

The Effect of Corrective Feedback on the Acquisition of Implicit and Explicit L2 Knowledge

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Abstract

The current study explored the effects of recasts and metalinguistic feedback on the acquisition of implicit and explicit knowledge of English by Persian EFL learners. Three intact EFL classrooms were assigned to three groups: two experimental and one control group. Learners in one experimental group received recasts whenever they made an error during task-based interactions with their interlocutors while learners in the second experimental group received metalinguistic corrective feedback for their errors while performing the same tasks. Learners in the control group also performed the same tasks but received no corrective feedback for their errors. Learners' achievements as a result of the treatments were investigated via timed and untimed grammaticality judgment tests and also via an elicited oral imitation test. The results indicated that metalinguistic corrective feedback is more effective than recasts in promoting the acquisition of both implicit and explicit L2 knowledge.

Key words: Recasts, metalinguistic feedback, corrective feedback, implicit knowledge, explicit knowledge.

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1. Introduction

Two types of evidence which are believed to be crucial in second language (L2) development are positive and negative evidence. Positive evidence provides learners with the correct and target-like structures or what is acceptable in L2 while negative evidence warns learners against what is unacceptable. One framework for investigating the roles of positive and negative evidence is based on research on the role of corrective feedback in L2 acquisition. Corrective feedback is defined as a teacher's reactive move that invites a learner to attend to the grammatical accuracy of the utterance which is produced by the learner (Sheen, 2007). Corrective feedback according to Ellis, Loewen, and Erlam (2006) takes the form of one or a combination of the following responses by a teacher when a learner makes an error: (1) an indication that the learner committed an error, (2) the provision of correct form of the error, and (3) the provision of some metalingual explanation regarding the error (P. 340). The most comprehensive taxonomy of corrective feedback has been provided by Lyster and Ranta (1997) who

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classified corrective feedback into six categories, which are explicit correction, recast, metalinguistic feedback, elicitation, repetition, and clarification request. Among these categories, recasts and metalinguistic feedback will be considered in the current study.

Different types of corrective feedback can be categorized according to their degree of implicitness or explicitness. Implicit types of corrective feedback are those which do not explicitly warn learners regarding their error and thus do not disrupt the flow of communication. Explicit corrective feedback, on the other hand, explicitly demands learners to pay attention to an incorrect feature in their output and thus is likely to impinge on communication. While recasts are usually considered as implicit corrective feedback by providing learners mainly with positive evidence, metalinguistic feedback is more explicit by indicating learners the nature of the error and providing them mainly with explicit negative evidence.

Implicit versus Explicit Corrective Feedback

As mentioned above, various types of corrective feedback differ in terms of how implicit or explicit they are. Recasts are usually regarded as prototypical implicit feedback defined by Lyster and Ranta (1997) as “the teacher’s reformulation of all or part of a student’s utterance, minus the error” (p. 46). An example of a recast adapted from Sheen (2007) is given below.

Student: There was fox.

Teacher: There was a fox (Sheen, 2007, p. 307).

Research has shown that recasts are the most frequently used type of corrective feedback in and out of the classroom (Braidı, 2002; Lyster & Ranta, 1997; Oliver, 1995; Sheen, 2004). Lyster (1998), for example, in his analysis of teacher-student interaction in four primary immersion classrooms found that out of six types of corrective feedback identified (recasts, metalinguistic feedback, explicit correction, clarification requests, elicitation, and repetition), recasts were the most frequently used type of corrective feedback. Sheen (2004) in a study that compared the frequency of recasts in immersion, communicative English as a second language (ESL), and also English in EFL contexts, found that, on average, 60% of all the feedback moves involved recasts. According to Ellis (1994), recasts create the optimal condition for cognitive comparison because they promote noticing of form while a focus on the meaning/message is maintained. Trofimovich, Ammar, and Gatbonton (2007) maintained that recasts are considered as ideal interactional feedback because, first, they are implicit and unobtrusive (i.e. they highlight the error without breaking the flow of communication) and, second, they are learner-centered (i.e. they are contingent on what the learner is trying to communicate). Nonetheless, the saliency of recasts to learners and their reliability as corrective moves have been questioned by some researchers on the ground that they are ambiguous and learners often fail to distinguish them from non-corrective repetitions. This is especially the case in classrooms in which the primary focus of the teacher and the students is on meaning. Furthermore, although recasts are often considered as prime examples of implicit corrective feedback, they can vary enormously in whether they afford negative or positive evidence. Some recasts are quite explicit and thus provide learners mainly with negative evidence. This is especially the case when the incorrect element of the utterance which is recasted to learners is phonetically emphasized by the teacher. Nonetheless, recasts are generally considered as an appropriate and effective tool for correcting learners’ errors in L2 classrooms without impinging on communicative and meaning-focused activities.

In contrast to recasts, metalinguistic feedback is an explicit type of corrective feedback. Lyster and Ranta (1997) defined metalinguistic feedback in terms of “comments, information, or questions related to the well-formedness of the learner’s utterance” (p. 47). The following example from Ellis et al. (2009) represents a metalinguistic feedback:

Learner: He kiss her.

Researcher: Kiss - You need past tense.

Learner: He kissed (Ellis et al. 2009, p. 319).

Therefore, metalinguistic feedback mainly provides learners with negative evidence. Thus, an important advantage of metalinguistic feedback over recasts is that metalinguistic feedback is self-evidently corrective and therefore enables learners to recognize the corrective intentions of feedback. Furthermore, metalinguistic feedback assists learners to locate the source of error in their production which in turn helps learners to carry out the cognitive comparison and/or noticing the gap between their errors and target forms. Such a cognitive comparison is believed to be crucial for L2 acquisition (Ellis, 1994; Schmidt, 1990).

A number of experimental studies compared the effects of recasts and metalinguistic feedback on L2 knowledge. Carroll and Swain (1993), for example, investigated the effects of four different types of corrective feedback on the acquisition of English dative alternation by 100 adult Spanish-speaking learners of English as an L2 and found that the groups who received explicit feedback performed significantly better than the control group. The study also found that the group which had been given the most explicit feedback (i.e. metalinguistic feedback) performed significantly better than all the other groups which received more implicit types of feedback. Similarly, Ellis et al. (2006) found that explicit corrective feedback in terms of metalinguistic feedback is more effective than recasts on the acquisition of English regular past tense by lower intermediate EFL learners. Their results also suggested that (explicit) corrective feedback is more beneficial to learners' implicit knowledge than their explicit knowledge of the target form. Measurement instruments which were used by Ellis et al. (2006) were a grammaticality judgment test and an oral imitation test to tap on learners' explicit and implicit knowledge respectively. Sheen (2007) also examined the effects of recasts and metalinguistic corrective feedback on the acquisition of English articles and the extent to which learners' language analytic ability (language aptitude) and attitudes towards corrective feedback mediate the effects of corrective feedback with three groups of intermediate-level EFL learners. The results indicated that the metalinguistic group outperformed both the recast and the control groups whereas the recast group did not perform significantly better than the control group. The results also indicated a significant relationship between benefiting from metalinguistic feedback and learners' language analysis ability and also their attitudes towards error correction. No such relations were found for the recast group. Thus, Sheen (2007) concluded that the insignificant relationship found between the effectiveness of recasts and analytic language ability and learners' attitudes could be explained with regards to the fact that recasts were not as salient as metalinguistic feedback and learners in the recast group were not aware that they were being corrected.

Other studies reported an association between using implicit corrective feedback such as recasts and measurable gains in L2 acquisition. For example, Lyster and Izquierdo (2009) indicated that recasts can be as effective as other more explicit types of corrective feedback which they called prompts whereby learners were pushed to self-correct. Mackey and Philp (1998) also reported the beneficial effects of recasts on learning with respect to L2 learners' acquisition of question forms. More specifically, they indicated that developmentally ready learners who were repeatedly exposed to recasts during communicative tasks outperformed both the group that received no recasts in producing more advanced question forms as well as those learners who were not developmentally ready to acquire the target form.

Implicit and Explicit L2 Knowledge

The distinction between implicit and explicit L2 knowledge is among the central issues in L2 acquisition research. Implicit knowledge refers to tacit, intuitive, and procedural knowledge regarding

what is grammatical. Explicit knowledge, on the other hand, refers to conscious and declarative knowledge regarding facts about language system which can be verbalized by individuals. According to Ellis (1990), implicit and explicit L2 knowledge are different in kind and are held separately in brain.

While there is a general consensus regarding the differentiated nature of L2 knowledge, there is no agreement over the interface between implicit and explicit L2 knowledge. According to Ellis et al. (2009), three different answers have been offered regarding the interface between implicit and explicit L2 knowledge:

1. According to strong interface position, explicit knowledge can be converted into implicit knowledge when learners practice explicit and declarative rules.
2. According to non-interface position, implicit and explicit knowledge are held separate in brain and each involves rigidly distinct mechanisms and thus cannot be converted to each other.
3. According to the weak interface position, explicit knowledge can assist the acquisition of implicit knowledge by making some aspects of input salient and noticeable to learners.

Each of these interface positions have some implications for L2 teaching and learning. Non-interface position implies an experiential analytic approach to language teaching which aims at exposing learners to ample L2 input without any explicit grammatical intervention. Proponents of strong interface position, in contrast, considers a role for explicit grammar teaching on the assumption that learners are able to convert their explicit knowledge into implicit knowledge which can subsequently be used in communication. Weak interface position implies that some level of explicit formal instruction can be beneficial to L2 acquisition by making some aspects of input more salient and noticeable to learners. This position which is in line with focus-on-form approach (as opposed to 'focus on formS) draws on Schmidt's noticing hypothesis (Schmidt, 1990, 2001) according to which noticing is a prerequisite for learning and learners must consciously pay attention to or notice input to be further processed for acquisition. Focus-on-form instruction refers to a kind of instruction in which linguistic features are integrated into meaningful activities that require learners to communicate, while eliciting their attention to some linguistic features in the input. Focus on formS, on the other hand, refers to instruction that seek to isolate some linguistic features devoid of communicative context and teach these features one at a time. While the issue of interface positions and the nature of implicit and explicit knowledge continue to be controversial in SLA research, there is a wide acceptance among L2 researchers and practitioners that SLA involves both implicit and explicit learning, and that implicit and explicit knowledge interact at the level of performance.

Measuring Implicit and Explicit Knowledge

Since the aim of the current research is to measure the effectiveness of corrective feedback in terms of implicit and explicit knowledge, it is essential to clearly set the criteria for determining valid measures to tap implicit and explicit L2 knowledge.

It is generally a consensus that the following three critical features among others act as criteria to distinguish between implicit and explicit knowledge (e.g. Ellis et al. 2009; Krashen, 1985):

1. *Degree of awareness*: Individuals are usually unaware of their implicit knowledge, but mobilizing explicit knowledge entails awareness of rules.
2. *Time available*: Implicit knowledge can be elicited when learners are pressured to perform a task on line, whereas unpressured tasks would permit learners to draw both on their explicit and implicit knowledge.
3. *Focus of attention*: Utilizing implicit knowledge entails a primary focus on message and peripheral focus on form, whereas using explicit knowledge demands a primary focus on language form and a peripheral focus on meaning.

Thus, by manipulating the above features, it is possible to design tests which tap on learners' implicit and explicit knowledge. In other words, any measure of implicit or explicit knowledge must be informed

by the above-mentioned features. In Han and Ellis (1998) and Ellis et al. (2009), attempts were made to develop measures of implicit and explicit knowledge which are in line with the above criteria and were used in the current study as well. They include timed and untimed *grammaticality judgment tests* (GJT) and also *elicited oral imitation test* (EOIT). According to Han and Ellis (1998) and Ellis et al. (2009), untimed GJTs encourage learners to draw on their explicit knowledge while timed GJTs limit L2 learners' ability to access explicit L2 knowledge and instead require them to draw on their implicit knowledge. Furthermore, it has been suggested that ungrammatical items in untimed GJT can better represent L2 learners' access to their explicit knowledge (Ellis, 2004, 2005). Concerning EOIT, Ellis et al. (2009) found some intriguing evidence to consider EOIT as a measure of implicit knowledge. According to Ellis et al. (2009), the high significant correlation between performance in EOIT and other measures of implicit knowledge is an evidence to consider this test as a valid measure of implicit knowledge. In this regard, they argued that EOIT is a reconstructive language stimuli, that is, it requires participants to process rather than repeat verbatim.

Motivations for the Current Study

It is difficult to draw firm and unequivocal conclusions regarding the comparative efficacy of recasts and metalinguistic feedback. One shortcoming of previous studies of corrective feedback is that recasts and metalinguistic feedback were operationalized differently. In previous studies, recasts were considered as prototypical implicit feedback while recasts can be made quite explicit via a number of conversational tactics such as rising intonation or emphasizing the corrected feature of learners' sentence in the recast. Metalinguistic feedback can also vary in that it can either be provided alone or be accompanied by a recast of the learner's incorrect sentence. Thus, a more accurate definition and operationalization of recasts and metalinguistic feedback is needed. Furthermore, while previous studies of corrective feedback investigated learning achieved through corrective feedback via different instruments such as both timed and untimed GJTs, and oral production tasks, they did not straightforwardly address learning gains in terms of implicit and explicit knowledge. One of the aims of the current study is to investigate the effects of recasts and metalinguistic feedback in terms of implicit and explicit knowledge. Finally, most research on corrective feedback has been performed on learners in immersion and ESL contexts. As Sheen (2004) argued, context is an important factor determining the effectiveness of corrective feedback. Thus, we believe that investigating the effects of corrective feedback on promoting L2 knowledge in Iranian EFL context will contribute to current literature and add to our understanding of the efficacy of corrective feedback.

Research Questions

The current study is guided by the following research questions:

1. What are the effects of recasts and metalinguistic feedback on the acquisition of implicit and explicit L2 knowledge?
2. Do recasts and metalinguistic feedback have differential effects on the acquisition of L2 knowledge?
3. Is there any relationship between providing implicit and explicit corrective feedback and the acquisition of implicit and explicit L2 knowledge?

2. Method

2.1 Design

The study used a quasi-experimental design involving pre-tests, treatment, post-tests, and delayed post-tests using intact EFL classes.

2.2 Participants

Three intact lower intermediate EFL classes in an Iranian urban area provided the sample of participants for the current study. The participants had been placed in their level based on a simulated TOEFL test and an interview. The participants' age ranged from 20 to 45 and all either held graduate degree or were university students. All learners were Iranian nationals with Persian as their first language. The class sizes ranged from 30 to 35. Out of the total of 99 students, 86 students completed consent forms and participated in the study. Accordingly, three groups (intact classes) were formed: one recast group (n= 30), one metalinguistic group (n= 29), and one control group (n=27). Out of 86 learners participating in the study, 46 were females and 40 were males. In their consent forms, all participants claimed that they were highly motivated to improve their English. Beside the researcher (the first author), 2 EFL teachers were invited to the study to serve as interlocutor (henceforth, interlocutors) to provide learners with feedback during the treatment sessions. The researcher also acted as an interlocutor during the treatment sessions. Prior to the study, the researcher met other interlocutors several times and informed them fully about the research objectives and procedures.

2.3 Operationalization

2.3.1. Recasts

Recasts were operationalized as a reformulation of a learner's errant utterance, without changing the original meaning intended by the learner in a communicative activity (Sheen, 2006). The recasts which were used in the current study were implicit feedback as the interlocutors did not attempt to make them explicit (i.e., emphasizing them). In other words, recasts in the current study were delivered with no extra or unusual stress or emphasis on the corrected part of the learner's incorrect utterance. The following example from the current study's database represents how recasts were operationalized in the study:

Example 1

Learner: He has dog.

Interlocutor: He has a dog.

2.3.2. Metalinguistic feedback

Metalinguistic feedback was operationalized as "a teacher's provision of correct form following an error, together with metalinguistic information (Sheen, 2007, p.307). The following example shows how metalinguistic feedback was operationalized:

Example 2

Learner: and dog was in his car.

Interlocutor: Can you think about your grammar? dog or the dog? You should use "the" before dog because you talked about it before and it is known to us.

As the example shows, besides the metalinguistic information, the interlocutors also provided the correct form of the learners' deviant structures.

2.4 Target structure

For the purpose of the current study, articles (definite *the*, and indefinite *a*) were chosen as target forms for several reasons. First, the participants of the current study had not received any explicit instruction regarding articles before the study. Thus, articles were deemed to be appropriate to isolate the effects of treatments. Second, following VanPatten's theory of input processing (VanPatten, 1996, 2002; VanPatten & Cadierno, 1993; VanPatten & Oikkenon, 1996), due to limited processing capacity, learners pay more attention to lexical words at the expense of functional words such as articles when processing language. Therefore, articles remain obscure and non-salient in the input and thus difficult to acquire by L2 learners. Finally, for the objectives of the current study, they are easy to elicit and measure in the context of meaning-focused activities. Thus, definite and indefinite articles as in the following sentences were chosen as linguistic targets for the current study:

-Yesterday, John watched *a* movie. *The* movie was so amazing.

2.5 Treatment materials and procedure

Several weeks before the treatment sessions started, the researcher met the other interlocutors and fully informed them about the treatment procedure. Furthermore, prior to the treatment sessions, the researcher met the interlocutors and rehearsed the treatments including how to elicit the desired response and how to provide corrective feedback. Following Sheen (2007), story retelling task was used to elicit participants' desired response in order to provide them with corrective feedback whenever they made any article error. The following steps were taken to elicit the desired response from learners and to provide them with corrective feedback.

1. The participants in each group were first provided with a short story in each treatment session.
2. The participants were told to read the story silently. They were also asked to retell the story for themselves for 5 minutes.
3. The participants were told that they should retell the story for an interlocutor in the absence of the story.
4. After the participants read the story silently, the researcher read the story again for the class and asked the participants some questions about the story. The participants were allowed to take notes regarding the story.
5. The teacher then collected the story and instead provided the participants several key words regarding the story. The key words represented the sequence of events in the story and aimed at assisting participants to remember the story.
6. The participants were told that they need these key words to retell the story.
7. The participants were asked to retell the story in pairs using key words in 5 minutes.
8. Each participant learner was then asked to retell the story for an interlocutor.
9. The interlocutor provided feedback whenever the learner made an article error according to the participants' group designation.

Two treatment sessions were held for each group and in each treatment session one story retelling task was performed. All treatment sessions were video-taped for further consideration.

2.6 Testing instruments and procedure

In order to measure learning gains which might have occurred during treatment sessions, three testing instruments, namely, an untimed GJT, a timed GJT, and an EOIT were assigned as pre-test, post-test, and delayed post-test. The pre-tests were assigned three days before the first treatment session and

the post-tests were assigned a day after the second treatment session while the delayed post-tests were administered two weeks later. In order to avoid extra variability in measuring implicit and explicit knowledge, the items in all grammatical judgment tests were the same. However, the items were reshuffled to provide 6 different versions to be used as untimed and timed GJTs in the three testing occasions. They included 24 items, 12 of which the use of definite and indefinite articles in a grammatically correct context and 12 of which contained the use of articles in a grammatically incorrect context. A further 15 distractors targeting the use of question forms, and relative clause forms were added to desensitize learners to target structures in the pre-tests. The time allotment for each item in timed GJT varied between 3 to 5 seconds depending on the length of the item, while learners were allowed unlimited time for the untimed GJT. It is acknowledged that time allotment for the timed GJT was arbitrary and further research is needed in this respect. For both timed and untimed GJTs, the sentences were shown to subjects on screen and they were asked to press enter key if they thought the sentence sounds grammatical and press shift if it sounds ungrammatical. In order to prevent accidental correct responses by the learners in the untimed GJT, the participants were asked to locate the source of the error in each sentence by highlighting the erroneous part of the sentence. In scoring the untimed GJT, the participants were awarded only for those items for which they located the source of error. The EOIT consisted of 13 items each of which contained one or two sentences targeting the use of definite or indefinite articles. Each item was accompanied by a picture. Some items contained the use of articles in a grammatically correct context while others contained articles in a grammatically incorrect context. The learners listened to each item once in real time and on an audiotape while watching the corresponding picture on a screen. Regarding EOIT, since it is important to maximize the possibility that learners pay attention to the meaning rather than the form and surface structure of the sentences (Ellis et al. 2009), the learners were first told to state whether the picture corresponds to what they hear by checking their answer sheet and then repeat the sentence in *correct* grammatical form. The learners were asked to mark true if they believe that the picture corresponds to the item and false if they believe that there was no association between the item and accompanying picture. Learners' responses to all items were then audio-recorded for subsequent analysis. The scoring criterion was based on supplying the articles in obligatory context irrespective of lexical accuracy or other grammatical errors as in the following example.

Example 3

A woman is driving a car. The woman drives very fast.

In the above example, there are three contexts for the use of indefinite and definite articles. The learners were only penalized for (a) dropping 'a' from the first two contexts and also for dropping 'the' or using 'a' for the third context. The total number of obligatory contexts included 15 indefinite and 14 definite articles. Thus, the maximum score for this test was 29.

2.7 Reliability of the tests

In order to ensure the reliability of the instruments used in the study, internal consistency of all three pre-tests were estimated using Kuder-Richardson Formula 20, on the performance of 50 percent of all learners participating in the study. Table 1 displays the reliability coefficients for the three measurement instruments.

Table 1. Tests' reliability

Test	Timed GJT	Untimed GJT	EOIT
Reliability	0.73	0.77	0.68

2. 8 Analysis

For the timed and untimed GJTs and the EOIT, raw scores were calculated for the pre-tests, post-tests, and delayed post-tests. Descriptive statistics for the three testing occasions were calculated for learners in the three groups. In order to explore any learning gain over time from the pre-test to the delayed post-test as a result of corrective feedback, mixed between-within group ANOVAs were performed with time as a within-group independent variable and corrective feedback treatment as a between-group independent variable and with total scores as a dependent variable. *Post hoc* analysis was performed when an ANOVA was significant. An alpha level of .05 was set. SPSS 16 was used to perform the analysis.

3. Results

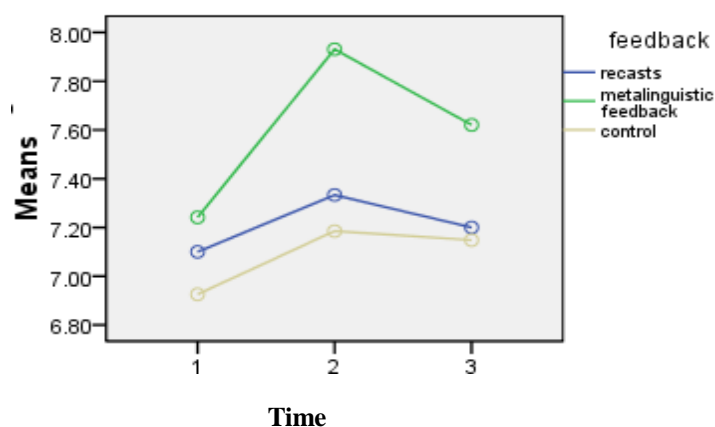
3.1 The timed GJT

Table 2 presents descriptive statistics for learners' performance in the timed GJTs for the three testing occasions: pre-test, post-test, and delayed post-test. Figure 1 provides its graphical representation. As table 1 indicates, all three groups have some gains from the pre-test to the post-test. A one-way ANOVA on pre-test scores revealed no significant differences among the groups, $F(2, 83) = 0.78$.

Table 2. Descriptive statistics for the timed GJT

Group	pre-test			post-test		delayed	
	N	M	SD	M	SD	M	SD
Recasts	30	7.10	.82	7.33	.75	7.20	.48
Metalinguistic feedback	29	7.24	.95	7.93	.88	7.62	.77
Control	27	6.92	.91	7.18	.78	7.14	.76

Figure 1. Mean performance across time for the timed GJT



In order to investigate learning gains from the pre-test to the delayed post-test, a mixed between-within-group ANOVA was performed with time as a within-group independent variable, corrective feedback as a between-group independent variable, and total scores as a dependent variable. Table 3 presents the results.

Table 3. Mixed- method ANOVA across the three testing periods and the three treatments

Source	df	F	sig.	Partial Eta Squared
Feedback (between subjects)	2	5.29	.007	.11
Time (within subjects)	2	8.28	.001	.16
Feedback*time	4	1.25	0.28	.03

As Table 3 indicates, there are main effects for time and corrective meaning that (a) corrective feedback was effective for the acquisition of target forms, (b) learners across the groups had statistically significant gains over time. As the table indicates, no statistical interaction effect was found between time and corrective feedback, meaning that the patterns of development from the pre-test to the post-test, and the delayed post-test were the same. However, this does not mean that the effects of treatment were the same for all groups. In order to further specify the effects of treatments for each group, one-way ANOVAs were performed for the post- and delayed post-test occasions to compare subjects' knowledge of target forms in the experimental and control groups. One-way ANOVA on post-test scores revealed a significant difference among the groups, $F(2, 83) = 6.75, p < .005$, *post hoc* comparisons revealed that the metalinguistic group outperformed the recast and control group. No statistically significant difference was found between the control and recast group. In the delayed post-test the only statistically significant difference was found between the metalinguistic and control groups, $F(2, 83) = 4.09, p < .05$. The difference between the metalinguistic and recast group was not statistical. Furthermore, in order to explore learning gains as a result of treatments for each group independently, a one-way within group ANOVA was performed with total scores as dependent variable and time (pre-test, post-test, and delayed post-test) as a within group independent variable. For the recast group, no significant difference was found among the learners' scores in the three testing periods meaning that learners had no significant gain from the pre-test to the post- and delayed post-tests, $F(2, 28) = 0.97, p = 0.38$. Regarding the metalinguistic group, the within group ANOVA indicated a significant difference among learners' scores in the three testing periods, $F(2, 29) = 17.26, p < .001$. *Post hoc* comparisons indicated a significant difference between learners' scores in the pre-test and pos-test. No significant difference was found between learners' scores in the pre- and delayed post-tests, or between post- and delayed post-test.

3.2 The untimed GJT

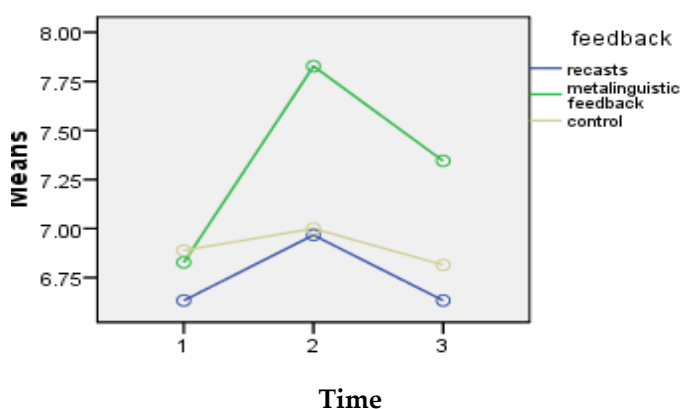
Table 4 presents descriptive statistics for the untimed GJT over the three testing periods. As the table indicates, the gains for the metalinguistic group are more significant than those of other groups as a result of the treatments.

Table 4. Descriptive statistics for the untimed GJT

Group	pre-test			post-test		delayed	
	N	M	SD	M	SD	M	SD
Recasts	30	6.63	.71	6.96	.66	6.63	.55
Metalinguistic feedback	29	6.82	.80	7.82	.65	7.34	.53
Control	27	6.88	.84	7.02	.62	6.81	.55

Figure 2 displays how the three groups differed from the pre-test to the post- and delayed post-tests.

Figure 2. Mean performance across time for the untimed GJT



A one-way ANOVA on the pre-test scores revealed no statistically significant difference between the three groups $F(2, 83) = 0.82$. Mixed between-within group ANOVA was also performed for the untimed GJT to investigate learning gains as a result of treatment over time. Table 5 presents the results.

Table 5. Mixed between –within group ANOVA for the untimed GJT

Source	df	F	sig.	Partial Eta Squared
Feedback (between subjects)	2	10.75	.000	0.1
Time (within subjects)	2	15.62	.000	0.15
Feedback*time	4	4.82	.000	0.20

As the table indicates, there are main effects for time, corrective feedback, and the interaction between feedback and time meaning that (a) there were significant gains over time, the corrective feedback treatments were effective, and the groups improved differently over time. In order to specify the effects of corrective feedback on the post-test and the delayed post-test occasions, one-way ANOVAs were performed on learners' scores in the two testing occasions. The results indicated that in the post- and delayed-post-tests, the difference among the groups was statistically significant, $F(2, 83)_{\text{post}} = 16.24, p < .001$ & $F(2, 83)_{\text{delayed}} = 10.49, p < .005$. *Post hoc* comparisons also revealed that in both post- and delayed post-test, the metalinguistic group outperformed the recast and control groups. The difference between the recast and the control groups was not found significant in the post- and delayed post-tests. These findings thus confirm the impression provided by figure two that learners in the metalinguistic group had a significant advantage over the recast and control groups in post- and delayed post-tests.

One-way within group ANOVA also indicated significant gains over time for the metalinguistic group, $F(2, 28) = 22.36$, $p < .001$, *post hoc* comparisons also indicated significant differences between the pre-test and post- and delayed post-tests. A one-way within group ANOVA also indicated that learners in the recast group had a significant gains from the pre-test to the post-test, $F(2, 28) = 3.37$, $p < .05$. No significant difference was found between the participants' scores in the pre- and delayed post-test.

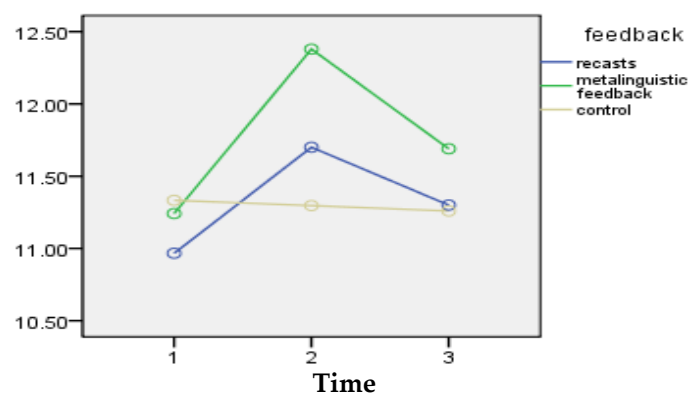
3.3 The EOIT

Table 6 provides descriptive statistics for learners' performance in the EOIT over the three testing occasions: pre-test, post-test, and delayed post-test. Figure 3 provides its graphical representation. As table 6 indicates, all three groups have some gains from the pre-test to the post-test. A one-way ANOVA on pre-test scores revealed no significant differences among the groups, $F(2, 83) = 0.78$.

Table 6. Descriptive statistics for the EOIT

Group	N	pre-test			post-test		delayed	
		M	SD	M	SD	M	SD	
Recasts	30	10.93	.86	11.76	0.97	11.30	.99	
Metalinguistic feedback	29	11.24	1.05	12.37	0.72	11.68	.80	
Control	27	11.16	0.91	11.29	1.1	11.25	.90	

Figure 3. Mean performance across time for the EOIT



As figure 3 displays, both feedback groups had some gains from the pre-test to the post-test while some of those gains seem to disappear from the post- to the delayed post-test. A one-way ANOVA on pre-test scores revealed no statistical difference among the groups, $F(2, 83) = 1.24$, $p = 0.29$. Mixed between- and within-group ANOVA was used to investigate the effects of treatments over time with time as a within group independent variable, corrective feedback treatment as a between group independent variable, and scores as a dependant variable. Table 7 presents the results.

Table 7. Mixed method ANOVA for the EOIT

Source	df	F	sig.	Partial Eta Squared
Feedback (between subjects)	2	3.88	0.02	.08
Time (within subjects)	2	16.91	.000	.16
Feedback*time	4	5.17	.001	.11

As the table indicates, main effects were found for corrective feedback and time. The interaction between time and corrective feedback was also found significant. One way ANOVA also indicated that there is a significant difference among the groups in the post-test, $F(2, 83) = 9.90, p < 001$. *Post hoc* comparisons revealed that the metalinguistic group outperformed the recast and control group while the difference between the recast and control groups was not found statistical. One-way ANOVA also revealed no significant difference among the groups in the delayed post-test, $F(2, 83) = 1.74, p = 0.18$. One-way within group ANOVA showed that learners in the recast group had a significant gain over time from the pre-test to the post-test, $F(2, 29) = 17.71, p < 001$. No significant difference was found between their scores in the pre- and delayed post-tests. A statistically significant loss was also found in the learners' scores from the post-test to the delayed post-test. One-way within group ANOVA on learners' scores in the metalinguistic group also indicated a significant difference in learners' scores over time, $F(2, 29) = 27.21, p < 001$. *Post hoc* comparisons indicated a significant gain in learners' scores from the pre-test to the post- and delayed post-tests.

In the current study, the metalinguistic group outperformed the recast and control groups in all post-tests, while no statistically significant difference was found between the recast and control groups. However, in the delayed post-tests, there were more fluctuations for the three testing instruments. In the untimed GJT which was a measure of explicit knowledge, the metalinguistic group outperformed other groups in the delayed post-test while no significant difference was found between the recast and control groups. In the timed GJT, a measure of L2 implicit knowledge, the only significant difference in the delayed post-test was found between the metalinguistic and control groups while no significant difference was found between the recast and control groups. Finally, in the EOIT which was also a measure of implicit knowledge, no significant difference was found among the groups in the delayed post-test. When learners' performance over time was analyzed for each group separately, it was found that metalinguistic corrective feedback had a more enduring effect on the acquisition of both implicit and explicit knowledge. Recasts, on the other hand, had some transient effects on learners' performance in EOIT and untimed GJT.

4. Discussion

The current study set out to investigate the effects of two types of corrective feedback on the acquisition of English implicit and explicit knowledge. The findings indicated that the metalinguistic group had a distinct advantage over recasts in both post- and delayed post-tests and contributed to the acquisition of both implicit and explicit L2 knowledge, although learners who received recasts had also some statistical gains from the pre-test to the post-tests. The results also indicated that the effects of metalinguistic feedback were more stable and enduring than those of recasts. More specifically, one-way repeated measures of ANOVAs indicated no statistically significant gain for the recast group from the pre-tests to the delayed post-tests, while learners' gains in the metalinguistic group remained significant from the pre-test to the delayed post-test for the untimed GJT and EOIT.

In the light of the above findings, the answer to the research questions posed in the current study can now be provided. The first research question asked was: What are the effects of recasts and metalinguistic feedback on the acquisition of L2 knowledge? The findings presented earlier suggested that metalinguistic corrective feedback was effective in promoting both implicit and explicit L2 knowledge. More specifically, one-way within group ANOVA indicated that learners who received metalinguistic corrective feedback had a statistically significant gain from the pre-test to the post- and delayed post-test. Regarding recasts, the results indicated that learners who received recasts had statistically significant gains from the pre-test to the post-test but not to the delayed post-test for the untimed GJT and EOIT while learners indicated no gains from the pre-test to the post-test in the timed GJT. Thus, the findings suggest that both recasts and metalinguistic feedback may facilitate the acquisition of both implicit and explicit knowledge, however, the effects of recasts on L2 development are not as straightforward and conclusive as that of metalinguistic feedback.

The second research question asked was if recasts and metalinguistic feedback have differential effects on the acquisition of L2 knowledge. The results of the current study indicated that learners who received metalinguistic feedback had a distinct advantage over those who received recasts in all three testing instruments. Furthermore, the effect of metalinguistic feedback was more durable than that of recasts as manifested in learners' performance in the delayed post-test.

Why did learners who received recasts not perform as consistently and significantly as those who received metalinguistic feedback? Research has shown that due to the implicit nature of recasts, learners may not notice the corrective purpose of recasts (e. g., Lyster, 1998, Lyster & Ranta, 1997; Panova & Lyster, 2002; Egi, 2010). According to Lyster (1998a) "recasts and non-corrective repetitions of learners' utterances by interlocutors fulfill the same functions in classroom discourse and they occur in identical patterns, thus limiting the salience of recasts as negative evidence" (p. 52). Thus, learners cannot be sure that whether the recast is just echoing their utterance or is intended to correct them. Panova and Lyster (2002) also noted that low proficiency learners might not benefit from recasts because they are unable to notice the corrective focus of recasts. Metalinguistic feedback, on the other hand, is quite salient and noticeable to learners as it explicitly warns the learner what is ungrammatical. Thus, we can argue that while noticing the corrective function of metalinguistic feedback was fairly inevitable for learners of the present study, the corrective function of some recasts might not be noticed by them. There is evidence suggesting that when recasts are salient to learners they are effective in promoting L2 knowledge. Han (2002) for example, reported learners who received recasts exhibited a remarkable growth in the consistent use of past tense forms. In the case of Han's study, the recasts were made salient to learners by being phonetically emphasized by interlocutors. Furthermore, the recasts were provided to learners over an extended period of time. These two features of recasts in Han's study suggest that the recasts were sufficiently salient to learners to provide learners with negative evidence. Mackey and Philp (1998) also reported the beneficial effects of recast on L2 development. An important feature of Mackey and Philp's study which is usually ignored in L2 acquisition studies was the developmental readiness of the learners to acquire target forms. As Pienemann (1984) suggests, the effect of any given pedagogical treatment could be constrained by the student's developmental readiness. Han (2003) also noted that only by gauging learners' degree of readiness prior to the treatment can the full effects of the treatment be evaluated.

Thus, it can be argued that due to the implicitness of recasts, several individual differences may constrain the saliency and therefore the effectiveness of recasts on L2 acquisition. They include, learners' proficiency level and developmental readiness, the length of instruction, the way recasts are operationalized by interlocutors during interactions, etc. Thus, the efficacy of recasts can be tailored to their ability to signal negative evidence to learners. More proficient learners, for example, are better able to detect the corrective nature of recasts due to their increased processing capacity compared with low proficiency learners. Recasts in the current study were presented to learners with no added emphasis or

stress. This might jeopardize recasts' saliency and thus limited their capability to provide negative evidence. As it was mentioned before, the argument regarding the role of the saliency of corrective feedback in the acquisition of L2 knowledge is grounded in Schmidt's noticing hypothesis (Schmidt 1990, 1993, 1995, 2001) according to which L2 input should first be noticed by learners in order to be further processed for acquisition. Accordingly, it can be argued that the more salient and noticeable the corrective feedback, the more effective it is. In contrast to recasts, metalinguistic corrective feedback explicitly draws learners' attention to the mismatch between their incorrect utterance and target-like form and is thus more effective than recasts. This speculation can be confirmed by considering learners' responses to corrective feedback (known as learners' uptake) or eliciting learners' perceptions of corrective feedback via retrospective methods such as stimulated recall interview (Mackey & Gass, 2005) which is beyond the scope of this paper.

Our third research question asked if there is any relationship between providing implicit and explicit corrective feedback and the acquisition of implicit and explicit L2 knowledge. Our expectation was that those who receive implicit corrective feedback such as recasts would perform better than those who receive explicit corrective feedback such as metalinguistic feedback on implicit measures of L2 knowledge such as timed GJT and EOIT. The results however did not confirm this hypothesis as those learners who received metalinguistic feedback outperformed other learners who received recast in both timed GJT and EOIT (both, implicit measures of L2 knowledge) on both post- and delayed post-tests occasions. With regard to the findings of the current study, no relationship can be considered between the type of feedback and the acquisition of implicit and explicit knowledge. The results are thus in contrast to the predictions of non-interface position which states that the acquisition of implicit and explicit knowledge involve different mechanisms (Krashen, 1985; Huljstin, 2002) as learners who received corrective feedback in terms of explicit metalinguistic knowledge in the present study showed gains in both implicit and explicit knowledge.

5. Conclusion, limitations, and future directions

The current study indicated that corrective feedback in the form of recasts and metalinguistic feedback can be effective in promoting both implicit and explicit L2 knowledge. The results also indicated that the effects of metalinguistic feedback are more significant and salient in L2 development. The cross-validation of the findings of the current study and previous research indicates that metalinguistic feedback is superior to recasts in promoting L2 knowledge because it is more noticeable and salient to learners hence enabling learners to notice the mismatch between their incorrect utterance and target-like form. We also suggested that recasts can be made more effective in promoting L2 knowledge when learners are able to notice their corrective focus. Furthermore, the results indicated that providing learners with explicit information in the form of metalinguistic knowledge assists the acquisition of both implicit and explicit knowledge. Such a finding challenges the claim that the acquisition of implicit and explicit knowledge involves completely different mechanisms.

Clearly, the above discussion regarding the role of learner's noticing in the effectiveness of corrective feedback is speculative and should be subject to empirical verification. Follow-up research may pursue several avenues to provide a better insight. One avenue, as suggested earlier, is the investigation and comparison of learners' uptake and modified output following different types of corrective feedback in a single study. The comparison of learners' perceptions following different types of corrective feedback via different introspective methods can also shed more light on the underlying cognitive mechanisms by which corrective feedback work to enhance L2 knowledge. Another potentially confounding issue which merits further attention is the inspection and reevaluation of implicit and explicit measures of L2 knowledge. While the current study, building on the previous research, used several testing instruments which are well-known to tap on implicit and explicit knowledge, the validity of such measures entails

further investigation especially with regard to the participants and instructional settings of the current study.

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