answers. On the other hand, learners' rejection of grammatical items and endorsement of ungrammatical items were coded as incorrect answers. All correct answers were given one point and all incorrect answers were given zero points. As the present study aims to observe impact of various combinations of instructional methods to adult L2 learners' acquisition of different types of target forms, scores across simple/complex targets and familiar/unfamiliar targets were calculated in addition to the scores on overall items. The scores were then converted into a percentage value that represents accuracy rate.

IV. RESULTS

1. The Untimed Grammaticality Judgment Task

First of all, a one-way ANOVA and a one-sample *t*-test were run for the pretest accuracy rates to examine if there was any significant between-group difference or a significant difference from a 50% chance level prior to the treatment. The one-way ANOVA found a significant between-group difference, $F(2, 42) = 3.971$, $p < .05$, $\eta_p^2 = .056$. Bonferroni post-hoc pairwise comparisons showed that the M group performed significantly better than the control group on the pretest ($p < .05$). No significant difference was found between the accuracy rates of the EI group and the control group ($p >$. 05). The one-sample *t*-test revealed that none of the groups performed significantly above chance (EI, $t(14) = -1.792$, $p > .05$; I, $t(14) = .285$, $p > .05$; Control, $t(14) = -2.091$, $p > .05$), suggesting that learner development can be attributed to the instructional treatment.

The accuracy rates on the UGJT posttests were analyzed across all groups (i.e., EI, I, and control) and four test sessions (i.e., Pretest, Posttest 1, Posttest 2, and Posttest 3). The descriptive statistics (Table 4) illustrates that all groups tended to score higher on the posttests than the pretest. The one-sample *t*-tests for the mean accuracy rates indicated that all experimental groups were likely to perform significantly above chance on Posttest 1 (EI, $t(14) = 4.889$, $p < .05$; I, $t(14) = 3.693$, $p < .05$), Posttest 2 (EI, $t(14) = 4.338$, $p < .05$; I, $t(14) = 1.699$, $p < .05$), and Posttest 3 (EI, $t(14) = 4.157$, $p < .05$; I, $t(14) = 2.293$, $p < .05$). However, the control group's performances on Posttest 1, $t(14)= .418$, $p > .05$, Posttest 2, $t(14)= 1.699$, $p > .05$, and Posttest 3, $t(14)= -1.209$, $p > .05$, were not distinguishable from chance.

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TABLE 4
Mean Accuracy Rates (*M*) and Standard Deviation (*SD*) on UGJT (%)

	Pretest		Posttest 1		Posttest 2		Posttest 3	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
EI (n = 15)	50.53	11.16	69.87**	15.73	67.87*	15.95	70.34*	18.95
I (n = 15)	56.07	11.23	60.80*	11.32	59.93*	13.01	59.41*	15.89
Control (n = 15)	43.60	13.83	50.93	8.64	53.44	7.85	45.80	13.44

Significance from chance: * $p < .05$. ** $p < .001$.

Next, a mixed ANOVA was conducted for the UGJT data with Time as a within-subjects variable and Group as a between-subjects variable. A four (Time: Pretest, Posttest 1, Posttest 2, and Posttest 3) x three (Group: EI, I, Control) ANOVA was performed on the UGJT accuracy rates. The mixed ANOVA revealed significant main effects for Time, $F(3, 126) = 9.749$, $p < .001$, $\eta_p^2 = .188$, for Group $F(2, 42) = 10.634$, $p < .001$, $\eta_p^2 = .336$, and for the Time x Group interaction, $F(6, 126) = 2.681$, $p < .05$, $\eta_p^2 = .113$.

A repeated-measures ANOVA was then carried out to observe the locus of the significant main effect for Time. First, a significant difference was found in the performances of the EI group, $F(3, 42) = 9.552$, $p < .05$; $\eta_p^2 = .406$, but not in the performances of the I group, $F(3, 42) = .920$, $p > .05$, $\eta_p^2 = .062$, or the control group, $F(3, 42) = 2.365$, $p > .05$, $\eta_p^2 = .145$. These results indicate that only the EI participants who were instructed in grammar rules explicitly showed significant development between the pretest and the posttests. Any significant development from the pretest scores was then observed by pairwise contrasts. The analysis indicated that the EI group's scores on Posttest 1, Posttest 2, and Posttest 3 were significantly higher than the pretest scores ($p < .05$). These results indicate that the EI learners were able to maintain their significant development on the UGJT over a month.

The main effect of Group was further investigated by Bonferroni post-hoc pairwise comparisons. The results of the post-hoc pairwise comparisons indicated that the EI group significantly outperformed the control group on Posttest 1, Posttest 2, and Posttest 3 ($p < .05$). The I group never outperformed the control group on any posttests ($p > .05$). The results suggest that only the group that was instructed in grammar rule explictly was able to outperform the control group significantly. The same learning effect was not found in the I group, which was exposed exclusively to L2 incidentally.

In sum, the overall analyses for the UGJT performances found that all experimental groups that did or did not receive the explicit grammar instruction (i.e., EI and I) performed significantly above chance on all posttests. This indicates that learning could take place through simple exposure to L2. However, the EI group's significant development in the short term, i.e., immediately after the treatment, and the long term, i.e., for a month, and their distinguishable performance from the control group's suggest

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that the use of explicit grammar instruction in addition to incidental L2 exposure method facilitated accurate performance on the UGJT.

2. The Oral Elicited Imitation Task

A one-way ANOVA and a one-sample *t*-test were run for the pretest accuracy rates to examine if there was any significant between-subjects difference or a significant difference from a 50% chance level prior to the treatment. The one-way ANOVA on the pretest scores found no significant group difference, $F(2, 42) = 1.264$, $p > .05$, and the one-sample *t*-test showed that none of the groups performed significantly above chance on the OEIT pretest. All groups performed significantly below chance (EI, $t(14) = -6.218$, $p < .05$; I, $t(14) = -10.766$, $p < .05$; Control, $t(14) = -9.992$, $p < .05$). As a result, development of all groups can be attributed to the effect of instructional treatment.

The accuracy rates on the OEIT were analyzed across all groups (i.e., EI, I, and control) and four test sessions (i.e., Pretest, Posttest 1, Posttest 2, and Posttest 3). The descriptive statistics (Table 5) illustrates that all groups gained higher scores on the posttests than the pretest. However, the one-sample *t*-tests on the mean accuracy rates indicated that none of the groups performed significantly above chance on Posttest 1 (EI, $t(14) = .478$, $p > .05$; I, $t(14) = -5.215$, $p < .05$; Control, $t(14) = -5.436$, $p < .05$), Posttest 2 (EI, $t(14) = .723$, $p > .05$; I, $t(14) = -5.215$, $p < .05$; Control, $t(14) = -4.715$, $p < .05$), and Posttest 3 (EM, $t(14) = 1.601$, $p > .05$; I, $t(14) = -.586$, $p > .05$; Control, $t(14) = -4.375$, $p < .05$).

TABLE 5
Mean Accuracy Rates (*M*) and Standard Deviation (*SD*) on OEIT (%)

	Pretest		Posttest 1		Posttest 2		Posttest 3	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
EI ($n = 15$)	21.67**	17.41	46.73	26.45	54.60	24.63	60.69	25.86
I ($n = 15$)	13.73**	13.04	31.67**	13.62	35.33*	21.50	46.89	20.56
Control ($n = 15$)	19.80**	11.70	25.60**	17.39	26.10**	19.63	31.20*	17.53

Significance from chance: * $p < .05$. ** $p < .001$.

A mixed ANOVA was performed for the OEIT data with Time as a within-subjects variable and Group as a between-subjects variable. A four (Time: Pretest, Posttest 1, Posttest 2, and Posttest 3) x three (Group: EI, I, control) ANOVA was thus carried out for the OEIT accuracy rates. The mixed ANOVA revealed a significant main effect for Time, $F(3, 126) = 41.306$, $p < .001$, $\eta_p^2 = .496$, for Group, $F(2, 42) = 192.569$, $p < .001$, $\eta_p^2 = .821$, and for the Time x Group interaction, $F(6, 126) = 4.770$, $p < .01$, $\eta_p^2 = .185$.

A repeated-measures ANOVA was conducted to observe the locus of the significant main effect for Time. A significant difference was found in the performances of the two

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experimental groups: the EI group, $F(3, 42) = 23.242$, $p < .001$, $\eta_p^2 = .624$; and the I group, $F(3, 42) = 16.468$, $p < .001$, $\eta_p^2 = .540$. The pretest to posttest development of the control group did not appear to be significant for Time, $F(3, 42) = 3.357$, $p > .05$, $\eta_p^2 = .193$. The pairwise contrasts indicated that the EI group and the M group's gain scores on Posttest 1 ($p < .05$), Posttest 2 ($p < .05$), and the Posttest 3 ($p < .05$) were significantly higher than their gain scores on the pretest. Even though the learners' accuracy rates on the posttests were not significantly above chance, the analysis of pairwise contrasts indicated that their posttest performances may involve significant improvement.

The main effect for Group was investigated by Bonferroni post-hoc pairwise comparisons. According to the post-hoc analysis, only the EI group significantly outperformed the control group on Posttest 1, Posttest 2, and Posttest 3 ($p < .05$, respectively) while any of the I group's posttest performances were not distinguishable from the control group's ($p > .05$). Therefore, the overall analyses for the OEIT indicate that provision of explicit grammar instruction may affect learners' OEIT scores positively.

In sum, the analysis for the OEIT across Time indicates that a significant improvement may be present in the posttest scores. Compared to the pretest scores, both EI and I groups scored significantly higher on all posttests. Therefore, the results of the OEIT performances indicate that learning could take place through a simple exposure to L2, without explicit grammar instruction. However, in the further analysis, only the EI group significantly outperformed the control group across all posttests, while the outstanding performances were not observed from the I group. Thus, the analyses suggest that the explicit grammar instruction may facilitate learners' gain of implicit knowledge, as evidenced by the EI group's superior OEIT posttest performances.

V. DISCUSSION AND CONCLUSIONS

This study aimed to identify the relationships of expicit knowledge and implicit knowledge by investigating whether the explicit knowledge derived from explicit grammar instruction can positively contribute to development of relevant implicit knowledge. For this, the current study compared two groups of learner performances who learned the target rule under the condition of explicit grammar insturction plus incidental L2 exposure versus who learned the target rule under the condition of incidental L2 exposure only. Their learning outcomes were assessed by the separete measures of explicit knowledge (i.e., UGJT) and implicit knowledge (i.e., OEIT).

The analysis of the UGJT, a primarily measure for explicit knowledge, produced similar results to those found previously for the effects of explicit L2 learning by means

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of grammar instruction (Muranoi, 2000; Radwan, 2005). The EI group, who received explicit gammar instruction in addition to the incidental exposure to L2, showed superior performances compared to the control group while the I group, who was only exposed to L2 incidentally, did show indistinguishable test performance from the control group. That is, knowing that the control group did not show any clear learning effect, only the EI group revealed successful gain of explicit L2 knowledge. The I group's inability to verbalize a critical L2 rule (i.e., obligaroty *that*-deletion) confirms that no explicit knowledge of L2 target was able to be established from the incidental L2 learning condition.

The analysis of the OEIT, a primary measure for implicit knowledge, revealed a trend of development limited to the EI group. Due to the complexity and low familiarity of the task, most learners gained relatively low scores on the OEIT, which drive no above chance posttest performances. However, when their development from the pretest to each posttest is observed, only the EI group's posttest scores were significantly higher than the pretet score, suggesting that the EI group was likely to obtain implicit knowledge of the L2 target rule. On the other hand, the I group and the control group's posttest scores were not better than the pretest score. No superior performance of the I group suggests that simple, incidental exposure to L2 may not offer a sufficient condition for adult L2 learners to develop implicit knowledge of L2.

Taking the results together, the EI group's developmental trend on the OEIT seems to be attributable to their successful gain of explicit knowledge, counter-evidencing Krashen's early proposal such that explicit formal instruction of L2 is useless or plays a peripheral role for developing implicit knowledge. On the other hand, the finding of the current study support the (weak/strong) interface position of implicit and explicit knowledge. As claimed by the proponents of the interface position (e.g., R. Ellis, 2003; DeKeyser, 2007) , it is possible that the explicit knowledge of L2 gained from explicit grammar instruction helped the EI learenrs to incorporate critical linguistic features into their implicit interlanguage grammar system by enhacning the process of noticing the gap between what they currently know and what they need to learn. It is also possible that the rule knowledge stored as declarative facts during the explicit grammar instruction became proceduralized through repetitive practice offered as incidental L2 exposure. These suggests that explicit grammar instruction in adult L2 classroom may play a significant, or pivotal, role in developing implicit knowledge. Thus, the use of explicit grammar instruction does not need to be avoided but could be promoted to be incorporated into the incidental learning condition.

Despite the meaningful finding for the interface of implicit and explicit knowledge, there are several limitations of this study that must be acknowledged. Firstly, the study employed a single number of measure for implicit knowledge, thus, no data triangulation

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is available to draw a solid conclusion. Due to the task difficulty of the OEIT, the results of the study was limited to draw some development trend of implicit knowledge from the EI group but was not observed a clear learning effect from their performances. Therefore, in the future, it would be worth utilizing a multiple number of learning measures that exclusively favor implicit knowledge, such as the word monitoring task, the free oral narrative task, and the timed grammaticality judgment task. By doing so, the likelihood of implicit knowledge devlopment can be examined with enhanced validity. Additionally, some studies have found that explicit grammar instruction may affect L2 learning differentially when the learning involves different types of L2 forms, such as morphology versus syntax (De Graaff, 1997), and simple versus complex targets (Fernández, 2008), Therefore, it would be of interest to replicate the study with different types of target in order to ensure the conclusion of the study may be applied more extensively.

REFERENCES

Anderson, J. R. (1993). *Rules of the mind.* Mahwah, NJ: Erlbaum.

Anderson, J. R., Fincham, J. M., & Douglass, S. (1997). The role of examples and rules in the acquisition of a cognitive skill. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 23,* 932–945.

Bialystok, E. (1978). A theoretical model of second language learning. *Language Learning, 28*, 81-103.

Bialystok, E. (1981). The role of conscious strategies in second language proficiency. *Modern Language Journal, 65*, 24-35.

De Graaff, R. (1997). The eXperanto experiment: Effects of explicit instruction on second language acquisition. *Studies in Second Language Acquisition, 19,* 249–276.

DeKeyser, R. M. (1995). Learning second language grammar rules: An experiment with a miniature linguistic system. *Studies in Second Language Acquisition, 17* (3), 397-410.

DeKeyser, R. M. (1998). Beyond focus on form: Cognitive perspectives on learning and practicing second language grammar. In C. Doughty & J. Williams (Eds.), *Focus on form in classroom second language acquisition* (pp. 42–63). New York: Cambridge University Press.

DeKeyser, R. M. (Ed.). (2007). Practice in a second language: Perspectives from applied linguistics and cognitive psychology. Cambridge: Cambridge University Press.

교보문고 KYOBO Book Centre

Ellis, N. C. (1993). Rules and instances in foreign language learning: Interactions of explicit and implicit knowledge. *European Journal of Cognitive Psychology, 5*(3), 289-318.

Ellis, R. (1993). Second language acquisition and the structural syllabus. *TESOL Quarterly, 27*, 91-113.

Ellis, R. (1994). A theory of instructed second language acquisition. In N. Ellis (Ed.), *Implicit and explicit learning of languages* (pp. 79-114). San Diego, CA: Academic Press.

Ellis, R. (2003). *Task-based language learning and teaching*. Oxford: Blackwell.

Ellis, R. (2005). Measuring implicit and explicit knowledge of a second language: A psychometric study. *Studies in Second Language Acquisition, 27*(2), 141-172.

Ellis, R. (2006). Current issues in the teaching of grammar: An SLA perspective. *TESOL Quarterly, 40*, 83-107.

Fernández, C. (2008). Reexamining the role of explicit information in processing instruction. *Studies in Second Language Acquisition, 30*, 277-305.

Fotos, S. (1993). Consciousness-raising and noticing through focus on form: Grammar task performance versus formal instruction. *Applied Linguistics, 14*, 385–407.

Fotos, S. & Ellis, R. (1991). Communicating about grammar: A task-based approach. *TESOL Quarterly, 25*, 605–628.

Haegeman, L. (1994). *Introduction to government and binding theory (2nd edition).* Oxford: Basil Blackwell.

Kim, B-J. (2007). The effects of different types of form-focused instruction on Korean university students' writing accuracy. *English Language & Literature Teaching, 13*(2), 63-90.

Kim, Bu-Ja. (2010). Form-focused instruction in incidental learning of English verb patterns. *English Language & Literature Teaching, 16*(3), 59-80.

Krashen, S. D. (1982). *Principles and practice in second language acquisition.* London: Pergamon.

Krashen, S. D. (1994). The input hypothesis and its rivals. In N. C. Ellis, (Ed.), *Implicit and Explicit Learning of Languages* (pp. 45-77). London: Academic Press.

Laufer, B., & Girsai, N. (2008). Form-focused instruction in second language vocabulary learning: A case for contrastive analysis and translation. *Applied Linguistics, 29*(4), 694–716.

McLaughlin, B., Rossman, T., & McLeod, B. (1983). Second language learning: An information-processing perspective. *Language Learning, 33*, 135-158.

Muranoi, H. (2000). Focus on form through interaction enhancement: Integrating formal instruction into a communicative task in EFL classrooms. *Language Learning, 50*, 617-673.

교보문고 KYOBO Book Centre

Nassaji, H. & Fotos, S. (2011). *Teaching grammar in second language classrooms: Integrating form-focused instruction in communicative context*. London: Routledge.

Paradis, M. (1994). Neurolinguistic aspects of implicit and explicit memory: Implications for bilingualism. In N. Ellis (Ed.), *Implicit and explicit learning of second languages* (pp. 393–419). London: Academic Press.

Paradis, M. (2004). *The neurolinguistic theory of bilingualism*. Amsterdam: Benjamins.

Pienemann, M. (1989). Is language teachable? Psycholinguistic experiments and hypotheses. *Applied Linguistics, 10*, 52-79.

Radwan, A. A. (2005). The effectiveness of explicit attention to form in language learning. *System, 33*, 69-87.

Ryle, E. (1949). *The concept of mind*. London: Hutchinson House.

Sharwood Smith, M. (1981). Consciousness-raising and the second language learner. *Applied Linguistics*, *2*, 159–169.

Spada, N. & Lightbown, P. M. (1993). Instruction and the development of questions in L2 classrooms. *Studies in Second Language Acquisition, 15*, 205-224.

Temple, L. (1995). Instructed learners' fluency and implicit/explicit language processes. In A. Housen & M. Pierrard (Eds.), *Investigations in instructed second language acquisition* (pp. 31-49). New York: Mouton de Gruyter.

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