The Effect of Second Language Proficiency Level on the Output-Input Processing Sequence

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Abstract

This study probed the effect of L2 proficiency on the acquisition of the vocabulary items and grammatical structures in an output-first-then-input processing sequence. To this end, 105 participants were selected from two proficiency levels (high-and low-intermediate). Participants of each proficiency level were randomly divided into two subgroups so that four treatment groups were arranged. Two groups (one high-and one low-intermediate) were assigned to the output condition and went through output-input-recall procedure. The other two groups (one high-and one low-intermediate) were assigned to the non-output condition and went through input-recall procedure. The results indicated considerable effect of output-input sequence on learners' acquisition of the targeted vocabulary items and grammatical structures (p= .000). However, for the L2 proficiency level, the results of the vocabulary and grammar scores showed no statistically significant difference between the two conditions.

Keywords: Output, Input, Proficiency level

1. Introduction

Input has always been a pivotal element in second language acquisition. Most of the theories or approaches in SLA have discerned the significance of input; however, theories of SLA differ from one another in the prominence they have given to the input (Ellis, 2008). Considering the importance of input, Krashen (1985) proposed his Comprehensible Input Hypothesis. According to this theory, language acquisition takes place only when learners have access to enough comprehensible input. Krashen (1985) considers the current level of L2 learners as *i* and their next stage as *i+1*. This means that for language acquisition to take place, learners should receive the input which is a little beyond their current ability. For Krashen, output is the outcome not a cause of acquisition.

Later, some researchers challenged Krashen's Input Hypothesis by indicating that comprehensible input despite its significance is insufficient for L2 acquisition (Swain, 1985). Swain (1985) investigated the language immersion programs in Canada and found that although in immersion programs, learners were exposed to a rich source of comprehensible input, they developed in understanding the language rather than producing it. Based on these observations, Swain proposed her 'Comprehensible Output Hypothesis'. According to Swain's Comprehensible Output Hypothesis for successful second language acquisition, learners should be provided with ample opportunities to produce language. In her view, producing output is extremely important in the process of second language acquisition.

Refining the output hypothesis in 1995 and 2005, Swain identified four different functions of output in second language acquisition: (1) noticing/ triggering/ consciousness raising, (2) hypothesis-testing, (3) metalinguistic/ reflective and (4) fluency/ automaticity. She believes that the most beneficial output practice is the one that pushes the language learners to detect their linguistic gaps and/or holes, generate and test hypotheses to fill these gaps and/or holes, have a conscious reflection on their own production and process language syntactically (Muranoi, 2007).

To confirm the validity of Swain's Hypothesis, several studies examined the role of output in L2 acquisition. Keck, Iberri-Shea, Tracy-Ventura and Wa-Mbaleka (2006) designed treatment tasks that included opportunities for pushed output (putting pressure on language learners to produce more appropriate and precise language, even though they had not yet fully acquired the structures needed, in order to be more comprehensible (Swain, 1985). Their findings confirmed the effectiveness of pushed output in promoting the process of the acquisition of second language. This finding supports Swain's (1985) claim that providing learners with opportunities for output is an essential part in the process of L2 acquisition since it serves not only as a way of practicing the existing knowledge but also as a way of acquiring new linguistic knowledge.

Findings reported in Muranoi (2007) also indicate that output practice _"any activity designed to provide L2 learners with opportunities to produce output" (p. 52) _ has beneficial effects on the development of second language productive proficiency. After investigating a number of empirical studies on the effects of output-based instruction, he came to the conclusion that supplying learners with opportunities to produce output in appropriate

contexts facilitates the development of learners' interlanguage, particularly the development of learners' productive skills. These studies demonstrate that instructional techniques focusing on eliciting output from language learners via text reconstruction, interaction and other tasks are fruitful for L2 development, although the scope of their influence highly depends on factors such as learners' individual differences and complexity of the target linguistic items.

The findings of the study conducted by Baleghizadeh and Arab (2010) demonstrate the beneficial role of producing output in noticing the gaps of the interlanguage knowledge. They found that pushing learners to produce the target language definitely results in the noticing of linguistic weaknesses in their interlanguage, and subsequently leads them to try to find solution for their weaknesses. The findings of this study also indicate that the learners in the intermediate proficiency level mostly notice their lexical gaps, and not their grammatical ones. The reason may be due to the fact that intermediate students do not hold a wide repertoire of grammatical knowledge. Interestingly, the findings of this study show that noticing does not result in long-term retention and learning.

The study done by Jiyuan (2009) also lent support to the noticing function of output hypothesis. Jiyuan compared two groups of EFL learners on their acquisition of English past hypothetical conditional. The outcomes of the study revealed that the output group's noticing of the target input was more than the non-output group because of the problems they had encountered when producing the output. Moreover, the output group outperformed the non-output group in the acquisition of the targeted form. In contrast to the previous study, the results of delayed posttests demonstrated the long-term effects of noticing in language learning.

Shehadeh (2003) conducted a study to assess how output can push language learners to test their hypotheses about the target language and how many learners' hypothesized sentences result in non-target-like output that interlocutors challenge. The findings revealed that non-native speakers had tested one hypothesis about the target language every 1.8 minutes. In addition, the hypothesis-testing episodes that resulted in non-target like output and made up over a third of all the episodes were not challenged by interlocutors.

Furthermore, Long (1996) asserts that producing language gets language learners to analyze and transform messages into grammatical utterances. Language production pushes the learners from focusing on meaning to consciously focusing on syntax. Syntactic processing involved in producing output leads learners to modify and reconstruct their output, which in turn, results in language acquisition.

Song and Suh (2008) evaluated the impact of output and different output task types (reconstruction and picture-cued writing tasks) on the noticing and learning of the English past hypothetical conditionals. The results of their study indicated that output tasks followed by relevant input promoted significantly more noticing of the targeted structures. Additionally, although no difference was found in the relative efficacy of the two output tasks, the picture-cued writing task seemed to provide more attention-drawing opportunities than reconstruction tasks.

Output-fronted activities were also contrived to promote L2 acquisition in the study by Suzuki, Itagaki, Takagi and Watanable (2009). They found that output activities followed by relevant input result in considerable achievements on the part of the learners. On a different note, through the first output, learners are prompted to pay closer attention to the linguistic forms in the follow-up input, and as a result, internalize the linguistic features of the input and thus produce linguistically more accurate outputs. Also, it appeared that output-first activities are more beneficial for more advanced students than less advanced ones.

What has received little attention in these studies is the role that learners' level of English proficiency has in the effectiveness of output processing on subsequent input processing, and consequently, the amount of L2 learning. Williams (1999) notes that language learners, in general, do not attend to formal aspects of language a lot. Nevertheless, learners' attention to form seems to be connected to learners' level of proficiency so that as the learners' L2 proficiency increases, their attention to form also increases.

Proficiency was also found to be effective on the task outcomes in Leeser (2004). He found that the learners' proficiency influenced the amount of attention they paid to the form, the types of form they attended to and the extent of their success in solving the language problems they faced with. He concluded that at higher levels of proficiency, learners are more ready to notice grammatical features. This means that learners' developmental readiness is the crucial condition for acquiring grammatical features. He points out that "it should be easier for more proficient learners to process grammatical form better than less proficient learners given that learners with a higher proficiency do not have to struggle as much with processing meaning during communicative exchanges" (p. 59).

In Hanaoka's (2007) study, learners at high proficiency level noticed their problems more than learners at low proficiency level. Learners also found more solutions and tried to use them more in their immediate revisions. However, the difference between the performances of the high and low proficiency levels was not statistically significant.

Suzuki et al. (2009) also found that high-intermediate learners achieved significantly higher recall scores than low-intermediate learners. According to them, the reason may be attributed to control vs. automatic processing. That is, low-intermediate learners' linguistic processing is more controlled while high-intermediate learners' linguistic processing is more automatic. Clearly, more controlled processing requires more attentional resources on the part of the learners.

Taken together, it is not clear how the results of the studies investigating output can be related to the proficiency levels of the language learners. Thus, proficiency is a factor that needs to be investigated further. By the same token, the present study is set to investigate the effect that second language proficiency has on subsequent input processing preceded by output processing in terms of linguistic domain, namely grammar and vocabulary.

2. Methodology

2.1 Research Design

As mentioned previously, the purpose of this study was to investigate the effectiveness of output-first-then-input sequence on the acquisition of the targeted vocabulary items and grammatical structures, as well as exploring the role of L2 proficiency on input processing preceded by output processing. As a result, the independent variables were the two treatment conditions (output vs. non-output) and proficiency level (low-vs. high-intermediate). The attempt was to assess the effects of these independent variables on the dependent variables, namely the acquisition of linguistic domains (grammar vs. vocabulary), that is, the extent of vocabulary and grammar acquisition brought about by the treatment.

The study was a comparison-group-design involving two experimental and two control groups. The experimental groups differed from the control groups with respect to the output requirement. Put another way, the experimental groups went through three phases; output 1, input and output 2 while the control groups just had two phases, input and output respectively. The difference among the two groups in each condition lies in the L2 proficiency level.

2.2 Participants

The participants of this study were initially 121 Iranian EFL learners. Sixteen were excluded from the analysis because they missed one of the phases of the study (some were late, and as a result, did not have as much time as the others for the first output, some did not read the model story, and some failed to complete their second output). Therefore the resulting participant pool consisted of 105 EFL learners (all females). Their ages ranged from 15 to 40, with an average of 27.5 years. All the participants were native speakers of Persian enrolled in the general English classes at Iran Language Institute (ILI) in Isfahan, Iran.

Table 1. The number of participants in the four treatment groups

Proficiency Level		Treatment Type		
		Output	Non-output	Total
Low-Intermediate	Females	28	24	52
High-intermediate	Females	28	25	53
Total		56	49	105

In order to analyze the effects that learners' level of English proficiency had on input processing preceded by output processing, participants were selected from among the high-and low-intermediate level classes of ILI. They were assigned to these two proficiency levels, high-and low-intermediate, based on the oral and written proficiency test of ILI. Of these, 52 were from low-intermediate level and the rest (n= 53) were from high-intermediate level. These classes were randomly allotted to four treatment groups so that 25 high-intermediate learners, and 24 low-intermediate ones were assigned to the output condition, and 28 high-intermediate learners and 28 low-intermediate ones were assigned to the non-output condition. The four treatment groups are outlined in Table 1.

2.3 Materials and Procedure

In fulfilling the aims of this study, a picture prompt consisting of four cartoon pictures presenting the procedure of a story (see Appendix 1) and its related model story written by an English native speaker (see Appendix 2) were used. These were taken from the study conducted by Suzuki et al. (2009).
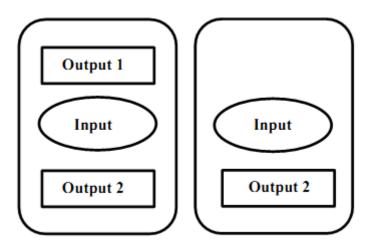

Figure 1.   Overall research design

Figure 1. depicts the procedure of this study. In the first phase of the study, the participants of the output condition were provided with the pictures and were required to write a story based on them (Output 1). This stage took ten minutes. It should be noted that, in this phase, the Persian translation of the story were orally presented to the students. This way, they were prevented from interpreting the story differently. As Figure 1. Shows, the participants of non-output condition did not have the Output 1 phase. In the second phase, all the participants both in the output and the non-output conditions received a model story and were asked to read it in three minutes (Input). At the end of phase two, the researchers provided learners with some Persian expressions and asked them about their English counterparts for two minutes. In phase three, all the participants both in the output and the non-output conditions were required to recall and write down in detail the model story they had just read (Output 2). This phase took about seven minutes in each class.

It is worth mentioning that the participants were not informed in advance about the procedure of the study. This way, the issue of memorizing the input was taken into account. Also, using dictionaries was not allowed in order to ensure students' concentration on their linguistic gaps and problems.

2.4 Scoring

In order to assess the students learning, one point was assigned to each correctly used vocabulary item and grammatical structure. The maximum vocabulary score was 83 (since the model story consisted of 83 words) and the maximum grammar score was 20 (because there were 20 predetermined grammatical structures selected based on their practical and pedagogical uses).

To avoid subjective interpretations, points were awarded to the exact words and grammatical expressions used by the participants in their recall task.

3. Results

Table 2. The effect of interaction between proficiency level and treatment condition on vocabulary scores (Two-way ANOVA)

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	854.878[a]	3	284.959	4.706	.004
Intercept	85204.923	1	85204.923	1.407E3	.000
level	4.557	1	4.557	.075	.784
group	842.795	1	842.795	13.920	.000
level * group	6.821	1	6.821	.113	.738
Error	6115.179	101	60.546		
Total	93716.000	105			
Corrected Total	6970.057	104			

According to the results of the two-way ANOVA provided in Table 2., there was a significant difference between the two treatment conditions (output vs. non-output) in the vocabulary scores in both proficiency levels, low-vs. high-intermediate (p= .000). However, the results of the two-way ANOVA to examine the effect of interaction between proficiency level and treatment condition on vocabulary acquisition showed no significant difference between the two levels, high-and low-intermediate, in the output condition p=.738.
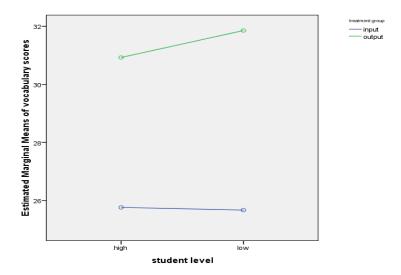

Figure 2. The effect of interaction between proficiency level and treatment condition on vocabulary learning

The above graph depicts the test results. Interestingly, as shown in Figure 2., although the difference between the two proficiency levels in output condition is not statistically

significant, the participants of output condition at low proficiency level scored around one point better than the participants of the same treatment condition (output) at high proficiency level in learning vocabulary items.

The results of the two-way ANOVA presented in Table 3. showed that the difference between the two treatment conditions, i.e. output vs. non-output, in the grammar scores in both proficiency levels was statistically significant (p= .000). However, the results of the two-way ANOVA on the effect of interaction between proficiency level and treatment condition on grammar scores showed no significant difference in grammar scores between the two proficiency levels (high-vs. low-intermediate) in the output condition (p= 0.830).

Table 3. The effect of interaction between proficiency level and treatment condition on grammar scores (Two-way ANOVA)

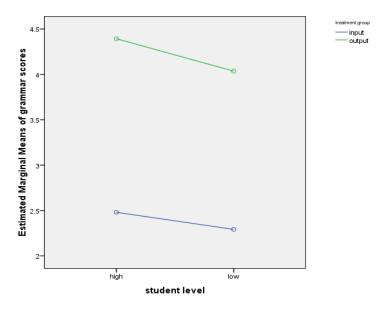| Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	89.406[a]	3	29.802	7.435	.000
Intercept	1138.156	1	1138.156	283.948	.000
level	1.944	1	1.944	.485	.488
group	87.351	1	87.351	21.792	.000
level * group	.186	1	.186	.046	.830
Error	404.841	101	4.008		
Total	1681.000	105			
Corrected Total	494.248	104			

Figure 3. The effect of interaction between proficiency level and treatment condition on grammar learning

The test results are illustrated in Figure 3. As the figure shows, the high-intermediate students in the output condition performed slightly better than low-intermediate ones in the acquisition of the grammatical structures. This difference is, though, trivial by comparison and not statistically significant.

In brief, for the type of treatment condition (output vs. non-output) the findings of the two-way ANOVA on the vocabulary and grammar test scores were significant in both proficiency levels (low-vs. high-intermediate). However, for the proficiency level, the findings from the two-way ANOVA on the vocabulary and grammar scores showed no statistically significant difference. That is, L2 proficiency level has no influence on input processing preceded by output processing.

4. Discussion

This study addressed the influence of L2 proficiency on subsequent input processing preceded by output processing. The statistics obtained from the two-way ANOVA showed that the output groups experienced greater improvement on the recall test (in both vocabulary and grammar scores) than did the non-output groups; however, no statistically significant difference was found between the performances of the participants of the two proficiency levels in output condition. This means that proficiency level has a marginal effect on the input processing preceded by the output processing. That is, although both proficiency levels in output condition performed significantly better than the same levels in non-output condition, performance of both proficiency levels in output condition was fairly the same.

In this regard, it is of interest to note that despite the fact that no significant difference was found between the performance of the two proficiency levels in output condition, when comparing two levels with each other one might find that the low-intermediate students performed slightly better than high-intermediate students in vocabulary acquisition while the high-intermediate students performed better than low-intermediate ones in the acquisition of grammatical features.

Based on the previous research studies, processing input (model story) demands more cognitive resources on the part of the low-intermediate learners. Whereas learners with the higher level of proficiency require fewer cognitive resources in processing input task. Therefore, high proficiency learners are able to pay close attention to the features of the model story (input), process these features through their short-term memory and store the features they have attended to in their long-term memory in a short period of time, three minutes in this study, while the amount of time required by low proficiency learners to go through these processes is much higher. In fact, low proficiency learners' linguistic knowledge is not yet proceduralized, and as a result their performance is slow and effortful (Suzuki et al., 2009).

According to Williams (1999), learners with lower level of proficiency find a wild gap between their own created outputs and the model story. So attending to all of these problems may overload participants' cognitive capacities. Low-intermediate learners' overloaded cognitive capacities prevent them from effectively processing the information presented in

the model story, and accordingly make it difficult for them to remember the features of input in their recall task.

However, the results of the present study are not meshed with these findings. In other words, the statistics revealed no significant difference between the performances of the two proficiency levels.

Hanaoka's (2007) study, also revealed that, compared to the less proficient learners, more proficient ones noticed the features of input more and incorporated them greater into their immediate revisions.

Alongside, Izumi (2003) agrees that learners at lower levels of proficiency have a tendency to attend more to meaning and lexical items in either the output they produce or the input they receive and attend less to the grammatical forms. One logical reason for this, as Leeser (2004) suggests, is that less proficient learners are not developmentally ready to process and use the grammatical structures presented in the input (model story). Leeser asserts that the prerequisite for noticing specific grammatical features is a reasonable knowledge of less complex grammatical structures. The outcomes of the present study are partially matched with these findings.

By and large, although the results indicate no unique effects of proficiency, it seems that the learners' proficiency level has an impact on their amount of attention to the grammatical forms and lexical items. Further research is necessary to more precisely specify the role of proficiency in subsequent input processing preceded by output processing.

So we can conclude that in this study, the results indicated considerable effect of output-input sequence on learners' acquisition of the targeted vocabulary items and grammatical expressions. However, for the L2 proficiency level, the results of the vocabulary and grammar scores showed no statistically significant difference between the two conditions. This means that the learners' L2 proficiency level has no role on subsequent input processing preceded by output processing.

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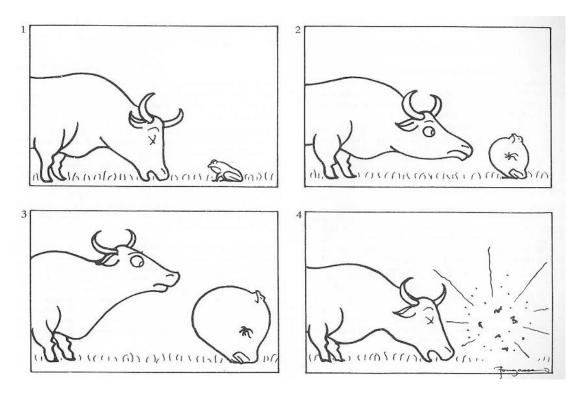
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Appendix

Appendix 1. Picture Story

Appendix 2. English Model Story

One day, a frog <u>was sitting</u>[1] on the grass, <u>looking at</u>[2] a cow. The cow <u>was eating</u>[3] the grass quietly. The frog thought that the cow was <u>a very big animal</u>[4], and it wanted <u>to be</u>[5] a very big animal, <u>too</u>[6]. So, it began <u>to fill</u>[7] <u>itself</u>[8] <u>up</u>[9] with air. The cow <u>looked at</u>[10] it <u>in surprise</u>[11]. The frog <u>went on</u>[12] <u>filling</u>[13] <u>itself</u>[14] <u>with more air</u>[15] <u>until suddenly---bang</u>[16]! It <u>broke into</u>[17] <u>little pieces</u>[18]. The cow <u>went back to</u>[19] <u>eating</u>[20] the grass quietly.

Note: The underlining with the numbers indicates the predetermined 20 target grammatical forms.