

The Effect of Positive and Negative Input on Learnability

Kiyomi WATANABE

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The present study focuses on the effectiveness of negative and positive input on learning certain grammar rules which contain a learnability problem. In first language acquisition, the grammatical rules with a learnability problem are believed to be acquired through positive input alone with the help of the innate language acquisition device. In the second language acquisition, there are variant studies; some claim that positive input is effective just as it is effective in first language acquisition, and some claim that negative input is needed. The present study conducted the experiment in which Japanese learners were divided into three groups and each group was further divided into three groups according to their proficiency levels. One group was given instruction and correction (explicit negative input), another group was given instruction (implicit negative input), and the last group was given only sample sentences and no instruction (positive input). The results indicated that all the groups which received explicit negative input did better and so did some implicit negative input groups, whereas the positive input group did not make any significant progress. The advanced level group mostly made the most progress within the same input group.

Key Words: SLA, Negative and Positive Evidence, Reflexives, Passives

1. Introduction

Any theory of Universal Grammar which claims to have descriptive adequacy must face a problem of learnability and be able to give an adequate account of the problem. The term 'learnability' is used here to describe the child's amazing ability to acquire first language without being given sufficient input. An extensive study on 'learnability' appears in a recent published book edited by Stefano Bertolo. (Bertolo, 2001) This remarkable feature of the first language acquisition is also referred to as 'logical problem', or 'poverty of the stimulus'.

Furthermore, a learnability problem is also an important issue for second language acquisition researchers, because it raises the crucial question of whether UG works in second language acquisition. Those who believe that UG operates in second language

acquisition tend to claim that positive evidence is sufficient to overcome a learnability problem in second language acquisition (Schwartz & Gubala-Ryzak, 1992; Schwartz, 1993), and those who don't, claim that negative evidence is necessary (White, 1991; Trahey & White, 1993; Izumi & Lakshmanan, 1998).

The present study attempts to look into the mechanism of second language learning through an experimental test in which subjects are rendered either positive or negative input to see how each type of input influences the acquisition of language. If the subjects who are given only positive input do as well as the subjects being given negative input, it would suggest that UG is still effectively working to overcome a learnability problem in second language acquisition. If they do not do as well, then UG may not be working, and the negative evidence may be needed, and a learnability problem would therefore not be a problem in second language acquisition.

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2. Purpose of the present study

It is the purpose of the present study to see whether UG effectively works in second language acquisition through conducting an experiment which tests the effectiveness of positive or negative input upon learning certain grammar structures.

The target grammar structures selected for the experiment are reflexives and passives. Reflexive anaphors have been the target of many researchers due to their multiple parameter values. As for passives, there is a distinct difference between Japanese and English. Japanese utilizes both direct and indirect types of passives, whereas English uses only direct type.

In both grammar structures it has been asserted that a learnability problem exists. In other words, negative evidence would be needed in acquiring the grammar unless UG is at work.

In Watanabe (2001), I performed an experiment to test reflexives and relative clauses. Reflexive anaphors have multiple values of parameter, thus indicating the existence of a learnability problem, whereas relative clauses have only two values and thus have no learnability problem.

The results of the experiment showed that negative input as well as positive input effectively helped the learners to learn the grammatical rules. However, the experiment was admitted to be preliminary due to the small number of subjects (32) that participated in the experiment.

It is therefore the object of the present study to perform a similar experiment, but on a larger scale, to examine the effectiveness of positive or negative input on learning grammatical rules which have a problem of learnability.

3. Research Questions

The experiment was conducted to look into the following questions;

1. Is positive input sufficient for the learning of English reflexives and passives?
2. Is there any difference in scores among the different proficiency levels?
3. Is there any difference in scores between the explicit negative and implicit negative input groups?

4. Experiment

4.1 Subjects

The subjects were 80 first year students at a private senior high school. They were divided into three groups according to their proficiency levels (advanced, intermediate, low). A standard test (i^{ã±}, Nikken) was used for the grouping of the students.

Then each proficiency group was further divided into three input type groups (1. explicit negative, 2. implicit negative and 3. positive).

4.2 Test

A grammatical judgment test was performed to see how well the subjects have learnt the target grammar structures. A pre-test was implemented before the session. The session lasted for 20 minutes. And a post-test was performed immediately after the session ended.

4.3 Experiment schedule

A standard test was performed. The subjects were divided into advanced, intermediate, and low groups. Each proficiency group was further divided into three input type groups: the implicit negative input group, the explicit negative input group, and the positive input type group. The implicit negative input group received the instruction only and no correction. The explicit negative input group received both the instruction and correction. The positive input group received sample sentences utilizing the target grammatical structures and was encouraged to read as many sentences as possible.

The session was given through printed materials. The students received different materials according to their input types, and were asked to read them for 20 minutes. Immediately after the session time, a post-test was given which lasted for 15 minutes.

4.4 Statistical analysis

A three-way analysis of variance (ANOVA) was used to analyze the result of pre- and post- tests. The three main variables were as follows:

- | | |
|-----------------|----------------------------|
| (1) Input types | 1. Implicit negative input |
| | 2. Explicit negative input |
| | 3. Positive input |
| (2) Proficiency | 1. Advanced |
| | 2. Intermediate |
| | 3. Low |

- (3) Test
 1. Pre-test
 2. Post-test

4.5 Target grammar structures

As stated earlier, the two grammar structures were selected for the subjects to learn. One was English reflexives and the other was passives.

Japanese and English rules for the two structures are quite different, and thus for the Japanese learners of English it was more difficult to learn them unless they were given some specific instructions or corrections. The reasons for the difficulties were as follows:

4.5.1 Reflexive

In English, reflexives are anaphors which are limited within the local domain of the sentence. Thus, in a sentence like 'John said that Fred washed himself', the reflexive pronoun, 'himself', can only mean 'Fred'. In Japanese, a reflexive anaphor is not limited to the local domain. Thus, in the Japanese version of the sentence 'John wa Fred ni jibun wo aratte hoshi katta,' the reflexive pronoun, 'jibun', can refer to both Fred and John.

Therefore, the Japanese learners of English must preempt the Japanese value of the parameter with the English value, which is a subset of the values. It indicates that the learner cannot learn the English value through a natural type of input, namely positive input, but needs specific instructions and corrections, namely negative input.

4.5.2 Passive

Japanese has both the 'direct' and 'indirect' passive, whereas English only has the direct passive.

4.5.2.1 English passive

English permits only the internal argument of the passivized verb to move to the subject position. In a sentence like 'John was called by Bill' the internal argument of the verb is base generated in the direct position. However, the subject position of the passive is empty.

4.5.2.2 Japanese passives

Contrary to English, Japanese has two types of passives: direct, and indirect passives. The direct passive is similar to English passive in that it has a corresponding active counterpart.

The indirect passive in Japanese, like the direct passive, also contains 'rare.' But, unlike the direct passive, the indirect passive does not have an active counterpart.

a. *Haha-oya wa hitoban-jyu akannbou ni naka-rete nemure-nakatta.*

(A mother was adversely affected as her baby cried throughout the night and she could not get any sleep.)

As in the case of sentence 'a.', the indirect passive sentence is interpreted as having suffered a negative or adverse experience. (中島, 1999; Izumi & Lakshmanan, 1998)

5. Results

5.1 Reflexives

The explicit negative input group (instruction and correction) with all three proficiency levels made a significant progress between the pre-test and post-test. (see Fig. 1)

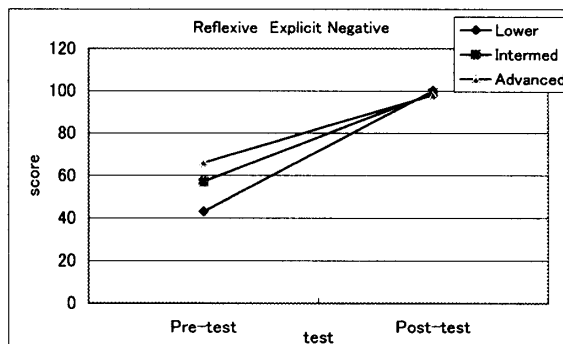


Figure 1

In the implicit negative input group (instruction only), only the low proficiency level group made a significant progress. The advanced and intermediate groups' mean scores did not significantly change but remained high. (see Fig. 2)

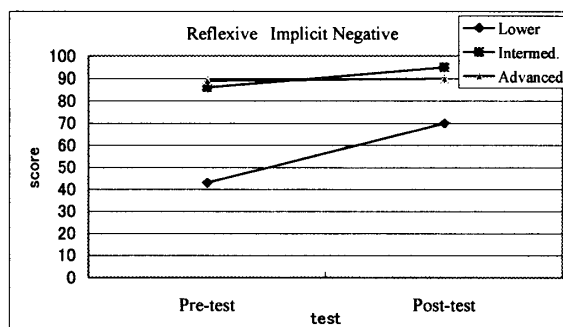


Figure 2

As for the positive input group, the advanced proficiency group's mean score remained high, and both the intermediate and low level groups made a little progress in score, but not enough to be considered as significant progress. (see Fig. 3)

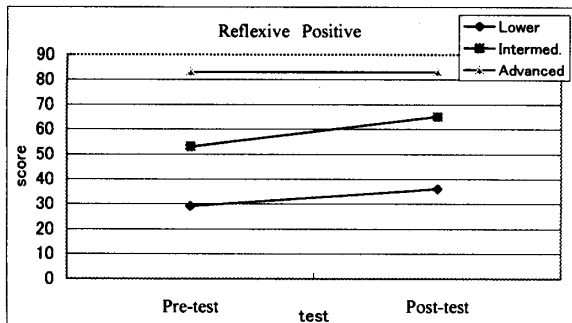


Figure 3

Interaction between input types and test showed there was a significant simple main effect. Thus a further multiple comparison test was performed. And the results showed that there was a significant difference between the explicit negative input group and positive input group as well as between the implicit negative input and positive input. There was no significant difference between the explicit negative and implicit negative input groups; both explicit and implicit negative input groups outscored the positive input group. (see Table 1)

<< means on Factor Proficiency(Post-test) >>

	advanced	intermed.	low
mean :	98.98	85.24	61.45
n :	27	25	25

pair	r	nominal level	t	p	sig.
adv. - low	3	0.0166667	5.588	0.0000001	s.
adv. - intermed.	2	0.0333333	2.046	0.0426947	n.s.
intermed. - low	2	0.0333333	3.476	0.0006838	s.

MSe=585.517723, df=136, significance level=0.050000

Table 1

5.2 Passive

Of the groups who received the explicit negative input (instruction and correction), the advanced proficiency level group made a significant progress. The other two groups, the intermediate and low levels, made a little progress but not enough to be considered significant. (see Fig. 4)

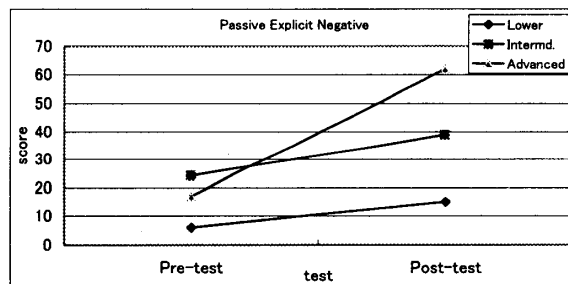


Figure 4

Of the groups who received the implicit negative input (instruction only), the advanced level group made significant progress. The intermediate group's score went up a little, but it was not high enough to be considered a significant progress. The low level group's score went down. (see Fig. 5)

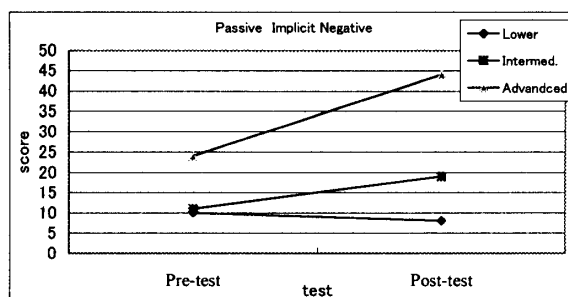


Figure 5

As for the positive input group, the mean scores of all three proficiency levels with positive input went down significantly. (see Fig. 6)

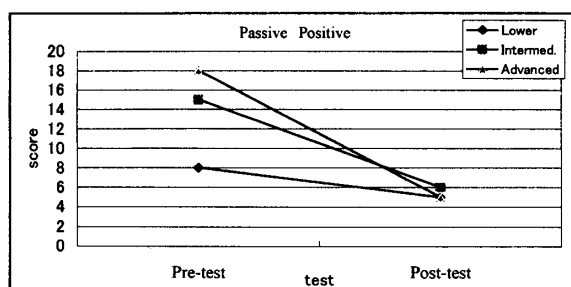


Figure 6

Interaction between input types and tests showed that there was a significant simple main effect. Thus a multiple comparison test was further performed. And the results showed that there was a significant difference between the explicit negative input group and positive input group as well as between the implicit negative input and positive input. There was also a significant difference

between the explicit negative and implicit negative input groups.

The mean score of the explicit negative input group made the highest score of the three groups. The implicit input group came in second, and the positive input group came in last. And there were significant differences among the three groups' mean scores. (see Table 2)

<< means on Factor Proficiency levels(Post-test) >>

	advanced	intmed.	low
mean :	38.53	23.71	5.45
n :	27	25	25

pair	r	nominal level	t	p	sig.
advanced - low	3	0.0166667	6.662	0.0000000	s.
advanced - intmed	2	0.0333333	2.984	0.0033771	s.
intmed - low	2	0.0333333	3.609	0.0004307	s.

MSe=319.941737, *df*=136, *significance level*=0.050000

Table 2

5. Discussion

The statistical analysis of the experiment on both reflexives and passives showed that the explicit negative input was most effective, and that the implicit negative input was also effective. The positive input was shown to be ineffective, and it even had a detrimental effect on passives.

As for the proficiency levels, the advanced group made significant progress with both explicit negative and implicit negative input on passive. The intermediate and low level groups made some progress in both reflexive anaphor and passive but not at a significant level.

A questionnaire was attached at the end of each test to obtain subjective data on how the subjects felt about the degree of difficulty of the two target grammar structures. The result indicated a clear-cut difference between the negative input groups (explicit and implicit) and the positive input group. At the pre-test, the majority of all three input groups felt they did not do well on either reflexive or passive questions. But, at the post-test, over 70% of the explicit negative group and over 40% of the implicit negative group thought they at least did well on the reflexive part of the test but not on the passive, whereas over 70% of the positive input group answered that they were not yet confident on reflexive or passive. It is interesting to note that their mental awareness of

the difficulty of the grammar structures corresponds with their actual test score. (see Fig. 7)

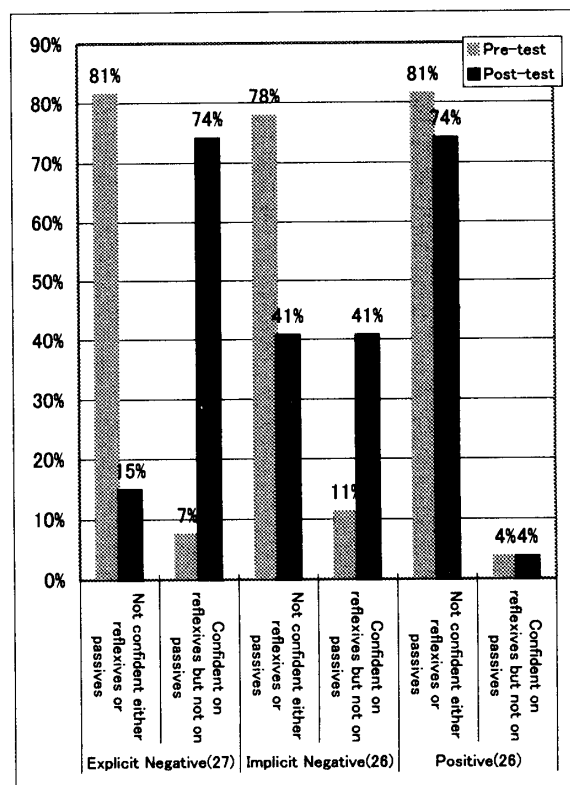


Figure 7

The fact that a high percentage of the positive input group felt they were not confident, even after they received the input, may explain why their mean scores on passives were lower than that of the pre-test. That is to say, it may well be possible that the positive input they received somehow led the group, which includes all advanced, intermediate and low proficiency subjects, to make wrong grammatical assumptions on English passives.

Conclusion

The experimental results showed that both explicit and implicit negative input were effective for overcoming a learnability problem existing in learning the English reflexive and passive structures. The positive input they received was shown to be ineffective, and, in the case of passive, it had a detrimental effect.

There are possibly some other factors which were associated with the positive input group's results. A greater amount of positive input may have been needed. The time they spent in receiving input might not have been long enough. Or, perhaps, had a performance test been conducted, the results might have been different. Thus the present study only produced the need for further studies on the effectiveness of positive input.

Suffice it to say that the conclusion of the present study is that the negative input, which includes both instruction and correction, was very effective in learning the grammatical rules with a learnability problem.

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Appendix

Pre-test

I. 次の文で himself/herself がさす人は誰か

a ~ dの中から一つ選び、その記号を右の解答欄に書きなさい。

- John said that Taro hit himself. _____
a. John b. Taro c. 文中以外の人
d. a, b, c すべて
- John hit himself. _____
a. John b. 文中以外の人 d. a, b 両方
- John said that Taro said that Kazuo hit himself.
a. John b. Taro c. Kazuo
d. 文中以外の人 e. a, b, c, d のすべて
- Hanako likes herself. _____
a. Hanako b. 文中以外の人
c. a, b 両方
- Mary said that Hanako likes herself.
a. Mary b. Hanako c. 文中以外の人
d. a, b, c のすべて

II. 次の文の下線部が正しいと思う場合は○、誤っていると思う場合は×を文の左にある線上につけなさい。また、誤っていると思う場合には、正しい文に直し、文の下線部に書きなさい。

- On a Sunday morning, my father was washing his car. You could say, 'His car was washed by my father.'

(日曜日の朝、お父さんが車を洗っていた。これは、

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「車は父によって洗われていた」とも言える)

2. You have been late to class lately. Today, your homeroom teacher called you to the teachers' room and scolded you. Afterwards, you tell your friend: 'I was scolded by the teacher.'

(あなたは最近授業に遅刻することが多くなりました。それで今日担任から教員室に呼ばれて叱られました。あとであなたは友達にこう言いました。

「先生に叱られちゃった」

3. A mother was not able to sleep well because her baby child cried all night. So, the mother told her friend, 'I was cried by my child all night.'

(お母さんは赤ちゃんが夜中泣いたのでよく眠ることができませんでした。それで、お母さんは友達に次のように話しました。「子供に一晩中泣かれたのよ」

4. You bought a new CD Walkman a few days ago. You like it so much. Today, when you came back from school, you found that someone stole the Walkman. So, you tell your friend, 'I was stolen my CD walkman.'

(あなたは数日前にCDウォークマンを買いまし

た。とても気に入ってます。今日学校から帰ったら、誰かがウォークマンを盗んでしまっていることに気づきました。それであなたは友達にこう言います。「ぼくはウォークマンを盗まれたんだ」

5. Your parents bought you a bicycle for your birthday. So, you could say, 'A bicycle was bought for me by my parents.'

(両親が誕生日に自転車を買ってくれました。これは次のようにも言えます。「自転車は両親によって僕のために買われた」

最後に次のアンケートに答えてください。当てはまるものに○を付けてください。

1. 自分の答えに自信がありますか。
 - a. Iの問題は自信がある。
はい ・ いいえ
 - b. IIの問題は自信がある。
 - c. IとIIとも自信がある。
 - d. Iの問題は自信がない。
 - e. IIの問題は自信がない。
 - f. IとIIとも自信がない。