Evaluating the Effectiveness of Explicit and Implicit Form-Focused Instruction on Explicit and Implicit Knowledge of EFL Learners

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Abstract

Although explicit and implicit knowledge of language learners are essential to theoretical and pedagogical debates in second language acquisition (SLA), little research has addressed the effects of instructional interventions on the two knowledge types (R. Ellis, 2005). This study examined the relative effectiveness of explicit and implicit types of form-focused instruction (FFI) on the acquisition of four morphosyntactic features by four measures of explicit and implicit language knowledge. The measures included: oral elicited imitation, timed and untimed grammaticality judgment, and metalinguistic knowledge tests. A pretest and two posttests were conducted immediately and three weeks after the instructional interventions. Durable effects of FFI on low intermediate Iranian learners were found for the target language forms. In particular, explicit and implicit FFI positively facilitated the development of explicit and implicit knowledge of the target features, both immediately after the instructional interventions and, marginally decreasing, over time. Also, explicit FFI was more effective than implicit FFI as measured by both explicit and implicit knowledge tests. The findings may contribute to understanding of the efficacy of explicit and implicit FFI on L2 learners' controlled (explicit) and spontaneous (implicit) use of morphosyntactic forms at relatively early stages of L2 acquisition.

Keywords: instructed SLA; explicit/implicit FFI; explicit/implicit knowledge

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INTRODUCTION

The role of instruction in second language (L2) development has long been a highly controversial issue in the field of L2 learning and teaching (see Richards & Rogers, 2001). The difficulty of acquiring a second language compared with the celebrated accomplishments in first language (L1) poses a challenge for L2 pedagogy, with a general belief in a fundamental difference between L1 and L2 acquisition, particularly concerning the procedural use of the language (Bley-Vroman, 1990).

L2 processes are often discussed in terms of the distinctions between implicit/explicit knowledge, implicit/explicit learning and implicit/explicit instruction. The importance of these distinctions for L2 development has been emphasized by many researchers (e.g., Ellis, 1994; Hulstijn, 2002; Ellis, 2008a). Understanding the relationship among these different distinctions (explicit/implicit knowledge, learning and instruction) is important for the field of second language teaching and learning. In particular, the exact relationship between type of instruction and type of L2 knowledge resulting from it are examined in this study.

LITERATURE REVIEW

The role and efficacy of instruction in second language development have been a recurrent issue of great importance. L2 researchers are not in agreement with regard to the potential role and effect of L2 instruction in second language development. Some researchers adhere to what Long and Robinson (1998) called the noninterventionist position and see no role for L2 instruction beyond the provision of a conducive environment for second language acquisition (SLA) (e.g., exposure to comprehensible input)

(Krashen, 1985, 1994; Schwartz, 1993). Others assume that L2 instruction is beneficial for second language development and adhere to an interventionist view. (e.g., Ellis, 1997, 2001, 2005; Long, 1988).

The second position concerning the effectiveness of L2 instruction has over the years gained extensive empirical support from different types of instructed SLA research (see reviews in R. Ellis, 1994, 1997, 2001, 2002; Norris & Ortega, 2000). For example, Norris and Ortega (2000) in their meta-analysis of 49 studies indicate that L2 instruction makes a difference and, furthermore its net effect is substantial, so that "L2 instruction can be characterized as effective in its own right" (p. 480).

Some theoretical arguments have also been presented regarding the indispensability of L2 instruction for successful language development for some types of L2 learners, for some non-salient features, and for functionally redundant aspects of grammar (DeKeyser, 2000; Doughty, 2003). In addition to the theoretical significance, the study of L2 instruction has practical importance as well. Its practical importance follows the assumption that a better understanding of the nature of instruction on SLA may lead to improvements in second language teaching practices (Spada & Lightbown, 2002).

Whatever the case for L2 instruction may be, according to de Graaff and Housen (2009), the position of most researchers is that SLA is a process which can be influenced by instruction, though not necessarily at libitum, and it is exactly this relative openness of SLA to instruction which has to be explored, so that it can be exploited for both theoretical and practical purposes (p.727).

In view of this seminal statement, the need for studies that attempt to investigate the variegated effects of instruction on SLA with regard to different moderating factors such as the type of L2 instruction, the type of language knowledge, the type of language forms and so forth is clearly felt.

L2 instruction according to some instruction taxonomies can be distinguished in terms of the direction of the L2 learner's main focus of attention between meaning-focused instruction (MFI) and form-focused instruction (FFI) (Ellis, 1999, 2001; Spada, 1997). The former involves the use of any tasks or activities that directs the learner's main focus of attention to the communication of meanings and messages (Ellis, 1999, 2001). The latter refers to "any pedagogical effort used to draw the learner's attention to language form" (Spada, 1997, p.73). Moreover, much research aimed at comparing the effectiveness of different types of FFI has generally classified the different pedagogic options in terms of implicit and explicit instructions (e.g. DeKeyser, 1995; Robinson 1996, 1997; Spada & Tomita, 2010).

The potential effects of implicit and explicit FFI on SLA can be investigated in terms of different types of L2 knowledge that learners may develop as a result of these types of FFI. The most common distinction concerning the different types of L2 knowledge is between implicit and explicit knowledge. Explicit knowledge is characterized as conscious and declarative knowledge about language that is potentially verbalizable and generally accessible only through controlled processing in planned language performance (Ellis, 2004). In contrast, implicit knowledge is defined as intuitive and procedural knowledge of language that is automatic and systematically variable and thus available for employment in unplanned, fluent language performance (Ellis, 2004, 2008b). But the main problem

attributed to this type of research, i.e. the effect of FFI on implicit/explicit knowledge types, is the extent to which the distinction between implicit and explicit knowledge can be operationalized. Some recent developments have provided evidence that it may be possible to measure them as independent constructs. For example Ellis (2005) developed a battery of five tests designed to measure explicit and implicit knowledge of L2 learners by manipulating some criteria that could possibly distinguish between the two constructs of explicit and implicit linguistic knowledge. Nevertheless, few studies (Akakura, 2011; Ellis et al., 2009) have attempted to examine the potential effects of explicit and/or implicit FFI on implicit and explicit L2 knowledge in terms of these new measures and hence the necessity of undertaking studies with regard to these new developments in the field is clearly understood.

PURPOSE OF THE STUDY

The present research, in light of the new psychometric developments mentioned already, undertook to build on and expand the previous studies by investigating the effect of explicit and implicit FFI on both implicit and explicit knowledge of L2 learners. The research questions motivating the current study are as follows:

1. Is there any significant effect of explicit and implicit FFI on the acquisition of the target features as measured by tests of explicit knowledge?

2. Is there any significant effect of explicit and implicit FFI on the acquisition of the target features as measured by tests of implicit knowledge?

For the purpose of the current study, we have defined explicit and implicit FFI following Norris and Ortega (2000). According to them, FFI is considered to be explicit if rule explanation comprises part of the instruction or if learners are directly asked to attend to particular language forms and to attempt to reach metalinguistic generalizations on their own. When neither rule explanation nor directions to attend to particular language forms or features are part of an instructional treatment, that treatment is considered implicit FFI. Also, our definitions of implicit and explicit knowledge are based on Ellis (2004, 2005, 2008b) which was already described.

METHOD

This study with a quasi-experimental design comprised a pretest, posttest, and delayed posttest. The participants were not randomly assigned to the groups but rather belonged to whole classes. But the classes were randomly assigned to the experimental or the control groups. The experimental groups receiving the explicit and implicit FFI consisted of four groups: The first group received instruction in the form of memorized-only treatment (implicit FFI) in which the materials were seeded with the target morphosyntactic features in the hope that the increased rate of occurrence of the features will make them salient to learners; and the second implicit group received FFI in the form of input enhancement which involves increasing the visual effect of specific linguistic features in the input

(Sharwood Smith, 1993). The results of the first and second experimental groups were later combined and analyzed as one group and these two groups were called implicit FFI group. The third group received instruction in a deductive manner which involves the provision of an explicit rule that they then practice (explicit FFI). Finally, the fourth experimental group also received explicit FFI but in an inductive manner which involves asking for the inducement of a rule from examples presented (R. Ellis, 2008b). The results of the third and fourth explicit groups were later analyzed as one group and was called explicit FFI group. The control group did not receive any special FFI but followed the regular language lessons.

Participants

Participants for the study were 150 Iranian learners (71 males and 79 females) who received the instructional treatments and also took the battery of tests developed for the purpose of this study. The participants' proficiency levels fell within the range of novice mid to intermediate low sublevels of ACTFL Proficiency Guidelines as determined by a test of KET administered by the researchers in the sampling phase of the study. In addition, they were chosen based on the results of a pretest showing them to be almost unfamiliar with the target features used in the study. The mean age of the participants was 22 years. They were enrolled in undergraduate arts or engineering courses in Islamic Azad University (two different branches of East Tehran and Islamshahr).

Instructional Materials

The choice of the target forms in this study was motivated by a number of considerations. First and foremost, an attempt was made to select target forms that were known to be commonly problematic to language learners (i.e., to result in errors). To this end, the SLA literature was consulted (e.g., Burt & Kiparsky, 1972). Second, the target forms were selected to represent both early and late acquired language forms or structures according to what is known about the developmental properties of L2 acquisition (e.g., Pienemann, 1998). Third, the target forms were chosen to include both morphological and syntactic features. Accordingly, four language forms (present progressive-ing; third person present tense-s; possessive–'s and WH-question about an object) were chosen based on the three criteria mentioned above. The results of Pretesting also demonstrated that most of the participants were unfamiliar and a few were partially familiar with these four forms.

The instructional materials consisted of many sentences seeded with exemplars of the four morphosyntactic forms and also some texts comprising many exemplars of the target forms. These materials were the same for all four experimental groups but the form of their presentation for each group was different. The input-enhancement group received the materials in a bolded and italic form, with an instruction that required students to focus their attention on comprehending the meanings of the texts and sentences. The memorized-only group received the same materials without any italicization or bolding with an instruction to just commit the sentences to memory and understand the given texts. The other two explicit groups also received the materials in deductive and inductive manner. The

deductive FFI provided L2 learners with explicit rules about the target features which they subsequently practiced and the inductive manner required them to induce rules from the examples given. All these four training conditions lasted for two successive weeks which consisted of 12 hours of FFI. The control group didn't receive any of these treatments but followed the regular language lessons, and no instruction on the target features was provided during the whole experiment.

Instruments

The effectiveness of FFI on learners' implicit and explicit knowledge of the target features was assessed by comparing learners' performance on four measures (Appendix). The four tests detailed below were adapted from an earlier test battery developed by R. Ellis (2005). Two of the tests, (i.e. OEIT and Timed GJT) originally intended by R. Ellis to measure implicit knowledge of grammatical forms, were also adapted here to measure the implicit type of knowledge and the other two tests (i.e. Untimed GJT and MKT) originally intended to measure explicit knowledge of grammatical forms were further adapted here to measure the same explicit type of knowledge of the target forms.

OEIT: The First Implicit Measure

This test consisted of 16 statements, half of which were grammatical sentences containing the target forms and half of which were ungrammatical sentences containing the target forms; that is, there was two grammatical and two ungrammatical sentences per target form. The sentences were audio-taped by one of the researchers and were played one at a time for the

students, who had to decide about the truth value of each statement (i.e. whether it was true or not true for them or whether they were uncertain about the propositional content of each statement). Requiring learners to decide about the truth value of the presented statements, not only brought their focus of attention on meaning rather than on form, it also had the extra benefit of delaying rote repetition. Next, the students were instructed to repeat each statement in correct English and were told that their responses are being taped. Before the test students received training that gave them practice in both aspects of the task, that is, in marking their 'beliefs' on the test sheet and in repeating each presented statement in correct English. Their answers were subsequently analyzed by identifying obligatory occasions for the use of the four target features. Each correctly imitated sentence was given a score of 1, whereas each sentence for which the target form was avoided or attempted but incorrectly supplied was given a score of 0. Finally, for each participant, the OEIT scores were expressed as the percentage of sentences restated or repeated correctly.

Timed GJT: The Second Implicit Measure

Timed GJT which was a computer-delivered test consisted of 16 sentences. These sentences were evenly divided into grammatical and ungrammatical sentences, and were presented to participants in a written form on a computer. Students were asked to indicate whether the sentences were grammatical or ungrammatical by pressing one of two keys on the computer keyboard within a fixed time limit. The time limit for each of the sentences was established on the basis of native speaker's average response for each stimulus. Following R. Ellis (2005), the average response time for the native

speakers was increased by 20% to allow for the slower processing pace of the L2 learners. So the specific time allowed for judging the individual sentences ranged from 1.8 to 6.24 seconds. Test items were scored as correct/incorrect in a dichotomous manner and items not responded to were considered as incorrect. Finally, a percentage accuracy score was calculated for each participant.

Untimed GJT: *The First Explicit Measure*

The untimed GJT included the same types of sentences as the timed GJT, which was given through computer monitor. Test takers were instructed to answer at their own pace because the test had no set time limit. Again all the sentences were presented in the written format. Participants were required to indicate the grammaticality of each sentence just as they had done in the timed version of the GJT.

MKT: The Second Explicit Measure

This test which was based on the test designed in Erlam, Philp, and Elder (2009) consisted of two parts. Part one presented students with five ungrammatical sentences based on the four target forms (each target form had one ungrammatical sentence except for WH question which had two exemplars), and asked students to formulate a rule in their L1 that could account for the ungrammaticality of the sentence. Part two required students to study a short text and try to find examples of the target forms in it. Finally a total percentage accuracy score for the MKT was calculated.

Reliability of the preceding tests was computed by means of internal consistency of responses to every item in each of the tests. Cronbach's alpha

coefficient was calculated for the pre-tests of the OEIT (α=.82), TGJT (α=.84), UGJT (α=.85), and MKT (α=.81).The reliability coefficients for all the measures were above the .80 level considered to be acceptable by Davies et al. (1999).

Subsequent analyses explored the construct validity of the test instruments by means of a Principal Component Factor Analysis (SPSS Version16.0). The purpose was to see whether the four tests will reduce to two components according to predictions about the two knowledge types they predominantly measure. The scores for the four pre-tests were examined. An initial Principal Component Analysis extracted two components with an initial Eigenvalue of 2.018 and a second component with an Eigenvalue of 1.124, which together comprised 63.7% of the variance. As indicated by previous studies (e.g., R. Ellis, 2005, 2006) the OEIT and the Timed GJT loaded at 0.7 or higher on one factor (implicit knowledge) and the MKT and Untimed GJT loaded strongly (i.e., higher than 0.7) on factor 2 (explicit knowledge). The previous results present evidence in favor of separability of the two types of knowledge.

Data Collection Procedure

The tests were completed in the following order: 1.OEIT, 2.Timed GJT, 3.Untimed GJT, 4. MKT. All tests included a number of training examples for participants to practice on. The OEIT was completed in one-on-one meetings between the researcher and a participant. Each participant listened to the sentences one at a time on a voice recorder, completed an answer sheet indicating his or her response to the belief statement, and then orally

reproduced the sentence, which was audio recorded. The timed GJT, the untimed GJT, and the MKT were completed individually on a computer in a private office. All of the tests were completed in a single session that lasted approximately 1.5 hours.

Data Analysis

In order to find out about the implicit knowledge of the four target features, a combined mean score for the OEIT and the Timed GJT for each of the four morphosyntactic forms were calculated. As for the explicit knowledge of the target features, a combined mean score using the Untimed GJT and the scores from the MKT was calculated for each of the four features. After the calculation of implicit knowledge and explicit knowledge scores of the target features, one-way ANOVA was run to probe the relative effects of explicit and implicit FFI on L2 knowledge (implicit and explicit) of the target features.

RESULTS

The First Research Question

The first research question addressed the effect of explicit and implicit FFI on the acquisition of the target features, as measured by tests of explicit knowledge. To probe the corresponding null hypothesis (which predict no effect of explicit and implicit FFI on the explicit knowledge of the target forms), first descriptive and then inferential statistics for the experimental and control groups are reported in Tables 1, 2, and 3.

As the results of descriptive statistics for explicit knowledge in Table 1 depict, there is less than 10% accuracy levels on the pretest scores. However, after receiving the instructional treatments, the two implicit and explicit groups considerably outperformed the control group. The explicit FFI group received the highest mean score in the immediate posttest (M=66.85) and the second rank in the immediate posttest scores belong to implicit FFI group (M=43.18). The lowest mean score in the immediate posttests belongs to the control group (M=9.46) with a large mean difference compared with the two experimental groups.

Additionally, the long-term impact of the instructional treatments is also reported in Table 1 based on the delayed posttest scores. Here again the highest mean score goes to the explicit FFI group (M=63.89) and after that with a noticeable decrease stands the implicit FFI group (M=41.26). Finally the control group with the lowest mean score (M=6.31) holds the third position. Again the two experimental groups show a large difference in their scores compared with the control group score.

Table 1: Descriptive statistics for explicit knowledge tests

Treatment	Test type	Time	Mean	SD	N
Implicit FFI	Explicit test	Pretest	6.72	1.68	60
		posttest 1	43.18	1.84	60
		posttest 2	41.26	1.25	60
Explicit FFI	Explicit test	Pretest	7.58	2.18	60
		posttest 1	66.85	2.48	60
		posttest 2	63.89	1.56	60
Control	Explicit test	Pretest	8.54	1.37	30
		posttest 1	9.46	2.12	30
		posttest 2	6.31	1.96	30

ANOVA results for the effects of the instructional treatments on L2 students' explicit knowledge are reported in Table 2. There was not a significant difference in the explicit knowledge of students' pretest scores for the experimental and control groups as indicated by the F and p values (F=.491, p=.613). This result on pretest scores indicates that any differences between groups on immediate and delayed posttests cannot be attributed to differential prior knowledge of the L2 students.

Table 2: Analysis of variance for explicit knowledge tests

Time	Source	df	F	P	Partial Eta Squared
Pretest	Between Groups	2	.49	.613	.004
	Within Groups	147			
Posttest	Between Groups	2	222.20	.000	.667
	Within Groups	147			
Delayed posttest	Between Groups	2	195.77	.000	.638
	Within Groups	147			

By contrast, there was a statistically significant difference at p<.01 level in the explicit knowledge of learners' immediate posttests for the three groups (two experimental groups & one control group): F= 222.2, p=.000. The actual difference in the immediate posttest scores between the groups is very large. The effect size, calculated using partial eta squared, is .66 (Cohen (1988) classifies .01 as a small effect, .06 as a medium effect and .14 as a large effect) which means that more than sixty percent of the variance in the immediate posttest scores is accounted for by the effect of the instructional treatments. Post-hoc comparisons conducted through Bonferoni test and as summarized in Table 3 indicate that the mean score for explicit FFI group (M=66.85) was significantly different from both

control group (M=5.46) and implicit FFI groups' mean scores (M=43.18). Additionally there was a significant difference between implicit FFI (M=43.18) and control (M=9.46) groups' scores.

Furthermore, the long-term effects of the instructional treatments were explored through analysis of variance already mentioned. The ANOVA results of students' delayed posttests in terms of their explicit knowledge indicate that there was a statistically significant difference at p<.01 level in the delayed posttests for the three groups: F=195.77, p=.000. The actual difference in the delayed posttest scores between the groups is again very large. The effect size, calculated using partial eta squared and as shown in Table 2, is .63.

Post-hoc comparisons reported in Table 3 indicate that the mean score for explicit FFI group (M=63.89) was significantly different from the control group's (M=6.31) and also from the implicit FFI group's mean score (M=41.26). In addition, the mean score for Implicit FFI group was significantly different from that of the control group's (M=6.31). These evidences lead us to believe that the first null hypothesis is highly unlikely, so we can reject it.

Table 3: Post-hoc comparisons between experimental & control groups' mean scores

Time	Type of knowledge	Group I	Group J	Mean Difference (I-J)	Sig.
Pretest	Explicit	Implicit FFI	Explicit FFI	2.14	.370
			Control	2.18	.455
		Explicit FFI	Implicit FFI	-2.14	.370
			Control	.04	.989
		Control	Implicit FFI	-2.18	.455
			Explicit FFI	-.04	.989
Posttest	Explicit	Implicit FFI	Explicit FFI	-23.66*	.000
			Control	37.72*	.000
		Explicit FFI	Implicit FFI	23.66*	.000
			Control	61.39*	.000
		Control	Implicit FFI	-37.72*	000
			Explicit FFI	-61.39*	.000
Delayed posttest	Explicit	Implicit FFI	Explicit FFI	-22.63*	.000
			Control	34.94*	.000
		Explicit FFI	Implicit FFI	22.63*	.000
			Control	57.58*	.000
		Control	Implicit FFI	-34.94*	.000
			Explicit FFI	-57.58*	.000

These findings indicate significant improvements from the pretest to the immediate and delayed posttests for the two experimental groups in comparison with the control group. Also the results show the effect of explicit FFI on students' explicit knowledge is significantly higher than the effect of implicit FFI on the same explicit type of knowledge. Moreover, these effects on explicit L2 knowledge are durable according to the findings of the delayed posttests.

The Second Research Question

The second research question addressed the effect of explicit and implicit FFI on the acquisition of the target features, as measured by tests of implicit

knowledge. To probe the corresponding null hypothesis (which predicts no effect of explicit and implicit FFI on the implicit knowledge of the target forms), descriptive and then inferential statistics for the explicit FFI, implicit FFI and control groups are summarized in Tables 4, 5, 6.

According to the results of descriptive statistics all three groups show low levels of accuracy on their implicit pretests as measured by tests of implicit knowledge. The two experimental groups do not show any considerable differences in their pretest scores compared to the control Group. However, the two experimental groups have changed considerably after receiving the instructional treatments. Considering the immediate posttests, it can be observed that the two experimental groups outperform the control group with a large mean difference. The explicit FFI group has gained the highest mean score in the immediate posttest scores (M=50.07) and the second rank belongs to implicit FFI Group (M=43.18). The lowest score goes to the control group (M=9.34) which has not changed considerably from its pretest (M=7.13).

Moreover, the durability impact of the instructional treatments can also be reported according to the delayed posttest scores. Here again the highest mean score belongs to explicit FFI group (M=47.33), which has decreased marginally from its posttest (M= 50.07). Implicit FFI group also has retained its effect on students' implicit knowledge on delayed posttest (M=41.33), although it has slightly decreased from its posttest score (M=43.18). Finally the control group once more has the lowest mean score (M=7.77). Again the two experimental groups show a large difference in their mean scores compared with the control group.

Table 4: Descriptive statistics for implicit knowledge tests

Treatment	Knowledge type	Time	Mean	SD	N
Implicit FFI	implicit test	Pretest	7.69	1.68	60
		Posttest 1	43.18	2.26	60
		Delayed 2	41.33	1.94	60
Explicit FFI	implicit test	Pretest	8.31	1.82	60
		Posttest1	50.07	2.39	60
		Delayed 2	47.33	2.14	60
Control	implicit test	Pretest	7.13	1.84	30
		Posttest 1	9.34	2.41	30
		Delayed 2	7.77	2.26	30

ANOVA results for the effects of the instructional treatments on L2 students' implicit knowledge are reported in Table 5. According to these results, there was not a significant difference in the implicit knowledge of learners' pretests for the experimental and control groups as indicated by the F and p values (F=.087, p=.916). This indicates that any differences between groups on immediate and delayed posttests cannot be attributed to the differential prior knowledge of L2 students.

Table 5: Analysis of variance for implicit knowledge tests

Time	Source	df	F	P	Partial Eta Squared
Pretest	Between Groups	2	.08	.916	.001
	Within Groups	147			
Posttest	Between Groups	2	102.09	.000	.479
	Within Groups	147			
Delayed Posttest	Between Groups	2	97.26	.000	.467
	Within Groups	147			

By contrast, there was a statistically significant difference at p<.01 level in the implicit knowledge of students' immediate posttests for the three groups: F=102.09, p=.000. The actual difference in the immediate posttests between the groups is almost very large. The effect size, calculated using partial eta squared, is .47, which means that almost half of the variance in the immediate posttests is accounted for by the effect of the instructional treatments (According to Cohen's (1988) guidelines, the values more than .14 are considered to be large effects). Post-hoc comparisons conducted through Bonferroni test and as summarized in Table 6 indicated that the mean score for explicit FFI group (M=50.07) is significantly different from the control group (M=9.34) and implicit group's mean scores (M=43.18). Moreover, there is a significant difference between the mean scores of implicit FFI (M= 43.18) and the control group (M=9.34).

Additionally, the durability impact of the instructional treatments on students' implicit knowledge gains are explored by the ANOVA results of the delayed posttests. The delayed posttest results of students' implicit knowledge as summarized in Table 5 indicate that there is a statistically significant difference at p<.01 level in the delayed posttest scores for the three groups: F=97.26, p=.000. The actual difference between the groups in the delayed posttests is almost very large. The effect size, calculated using partial eta squared is .46. Post-hoc comparisons conducted through Bonfereoni test (reported in Table 6) indicated that the mean score for explicit FFI group (M=47.33) was significantly different from the control group's (M=7.77) and likewise significantly different from the implicit group's mean score (M=41.33). Furthermore, the mean score of the implicit FFI group was significantly different from that of the control group. The

weight of these evidences leads us to believe that the second null hypothesis is highly unlikely, so we can reject it as well.

Table 6: Post-hoc comparisons between experimental & control groups' mean scores

Time	Type of knowledge	Group I	Group J	Mean Difference (I-J)	Sig.
Pretest	Implicit	Implicit FFI	Explicit FFI	-.61	.796
			Control	.56	.846
		Explicit FFI	Implicit FFI	.61	.796
			Control	1.18	.686
		Control	Implicit FFI	-.56	.846
			Explicit FFI	-1.18	.686
Posttest	Implicit	Implicit FFI	Explicit FFI	-6.89*	.004
			Control	33.84*	.000
		Explicit FFI	Implicit FFI	6.88*	.004
			Control	40.74*	.000
		Control	Implicit FFI	-33.84*	000
			Explicit FFI	-40.74*	.000
Delayed posttest	Implicit	Implicit FFI	Explicit FFI	-5.99*	.013
			Control	33.55*	.000
		Explicit FFI	Implicit FFI	5.99*	.013
			Control	39.55*	.000
		Control	Implicit FFI	-33.55*	.000
			Explicit FFI	-39.55*	.000

The previous findings relating to the implicit knowledge of the L2 learners indicate significant improvements from the pretest to the immediate and delayed posttests for the explicit and implicit FFI groups compared to the control group. In addition, the findings show that the effect of explicit FFI on learners' acquisition of the target features in terms of their implicit knowledge is significantly more than the effect of implicit FFI on the same implicit type of knowledge. Moreover, these effects on implicit knowledge of the experimental groups are durable based on the results of the delayed posttests administered in this study.

DISCUSSION

Research question one of the present study probed the effectiveness of explicit and implicit FFI on the four target features as measured by explicit knowledge tests (Untimed GJT & MKT). The findings of the study showed significant group differences between the experimental and control groups in their explicit knowledge of the target features. The most effective experimental treatment was explicit FFI which as mentioned already not only greatly outperformed the control group, but also outperformed the implicit FFI group on immediate and delayed post-experimental measures. Moreover, the magnitude of the effect sizes calculated through partial eta squared in the immediate and delayed posttests were .66 and .63 respectively. These squared measures indicate "the observed proportion of explained variance" (Kline, 2004, p.100) and they measure how much independent and dependent variables vary together. The magnitude of the effect sizes of the post-test values (immediate & delayed) on explicit knowledge measures show very large effects considering Cohen's (1988) guidelines in this regard. In other words, the amount of covariation between the independent variables (explicit & implicit FFI) and the dependent variable (explicit knowledge tests) is substantial. Thus, the observed differences in mean effectiveness between experimental and control groups can be interpreted as a trustworthy difference that do not fall within the realm of probabilistic sampling variability.

Also comparing the relative effectiveness of explicit and implicit types of FFI, the present study in line with several other studies (e.g., Ellis, Loewen & Erlam, 2006; Norris & Ortega, 2000; Robinson, 1996; Spada & Tomita, 2010; Williams & Evans, 1998) found that the explicit FFI is

significantly more effective than implicit FFI as measured by explicit knowledge measures in both posttests.

Furthermore, the results of delayed posttests suggest that the effects of FFI (primarily explicit and secondarily implicit) seem durable. This can be concluded from the observation that although such effects tend to marginally decrease over time (probably as a result of maturation and learning that over time bring control and experimental groups closer together), it is still the case that the effects of delayed posttests remain very large (as reported by the magnitude of the effect sizes), indicating sustained differences in favor of experimental instructed groups.

Research question two of the current research inquired about the effectiveness of explicit and implicit FFI as measured by implicit outcome measures (Timed GJT & OEIT). The findings of the current study showed significant improvement for the experimental groups from the pretest to posttest outcome measures compared with the performance of the control group. The most effective experimental treatment in terms of students' implicit knowledge was explicit FFI which not only greatly outperformed the control condition but also outperformed the implicit FFI on the immediate and delayed posttests. Moreover, the magnitude of the effect sizes calculated through partial eta squared in the immediate and delayed posttests were .47 and .46 respectively. As discussed previously, the squared measures show the amount of covariation in the independent and dependent variables. These estimates, considering Cohen' (1988) guidelines, can be regarded as large effects. However, comparing the results of implicit knowledge tests with explicit ones in terms of their effect sizes show larger effect sizes for explicit tests for both types of FFI groups and this may be

due to the fact that the development of implicit knowledge relies on various factors such as   saliency and frequency of a language form in the input, its functional value (or redundancy), the linguistic domain to which it belongs (syntax, morphology etc.), the degree of contrast/similarity with the corresponding form in the L1, the regularity of a linguistic rule, the type of processing mechanisms involved in the learning of a language form (i.e., item vs. rule-based learning), and so forth (de Graaff & Housen, 2009; R. Ellis, 2006)

In addition, Norris and Ortega's (2000) study showed that the average FFI effect size in the few studies involving a measure of implicit knowledge that they investigated was much lower than in studies that employed outcome measures based on explicit knowledge of L2 learners (k =.55 as opposed to k =1.46, respectively). Their findings cast some doubt on whether FFI (implicit or explicit) is capable of having a considerable effect on L2 learners' implicit knowledge of grammatical forms or features. However, the result of the current study in line with Day and Shapson (1991), Salaberry (1997), Housen, Pierrard and Van Daele (2006) and recently Akakura (2011) suggest that FFI (explicit and/or implicit) can have a significant effect on the accuracy of the use of morphosyntactic forms as measured by implicit knowledge measures.

Moreover, the results of this research question lends empirical support to the theoretical position taken by some prominent SLA scholars that FFI can aid the acquisition of implicit knowledge (e.g., N. Ellis, 2002, 2005; R. Ellis, 2002, 2008a; Long, 1983, 1988). Taking performance in terms of tasks that are considered to measure the implicit knowledge of L2 learners, the findings of this study demonstrate that FFI results in the

acquisition of the selected target forms that are additionally of a durable nature. Furthermore, comparing the relative effectiveness of explicit and implicit types of FFI, the current research in line with some other studies (e.g., Ellis, Loewen & Erlam, 2006; Murunoi, 2000; Spada & Tomita, 2010) showed that explicit types of FFI are significantly more effective than implicit types of FFI at least as operationalized in this study and as measured by implicit knowledge tests validated and utilized here in both immediate and delayed post-test outcome measures.

Overall the findings of this empirical classroom-based research on explicit and implicit FFI concur with Norris and Ortega's (2000) meta-analysis in which explicit instruction was demonstrated to have the strongest impact on the L2 learners' language learning, particularly if connections of a form-meaning nature are emphasized. This finding can be taken to suggest that, other things being equal(e.g., the nature of the target forms, length of the instructional treatments, the intensity of the instruction and the proficiency level of the L2 learners under investigation), explicit types of FFI are superior to more implicit types of FFI. However, some researchers such as Doughty (2003) have stressed concerns about the validity of most previous studies in terms of their research design and measurement of their learning outcomes, detracting from the reliability of their conclusions. But the current study cognizant of validity problems in most previous type-of-instruction research attempted to overcome the pitfalls of previous research by isolating some mediating factors (in order to evaluate their specific contributions to implicit and explicit knowledge of L2 learners) and came to this conclusion that the previous caveats notwithstanding, explicit FFI is

more effective than implicit FFI as measured by explicit and implicit measures validated and utilized in this study.

CONCLUSIONS AND IMPLICATIONS

The results of the present study indicate that explicit and implicit FFI positively facilitate the development of explicit and implicit knowledge of language features, both immediately after the instructional intervention and, marginally decreasing, over time. Further, explicit FFI was found to be more effective than implicit FFI as measured by both explicit and implicit knowledge tests.

The main theoretical implication that may be drawn from this study is that the case for the strong or at least weak-interface positions are strengthening and the case for the 'zero option' position or the non-interface position is weakening. More specifically, FFI that incorporates explicit (including deductive and inductive) techniques can teach L2 learners metalinguistic facts about target features and thereby contribute to their explicit knowledge. Also the results of the current research provided evidence that explicit knowledge developed through explicit FFI can assist L2 learners in acquiring implicit language knowledge. That is, teaching language rules deductively or helping learners to discover rules inductively leads ultimately to improved accuracy in planned as well as unplanned language performances. Thus, these findings provide theoretical and empirical support for the interface hypothesis.

Additionally, implicit FFI as reported in this study helped L2 learners develop the ability to produce the targeted forms in planned and unplanned responses. These findings address the criticism directed at much

FFI research by Doughty (2003), that the type of measuring instrument selected in many form-focused studies is biased towards explicit knowledge. Implicit FFI as reported in this study can serve to facilitate the processes involved in natural language learning in agreement with the claims put forward in favor of input-processing instruction, providing that the language forms targeted are not too complex for the L2 learners and the instruction is of adequate quantity.

This study has of course its own limitations. The validity of the findings depends heavily on the outcome tests used to measure explicit and implicit L2 knowledge. Arguments and psychometric evidence for the reliability and validity of these outcome tests has been presented in this study and also elsewhere (see also Akakura, 2011, R. Ellis, 2005). However, further work on designing tests of these two types of knowledge is obviously necessary.

A more complex agenda needs to be adopted within L2 type-of-instruction research that examines not only the effectiveness of particular instructional options but also the potential effect of a range of moderating factors. These could include individual learner factors such as language aptitude, age, learning style, personality and motivation; cognitive factors such as learner's degree of developmental readiness and degree of noticing of L2 input; and pedagogical factors such as duration, timing, and intensity of L2 instruction (Norris and Ortega, 2000). It may then be possible to deduce some solid conclusions regarding the relationship between explicit and implicit FFI, explicit and implicit learning and finally explicit and implicit language knowledge.

Bio-data

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Appendix

Test Battery

A: OEIT

1. Princess **Diana death** shocked the whole world.
2. The wind **is blowing** very hard outside.
3. Everyone **loves** comic books and **read** them.
4. What **does a person** usually drink every day?
5. People worry about their **parent health** and their **children's future**.
6. Our teacher **goes** to a conference in Canada **this week**.
7. Many people **spend** a lot of money each week on eating out.
8. What **does children** usually watch every morning?
9. Physical exercise is important to all the **people's good health**.
10. One of your friends **is taking** a Physics course this semester.
11. Our ability to speak **make** us different from other animals.
12. Who **do you** see every Friday?
13. 30% of all our **country's energy** use is in the home.
14. You **wear** a white hat and a gold watch **today**.
15. Every 12 months, the Earth **circles** the Sun.
16. What **do your father** say about your University?

B: GJT Items (for both **timed** and **untimed** versions)

1. Jack is still living in his rich uncle house.
2. She is drawing a picture on the board now.
3. Karl loves basketball and play almost every weekend.
4. What do you usually buy at weekends?
5. When the child toy broke, I fixed it.
6. She wears a white blouse and a yellow skirt today.
7. Her youngest son work for a television company.
8. What does you usually watch at nights?
9. Poverty affects children's physical health.
10. His father is currently write a book about his adventures in Africa.
11. People expect complete openness from the President about his health.
12. What your mother does read every day?
13. His father's face is very kind and friendly.
14. He is looking for his glasses at the moment.
15. Every month, she spends a lot of money on clothes.
16. What are you studying at the university?

C: MKT

(Part 1)

For each sentence, if you know a rule that explains why the sentence is ungrammatical, write it in Farsi in the space provided.

1. Martin <u>work</u> in a car factory.

....

2. John lost <u>his friend books</u> yesterday.

....

3. Your friend is <u>take</u> an English course this term.

....

4. What <u>do she drinks</u> every day?

....

5. Who <u>he did</u> call last Monday?

....

 (Part 2)

Read the passage below. Find at least one example in the passage for each of the grammatical features listed in the table.

What do people do in their leisure time? Studies show that people are watching more TV today than they did twenty years ago. Computers are also changing the way people use their leisure time. Today people are spending more time doing things on their computers. Surfing the Internet is becoming another popular free-time activity. In fact, some employers are finding that workers are skipping lunch to surf the Internet.

More and more, people are mixing their work time and play time. They talk on the telephone while they are commuting to work. They read work papers while they are eating. They listen to music while they are studying. Maybe this is why people's lives have changed and they believe that they have less free time today.

Grammatical feature	Example
Possessive –s	
Present progressive-ing	
Third person -s	
WH-questions about an object	