How Written Recasts Influence the Processing of Corrective Feedback: A Case of Noticeability and Explicitness

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Abstract

The present study explored whether written recasts influence the processing of corrective feedback. Following an experimental design, lower-intermediate level ESL learners (N=32, Asian and Arabic) studying at an American university were randomly put into 3 groups. Group A (aural recasts) received recasts only through an aural channel, Group V (visual recasts) was provided recasts only through a visual channel, and Group AV (aural and visual recast) received feedback through both channels in the treatment sessions. The statistical data gathered from pre-test and post-test scores were submitted to a series of ANOVA and ANCOVA tests, and interpretations were drawn from the findings. The study tested the hypothesis that learners receiving recasts through both modalities outperform the other groups in relation to their post-test performance. The results indicated that Group AV outperformed V and A groups regarding their performance in the written and oral measures suggesting a significant contribution of the modality in which recasts are provided. In order to increase the explicitness of corrective feedback, recasts should be given in aural and visual modalities to be easily noticeable, unambiguous, and efficient, considering classroom time limitations.

One of the key topics in second language acquisition (SLA) research is corrective feedback and how learners benefit from this process. The findings of the empirical studies in the past decade suggest that learners benefit from both positive evidence provided during the interaction and the corrective feedback received either implicitly or explicitly (Li, 2010). However, the findings of these studies are often mixed and inconclusive, and therefore more research is needed on corrective feedback in order to have a better understanding of its differential effects on second language acquisition.

The role of corrective feedback in SLA has attracted great attention for theoretical discussions and its practical implications for classroom teaching. Recent studies have expanded this topic to new areas, linguistic forms, and target languages, producing a plethora of empirical studies and meta-analyses (e.g., Li, 2010; Norris & Ortega, 2006). Moving beyond the question of whether corrective feedback facilitates acquisition, recent literature focused on internal and external variables that contribute to this process, such as differential effects of corrective feedback types and individual cognitive variables (e.g., Author, 2013; Rassaei, 2014; Sagarra, 2007; Sheen, 2007; Sagarra & Abbuhl, 2013). Following this trajectory of research, the present study aims to explore the effectiveness of written recasts

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through which corrective feedback could be made more explicit and noticeable, thereby contributing to learners' second language acquisition.

Corrective Feedback in SLA

For the purposes of this study, corrective feedback is defined as information following a student error (Long, 1996). This could be a teacher question, correction, or a peer correction regarding a linguistic error made by the student. The correction could be (a) implicit: implanted into the natural flow of the conversation; or (b) explicit: interruptive, following a more explicit pattern. While implicit feedback types include recasts, clarification requests, and modeling, explicit types include metalinguistic information, and rule explanation (Ellis, Loewen, & Erlam, 2006).

Recasts

Among all the corrective feedback types, recasts are paid particular attention as they are most commonly used by language teachers, and generally maintain the focus on meaning, without interrupting the communication (Leeman, 2003; Long, Inagaki, & Ortega, 1998; Lyster, 2004). According to the definition of Long (1996) a recast is "a discourse move that rephrases an utterance by changing one or more sentence components: 'subject, verb, or object' while still referring to its central meanings" (p.434).

S: That *be* great. (Student uses the wrong form of *be* verb)

T: That *is* great. (The teacher reformulates the sentence using the correct form)

Although most researchers agree that recasts are the most common feedback type used in the classrooms, there are mixed results, questioning their effectiveness when compared to other feedback types (e.g., Ellis, et al., 2006; Philp, 2003). For example, Ayoun (2001) investigated the effectiveness of written recasts in comparison to modeling and metalinguistic explanation. The research findings revealed that the written recast group performed better than the group who received traditional explicit positive evidence. Ayoun (2004), in a subsequent study, contrasted her initial claims by suggesting no significant contribution of the type of feedback, pursuing two strands of research: (a) the effectiveness of written recasts compared to modeling and metalinguistic explanation; and (b) the development of temporality in the inter-language of French college students.

Another study which explored the effectiveness of recasts in the classroom is that of Philp (2003). The researcher investigated whether the ability to recall a recast is inhibited by learners' level and/or the length of the recast. She found that ESL learners generally noticed the changes made to their non-target like utterances through recasts. She also added that the level of learners, the length of recasts, and the number of changes in the recast impacted the accuracy of recall. The researcher, consequently, argued that learners with different levels of proficiency may exhibit variety in noticing the gap between their utterance and the correction made through recasts.

In addition to the discussions on the effectiveness of recasts to notice the gap, several researchers agree that recasts are processed in short-term memory, but not stored in long-term memory (e.g., Loewen & Philp, 2006; Philp, 2003). Carrol and Swain (1993) conducted post treatment recall tests to see if students can recall the tokens mentioned in the treatment sessions. The researchers explored the effects of various feedback strategies on learners'

capacity to identify which dative sentences alternate, using a pre-test and post-test design. Measuring the effect of different treatments with the same items used in treatment and post-treatment recall tests, they observed that the recast group performed second best in the short-term recall tests after the group receiving metalinguistic information; however, only the latter retained a long-term gain, lending further support to the long term effectiveness of explicit corrective feedback.

Many of these studies were conducted in laboratory environments and may be subject to an experimenter bias. In order to address this concern, Ellis and Sheen (2006) studied the role and effectiveness of recasts within the context of the social and instructional conditions in which they occurred. In their study, they stressed the complexity of recasts in terms of their function (communicative or didactic), implicitness (in many examples they might be as explicit as other correction types), and source of evidence (truly negative, truly positive, or both). They suggested that learners might show variety in the way they interpret recasts due to: (a) their role (learner orientation or a communicative orientation); and (b) sociological, and psychological factors that influence learners' receptivity to them. Their review article informed future studies including the present study, reexamining the questions: What is a recast?; how implicit/explicit are they?; how do they facilitate acquisition?; are recasts more powerful than other corrective feedback types?; and what features could be suggested to make them more effective? Among the questions discussed in their article, the latter has determined the rationale and focus of the present study.

Another important study for the development of the current study is that of Loewen and Philp (2006). The researchers recruited 12 teachers and 118 learners in order to: (a) investigate the occurrences of recasts, informs, and elicitations; (b) define recasts; and (c) find out whether recasts lead to improved successful uptake, and higher post-test scores. Their research findings exhibited a distribution among feedback types used in the classroom as: (a) recasts (50%); (b) providing information (37%); (c) and eliciting a response from the learners (14%). Research findings also pointed to another fact that there are certain features which enhance the salience of recasts and make them more or less noticeable: (a) linguistic focus: lexical, morphological, phonological, combination; (b) length of recast; (c) prosodic emphasis; (d) segmentation; (e) number of changes; and (f) number of feedback moves.

Improved Recasts to Facilitate Acquisition

Recent studies shifted their focus from whether recasts are effective to how recasts could be improved in order to facilitate acquisition. As a way to increase the effectiveness of recasts, input enhancement has been suggested and tested in experimental studies (e.g., Rassaei, 2014; Sagarra & Abbuhl, 2013). In an early study, Doughty (1991) studied typographical enhancement to attract attention to form. This study explored whether input enhancement (IE) would have facilitative effects. The results indicated that two experimental groups (IE and only metalinguistic explanation) had comparable degrees of improvement in their grammaticality judgment test scores as well as in the production of relative clauses. Most importantly, the typographical enhancement group showed superior performance in reading comprehension tests, compared to the group which was treated only with metalinguistic explanation. Similarly, Rassaei (2014) compared the differential effects of textual enhancement and input enrichment on the development of English articles and found

that textual enhancement outperformed the effects of input enrichment, lending further support to the necessity of modifying input to make target forms in the input salient and noticeable to learners (Schmidt, 2001). Input enhancement can also produce effective acquisition outcomes in the absence of meaning-focused interaction. In a computer-learner interaction study, Sagarra and Abbuhl (2013) investigated whether learners notice the corrective intent of recasts through practice with computer administered feedback. Their findings indicated that orally enhanced recasts were more effective than orally unenhanced and textually enhanced recasts. Their intervention to increase the salience of the target items were especially helpful to overcome potential lower working memory capacities.

As in most corrective feedback studies, there are some mixed results regarding the effectiveness of input enhancement for improved acquisition. Izumi (2002) compared the effectiveness of output-input interaction and visual IE, and found that the output-production group performed better than the group with exposure to the same input for the purpose of natural communication. However, the visual input enhancement group did not show considerable improvement in learning. Similarly, Lluna (2006) studied whether recasts are more effective when supported by textual and visual enhancement. In order to see if there is a significant difference between the groups: (a) recast only; and (b) recast with visual enhancement, the researcher analyzed how Spanish FL learners processed verb tenses. The research findings showed parallel results to Izumi's study and showed no significant effect of visual enhancement. In Lluna's findings, the control group's gain scores were the highest in general; the enhanced recast group followed, and the standard recast group ranked the last. It could be argued that these studies sampled a small group of participants, and limited their findings to their target structures. In order to have a solid ground on which more theoretical and pedagogical discussions can take place, further empirical studies using different contexts and different target structures are needed (Li, 2010). Therefore, this study aimed to investigate whether written recasts influence the acquisition of irregular past tense verbs in English. The research questions addressed are as follows:

1. Does the use of a different modality in the provision of recasts affect the acquisition of the target structure measured by oral and written performance?
2. Does the influence of the treatment show long term advantage?

This study hypothesizes that learners who receive recasts in written modality, and in written and aural modalities are more likely to notice the correction and perform better in the post-tests than those receiving in aural modality. The differential effects of corrective feedback have been explored in previous research using structures which require explicit knowledge, but frequently lead to errors particularly in oral production (e.g., Askildson, 2007; Ellis et al., 2006; Leeman, 2003; Loewen & Philp, 2006; Sheen, 2010). This study followed the example of the Ellis et al. (2006) which adopted irregular past tense forms as the target structure. The purpose of choosing irregular past tense verb forms is that learners at the intermediate level are expected to be familiar with the past tense verb forms, and have explicit knowledge of this structure. Therefore, the aim of the study is not to explore whether corrective feedback helps the learning of an entirely new structure, but whether it helps the learner to achieve a better control on a structure they only partially acquired.

Method

The present study investigated the differential effects of aural only recasts (A), visual recasts (V), and recasts in aural and visual modalities (AV). Group A received only aural recasts. Group V received only visual (provision of the orthographical input) recasts, and Group AV received aural and visual recasts together. The comparable effectiveness of both types of feedback was evaluated by picture description tests and fill-in-the-blanks tasks in pre-test and post-test measures.

Participants

The study was conducted at a major American university. A total number of 32 lower-intermediate level learners were recruited for the experiment during two semesters. Initially, 35 students volunteered to participate, but 3 participants were not able to attend the treatment sessions, and dropped out of the experiment. All of the participants were the students enrolled in the English Language Center at the participating university. The participants were from China (n=4), Iraq (n=2), Japan (n=1), Korea (n=18), Qatar (n=1), and Saudi Arabia (n=6). They came to the U.S. for a semester or an entire year to pursue undergraduate/graduate education or through an exchange program. Their age range is 18-35 with a comparable number of male and female students in the sampled groups. As for their second language background, they studied English in their home countries, and most of them did not have previous experience in the U.S. The participants were recruited on voluntary basis, and participating in the experiment served as additional language practice.

Materials

Adopting a pre-test and post-test design, the study included such interaction activities as: (a) picture-description tasks; and (b) fill-in-the-blanks activities. Using picture description tasks (Doughty, 1991), and fill-in-the-blanks (Leow, 2001) are common methods in SLA research since they elicit learners' production in oral and written measures, targeting specific features. The picture description tasks aimed to measure learners' oral performance and implicit knowledge of language (Loewen & Philp, 2006) as it requires production as an immediate response to a stimulus. The pictures were used to elicit a minimum of 22 irregular verb forms among 35 past and present verb forms. In order to guide students to the appropriate verb and tense, information regarding date (e.g., last week, last Sunday) and activity (e.g., play, fly) was added, which left no room for the use of other structures. Picture descriptions were used both in pre-test and post-test measures with different pictures but the same target verbs and similar difficulty level and complexity. Fill-in-the-blanks tasks aimed to measure learners' written production and explicit knowledge of language where they do not have time limitations, and have the freedom to go back and forth between their responses. The token verbs used in written pre-tests and post-tests are also the same verbs with different contexts and similar difficulty level and complexity.

Procedure

The researcher visited the classrooms, and informed the students about the experiment at the beginning of the semester. Those who volunteered to participate were asked to sign the consent forms, and were assigned a date to meet. Participants were randomly assigned to the modality groups as; (a) Group A (n=11); (b) Group V (n=9); and (c) Group AV (n=12). Group A in this experiment served as the control group, while Group V and Group AV were

the experimental groups. Group A received oral corrective feedback, and the treatment effect in Group V and Group AV was compared with that of Group A. Before the experiment, participants filled in a background questionnaire, and sat across a table from the researcher. The experiment was carried out in four phases as pre-test, treatment, immediate post-test, and delayed post-test. Table 1 presents the order of the activities.

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Table 1
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Pre-test

The experiment started with the written pre-test in which learners filled in the blanks in the sentences using the correct form of the verb provided in the parentheses. Following the written test, learners were engaged in an oral picture-description task in which they described what they saw in a picture. The pictures had some guiding information such as "last Monday" or "in 1982." In addition to the date given on each picture, base forms of the verbs were provided. To exemplify, a learner held a card on which there was a picture of a man playing football, and information with "John", "play" and "last weekend." Learners were expected to describe this picture as "John played football last weekend." In order to make it in the form of a game, the researcher found the same picture in his set, and they moved on to the next picture. There were 35 pictures which included 22 target structure verbs, and 13 distracters. The participant was recorded after his/her consent. The recordings were later transcribed by the researcher to calculate the number of correctly used past tense verb forms. Each correctly produced token verb (irregular past tense) was given a credit, and this made up the participants' pre-test score.

Treatment

The treatment began immediately following the pre-test. In the treatment session, participants were engaged in another picture description task in which the verb and the time were given, but not the agents. The participants were instructed to come up with their own agents who could be from their own life or environment. To illustrate, the information below a picture read, "play the piano/at a concert last Saturday", and the participant created an imaginary subject, and used that in the sentence again using with the correct form of the verb. This was designed to make the activity look like a game rather than a test. When they made a mistake in the form of the verb, Group A was corrected by the researcher, saying the correct form of the verb, Group V was corrected by showing the orthography of the correction which was already printed on a card behind the researcher's set of pictures, and Group AV was corrected by saying the correction and showing the orthography on the flashcard. This task aimed to elicit a minimum of 22 target verbs, and a number of other words. For both, they received corrective feedback. When a learner used the wrong form of the target structure, the researcher provided the correct reformulation as in the example:

P: Yuki *flied* from Tokyo. (student's utterance)

R: *flew* (recast)

P: Yes… *flew* from Tokyo. (uptake)

Group V received only visual recasts. The researcher did not tell the correct reformulation but showed the flashcard with the orthography of the correction. Considering the example given, the researcher did not say *flew,* but showed a card on which the verb *flew* was written. The researcher held this card in the air at eye level between both sides for four seconds to provide equal opportunity for exposure to everyone in the groups, and to block eye contact with the researcher thus attracting the learner's attention to the card. Group AV received visual and aural recasts together. Therefore, the researcher not only gave the correction aurally saying *flew,* but also gave it through the visual channel, showing the card with the verb *flew.*

Immediate and Delayed Post-test

The next phase of the experiment was the immediate post-test in which learners did another picture description task with the same verbs used in the pre-test as well as the treatment. The target words tested in the pre-test, and corrected in the treatment sessions were tested again to see if there was an effect of treatment on the post-test scores. The token words used in each test were the same verbs with different contexts but with similar difficulty level and complexity. In addition to the oral post-test, the students were engaged in a written post-test in which they did another fill-in-the blanks activity. In order to avoid an ordering effect, some of the participants were given the written post-test prior to the oral post-test. The oral sessions were recorded for transcription. The delayed post-tests were administered after two weeks.

Results

In this section, the descriptive and inferential statistics are presented and followed by a presentation of common irregular past verb errors in pre- and post-tests. The independent variable in the experiment was the modality of recasts, and the dependent variable was the test scores. Before comparing students' performance over time across different treatment sessions, one-way ANOVA test was applied to the pre-test scores in order to see whether there was a significant difference between the groups prior to the treatment. In the analysis of scores, the number of correct responses was calculated giving credit for each, and they made up the pre-test and post-test scores of the students. Table 2 shows the analysis of the pre-test and post-test scores in the oral and written tests.

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Table 2

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As shown in Table 2, all of the groups showed certain progress between pre- and post-tests, measured by oral and written performance tests. In order to have more confidence in the results from the post-tests, pre-test scores were analyzed to see whether the initial performance of the students showed homogeneity among the groups. Table 3 shows the oral and written pre-test scores of the students prior to the treatment session.

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Table 3

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As shown in Table 3, one-way analyses of variance showed that the differences in the written pre-test scores among the three groups were not significant: $F(2, 29) = 2.870$, $p= .073$; whereas the analysis of oral pre-tests yielded a significant difference; $F(2, 29)= 3.855$, $p= .033$. This finding indicates the fact that learners' initial proficiency showed similarity among the groups in terms of their written performance, but not in oral performance.

Therefore, an analysis of covariance test (ANCOVA) was conducted with oral post-test scores as the dependent variable, and the oral pre-test scores as the covariate. Results indicated significant group differences at post-test with the effect of the pre-test scores controlled. The covariate, oral pre-test scores, was significantly related to the oral post-test scores, $F(1, 26) = 125.74$, $p<.001$. There was also a significant effect of group on oral post-test scores, $F(2, 26) = 19.13$, $p<.001$, and a significant effect of interaction $F(2, 26) = 16.29$, $p<.001$ after controlling the effect of oral pre-test scores.

For the written test scores, there was not an interference of pre-test scores; thus, a mixed design ANOVA was administered to the three groups of modalities in pre-test, post-test, and delayed post-test measures. As the sphericity of the data assumption was violated ($p=.006$), Greenhouse Geisser test was administered. Results indicated a significant main effect of test in the written tests, $F(2, 29) = 20.055$, $p <.001$, η_p^2 .40, suggesting that all the groups performed differently between the three tests; however, the effect of group was not found to be statistically significant, $F(2, 29) = 1.048$, $p= .364$, indicating that the groups did not perform differently from each other in each given test. There was; however, a significant Test X Group interaction, $F(2, 29) = 3.760$, $p =.017$, η_p^2 .20. The interaction shows that learners displayed variation in their progress from one test to the other and differed from other groups. The combination of these two made up the interaction. Between the pre-test and post-test as well as the delayed post-test, learners' overall accuracy improved among the groups. A graphical representation of the Test X Group interaction is presented in Figure 1.

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Figure 1

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As shown in Figure 1, Group A improved their scores from 18.27 (*SD* 3.31), to 19.64 (*SD* 2.11), and Group V showed an increase from a mean of 15.33 (*SD* 4.63) to 18.78 (*SD* 3.52). Group AV improved their scores from 14.83 (*SD* 3.07) to 18.92 (*SD* 2.67), showing the greatest increase among the three. In delayed post-tests, Group A showed a decrease from 19.64 (*SD* 2.11) to 18.45 (*SD* 3.17). Group V also showed a decrease from 18.78 (*SD* 3.52) to 16.17 (*SD* 6.03), while Group AV showed the smallest decrease from 18.92 (*SD* 2.67) to 18.60 (*SD* 2.98). As can be seen from Figure 1, all of the groups increased their scores between pre-test and post-test; however, displayed a decrease between post-tests and delayed post-tests. Group AV displayed the smallest decrease suggesting that they retained the treatment effect better than Groups A and V.

The statistical findings from the ANOVA and ANCOVA tests confirmed that there were significant differences between the groups in the same test, and within the groups between the tests. However, these statistics were not capable of explaining the relationship shown as a line in Figure 1, which represented the progress between two points. In order to

investigate the progress between the tests according to the groups, gain scores from the tests were calculated: (Gain score= post-test – pre-test).

A one-way ANOVA test followed by Tukey's post hoc test was conducted to the gain scores. The findings yielded a significant difference between the groups in oral test gain scores, $F (2, 29) = 6.459$, $p = .005$, and written test gain scores, $F (2, 29)= 7.321$, $p = .003$. Table 4 shows the results of the one-way ANOVA test.

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Table 4
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As shown in Table 4, the groups performed significantly different from each other measured by their gain scores. In order to identify the location of differences, Tukey's post hoc test was used. Table 5 shows the results of the Tukey's post hoc tests.

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Table 5
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According to the results of the Tukey's post hoc test, there was a significant difference between A and AV groups in terms of their oral test gain scores, in which AV had a mean of 4.92 (*SD* 2.77), while A had a mean of 1.73 (*SD* 1.79), while the V group was in the middle with a mean of 3.33 (*SD* 1.32)

The findings in the written test gain scores also indicated significant differences among the groups. According to the results of Tukey's post hoc test shown in Table 6, there was a significant difference between A and V groups as well as A and AV groups, but not between V and AV groups indicating that the V group showed similar progress compared to the AV group in written measures. In the written tests, the AV group acquired the highest gain score mean; 4.08 (*SD* 1.56), followed by the V group 3.44 (*SD* 2.18), and finally A group 1.36 (*SD* 1.56). The graphical representation of the oral and written test gain scores is presented in Figure 2.

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Figure 2
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In order to draw a better picture about students' growth or learning from pre-test to post-test, their common irregular past verb errors are presented according to their treatment group and L1 background. The influence of their first language on the processing of corrective feedback is out of the scope of this study, but the provided list might inform future studies in terms of the manner and type of common errors, looking for any systematicity or tendencies. The common errors across all modality groups and L1 backgrounds in this study included: a) using base verb forms for irregular past verbs e.g., I fly yesterday, b) adding –s ending for 3rd person singular to irregular past verbs e.g., She wents to school, c) adding –ing

ending to base verb forms, e.g., I swimming last summer d) leaving the answer blank or avoiding the use of irregular past verbs, e) overgeneralizing the regular verb form e.g., They catched the burglars, and f) writing irregular past verbs phonetically, or as they hear it, e.g., The birds flu; they cought the burglars. Students in this study showed some progress from pre-test to post-test, but they did not have a perfect score in their post-tests. The treatment was somewhat effective in making the corrective feedback explicit and noticeable, but students need to practice extensively to better integrate the corrective feedback and transfer it to long term memory. Table 6 shows the list of common irregular past verb errors in pre-tests and post-tests.

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Table 6

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Discussion

The first research question asked whether the use of a different modality, specifically written recasts, yields a significant difference regarding the acquisition of the target structure measured by written and oral post-tests.

As Group A had the highest pre-test scores in oral tests, they showed an advantage over the other groups. Therefore, the pre-test scores were used as the covariate, testing to what extent their pre-test scores account for the overall difference. The findings of the ANCOVA test showed that there was a significant effect of group on oral post-test scores after controlling the effect of oral pre-test scores. These findings suggest that in oral tests, the modality of recast (AV, V, and A) had a significant contribution to the overall variance in the data set. There was also a significant effect of Test X Group interaction indicating that the test and group contributed to the variance together in oral measures. Therefore, learners' progress from pre-test to post-test can be explained with the modality in which they were given corrective feedback even though their initial proficiency was different from each other. Learners receiving recasts in visual and aural & visual modalities showed greater progress between oral pre-test and post-test. Learners in V and AV groups retained the visual information better than the A group, and were able to recall the correct form and orally produce in a context where they had limited time to respond. This could be explained with the different ways of storing implicit and explicit information. Given that the best measures of implicit knowledge are oral tasks such as picture description and storytelling (Ellis et al., 2006), participants' performance in oral tests in this study might be showing their implicit knowledge of language. Accordingly, the written recasts seem to have helped learners store the correction in their implicit knowledge, and made it possible to recall this information for immediate oral production.

In written measures, there was a significant contribution of test and Test X Group interaction but not group per se, indicating that written recasts might not have made a difference among the groups in storing explicit information. Although learners' progress in written measures was not statistically significant from each other according to grouping, it is significant when combined with the effect of test itself. This means that learners displayed progress from pre-test to post-test in written measures, yet this difference cannot be explained

with the effect of grouping or test only, but their combined effect which is explained as the Test X Group interaction. Learners performed better in the written post-tests due to the different treatment they have received and the effect of test. Parallel to their performance in oral measures, Group AV showed the greatest progress followed by Group V and Group A. Although these differences are not statistically significant, they still tell about a tendency in which the AV group showed the greatest advantage and outperformed the other groups.

Since there were significant differences in learners' progress between the three tests regardless of the groups in written measures and between the groups in oral measures, the tendency of the progress was investigated. In order to do this, learners' gain scores between pre-test and post-tests were calculated. According to the analyses of the gain scores with one way ANOVA and Tukey's post hoc test, Group AV progressed the most followed by, Group V and Group A, (Group AV> Group V> Group A) . These findings suggest that Group A showed the lowest increase from pre-test to post-test showing that they did not benefit from the correction as much as the V and AV groups did. Group V was the second showing that they might have used the advantage of the visual information, and therefore performed almost as well as the AV group in the oral and written post-tests. Because of the use of the two modalities and receiving information through two channels, the AV group outperformed the other groups in terms of gain scores between pre-test and post-tests, and they showed the lowest loss of gain from post-test to delayed post-test. In summary, learners receiving recasts in two modalities retained the corrective feedback longer than those receiving the correction in only aural or only visual channels.

The second research question addressed whether learners' gain from the treatment is retained over time. According to the research findings, all of the groups were able to retain the corrections over the course of two weeks with some level of loss. Therefore, it could be argued that written recasts helped the learners to process the information in a short time, but gave similar results in the long term. Therefore, the influence of written recasts was more evident in a short period. This finding is parallel to the findings of Loewen and Philp (2006) and Philp (2003), who concluded that recasts are most successfully processed in short-term memory, but not stored as successfully in the long-term memory. The AV group, in this study, displayed a relatively better performance in retaining the learning gain despite some loss, which could be explained by the explicitness and noticeability of the correction. According to the findings of Loewen and Philp (2006) and Philp (2003), explicit corrective feedback is more likely to be stored in the long term memory, compared to implicit corrective feedback such as recasts. The findings of this study lend further support to their findings, suggesting that learners who were given the corrective feedback in two modalities retained the corrective feedback better than other groups, possibly due to the explicit nature of the correction (Sheen, 2010) and its being easily noticeable (Schmidt, 1990).

This study also lends further support to the Carrol and Swain (1993) study, which concluded that metalinguistic feedback maintained a long-term advantage when compared to modeling and implicit negative feedback. Written recasts in the present study worked better in the processing of implicit information, and showed a greater contribution in oral measures and an interaction effect with test in written measures. Written recasts, in this case, increased the noticeability of the correction by making it more explicit and easier to notice to learners.

This study adopted an experimental design, and aimed to obtain empirical evidence exploring the effects of written recasts which are designed to be more noticeable and explicit to the learners. Previous studies on input enhancement compared the effects of treatment with other more explicit forms of instruction rather than a true control group. In addition, most experimental studies did not employ a delayed post-test to assess the effects of treatment over an extended period of time (Li, 2010; Rassaei, 2014). To address these issues, the present study adopted a true control group that received recasts only in aural modality to provide baseline data, as well as a delayed post-test to assess the long term effects of treatment. The inclusion of a control group and delayed post-test made the interpretation of learning gains more straightforward as outcomes of the treatment. Therefore, the current study aimed to address the methodological concerns stated in Li (2010) and Rassaei (2014).

Like many experimental studies, this study might have certain limitations. There might be other variables affecting learners' performance in retaining or not retaining the corrective feedback such as learner's L1 background, their awareness of the task, and their learning styles. The participants in this study are from different L1 backgrounds, and this might have influenced the results. In addition, learners' progress over time could also be stemming from the awareness that the learners might have acquired, regarding their strengths and weaknesses in the target structure in the course of the two weeks. On the other hand, the language instruction in their ESL classes had been continuing keeping the learners active and offering them opportunities to use their knowledge in daily and academic settings. The findings of this study could also be related to participants' learning styles. Further studies can compare learners' performance to recall visual and aural input with their learning styles (visual, auditory etc.) and learning preferences.

Learners were also asked whether they noticed anything with the test such as the target structure of the experiment, and they answered that the aim was to use the correct tense in the sentences. According to some Arabic speaking participants in the study: "Arabic learners in general do not have to see the orthography of the correction, and they can easily remember when they are told something". However, their responses in the pre-tests and post-tests included frequent spelling errors of irregular verbs, as shown in Table 6. The same participants also claimed that Arabic culture is putting more emphasis on oral arts such as poetry and music, but not visual arts like painting and photography. According to them, their educational background is heavily built on oral skills with oral instruction and correction. This information by Arabic speaking students could be interpreted and used in two ways by language teachers: (a) although some learners stated that they do not rely on visual input and learn better from oral instruction, their performance did not exhibit such a tendency; on the contrary, the members in AV groups outperformed the other groups; (b) this could provide basis for further studies, as it could be revealing a significant contribution of first language background, learning styles, learners' preferences, educational background, and cultural beliefs about language use and learning. It is hoped that these findings can provide some directions for future research and help language teachers provide explicit and noticeable corrective feedback.

Conclusion

It is still not possible to make clear-cut generalizations about written recasts without further empirical evidence; however, this study made an attempt to contribute to the growing knowledgebase of corrective feedback and provide direction for further studies. In terms of research, using a delayed post-test and a true control group, it informs researchers about the effectiveness of corrective feedback in different modalities, and how recasts are processed by learners when the correction is more/less explicit. In terms of teaching, the findings suggest that written recasts help learners from a variety of L1 backgrounds (e.g., Arabic, Chinese, Japanese, and Korean) notice corrective feedback and retain it for an extended period of time. Since teachers ideally want their students to recognize and understand their corrections, corrective feedback needs to be explicit, easily noticeable, unambiguous, practical, and efficient. This could be achieved in several ways through which teachers can help learners visualize the corrective feedback, see their orthography and internalize it as intake, and store it for future use. For example, teachers can take notes of students' most common errors, (see Table 6 for an example), and give corrective feedback by writing them on the board and working on them explicitly at the end of classes, or give correction sheets with most common errors from students' oral or written production during classes. Assuming that learning takes place in multiple modalities including the use of texts, pictures, music, and even tactile activities, feedback should also be grounded in multiple channels such as the aural and visual modalities as suggested in this paper. Further studies should investigate the quality of feedback, the modality and type of the feedback as well as the differential effects in different cultural contexts and groups of learners.

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APPENDICES
APPENDIX A
SAMPLES OF PICTURE-DESCRIPTION TESTS

PAUL LUCY Last Saturday JOHN

meet watch

STEVE read jump cook PAM

FRED

SAM ERIC

play

JO lie
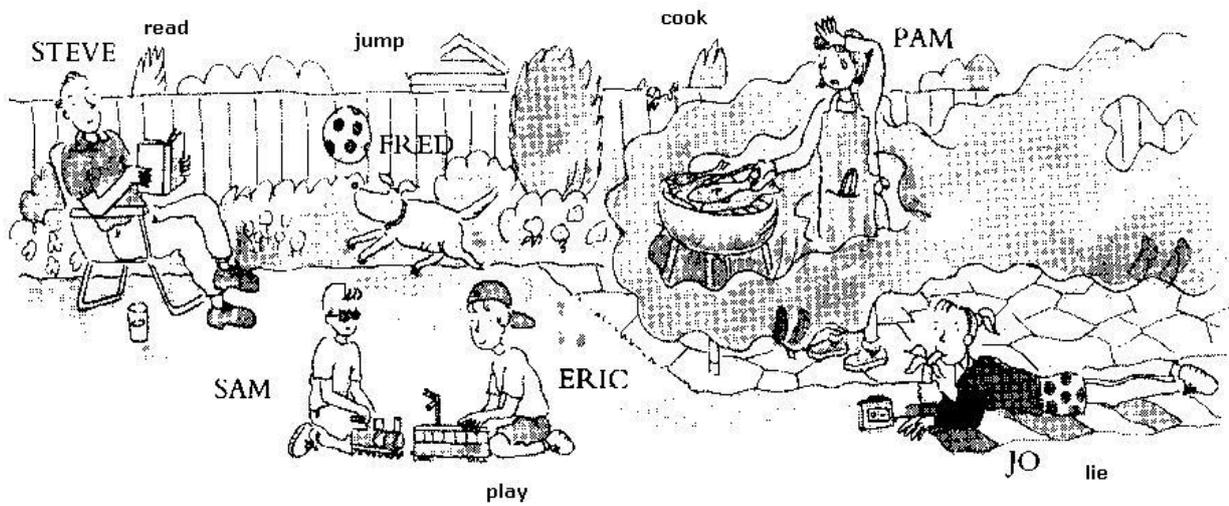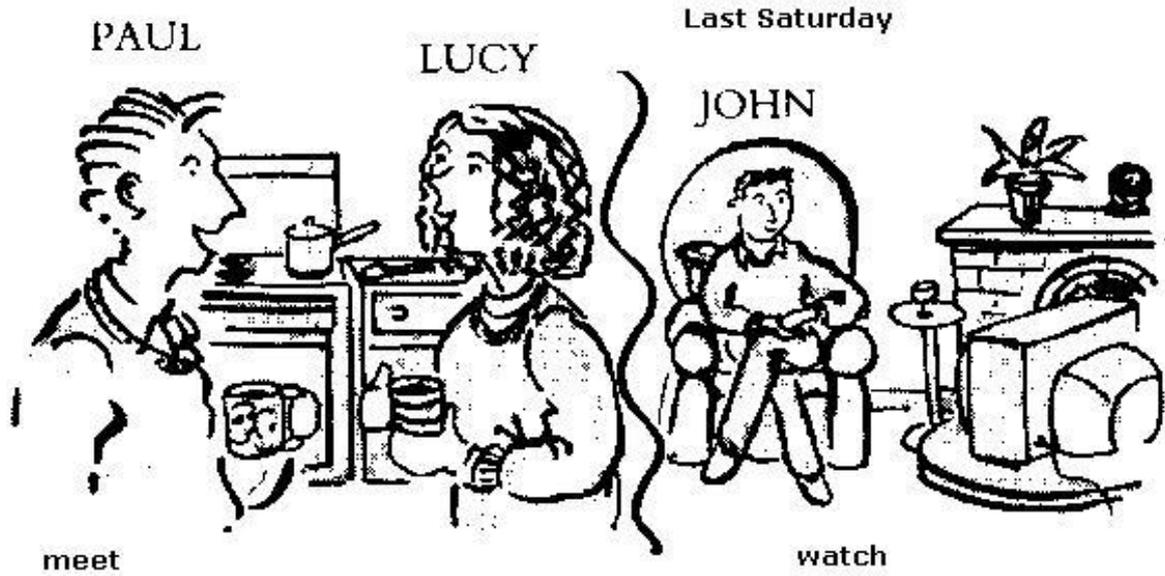
Yesterday

APPENDIX B
SAMPLE OF A WRITTEN TEST

Date:_____

Participant ID:_____

Fill in the blanks using the correct tense of the verb in the parenthesis.

1. Yesterday night, Mark_____ (drink) beer with his friends at a bar on Grand River.
2. Lucy used to have a bird. Last month, her bird_____(fly) from the open window.
3. Last night, Luke_____(fall) from the ladder, while he was trying to climb a tree.
4. Every week, Jennifer_____(visit) her parents.
5. Two weeks ago, Jennifer_____(meet) her parents in her hometown.
6. Last night, my friend's dog and a cat on the street _____(fight).
7. In February 2008, Maren_____(buy) a new house by the lake.
8. Last year, my sister _____(sing) a song at a party of her school.
9. Next week, I _____(play) football in our school's team.
10. Last weekend, Jason_____(run) with his friends in the forest.
11. Last night was so long. I _____(sleep) very well.
12. Last summer, Marie_____(go) to Florida, and she _____(swim) in the sea.
13. On my birthday last year, my father _____(give) me a new watch.
14. Every Saturday, Jill _____(watch) a sit-com on TV.
15. I was very tired yesterday, and I _____(sit) on the sofa in the living room.
16. Yesterday, my friends_____(come) to my place around 10 o'clock.
17. When I saw my old friend Ann last week, I _____(think) she was upset about something.
18. Professor Bergen _____(write) a new article about human psychology.
19. Now, my cat_____(look) at the cars from the window.
20. Last Saturday, I _____(find) a wallet on the way, when I was going home.
21. Two weeks ago, I _____(lose) my passport on a public bus.
22. Last night, the police _____ (catch) two criminals in a restaurant.
23. Two months ago, Jim_____ (drive) to Chicago with his family. When they were in Chicago, they_____(eat) Chicago's famous stuffed pizza.
24. Last weekend, my roommate _____(make) an apple pie for us.