**Corrective Feedback and Language Anxiety in L2 Processing and Achievement**

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This experimental study investigated whether language anxiety differentially influences the extent to which two corrective feedback (CF) techniques of recasts and prompts affect the L2 learning process and its outcome. Four experimental groups were formed according to their anxiety level and the type of CF received during question recall tasks they completed: the high-anxiety recasts-receiving group, the low-anxiety recasts-receiving group, the high-anxiety prompts-receiving group, and the low-anxiety prompts-receiving group. Two high- and low-anxiety control groups were additionally formed, who did not engage in the tasks. Learners’ anxiety level was judged based on their responses to a language anxiety questionnaire. CF efficacy in processing L2 was measured by examining the extent to which CF induced modified output and repair. Learners’ L2 knowledge was assessed at explicit and implicit levels on pretests, immediate posttests, and delayed posttests. Results revealed that language anxiety had no impact on prompts’ efficacy but displayed some influence on recasts’ efficacy. Recasts were more effective in promoting repair and L2 explicit knowledge for low-anxiety learners. It was also found that the differential effects of learner language anxiety were closely related to the level of anxiety aroused by the way the tasks were implemented. The finding highlights the significance of considering both learner language anxiety and task anxiety in providing CF.

**I. INTRODUCTION**

It has been observed that learners in content-based or communicatively oriented second language (L2) programs reach high levels of comprehension and oral fluency, yet still show a lack of grammatical accuracy even after years of exposure to the target language.

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Researchers have put forth form-focused instruction (FFI) as a solution to this problem. FFI is defined as “any planned or incidental instructional activity that is intended to induce language learners to pay attention to linguistic form” (Ellis, 2001, pp. 1-2). This instructional type was theoretically supported by Schmidt’s (1993, 1995) Noticing Hypothesis which claimed that acquisition of target language form requires noticing that form and noticing the gap between the target form and the learner’s interlanguage output.

Interactional corrective feedback (CF) has been much in focus as a means of FFI in instructional SLA for its multiple advantages in terms of what and when to notice. CF is a reactive FFI technique in that it is provided in response to learner errors from semantically contingent speech in interaction. It may thus draw learners’ attention to form that better fits their proficiency level, compared with proactive ones such as typographically enhanced input. Timing-wise, CF is given when learners complete their language production (i.e., make an error). It is considered as the moment learners’ attention can most effectively be drawn to the error-related form (Lightbown, 1991, 1998; Long, 1991).

Research on CF has mostly adopted Lyster and Ranta’s (1997) classification into six feedback types: explicit correction, recasts, metalinguistic clues, elicitation, repetitions, and clarification requests. The last four were later integrated under one category called “prompts” by Lyster (2002). Among them, recasts have received the most attention from researchers in part because the technique helps address some significant acquisition-related issues as described later. Some studies on recasts investigated whether or not they are effective in L2 development (Han, 2002; Iwashita, 2003; Mackey & Philp, 1998; McDonough & Mackey, 2006). Others were interested in comparing recasts with proactive FFI techniques such as models (Long, Inagaki, & Ortega, 1998) or with another CF type such as prompts (Ammar & Spada, 2006; Carroll & Swain, 1993; Ellis, 2007; Ellis, Loewen, & Erlam, 2006; Havranek & Cesnik, 2001; Leeman, 2003; Lyster, 2004; McDonough, 2007).

Comparative research of recasts and prompts has recently found that one type is not absolutely superior to the other as there are some intervening variables that influence their relative effects. For example, Ammar and Spada (2006) showed that prompts were more effective than recasts for low-proficiency learners but the differential effects did not emerge for high-proficiency learners. In Lyster and Mori’s (2006) study, CF efficacy was mediated by communicative orientation of the classroom. Specifically, recasts were more effective in form-focused classrooms while prompts were more beneficial in meaning-focused classrooms. Sheen (2008) and Jang (2010) argued that language anxiety is another variable mediating recast efficacy based on results revealing that recasts were more beneficial for low-anxiety learners. Their studies, however, were done to the exclusion of prompts. To the best of my knowledge, recasts and prompts have not been compared in consideration of learner anxiety. The purpose of the current study is to add to the
understanding of what determines the way recasts and prompts work by exploring language anxiety as a potential variable to mediate the effectiveness of the two CF techniques.

II. THEORETICAL AND EMPIRICAL BACKGROUND

1. CF Sequence

In teacher-learner interaction, one CF sequence is composed of three elements—trigger, feedback, and uptake (the examples below are from the present study).

Example 1
Student: What he did at home over the weekend? (Trigger: error)
Teacher: What did he do at home over the weekend? (CF: recast)
Student: What did he do? (Uptake: repair - repetition of recast)

Example 2
Student: How she fly next week? (Trigger: error)
Teacher: How ......? (CF: prompt - elicitation)
Student: How she (Uptake: unmodified output / Trigger: error)
Teacher: When is next week? Think about it. (CF: prompt - metalinguistic clue)
Student: How she will fly (Uptake: modified output / Trigger: error)
Teacher: It should be a question. (CF: prompt - metalinguistic clue)
Student: How will she fly? (Uptake: self-repair)

As seen in Example 1, a trigger is a learner’s utterance containing an error. An uptake constitutes the learner’s response to the teacher’s intention to draw the learner’s attention to language form via CF. Uptake may be either modified or unmodified as seen in Example 2. Even if modified, it is not necessarily well-formed. Targetlike modification is referred to as repair (Sheen, 2008). If uptake is not repair (i.e., not correct form), then uptake may serve as another trigger extending the CF sequence.

2. Recasts

Recasts are one type of CF technique that constitutes the teacher’s targetlike reformulation of the learner’s ill-formed utterance with its content intact as in Example 1. Recasts have a wide variety of characteristics that have helped elaborating SLA theories.
and can affectively and cognitively facilitate learners’ L2 processing. Though negative feedback, recasts provide exemplars of positive evidence as well. Having the double functions as positive evidence and implicit negative feedback, recasts were targeted for studies addressing such significant SLA issues as necessity of negative evidence (Ayoun, 2001; Leeman, 2003) and superiority of implicit versus explicit feedback in L2 development (Ellis et al., 2006; Loewen & Nabei, 2007), becoming the most widely investigated CF type in the literature.

Recasts are implicit and unobtrusive in nature. They have no overt signal to indicate that the learner’s prior utterance is problematic (i.e., implicit) and presumably do not hamper the flow of interaction (i.e., unobtrusive). Recasts might be viewed as a relatively useful CF technique from the perspective of Krashen’s (1985) Monitor Model, though he basically opposed the use of CF. Due to their implicitness and unobtrusiveness, recasts may help lower learners’ affective filter and assist L2 acquisition. The very nature may also be part of the reason that recasts are teachers’ most preferred CF in communicative classrooms (Lyster & Ranta, 1997).

Cognitively, recasts have at least two advantageous features to facilitate noticing. Immediately following learners’ erroneous utterances, recasts provide their correct version. This juxtaposition makes it possible for learners to make a direct comparison between their inaccurate forms and targetlike reformulations, leading to noticing the gap and restructuring their interlanguage (Doughty, 2001). According to VanPatten (1990, 1996), beginning learners have difficulties in processing content and form of input simultaneously because of their limited attentional resources and tend to process content before form. As recasts hold content of the learner’s message constant, the learner’s attentional resources, when faced with a recast, are freed up from processing its meaning and can be exclusively used to focus on its form (Long, 1996; Long & Robinson, 1998).

Some research (Lyster, 1998; Lyster, 2004), however, pointed out that recasts have some aspects to interfere with noticing as well. For CF to promote noticing, its corrective nature should be perceived by learners. Recasts are ambiguous in that they share a pragmatic function with non-corrective repetition of well-formed utterances, namely, to confirm or disconfirm the learner’s message. This ambiguity potentially obscures learners’ perception of recasts’ corrective intention.

Some studies showed the superior effects of recasts over models (Long et al., 1998). Others suggested that the effects vary depending on various variables. For example, recasts are more effective when they are given on lexical and phonological errors than on morphosyntactic ones (Mackey, Gass, & McDonough, 2000); when they are shorter and involve minimal changes (Egi, 2007; Philp, 2003; Sheen, 2006); and when they are provided to high-proficiency learners (Mackey & Philp, 1998) or to low-anxiety learners (Jang, 2010; Sheen, 2008).
3. Prompts

Prompts, unlike recasts, do not provide target-like reformulations but overtly signal that the learner’s utterance is ill-formed via interactional moves such as elicitation and metalinguistic clues as seen in Example 2. Prompts are more facilitative in noticing than recasts in some aspects. As prompts are more explicit and thus less ambiguous, their corrective intention is more readily recognized. Moreover, prompts indicate the locus and nature of an error as well as its existence (Ammar & Spada, 2006). In Example 2, the elicitation points to where the error occurred by pausing after the word ‘How’ and the subsequent metalinguistic clues provide information that the errors are about tense and word order.

Another aspect of prompts relating to noticing function is that they force the learner to modify his or her previous utterance. In other words, prompts provide opportunities for pushed output which, according to Swain’s (1985, 1995) Comprehensible Output Hypothesis, is necessary for L2 acquisition because it induces learners to notice target form and test their own hypotheses about L2 system. Although the learner can also modify his or her prior utterance following a recast, recast- and prompt-induced modifications are quantitatively and qualitatively different. In the case of recasts, both initiation and correction of an error are accomplished by the teacher within a single turn. This reduces the need for the learner to modify his or her initial utterance. In this sense, recast-induced modifications are voluntary rather than pushed and thus their frequency is likely to be lower than that of prompt-induced ones. Moreover, prompts engage learners in cognitive processes of noticing and hypothesis testing by pushing them to produce output. However, a recast-triggered modification may be a mere repetition of the recast that does not involve such processes (Gass, 2003).

Within the framework of skill acquisition theory which views language learning as gradual transition from declarative knowledge to procedural knowledge through practice, recasts and prompts can be seen to play distinct roles in processing and developing L2 knowledge (Anderson, 1987; DeKeyser, 1998, 2001). As recasts provide exemplars of positive evidence, they may be more beneficial in encoding new forms and developing declarative knowledge. On the other hand, prompts are more likely to increase control over already internalized forms and to develop procedural knowledge by virtue of opportunities for practice they provide in the form of pushed output.

Studies comparing recasts and prompts showed that their effectiveness is not uniform across different settings. Research conducted in classroom settings consistently showed superior effectiveness of prompts over recasts (Ammar & Spada, 2006; Ellis, 2007; Ellis et al., 2006; Loewen & Philp, 2006; Lyster, 2004). Such differential effects, however, did not manifest themselves in laboratory studies (Carroll & Swain, 1993; Leeman, 2003;
Prompts’ superiority in classrooms exhibits that increase in explicitness of FFI leads to its greater efficacy as concluded in Norris and Ortega’s (2000) meta-analysis of FFI studies. Greater effects of prompts are offset in laboratory settings, where recasts’ explicitness may be raised to the level of prompts because they are provided more consistently and intensively than in classrooms.

4. Language Anxiety

Language anxiety is described as “the apprehension experienced when a situation requires the use of a second language with which the individual is not fully proficient” (MacIntyre, 1999, p. 5). It is neither a general anxiety that one has as part of his or her permanent disposition (i.e., trait anxiety) nor a specific anxiety that one experiences at a transient moment (i.e., state anxiety). It is situational in that it is aroused repeatedly when the learner encounters particular situations such as speaking in public and taking tests.

Divergent positions have been put forward on the role of language anxiety in L2 development. Horwitz and other researchers (Horwitz, Horwitz, & Cope, 1986) developed a scale called “foreign language classroom anxiety scale (FLCAS)” to measure language anxiety. Using this scale, they consistently showed language anxiety to have debilitative effects in L2 achievement (Cheng, Horwitz, & Schallert, 1999; Horwitz, 1987, 2000; Horwitz et al., 1986). On the other hand, Sparks and Ganschow (1991) argued that affective factors such as language anxiety have no effects because L2 acquisition is determined exclusively by cognitive factors including language aptitude. Other researchers, however, saw possibilities for a facilitative role when anxiety led to higher motivation (Kleinmann, 1978) or when it was aroused by bearable and manageable tension (i.e., euphoric as opposed to dysphoric tension) (Spielman & Radnofsky, 2001).

As Sheen (2008) pointed out, a majority of research focused on relating anxiety to learning outcome rather than learning processes. Some researchers, however, recently began to include the processing aspect when exploring CF efficacy. Krashen (1985) is one of those early researchers to link anxiety and CF. He argued against the use of CF in classrooms as it arouses anxiety and thus is detrimental to L2 acquisition by raising the learner’s affective filter. Sheen (2008) and Jang (2010) looked into how language anxiety was connected with recasts. They found that recasts were more effective for low-anxiety learners than high-anxiety learners in production of repair as well as L2 achievement. However, no attempts have yet been made to associate language anxiety with prompts in isolation or in comparison with recasts. The present study aims at broadening the scope of CF research by tapping into these pending issues, namely, to relate anxiety to learning processes and to prompts. The following research questions are raised to address the issues:
1. Are there differences in the extent that language anxiety influences the effects for recasts and prompts on inducing modified output and repair?
2. Are there differences in the extent that language anxiety influences the effects for recasts and prompts on achievement of implicit and explicit L2 knowledge?

III. METHOD

1. Design

An experiment was conducted in a laboratory setting to fulfill the study’s purposes. Materials for the experiment comprised a language anxiety questionnaire, two sets of feedback treatment tasks, and three tests. The anxiety questionnaire was used to measure participants’ anxiety levels. The tasks were designed to allow the teacher to provide CF on every learner error. The tests consist of the pretest, the immediate posttest, and the delayed posttest with two different versions for each test. One version was for assessing declarative knowledge and the other for procedural knowledge. The pretests were administered before the treatment tasks, the immediate posttests right after their completion, and the delayed posttests two weeks later.

2. Participants

A total of sixty nine students completed the whole experiment including the anxiety questionnaire, two treatment and three testing sessions. They were all freshmen in a Korean university and were attending one of the researcher’s courses in the semester that the experiment was conducted. The participants were assigned to a high- or low-anxiety group based on their scores on the anxiety questionnaire. Each anxiety group was further randomly assigned to one of a recast-group and a prompt-group according to the type of CF they would receive during the treatments, or a control group that would receive no treatments. Then, six different groups were formed for the experiment as seen in Table 1.

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Participant Numbers by Group</th>
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</thead>
<tbody>
<tr>
<td>Group</td>
<td>Number</td>
</tr>
<tr>
<td>High Anxiety Recast (HR) Group</td>
<td>13</td>
</tr>
<tr>
<td>Low Anxiety Recast (LR) Group</td>
<td>14</td>
</tr>
<tr>
<td>High Anxiety Prompt (HP) Group</td>
<td>10</td>
</tr>
<tr>
<td>Low Anxiety Prompt (LP) Group</td>
<td>11</td>
</tr>
<tr>
<td>High Anxiety Control (HC) Group</td>
<td>11</td>
</tr>
<tr>
<td>Low Anxiety Control (LC) Group</td>
<td>10</td>
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</tbody>
</table>
3. Target Structure

The structure targeted for CF was word order in English question formation. Selection of this structure was the result of some pedagogical consideration. Questions are a structure of high frequency in learners’ use of English for communication. However, they are very difficult for Korean students to learn due to big differences between Korean and English in the ways to construct them. This difficulty is very likely to cause frequent learner errors, creating plenty of opportunities for providing CF in interaction with learners. Then, it was expected that targeting question formation would help address the research questions by ensuring a large number of CF sequences.

It has been suggested that mastering English question formation requires learners to pass through six stages with a higher stage involving a more structural complexity. (Mackey & Philp, 1998; Pienemann, Johnston, & Brindley, 1988; Spada & Lightbown, 1993) (see Appendix A). During the treatment sessions, the researcher who acted as the teacher provided CF on stage 5 errors as the tasks were designed to have the participants produce questions at that stage only. Questions at stages 1-3 could not be targeted for CF because they may be structurally incomplete or inaccurate. Stage 4 and stage 6 questions were excluded to control for the complexity of CF provided.

4. Instruments for Measuring Variables

1) Language Anxiety Questionnaire

To measure the participants’ language anxiety levels, a language anxiety questionnaire was prepared by adapting the one initially developed by Sheen (2008) (see Appendix B). The questionnaire contained 8 items specifically asking about speaking anxiety. It was translated into Korean and the participants responded to the statement of its items on a 6-point Likert scale from “strongly disagree” to “strongly agree.”

Each item was scored in the range of 1 (least anxious) to 6 (most anxious), yielding a possible questionnaire score spanning from 8 to 48 for each participant. The participants were categorized as ‘high-anxiety’ or ‘low-anxiety’ learners based on their questionnaire scores. As the score of 30 was a point splitting the participants in half, it was used as the dividing point. Accordingly, those with more than 31 points were regarded as being highly anxious while those who scored 29 points or less were taken as having low-anxiety.

2) Substitution Test

The current study categorizes learners’ L2 knowledge into explicit and implicit kinds,
adopting skill acquisition theory as the basis for such distinction. As briefly noted earlier, the theory contends that language learning involves proceduralizing and automatizing declarative knowledge (Anderson, 1987; DeKeyser, 1998, 2001). When it comes to processing entailed in the use of each type of knowledge, declarative knowledge may be activated from short-term memory and is retrieved through controlled processing that requires mobilizing a great deal of attention and conscious awareness. In this sense, declarative knowledge can be viewed as more of the explicit kind. Procedural knowledge, on the other hand, is retrieved from long-term memory via automatic processing with little attention and awareness, thus being considered implicit. The participants were tested on their declarative and procedural knowledge (i.e., explicit and implicit knowledge) of English question form separately.

A substitution test was employed and administered to measure and track the development of the learners’ explicit knowledge of the target structure. The test had 12 items and each item was composed of a declarative sentence containing an underlined portion, a wh-word in a parenthesis next to the sentence, and a long blank line under the sentence with a question mark at the end (see Appendix C for a few selected items). For each item, the learners were asked to convert the given declarative sentence into an interrogative in the long line by substituting the given wh-word for underlined words. Each of the correctly converted items was assigned 1 point, the maximum score of the test being 12 points. The substitution test was intended to measure explicit knowledge as it was not time-constrained, allowing the learners to repeatedly read the items and to exert as much attentional resources as they need in order to consciously retrieve their internalized knowledge to complete the test.

3) Speeded Dictation Test

To measure the learners’ implicit knowledge of English question form, a speeded dictation test was developed. It had 20 sentences of 8 to 10 words, which was to control for length that impacts on the learners’ online processing loads. Of 20 sentences, 12 were questions with the target word order (i.e., stage 5) and 8 were declarative sentences that served as distracters (see Appendix D for a few selected items). The learners listened to the sentences one by one during the test. For each sentence, they were given 20 seconds to write it down after hearing it. Only interrogative sentences were scored and 1 point was assigned to a correctly dictated question, the perfect score for a learner being 12 points. The test was regarded as assessing the learners’ implicit knowledge as it was administered with a time-limit (i.e., 20 seconds per item to write after hearing once), forcing the learners to utilize the kind of knowledge that can be retrieved subconsciously through automatic processing.
5. Treatment Tasks

Question recall tasks were developed to provide CF on learner errors. During each task, a script of a hypothetical interview (see Appendix E) between two people was given to each participant. It consisted of six questions at the target stage (i.e., stage 5) and their responses. All questions were of 6 to 8 words to control for their length.

Upon receiving a script, the learners were given 4 minutes to memorize the entire interview, after which the scripts were collected from them. Then, the teacher gave one response from the interview to a learner. When hearing the response, the learner’s task was to recall and orally produce its corresponding question as quickly and accurately as possible. If the recalled question was not in correct form, the teacher provided CF of the type of the learner’s group. Prompts were offered in the subtypes of elicitation and metalinguistic clues in isolation or in combination. The teacher made sure that every learner participating in a given task (i.e., per script) had 2 recalling opportunities. The learners engaged in 2 treatment sessions and 3 different interview scripts were used for one session on the average. This means that a learner normally received 12 opportunities to recall questions and to potentially receive CF.

6. Procedure

On the first day of the experiment, the participants completed the language anxiety questionnaire and two pretests—speeded dictation and substitution tests. Before the treatment sessions began, the learners were assigned to four experimental and two control groups based on their anxiety questionnaire scores and through random selection as described previously.

Each experimental group was further divided into three subgroups of 4 to 5. The teacher and a subgroup met twice to complete the treatment tasks over a period of one week. All verbal interaction during the tasks was audio-recorded, transcribed, and coded for statistical analyses. The learners took immediate posttests at the end of their second treatment session and delayed posttests two weeks later. The control groups did not engage in the treatment tasks and took posttests on the same days as the last experimental subgroup did. A summary of the whole procedure is displayed in Figure 1.

Transcriptions of verbal interaction were coded for frequencies of CF, modified output and repair to address the first research question which is concerned with CF-induced responses in order to see L2 processing aspects. The frequencies of modified output and repair for each group were converted into percentage scores. Such conversions were necessary for statistical comparisons as a highest possible frequency could not be set uniformly across the groups. A group’s modified output percentage was produced by dividing the number of
its modified output by that of CF it received. A group’s repair percentage was obtained by
dividing the number of its repair by that of its modified output.

**FIGURE 1**
Whole Procedure of the Experiment

<table>
<thead>
<tr>
<th>Step</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety Questionnaire / Pretests</td>
</tr>
<tr>
<td>↓</td>
</tr>
<tr>
<td>Group Assignment</td>
</tr>
<tr>
<td>(four experimental and two control groups)</td>
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<tr>
<td>↓</td>
</tr>
<tr>
<td>Task Treatment</td>
</tr>
<tr>
<td>(experimental groups – two sessions over one week for each subgroup)</td>
</tr>
<tr>
<td>(control groups – no treatment)</td>
</tr>
<tr>
<td>↓</td>
</tr>
<tr>
<td>Immediate Posttests</td>
</tr>
<tr>
<td>(experimental groups – immediately after the end of second treatment session)</td>
</tr>
<tr>
<td>(control groups – same day as the last experimental subgroup took)</td>
</tr>
<tr>
<td>↓</td>
</tr>
<tr>
<td>Delayed Posttests</td>
</tr>
<tr>
<td>(two weeks after immediate posttests)</td>
</tr>
</tbody>
</table>

The tests’ raw scores were compared to address the second research question which is concerned with the learners’ achievement of knowledge. Converting the raw scores into percentages was not necessary because the possible score range was the same (i.e., 0-12 points) for all groups. The alpha level for decision on significance in inferential statistics was set at $p < .05$.

**IV. RESULTS**

Table 2 shows the frequencies of CF sequences among the treatment groups.\(^1\) The high-anxiety groups received more CF than the low-anxiety groups particularly when CF took the form of recasts. A chi-square analysis confirmed that the difference is statistically significant, $X^2 (3, 306) = 51.046, p < .001$.

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\(^1\) Recast data obtained for the current study was used in the author’s other study (Jang, 2010) to be compared with recasts of the more explicit kind.
Table 3 presents the frequencies and the percentages of modified output and repair for the treatment groups. With regard to the frequency of modified output, the group differences are statistically significant as revealed by a chi-square analysis, $X^2 (3, 139) = 23.964, p < .001$. It is evident that the differences were made largely due to the CF factor rather than the anxiety factor. The learners produced a much higher rate of modified output after receiving prompts than recasts irrespective of their anxiety level (i.e., 22.3% (R) vs. 81.0% (P) for the high-anxiety learners; 22.6% (R) vs. 88.2% (P) for the low-anxiety learners). As long as CF type was held constant, the learners even at different levels of anxiety modified their output at similar rates (i.e., 22.3% (H) vs. 22.6% (L) for recasts; 81.0% (H) vs. 88.2% (L) for prompts).

Taking a look at the frequency of repair, a chi-square analysis revealed that the group differences are statistically significant, $X^2 (3, 89) = 23.045, p < .001$. The high-anxiety recast group produced a significantly lower rate of repair than the other three groups. The other three groups, however, produced very similar rates of repair. In other words, the low-anxiety learners similarly responded with repair to recasts and prompts (i.e., 71.4% and 71.1% respectively) while the high-anxiety learners did so differently. Both high- and low-anxiety learners responded with repair at similar rates when CF was a prompt (i.e., 68.6% and 71.1% respectively) but they did not do so when receiving a recast. These results revealed that, unlike modified output, the occurrence of repair can be affected by both the CF and the anxiety factors. However, the combined effect was negative and only emerged in a limited interaction where the CF was recasts and provided to the high-anxiety learners.
One-way ANOVAs were run to check on statistical significance of the group differences in the performance on the tests. Table 4 shows the means and the standard deviations for the scores of all groups on the three speeded dictation tests that were administered to track the learners’ implicit knowledge of the target feature. The results of an ANOVA for the pretest means revealed no statistical significance among the group differences, $F(5, 63) = 2.342$, ns, confirming that all groups’ levels of implicit knowledge were comparable before the treatment sessions. ANOVAs for posttest means revealed that the group differences fail to reach a statistically significant level in both the immediate and the delayed posttests, $F(5, 63) = 2.084$, $p = .079$; $F(5, 63) = 2.133$, $p = .073$, respectively. Analyses of data from the speeded dictation tests thus revealed that neither of the CF and the anxiety factors affected or contributed to development of the learners’ implicit knowledge.

**TABLE 4**

<table>
<thead>
<tr>
<th>Group</th>
<th>Pretest M</th>
<th>Pretest SD</th>
<th>Immediate posttest M</th>
<th>Immediate posttest SD</th>
<th>Delayed posttest M</th>
<th>Delayed posttest SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>HR</td>
<td>1.31</td>
<td>1.38</td>
<td>3.38</td>
<td>3.71</td>
<td>3.77</td>
<td>2.71</td>
</tr>
<tr>
<td>LR</td>
<td>3.07</td>
<td>1.49</td>
<td>6.00</td>
<td>1.75</td>
<td>5.86</td>
<td>2.03</td>
</tr>
<tr>
<td>HP</td>
<td>1.30</td>
<td>1.42</td>
<td>2.50</td>
<td>1.18</td>
<td>2.40</td>
<td>1.65</td>
</tr>
<tr>
<td>LP</td>
<td>3.00</td>
<td>2.93</td>
<td>4.27</td>
<td>3.44</td>
<td>4.36</td>
<td>3.32</td>
</tr>
<tr>
<td>HC</td>
<td>3.36</td>
<td>2.46</td>
<td>4.27</td>
<td>2.80</td>
<td>4.82</td>
<td>2.68</td>
</tr>
<tr>
<td>LC</td>
<td>2.50</td>
<td>2.17</td>
<td>3.70</td>
<td>3.34</td>
<td>4.30</td>
<td>3.40</td>
</tr>
</tbody>
</table>

The descriptive statistics for the substitution tests meant to measure the learners’ explicit knowledge are displayed in Table 5. An ANOVA performed for the pretest scores revealed that the mean differences among the groups are not statistically significant, $F(5, 63) = 0.732$, ns, confirming that all groups initially had comparable levels of explicit knowledge of the target feature. An ANOVA for the immediate posttest scores revealed that the group differences are statistically significant, $F(5, 63) = 2.542$, $p = .043$. Tukey’s post hoc pairwise comparisons revealed that a significant difference lies between the low-anxiety recast group and the low-anxiety control group at $p = .037$. For the delayed posttest scores, an ANOVA revealed no statistical significance among the group differences. These analyses show that recasts may benefit development of explicit knowledge while prompts do not have such benefits. However, the recasts’ benefits were limited to the low-anxiety learners and not long-lived.
TABLE 5
Descriptive Statistics for Substitution Tests

<table>
<thead>
<tr>
<th>Group</th>
<th>Pretest M</th>
<th>Pretest SD</th>
<th>Immediate posttest M</th>
<th>Immediate posttest SD</th>
<th>Delayed posttest M</th>
<th>Delayed posttest SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>HR</td>
<td>3.00</td>
<td>3.81</td>
<td>4.62</td>
<td>4.43</td>
<td>4.23</td>
<td>4.59</td>
</tr>
<tr>
<td>LR</td>
<td>3.21</td>
<td>3.12</td>
<td>7.14</td>
<td>3.68</td>
<td>5.50</td>
<td>3.59</td>
</tr>
<tr>
<td>HP</td>
<td>2.30</td>
<td>2.79</td>
<td>3.00</td>
<td>3.50</td>
<td>2.60</td>
<td>3.41</td>
</tr>
<tr>
<td>LP</td>
<td>4.00</td>
<td>4.94</td>
<td>4.00</td>
<td>4.40</td>
<td>4.64</td>
<td>4.34</td>
</tr>
<tr>
<td>HC</td>
<td>2.91</td>
<td>3.45</td>
<td>3.27</td>
<td>3.90</td>
<td>3.45</td>
<td>3.80</td>
</tr>
<tr>
<td>LC</td>
<td>1.30</td>
<td>1.49</td>
<td>2.20</td>
<td>3.29</td>
<td>2.40</td>
<td>2.88</td>
</tr>
</tbody>
</table>

V. DISCUSSION

All groups had comparable knowledge at the outset of the experiment as evidenced in the results of the pretests. However, the analyses of CF sequences that reflect occurrences of learner errors revealed that the high-anxiety learners committed more errors than their low-anxiety counterparts during the task activities. It has been argued that the highest anxiety-provoking situation for learners is the one where they have to speak in front of others (e.g., the whole class) (Krashen, 2003; Price, 1991; Young, 1990). The treatment tasks of this study may have created such a highly anxiety-arousing environment in that they required the learners to speak in front of other group members and the teacher. The high-anxiety learners may have been emotionally more responsive to the anxious nature of such context.

As mentioned previously, language learners have difficulty focusing on content and form simultaneously in processing input. Their usual strategy is to prioritize the use of their limited processing resources for comprehending the meaning of the input rather than attending to its form (VanPatten, 1990, 1996). The most embarrassing incidence for a participating high-anxiety learner would be the non-ability to speak as result of being unable to recall a question. In order to recall a question, the learner had to first capture the meaning of its response given by the teacher and then retrieve the meaning of the question. It was not feasible for a learner to carry out the tasks simply by memorizing the whole interview by rote, considering the lengths of an interview script and of time allowed for memorizing it. It is then probable that the high-anxiety learners, who got more anxious from the anxiety-inducing nature of the tasks, relied more on their usual strategy to prioritize processing meaning to avoid such embarrassment as failure to recall. This, in turn, may have left them with less attentional resources for processing form, which resulted in more errors.

It should be noted that anxiety had a heavier impact on committing errors for the recast groups than for the prompt groups. The difference in error frequency between the high-
Corrective Feedback and Language Anxiety in L2 Processing and Achievement

and low-anxiety learners was much bigger in the recasts-receiving condition compared with the prompts-receiving condition. The wider inter-anxiety gap in the recast condition may be explained by the ambiguity of recasts. As noted previously, recasts have potential to be taken as intending to confirm the content of a learner’s message (Lyster, 1998; Lyster, 2004). For the high-anxiety learners who were focusing primarily on meaning, it is more likely that they treated recasts as having such intention rather than as CF, leaving the same error to recur. On the other hand, prompts are more explicit CF that shows the locus and nature as well as the existence of an error (Ammar & Spada, 2006). Even the high-anxiety learners therefore are most likely to engage in focus on form on the reception of prompts, leading to much less error difference between the prompts-receiving anxiety groups.

The first research question was about the role of language anxiety in CF efficacy on eliciting modified output and repair. Although modified output and repair can be taken as evidence for noticing, they represent it at different levels. According to Thornbury (1997), there are two separate kinds of noticing necessary for L2 acquisition: “attend to linguistic features” and “notice the gap, i.e., make comparisons between current state of their (learners’) developing system … and the target language system” (p. 326). A learner can and does modify his or her initial utterance only when he or she recognizes that there was a problem in the form of that utterance. This recognition of an error presence is the result of comparison between the learner’s own language form and its targetlike form. In this sense, an incidence of modified output constitutes evidence for noticing the gap.

Modified output, however, is not necessarily in a correct form. Repair, as it is well-formed modified output, is therefore a more adequate yardstick for attending to and noticing target linguistic features. A targetlike form can be retrieved from recasts stored in short-term memory or, by virtue of prompts’ pushing nature, from linguistic representations in long-term memory. It should be noted that modified output and repair triggered by prompts may be more accurate measures of noticing than those following recasts. On receiving a recast, a learner can produce a seeming repair by simply mimicking the recast without such cognitive processing as noticing (Gass, 2003), as mentioned previously.

The learners produced higher rates of modified output following prompts than recasts. This pattern was seen in other studies (Lyster & Izquierdo, 2009) and can be explained in terms of previously stated differences in the characteristics of the two CF techniques. Withholding correct form from learners, prompts urge them to correct their errors (i.e., produce modified output) by mobilizing their own cognitive resources and knowledge from long-term memory. Recasts, on the other hand, are not as pushy for modified output since they provide correct form. In some discourse contexts, a learner’s modified output may even be improbable and inappropriate following a recast (e.g., when the teacher moves on to another topic after giving a recast without a pause for the learner to respond).
With regard to language anxiety, it did not affect the CF efficacy in inducing modified output irrespective of its type. The different anxiety groups produced modified output at the very similar rates for either CF type (22.3% (H) vs. 22.6% (L) for recasts; 81.0% (H) vs. 88.2% (L) for prompts). This finding suggests that the distinction in characteristics of the two CF types is so robust as to override any language anxiety influence.

In contrast, language anxiety presented its effect in producing repair of recasts. Compared with the high-anxiety recast learners, the low-anxiety recast learners were able to repair their errors at a higher rate (41.4% (HR) and 71.4% (LR)) and this level paralleled those of the prompts-receiving learners. Once they realized the presence of an error after receiving a recast, the low-anxiety learners seem more likely to have continued focusing their attention on form, comparing their initial utterance with its recast, and identifying the locus and nature of the error. On the contrary, even after perceiving corrective intention of a recast, the high-anxiety recast learners more likely kept focusing on meaning possibly because of their primary concern to avoid a highly embarrassing case of not being able to speak from non-comprehension. This limited their ability to incorporate corrected form offered by a recast into their subsequent speech.

Language anxiety was not effective in inducing repair of prompts, though (68.6% (HP) and 71.1% (LP)). This may be related again to prompts’ nature of pushing learners for output. Learners have to keep focusing their attention on form to generate their own output regardless of their anxiety level, which is presumably a large contributor to the little difference between the prompt groups in producing repair as well as modified output.

The second research question was as to the role of language anxiety in CF efficacy on development of implicit and explicit L2 knowledge. The results on the speeded dictation test showed that neither CF technique was effective in implicit L2 knowledge development. Each CF type may have a different explanation for its non-effectiveness from the perspective of skill acquisition theory. In this theory, implicit knowledge is what is turned from explicit knowledge through practice. In other words, one cannot get implicit knowledge without explicit knowledge and its practice. Prompts are a good tool for practice as they provide ample opportunities for pushed output. Prompts nevertheless were of little help in developing implicit knowledge. It probably has to do with the fact that the participating learners did not have enough explicit knowledge to be turned into implicit knowledge. The learners had a very low level of declarative knowledge about the target structure prior to the CF treatments as shown in their pretest mean scores that ranged from 1.30 to 3.36 out of 12 points. If this logic is legitimate, the non-effectiveness of prompts suggests that a certain level of explicit knowledge is required for practice to work.

As for the non-effectiveness of recasts, the learners’ little explicit knowledge may not be a major problem. The learners got correct form on which to build declarative knowledge through recasts. Instead, practice (lack of practice to be exact) could be a main source for
little progress. Given less opportunities for pushed output, the recasts-receiving learners may not have been able to practice their explicit knowledge enough to turn it into implicit knowledge.

Besides the quantity of practice, its quality can also be a problem for recasts-receiving learners. The kind of explicit knowledge retrieved for practice by the recasts-receiving learners may be different from that by the prompts-receiving learners. Once a learner gets a target form with an aid of a recast, it is stored unstably in short-term memory. When the learner subsequently retrieves that form from short-term memory to practice it (i.e., modifies an error in uptake), the retrieved form is possibly not as it was in the recast. It is “because the input information is immediately processed and not stored in memory in that form” (de Bot, 2000, p. 228). The recasts-receiving learners thus, if ever, may have practiced incorrect forms, if not always, effacing what little beneficial effect the recast-led practice had. On the other hand, a learner, when faced with prompts offering no target form for short-term memory, resorts to retrieving explicit knowledge for practice from long-term memory where the target form is stably internalized. These accounts of the non-efficacy of either CF type suggest that learners are required to have a certain level of stable explicit knowledge for achievement of implicit knowledge. Establishing veracity of all this, of course, necessitates future empirical studies. As there was no effect for either CF type, it follows that language anxiety did not show any influence on either CF efficacy as well.

With regard to explicit knowledge development, prompts were ineffective while recasts displayed some positive effects. Acquiring explicit knowledge in the form of declarative knowledge involves noticing and encoding of new linguistic features. Prompts do not present positive evidence to permit such processing. They only push the learner to produce target form by retrieving and activating already internalized representations in long-term memory. These are processes of proceduralizing (i.e., practicing) rather than developing explicit knowledge, which explains the prompt groups’ failure to acquire explicit knowledge. With no effects of prompts, the influence of language anxiety on the prompt efficacy naturally did not manifest itself, either.

The learners in the recast groups, by contrast, were able to engage in cognitive processes of noticing and encoding new language form as it was contained in recasts (Braidi, 2002; Leeman, 2003). This accounts for the recasts’ positive efficacy but it was mediated by language anxiety level. Recasts only benefitted the low-anxiety learners but not the high-anxiety learners. Recasts’ disfavor with the high-anxiety learners had been unexpected for their affective advantages. Recasts are non-threatening to learners as they are implicit and unobtrusive, potentially serving scaffolding functions (Seedhouse, 2004). It is then arguable that when receiving recasts, high-anxiety learners possibly experience similar levels of anxiety to low-anxiety learners. From this logic, the high-anxiety learners should
have shared the progress the low-anxiety learners made.

The reason for the unexpected no-effect for the high-anxiety learners is presumably because the anxiety-alleviating advantages recasts generally entail had been offset by the way the tasks were implemented. As noted earlier, the tasks of this study exposed the learners to highly anxiety-provoking situations where they had to speak in front of their peers and teacher. The high-anxiety learners may have been more sensitive to this affectively unfriendly context, remaining to be highly anxious.

In addition, the tasks were carried out in laboratory settings. As described previously, research on recasts has shown that recast effectiveness varies in different settings. In laboratory studies, recasts were found to have positive effects on L2 learning (Han, 2002; Iwashita, 2003; Long et al., 1998; Mackey & Philp, 1998; McDonough & Mackey, 2006). They were shown to have the same level of contribution to L2 learning in comparison with prompts (Carroll & Swain, 1993; Leeman, 2003; McDonough, 2007). However, no classroom studies have yet shown superior effects of recasts over other types of CF including prompts (Ammar & Spada, 2006; Ellis, 2007; Ellis et al., 2006; Loewen & Philp, 2006; Lyster, 2004).

Recasts are provided more systematically, consistently, and intensively in a laboratory than in a classroom. In fact, during the treatment tasks of the current study, CF was provided in a particular type (i.e., systematically) on errors in English question (i.e., consistently) whenever they occurred (i.e., intensively). These laboratory properties make the corrective intention of a recast more obvious and its target form more salient. In other words, recasts become more explicit in a laboratory setting and this directs learners toward focusing more on form. The elevated explicitness of recasts and subsequent increase in focus on form may largely account for their augmented effects in laboratory studies in general and L2 explicit knowledge development attained by the low-anxiety recast learners in the present study in particular. However, for the high-anxiety learners who were kept highly anxious by the anxiety-inducing nature of the tasks they were doing, more explicit recasts may not have been equally beneficial. It may be that with their primary concern of not being embarrassed, the high-anxiety learners were constantly too intent on comprehending meaning of the teacher’s utterances to appreciate the raised explicitness of recasts for focus on form.

It is noteworthy that the low-anxiety learners’ increased explicit knowledge did not hold for long as the delayed substitution test results showed no significant differences among the groups. The learners constructed their explicit knowledge based on form that was offered by recasts and thus stored without stability in short-term memory. Given that they engaged in only two treatment sessions, they were probably not given sufficient opportunities to stabilize and internalize the fledgling explicit knowledge of the target form, let alone increase control over that form through proceduralization and
VI. CONCLUSION

This study examined whether language anxiety differentially mediates the efficacy of different types of CF in processes and achievement of L2 learning. For this purpose, two types of CF techniques—recasts and prompts—were compared in terms of their structural properties. Drawing upon this comparison, potential advantages and disadvantages the techniques each have for L2 learning were highlighted within the theoretical frameworks of noticing hypothesis, comprehensible output hypothesis, and skill acquisition theory. The effectiveness of the target CF techniques in eliciting modified output and repair and in developing implicit and explicit knowledge was then empirically compared and analyzed in relation to learners’ language anxiety level.

The findings revealed that language anxiety was positively related to error frequencies (i.e., the higher anxiety, the more errors) and that the relationship was stronger when CF was a recast. With regard to CF efficacy in inducing modified output, neither CF technique was affected by anxiety. As for eliciting repair, prompts’ efficacy remained unaffected whereas recasts’ efficacy varied with higher anxiety producing lower rates of repair. When it comes to CF efficacy in developing knowledge, anxiety was not influential in effects of either technique on implicit knowledge attainment. It did not impact prompts’ effectiveness on achieving explicit knowledge, either. However, it influenced recasts’ efficacy as only the low-anxiety learners improved their explicit knowledge although it was only short-term.

Overall, language anxiety was not related to prompts’ efficacy in either aspect of process and attainment of L2 learning. The reason may be that prompts are so explicit in its corrective intention and so forceful in pushing output as to leave little room for learners of varying anxiety levels to engage in perceiving CF and practicing the target form to different extents. On the other hand, recasts’ efficacy was selectively affected by anxiety. Where there was an anxiety effect, recasts were less beneficial to the high-anxiety learners. It is because despite the anxiety-reducing nature of recasts, they were not able to mitigate their anxiety due to having a high susceptibility to the anxiety-inciting properties of the tasks that they were involved in.

Applying these findings, a language teacher might want to carefully take into account his or her learners’ anxiety level particularly when they give CF in the form of recasts in the classroom. The importance of considering the anxiety factor in providing recasts is bolstered by the observation of some studies (Lyster, 2007; Lyster & Ranta, 1997) that recasts are the very type of CF that teachers most commonly provide. In judging learners’
anxiety level, it should be remembered that language anxiety is neither trait nor state kind. It is a situational anxiety. This study showed that the way a task is organized and carried out shapes the level of situational anxiety the task arouses. It also showed that high-anxiety learners are more venerable to a high anxiety-provoking situation and may be less benefited by recasts. A teacher then would wish to carefully select and/or develop tasks and implement them in the way that lowers the anxiety level of particularly highly anxious learners in order for recasts to work to its fullest.

There is a caveat about interpreting the findings presented here. No relations were found between language anxiety and prompts’ efficacy in the current study. One cannot necessarily draw a conclusion from it that there is no need to consider learners’ anxiety level in presenting prompts in classrooms. The fact that the experiment was done in a laboratory setting should not be disregarded. As stated previously, the setting where CF is provided is an intervening factor that could affect CF efficacy. Future classroom studies are in order for more convincing insights into how anxiety and CF are connected.

Other flaws to be overcome in future research includes small numbers of samples (i.e., 10-14 per group) and task sessions (i.e., two times), the discrepancy in modality between tasks (i.e., oral) and tests (i.e., written), and the use of multiple prompt types (i.e. elicitation and metalinguistic clues) that could have blurred the effect of a particular prompt technique. Future studies may be expanded and elaborated from this study by examining the prompt subtypes of elicitation and metalinguistic clues separately and by looking further into the other subtypes (i.e., clarification requests and repetition). As this study showed that language anxiety, as an affective individual difference factor, differently influenced the effectiveness of recasts and prompts, another promising research direction would be to touch upon other individual difference factors. It could be cognitive one such as language aptitude and working memory as well as affective one including motivation. This line of work is of much value to ultimately be able to individualize the use of CF for the maximization of its effectiveness in L2 learning.

Continued and expanded research with a wider variety of potential intervening factors on the agenda will provide more of in-depth information on how CF can effectively work. Along the way, it would be increasingly clear that what is at stake for teachers is not a matter of a routine choice of one type of CF over another but of a moment-by-moment decision to use what CF to what learners in what context.

REFERENCES


APPENDIX A
Developmental Stages for English Question Form

· Stage 1
  Single words (e.g., Market?)
· Stage 2
  SV(O) (e.g., He moved to a big city?)
· Stage 3
  Do+SV(O)? (e.g., Do he eat?)
  Be+SV(O)? (e.g., Was she visit park?)
  Wh+(do/be)+SV(O)? (e.g., When they see the dog?)
· Stage 4
  Wh+copula+S? (e.g., What food is that?)
  Auxiliary except ‘do’ in yes/no Q (e.g., May he fly?)
· Stage 5
  Wh+auxiliary+S? (e.g., How should I go?)
· Stage 6
  Negative Q (e.g., Why can’t you come?)
  Tag Q (e.g., You sold it, didn’t you?)
  Embedded Q (e.g., Do you know when he left the room?)

* This is an adaption of the one in Pienemann et al. (1988).
* Examples are from the present study except those for stage 6.

APPENDIX B
Items of Language Anxiety Questionnaire

· 나는 항상 다른 학생들이 나보다 영어를 더 잘 말한다고 느낀다.
  (I always feel that the other students speak English better than I do.)
· 나는 영어회화수업시간에 대답을 할 때 종종 자신감이 없다.
  (When I give my answers in my English conversation class, I often lose confidence.)
· 금담들 앞에서 영어로 말해야 할 때 나는 기본이 좋다.
  (I feel good when I have to speak English in front of my classmates.)
· 영어로 말할 때 다른 학생들이 나를 비웃지 않음을까 두렵다.
  (I’m afraid the other students will laugh at me when I speak English.)
· 영어회화수업에 참여할 때 나는 일반적으로 긴장한다.
  (I’m generally nervous when participating in my English conversation class.)
(When speaking in my English conversation class, I’m not worried about English grammar.)

(I’m enjoying my English conversation class because I’m comfortable with the level of English.)

(I’m afraid of speaking right after the teacher corrects my errors.)

* This is adapted from the one in Sheen (2008) to better fit the EFL laboratory setting.
* This was used in the author’s other study (Jang, 2010).

APPENDIX C
Selected Items of the Substitution Test

- She drinks tea a lot because it smells good. (why)
→ ___________________________________________?
- He can meet her tomorrow in his office. (where)
→ ___________________________________________?
- They had bought Jane the building two years before. (who)
→ ___________________________________________?

APPENDIX D
Selected Items of the Speeded Dictation Test

- Why will he see the movie with you?
- Which bus should I take to get to you?
- Whose book did you want to read most?

APPENDIX E
A Sample Script of Interview

Q: What bank should I go to this evening?
A: Shinhan Bank. It is in the downtown.
Q: How can I get there from here?
A: By subway. That is the easiest way.
Q: How long will it take to get there?
A: About twenty minutes.
Q: Who should I meet at the bank?
A: Mr. James. He is the head of the bank.
Q: What time can I talk to him?
A: At 7 o’clock. He will be in his office.
Q: What must I say first in his office?
A: Good evening, Mr. James.

Applicable levels: tertiary education
Key words: corrective feedback, recasts, prompts, language anxiety, modified output, repair, implicit and explicit knowledge

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