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The Role of Visual Enhancement and Awareness in L2 Learning

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This study investigated how different types of formal instruction affect the second language learning of English grammatical structure among Korean high-school students. The linguistic focus of the study was English present perfect, which often creates learning problems for Korean learners of English. Subjects were divided into a control group and an experimental group (Enhanced group). The input the subjects in the experimental group received was manipulated by visually enhancing (with highlighting of the target structures in a reading text). Learners' awareness of the rules throughout the treatment period, as well as accuracy of target structures was measured. Results indicated that subjects in the Enhanced group showed higher performance than the Control group. Further, awareness of rules that learners developed over the treatment period did not provide any advantage in learning.

[Visual Enhancement and Awareness, 시각적 강화와 인식]

Ⅰ. INTRODUCTION

This study investigated whether different degrees of awareness have different effects on learners' second language (L2) development. The relationship between awareness and learning has long been a focus in cognitive psychology. Studies have argued that awareness is not a necessary condition in learning (e.g., Curran & Keele, 1993; Nissen & Bullemer, 1987, among others). Although direct and indirect

benefits of awareness can be found in many L2 acquisition and pedagogical studies (e.g., Alanen, 1995; Leow, 1997, among others), the focus of these studies has been on the effects of different types of instruction employing various instructional techniques that promote awareness, not on awareness itself.

Presenting learners with types of instruction that differ in the explicitness allocated at the time of input provision enables us to examine the issue discussed above. In the present study, learners are provided with the enhanced input type of instruction. Results confirm that in the short term, those who received enhanced input showed post-instructonal increase in the performance. That is, those who received enhanced input type of instruction showed a significant increase across time. However, the most interesting finding was that awareness of rules that the subjects have developed through exposure to the input did not facilitate learning.

This paper is organized as follows: First, this study reviews the ways in which awareness has been investigated in L2 acquisition as well as in L2 pedagogy. Second, based on this review, research questions are presented and hypotheses are formulated. Third, linguistic focus of the study is described. Next, the study describes the experiments conducted and their results. Finally, implications are discussed.

1. Awareness in L2 Acquisition and Pedagogy

Awareness "refers to a particular state of mind in which an individual has undergone a specific subjective experience of some cognitive content or external stimulus" (Tomlin & Villa, 1994, p.193). There have been different views in current SLA literature as to the role of awareness in learning (e.g., Carr & Curran, 1994; Schmidt, 1990; 1995; Tomlin & Villa, 1994). For example, Schmidt (1990, 1995) claimed that learners must consciously pay attention to or *notice* input in order for language learning to occur. *Noticing*, what he calls a low-level awareness, is the necessary and sufficient condition for learning. Since all noticing is conscious, Schmidt also claimed that implicit or subliminal language learning is impossible. In sum, his view is that noticing involves awareness.

Tomlin and Villa (1994), however, criticized Schmidt's concept. Based on the evidence from cognitive psychology (e.g., Nissen & Bullemer, 1987, among others), they claimed that detection of input is a necessary and sufficient condition in order for further processing to occur. That is, learning may occur without awareness. Although no direct claims have been made, the results of several recent L2 studies

are consistent with Tomlin and Villa's view (e.g., Alanen, 1995; Doughty, 1991; Ellis, 1993, and Leow, 1998, among others). Studies have measured whether the learner's performance changes through various instructional techniques such as rule presentation, enhanced input or a combination of both. The studies which tested learners' exposure to various types of inputs show overall positive effects when they are presented with enhanced input and rule presentation. Doughty (1991) showed a positive short-term effect of either a combination of rule plus enhanced input or enhanced input as opposed to unenhanced exposure only. Doughty claimed the results to be due to the successfully drawing learners' attention to meaning through visual enhancement or through the combination of rule presentation and sentence manipulation.

The combined effect of drawing learners'attention through rule presentation and visual enhancement was also evidenced in both Ellis (1993) and Alanen (1995). In Ellis (1993), learners who received both rules of Welsh soft mutation and their applications to exemplars (Rule & Instance group) had advantages over those who received either rules (Rule group) or exemplars (Instance group). Rule & Instance learners were the slowest to learn, but they were the only ones to develop an abstract schema for the application of rules and an ability to generalize to new examples. Alanen (1995) supported the finding of Ellis by showing that the subjects who received rule instruction and those who received rule plus enhanced input instruction performed better than those who received either the enhanced input or unenhanced input. Also, the measurement of learners' awareness and the relationship to consequent change in their performance has been made through various techniques such as postexposure questionnaires or on-line think-aloud procedures (e.g., Robinson, 1995; Leow, 1997).

However, can awareness provide some advantage to SLA even if it is not a necessary condition? Leow (1997) has shown that increased awareness is related to both increased recognition and correct written production of morphological forms; additionally, different levels of awareness may correspond to different processing strategies (e.g., the presence or absence of hypothesis testing). That is, learning is enhanced when subjects' awareness level is increased.

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Based on the previous studies, the present study is guided by the following points: (1) at least for short-term gain, learners need to detect linguistic features of the input as well as meanings, and (2) awareness may not be necessary in learning, although its facilitative effect remains to be seen.

2. Research Questions

Drawing on the findings from the previously mentioned studies, the present study looks into the following research questions.

(1) Would learners who receive enhanced input develop awareness of the target forms?

In the present study, target structures were made more salient through visual enhancement (color-coded target structures), in order to increase the likelihood that learners would detect them. It was expected that the learners' attention would be directed to the visual enhancement, creating a necessary condition for learning (Tomlin & Villa, 1994). Following Doughty (1991) and Alanen (1995), It was hypothesized that the experimental group subjects who receive visual enhancement (Enhanced group) would outperform the subjects who are only exposed to the input (Control group). It was hypothesized that the learners' attention would be directed toward the enhanced target structures, creating a necessary condition for the conversion of input to intake (Tomlin & Villa, 1994).

H1: Enhanced group subjects would outperform Control group subjects

(2) Would developed awareness be associated with higher performance of the target forms?

Following Curran and Keele (1993), we hypothesize that learners who develop awareness throughout the experiment, as measured by their responses on postexposure questionnaires, would outperform those who do not.

H2: Subjects who develop awareness throughout the experiment would outperform those who do not.

3. Focus of the Present Study

The focus of the present study is the English present perfect since many Korean L2 learners of English have considerable difficulty with the English tense/aspect system, due to the difference in the temporal expression. English insists on marking every finite verb group for absolute tense, whether or not the time orientation would be clear without it. Many other languages, including Korean, often do not require such a marking of the verb group where the time location is either unimportant or is clear from context. In one study on Korean learners' perception and production of tense and aspect in English, it was shown that the learners demonstrated their lowest attainment level with the present perfect among all other tense and aspect forms (Lee, 1995).

Bardovi-Harlig (1997), in her detailed study of the acquisition of the English present perfect, illustrated the problem that SLA learners of English encounter when acquiring the present perfect: they have to learn the form and also need to distinguish the meaning and use of the present perfect from the past, a semantically similar counterpart. McCoard (1978) described the invariant meaning of the present perfect as "an identification of prior events with the extended now"(p.19), distinguishing it from the simple past defined as "the time which is conceived of as separate from the present" (p.19). Suh (1992) stated that by using the present perfect the "speaker brings what happened in the past to the realm of the present"(p.82). Suh further indicated that the present perfect and the simple past share the feature [+anterior], but differ on the feature [current relevance] with the present perfect carrying [+current relevance] and the simple past [-current relevance]. This semantic closeness often creates problems for L2 learners. For Korean learners of English, additional problems exist due to the structure of their L1. As in many other languages, it is difficult to separate tense from aspect in Korean. Mostly, this is due to a lack of morphology specifically separating the aspect marker "*-et*", which is also the past tense morpheme in Korean. It is said that the past tense morpheme "*-et*" is known to have a secondary function of "perfect" (Sohn, 1995).

II. METHODOLOGY

1. Participants

Twenty-six Korean high school students voluntarily participated in the study. The role of prior knowledge and exposure to the target language outside the classroom could be controlled since the amount and degree of formal instruction received in a foreign language was equivalent for all participants. They had been learning English in a strictly classroom-oriented setting for 4 years at the time of the experiment. They were chosen because of their limited proficiency on the target language. At the time of the experiment, subjects had been studying the target structure for 2 years, according to their curriculum. Their classroom learning on the target structure has been mostly limited to the sentence level.

2. Procedure

1) Experimental Condition

Twenty-six participants were randomly assigned to one of the two groups. The first group was the Enhanced group, and the second group was the Control group. Participants were immersed in the following learning condition:

i) Control Group (N = 13)

This group is essentially a control group who receive reading texts with no visual enhancement of the target structures.

ii) Visual Enhancement Group (N = 13)

Subjects are provided with reading texts with visual enhancement of the target structures.

2) Experiment

There are four different parts in the testing of the present study.

(1) Pretest

First, in the pretest (Test 1), written production tests were given to the subjects. They were presented with a passage, and instructed to fill in the blanks with appropriate verb forms. The verb forms to be used here were mostly composed of

the present perfect and the past tense, with some other tenses as fillers.

(2) Treatment

As for the treatment, subjects participated in four forty-five minute classes during the period of one week, for a total of 180 minutes. Both groups were immersed for the same amount of time throughout the experiment and instructed to focus on the content of the reading texts. They were informed that they will be tested on content-based questions afterwards. There were two parts to the treatment: the first two classes were devoted to teaching the present perfect tense, and the latter two were focused on comparing the usage of the present perfect with the past tense. The two groups received the following types of input:

a. Control Group:

Subjects were provided with only the reading texts and had subsequent comprehension check-ups. They were asked to read the entire passage and to solve the comprehension check-ups. The format was the same for both Part I and II.

b. Enhanced Group:

Reading texts with target structures color-coded were provided. They were also given several comprehension check-ups to solve. In Part I, students were provided the present perfect with highlighted color. In Part II, passages had the present perfect and the past in contrasting highlighting.

(3) Measurement of Awareness

To obtain learners' awareness of the target structures and the explicit knowledge they had formed on the basis of input, questionnaires were given in Korean after each treatment class (four in total). The questionnaires were composed of some questions which were designed to measure the extent of learners' awareness of the target structures. Other questions asked whether they had noticed any rules, whether they had tried to find any rules, and if so, to give examples. In order to prevent learners from becoming aware of the rules in repeatedly answering such questions, distractor questions were included.

In the questionnaires, when the learners had made any explicit mention of any of the target structures, described, or presented an example of the target structures, they received 1 point for their level of awareness. The points thus obtained were added up and then used as the learner's awareness score. Complete rule explanations were not required if the learners described any elements of the rules presented during the treatment.

(4) Posttest

At the end of the treatment period, posttest (Test 2) was administered to the students to specifically measure the learners' proficiency gains on the target structures. The first part of the posttest replicates half of the pretest to see the growth in the target structure. In the second part, to exclude any increase of proficiency due to memory, comparable but different test items are given to the students.

Ⅲ. RESULTS

The results, listed in Table 1, compare mean scores of two experimental groups on the pretest (Test 1) and the posttest (Test 2). The results are also displayed as a graph in Figure 3.

1. Pretests

For the pretest (Test 1) that occurred prior to the treatment, the analyses of variance showed that the Control and Enhanced groups did not exhibit a significant difference from each other (F = 0.493, n.s.). Therefore, with regard to the knowledge on the target grammar prior to the treatment, the randomly selected subjects formed a homogeneous group.

2. Posttest

1) Hypothesis 1

Hypothesis 1 predicted that the Enhanced group will outperform the Control group in the posttest. The results of GROUP X TEST analysis of variance (ANOVA) yielded a significant main effect (df = 1, F = 9.236, p= .00) on GROUP, and also a significant effect on TEST (df = 1, F = 89.764, p = .00). The results indicated that the mean percentage correct on the tests (collapsing across 2 groups) was not the same for Test 1 (pretest) and Test 2 (posttest). Additionally, there a significant GROUP X TEST interaction (df = 1, F = 0.5143, p = .07). That is, the differences in mean performance between Test 1 and 2 depended on the group differences.

TABLE 1
Accurate Percentages on Tests 1 and 2

	Enhanced	Control
Pretest(Test 1)	47.14%	49.12%
Posttest(Test 2)	56.12%	50.45%

2) Hypothesis 2

Hypothesis 2 tested whether the learners' awareness that has developed over the instructional period would enhance learning of the target structures. To investigate the extent to which the learners seemed to be aware of structural elements in the input and to what the learners seemed to have consciously attended during the experiment, a series of questionnaires were collected throughout the treatment period. Table 2 displays the different levels of awareness reported by the learners through the questionnaires.

TABLE 2
Level of awareness demonstrated by the learners in Enhanced and Control Groups

	Q*1	Q2	Q3	Q4	Total
Enhanced	8	3	1	2	14
Control	4	3	4	2	13

*Q = Questionnaire

Correlational analysis was performed to see if there were any significant correlational coefficients between learners' awareness and their performance. It showed that there was no significant correlation between awareness and performance (r = 0.31, $p < 0.001$). Learners' demonstration of awareness was not significantly correlated to their performance.

Ⅳ. CONCLUSION AND DISCUSSION

Two major findings are evident in this study. First, at least in the short-term, visually enhanced input in context facilitates L2 performance of

target structures. In the study described here, target structures were made visually more salient in order to increase the likelihood that learners would detect them. It was expected that additional salience would result in an increased detection with which learners encountered the forms as they completed a set of learning tasks. The findings presented suggest that the target structures may have been salient in the input available to learners when attention was drawn by visual enhancement. In Test 2, which was performed just after the treatment, there was a significant difference between the Enhanced and Control groups. The results illustrated that visual input enhancement alone appeared to have a significant effect on learners' performance. One explanation for this might be that the method of highlighting through contrasting colors was salient enough for the subjects, at least in the short-term.

The second outcome of this study is that the awareness demonstrated by the learners throughout the treatment did not correlate to their performance. Schmidt (1990, 1995) claimed that in order to become aware of a rule, or form a hypothesis, one first had to notice the linguistic elements involved. As was mentioned above, researchers have often made claims that contradicted Schmidt (e.g., Tomlin & Villa, 1994, among others). The results of the present study are consistent with such findings that claims against Schmidt. Specifically, Schmidt's claim that noticing, or awareness of input, is a necessary condition for learning was largely refuted in that there was no significant correlation between learners' awareness and their performance. The results are in line with Doughty (1991) in that there was no difference between learning with or without awareness. The findings provide further empirical evidence for the dissociation between awareness and L2 learning of the target structures found in the other studies mentioned above.

Although many participants reported having noticed the use of highlighted colors, they did not consider a reason for this use. Would it be that they had become aware of the targets, but did not try to form a hypothesis? As Sharwood-Smith (1991) has pointed out, it is not appropriate to assume that external manipulation of the input is the only mechanism that will increase learners' attention. He cautioned that artificially induced noticing may not result in the target structures being included into the developing interlanguage. In other words, forms may be noticed perceptually, but not linguistically: "Although learners may notice the signals, the input may nevertheless be nonsalient to

their learning mechanism" (1991, p.121).

However, problems exist in terms of the methodology: the design of the study cannot control the precise moment in which the learners detect the visual input. The design can only control the conditions of the input, that is, what the learner had been visually provided, and measure the differential effects of the different types of the input. We can determine neither the origin of the effects nor the point at which the differences between the learners occur.

Also, caution must be taken in interpreting the results of the learners' awareness. The design of this study aimed at measuring the learners' awareness at the point at which they were exposed to the visual input. However, relying solely on the postexposure questionnaires by learners has its problems as have been pointed out in several studies (see Leow, 1997, 1998, 2000; Truscott, 1998). In fact, Leow (1997, 1998, 2000) argued that studies which measure awareness through the use of online elicitation procedures appear to address the differences between the learners' level of awareness more effectively. As an alternative, several recent studies have utilized online elicitation measures such as think-aloud protocols (Leow, 1998; Rosa & O'Neill, 1999) or a combination of both think-aloud protocols and a rule statement test (Alanen, 1995). While these studies have reported a positive role of awareness (Alanen, 1995; Leow, 1997; 1998, among others) in learning, a serious problem remains. When online data are gathered at the same time that learners are interacting with the L2 input, learners may become more conscious of the structural elements and the linguistic data. Rosa and O'Neill (1999) point out that concurrent think-aloud protocols could very well induce some learners to perform in a more systematic manner than they would otherwise, therefore altering the very process that the researcher is trying to investigate. In addition, Rosa and O'Neill argue that think-aloud protocols may present considerable variation according to the individual's aptitude, linguistic ability, and cognitive ability. For such reasons, studies that have reported a positive role of awareness using think-aloud protocols are dubious.

In summary, the findings from the study suggest that, first of all, drawing the learners' attention to a linguistic feature by input enhancement alone may be sufficient at least in the short-term. Whether learners will maintain the short-term gain over longer periods of time remains to be seen in a further study. In addition, explicit instruction combined with visual enhancement technique may also facilitate learning. Whether such combined effect will be even more facilitative also needs to be studied.

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APPENDIX

Example of the Questionnaire for measuring awareness (Translated from Korean into English)

1. Have you noticed any grammatical structures in today's lesson?
2. If yes, can you list any examples?
3. What was your general impression of the lesson? (Distracter question)
4. Do you have any suggestions for the class? (Distracter question)
5. Can you state the grammatical structures you have noticed?
6. What was your feeling of the story you have read today? (Distracter question)
7. Have you experienced any of the events that you have read today in class? (Distracter question)

예시언어(Examples in): English
적용가능 언어(Applicable Languages): English
적용가능 수준(Applicable Levels): Secondary/Higher

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