Available online at www.jlls.org

JOURNAL OF LANGUAGE AND LINGUISTIC STUDIES

ISSN: 1305-578X

Journal of Language and Linguistic Studies, 10(2), 183-199; 2014

Impact of explicit instruction on EFL learners' implicit and explicit knowledge: A case of English relative clauses

Marzieh Nezakat-Alhossaini [a] *, Manijeh Youhanaee [a], Ahmad Moinzadeh [a]

[a] *University of Isfahan, Isfahan, Iran*

APA Citation:

Nezakat-Alhossaini, M, Youhanaee, M, & Moinzadeh, A. (2014). Impact of explicit instruction on EFL learners' implicit and explicit knowledge: A case of English relative clauses. *Journal of Language and Linguistic Studies, 10*(2), 183-199.

Abstract

The present study sought to investigate the effect of explicit instruction (direct proactive explicit instruction) on the acquisition of English passive objective relative clauses. Two groups of participants were involved in the study; a group of advanced EFL learners (n = 16) and a group of intermediate EFL learners (n = 37) who were randomly divided to two groups of experimental (n = 22) and control (n = 15). The experimental group received 4 sessions of explicit instruction on the target structure. The control group, however, did their routine activities in a writing class. There were three test times, namely a pre-, post-, and delayed post-tests. Two separate measures of explicit and implicit knowledge were applied; an offline test of metalinguistic knowledge (an error correction task) and two online speeded tests of implicit knowledge (a self-paced-reading task and a stop-making sense task). The findings revealed a positive effect of explicit instruction for both implicit and explicit knowledge for the treatment group. Durable effects of explicit instruction were found based on the results obtained from the delayed post-test. The advanced group performed very closely to the treatment group, indicating the effect of explicit instruction in accelerating language learning, as well as the necessity of explicit instruction for some language forms to be acquired in EFL contexts.

Keywords: Explicit/explicit instruction; implicit/explicit knowledge; online/offline tests; English reduced relative clauses

1. Introduction

The effectiveness of explicit instruction in developing explicit and implicit knowledge of a second language has been intensively studied during the past decades. However, the extent to which explicit instruction can lead to implicit knowledge is still a matter of debate. Ellis (2005, 2009) argues that this debate is partly due to the difficulty of operationalizing implicit knowledge on the one hand, and as its direct consequence, not having appropriate tests to measure it on the other. As illustrated in the meta-analysis by Norris and Ortega (2000), most of the studies on the efficacy of explicit instruction in enhancing implicit knowledge have used measurements assessing explicit knowledge rather than implicit knowledge. By the work of Ellis (2005, 2009) and based on the criteria suggested, appropriate operationalization of implicit knowledge makes it possible to have separate measures for explicit and implicit knowledge, as it is also shown in some recent studies (Akakura, 2012; Ellis et al., 2009).

* Marzieh Nezakat-Alhossaini. Tel.: +98-913-128-2773
E-mail address: marzieh.nezakat@fgn.ui.ac.ir

Free production tasks, such as writing tasks or oral production tasks, have been introduced and used as a way to measure implicit knowledge (From among: Akakura, 2012; Ellis, 2005, 2009, Ellis et al., 2009); however, because there is no control over the data on fluency, it is difficult to say that the learners do not monitor their output using their explicit knowledge (R. Ellis, 2002). To compensate for this uncertainty, measures which tap the learners' unconscious knowledge of language with the least amount of control over the output seem to be a better solution.

Speeded tests, through which participants are under time pressure to perform, have been used intensively during the last two decades in psycholinguistic studies. These tests are mostly intended to gain an insight into the way different language structures are processed unconsciously, that is, without being able to think metalinguistically in a conscious manner. The preference of online tests to offline tests (e.g. grammaticality judgment tests) in understanding and measuring the implicit knowledge of L2 learners has been rigorously emphasized in the literature (e.g. Felser, 2005; Juffs, 2001; Marinis, 2003, 2010; Roberts, 2012). If well-designed, these performance tests can provide an opportunity to understand what linguistic knowledge individuals have and how they put their linguistic knowledge into use (Jiang, 2012).

Regarding the existing debate in the current literature on the effect of explicit versus implicit instruction on both implicit and explicit knowledge as well as the measures of these two types of knowledge, the present study intended to investigate the effect of proactive form-focused instruction on the acquisition of a complex structure, i.e. English passive reduced relative clauses (PRRCs), among intermediate L2 learners of English.

2. Background

2.1. Explicit versus implicit instruction

As stated above, one controversial question involved in explicit or implicit grammar instruction is the extent each can help develop explicit knowledge, and even more importantly, implicit knowledge which is the ideal outcome of any language teaching setting (R. Ellis, 1993, 1994, 2002, 2005, 2008, 2009; Hulstijn, 2002; Krashen, 1981, 1982, 1985, 2008; Schmidt and Frota, 1986; Sharwood Smith, 1981; DeKeyser, 1998, 2007). Implicit instruction is referred to a learning environment in which learners' attention is drawn to target forms without awareness and the focus of instruction is on meaning (Ellis, 2005, 2009). Explicit instruction, on the other hand, involves learners in developing metalinguistic awareness of the target structure (DeKeyser, 1995).

Both implicit and explicit instruction can be reactive or proactive in nature. Reactive implicit instruction refers to a learning condition in which the target forms happen as an outcome of the task being performed in class. Proactive implicit instruction happens when tasks are deliberately designed to contain target forms, and performing the task provides the opportunity to use those structures. Reactive explicit instruction, on the other hand, refers to a learning condition in which the instructor provides metalinguistic or explicit corrective feedback while learners produce the target structure. Proactive explicit instruction means a structure is dealt with and reacted upon even before it is proven to be problematic and it can be direct or indirect. In direct proactive explicit instruction and feedback the structure is explained metalinguistically prior to any activity, and in the indirect form, the teacher allows learners to discover the rules on their own based on the data provided (Ellis, 2005, 2009).

Different studies have investigated the effect of implicit versus explicit instruction on implicit and explicit knowledge. Hulstijn (1989) investigated the effect of explicit versus implicit instruction on learning an artificial and a natural language. There were three treatment conditions; a form-focused group, the meaning focused group, and the form- and meaning-focused group. The form-focused group outperformed the other two in learning the artificial language regarding scores obtained from a sentence-

copying task containing target sentences and a cued recall task requiring the learners to recall all target structures presented to them during the learning phase. This led to the conclusion that for incidental learning to happen, attention to form when encoding input is a sufficient condition.

In another attempt, Doughty (1991) compared meaning-oriented instruction with rule-oriented instruction in the acquisition of relative clauses among intermediate ESL learners. The meaning-oriented group received sentence clarification strategies and lexical rephrasing through input enhancement (reactive implicit instruction). The rule oriented group, however, received explicit explanation of the target structure (direct proactive instruction). The results, though not exactly determine whether the learners were engaged in implicit learning or not, indicated that attention to form, be it through implicit or explicit learning, can help promote the acquisition of target structures. In other words, no difference between the two types of learning was found.

Robinson (1996) conducted a study on a group of Japanese ESL learners and investigated the effect of implicit versus explicit instruction on the acquisition of pseudo-clefts (a hard rule, considered so by the writer) and subject-verb inversion following an adverbial fronting (an easy rule, again by the writer). There were four conditions involved in the study: implicit condition, incidental condition, rule-search condition, and instructed condition. Implicit knowledge was measured through timed GJ tasks and a questionnaire to measure the participants' awareness. Explicit knowledge was measured through a GJ task on correctness. Conditions 1 and 2 performed the same in terms of the metalinguistic and speeded tests. The instructed group performed better in the GJ task of correctness than group 1 on easy rules, however, groups 1 and 2 gained better scores on the awareness test on the hard structure.

Norris and Ortega (2000), in their meta-analysis of the studies conducted on this issue, maintained that explicit instruction was more effective than implicit instruction in improving both implicit and explicit instruction. However, there was found large variances from study to study. One explanation for this difference was attributed to different operationalization of implicit and explicit knowledge among different studies (e.g. Doughty, 1991; Robinson, 1996). Another problem came from the different measures, and somehow inaccurate measures, of implicit and explicit knowledge used in these studies (Ellis, 2005).

In a more recent study, Tode (2007) investigated the durability of learning through explicit versus implicit instruction on three groups of Japanese learners' learning of "be" verbs. The three groups were assigned to explicit instruction group, implicit instruction group, and a third group with neither of the mentioned types of instruction. The results of the study showed greater short-term retention of the target structure in favor of the explicit instruction group and not the other two. However, it was revealed that despite the short-term retention, there was not long-term retention for the same group (explicit instruction group). This finding was attributed to the lack of follow-up practice, and the necessity of follow-up exercises together with corrective feedback was emphasized by the author.

With regard to the importance of having separate measures of implicit and explicit knowledge, Loewen, Erlam, and Ellis (2009) tried to examine the effect of implicit knowledge on the acquisition of third person (s) which is considered a late-acquired feature of English by the authors. The treatment group received extensive incidental exposure to the target structure, while their attention was drawn to a completely different structure: the indefinite article 'a'. The explicit knowledge of the learners was measured using an untimed GJ task, and their implicit knowledge was tested through an Oral Elicitation Imitation test. No gains in either of the explicit or implicit knowledge of the target structure was found. This was partly attributed to the difficulty of the target structure.

In a recent attempt, Akakura (2012) studied the effect of explicit instruction on the learning of English articles among second language learners. A grammaticality judgment task plus a metalinguistic one was used to measure the explicit knowledge and an elicited imitation task in addition to an oral

production one was conducted for the implicit knowledge. There were CALL activities to practice the target forms which were presented through proactive form-focused instruction. The results of the study showed significant improvement in both production and recognition of articles by the learners with durable gains of the target structure.

What can be observed from the above literature on the effectiveness of explicit instruction in promoting both implicit and explicit knowledge can be explained by Corder's (1967) assertion about language learning. He states that there are aspects in a given second language that cannot be picked spontaneously from the input, that is, the possibility of 'input' becoming 'intake' knowledge. Therefore, some amount of explicit instruction, or what Schmidt (2001) calls 'noticing', might be necessary to help explicit knowledge facilitate learning, or in another word, the implicit knowledge.

On the subject of implicit knowledge, R. Ellis (2002) suggests that the effectiveness of explicit instruction in facilitating implicit knowledge may depend on a number of factors such as the complexity of the target structure, the extent of the instruction, and the availability of the target structure in noninstructional input. In the same way, Hulstijn and Graaff (1994) introduce a number of dimensions to be considered when taking explicit instruction into account as a facilitative tool in second language learning. Complexity (in a cognitive sense) as one dimension refers to the difficulty of a given structure; that is, in the authors' own terms, "[…] the number (and/or the type) of criteria to be applied in order to arrive at the correct form" (p. 103). Accordingly, stated as H3, they proposed that explicit instruction is more advantageous in the case of complex rules than simple rules.

As regards, English reduced relative clauses, and especially passive objective reduced relative clauses (PRRCs) (e.g. the birds noticed in the yard flew away), are among complex and at the same time ambiguous structures shown to be difficult to be processed by second language learners (Adone and Rah, 2010; Franck-Mestre, 2004; Juffs, 1998, 2006). Ambiguous and at the same time complex structures such as English RRCs have been mostly studied with regard to the way they are processed by native speakers (MacDonald, 1994), and in L2 contexts, the way they are processed by advanced or near native L2 learners (Frank-Mestre, 2004; Juffs, 1998) and in a more recent study by intermediate L2 learners (Adone & Rah, 2010). Considering the possible effectiveness of explicit instruction in helping learners attend to ambiguous structures (R. Ellis, 2002), and thereby learn these structures, gives way to the necessity of some form of instruction involved in dealing with such structures.

Therefore, the present study intended to investigate the effect of proactive form-focused instruction on the implicit and explicit knowledge of English passive reduced relative clauses (PRRCs), among intermediate L2 learners of English and have a comparison between the instructed group and a group of advanced L2 learners. As stated in the previous section, most studies investigating the effect of explicit instruction on L2 learners' implicit and explicit knowledge failed to measure the impact of instruction on implicit knowledge due to the limitations of the instruments used (R. Ellis, 2002, 2005, 2009). The present study, however, tried to use instruments measuring real time performance of L2 learners which due to their online nature are better indicators of the L2 learners' implicit knowledge.

The following research questions were investigated in this study:

1. Does explicit instruction affect the explicit knowledge of PRRCs among intermediate EFL learners?
2. Does explicit instruction affect the implicit knowledge of PRRCs among intermediate EFL learners?
3. How are the explicit and implicit knowledge of the target structure different between the instructed intermediate L2 learners and advanced L2 learners?

3. Method

3.1. Participants

Two groups of EFL learners participated in this study. The first group were a number of 35 intermediate EFL learners ranged in age from 18 to 35, who were of both genders. They were randomly divided into experimental (n = 22) and control (n = 15) groups. The participants were all taking a writing course at the time and were not exposed to any other courses relevant to the structures under study. As English is not used in daily discourse in Iran, the participants were not exposed to any language out of class either.

The second group of participants were a group of PhD students of TEFL with an average of 10 consecutive years of studying English as a Foreign Language (TEFL), and had not lived or spent more than a week in an English speaking country. They had all learned English in language institutes, and afterwards at the university during their studies, so they were exposed to language in an explicit manner as it is common practice in Iran.

3.2. Design

This study employed a quasi-experimental design with a pre-test, post-test design involving two groups of intermediate and advanced L2 learners of English. The first group was randomly divided into experimental and control groups. The experimental group received 400 minutes of instruction on target structures during a week. The control group, however, received their routine lessons in their writing course. There were three testing times for this group: a pre-test, a post-test, and a delayed post-test. The second group did not receive any instruction and participated in only one set of the three test series conducted for the intermediate group.

3.3. Instructional materials

As stated in the introduction section, Passive Reduced Relative Clauses (PRRCs) are among complex structures which are difficult for second language learners to learn and process (Juffs, 1998, 2006; Franck-Mestre, 2004; and Adone and Rah, 2010). As a result, this structure was the focus of the present study. The target structure was taught together with other structures, such as adverbial clauses, and noun clauses, in order not to draw attention to the purpose of the study.

3.4. Procedure

In order to select the intermediate learners participated in the study, an ad was put in a language institute in Isfahan, Iran, asking for volunteers to take part in a one-week free course on grammar. The volunteers were first checked based on their scores in previous terms and the ones with an average of 85 out of 100 were selected. The grammar part of Oxford Placement Test (OPT) (Allen, 2004) containing 100 questions was used to evaluate the grammatical knowledge of the volunteers. As the OPT test manual states, the two parts of the test, namely the listening and grammar parts, can be used separately if desired, and the scoring procedure can be done through calculating percentages. Accordingly, a proportion of the score range 135-149 out of 200, which is defined as intermediate level, was calculated to come up with the score range of 71±8 out of 100 based on the grammar section only. The second groups of participants, i.e. the advanced group, took the grammar part of the OPT as well, and the ones (n = 16) scored within 85.5±10, defined as advanced learners by the OPT manual, were selected.

The treatment started a week after conducting the pre-tests. Each lesson started by explaining the structures mentioned in the previous section. The main medium of class was English; the participants' native tongue – Persian – was used when it seemed necessary to clarify the points the participants

showed difficulty understanding. The structures were taught in a deductive manner and direct proactive in nature, as defined by Ellis (2009). The target structures were then taught through form/function mappings of different types of clauses and phrases (Batstone and Ellis, 2009) which were followed by a number of exercises in hand-outs distributed among the participants. An attempt was made to have follow-up form-focused exercises to provide opportunity for the participants to use the target structure, based on what DeKeyser (1998) has proposed as output-based instruction. A post-test was conducted two days after the treatment and a delayed post-test was administered three weeks after the first post-test.

3.5. Instruments

3.5.1. Error correction tasks

This task was conducted to tap on the participants' explicit knowledge of the target structures. The test contained 48 items from among 24 were experimental items and 24 fillers. The fillers contained other grammatical points and were irrelevant to the target structures; half the items in each set were ungrammatical. The tests were checked by a native speaker for their accuracy. To reduce content familiarity, the test items were randomly scrambled to create three versions of the test for the pre-test, first post-test, and the delayed post-test.

The participants were to identify the ungrammatical items. They were asked to correct the wrong items and provide the correct version; furthermore, they were instructed to only underline the ungrammatical segment in an item if they found the item wrong but were not able to provide the correct form. There was no time pressure for completing the task. Responses were scored as (1) for the correct version provided, (0) for not identifying the ungrammatical items, and (0.5) for just underlying the incorrect segments. Reliability for the scores (Cronbach's alpha) was $\alpha = .751$ for the pre-test. Examples 3 (a) and 4 (b) illustrate sample grammatical and ungrammatical experimental items:

(3)
(a) *The patient who advised by his doctor to stop smoking tried to do so.
(b) The birds noticed on the tree pecked at an insect.

3.5.2. Self-paced reading task (moving window technique)

This test was primarily used to see whether the participants possessed the implicit knowledge required in real-time comprehension. A non-cumulative version of self-paced reading task as defined by Just, Carpenter, and Woolley (1982) was used. A non-cumulative presentation provides a more accurate picture of participants' reading in comparison with the cumulative presentation in that the former does not allow the participants to go back and read parts of the sentences again (McDonough & Trofimovich, 2012). The only disadvantage is that the latter is closer to the way we read in real life, and therefore, more naturalistic (Marinis, 2010).

In a non-cumulative presentation, the participants are to read a number of items in a segment by segment (or phrase by phrase) fashion at their own pace. They are instructed to press a pacing button to proceed to the subsequent segments or phrases. The rationale behind this technique is that increasing reaction times to a particular segment indicates difficulty processing during reading (Felser, Roberts, Marinis, & Gross, 2003). The test contained 40 items including 16 items on the target structure and 24 fillers. The experimental items contained both grammatical and ungrammatical sentences.

(4)
The angry nurse_1/ criticized at the hospital_2/ got fired_3.

The slashes represent the way the items were presented to the participants; the participants could not see the slashes. Regions (2) and (3), which were the main target for analyses, were matched for length for all items. The presentation of items and recording the reaction times (RTs) were done by DMDX software package (version 4.2.2.0) designed by Kenneth I. Forster and Jonathan C. Forster at the University of Arizona. The participants were seated in front of a 14-inch monitor and were instructed to press the Right Shift key to move through the items as quickly as possible but not too quickly to miss a segment. There were a number of 6 practice items at the beginning to familiarize the participants with the test procedure. The items were pseudo-randomized by the software; as a result, no two trials (pre-test, post-test, and delayed post-test) were the same for each and every participant. The task was about 5 to 7 minutes long.

Since self-paced reading tasks are basically designed to examine participants' level of comprehension on specific target structures, it is of outmost importance to make sure that the participants do not press the pacing buttons in a mindless manner. A number of different techniques have been used to provide mindful reading of items, from among presenting a comprehension question after the presentation of each item (Rah & Adone, 2010; Hopp, 2010), grammaticality judgment tasks (Juffs, 1998), and making a plausibility judgments (Williams, Mobius & Kim, 2001) can be mentioned. Following the previous studies, a grammaticality judgment task was followed after participants pressed the pacing button for the last segment of each item. Accordingly, two options of 'grammatical' and 'ungrammatical' were presented at the right and left corner of the screen, respectively. Participants were trained to press the Right Shift key for 'Grammatical' and the Left shift key for 'Ungrammatical'. Feedback on the accuracy of answers was provided randomly and for only half the experimental and filler items.

3.5.3. Stop making sense task

As with the self-paced reading task, this test was primarily used to see whether the participants had acquired the implicit knowledge of the target structure. In a stop-making-sense task, subjects have to identify at which point the sentence becomes implausible; hence, it forces subjects to use plausibility information. The rationale behind conducting this online test was to have a closer look at the participants' level of comprehension; in other words, it was intended to have a double check on the results obtained in self-paced reading task. The participants had to react on the grammaticality of each segment when they read the items and not at the end of each item. As a result, an opportunity was provided to check whether the segments being recognized as ungrammatical in the stop-making-sense task had longer reaction times in self-paced reading task as well.

As with the self-paced reading task, there were a number of 40 items including 16 items on the target structure and 24 fillers. The design of the test was exactly the same with the self-paced reading task. The items provided for this test were the exact replica of the moving window task, and changes were only made to the words in regions (1) and (3) with non-critical words. The presentation and recording of RTs were carried out via the same software and the same monitor. They were instructed to move through the items by pressing the Right Shift key and react on the grammaticality of segment by pressing the Left Shift key when the sentence stopped making sense to them.

4. Results

As stated in the procedures, the participants went through two sets of tests, namely online and offline. The results of the two sets of tests are presented below based on the accuracy and reaction times obtained from the tests. By accuracy, we mean the accuracy of the judgments on the grammaticality of the test

items in both offline and online tasks. And by reaction time, we mean the reading times of the participants for test items in the online tasks. Accuracy and RTs were analyzed for the three test times of the intermediate group and the one-time testing of the advanced group. Alpha was set at .05 for all statistical analyses.

4.1. Error correction task

A mixed between-within subjects ANOVA was run to investigate the experimental and control groups' performance through the three test times. An independent samples t-test was run to compare the final results of the experimental group (delayed post-test) with the advanced group. The descriptive statistics are presented in Table 1 below. The results of the mixed between-within subjects ANOVA and independent samples t-test are illustrated in Tables 2 and 3, respectively.

Table 1. Descriptive statistics for the error correction test for the experimental, control, and advanced groups

		pretest		**posttest**		**Delayed posttest**	
		Mean	S.D	Mean	S.D	Mean	S.D
Experimental	22	6.63	2.23	11.34	5.71	19	2.72
Control	15	7.43	2.78	7.36	2.60	7.25	2.53
Advanced	16					19	2.48

Table 2. Results of the mixed between-within subjects ANOVA for the error correction test for the experimental and control groups

	SS	df	MS	F	p	ηp2
Within-group						
Time	622.577	1.726	360.634	35.874	.000	.506
Group×Time	771.037	1.726	446.630	44.429	.000	.559
Error	607.405	60.422	10.053			
Between-group						
Group	702.991	1	702.991	39.817	.000	.532
Error	617.946	35	17.656			

The results of the mixed between-within group ANOVA revealed a significant interaction for *Time*Group*, the main effect for *Time,* and the main effect for *Group*. As there was a significant interaction effect, a post hoc test was run to look into the simple effects of *Time* for each group. For the experimental group, there was a significant difference between the pre-test and post-test ($p < .001$) and a significant difference between the pre-test and delayed post-test ($p < .001$) and a significant difference between the post-test and delayed post-test ($p < .001$) in favor of the post-test and delayed post-test, respectively. For the control group, there was found no significant difference among the pre-test, post-test and delayed post-test ($p > 0.05$).

Table 3. Independent samples t-test for the error correction test for the advanced and experimental groups

		N	**t**	**Sig.**
Error correction	**Exp. Post2**	22	.07	.941
	Advanced	16		

The results of the independent samples t-test indicated that the experimental group were able to gain similar results with the advanced group in their second post-test.

4.2. Self-paced reading tasks

The first part of the analysis was conducting a mixed between-within group ANOVA to examine the overall improvement of the intermediate group in the accuracy part of each item and an independent samples t-test to compare the experimental and advanced groups. The descriptive statistics are presented in Table 4, and the results of the ANOVA and t-test are presented in Tables 5 and 6.

Table 4. Descriptive statistics for accuracy in the SPRT for the experimental, control, and advanced groups

		pretest		**posttest**		**Delayed posttest**	
		Mean	S.D	Mean	S.D	Mean	S.D
Experimental	22	15.42	3.07	21.33	5.15	19.81	5.95
Control	15	16.60	3.43	14.60	3.22	15.56	3.43
Advanced	16					21.62	5.38

Table 5. Results of the mixed between-within subjects ANOVA for accuracy in the SPRT for the experimental and control groups

	SS	df	MS	F	p	ηp^2
Accuracy						
Within-group						
Time	46.700	2	23.350	4.536	.014	.115
Group×Time	50.700	2	25.350	4.925	.010	.123
Error	360.309	70	5.147			
Between-group						
Group	55.904	1	55.904	8.645	.006	.198
Error	226.330	35	6.467			

The results of the mixed between-within group ANOVA revealed a significant interaction for *Time*Group*, the main effect for *Time,* and the main effect for *Group*. As there was found a significant interaction effect, a post hoc test was implemented to find the simple effects of *Time* for each group. For the experimental group, there was a significant difference between the pre-test and post-test (p = .002) and a significant difference between the pre-test and delayed post-test (p = .001), with the delayed post-test scores greater than both the pre-test and post-test. No significant difference, however, was found between the post-test and delayed post-test (p = 1.00). For the control group, on the other hand, there was no significant difference among the pre-test, post-test and delayed post-test ($p > 0.05$).

Table 6. Independent samples t-test for accuracy in the SPRT for the advanced and experimental groups

		N	**Statistic (t)**	**Sig.**
Accuracy in the SPRT	**Exp. Post2**	22	1.05	.304
	Advanced	16		

The results of the independent samples t-test indicated that the experimental group performed the same with the advanced group after the instructional sessions. The second part of analysis for the self-paced reading task was to investigate the reaction times on the third region of test items. As with the analyses for accuracy, a mixed between-within group ANOVA together with an independent samples t-tests were conducted.

Table 7. Descriptive statistics for RTs in the SPRT for the experimental, control, and advanced groups

		pretest		**posttest**		**Delayed posttest**	
		Mean	S.D	Mean	S.D	Mean	S.D
Experimental	22	3104.17	515.37	2486.19	847.25	1846.94	429.10
Control	15	3080.36	480.74	2876.38	636.82	2935.36	576.35
Advanced	16					2651.61	884.25

Table 8. Results of the mixed between-within subjects ANOVA for RTs in the SPRT for the experimental and control groups

	SS	df	MS	F	p	ηp^2
RT23Passive						
Within-group						
Time	1.693E9	1.535	1.103E9	7.776	.003	.182
Group×Time	1.485E9	1.535	9.674E8	6.819	.005	.163
Error	7.622E9	53.725	1.419E8			
Between-group						
Group	986471.095	1	986471.095	.007	.004	.189
Error	4.982E9	35	1.423E8			

The results of the mixed between-within group ANOVA revealed a significant interaction for *Time*Group*, the main effect for *Time,* and the main effect for *Group*. The results from the post hoc test on *Group* showed a significant difference between the two groups ($p = 0.41$) in favor of the experimental group. Moreover, the post hoc test on *Time* revealed no significant difference between the pre-test and post-test ($p = .315$), but the delayed post-test was significantly better than the pre-test ($p = .033$) and post-test ($p = .040$). No significant difference was found for the control group throughout the three test time ($p > .05$).

Table 9. Independent samples t-test for RTs in the SPRT for the advanced and experimental groups

		N	**Statistic (t)**	**Sig.**
Region three RTs in the SPRT	**Exp. Post2**	22	3.65	.001
	Advanced	16		

As the findings show, the experimental group outperformed the advanced group. The overall speed (RTs) of the participants in two groups of control and experimental before and after instruction and the advanced group could give us a deeper understanding of the effect of instruction. Therefore, a sum of RTs on both regions 2 and 3 was calculated for each test time.

Table 10. Descriptive statistics for sum RTs in the SPRT for the experimental, control, and advanced groups

		pretest		**posttest**		**Delayed posttest**	
		Mean	S.D	Mean	S.D	Mean	S.D
Experimental	22	5439.01	971.17	4788.79	933.93	4035.20	704.60
Control	15	5382.85	1140.24	5456.32	1143.71	5489.32	1210.32
Advanced	16					4523.34	1310.71

Table 11. Results of the mixed between-within subjects ANOVA for sum RTs in the SPRT for the experimental and control groups

	SS	df	MS	F	p	ηp^2
Within-group						
Time	1.693E9	1.535	1.103E9	7.776	.003	.182
Group×Time	1.485E9	1.535	9.674E8	6.819	.005	.163
Error	7.622E9	53.725	1.419E8			
Between-group						
Group	986471.095	1	986471.095	.007	.009	.152
Error	4.982E9	35	1.423E8			

The results of the mixed between-within group ANOVA revealed a significant interaction for *Time*Group*, the main effect for *Time,* and the main effect for *Group*. The results of the post hoc test

for *Time* revealed a significant difference between the pre-test and post-test ($p = .001$) and a significant difference between the pre-test and delayed post-test ($p < .001$) in favor of the delayed post-test for the experimental group. But there was no significant difference between the post-test and delayed post-test ($p = .144$). For the control group, there was no significant difference among the pre-test, post-test and delayed post-test ($p > .05$). Table 12 shows that, although no significant difference was found between the two groups, the experimental group gained smaller overall RT scores on time 3 compared with the advanced group.

Table 12. Independent samples t-test for sum RTs for the advanced and experimental groups

		N	Statistic (t)	Sig.
Sum RTs on regions 2 and 3 in the SPRT	**Exp. Post2**	22	1.45	.151
	Advanced	16		

4.3. Stop-making-sense task

This online test was conducted to gain a more detailed picture of the way participants processed test items. A mixed between-within group ANOVA together with an independent samples t-test were run to investigate the performance of the three groups.

Table 13. Descriptive statistics for third regions in the SMST for the experimental, control, and advanced groups

		pretest		**posttest**		**Delayed posttest**	
		Mean	S.D	Mean	S.D	Mean	S.D
Experimental	22	5.09	1.26	6.42	1.69	7.09	1.37
Control	15	4.73	1.22	4.80	1.01	4.79	1.12
Advanced	16					6.75	1.29

Table 14. Results of the mixed between-within subjects ANOVA for third regions in the SMST for the experimental and control groups

	SS	**df**	**MS**	**F**	**p**	ηp^2
Accuracy Active						
Within-group						
Time	45.720	2	24.250	4.436	.024	.125
Group×Time	51.701	2	25.360	4.825	.020	.133
Error	341.308	70	6.137			
Between-group						
Group	56.914	1	54.804	7.645	.004	.188
Error	236.334	35	6.477			

The results of the mixed between-within group ANOVA revealed a significant interaction for *Time*Group*, the main effect for *Time,* and the main effect for *Group*. The results of the post hoc test for *Time* revealed a significant difference between the pre-test and post-test ($p = .002$) and a significant difference between the pre-test and delayed post-test ($p < .001$) in favor of the delayed post-test for the experimental group. But there was no significant difference between the post-test and delayed post-test ($p = .151$). For the control group, there was no significant difference among the pre-test, post-test and delayed post-test ($p > .05$). As can be observed in Table 15, the experimental group could obtain the same accuracy scores with the advanced group.

Table 15. Independent samples t-test for the advanced and experimental groups

		N	Statistic (t)	Sig.
Sum RTs on regions 2 and 3 in the SPRT	**Exp. Post2**	22	.77	.44
	Advanced	16		

5. Discussion

The present study sought to investigate the effect of explicit instruction on the learning of ambiguous structures, here passive objective relative clauses. Both explicit and implicit knowledge were analyzed before and after instruction for the experimental group and were compared with the control and advanced learners. The first research question concerned the effect of explicit knowledge on the metalinguistic (explicit) knowledge of the target structure for the experimental group. Significant effects for instruction were found in the immediate offline post-test for the experimental group which sustained with an increase to the delayed post-test. Despite similar performances by the experimental and control groups in the pre-test, the experimental group outperformed the control group in the immediate post-test. This revealed an improvement in metalinguistically producing the right form of the target structures after instruction. The main effect of explicit instruction on explicit knowledge was revealed when scores obtained from the delayed offline post-test of the experimental group were compared with that of the advanced group. As illustrated in the error correction test's results, no significant difference was found between the two groups' performances. This suggested a significant effect for instruction to the extent that it enabled the intermediate group to perform almost similarly with the advanced group.

The second research question concerned the effect of explicit instruction on the implicit knowledge of the target structure. The SPRT results for the accuracy revealed significant gains throughout the three test times for the experimental group. The speed of processing, indicating how automatized the target structure had become through the course of treatment, was evaluated by comparing RTs for judging test items. Although no significant difference was found among the three test times for the experimental group, mean RTs generally decreased from the pre-test to post-test and finally the delayed post-test. This fall in RTs can imply faster judgments on the grammaticality of test items, and when paired with the results obtained from the accuracy of judgments, it can be claimed that the experimental group had reached some level of automatization after instruction. This constant decrease in RTs from the pre- to delayed post-test, i.e. faster decisions on grammaticality, together with a slight fall in accuracy gains from the post- to delayed post-test can be explained by what has been overly recognized as the trade-off hypothesis. This trade-off which is an increase in one cognitive aspect at the expense of another has been contributed to learners' limited cognitive capacity while doing online tasks (Skehan and Foster, 1997; Yuan and Ellis, 2003, Tavakoli and Foster, 2008).

The results obtained from the analyses of the SMST's third regions added to the evidence to the effectiveness of explicit instruction in improving implicit knowledge. First, the experimental group gained shorter RTs from time 1 to time 3 of testing on this region. Second, similar performances by the experimental and the advanced groups were found indicating that explicit instruction had helped intermediate learners read faster. Moreover, although no statistically significant difference was found between the two groups, the experimental group performed faster in their delayed post-test than the advanced learners.

As mentioned earlier, the SMST was administered to provide support for the findings obtained from the SPRT. The plausibility judgments on the third regions were analyzed to see whether there was a shared pattern between the length of RTs on the third region obtained from the SPRT and the judgments on the same region for the SMST. The overall pattern of plausibility judgments on the third region

improved through the course of study for the experimental group. This was in accord with the longer RTs obtained from the SPRT. As with the SPRT results, the SMST results of the experimental group were compared with that of the advanced group. Similarly, the groups performed in the same way with even better accuracy gains in favor of the experimental group. A rather revealing comparison between the RTs on the third region in the SPRT and the accuracy gains from the SMET between the two groups gave rise to the effectiveness of explicit instruction on the implicit knowledge of the experimental group. That the experimental group gained the same results with the advanced group on both tests brought strong evidence to the effectiveness of explicit instruction in improving implicit knowledge for this group.

The findings of this study regarding the experimental group's improved performance after instruction in both offline and online tests is supported by Norris and Ortega (2000) who maintained that explicit instruction makes a considerable difference in learners' state of knowledge with durable effects. The findings are further supported by what Ellis (1990) puts forward as to the delayed effect of instruction when the grammatical features help learners attend to the input and help them acquire the structure procedurally. Accordingly, the improved performance in the delayed post-tests compared with the first post-tests can be due to the fact that more time was needed to internalize the structure (see, Gass, 1997; Nassaji and Fotos, 2004; VanPatten, 1996, Mackey, 1999; Ellis, 2009). This is in line with Akakura (2012) in which explicit instruction showed durable effects concerning the acquisition of articles, and opposed to Tode (2007) in which no durable results were obtained for explicit instruction.

Regarding the fact that the participants in this study benefited from explicit instruction to improve both their explicit and implicit knowledge, it can be claimed that the findings of this study may serve as an attempt to refute opposing ideas towards the effectiveness of explicit instruction. For instance, Krashen (1981, 1982, 1993) views explicit instruction to be effective in only simple structures and only in form of explicit knowledge. The results obtained here provide evidence that complex structures can be acquired through explicit instruction. Furthermore, as Loewen et al., (2009) stated, implicit learning did not result in either explicit or implicit knowledge, which can suggest the necessity of some form of explicit learning. Moreover, Krashen argues that the effects of explicit instruction are evident only if there are measures by which implicit knowledge is tested in free production tests and not in situations under monitoring and control. This is what Ellis (2005, 2009) is concerned with, i.e. lack of appropriate measures of implicit knowledge. Hence, using appropriate measures of both explicit, and more importantly, implicit knowledge in this study led to more reliable evidence to the effectiveness of explicit instruction in improving implicit knowledge.

6. Conclusion

Overall, the present study came at three major findings. First, there was found a positive effect of explicit instruction on both explicit and implicit knowledge of a complex structure. This finding is supported by a large body of research showing that explicit learning is effective. Second, similar online and offline performances by the intermediate and advanced groups were in accord with N. Ellis's (2002) assertion that language acquisition can be speeded by explicit instruction, and without some form of consciousness raising or noticing, formal accuracy cannot be attained or may be picked up very slowly (Sharwood Smith, 1981; Schmidt, 1990; Terrell, 1991). Third, the durable results of the explicit instruction for both implicit and explicit instruction brought about evidence to the long-term effect of explicit instruction.

There are pedagogical implications regarding the results obtained in this report. Previous studies (e.g., Adone & Rah, 2010) found that intermediate level learners participated were not able to process complex structures such as RRCs as well as advanced learners did. Regarding the results obtained in the

present study, it can be argued that, by the help of instruction, and specifically explicit instruction, learners can speed their progress in acquiring more complex structures which might occur, if at all, in a much slower pace.

The study was not without its limitations. Number one limitation concerns using speeded online tests as they require the participants to work with computers in addition to learn how the tests work. Therefore, there might be an instrument effect regarding getting used to the keys defined for 'yes' and 'no' answers, and the RTs obtained might be affected by this matter. Another limitation was the number of instructional sessions. In this study, there were four sessions of instruction each 100 minutes. More reliable results may be obtained with a longer period of instruction.

To provide more in-depth findings regarding the effectiveness of explicit instruction on explicit and implicit knowledge, future studies can provide other measures of implicit knowledge such as free production tasks and pair the results with speeded online tasks to mitigate the possible instrument effect mentioned here. Other complex structures can be put to scrutiny to see whether explicit instruction can be effective for all kinds of structures. And finally, lower level participants can be a subject of inquiry to examine under what conditions and for which proficiency levels explicit instruction can work best.

References

Allen, D. (2004). *Oxford placement test*. Oxford: Oxford University Press.

Akakura, M. (2012). Evaluating the effectiveness of explicit instruction on implicit and explicit knowledge. *Language Teaching Research, 16 (1)*, 9-37.

Batstone, R. & Ellis, R. (2009). Principled grammar teaching. *System: An International Journal of Educational Technology and Applied Linguistics, 37,* 194–204.

Bley-Vroman, R. (1990). The logical problem of foreign language learning. *Linguistic Analysis, 20 (1/2)*, 3-49.

Corder, S. P. (1967). The significance of learner's errors. *International Review of Applied Linguistics in Language Teaching, 5,* 161-69.

DeKeyser, R. (1995). Learning second language grammar rules: An experiment with a miniature linguistic system. *Studies in Second Language Acquisition, 17*, 379-410.

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

DeKeyser, R. (2007). Introduction: Situating the concept of practice. In R. DeKeyser (Ed.), *Practice in a Second Language: Perspectives from Applied Linguistics and Cognitive Psychology* (pp. 1-18). New York: Cambridge University Press.

Doughty, C. (1991). Second language instruction does make a difference: Evidence from an empirical study on SL relativization. *Studies in Second Language Acquisition, 13*, 431-469.

Ellis, R. (1990). *Instructed second language acquisition: Learning in the classroom*. Oxford/Cambridge, MA: Blackwell.

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

Ellis, R. (1994). *The Study of Second Language Acquisition*. Oxford: Oxford University Press.

Ellis, R. (2002). Does form-focused instruction affect the acquisition of implicit knowledge? A review of the research. *Studies in Second Language Acquisition, 24*, 223-36.

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

Ellis, R. (2008). Explicit knowledge and second language learning and pedagogy. In J. Cenoz & N.H. Hornberger (Eds.), *Encyclopedia of language and education: Volume 6: Knowledge about language* (pp. 143–153). 2nd edition. New York: Springer.

Ellis, R. (2009). Measuring implicit and explicit knowledge of a second language. In R. Ellis, S. Loewen, C. Elder, R. Erlam, J. Philp, & H. Reinders (Eds.), *Implicit and explicit knowledge in second language learning, testing and teaching* (pp. 31-64). Bristol/Buffalo, NY/ Toronto: Multilingual Matters.

Ellis, R., Loewen, S., Elder, C., Erlam, R., Philp, J., & Reinders, H. (2009). *Implicit and explicit knowledge in second language learning, testing and teaching*. Bristol/Buffalo, NY/Toronto: Multilingual Matters.

Ellis, N. C. (2002). Frequency effects in language acquisition: A review with implications for theories of implicit and explicit language acquisition. (Target article) *Studies in Second Language Acquisition, 24*, 143-188.

Felser, C. (2005). Experimental psycholinguistic approaches to second language acquisition. *Second Language Research, 21,* 95-97.

Felser, C., Marinis, T., Clahsen, H., & Gross, L. (2003). Children's processing of ambiguous sentences: A study of relative clause attachment. *Language Acquisition, 11*, 127-163.

Frenck-Mestre, C. (2004). Ambiguities and anomalies: What can eye-movements and event-related potentials reveal about second language sentence processing? In J. F. Kroll & A. M. B. De Groot (Eds.), *Tutorials in bilingualism: Psycholinguistic perspectives* (pp. 268-284). Mahwah, NJ: Erlbaum.

Gass, S.M. (1997). *Input, interaction, and the second language learner*. Mahwah, NJ: Lawrence Erlbaum.

Hopp, H. (2010). Ultimate attainment in L2 inflection: performance similarities between non-native and native speakers. *Lingua, 120*, 901-931.

Hulstijn, J. (1989). Implicit and incidental second language learning: Experiments in the processing of natural and partly artificial input. In H. Dechert & M. Raupach (Eds.), *Interlingual Processes* (pp. 49-73). Tubingen: Gunter Narr.

Hulstijn, J. (2002). Towards a unified account of the representation, processing and acquisition of second language knowledge. *Second Language Research, 18*, 193–223.

Hulstijn, J. H., & de Graaff, R. (1994). Under what conditions does explicit knowledge of a second language facilitate the acquisition of implicit knowledge? A research proposal. *AILA Review, 11*, 97–112.

Jiang, N. (2012). *Conducting reaction time research in second language studies*. New York: Routledge

Juffs, A. (1998). Main verb vs. reduced relative clause ambiguity resolution in L2 sentence processing. *Language Learning, 48*, 107-147.

Juffs, A. (2001). Psycholinguistically oriented second language research. *Annual Review of Applied Linguistics, 21*, 207-220.

Juffs, A. (2006). Processing reduced relative versus main verb ambiguity in English as a second language: A replication study with working memory. In R. Slabakova, S. Montrul, & P. Prévost

(Eds.), *Inquiries in linguistic development in honor of Lydia White* (pp. 213-234). Amsterdam: Benjamins.

Just, M. A., Carpenter, P. A., & Wolley, J. D. (1982). Paradigms and processes in reading comprehension. *Journal of Experimental Psychology: General, 111*, 228-238.

Krashen, S. (1981). Second language acquisition and second language learning. Oxford, England: Pergamon.

Krashen, S. D. (1985). *The input hypothesis: Issues and implications*. London: Longman.

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

Krashen, S. (1993). The effect of formal grammar teaching: Still peripheral. *TESOL Quarterly, 26*, 409-411.

Krashen, S. (2008). Language Education: Past, Present and Future. *RELC Journal, 39*, 2, 178-187.

MacDonald, M. C. (1994). Probabilistic constraints and syntactic ambiguity resolution. *Language and cognitive processes, 9*, 157-201.

Mackey, A. (1999). Input, interaction, and second language development: An empirical study of question formation in ESL. *Studies in Second Language Acquisition, 21*, 557-87.

Marinis, T. (2003). Psycholinguistic techniques in second language acquisition research. *Second Language Research, 19(2),* 144–161.

Marinis, T. (2010). Using on-line processing methods in language acquisition research. In S. Unsworth, & E. Blom (Eds.), *Experimental methods in second language research* (pp. 139-162). Amsterdam: Benjamins.

McDonough, K. & Trofimovich, P. (2012). How to use psycholinguistic methodologies for comprehension and production. In A. Mackey, & S. Gass (Eds.), *Research methods in second language acquisition* (pp. 117-138). Oxford: Wiley-Blackwell.

Nassaji, H. & Fotos, S. (2004). Current developments in research on the teaching of grammar. *Annual Review of Applied Linguistics, 24*, 126-45.

Norris, J. M. & Ortega, L. (2000). Effectiveness of L2 instruction: A research synthesis and quantitative meta-analysis. *Language Learning, 50*, 417-528.

Rah, A., & Adone, D. (2010). Processing of the reduced relatives clause verb ambiguity in L2 learners at different proficiency levels. *Studies in Second Language Acquisition, 32,* 79-109.

Roberts, L. (2012). Psycholinguistic techniques and resources in second language acquisition research. *Second Language Research, 28(1),* 113–127.

Robinson, P. (1996). Learning simple and complex rules under implicit, incidental rule-search conditions, and instructed conditions. *Studies in Second Language Acquisition, 18,* 27-67.

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

Schmidt, R. (1990). The role of consciousness in second language learning. *Applied Linguistics, 11,* 129-158.

Schmidt, R. (2001). Attention. In P. Robinson (Ed.), *Cognition and second language instruction* (pp. 3-32). Cambridge: Cambridge University Press.

Schmidt, R., & Frota, S. (1986). Developing basic conversational ability in a second language: A case-study of an adult learner. In R. Day (Ed.), *Talking to Learn: Conversation in Second Language Acquisition* (pp. 237-326). Rowley, MA: Newbury House.

Skehan, P., & Foster, P. (1997). The influence of planning and post-task activities on accuracy and complexity in task based learning. *Language Teaching Research, 1*, 185–211.

Tavakoli, P., & Foster, P. (2008). Task design and second language performance. The effect of narrative type on learner output. *Language Learning, 58*, 439-473.

Terrell, T. (1991). The role of grammar instruction in a communicative approach. *The Modern Language Journal, 75,* 52–63.

Tode, T. (2007). Durability problems with explicit instruction in an EFL context: the learning of the English copula 'be' before and after the introduction of the auxiliary 'be'. *Language Teaching Research, 11 (1)*, 11-30.

VanPatten, B. (1996). *Input processing and grammar instruction in second language acquisition*. Norwood, NJ: Ablex.

Williams, J., Mobius, P., & Kim, C. (2001). Native and non-native processing of English wh-questions: Parsing strategies and plausibility constraints. *Applied Psycholinguistics, 22*, 509-540.

Yuan, F. & Ellis, R. (2003). The effects of pre-task planning and on-line planning on fluency, complexity, and accuracy in L2 monologic oral production. *Applied Linguistics, 24*, 1-27.

Açık öğretmenin yabancı dil olarak İngilizce öğrenenlerin örtülü ve açık bilgileri üzerindeki etkisi: İngilizce ilgi cümlecikleri vakası

Öz

Bu çalışma doğrudan öğretmenin(direkt proaktif doğrudan öğretme), İngilizce edilgen nesne konumundaki ilgi cümleciklerinin edinimi üzerindeki etkisini incelemektedir. Bu çalışmada iki grup katılımcı yer almıştır; deney (s = 22) ve kontrol (s = 15) grubu olmak üzere gelişigüzel bir şekilde ikiye ayrılmış ileri seviyede İngilizceyi yabancı dil olarak öğrenenler grubu (s = 16) ve orta seviyede İngilizceyi yabancı dil olarak öğrenenler grubu (s = 37). Deney grubu hedef yapıya yönelik 4 ders doğrudan öğretme almıştır. Fakat kontrol grubu yazma derslerindeki rutin aktivitelerini yapmıştır. Dersten önce, dersten sonra ve gecikmeli olmak üzere 3 test zamanı vardır. İki ayrı doğrudan ve dolaylı bilgi ölçeği uygulanmıştır; bir tane çevrimdışı üst dil bilgisi testi (hata düzeltme aktivitesi) ve iki tane çevrimiçi hızlandırılmış dolaylı bilgi testi. (bir adet kendi hızına göre yapılan okuma aktivitesi ve bir adet stop-making sense aktivitesi). Bulgular, deney grubu için doğrudan öğretmenin hem dolaylı hem de doğrudan bilgi üzerinde olumlu etkisi olduğunu göstermiştir. Doğrudan öğretmenin kalıcı etkileri gecikmeli uygulanan testten alınan sonuçlara bağlı olarak çıkarılmıştır. İleri seviyedeki grup, deney grubuna çok yakın bir performans göstermiştir. Bu da İngilizceyi yabancı dil olarak öğrenme bağlamında edinilmesi gereken bazı dil yapıları için doğrudan öğretmenin gerekliliğinin yanı sıra doğrudan öğretmenin dil öğrenimini hızlandırmadaki etkisini göstermektedir.

Anahtar sözcükler: Doğrudan/Doğrudan öğretme; dolaylı/dolaylı bilgi; çevrimdışı/çevrimiçi testler; indirgenmiş İngilizce ilgi cümlecikleri

AUTHOR BIODATA

Marzieh Nezakat-Alhossaini is a PhD candidate of Applied Linguistics from the University of Isfahan. Her research interests are second language acquisition, TEFL, and language processing.

Manijeh Youhanaee is an assistant professor of Applied Linguistics from the University of Isfahan. Her research interests are second and third language acquisition and syntax.

Ahmad Moinzadeh is an associate professor of Applied Linguistics from the University of Isfahan. His research interests are second language acquisition and syntax.