

第二言語語彙意味習得におけるインプットとアウトプットの役割：大学でのクラスルームリサーチより

The Role of Input and Output in the Acquisition of L2 Word Meanings: A Classroom Study in a Japanese University

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ABSTRACT

話者は、会話において意思の疎通が上手く行かなかった場合に、相互理解に向けて会話の修正（意味交渉／Negotiation of Meaning）を試みることがある。近年の相互交流仮説（the Interaction Hypothesis）では、その意味交渉を通じて生み出されるより理解可能なインプットが第二言語習得に重要であることに加えて、アウトプットの役割も重視している。学習者は、意味交渉を通して発話の産出や修正を強制されることにより、目標言語への注意を高め、その結果、より深く目標言語を処理すると考えられるからである。本研究は、相互交流仮説に基づき、インプットとアウトプットの語彙学習への効果を、教室内的教師と日本人大学生とのタスク活動を基に調査した実践的研究である。

According to the Interaction Hypothesis (e.g., Long 1983), input which becomes comprehensible through *negotiation* (interactionally modified input) is crucial to second language acquisition (SLA). Negotiation is a process of working toward comprehensibility by a speaker and his/her interlocutor when there is a lack of understanding in communication between them. In addition to the importance of interactionally modified input, the recent Interaction Hypothesis (e.g., Long 1996) claims that “pushed” output plays an important role in SLA. Based on the Interaction Hypothesis, this study investigated how various types of input and output affected 134 Japanese university students’ acquisition of new L2 word meanings. The results showed: 1) interactionally modified input promoted the acquisition of the meanings of target words more than premodified input; 2) interactionally modified input with pushed output promoted the acquisition of the meanings of target words more than interactionally modified input without pushed output. Therefore, these findings support the Interaction Hypothesis.

INTRODUCTION

If one reflects on the history of second language (L2) classroom teaching and learning, the last two decades of the twentieth century might be characterized as the era of *communicative language teaching* (CLT) (Brown, 1994) which takes communicative and interactive approaches to L2 learning. Meanwhile, in second language acquisition (SLA) research, many extensive studies have been conducted to reveal how interaction assists acquisition since Hatch (1978) and Long (1983) claimed interaction has an important role in L2 learning. As Krashen (1982, 1985) stated, Long also argued that comprehensible input is crucial for acquisition, but he emphasized the importance of input which becomes comprehensible through

conversational adjustments between a speaker and an interlocutor. The process of restructuring interaction between interlocutors to achieve mutual understanding is later referred to as *negotiation* (see, e.g., Gass & Varinos, 1985; Larsen-Freeman & Long, 1991; Pica, 1994).

From previous studies, it appeared that learners mainly benefit from negotiation for vocabulary learning. Reflecting on various communication tasks, Pica, Kanagy, and Falodun (1993) and Pica (1994) pointed out that negotiation seems to work most readily on lexical items and larger syntactic units, but not much on grammatical morphology because learners may not need much morphosyntax to communicate with their interlocutors. Foster (1998) also indicated that in the classroom most interactional modifications were made on semantic items but only a few were made on morphosyntactic items. As they claimed, if negotiation mainly concerns lexical items, one can not ignore its crucial role in vocabulary learning. This paper reports on an empirical classroom study which investigated the effect of various types of input and output modified through classroom negotiated interaction on vocabulary learning.

Premodified Input, Interactionally Modified Input, Pushed Output, and L2 Learning

In order to link conversational adjustments with acquisition, Long (1985) proposed that the three steps researchers need to take are as follows:

1. Show that (a) linguistic/conversational adjustments promote (b) comprehension of input.
2. Show that (b) comprehensible input promotes (c) acquisition.
3. Deduce that (a) linguistic/conversational adjustments promote (c) acquisition (p. 378).

Some empirical studies have supported the first step of this proposal. Pica, Young, and Doughty (1987) researched how directions presented by a

native speaker (NS) of English under two input conditions, premodified input and interactionally modified input, affected the 16 non-native speakers' (NNSs) comprehension of the directions. Directions under the premodified input condition were previously made to contain more repeated words and less syntactically complex sentences than baseline directions. Directions under the interactionally modified input condition were in the same form of baseline directions; hence, they did not contain any linguistic modifications, but NNSs had opportunities to interact with a NS while receiving the directions. The results showed that directions under interactionally modified input conditions facilitated comprehension more than premodified directions. Gass and Varonis (1994) and Loschky (1994) also found that interactionally modified input promoted learners' comprehension more than premodified input.

Ellis, Yamazaki, and Tanaka (1994) also found a direct relationship between interactional modifications (conversational adjustments) and acquisition. Similar to the study by Pica et al. (1987), they investigated the effects of three different types of input; interactionally modified input, premodified input, and unmodified input (baseline input) on comprehension and acquisition of new vocabulary meanings. The study was based on two empirical classroom studies involving 79 and 127 high-school students in Japan. The teacher gave directions which contained 18 new words. They found that the students under the interactionally modified input conditions, in which they had an opportunity to interact with the teacher whenever they had questions about the teacher's directions, resulted in better comprehension and acquisition of the words than the students under the premodified and unmodified input groups. Thus, the results support Long's claim of the importance of input through negotiated interaction to SLA. However, learners who actually participated in interaction

neither comprehended nor learned the new words any more than those who simply received the interactionally modified input.

The reason the experience of negotiated interaction did not lead to more L2 vocabulary learning than the exposition to the negotiated interaction might be explained by the significance of 'pushed output.' Swain (1985) argued that output which is 'pushed' to produce is especially important for SLA. According to her, learners can extend their linguistic repertoire in an attempt to produce output in a more precise and appropriate way. In Long's later version of the interaction hypothesis, he (1996) also argued that modified output through negotiation contributes to SLA. In fact, Fuente (2002) found modified output to be effective in L2 vocabulary learning. She studied the effects of three treatments; namely, premodified input, negotiation without pushed output (interactionally modified input without pushed output), and negotiation with pushed output (interactionally modified input with pushed output) on the learning of 10 Spanish words in NNS/NS pair work. The results showed that negotiation with pushed output did not promote receptive acquisition more than negotiation without output, but it promoted productive acquisition more. Output in negotiation was effective for productive lexical acquisition.

Pica, Holliday, Lewis, and Morgenthaler (1989) claimed that some types of negotiation, such as clarification requests, promote pushed output more than others such as confirmation checks. In Ellis et al. (1994), even though several learners actively participated in negotiation over target words with their teacher, basically they were not asked to produce the words or clarify their meanings. They were asked the teacher to repeat or clarify the meanings of the target words. In short, they had negotiation without pushed output. Therefore, active participation in negotiated interaction may not have been more advantageous than just being

exposed to it in their study.

The present study investigated the role of pushed output in interaction in L2 vocabulary learning. Although Fuente's study (2002) researched modified input and output in NNS/NS pair work, the present study focused on work in a teacher/student classroom because one of the aims of our study was to examine the effect of modified input and output, both of which learners often experience in the classroom. The study was conducted based on Ellis et al.'s study (1994); thus, it had three input conditions, interactionally modified input, premodified input, and unmodified input. In addition, it contained one more condition, interactionally modified input with pushed output, to investigate the effect of pushed output. Two general research questions were: (1) Does interactionally modified input promote the comprehension and acquisition of new L2 word meanings more than premodified input?; (2) Does interactionally modified input with pushed output promote the comprehension and acquisition of new L2 word meanings more than interactionally modified input without pushed output?

METHODOLOGY

Participants

The participants were 134 first-year students at a university in Japan. They were from four elective English language classes, two speaking classes and two listening classes, at a false-beginning level of proficiency. They were placed in these classes based on their performance on the placement test administered by the university. They had studied English for six and a half years previously.

Design

The study was a classroom quasi-experimental research project over ten weeks with a pretest-posttest design and involved four treatment groups. The four treatment groups differed in terms of three

major independent variables of this study, premodified input, interactionally modified input, and interactionally modified input with pushed output. There were two dependent variables, listening comprehension and vocabulary acquisition.

One speaking class which contained 20 students was designated the baseline group and considered a control group. The other speaking class which contained 34 students was designated the premodified input group. One listening class which contained 32 students was designated the interactionally modified input group, and the other listening class which contained 39 students was designated the interactionally modified input with pushed output group. The four groups engaged in a pretest, treatment, and posttests.

Instruments

The pretest was administered to all the groups a week before the treatment in order to select eighteen lexical items that were the least known to the students. The test consisted of 50 words related to items of household commodities, clothes, groceries, school supplies, and toys. The students were asked to translate the meaning of the words into Japanese, but were allowed to draw a picture or explain the meaning if they did not know the Japanese words corresponding to the test items. Based on the results, the words selected as target items were: *razor*, *dustpan*, *hacksaw*, *colander*, *binoculars*, *Popsicle*, *rattle*, *spinach*, *whisk*, *detergent*, *ladle*, *rake*, *scallop*, *tweezers*, *glue*, *plunger*, *embroidery*, and *bathing suit*. The non-recognition level of these words was 99.9 %.

Three posttests were administered: the first posttest was right after the treatment; the second was a week after the treatment; and the third was two months after the treatment. The instruction of the posttests was the same as the pretest, but the order of the target items shown was changed and fifteen distracters were added in all the tests.

Treatment

Four groups participated in a listening task in which they were asked to listen to the story of John's family, the Browns, who are going to a department store for shopping. The story contained 18 episodes about what each member of the Browns, John, his father, mother, grandmother, brother, and sister, is planning to buy at the department store. Two sheets were given to the students: one contained the shopping lists of the six family members; and the other contained the pictures of 48 items including the 18 target items and 30 distracters. In accordance with the episode read by their teacher, the students were required to match the items they heard with the individual pictures of these items and write the number of the chosen picture in the shopping list. The shopping lists were collected at the end of the treatment in order to check the students' comprehension of the story. For each episode, if the students chose the correct picture and wrote its number in the appropriate place on the shopping list, they received one mark.

The four groups experienced the listening task under the following conditions.

Baseline Group (BI): The students listened to the baseline version of the 18 episodes, which did not contain any repetitions or elaboration of target words, read by the teacher, at about 160 words per minute. An episode containing a target word, *razor*, read in this group was: "Look at John's shopping list. First, John is going to buy a razor on the second floor."

The Premodified Input Group (PMI): The students listened to the premodified version of the 18 episodes which contained repetitions and elaboration of target words. For example, the episode containing *razor*, was "Look at John's shopping list. First, John is going to buy a *razor* on the second floor. A razor is an item that we use to cut or remove hair from our face or legs." The

episodes were read by the teacher at about 100 words per minute.

The Interactionally Modified Input Group (IMI): The students listened to the baseline version of the episodes which were also read at about 160 words per minute. Although the baseline group and the premodified input group were not allowed to interact with the teacher, this group was given an opportunity to ask the teacher any questions they had about the episodes. In order to encourage the students to actively interact with the teacher, several sentences for requesting clarification such as "Could you repeat that?", "What does a ... mean?", and "What does a look like?" were written on the board by the teacher. According to the request made by the students, the teacher modified her previous utterance.

The Interactionally Modified Input with Pushed Output Group (IMI+O): Just like the students in the interactionally modified input group, the students in this group listened to the baseline version of the episodes and were allowed to interact with the teacher whenever they had a question about the episodes. However, the students who actively engaged in interaction with the teacher were asked to clarify the meaning of the words they asked. Hence, they were pushed to produce the meaning of target words.

The episodes were read by a non-native English teacher who was teaching all four of the classes. The interactions in the interactionally modified input group and the interactionally modified input with pushed output group were audio-taped and transcribed for analysis.

RESULTS AND DISCUSSION

Research Question 1: Does interactionally modified input promote the comprehension and acquisition of new L2 word meanings more than premodified input?

The comprehension scores were calculated based

on all the students' performance on the listening task during the treatment in each group. If the students could correctly identify the item read by the teacher and write its number in the appropriate place on the shopping list, they obtained one mark. The differences of the comprehension scores between the four groups were computed by a one-way analysis of variance (ANOVA). Table 1 shows that there was a significant difference among the four groups ($F(3,112) = 315.44, p < .05$).

A post-hoc Scheffe test showed that the comprehension scores in the interactionally modified input (IMI) group were significantly higher than the baseline input (BI) group and the premodified input (PMI) group. It also indicated that the comprehension scores in the interactionally modified input with pushed output (IMI+O) group were significantly higher than the BI group and the PMI group.

We also examined to what extent the students in each group acquired the meaning of the target lexical items based on all the students' three posttest scores. ANOVAs were used to compare

the differences in the vocabulary acquisition scores across the four groups in three posttests. As Table 3 shows, there were significant differences among the four groups in Posttest 1 ($F(3,112) = 6.61, p < .05$), Posttest 2 ($F(3,112) = 6.93, p < .05$), and Posttest 3 ($F(3,112) = 9.47, p < .05$). Post hoc Scheffe tests for each post test were computed and showed that there were significant differences between the interactionally modified (IM) group and the baseline group, and the interactionally modified input with pushed output (IM+O) and the baseline group. However, there was no significant difference among the other groups.

These results indicate that interactionally modified input facilitated the comprehension and the acquisition of new L2 word meanings more than premodified input. This finding might be related to the quantity and quality of input given to the four groups. The quantity and quality of input which each group received during the treatment was analyzed based on the analysis made by Ellis et al. (1994). As Table 5 shows, the length of each treatment varied greatly among the four groups.

Table 1 Comparison of Comprehension Scores across the Four Groups

Source of Variance	SS	df	MS	F
Between Groups	3992.32	3	1330.77	315.44*
Within Groups	472.51	112	4.22	

* $p < .05$

Table 2 Scheffe Test of Differences in Comprehension Scores across the Four Groups

	Baseline Input	Premodified Input	Interactionally Modified Input	Interactionally Modified Input + Output
Mean	0.61	11.46	14.23	15.42
Baseline		-10.85*	-13.62*	-14.81*
Premodified Input			-2.77	-3.96*
Interactionally Modified Input				-1.19

* $p < .05$

Table 3 Vocabulary Acquisition Scores across the Four Groups

Source of Variance	SS	df	MS	F
Posttest 1				
Between Groups	73.88	3	24.62	6.61*
Within Groups	416.92	112	3.72	
Posttest 2				
Between Groups	78.73	3	26.24	6.93*
Within Groups	424.06	112	3.79	
Posttest 3				
Between Groups	96.63	3	32.21	9.47*
Within Groups	380.98	112	3.40	

* $p < .05$

Table 4 Scheffe Test of Differences across the Four Groups

	Baseline Input	Premodified Input	Interactionally Modified Input	Interactionally Modified Input +Output
Posttest 1				
Mean	0.75	1.65	2.38	2.81
Baseline Input		-0.94	-1.63*	-2.06*
Premodified Input			-0.73	-1.15
Interactionally Modified Input				-0.42
Posttest 2				
Mean	0.75	1.58	2.38	2.86
Baseline Input		-0.83	-1.63	-2.11*
Premodified Input			-0.88	-0.48
Interactionally Modified Input				0.48
Posttest 3				
Mean	0.54	1.15	2.65	2.58
Baseline Input		-0.62	-2.12	-2.05
Premodified Input			1.50*	-1.43*
Interactionally Modified Input				7.051E-02

* $p < .05$

The BI group engaged in the listening task for about 15 minutes, the PMI for about 25 minutes, the IMI for about 35 minutes, and the IMI+O for about 45 minutes. Hence, the students in both the IMI group and the IMI+O group which received interactionally modified input were exposed to more input than the PMI group which received premodified input.

In order to analyze the quality of input given to each group, a redundancy score and a complexity score were calculated. To obtain a redundancy score, first, the number of repetitions of the target lexical item in each episode was counted. Then, the mean number of repetitions in the input given to each group was calculated. As observed in Table 5, the redundancy scores differed across the four groups. The IMI+O group had about 5.94 repetitions per episode, the IMI group about 3.89 repetitions, the PMI group about 1.94 repetitions. Thus, the interactionally modified input which the IMI group and IMI+O group received contained more repetitions of the target lexical items than the premodified input which the PMI group received.

The complexity of input did not differ much in the four groups. It was measured by the number of S-nodes¹ in each episode and divided by the number of T-units² per episode. As Table 5 shows, premodified input was the most complex. In summary, comparing the redundancy and complexity of the interactionally modified input with premodified input, we can assume that the interactionally modified input available to the IMI

group and the IMI+O group was more comprehensible than to the PMI group, and it led to higher comprehension and acquisition scores in both groups. Since the length of input varied greatly across the four groups in our study, it is necessary to control the length of time for carrying out the treatment in order to compare the effectiveness of premodified input and interactionally modified input more accurately.

Research Question 2: Does interactionally modified input with pushed output promote the comprehension and acquisition of new L2 word meanings more than interactionally modified input without pushed output?

In order to examine the second research question, the effect of pushed output on the comprehension and the acquisition of new L2 word meanings, the comprehension scores and the acquisition scores of the students who actively participated in the interaction in the IMI+O group were compared with the students who actively participated in the interaction in the IMI group. The difference between the IMI+O active participants and the IMI active participants was that the IMI+O active participants were pushed to produce the target lexical items and clarify their meanings during the interaction with the teacher, while the IMI active participants were not. In the IMI+O group, four students frequently interacted with the teacher and engaged in the pushed output. In the IMI group, five students actively participated

Table 5 Time, Redundancy, and Complexity of the Four Types of Input

	Time	Redundancy	Complexity
Baseline Input	15 min.	1(18/18)	1.33
Premodified Input	25 min.	1.94(35/18)	1.74
Interactionally Modified Input	35 min.	3.89(70/18)	1.70
Interactionally Modified Input + Pushed Output	45 min.	5.94(107/18)	1.64

in the interaction. The other students basically just listened to the interaction between these active participants and the teacher. Table 6 shows the four IMI+O active participants' comprehension scores during the treatment and the acquisition scores in the three posttests, and Table 7 indicates the five IMI active participants' comprehension and acquisition scores.

As Table 6 shows, all the active participants in the IMI+O group gained higher comprehension and acquisition scores on posttests 1 and 2 than those who simply listened to the interaction. Three out of the four active participants obtained higher scores than the listeners on posttest 3. Table 7 indicates that four out of the five active participants in the IMI group achieved comprehension scores above those who simply listened to the interaction. However, only two participants obtained higher acquisition scores than the listeners on posttest 1,

none on posttest 2, and one on posttest 3. Therefore, it can be said that the active participants with pushed output comprehended and acquired the meanings of the target lexical words better than the listeners, while the active participants without pushed output did not acquire their meanings any better than the listeners.

Furthermore, as Tables 6 and 7 show, the mean comprehension scores and the acquisition scores on the three posttests by the IMI+O active participants were much higher than the IMI participants. We may conclude that interactionally modified input with pushed output promotes the learning of new L2 word meanings more than interactionally modified input without pushed output. This finding indicates the positive effect of pushed output in the learning of new L2 word meanings.

Why did interactionally modified input with

Table 6 Comprehension and Acquisition Scores of Active Participants in the IMI+O

	comprehension	Posttest 1	Posttest 2	Posttest 3
Group Mean	15	2.28	2.68	2.34
Participant 1	18	5	5	4
Participant 2	17	10	8	7
Participant 3	16	4	3	1
Participant 4	18	8	6	4
Active Participant Mean	17.25	6.75	5.5	4

Table 7 Comprehension and Acquisition Scores of Active Participants in the IMI Group

	comprehension	Posttest 1	Posttest 2	Posttest 3
Group Mean	14.23	2.55	2.11	2.48
Participant 1	16	1	1	1
Participant 2	16	0	0	2
Participant 3	16	2	2	1
Participant 4	15	3	2	0
Participant 5	10	3	0	3
Active Participant Mean	14.6	1.8	1	1.4

output promote the active participants' vocabulary learning more than interactionally modified input without output? It can be explained by the 'hypothesis-testing' function and the 'noticing' function of output. Excerpt 2 shows a conversation between the teacher and the active participants in the IMI+O group over a target word, 'colander,' while excerpt 1 shows a conversation between the teacher and the active participants in the IMI group over the same word. As observed in Excerpt 2, participant 2 was pushed to produce the target word and its meaning. Being pushed, the participant uttered '...co...co,' and this utterance played the role of the hypothesis-testing function, which sees producing output as a way of testing one's hypothesis about the target language. Due to his attempt to produce the word, the participant could receive feedback from the teacher; consequently, he managed to produce the same word in a subsequent utterance.

The pushed output also helped the participant realize the gap between what he wanted to say and what he could say. As a result, it might have encouraged him to pay more attention to this target word. According to Swain (1995), a function of 'noticing' is that 'in producing the target language (vocally or subvocally) learners may notice a gap between what they want to say and what they can say, leading them to recognize what they do not know, or know only partially' (p. 125-126). Swain indicates that this 'noticing/triggering' function might be referred to as its consciousness-raising role. While learners engage in the activity of producing the target language they may consciously recognize some of their linguistic problems and it might give them some information that they need to know about their L2.

As Excerpt 2 shows, being forced to clarify the meaning of the word, participant 2 in the IMI+O group neither repeated nor summarized the explanation given by the teacher but described it in

his own words. This indicates that through output, he could process the words more deeply than by simply hearing them. In fact, the participant could successfully comprehend the meaning of the word, 'colander,' during the task and retained it for two months, while the participants in the IMI group failed to retain the word in all the posttests.

Excerpt 1 (*The IMI group*)

- T: Let's go to number two, John's father..... John's father. Please listen. First, John's father is going to buy a colander on the fourth floor.
- P1: Please speak more slowly.
- T: Okay. First, John's father is going to buy a colander on the fourth floor.
- P2: What is a colander?
- T: A colander is a bowl with small holes in it. We use it to wash the vegetables. It's a bowl with small holes. We use it to wash the vegetables.

* P1 = Participate 1 and P2 = Participate 2. They actively participated in the interaction in the IMI group.

Excerpt 2 (*The IMI+O group*)

- T: Next, let's go to John's father. Please listen. First, John's father is going to buy a colander on the fourth floor.
- P1: What's colander?
- T: A colander is a bowl with small holes....and we use it to wash the vegetables.
- P2: Could you repeat?
- T: Sure. A colander is a bowl with small holes. We use it to wash the vegetables. It's a kind of a bowl and it has many small holes.
- So, did you get it? What is he going to buy?
- P2: co...co,,

T: colander
P2: colander
T: What's a colander?
P2: Eh...made...made of stainless.
T: I see. Yeah, it's made of stainless steel.

* P1 = Participate 1 and P2 = Participate 2. They actively participated in the interaction in the IMI+O group.

CONCLUSION

Due to the fact that only four participants engaged in the pushed output, the amount of data showing its effectiveness on L2 vocabulary learning is too small to make the finding conclusive; thus, a means of obtaining more samples of pushed output should be considered for further study. Furthermore, the amount for time each treatment needs to be controlled.

As the interaction hypothesis and the output hypothesis suggest, the present study indicates that it is important for learners to engage in a task that encourages interaction, providing them not only with modified input but also ample opportunities to modify their output in order to facilitate L2 vocabulary learning. Output allows learners to process the target word deeply. In addition, it encourages learners to notice a gap between what they know and what they do not know and leads them to pay more attention to the target word. More attention to the form may promote their L2 learning.

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Notes

- 1 An S-node is indicated by a tensed or an untensed verb.
- 2 A T-unit refers to an independent clause plus any dependent clauses attached to or embedded in it.