Relationships of Form-focused Instruction, Target Complexity, and Implicit and Explicit Knowledge

Katie J. Kim
(University of New Hampshire)


This study investigates differential effects of form-focused instruction (FFI) to a simple versus complex L2 targets when the FFI is offered within a context of primarily meaning-focused instruction (MFI). Forty-seven Korean-speaking adult learners of English participated in the study and were randomly assigned to one of the two experimental groups or one control group. The experimental participants were instructed in one simple and one complex targets through MFI plus FFI or MFI only. No instruction was provided for the controls. Learning was measured by a grammaticality judgment task, and knowledge types were examined by subjective measures of awareness. The results indicate that the combination of FFI and MFI results in more robust learning effects than the exclusive use of MFI particularly for both simple and complex targets. As for the types of knowledge, the analyses found that FFI positively influences development of implicit and explicit knowledge.

**Key words**: form-focused instruction, meaning-focused instruction, implicit knowledge, explicit knowledge

**1. INTRODUCTION**

The benefits of form-focused instruction (FFI) within a primarily meaning-focused second language (L2) learning context have been demonstrated by an ample amount of second language acquisition (SLA) research. While acknowledging that purely meaning-focused instruction (MFI) can facilitate the learning of functional use and promote communicative skills in an L2, many empirical studies (e.g., Alanen, 1995; Bygate, 1996; de Graaff, 1997; DeKeyser, 1995; N. Ellis, 1993; Harley, 1998; Harley & Swain, 1984; Lightbown & Spada, 1990; Nagata, 1993; Robinson, 1996, 1997; Rosa & Leow, 2004; Skehan, 1996; Spada & Lightbown, 1993; Williams & Evans, 1998) suggest that MFI is not sufficient for adult L2 learners’ achievement of accurate use of the L2. More recent SLA studies further claimed that FFI facilitates accurate L2 grammatical knowledge
because it increases learners' noticing of L2 forms (Radwan, 2005) and draws their attention to less salient targets (De la Fuente, 2006; Fernández, 2008; Housen, Pierrard, & Daele, 2005; Muranoi, 2000), which in turn contributes to an increase of intake and correct use of L2 forms (Spada, Lightbown, & White, 2005, also see Norris & Ortega, 2000; Spada & Tomita, 2010 for meta-analytic review).

Despite many investigations on the positive effects of FFI additionally implemented within the context of MFI, not many studies looked into differential benefits of FFI when other surrounding variables of L2 learning, e.g., complexity of target forms and development of implicit and explicit knowledge, are taken into consideration. In this respect, the current study aimed to examine the relative effectiveness of FFI on adult learners' acquisition of simple and complex L2 targets, particularly, when the FFI is provided in a primarily MFI context. In addition, the study investigated learners' awareness of the acquired knowledge in order to examine whether the use of FFI can result in development of implicit and/or explicit knowledge.

2. LITERATURE REVIEW

2.1. FFI and Target Complexity

Complexity of target forms is one of the moderating factors that influence the effectiveness of FFI. Some target forms may be more amenable to instruction, or easier for students to learn, than others, but it is unclear what the relevant constraints are. Some theoretical frameworks discuss how forms with different levels of complexity can be best taught. Some researchers (e.g., Krashen, 1982, 1994) argue that only the learning of easy rules can benefit from explicit instruction; hard rules are considered to be best learned implicitly through meaning-focused practice. The argument is that hard rules are too complex to be successfully taught, and therefore, are difficult to learn through traditional rule explanation and practice pedagogy. Others claim the opposite. Hulstijn and De Graaff (1994) proposed that learning of simple morphosyntactic rules is best accomplished under implicit conditions, and complex rules are best learned under explicit instruction. When features are complex and contextualized, the underlying rules are difficult to notice, so explicit instruction is necessary to assist learners in discovering complex rules (Hulstijn & De Graaff, 1994). However, there are very few empirical studies (e.g., De Graaff, 1997; Fernández, 2008; Robinson, 1996) that directly compare the effects of instructional methods on different target forms of varying complexity.

A few studies have shown effects of FFI on learning of simple versus complex L2 rules. For example, Robinson (1996) compared the learning of easy syntactic rules to the learning
of difficult syntactic rules using a semi-artificial language under four different exposure conditions: implicit, incidental, rule-search, and instructed conditions. Expert L2 teachers were asked to identify a list of grammatical structures that they thought to be the most difficult for their students. In training, implicit participants were asked to memorize sentences focusing on word order in the stimuli. Incidental participants were required to read sentences and understand the meaning of the stimuli. The rule-search group was instructed to identify the rules illustrated by the stimulus sentences. The instructed participants received formal rule explanation before viewing them. Learning was measured by a grammaticality judgment task. In terms of overall accuracy rates, the instructed condition outperformed all other groups on both simple rule and complex rule. As a result, Robinson (1996) found no clear advantages for the implicit condition with complex rules.

De Graaff (1997) investigated the interaction between explicit FFI and rule complexity (simple vs. complex), and rule type (morphology vs. syntax) in the acquisition of an artificial language. All learners were asked to learn four types of target structures (simple morphological, complex morphological, simple syntactic, and complex syntactic) under either explicit or implicit learning conditions. The explicit learners received explicit rule explanation after a practice activity, whereas the implicit learners did not receive the rule explanation after the activities. The results showed that the participants who received explicit rule explanation performed significantly better on posttests than participants in the implicit condition. Regarding the target structure variables, the explicit learners scored significantly higher on the simple morphological and complex syntactic structures than the implicit learners. No significant effect from explicit learning was found regarding the complex morphological and simple syntactic rules. These previous studies have shown that FFI is effective when learning complex forms as well as simple forms. This seems to suggest that FFI is beneficial regardless of target complexity. However, the results are not completely generalizable because the previous studies used different criteria to define simple versus complex rules.

Given the lack of consensus on the conceptualization and operational definition of complexity in the L2 literature, it is not easy to decide how to deal with target complexity in SLA. This vagueness in the way rule complexity is understood increases the theoretical controversies over the differential benefits of FFI.

### 2.2. FFI and Development of Implicit Knowledge

As the previous studies did not employ measures of awareness for L2 knowledge, it is hard to assume that learning outcomes of FFI illustrates development of linguistic competence, which primarily consists of implicit knowledge (e.g., Chomsky, 1976; Ellis, 2006; Rumelhart & McClelland, 1986). Many theories in SLA distinguish implicit
knowledge and explicit knowledge. Implicit knowledge of language is often characterized as intuitive and tacit (Bialystok, 1981). 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 (1982), 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 MFI such that the learner’s attention is focused on meaning rather than forms. The processing of implicit knowledge is thought to be proceduralized (Anderson, 1983, 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, and it composes the basis of unplanned and fluent communicative language (Krashen, 1982, 1994).

In the context of SLA, implicit knowledge is assumed to develop incidentally. Incidental learning is defined as “learning without the intent to learn or the learning of one thing (e.g., grammar) when the learner’s primary objective is to do something else (e.g., communicate)” (Schmidt, 1994, p. 16). As Paradis (1994, p. 394) puts it, knowledge can be “acquired incidentally by not focusing attention on what is being internalized as in acquiring form while focusing on the meaning.” This illustrates that incidental learning is defined by the absence of intention to learn. As a result, like implicit learning, incidental learning in L2 classrooms can develop linguistic knowledge without deliberate effort. Incidental learning does not involve conscious intention to learn, so the knowledge acquired under this condition can be implicit.

Because MFI is designed to direct learners’ attention to meaning, it supports an environment for incidental learning that results in implicit knowledge eventually. Indeed, the studies that examined learning under MFI found that learners would gain L2 knowledge incidentally while focusing on L2 meaning (e.g., Laufer, 1997; Leung, 2007; Rebuschat & Williams, 2006; Williams & Kuribara, 2008) while their attention was directed to other targets. The learning effect in these studies was represented by incidental learners’ higher accuracy in L2 comprehension compared to those learners who did not receive language training. In addition, incidental learners’ inability to verbalize specific rules applying to the testing items indicated that the L2 knowledge they possess is unconscious. Thus, these findings imply that learning can take place incidentally under MFI, and it results in implicit knowledge.

In contrast, explicit knowledge is broadly defined as knowledge about language. It is a more conscious type of knowledge that is learned with intention and deliberate effort (Ellis,
Therefore, in the context of SLA, explicit knowledge is gained through formal L2 study (Krashen, 1982) with use of an instructional method directing learners' attention to forms, namely, FFI. 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, 1983, 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, 1982).

FFI classrooms where students are explicitly taught L2 forms are likely to serve as a plausible condition in which learners can acquire explicit L2 knowledge. Because the primary objective of FFI is to build explicit knowledge of the language structure, learners become aware of linguistic information targeted during the instruction. For this reason, use of FFI methods necessarily involves a conscious process of L2 learning that promotes explicit learning of the L2. However, this does not imply that acquisition of implicit knowledge is completely impossible because learners may learn a form incidentally that is not the focus of the class. For instance, learners can unconsciously come to acquire L2 word order while focusing on a morphosyntactic rule, such as the rule about the English third person singular -s. In this case, the acquisition of the word order takes place incidentally without learners' intention to learn. Also, it is possible that implicit knowledge on the target language can further develop over time by the aid of the explicit knowledge learned under FFI. This case also assumes that implicit knowledge could develop from an instructional method focusing on L2 forms.

Although explicit L2 knowledge is found to contribute to accurate grammatical knowledge of the L2, studies in SLA have not reached consensus on the relationship and possible interaction of implicit knowledge and explicit knowledge. For example, some theorists argue that explicit knowledge plays a peripheral role in the development of implicit knowledge (e.g., Krashen, 1982; Paradis, 1994, 2004), while others claim that explicit knowledge facilitates it (e.g., Ellis, 2008; R. Ellis, 1993, 1994). A more radical argument states that explicit knowledge can be converted into implicit knowledge (Anderson, 1982). At this point, identifying their relationship is a significant task because it offers pedagogical implications of whether the implementation of FFI should be maintained or replaced by other instructional method. Therefore, at the current stage of research, identifying types of knowledge learners develop in FFI and/or MFI would be pedagogically meaningful because it may suggest a role of explicit knowledge in the development of implicit knowledge and adequacy of FFI methods in L2 classrooms.
2.3. The Present Study

Given the fact that implementation of FFI is facilitative for adult learners’ L2 learning (e.g., facilitating learning processes, increasing long-term accuracy, and raising the ultimate level of attainment), the current study primarily aimed to fill gaps by addressing two important limitations of existing studies: (1) inconsistent operationalization of target complexity; and (2) absence of measures of awareness to identify effects of FFI in relation to implicit knowledge. The present study posed the following research questions:

1) Does the FFI added to MFI promote acquisition of a simple and/or a complex L2 targets?
2) Does the FFI added to MFI support development of implicit as well as explicit knowledge?

3. METHOD

3.1. Participants

Forty-seven Korean-speaking learners of English as a foreign language (EFL) participated in the present study (male = 12, female = 35). All of the participants were majoring in English language and literature at a university in Korea. The self-rated English proficiency by using the five-point Likert scale indicated that the participants have an intermediate level of English proficiency (Table 1). The age of the participants ranged from 20 to 26 ($M = 21.73$, $SD = 1.58$). They began learning/studying English at age of 10.02 ($SD = 2.99$) and studied English for 11.46 years ($SD = 2.03$) on average.

<table>
<thead>
<tr>
<th>TABLE 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-rated English Proficiency by Group</td>
</tr>
<tr>
<td>Listening</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>$M$</td>
</tr>
<tr>
<td>FM ($n = 16$)</td>
</tr>
<tr>
<td>M ($n = 16$)</td>
</tr>
<tr>
<td>Control ($n = 15$)</td>
</tr>
<tr>
<td>Total ($N = 47$)</td>
</tr>
</tbody>
</table>

0 = beginner; 1 = low intermediate; 2 = intermediate; 3 = high intermediate; 4 = advanced; 5 = near native
3.2. Linguistic Targets

This study employed two syntactic rules that involve different complexity, and the rule complexity was determined by considering the number of criteria to be applied in order to arrive at the correct form (De Graaff & Hulstijn, 1994). In this study, *wh*-movement from (1) the object position and (2) the subject position were used as a simple rule and a complex rule, respectively (Table 1). For the *wh*-movement from the object position, *wh*-words are extracted from the object position in the embedded clause whereas for *wh*-movement from the subject position, *wh*-words are extracted from the subject position in the embedded clause. For the object extraction, only two criteria (i.e., (1a) *do*-support and (1b) *wh*-movement) are applied while for the subject extraction three criteria are applied (i.e., (2a) *do*-support, (2b) *wh*-movement, and (2c) deletion of the complementizer *that*). Whereas the deletion of the complementizer *that* is optional in the *wh*-movement from the object position (1c), it is obligatory in the one from the subject position (2c). As more transformational rules are applied to the long-distance subject extraction, it can be argued that the long-distance subject extraction is cognitively more complex than the long-distance object extraction.

**TABLE 2**

<table>
<thead>
<tr>
<th>Simple and Complex Rules: Object Extraction and Subject Extraction</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Example Sentences</strong></td>
</tr>
<tr>
<td>Original Sentence</td>
</tr>
<tr>
<td>Simple:</td>
</tr>
<tr>
<td>1a. Does Mary believe [{CP that [IP John teaches math]}]?</td>
</tr>
<tr>
<td>1b. <em>What</em>, does Mary believe [{CP that [IP John teaches <em>ti</em>]}]?</td>
</tr>
<tr>
<td>Extraction</td>
</tr>
<tr>
<td>1c. <em>What</em>, does Mary believe [{CP <em>ti</em> [IP John teaches <em>ti</em>]}]?</td>
</tr>
<tr>
<td>Complex:</td>
</tr>
<tr>
<td>2a. Does Mary believe [{CP <em>ti</em> that [IP John teaches <em>ti</em>]}]?</td>
</tr>
<tr>
<td>2b. <em>Who</em>, does Mary believe [{CP <em>ti</em> that [IP <em>ti</em> teaches math]}]?</td>
</tr>
<tr>
<td>Extraction</td>
</tr>
<tr>
<td>2c. <em>Who</em>, does Mary believe [{CP <em>ti</em> [IP <em>ti</em> teaches math]}]?</td>
</tr>
</tbody>
</table>

3.3. Design

The study employed a pretest, three treatment sessions, an immediate posttest (posttest 1), a one-week delayed posttest (posttest 2), and a one-month delayed posttest (posttest 3), as well as the questionnaires for bio-data information and language background. The participants were randomly assigned to one of the two experimental groups, who received a combination of FFI and MFI (FM group, *n* = 16) and MFI only (M group, *n* = 16) as instructional treatment, or the control group (*n* = 15), who did not receive any type of treatment. Data were collected over five experimental sessions (Figure 1). On the first day
(Session 1 in Week 1), FM and M groups filled out the biodata and language background questionnaire and took the pretest session. Then, they proceeded to the treatment 1. The FM group received FFI in addition to MFI while the M group engaged in MFI only. On the second (Session 2 in Week 1) and the third days (Session 3 in Week 1), both groups received MFI. The last treatment on the third day was immediately followed by the posttest 1. The delayed posttests were administered two times; the posttest 2 was administered after a week (Session 4 in Week 2) and the posttest 3 after a month (Session 5 in Week 5). The control group did not receive any treatment but only took in the pretest, posttest 1, posttest 2 and the posttest 3.

3.4. Materials

The treatment composed of two major components, FFI and MFI. The test sessions utilized three tasks: the grammaticality judgment task (GJT), the subjective measures of awareness (i.e., confidence ratings and source attributions), and the metalinguistic knowledge test (MKT). All treatments and tests were computerized and individualized.

FIGURE 1

Experimental Procedures

- Session 1 (Day 1 in Week 1)
  - Background questionnaires
  - Pretest

- Session 2 (Day 2 in Week 1)
  - Treatment 2

- Session 3 (Day 3 in Week 1)
  - Treatment 3
  - Posttest 1

- Session 4 (Day 4 in Week 2)
  - Posttest 2

- Session 5 (Day 5 in Week 4)
  - Posttest 3

3.4.1. Form-focused instruction

Among various instructional techniques of FFI, the current study utilized one of the
most explicit types of FFI by means of explicit grammar instruction. In this condition, the participants were explicitly instructed with the two English syntactic rules. The rules were presented with three 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 not able to complete this comprehension task successfully, the rules were taught again individually until they could complete the comprehension task. The instruction was delivered in learners’ L1 (Korean). The FFI session lasted five minutes approximately.

3.4.2. Meaning-focused instruction

In order to control for other confounding factors, such as instructors and amount of input, the current study utilized an individual, computerized non-communicative picture-selection task. The picture-selection task was designed to offer an incidental L2 learning condition by directing participants’ primary attention to L2 meaning. In this task, the participants were asked to listen to and repeat a question sentence that the target rules are operated and select a picture that could be the best answer for the question. The task consisted of 120 grammatical sentences, and they were evenly divided among the target forms; 60 sentences employed the simple target structure and the rest 60 employed the complex target structure. The sentences were read out by a female native speaker of American English, and digitally recorded on Praat. Each participant took approximately 40 minutes daily to complete this task.

3.4.3. Grammaticality judgment task

Twenty-four sentences (12 simple and 12 complex structures), which were equally distributed across the sentence grammaticality (six grammatical and six ungrammatical sentences), were employed in the GJT. In the GJT, 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. The test items were read out by a female native speaker of American English, and digitally recorded on Praat.

3.4.4. Subjective measures of awareness

In order to determine to what extent participants’ judgment and structural knowledge was conscious (Dienes, 2008; Dienes & Scott, 2005) while judging grammaticality of
sentences, the current study incorporated confidence ratings and source attributions to the GJT. The confidence ratings were utilized to measure consciousness of the judgment knowledge by asking how confident they were in their judgment (not confident, somewhat confident, quite confident, or extremely confident). In confidence ratings, the learners were asked to indicate the degree of confidence of their judgment (0 for not at all confident, 1 for somewhat confident, 2 for quite confident, and 3 for extremely confident). The source attributions were employed to measure consciousness of the structural knowledge by asking learners to report on what the basis of their judgment was (guess, intuition, memory and rule knowledge) (Rebuschat, 2008). In source attributions, the participants were asked to indicate the basis of their judgment (g for guessing, i for intuition, m for memory, and r for rule knowledge). The guess and intuition were cases of unconscious structural knowledge and rules knowledge and memory were cases of conscious structural knowledge.

3.4.5. Metalinguistic knowledge test

Eight sentences (four simple and four complex structures) were created, and they were equally distributed across the sentence grammaticality (two grammatical and two ungrammatical sentences). In this test, the participants were asked to decide whether the provided sentences are grammatical or ungrammatical, and underline the part of the sentence that makes it ungrammatical. The participants were then asked to correct the errors to make a grammatical sentence and provide a reason for their correction.

3.5. Scoring

3.5.1. Grammaticality judgment task

The participants' endorsement of grammatical sentences and rejection of ungrammatical sentences were considered as correct answers. Their 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 point.

3.5.2. Subjective measures of awareness

The analyses on confidence ratings and source attributions were run for the experimental groups' posttest data only because these data offers a behavioral aspect of learning outcomes from those who show an indication of L2 learning. In these tasks, proportion and accuracy rates were analyzed across confidence levels and different types of sources.
3.5.3. Metalinguistic knowledge test

The MKT was designed to observe metalinguistic knowledge from their rule-based analysis on target sentences. Thus, only learners’ answers on ungrammatical sentences were analyzed. The participants received one point when the answer satisfied all of the four criteria: (1) accurately identifying an ungrammatical sentence as ungrammatical, (2) pointing out an erroneous part of the sentence, (3) providing an appropriate reason why the part is erroneous, and (4) correcting the part to make the sentence grammatical. When the answers did not satisfy any one of the four criteria, zero point was credited.

4. RESULTS

In the MKT pretest, four (FM = 1; M = 3) of the 47 participants showed metalinguistic knowledge on either or both of the target rules so the data from these participants were removed from the pool. Only the data from the remaining 43 participants (FM = 15; M = 13; Control = 15) were used in the following statistical analyses.

4.1. Performance on the Simple Target

4.1.1. Grammaticality judgment

The results of the descriptive statistics are presented in Table 3. First of all, a one-way ANOVA was run for the learners’ pretest scores in order to detect any group difference prior to the treatment. The one-way ANOVA for the pretest scores on the simple target found no significant differences among groups, $F(2, 40) = 0.96, p > .05$. Thus, any differences found on the posttests can be attributed to the instructional treatment.

<table>
<thead>
<tr>
<th>Simple Target: Mean accuracy rate (%) and standard deviation (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>FM ($n = 15$)</td>
</tr>
<tr>
<td>M ($n = 13$)</td>
</tr>
<tr>
<td>Cont ($n = 15$)</td>
</tr>
</tbody>
</table>

Next, a four (Time: pretest, posttest 1, posttest 2, and posttest 3) x three (Group: FM, M, and control) repeated-measures ANOVA was run for the GJT accuracy rates on the simple
The repeated-measures ANOVA revealed significant main effects for Time, $F(3, 120) = 7.318, p < .001, \eta_p^2 = .155$, and for Group, $F(2, 40) = 11.289, p < .001, \eta_p^2 = .361$, but no significant Time x Group interaction effects, $F(6, 120) = 1.464, p > .05, \eta_p^2 = .078$. Further pairwise contrasts computed that the FM group showed significant improvement on the posttest 1 ($p < .05$), and it was maintained over one week ($p < .05$) and one month ($p < .05$). No significant pretest to posttest improvement was observed in the M group and the control group. The results indicate that inclusion of FFI would positively impact initial and long-term development of linguistic knowledge of a simple L2 target. The locus of the main effect for Group on the simple target was investigated by the Bonferroni pairwise comparisons. The pairwise comparisons revealed that only the FM group outperformed the control group on the posttest 1, posttest 2, and posttest 3 ($p < .05$, respectively). On the other hand, the M group’s scores gained on the posttests were not significantly different from what control group gained ($p > .05$). These results illustrate that a combination of FFI and MFI would result in more substantial learning effects than an exclusive use of MFI in the short-term and in the long-term.

4.1.2. Subjective measures of awareness

In terms of the confidence ratings (Table 4), the descriptive statistics for proportion showed that the FM group and M group chose the options *quite confident* and *extremely confident* more frequently than the options *somewhat frequently* and *guessing* across the three posttests. In terms of accuracy rates, a non-parametric binominal analyses revealed that both FM group and M group were likely to perform significantly above chance when selecting *quite* and/or *extremely confident* ($p < .05$) in the posttest 1, posttest 2, and posttest 3. However, the FM and the M participants were not likely to perform significantly above chance when they reported to be *guessing* or *somewhat confident* ($p > .05$). Although there was one case that the M group showed significantly above chance performance when reported *somewhat confident* (posttest 2) ($p < .05$), this tendency disappeared after a month ($p > .05$). In sum, the analyses indicate that both the FM and the M groups acquired conscious judgment knowledge of the simple rule after the instructional treatment, and this conscious structural knowledge was sustained over a month. This suggests that learners can acquire conscious judgment knowledge when they get enough exposure to meaningful L2 input.

As for the source attributions (Table 5), the descriptive statistics for proportion indicated that the FM group tended to believe that their judgment was based on *rule knowledge* most frequently, and followed by *intuition* or *memory* over time. They chose the *guess* option least frequently. On the other hand, the M group chose the *memory* and *intuition* options most frequently, and followed by *rule knowledge* or *guess*. Regarding the accuracy rates,
the FM group performed significantly above chance when basing their judgment on not only rule knowledge and memory but also intuition \((p < .05)\). The FM learners were not likely to perform significantly above chance when basing on guess \((p > .05)\) except for the posttest 2. In case of the M group, they performed significantly above chance when they reported that they relied on intuition and/or memory \((p < .05)\). After a month, the M group also performed significantly above chance when basing on rule knowledge \((p < .05)\). Thus, the analyses found indications of conscious structural knowledge (i.e., memory, rule knowledge) and unconscious structural knowledge (i.e., intuition) in both the FM group and the M group.

**TABLE 4**

<table>
<thead>
<tr>
<th>Simple Target: Accuracy (Acc) and Proportions (Prop) (%) across Confidence Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Post-test</strong></td>
</tr>
<tr>
<td>FM ((n = 15))</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>**M ((n = 13))</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
</tbody>
</table>

* \(p < .05\)

**TABLE 5**

<table>
<thead>
<tr>
<th>Simple Target: Accuracy (Acc) and Proportions (Prop) (%) across Source Attributions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Post-test</strong></td>
</tr>
<tr>
<td>FM ((n = 15))</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>**M ((n = 13))</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
</tbody>
</table>

* \(p < .05\)

4.1.3. Metalinguistic knowledge test

There were two simple ungrammatical items in each MKT, so the available maximum gain scores were two points. When learners gained two points on the test, it was considered an indication of reliable metalinguistic knowledge of the simple rule. The number of participants who showed reliable metalinguistic rule of the simple target was counted for
the MKT. The results of the pretest showed no participants started with any prior knowledge of the target. The posttest results illustrated that 11 participants in the FM group gained accurate metalinguistic knowledge immediately and over a month. In terms of the M group, no learners showed reliable metalinguistic knowledge on the immediate posttest but six learners and five learners showed the knowledge after a week and a month, respectively. The control participants showed no evidence of reliable metalinguistic knowledge across the MKT posttests.

4.2. Performance on the Complex Target

4.2.1. Grammaticality judgment

The results of the learner performances on the complex target rule are illustrated in Table 6. The same statistical method was utilized for the learner performances on the complex target rule. The one-way ANOVA did not find group difference for the pretest scores on the complex target, \( F(2, 40) = 1.123, p > .05 \). These results confirm that any differences found on the posttests can be attributed to the instructional treatment.

| Complex Target: Mean accuracy rate (%) and standard deviation (SD) |
|------------------|------------------|------------------|------------------|------------------|
|                  | Pretest          | Posttest 1       | Posttest 2       | Posttest 3       |
|                  | M (SD)           | M (SD)           | M (SD)           | M (SD)           |
| FM (n = 15)      | 46.53 (14.70)    | 65.07 (17.66)    | 59.53 (20.13)    | 64.47 (18.44)    |
| M (n = 13)       | 49.31 (12.11)    | 57.08 (13.31)    | 49.62 (13.32)    | 51.67 (13.98)    |
| Cont (n = 15)    | 41.13 (16.79)    | 52.33 (16.36)    | 51.20 (14.03)    | 42.87 (19.41)    |

Next, a four (Time: pretest, posttest 1, posttest 2, and posttest 3) x three (Group: FM, M, control) repeated-measures ANOVA was carried out for the complex target with Time as a within-subject variable and Group as a between-subject variable. The repeated-measures ANOVA found a significant main effect for Time, \( F(3, 120) = 5.234, p < .01, \eta^2_p = .116 \), and for Group, \( F(2, 40) = 5.694, p < .01, \eta^2_p = .222 \), but no Time x Group significant interaction effects, \( F(6, 120) = 1.315, p > .05, \eta^2_p = .062 \). Further pairwise contrasts indicated that the FM group showed statistically significant improvement not only immediately after the treatment (\( p < .05 \)) but also over a week (\( p < .05 \)) and a month (\( p < .05 \)). The improvement of the M group and the control group were not statistically significant immediately and over time. The locus of the main effect of Group for the complex rule was also investigated by the Bonferroni pairwise comparisons. The
Bonferroni pairwise comparisons did not detect a noticeable result among three groups until one week. On the posttest 3, however, it was found that the FM group significantly outperformed the control group \((p < .05)\). The results of the M group remained indistinguishable from those of the control group \((p > .05)\) immediately and over time. Therefore, the learners’ performance on the complex target illustrates that a use of FFI would show greater benefits when the target form is more complex.

4.2.2. Subjective measures of awareness

As for the confidence ratings (Table 7), the descriptive statistics for proportion found the FM group selected \textit{extremely confident} most frequently, and followed by \textit{quite confident}, \textit{somewhat confident} and guessing. On the other hand, the M group was likely to choose \textit{quite confident} most frequently, and followed by \textit{somewhat confident}, \textit{extremely confident}, and \textit{guessing}. In terms of accuracy rates, a non-parametric binominal analyses revealed that the FM group performed significantly above chance when selecting \textit{quite confident} in the posttest 1\((p < .05)\), \textit{extremely confident} in the posttest 2 \((p < .05)\), and \textit{quite confident} and \textit{extremely confident} in the posttest 3 \((p < .05)\). When they reported they were guessing or \textit{somewhat confident}, their performance was indistinguishable from chance \((p > .05)\). The M group, on the other hand, did not perform significantly above chance when they reported to be \textit{extremely confident}, \textit{quite confident}, or \textit{somewhat confident} \((p > .05)\). The M group showed significantly above chance performance when reported \textit{guessing} (posttest 1) \((p < .05)\), but this tendency disappeared after a week \((p > .05)\). In sum, the analyses indicate that only the FM group acquired conscious judgment knowledge after the instructional treatment, and it was maintained over time for a month. However, no indication of conscious judgment knowledge was observed in the M group. This suggests that MFI condition is not sufficient for adult learners to acquire conscious judgment knowledge when the target is more complex, and FFI treatment compensates the insufficiency of MFI.

<table>
<thead>
<tr>
<th>TABLE 7</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Complex Target: Accuracy (Acc) and Proportions (Prop) (%) across Confidence Ratings</strong></td>
</tr>
<tr>
<td>Post-test</td>
</tr>
<tr>
<td>Acc</td>
</tr>
<tr>
<td>FM ((n = 15))</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>M ((n = 13))</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>* (p &lt; .05)</td>
</tr>
</tbody>
</table>

[Image 0x0 to 448x684]
As for the source attributions (Table 8), the descriptive statistics for proportion indicated that the FM group tended to believe that their judgment decisions were based on rule knowledge most frequently, and followed by intuition and memory over time. The FM group chose guess least frequently. On the other hand, the M group appeared to choose memory and intuition more frequently than rule knowledge and guess. Regarding the accuracy rates, the FM group appeared to perform significantly above chance when basing their judgment on rule knowledge and intuition ($p < .05$). The FM participants had never performed significantly above chance when basing on memory and guess ($p > .05$). In case of the M group, they had not performed significantly above chance on any sources across the three posttests ($p > .05$). Thus, the analyses found that only the FM group showed an indication of conscious (i.e., rule knowledge) and unconscious (i.e., intuition) structural knowledge consistently over time. No reliable structural knowledge was shown by the M group. The results suggest that MFI is not sufficient for development of conscious and unconscious structural knowledge for adult L2 learners especially when the target is complex, so the aid of FFI is necessary.

**TABLE 8**

| Complex Target: Accuracy (Acc) and Proportions (Prop) (%) across Source Attributions |
|---------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                                 | Guessing        | Somewhat        | Quite           | Extremely       |
|                                 | Acc  | Prop | Acc  | Prop | Acc  | Prop | Acc  | Prop |
| Post-test                      | FM   | M    | FM   | M    | FM   | M    | FM   | M    |
| 1                              | 50.00| 10.00| 66.67*| 28.33| 61.22| 27.22| 70.97*| 34.44|
| 2                              | 47.06| 9.55 | 65.08*| 35.39| 54.00| 28.09| 62.50| 26.97|
| 3                              | 53.33| 8.52 | 63.77*| 39.20| 60.00| 17.05| 67.74*| 35.23|
| FM ($n=15$)                    | 1                | 2                | 3                | 1                | 2                | 3                |
| 1                              | 73.53| 19.21| 50.00| 35.03| 52.17| 38.98| 75.00| 6.78 |
| 2                              | 45.83| 13.79| 25.70| 42.53| 45.24| 24.14| 52.94| 19.54|
| 3                              | 53.57| 15.64| 50.68| 40.78| 57.14| 27.37| 44.83| 16.20|
| M ($n=13$)                     | 1                | 2                | 3                |

* $p < .05$

4.2.3. Metalinguistic knowledge test

There were two complex ungrammatical items in each MKT, so the available maximum gain scores were two points. When learners gained two points on the test, it was considered an indication of reliable metalinguistic knowledge of the complex rule. The analysis of the MKT pretest illustrated that no participants had prior metalinguistic knowledge of the complex target. Immediately after the treatment, the results of the FM group showed that 11 of them gained accurate metalinguistic knowledge of the complex target, and nine of them successfully maintained the knowledge over a month. However, the M participants showed no gain in reliable metalinguistic knowledge across all posttests. No indication of learning was observed among the participants in the control group.
5. DISCUSSION

As for the first research question (i.e., Does the FFI added to MFI promote acquisition of a simple and/or a complex L2 targets?), the current study found that the combination of MFI and FFI is generally beneficial for acquisition of both simple and complex targets. For example, although the M group showed increase in their mean posttest scores on the simple and complex targets, only FM group showed significant pretest to posttest improvement in the short term and/or in the long term. Also, according to the between-group analysis, FM learners’ GJT posttest scores were significantly higher than the control group’s posttest scores. However, the M group’s scores on the posttests were not statistically different from the control group’s posttest scores. These indicate that the exclusive use of MFI does not offer a sufficient condition for significant L2 development.

The significant learning outcomes of the FM group on both simple and complex targets seem to attribute to FFI, which help learners’ attention to L2 forms and let them save considerable time and effort in discovering and processing the intricacies (de Graaff, 1997; Hulstijn & de Graaff, 1994). In this study, the FM learners were instructed the rules before being exposed to the meaningful L2 input. Through the FFI, the FM learners learned the important grammar points and underlying transformation rules, and this metalinguistic grammar knowledge may have led the learners to pay extra attention to forms during MFI. In other words, the existing explicit rule knowledge may have increased saliency of L2 targets and guided the FM learners not to ignore crucial grammar points. In this way, the learners who received FFI before MFI might have been able to make form-meaning connection more effectively during MFI (Fernández, 2008).

It is worth mentioning here that the significant learning effect of the complex L2 rule did not appear immediately but a month later. Unlike the simple target, which the FM learners showed the significant learning outcomes immediately, the learning outcomes for the complex target took a longer time to appear. One would argue that the FM learners’ delayed learning of the complex rule might have taken place through additional exposure through repetitive testing, not directly through the treatments. However, the fact that the same delayed learning effect did not appear in the M learners proposes that the delayed learning effect was mainly caused by FFI, not testing. Although the learning effect of the complex rule appeared after a month, this result does not seem to contradict the current argument of the benefits of FFI. Rather, it suggests that the effects of FFI may appear not immediately but later, particularly, when the target rule is complex so cognitively more demanding.

In sum, as for the effects of FFI in relation to target complexity, the present study found counterevidence to Krashen (1982, 1994), who claimed that hard rules are too complex to be taught successfully so these rules can be best learned implicitly or incidentally.
Nevertheless, the study observed that the learners who were instructed in the combination of FFI and MFI developed significantly across the simple and complex L2 targets as the FFI raises learners' attention to forms. As an anonymous reviewer pointed out, Krashen’s proposal may not be refuted completely as the current study limited its observation to L2 learning of adult learners. However, as long as adult L2 learners are concerned, the present study found that explicit effort to learn L2 would not be detrimental but can support learning.

As for the second research question (i.e., Does the FFI added to MFI support development of implicit as well as explicit knowledge?), the subjective measures of awareness illustrated that FFI can support development of implicit knowledge as well as explicit knowledge of the L2. For example, the FM group appeared to gain implicit knowledge (conscious judgment knowledge based on reliable unconscious structural knowledge, i.e., intuition) and explicit knowledge (reliable conscious structural knowledge, i.e., memory and rule knowledge) of the simple target and the complex target, and both types of knowledge were sustained over time. The FM learners’ successful gain of explicit knowledge of both targets was further supported by their superior performance on the MKT. Taken together, the data suggest that implicit knowledge and explicit knowledge of one target rule can develop in parallel, so presence of explicit knowledge of a target would not hinder development of implicit knowledge of the target. Therefore, the findings of the current study contradict Krashen’s learning-acquisition hypothesis (1982) but support the interface position of implicit and explicit knowledge (Anderson, 1982, 1983; DeKeyser, 1995; Ellis, 1994; Sharwood Smith, 1981).

The possibility of parallel development of implicit knowledge and explicit knowledge has been suggested by research in the field of cognitive psychology that deals with a domain of motor-skill learning (e.g., Willingham, 1998; Willingham & Goedert-Eschmann, 1999). Using a serial response time (SRT) task, William and Goedert-Eschmann found that the explicit learning group showed the same reliable effect of the SRT task as the implicit learning group at the transfer phase. Based on this result, the researchers suggested that implicit and explicit learning of a sequence in a motor task are not mutually exclusive, but can occur in parallel. In other words, when learners acquired explicit knowledge, they could still gain implicit knowledge during the training, as “explicit knowledge can be used to guide motor behavior while implicit learning occurs in parallel, based on the motor behavior being executed” (Willingham & Goedert-Eschmann, 1999, p. 534).

Another interesting finding of the current study was observed in the M learners’ gain of explicit L2 knowledge of the simple rule through MFI. Although the M group was not instructed the L2 rules, some of the M learners’ subjective measures of awareness and the MKT posttests data showed reliable explicit rule knowledge of the simple rule. The same result was not observed when the target rule was complex. Therefore, it would be
appropriate to argue that MFI would not be a purely incidental condition for L2 adult learners to acquire L2 rules implicitly. Rather, the adult learners may learn underlying structures of L2 inductively and intentionally during MFI, particularly, when the targets are simple. This finding suggests a methodological concern that a purely incidental condition designed for implicit learning may not completely support incidental learning and acquisition of implicit knowledge.

In sum, the data for the second research question illustrated that the learners instructed in FFI can gain explicit knowledge of not only the simple rule and but also the complex rule. Moreover, the study observed that the learners are more likely to develop implicit knowledge of a target when they have explicit knowledge of the target. As a result, the current study did not find evidence that presence of explicit knowledge interfere with the development of implicit knowledge. Rather the data of the present study support that implicit knowledge can develop in parallel with explicit knowledge.

6. CONCLUSION

The current study aimed to identify differential benefits of FFI in relation to target complexity when it was offered within a primarily meaning-focused condition in the context of adult SLA. The study observed that the learners who were instructed in the combination of FFI and MFI developed consistently across the simple and complex L2 targets, and the impacts of FFI were greater for the complex target as the FFI raises learners’ attention to forms, which involve communicative redundancy and low saliency. As far as types of knowledge are concerned, the subjective measures of awareness found that FFI does not interfere with but can contribute to development of implicit knowledge as well as explicit knowledge of the simple and the complex targets, and they can be sustained over time.

The current study has important pedagogical implications for the structure of adult second language classes, which mainly consist of MFI methods and FFI methods. The current findings suggest that a combination of FFI and MFI is facilitative of L2 learning, and more effective learning is driven when adult learners learn the rules while engaging in the meaning-focused activities. In this study, a considerably greater synergistic effect of FFI and MFI was shown for complex rule learning and development of both implicit and explicit knowledge. Consequently, it can be concluded that adult L2 curricula can be improved by being structured around explicit rule presentation within exposure to naturalistic L2 instances, which is the most facilitative of adults’ L2 syntax learning.
REFERENCES


Ellis, R. (1993). Second language acquisition and the structural syllabus. TESOL Quarterly,


Relationships of Form-focused Instruction, Target Complexity, and Implicit and Explicit Knowledge

Germany: Mouton de Gruyter.


**APPENDIX A**

**FFI example (delivered in Korean, English translation provided in *italics*)**

목적이어를 찾는 의문문 만들기

*How to make an interrogative sentence that the object is in question*

목적이어(예. You think that John likes English)을 목적어를 찾는 의문문으로 만드는 3단계

*Three steps to change a complex declarative sentence into an interrogative sentence that the object is in question*

1. Do/Does 동사를 이용하여 주절을 의문형으로 바꾸기. *Insert do/does and change the main clause into a form of interrogative sentence.*

   *You think* that John likes English. \(\rightarrow\) **DO you think** that John likes English.

2. 종속절 목적어에 알맞는 의문사 찾기. *Find out an appropriate wh-word for the object.*

   Do you think that John likes **English**. \(\rightarrow\) Do you think that John likes **WHAT**.

3. 종속절 의문사를 문두로 이동. *Move the wh-word to the sentence front.*

   Do you think that John likes **what**. \(\rightarrow\) **WHAT** do you think (that) John likes?
How to make an interrogative sentence that the subject is in question

Three steps to change a complex declarative sentence into an interrogative sentence that the subject is in question

1. Do/Does 동사를 이용하여 주절을 의문형으로 바꾸기. Insert do/does and change the main clause into a form of interrogative sentence.

You think that John likes English. → **DO** you think that John likes English.

2. 종속절 목적어에 알맞는 의문사 찾기. Find out an appropriate wh-word for the object.

Do you think that John likes English. → Do you think that **WHO** likes English.

3. 종속절 의문사를 문두로 이동. Move the wh-word to the sentence front.

Do you think that who likes English. → **WHO** do you think that likes English?

4. 접속사 that 삭제. Delete the complementizer that

Who do you think **that** likes English? → Who do you think likes English?
APPENDIX B
Sample presentation of the picture-selection task

(A participant hears *What does he think that Sarah cooks?*)

(The participant repeats *What does he think that Sarah cooks?*)

Best answer?

1 2 3

(The Participant chooses an answer.
Moving on to the next question if the participant chooses a correct one.
If not, the same question is repeated until the participant answers correctly)
Applicable levels: Secondary, college, higher

Katie, J. Kim
University of New Hampshire
40 Hamilton Smith Hall 95
Main Street Durham, NH 03824
Tel: +1-571-218-0437
Email: jcl87@unh.edu

Received in March, 2013
Reviewed in April, 2013
Revised version received in May, 2013