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Effects of learner interaction, receptive and productive learning tasks on vocabulary acquisition: An Iranian case

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Abstract

This study investigated the effects of three different tasks on the acquisition of new EFL vocabulary items. Sixty six intermediate Iranian adults were divided into three learning groups: receptive (RL), productive (PL), and negotiated interaction (NI) who were taught 36 vocabulary items during four consecutive weeks. Two levels of vocabulary knowledge (receptive and productive) were assessed using two tests (L1 translation and sentence construction, respectively) which were administered immediately after learning and seven days later. The results of the MANOVA showed that the NI significantly outperformed the other two groups in acquiring receptive and productive vocabulary and their vocabulary knowledge was held up over time. It was also found that the PL attained a higher level of vocabulary than the RL. Moreover, the findings showed that all treatment groups gained a higher level of receptive vocabulary than productive. The findings of this study indicate that the students’ interaction and their productive use of vocabulary items are likely to result in the better acquiring of receptive and productive vocabulary.

Keywords: Learners' interaction; receptive task; productive task; vocabulary acquisition; receptive and productive vocabulary

1. Introduction

There is "a general consensus" that a well-established goal in learning a foreign language is the ability to communicate effectively in that language (Hedge 2000, p.40). Lexical competence is currently acknowledged by many vocabulary specialists to be a core component of communicative competence (Coady & Huckin, 1997; Harley, 1996; Richards & Renandya, 2002). Thus, in the field of second language acquisition (SLA) how vocabulary is acquired and what the most efficient means are to promote effective acquisition are worthwhile lines of investigation. Currently, a majority of vocabulary is taught through reading or listening in classrooms. Teachers may tell learners the meaning of a word, provide a definition, or use the word in a sentence, but they are less likely to ask students to use an item, apart from spelling or pronouncing it. Little attention is given to productive activities and the majority of vocabulary is learned receptively. Receptive tasks may be more popular because they are easier to design, grade, and complete than productive tasks. However, it has never been demonstrated that receptive learning is more effective than productive learning. When vocabulary teaching is in focus, in many EFL classrooms, learners' interaction is also neglected. The interactional perspective on SLA argues that conversational interaction provides opportunities for language practice in the target language (TL) and is the basis for language development.

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Nevertheless, studies attempting to link negotiated interaction with second language (L2) vocabulary acquisition, although providing some support, are less than conclusive to provide a clear guideline for the teaching of the new TL items. This inconsistency in vocabulary teaching has led to the current research that seeks to gain further insight into the effects of receptive and productive learning tasks and interaction between nonnative speakers (NNSs) on EFL vocabulary acquisition, namely receptive and productive vocabulary.

1.1. Conversational interaction and L2 vocabulary acquisition

Long’s updated version of the Interaction Hypothesis (1996) defines interaction as the conversational modifications or adjustments that take place in communicative interactions between a native speaker (NS) and a NNS and also between NNSs. Key to the interaction position is the notion that when learners and interlocutors engage in negotiation to resolve impasses in communication, they signal and respond in ways that enhance their comprehension of input. There is fairly solid evidence supporting the view that negotiation assists comprehension (Ellis et. al., 1994; Pica et. al., 1987) with more mixed results on a link between negotiation and lexical acquisition.

Ellis et al (1994) observed that learners who received interactional adjusted input achieved and maintained higher vocabulary retention scores in an immediate posttest than those who received pre-modified (not solicited) input. In line with this finding, Gass and Varonis (1994) found that NNSs who were allowed to negotiate with their NSs interlocutor were significantly more accurate in their picture description task than those NNSs who had not been allowed to interact. On the other hand, Ellis (1995) concluded that the apparent benefits to acquisition associated with the interactional modified input group are tempered by the fact that the rate of acquisition was faster for the pre-modified input group. Another mixed result was found by Loschky (1994). He found no main effect for acquisition of neither vocabulary, nor grammatical structures among his pre-modified, interactional modified, and unmodified input with no interaction groups. Ellis and He (1999), in their research compared three groups: pre-modified (base-line) input, interactional modified input, and modified output groups. They found no difference in the comprehension scores of the pre-modified and interactional modified input groups. Further, they demonstrated that the modified output group outperformed the two groups who had only experienced modified input in measures of comprehension and acquisition. The results, however, showed that reasonable levels of comprehension and acquisition can be achieved in all three conditions and maintained over time. In contrast, de la Fuente (2002) found that the two negotiated interaction groups in her study attained higher levels of comprehension of target lexical items than the pre-modified input group. She found that for both receptive and productive vocabulary acquisition, the negotiated interaction with pushed output group scored significantly higher than the pre-modified, no negotiation group. Nevertheless, de la Fuente’s results offered further support for the Interaction Hypothesis and, in particular, the role of pushed output in subsequent productive acquisition of new words. Smith (2004) studied the effect of computer-mediated negotiation interaction and found that the previously unknown lexical items that were negotiated were retained significantly better as measured by immediate and delayed recognition (receptive) and object labeling (productive) posttests than those items where preemptive input alone was provided. Although there are some mixed results regarding the type of interaction and its link to vocabulary acquisition, most of these studies suggest that interactionally modified input leads to better comprehension than both unmodified and pre-modified input.

1.2. Receptive and productive L2 vocabulary learning

There is very little research that compares receptive and productive learning. However, research on learning word pairs (L1→L2 and L2→L1) sheds some light on this issue. Research on learning from word pairs suggests that the type of learning, receptive or productive, affects the type and amount of knowledge gained (Griffin & Harley, 1996; Schneider et al., 2002; Waring, 1997). Mondria and Wiersma’s (2004) studying the learning of word pairs, explored the effects of combined receptive and productive learning. They found that the combination method would not lead to superior receptive retention on the basis of the fact that the extra type of learning (productive learning) in itself leads to a certain amount of receptive retention. Webb (2005) could be the first research which did not make use of word pairs when comparing receptive and productive learning; he rather studied the effects of receptive and productive tasks on vocabulary knowledge. His first experiment showed that, when the same amount of time was spent on both tasks, the receptive task was superior, a finding which contrasts with Griffin and Harley (1996), Mondria and Wiersma (2004), and Waring (1997) who claim receptive learning to be more effective in contributing
to receptive knowledge, whereas productive learning may be better suited to increasing productive knowledge, but it is in line with Schneider et al. (2002). And the second experiment showed that, when the allotted time on tasks depended on the amount of time needed for completion, with the productive task requiring more time, the productive task was more effective.

The relatively few empirical studies that have addressed receptive and productive learning have produced contradictory findings and, therefore, offered conflicting implications for foreign language teaching. Informed by the previously cited research, the present study focuses on interactional modified input and its effectiveness in lexical acquisition among high intermediate-level learners and it further aims to compare its effects with those of receptive and productive vocabulary learning tasks.

1.3. Research questions and hypotheses

As there are currently no studies that attempt to simultaneously investigate and compare the effects of receptive and productive vocabulary learning tasks and learners’ interactions on the receptive and productive knowledge of new L2 words, this study aims to bridge this gap. Accordingly, the following research questions were posed:

1. Does learner interaction result in higher levels of L2 receptive vocabulary acquisition as compared with learning words just receptively or productively? If so, will it hold up over time?

2. Does learner interaction result in higher levels of L2 productive vocabulary acquisition as compared with learning words just receptively or productively? If so, will it hold up over time?

Based on the previous research and above questions, the following directional hypotheses are formulated:

**Hypothesis 1**: (a) Learners who have negotiated interaction will attain higher levels of L2 receptive vocabulary than learners acquiring words just receptively or productively, and (b) it will hold up over time.

**Hypothesis 2**: (b) Learners who have negotiated interaction will attain higher levels of L2 productive vocabulary than learners acquiring words just receptively or productively, and (b) it will hold up over time.

2. Method

2.1. Procedure

Based on the results of the pretest on the 36 target items conducted two days before the treatment phase, 8 learners who were familiar with the words were excluded out of the 72 Iranian high-intermediate learners previously homogenized using the grammar and vocabulary section of OPT (scoring over 31 out of 50). The remaining 66 participants were randomly assigned to three treatment groups: receptive learning (RL), productive learning (PL), and negotiated interaction (NI). The treatment phase was carried out within four class sessions, i.e. four consecutive weeks. In each session, the participants of each group read a passage chosen from the book *1100 Words You Need to Know* (Bromberg & Gordon, 2004) containing nine bold-faced target words, the meanings of which were provided in marginal glosses. The tasks which followed each passage differed for each treatment group:

2.1.1. Receptive learning treatment (RL) group

Learners of the RL group had to do a recognition task. In this task there were nine sentences from each of which the target word had been deleted and replaced with a blank. Learners had to recognize the meaning of a word and write the appropriate number of each word in the blanks. In (1) the deleted target word is *peruse*. The learner by understanding the meaning of this word, chooses this target word from the box of words given to her and writes its number in the blank. Such activities tap the receptive vocabulary knowledge of the learners (Read, 2000).


(1) After being warned by his father, he began to (3) daily.

2.1.2. Productive learning treatment (PL) group

The learners of this group had to write each target word in a sentence in the space provided for each word, as in (2):
According to Read (2000), this task allows the learners to demonstrate several aspects of their vocabulary ability such as whether they understand the meaning of target word, how a word functions grammatically in a sentence, or more generally whether they know how to productively use this word in their writing.

2.1.3. Negotiated interaction (NI) group

Unlike the other two treatment groups which required the participants to do individual tasks, the learners of this group worked in pairs. The learners of this group after reading the passages individually had to work in pairs and retell the story. The new target words are given to one student, and she is required to retell the story using these words. She is not allowed to look back at the meaning of these new words. However, her partner does have access to the meaning of the words. When she signals or indicates non-understanding or incomplete understanding of the words, her partner has to elaborate on the words. Then after five minutes, the teacher will tell them to reverse roles.

Following the findings of the pilot study, the learners were given 15 minutes to complete the treatment phase. Five minutes was allotted for reading the text and understanding the meaning of the words, and ten minutes for carrying out the tasks. Only the participants of the NI group were told to reverse roles after five minutes’ of doing the task. The learners were told that they would be tested after the treatments but not about the nature of the tests.

2.2. Scoring procedure

Based on Webb (2005) two levels of vocabulary knowledge (receptive and productive knowledge) were assessed using two tests (L1 translation and sentence construction, respectively). The order of the items was randomly changed on each of the tests to eliminate regency and previous assessment effects. An immediate productive posttest (15 min) was administered immediately following the treatment task in each session, and after the immediate productive posttest sheets were collected, the learners took an immediate receptive posttest (10 min). Productive knowledge of words was tested first in order to avoid test effect. Each delayed posttest was administered 7 days after the relevant immediate test. This procedure mirrored the immediate posttest procedures exactly with the exception that the target lexical items were presented in a different order. In both receptive and productive tests, the minimum score was 0 and the maximum 36.

3. Results

To test the hypotheses of this study, or in other words to measure the effects of each learning condition on receptive and productive vocabulary acquisition and their retention over time, the data were submitted to a 3 (receptive learning vs. productive learning vs. negotiated interaction) × 2 (immediate posttest vs. delayed posttest) MANOVA. The dependent factors were receptive and productive vocabulary acquisition and the fixed factors were Type of treatment task as a between-subject factor and Time as a within-subject factor. Box’s M test of differences between covariance matrices justified the use of the multivariate approach (Box’s M = 270.65, p = .103). Using Wilk’s lambda, a main effect was found for Type of treatment task (F = 21.49, p = .00) and for Time (F = 20.52, p = .00). This implied that participants in all three groups demonstrated some change in their vocabulary knowledge over time. The results for each dependent variable are provided below.

3.1. Effects of negotiated interaction on receptive vocabulary acquisition

The mean scores and standard deviations for the receptive vocabulary acquisition (a dependant measure) for each treatment group on the two respective tests (immediate and delayed) are provided in Table 1. Concerning part a of the first hypothesis, using a Bonferroni adjusted alpha level of .025, a significant main effect was found for Type of treatment task: F (2,126)=41.38, p=.000, partial eta squared=.4, and for Time: F (1,126)=31.02, p=.000, partial eta squared=.2.

Table 1. Means and standard deviations of each learning group for receptive vocabulary acquisition
No significant interaction effects was observed between Type of treatment task and Time, $F = 2.540, p = .082$. Scheffe post hoc contrast analyses revealed a significant overall difference between all treatment groups. In other words, the NI group outscored the RL and PL groups; therefore, part a of the first hypothesis is confirmed. It was also found that the PL group outperformed the RL group. Results are reported in Table 2.

Table 2. Scheffe post hoc comparisons for receptive vocabulary acquisition

<table>
<thead>
<tr>
<th>Groups</th>
<th>diff.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receptive learning vs. Productive Learning</td>
<td>-4.273*</td>
</tr>
<tr>
<td>Receptive learning vs. Negotiated Interaction</td>
<td>-8.182*</td>
</tr>
<tr>
<td>Productive Learning vs. Negotiated Interaction</td>
<td>-3.91*</td>
</tr>
</tbody>
</table>

$p < 0.05^*$

Since a significant main effect was found for time, it implies that after seven days, participants' receptive knowledge of the words has decreased. However, an inspection of the mean difference of the three learning groups indicated that the NI group had the least of receptive vocabulary knowledge decay as compared with the RL and PL groups (1.82 vs. 4.73 vs. 5.73); thus, confirming part b of the first hypothesis (Figure 1).

3.2. Effects of Negotiated Interaction on Productive Vocabulary Acquisition

Table 3 shows the mean scores and standard deviations for the productive vocabulary acquisition (a dependant measure) for each group on the two respective tests (immediate and delayed). Using a Bonferroni adjusted alpha level of .025, a significant main effect was found for Type of treatment task: $F (2,126)=36.44, p=.000$, partial eta squared=.37, and for Time: $F (1,126)=34.54, p=.000$, partial eta squared=.21. No significant interaction was seen between Type of treatment task and Time $F = 3.02, p = .30$.

Table 3. Means and standard deviations of each learning group for productive vocabulary acquisition

<table>
<thead>
<tr>
<th>Learning Groups</th>
<th>n</th>
<th>Immediate Productive</th>
<th></th>
<th>Delayed Productive</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>SD</td>
<td></td>
</tr>
<tr>
<td>Receptive Learning</td>
<td>2</td>
<td>21.68</td>
<td>5.03</td>
<td>14.59</td>
</tr>
<tr>
<td>Productive Learning</td>
<td>2</td>
<td>25.36</td>
<td>4.56</td>
<td>21.04</td>
</tr>
<tr>
<td>Negotiated Interaction</td>
<td>2</td>
<td>26.82</td>
<td>4.87</td>
<td>24.95</td>
</tr>
</tbody>
</table>

To scrutinize part a of the second research hypothesis, a Scheffe post hoc was run to see which treatment task led to a higher level productive vocabulary knowledge. It revealed a significant overall difference between the RL and PL groups and between the RL and the NI groups group, i.e. the PL and the NI groups attained higher levels of L2 productive vocabulary than the RL group. The test of contrast did not reveal any significance difference between the
PL and the NI groups. In other words, the L2 productive vocabulary gain of the NI and PL groups was similar. Therefore, part a of the second hypothesis is partially rejected (Table 4).

Table 4. Scheffe post hoc comparisons for productive vocabulary acquisition

<table>
<thead>
<tr>
<th>Groups</th>
<th>dif</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receptive learning vs. Productive Learning</td>
<td>-5.07*</td>
</tr>
<tr>
<td>Receptive learning vs. Negotiated Interaction</td>
<td>-7.75*</td>
</tr>
<tr>
<td>Productive Learning vs. Negotiated Interaction</td>
<td>-2.68</td>
</tr>
</tbody>
</table>

\( p < 0.001^* \)

To investigate the effect of time on type of treatment task, the mean difference of the three learning groups was examined. It was found that although after seven days participants productive knowledge of the words showed a decrease, the NI group had the least of productive vocabulary knowledge decay (1.86 vs. 3.50 vs. 7.09). Part b of the second research hypothesis is, thus, confirmed (Figure 1).

4. Discussions and Conclusions

Hypothesis 1 which predicted the learners who have negotiated interaction (while learning new vocabulary) will attain higher levels of L2 receptive vocabulary than learners acquiring words just receptively or productively, was confirmed by the results of the study. Although the learners of all three treatment tasks learned a number of new target words, the negotiated interaction group significantly outperformed the other two groups. The results of the present study appear to corroborate those obtained in de la Fuente (2002), in which she found her NIPO (Negotiated Interaction Pushed Output) group for both receptive and productive vocabulary acquisition, scored significantly higher than the pre-modified and no negotiation group. The reason seems to be the negotiation made to solve impasses in communication. These results can also be interpreted in light of the cognitive theories postulating that L2 learners need to pay attention and negotiate for getting the meaning of the new words in order to communicate easily (Schmidt, 1995). When engaged in negotiation, learners are provided the opportunity to notice new words and see them as a gap in their linguistic knowledge (Farch & Kasper, 1987; Long, 1996). In other words, learners need to notice or pay attention to the gap between what they know and what they want to produce (Gass & Varonis, 1994). From this point of view, negotiation could be considered an attention focusing mechanism (Pica, 1994), provided that learners do indeed pay attention to the feedback provided by the information providers. During lexical negotiation learners arguably process new and problematic target items deeper, involving greater mental effort (Hulstijn, 1992; Joe, 1995). The benefits of negotiated interaction for lexical acquisition may also be partially explained by the concept of involvement load suggested by Laufer and Hulstijn (2001). Negotiation of meaning may heighten the degree of involvement in processing the target words. Part b of hypothesis 1, which predicted that the learner L2 receptive vocabulary knowledge gained as a result of negotiated interaction will hold up over time, was also supported by the findings of this study. This could be due to the deeper processing that the learners are involved while negotiating the meaning of the words.

Comparing the mean score of all treatment groups, it was observed that the receptive vocabulary knowledge gain of the three experimental groups of this study was higher than their productive knowledge. This may be as a result of receptive knowledge being easier to learn than productive knowledge. This finding is in line with Schneider et al. (2002) and Webb (2005); however, it contrasts with earlier findings that claim receptive learning to be more effective in contributing to receptive knowledge, whereas productive learning may be better suited to increasing productive knowledge (Griffin & Harley, 1996; Mondria & Wiersma, 2004; Stoddard, 1929; Waring, 1997). From a cognitive perspective, the different results obtained for reception and production offer some evidence of the differences between vocabulary processing in recognition and production tasks.

Hypothesis 2 which predicted that learners who have negotiated interaction will attain higher levels of L2 productive vocabulary than learners acquiring words just receptively or productively was partially supported by the results of this study. The results indicated that the type of treatment affected productive acquisition of target words. The negotiation interaction group and the productive learning group gained higher level of productive vocabulary knowledge. These results appear to empirically support the hypothesis proposed by Ellis et al. (1994) namely, that interaction facilitates the productive use of new words only if learners had the opportunity to use them. These results also support the research done on negotiation that emphasizes the role of output production on L2 development.
(Ellis et al. 1994; de la Fuente, 2002; Gass & Varonis, 1994). Part b of hypothesis 2 which predicted learner L2 productive vocabulary knowledge gained as a result of negotiated interaction will hold up over time was supported by the results.

The findings of this study provide more evidence to support the interactional framework in SLA provided that the learners are pushed to negotiate with each other, which results in L2 productive and receptive vocabulary that will hold up over time. Although a longer delay between the immediate and delayed posttests would have been favorable, the institute's rules prohibited this possibility. This is viewed as a limitation to the study. Output production during negotiation appears to be able to positively influence learners’ ability to internalize words and activate this knowledge later on. In line with Long (1996) and Gass (1997), it is also suggested that cognitive factors such as attention are the key to unveiling what elements in the negotiation process facilitate L2 vocabulary acquisition. Moreover, this experiment indicates that productive learning is superior to receptive learning not only in developing productive knowledge but also in producing larger gains in receptive knowledge.

5. References


