An Empirical Research on the Noticing Function of Oral Output

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Abstract
Based on Swain’s Output Hypothesis, the paper reports an experimental study that investigated the noticing function of oral output and its effect on the acquisition of English past hypothetical conditional. Twenty sophomores majoring in economics participated in this study, with ten of them assigned to the experimental group and the other to the control group. The experimental group was engaged in picture description tasks, which tended to elicit their oral production. The control group was only required to do comprehension tasks (i.e. picture sequencing task) with the same material. The data collected from the immediate posttest and the delayed posttest were analyzed by SPSS11.5. The results indicated that the experimental group made significant improvement in using the target form in both the immediate posttest and the delayed posttest. Moreover, in both of the posttests the experimental group performed significantly better than the control group in using the target form. These results lend support to Swain’s Output Hypothesis and have important pedagogical implications.

Key words: Output; Noticing; Foreign language teaching and learning

INTRODUCTION
Producing the target language (TL), or output has long been considered an important part of language learning, yet exactly whether and how it helps with language learning are often left quite vague. Many experts (e.g. Krashen, 1982, 1985; Long, 1983) claimed that output is just a manifestation of acquired knowledge and that it does not play any active role in learning the TL except as a way of practicing already-existing knowledge for greater fluency or as the means of eliciting additional input. According to Swain, these views are quite limited. Based on years of research on immersion programs, Swain put forward the Output Hypothesis in 1985, in which she claimed output is also an important causal factor and that it has four important functions to perform in language learning.

According to Swain, the first function of output is the fluency function. As is known to all, Practice makes perfect. In order to develop speedy access to the extant second language knowledge for fluent productive performance, the learners need many opportunities to use their knowledge in meaningful context, and this naturally requires output. The second function is the metalinguistic function. Output enables learners to reflect on their own TL use, thus deepening their awareness of forms, rules, and form-function relationships. The third one is the hypothesis-testing function. Producing output is one way of testing one’s hypothesis about TL—to try out the means of expression and see if they work. The last one is the noticing/triggering (or consciousness-raising) function. It means that during producing TL, language learners may recognize their linguistic problems and notice what they need to discover about the TL (Swain, 1995). This sense of problematicity may promote learners to try different ways to solve their problems. For example, if the learners are left on their own, they may search their own linguistic knowledge for information that might help to close the gap by generating new knowledge or consolidating existing knowledge (Swain & Lapkin, 1995). But if relevant input is immediately available, learners may examine closely how the TL expresses the intention that...
they just had difficulty in expressing on their own. In either case, learning is believed to be enhanced.

From what’s mentioned above, it can be seen that the traditional viewpoints on output should be changed. Output is not just a result of second language acquisition. It can facilitate language learning in many ways. Swain’s exposition of output’s functions has great significance in SLA, because only with proper understanding of how output contributes to SLA can the output activities be efficiently utilized in the language classroom. Of several functions of output specified in the Output Hypothesis, the present study tends to explore the noticing function. Many researchers (Carr & Curran, 1994; Schmidt, 1990, 1993, 1994, 2001; Tomlin & Villa, 1994) acknowledged the significant role of attention in the language learning process. The noticing hypothesis proposed by Schmidt in the 1990s claimed that noticing is a necessary prerequisite for L2 acquisition. intake is possible only when the learners noticed the language features in the input. SLA research has focused on investigating how to draw learners’ attention to certain linguistic features in the input in order to promote their learning. Researchers have proposed various tasks and techniques from the most explicit method of instructing grammatical rules to the most implicit method of providing learners with typographically enhanced input. Yet, among these various efforts to draw learners’ attention to form, the facilitative function of output in promoting learners’ attention doesn’t receive adequate attention. To date only a small number of researchers investigated the noticing function of output and produced inconsistent results. Among these researches, most of them (Swain & Lapkin, 1995; Izumi et al., 1999; Izumi & Bigelow, 2000; Izumi, 2002; Feng & Huang, 2004; Song & Suh, 2008) employed written modality. A few experiments did use oral modality. In 2004, Yukiko Izumi and Shinichi Izumi explored the facilitative effect of oral output. The results of their experiment were contrary to expectations: the output group failed to outperform the non-output group; it was expected that those subjects participating in the output activity noticed their problems and then tried to use the relevant input efficiently to solve their problems. Participants in this study were assigned to an experimental group (EG, n=10) and a control group (CG, n=10) using a stratified random assignment procedure with the pretest results serving as the basis of stratification.

Before the experiment began, a pilot study was conducted in two other classes whose language proficiency was equivalent to the subjects in this study. Based on the findings of the pilot study, the time for each treatment session was set up. The author also revised the original material and made it suitable for the subjects, for example, words of low-frequency were substituted by words of higher frequency.

The experiment consisted of two assessment tests and three treatment tasks. There were one-week gaps between the treatments. There is more than one treatment phase mainly because extended opportunities to produce output and receive relevant input are very crucial in learning the grammatical forms (Izumi & Bigelow, 2000). In order to let the output group demonstrate greater advantage in acquiring the target form, they need to be given more

1. RESEARCH QUESTIONS

Two research questions would be addressed in the present study:

Research Question One: Does the learner’s oral output promote learning of a grammatical form embedded in the aural input?

Research Question Two: Do learners of the output group outperform those of the non-output group, who only engages in comprehension activity in learning the target form?

2. METHODOLOGY

The past hypothetical conditional in English was chosen to be the target form of this study. For example, if he had been careful, he could not have made so many mistakes. According to Celce-Murcia and Larsen-Freeman (1983), conditional sentences, especially hypothetical or counterfactual conditional (imaginative conditional) cause great trouble to ESL learners. Chinese students are reported to have greater difficulty in mastering the past hypothetical conditional sentences due to its semantic and structural complexity.

Subjects in this study were selected from among two classes of sophomores majoring in economics in a college of Jinan. The selection of the subjects was based on a pretest administrated two weeks before the experiment. The students who had grasped the target form or who failed to show any sign of knowledge of subjective mood were eliminated from the subject pool. Twenty students were chosen to participate in this experiment. Because these participants had problems in using the target form, it was expected that those subjects participating in the output activity noticed their problems and then tried to use the relevant input efficiently to solve their problems. Participants in this study were assigned to an experimental group (EG, n=10) and a control group (CG, n=10) using a stratified random assignment procedure with the pretest results serving as the basis of stratification.

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chances to produce output and access relevant forms. Besides, there are many examples of target form used in the context of the input text. This creates an input-flood context which is believed to be favorable for SLA. In each treatment session, the participants completed a task and a short retrospective questionnaire in approximately 25 minutes. In order to assess whether the participants uptook the target form, posttest I was administrated immediately after they took part in the third treatment task. In order to assess whether the participants gained long-term accuracy in using the target forms, posttest II was given four weeks after the posttest I. In order to control the outside exposure to the target form, the teacher of the participating classes were requested not to teach subjunctive mood and not to answer any questions about subjunctive mood from their students during the experimental period; Besides, the subjects were asked not to discuss the treatment activities with other participants and not to consult anyone or any reference book.

All tests and treatments were done in the language laboratory. In the lab, the subjects used headphones to listen to the materials and used microphones to record their oral output. Two native speakers of English recorded all the sentences used in the tests and the tasks. They spoke rather slowly but very clearly. Each test and task began with oral directions. If the participants don’t understand the direction, they could ask the researcher at that time.

At the beginning of each treatment, subjects of both groups listened to the entire input text to get the general idea. Then, they were given different tasks. The experimental group did the picture description task while the control group did the picture sequencing task. The picture description task was based on Y. Izumi and S. Izumi’s experiment (2004), but with some modifications. In their study, the researchers let them work on one sentence at a time in order to lessen their processing load. However, this task design might work against the learners by making it possible to mechanically memorize the model sentence without involving them in genuine production mechanism. It is probably the reason why their experiment failed to confirm Ouput hypothesis. According to Levelt’s speech production model, speakers are more active than they are in comprehension. They need to create communicative intentions and express them in linguistic forms. Therefore, there is much less chance for the speaker to bypass syntactic processing in production. This kind of grammatical encoding is quite necessary for them to notice their linguistic gaps. Recognition of the limitations in one’s interlanguage is an important step for language development, because the recognition gives the learners the incentive to try various means to solve their problems depending on the given situation at that time, for example, they may interact actively with external environment to find a solution (eg. attend selectively to certain aspects of the input). Thus, output serves as a useful means of promoting “the interaction between learner internal factors (including selective attention and their developing L2 competence) and environmental factors (input, interaction, and pedagogical intervention), or the interaction within the learners themselves for internal metalinguistic reflection” (Izumi, 2003, p.187). In this way, output contributes a lot to language development. In present research, the author divided the input text into several shorter, semantically coherent subsections. It enables participants to remember the content of the subsection while avoiding mechanical memorization of the sentences. For the most part, each subsection consisted of three clauses. It was hoped that our modification of the task could engage the participants in syntactic processing without overtaxing their attentional capacity too much.

In the picture description task, pictures were shown sequentially on the computer screen, one at a time. Once a picture appeared on the screen, the students would hear the sentences describing the picture. Then they would have 30 seconds to produce oral output describing the picture on the screen. After the first input-output sequence, students would listen to the same input and produce output again. This procedure was repeated until the whole text was finished. This task is a kind of reconstruction task in which the participants are required to reproduce the sentences as accurately as the original ones. One advantage of that task is that they make the participants unable to use the communication strategies to avoid their problematic knowledge. They were forced or pushed to notice some of their linguistic problems, which might promote them to process the following input with more focused attention. The task satisfied the conditions of output tasks specified in Swain’s output Hypothesis. According to Swain, learners not only need the opportunities of output but also need the opportunities of ‘pushed output’. Learners need to be pushed to make use of their linguistic resources so that the functions of output can be brought into full play.

In the picture sequencing task given to the control group, all pictures were randomly placed on the screen and shown at once. As in the picture description task, participants listened to each subsection twice, and each listening was followed by a 30-second interval during which the participants chose a picture according to the description they had heard. Though the two tasks are different, the participants in the two groups hear the same material during the same time.

All the tests in this study are composed of two parts. One part is a grammaticality judgment test to assess the participants’ receptive knowledge. In this test, participants were asked to judge whether a sentence was correct or not and, if incorrect, they were asked to write down the incorrect part of the sentence on a paper. The grammaticality judgment test consisted of 22 sentences, of which 16 used the target form and 6 served as distracters. Of the 16 using the target form, 6 were correct and 10
incorrect, with 5 incorrect sentences starting with an if-clause and 5 with a main clause. The other part was an interpretation test which is believed to test their productive knowledge.

The interpretation test consisted of seven sentence items which required using the past hypothetical conditionals and five distracters. To be consistent with the purpose and the design of this study, the two tests were adapted in the oral/aural mode.

As to grammaticality judgment tests, a conservative system of scoring was utilized. If the items were not judged or were judged incorrect but without writing down the incorrect part, they were excluded from the analysis. If a non-conditional-related part of the sentence were written down, such items were also excluded from the analysis. In this study conditional-related words refer to such words as modals (would, could), aspectual auxiliaries (have, had), copula in the past participle ending (-ed and -en). The remaining items were then scored for the correctness of the judgment. The scores of tests were calculated for each subject by dividing the total correct scores by the total number of applicable items. Each subject, therefore, got a percentage score for each test.

Izumi et al. (1999) used two methods to score the interpretation tests. One was a targetlike use analysis and the other was an interlanguage analysis. In present study, the interlanguage analysis was employed because according to Izumi et al. (1999), this method could capture the subtle and gradual nature of the changes in the learners’ interlanguage. In this method, the past hypothetical conditional was divided into seven components: in the if-clause, (a) the past tense (b) the perfect aspect, and (c) the past participle form; and in the main clause, (d) a modal, (e) the past tense (f) the perfect aspect, and (g) the past participle form. If one of the components appeared in the participants’ oral output, they would get one point. But if an extra element was present, as in double marking of the past tense in one clause (for example, he would have gone), one point was deducted for the scores. The maximum possible IL score was 21 for the if-clause, 28 for the main clause. In this test, incorrect morphology (eg., caught for caught) was considered correct.

Retrospective questionnaire adapted from the one used by Izumi (2004) was given immediately after each treatment (a total of three interviews in the same format were given). In the questionnaire, questions were presented in a multiple-choice format, with choices carefully selected from the findings of related previous studies (Izumi, 2000, 2002; Izumi et al., 1999; Izumi & Biglow, 2000). Some questions required all participants to answer, while others only required the experimental group to answer. Questions asked to both groups were as following:

a) What did you pay attention to the most while listening to the subsections of the first time?

b) What did you pay attention to the most while listening to the subsections of the second time?

The questions asked to the experimental group were:
a) What difficulties did you have when you tried to describe the picture of the first time?
b) What difficulties did you have when you tried to describe the picture of the second time?

3. RESULTS AND DISCUSSION
The scores obtained from the grammaticality judgment tests and from the interpretation tests were analyzed by SPSS11.5.

3.1 The Results of Grammaticality Judgment Test
In order to know the changes made in different tests by different groups, Paired-Samples T tests were performed on the total pre- and posttest scores for both the EG and the CG. The results were demonstrated in Table 1.

<table>
<thead>
<tr>
<th>Table 1 Grammatical Judgment Test Scores for Both Groups in Three Test Occasions</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Pre-test Posttest I Posttest II Pre-post I Post-postII</td>
<td></td>
</tr>
<tr>
<td>EG</td>
<td>48.9</td>
</tr>
<tr>
<td>CG</td>
<td>45.1</td>
</tr>
<tr>
<td>Note. The scores are presented in percentage.</td>
<td></td>
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</tbody>
</table>

From Table 1 it can be seen that there was a significant increase in scores of the EG from the pretest to the first posttest (p=.008≤.05). On the second posttest conducted four weeks later, the scores of the experimental group decreased a little bit, but the difference between the first posttest and the second posttest did not reach statistical significance. The main scores of pretest and the second posttest were also compared. The difference between them was significant (p=.03≤.05). These results indicated that the EG improved a lot after receiving the output activity, and this improvement maintained even after four weeks. For the control group, there was also an increase in scores from the pretest to the first posttest, and this increase was also statistically significant (p=.028≤.05). The fact that not only the EG but also the CG improved significantly in the first posttests seemed to indicate some positive impact of exposure to the input flood during the treatment. However, the mean score of the CG dropped from 54.3 to the first posttest to 45.9 in the second posttest. Though the mean score of the second posttest was still higher than that of the pretest, the difference between them did not reach statistical significance. This showed that the positive effect of comprehensible input did not maintain a long time. The analysis of the changes of the groups in different tests demonstrated the facilitative impact of oral output on learning the target form.
The Independent-Samples T test was also employed to make the comparison between the results of grammatical judgment test of the EG and the CG. The mean score of the EG (69.3) was much higher than that of the CG (54.3) in posttest one. And their differences have reached statistically significance ($p=0.046\leq0.05$). Thus the subjects engaged in the output activity outperformed those who were only engaged in the comprehension activity in the immediate uptake of the target form.

In posttest II, the EG still performed significantly better than the CG in the delayed posttest four weeks later with $p=0.023\leq0.05$.

### 3.2 The Results of the Interpretation Test

As in the case of the grammaticality judgment test, Paired-Samples T test was first conducted for the interpretation test to examine the changes made by different groups in different test occasions. The following table showed that in the pretest, the EG’s mean score was 25.3, which jumped to 38.4 at the first posttest and stayed at that level at the second posttest. The increase from the pretest to the first posttest and also from the first posttest and the second posttest were statistically significant ($p=0.004\leq0.05$ and $p=0.003\leq0.05$). However, for the CG, the mean score at the pretest was 23.2, which rose to 29.5 at the first posttest and then fell slightly to 27.7 at the second posttest. There were no significant differences between these test scores. From these descriptive statistics, it can be seen that the output-input treatment seemed to have a significant impact on the learning of English hypothetical conditional form. Though the CG also improved the target form, the improvement did not reach the statistical significance. Therefore, the function of comprehensible input in language learning is quite limited; the output activity contributes a lot in learning the target form.

<table>
<thead>
<tr>
<th>Test Occasions</th>
<th>Pretest</th>
<th>Posttest I</th>
<th>Posttest II</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group</strong></td>
<td>Mean SD</td>
<td>Mean SD</td>
<td>Mean SD</td>
</tr>
<tr>
<td>EG</td>
<td>25.3  9</td>
<td>38.4  8</td>
<td>37.5  7</td>
</tr>
<tr>
<td>CG</td>
<td>23.2  9</td>
<td>29.5  9</td>
<td>27.7  12</td>
</tr>
</tbody>
</table>

Using the Independent-Samples T test, the scores of the CG and the EG in the first posttest are also compared. The mean score of the EG (38.5) is much higher than that of the CG (29.5), and the difference between them reached statistical significance ($p=0.037\leq0.05$). In the second posttest, the main score of the EG was still higher than that of the CG and there still existed significant difference between the EG and the CG ($p=0.043\leq0.05$). This indicates that output enabled the language learners to better assimilate the productive knowledge of the target form.

### 3.3 The Results of Retrospective Questionnaire

The retrospective questionnaire was also analyzed. To the question of what they paid most attention to while listening to the subsections the first time, the answers of output participants were divided into “main ideas” (53%), “grammar” (20%) and “unfamiliar words and phrases” (27%). Most participants in the non-output group reported that they paid attention to the main ideas on the first hearing (65%). The second time when they listened to the same input, most output group participants (65%) reported that grammar became the focus of their attention, while some said that they attended to the main ideas (18%) and unfamiliar words and phrases (16%). However, non-output participants’ answers varied from continued attention to main ideas (60%), to attention to grammar (20%), unfamiliar words and phrases (10%). To the questions about their perception of difficulty during their production attempts, a majority of output participants reported that they had difficulty with grammar in both the first output (80%) and the second output (60%), while some reported that they had difficulty in remembering the vocabulary (10%) and the meaning (10%) in the first output and other factors (18%) in the second output. Overall, participants’ self-reports indicated that the task demands in different treatment tasks resulted in somewhat different patterns of participants’ attentional behavior in the two groups.

DISCUSSION

From what’s mentioned above, it can be seen we got positive answers to the research questions posed in this study: the learner’s oral output did promote learning of a grammatical form embedded in the aural input, and the output group outperformed those who only engaged in comprehension activity in learning the target form. The results lend support to Swain’s Output hypothesis. Just as was mentioned before, output has the noticing function. Output in the picture description task prompted the EG to recognize their difficulty in using the target form, which made them pay much attention to grammar when they listened to the subsections for the second time, thus facilitating their acquisition of the target forms. Not only did the scores in tests provide insight into the facilitative impact of output on language learning, the results of the retrospective questionnaire also shed light on it. It can be seen that the subjects in the EG experienced more noticing of grammar than the CG. As we all know, noticing the formal features in input is a prerequisite for language processing, which can lead to the eventual acquisition of the features. It’s generally considered that a language learner goes through four general steps in learning a language:

- A feature in processed input is noticed;
- A comparison is made between existing linguistic knowledge and the new input;
c) New linguistic hypotheses are conducted on the basis of the differences between the new information and the current interlanguage;

d) The new hypotheses are tested through attending to input and also through learner output using the new form.

Ellis agrees with the above procedure of language processing. The second step of language learning process is called “Matching” by Klein (1986). Klein claims that: “The learner must continuously compare his current language variety with the target variety” (1986, p.62). Ellis (1995) prefers to use the term “cognitive comparison”, since this “better captures the fact that learners need to notice when their own output is the same as the input as well as when it is different” (1995, p.89). This kind of comparison can trigger changes in one’s knowledge base. Pushed output can create a favorable condition for the learner to compare the interlanguage and the target language forms (Izumi, 2002). By producing utterances, the learners not only need to create communicative intention, but also need to employ their internalized knowledge to express their intention. In this process, syntactic processing is a must. While doing syntactic processing, the learner may realize their inability of expressing certain ideas, that is, they may notice the gap in their interlanguage. If at this time the relevant grammatical form is immediately available, the learners will make a cognitive comparison between their interlanguage form and the target language form, leading them to expunge the nontargetlike form from their developing interlanguage and acquire the target language form. This speculation is confirmed by studies on the role of recasting. The studies have shown that if learners get immediate access to targetlike use of forms, they can acquire the forms effectively.

Based on the differences between the new information and their interlanguage, the learners can form the new hypothesis. For example, in a student’s reconstruction, there is the following sentence. “I would be frightened when I … would be … I had had … I have … had had high temperature because I had to be bled by the local barber.” From this, it can be seen that the student were not sure of the structure he used. So there was much hesitation. “would be … I had had … I have … had had.” Finally, the student decided to use “had had” to express the subjective mood. He was forming a hypothesis and this hypothesis was confirmed when he heard the next subsection. So when he tried to reconstruct the next subsections, he did not hesitate. “If I had had … toothache”. Such kind of example was quite common in the transcript. The reason may be that after the first reconstruction, the student noticed his problems in using the target form, which prompted him to conduct an analysis of the subsequent input, thus leading to modified output. Swain claims that: “what goes on between the first output and the second, we are suggesting, is part of the process of second language learning” (1995, p.386).

Although output contributes to language learning, it should be kept in mind that its facilitative impact does not occur in any circumstances and not all kinds of output activity can prompt language learning. For example, the above sections mentioned the experiment conducted by Y. Izumi and S. Izumi, in which the output task failed to engage participants in syntactic processing and alert them to possible knowledge gaps. Their output task turned out to be similar to a traditional grammar drill that focused on mechanical production. The participants didn’t bother to match the meaning represented in the picture with the form they heard, and they were not involved in any real syntactic or even semantic processing. However, in this study, attention to meaning was made part of the overall task design. Simple memorization of the input was prevented by presenting it in semantically coherent subsections, each of which was made short enough for the learners to remember its content but long enough to make verbatim memorization difficult. This design avoided overloading learners’ attention capacity while encouraging them to involve in syntactic processing. On the other hand, “loose” conversational contexts should be used with caution if we want to bring the noticing function into full play, because in such context, learners may use various communication strategies, such as avoidance strategies identified by Faerch and Kasper in 1983, to avoid problematic lexical and grammatical structures. Therefore “loose” conversational context cannot have the same facilitative effect on language development. That is why in this study, the participants were required to reconstruct the text as accurately as the original one. In this way, the participants can enhance their awareness of linguistic inability.

CONCLUSION

Although the present study demonstrates the facilitative effect of output and lends support to Swain’s Output Hypothesis, there are still some limitations in this experiment, such as the sample of this experiment is not big enough to generalize the effect of output on language learning for students of all levels, the long-term effect of output remains to be unexplored and whether output task has facilitative effect in vocabulary acquisition. It’s hoped that more research can be conducted in this area to address these problems so that we can apply the Output Hypothesis efficiently to language teaching practice.

REFERENCES


