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ABSTRACT

An experiment in Japan investigated the kind of input that is effective in enabling college-level students of English as a Second Language to formulate grammar, specifically prepositional and phrasal verbs. A grammaticality judgment test and a translation test were given to 131 Japanese university students, who were divided into three treatment groups and one control group. The treatment groups were taught these verbs with different approaches: (1) providing positive evidence (grammatically correct examples); (2) providing examples of both grammatical and ungrammatical forms (positive and negative evidence); and (3) providing individualized error correction to each student. Subjects were then tested immediately after the treatment, 1 month later, and 1 year after treatment. Results indicate that the second treatment was most beneficial over 1 month. Over the period of a year, provision of positive evidence did not have a significant effect on grammatical knowledge, and it had only an immediate effect in translation. In addition, it was easier to make a correct grammaticality judgment on phrasal verbs with the pronoun "it" than on lexical phrasal verbs. Contains 46 references. (MSE)

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Instructional Effects of Positive and Negative Evidence on Prepositional/Phrasal Verbs

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Abstract

The current classroom research investigates what type of input may be effective in enabling EFL learners to formulate their grammar. Two research questions were addressed: (1) What type of input will have an effect on the formulation of learners' grammatical knowledge?; (2) If there is an effect for treatment, will the effect remain one month after the treatment?

125 Japanese university students participated in the Preliminary experiment, and a different group of 131 Japanese university students took part in the Main experiment. Two kinds of tests on English prepositional/phrasal verbs—(A) a grammaticality judgment test and (B) a translation test—were given to the subjects in the Preliminary experiment and the Main experiment. The test data of the Preliminary experiment were examined using BILOG 3 (Mislevy and Bock 1990; a computer package of statistics based on Item Response Theory) and the test items were edited for the test construction in the Main experiment, which included the Pre-test, Post-tests 1 (immediately after the treatment), 2 (one month after the treatment), and 3 (one year after the treatment). The test data of the Main experiment were not analyzed on a basis of Item Response Theory because of the time constraints.

All the subjects in the Main experiment were divided into three experimental groups and one control group, according to the type of treatment they received:

[**Experimental groups**] **Group A**—positive evidence,
Group B—positive evidence and negative evidence with explicit metalinguistic information,
Group C—explicit response rejection and positive evidence (modeling),
[**Control group**] **Group Z**—no treatment.

The major findings which resulted from the two tests demonstrate that (1) the treatment provided to Group B was more beneficial over one month than the other treatments; (2) the treatment given to Group B had beneficial effects over one month on the formulation of grammatical knowledge, but the treatment to Group A had only a temporary effect; (3) according to the results of the Pre-test, and Post-tests 1, 2, 3, the provision of positive evidence on Test (A) did not have significant gains in grammatical knowledge, whereas on Test (B) it had only an immediate effect on the learning; (4) the phrasal verbs with the pronoun 'it' were easier to make a correct grammaticality judgment than the lexical phrasal verbs. The pedagogical implications are also discussed.

1. Introduction

A preposition in prepositional verbs and a particle in phrasal verbs are identical in form. Therefore, it seems that prepositional and phrasal verbs are very difficult for EFL (English as a Foreign Language) learners to distinguish and acquire.[1] In addition, some nonnative speakers have a tendency to overuse single lexical items in informal contexts where a phrasal verb would be much more appropriate (e.g., extinguish=*put out*) (Celce-Murcia and Larsen-Freeman 1983: 264).

Verb-particle combinations are called phrasal verbs. Some phrasal verbs retain the individual meanings of the verb and the particle (e.g., *sit down*), and other phrasal verbs are idiomatic: the meaning of the combination cannot be built up from the meanings of the individual verb and the particle (e.g., *give in*=surrender). On the contrary, verb-

preposition combinations are called prepositional verbs (see Leech and Svartvik 1994: 336-338). Murata (1982: 81-82) analyzed prepositional verbs in terms of 'idiomatization' (Bolinger 1961: 22). The degree of idiomatization is higher in (b) than in (a), as follows:

a. We *went into* the room.

b. We *went into* the problem.

Traditionally, the phonological and syntactic differences between the two types are illustrated as follows (Leech and Svartvik 1994: 339, Palmer 1965):

(1) The particle (or adverb)[2] in a phrasal verb (1a) is usually stressed and has nuclear stress in end-position. The preposition in a prepositional verb (1b) is normally unstressed.

a. All young men were *called up* for military service.

b. We'll *call on* you as soon as we arrive.

(2) The preposition in a prepositional verb (2b) must come before the prepositional object. A phrasal verb normally takes a combination of 'O+particle' or 'particle+O.' When the object in a phrasal verb is a pronoun, it always has to come before the particle.[3]

a. We'll *call up* our friends.
   We'll *call* our friends *up*.
   *We'll *call up* them.
   We'll *call* them *up*.

b. We'll *call on* our friends.
   *We'll *call* our friends *on*.
   We'll *call on* them.
   *We'll *call* them *on*.

Celce-Murcia and Larsen-Freeman (1983: 267-268) point out that there are inseparable phrasal verbs (e.g., *run into...*, *come across...*, *get over...*) and phrasal verbs that are always separated (e.g., *get... through*, *see... through*) as well as separable ones (e.g., *throw away*, *take up*, *give up*).

c . John *ran into* an old friend.
John *ran into* him.
*John *ran* an old friend *into*.
*John *ran* him *into*.

d . How can I *get* the message *through* to him?
How can I *get* it *through* to him?
*How can I *get through* the message to him?

Celce-Murcia and Larsen-Freeman (1983: 268) state that the reason for obligatory separation is presumably to avoid the ambiguity with inseparable phrasal verbs that have the same form but a different meaning: *get through* the lesson='finish' the lesson. Such obligatorily separable phrasal verbs are a small subcategory of separable phrasal verbs (Celce-Murcia and Larsen-Freeman 1983: 268).

(3) Only the prepositional verb (3b) allows an adverb to be placed between the verb and the preposition.

a .*They *called* early *up* our friends.

b . They *called* early *on* their friends.

Leech and Svartvik (1975) included one more syntactic difference:

(4) In relative clauses, the particle (or adverb) in a phrasal verb must stay after the verb, as in (4a).

a . All young men (whom) they *called up* were not at home.
*All young men *up* whom they *called* were not at home.

b . The friends (whom) they *called on* were not at home.
The friends *on* whom they *called* were not at home.

Celce-Murcia and Larsen-Freeman (1983: 268-269) add the following point:

(5) In Wh-questions, the particle cannot be separated from its phrasal verb, as in (5b).

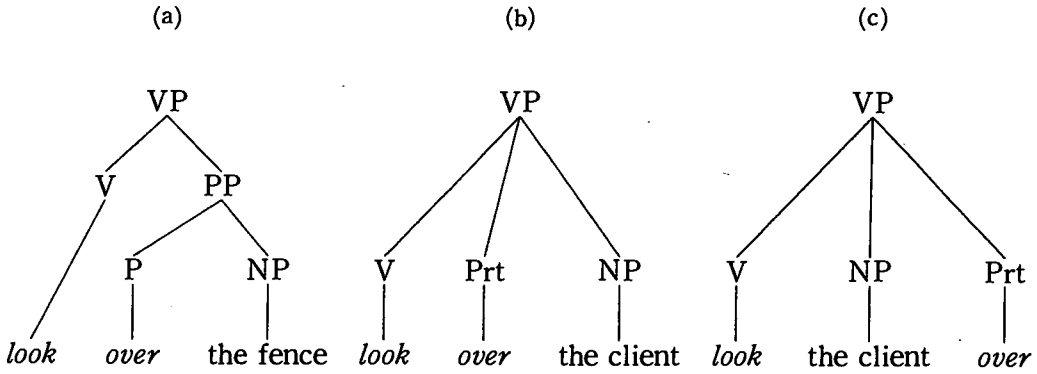
a . *At* what did Sara *look*? [formal]

b .**Up* what did Philip *make*?

The following structurally parallel sentences differ in the internal

Figure 1 : Schematic representations of phrasal verbs and prepositional verbs

(a) Harry will *look over* the fence. [prepositional verb]
(b) Harry will *look over* the client. [phrasal verb] (Fraser 1974: 1)
(c) Harry will *look* the client *over*. [phrasal verb]



structures of the VPs which they contain. Schematic representations are shown in Figure 1.

Side (1990) pointed out the following points with regard to the reasons learners do not like phrasal verbs: (1) there are a confusing number of combinations of verb and particle; (2) many phrasal verbs have more than one meaning; (3) the meaning of idiomatic phrasal verbs does not appear to be the sum of the two (or three) parts; (4) since teachers and/or course books usually give definitions of phrasal verbs, students will stick to and use the latinate definition rather than the Anglo-Saxon phrasal verb, especially if it is a one-word definition; (5) the particle seems random; (6) there is often some confusion, despite the example sentences given in the exercises, as to whether the verb is intransitive or transitive; (7) register/appropriacy; (8) the students' ability to understand and use phrasal verbs is, of course, heavily influenced by their knowledge of their own language.

Fraser (1965) and Ross (1967: 108) stated that the particle can be a remnant of a reduced prepositional phrase (as in (6), (8), (9), (10),

(11)), or it can appear as the reduced form of an adverb (as in (7)).

(6) a. She *took* the boxes *out of* the drawer.
b. She *took* the boxes *out*.
She *took out* the boxes.

(7) a. He *threw* the ball *upwards*.
b. He *threw* the ball *up*.

(8) a. She *carried* the dinner *into* the room.
*She carried the dinner *in* the room.
b. She *carried* the dinner *in*.
She *carried in* the dinner.

(9) a. We stopped the bus and *got off the bus*.
b. We stopped the bus and *got off*.

(10) a. The child *ran across* the street in front of the car.
b. The child *ran across* in front of the car.

(11) a. I got a quick look at Mary's face as I *walked past* the entrance.
b. I got a quick look at Mary's face as I *walked past*.

There have been some psycholinguistic L1 (first language) studies concerning the use or understanding of prepositional verbs and phrasal verbs (see Miura 1989 for details). Goodluck (1986) suggested that children aged 4 to 6 can discriminate prepositional verbs and phrasal verbs almost in the same manners adults do. Gibbs (1985, 1987) and Reagan (1987) found that familiar idiomatic expressions were understood more easily than unfamiliar ones. Samuel et al. (1982) and Bock (1986, 1987) suggested that sentences including short, familiar words are understood more easily than those including long, unfamiliar words.

No research in ESL situations and only one study in EFL situations have been conducted concerning the acquisition of prepositional/phrasal verbs, as far as the present researcher knows. Miura (1989) investigated to what extent Japanese university students were able to use prepositional and phrasal verbs properly, varying in the category and length of the object. In one translation test given to 45 subjects (Experiment I), no

difference was found between a pronominal object and a lexical object regarding prepositional verbs. In the case of phrasal verbs, the correct uses in a pronominal object were significantly smaller than those in a lexical object. It was found that the subjects were likely to pose the particle before a lexical object, and that in phrasal verbs most subjects had not mastered posing the particle after a pronominal object. In another translation test given to 51 subjects (Experiment II), all of whom did not participate in Experiment I, only lexical items were used varying in their lengths. Regarding prepositional verbs, the number of correct uses decreased with the increase of object length: one-word object (proper noun) was used more correctly than two-word (the+Noun) and three-word (the+Adjective+Noun) objects. Regarding phrasal verbs, the number of correct uses did not differ between the three object lengths.

2. The Study

2.1. Research Questions

The main purpose of this research is to investigate what type of input may be effective in enabling EFL learners to formulate their grammar. The following two research questions are thus posed in this research:

Research Question (1)—What type of input will have an effect on the formulation of learners' grammatical knowledge?

Research Question (2)—If there is an effect for treatment, will the effect remain one month after the treatment?

2.2. Hypotheses

Hypotheses 1-4 are related to Research Question (1), and Hypothesis 5 to Research Question (2).

H1: There would be no statistically significant difference in accuracy of responses between the experimental groups and the control group. The test scores would result in no difference between the experimental

groups and the control group. If the null hypothesis is incorrect, the alternative hypothesis (H2) is stated as follows:

H2: The experimental groups would outperform the control group in accuracy of responses.

The treatment would be beneficial in inducing a positive learning effect. It is predicted, however, that not all treatments are beneficial to learners. Either H3 or H4 would be thus supported.

H3: The group receiving explicit metalinguistic information would perform better than the other groups.

Explicit information about the grammatical rules might be the most effective to trigger the learning of the rule. The most informative type of feedback consists of a detailed, complete, and accurate grammatical description (Carroll and Swain 1993: 362). Empirically, Kubota (1991) found that explicit corrective feedback was successful in triggering students' modified correct forms immediately after feedback than implicit corrective feedback. Carroll et al. (1992) studied the effects of explicit feedback on the learning of French morphological generalizations, finding that experimental groups receiving corrective feedback significantly outperformed control groups receiving no feedback in the feedback sessions. The same result was obtained from Carroll and Swain (1993), who examined the relative effects of various types of negative feedback on the acquisition of the English dative alternation. Negative feedback or negative evidence is referred to as information to the learner that the learner's production was inappropriate in some way, possibly nonfelicitous, possibly ungrammatical, possibly difficult to parse, etc. (Schachter 1993: 182). Carroll and Swain (1993) discovered that the group receiving explicit metalinguistic information regarding the generalizations outperformed the other groups. Therefore, this result led to the formation of Hypothesis 3.

H4: The group receiving the overt model of the desired form would do significantly better than the other groups.

Kubota (1994) discovered that the group receiving modeling and implicit negative feedback did significantly better than the control group receiving no treatment. Providing the correct form to learners may help them 'notice the gap' (Schmidt and Frota 1986) between the target norm and the wrong response and then learn the rule. The model of the form would be the most beneficial in learning the rule.

H5: The experimental groups would respond significantly better in Post-tests 1 and 2 than in the Pre-test.

It is assumed that there would be a positive learning effect longitudinally (one month after treatment), owing to the provision of treatment.

2.3. Subjects

125 Japanese university students of EFL participated in the Preliminary experiment. A different group of 131 Japanese university students of EFL were given three tests (Pre-test and Post-tests 1 and 2) in the Main experiment. All of them had studied EFL in instructional settings for six or seven years, and they reported that they had already studied the basic usages of the target structures while they were at high school. The data of 28 subjects in the Main experiment had to be excluded from the analyses, since they missed one or more of the following: Pre-test, Treatment, and Post-tests 1 and 2.

2.4. Test Items

Phrasal verbs and prepositional verbs were targeted, because most Japanese EFL learners seem to find it difficult to acquire them. However, phrasal-prepositional verbs (e.g., *put up with*, *walk out on*) were not examined in this research; in informal English, some verbs can combine as an idiom with both an adverb and a preposition (Leech and Svartvik 1994: 339).

2.5. Research Procedures

There were six stages in this research: the test in the Preliminary experiment, and the Pre-test, the Treatment, Post-tests 1, 2, and 3 in the Main experiment. In each test, the subjects were asked to make a grammaticality judgment in Test (A) and translate the Japanese sentences into English in Test (B), on a syntactic level, not on a discourse level. Hence, the difference between the two possible word-orders in phrasal verb constructions was not taken into consideration in this research.[4]

[Stage 1: Test session in the Preliminary experiment]

The 5-minute Test (A) was a grammaticality judgment test to elicit the subjects' receptive knowledge, whereas the 20-minute Test (B) was a translation test from Japanese to English to get data of their productive knowledge (see Appendix 1).

A total of 125 Japanese university students of EFL were given the Preliminary test in December 1994, for the purpose of editing the test items for the Main experiment. The test data were examined using BILOG 3 (Mislevy and Bock 1990; a computer package of statistics based on Item Response Theory). The results suggested that Items Nos. 3, 4, 6, 7 in Test (A) were eliminated from the tests in the Main experiment, because their item difficulty parameters (threshold) were either above +3.0 or below −3.0. No other items in Tests (A) and (B) were deleted, since all of their item discriminating parameters (slope) exceeded +0.2 (see Appendix 3).

[Stage 2: Pre-test session in the Main experiment]

On the Pre-test of the Main experiment, given in December 1995, there were 20 test items in Test (A)—a grammaticality judgment test and 10 test items in Test (B)—a translation test (see Appendix 2). Test (A) took 10 minutes, whereas Test (B) was 20 minutes long.

[Stage 3: Treatment session in the Main experiment]

One Japanese teacher of EFL was selected so that the influences of

[Experimental groups]	
Group A—Positive evidence	[5 minutes, collectively]
Group B—Positive evidence and negative evidence with explicit metalinguistic information	[5 minutes, collectively]
Group C—Explicit response rejection and positive evidence (modeling)	[10 minutes, individually]
[Control group]	
Group Z—No treatment	[N/A]

variables (e.g., feedback time, feedback contents) might be minimalized. The present researcher served as a teacher in the current experiment. The treatment was given to each experimental group in Japanese, 20 minutes after the Pre-test during the same class period. The four classes were divided into 3 experimental groups and 1 control group, according to the type of treatment the subjects received.

Group A was collectively provided positive evidence, which is referred to as evidence that is grammatical in the input so as to give learners examples of how the target language works (Sharwood Smith 1991: 123). The following grammatical sentences in Test (A) were written on the blackboard, and then the teacher read each sentence three times.

1. Tim takes after his father.
2. I'm going to wait for the next bus.
3. John fought against the rule.
4. Ken turned the radio on.
   Ken turned on the radio.
5. John sorted out the letters.
   John sorted the letters out.
6. Bill threw it away.

Sentence 1 corresponded to No. 1 in Test (A); Sentence 2 to No. 4; Sentence 3 to No. 20; Sentence 4 to No. 2; Sentence 5 to No. 14; Sentence 6 to No. 10. The treatment in Group A took 5 minutes.

Group B collectively received positive evidence as well as negative evidence with explicit metalinguistic information. First, the teacher wrote the following grammatical and ungrammatical sentences included in Test (A) and then read each sentence only once:

1. (a) Tim takes after his father.
   (b) Tim takes his father after.
2. (a) I'm going to wait for the next bus.
   (b) I'm going to wait the next bus for.
3. (a) John fought against the rule.
   (b) John fought the rule against.
4. (a) Ken turned the radio on.
   (b) Ken turned on the radio.
5. (a) John sorted out the letters.
   (b) John sorted the letters out.
6. (a) Bill threw it away.
   (b) Bill threw away it.

The input was written on the blackboard so as to allow time for learners to reflect on the sentences. Next, the subjects in Group B received the following grammatical explanations:

> 1. In the case of the preposition as in (1a), (2a), (3a), it is followed by an NP; hence, the reverse construction is ungrammatical as in (1b), (2b), (3b).
>
> 2. There are two possible sentences as in (4a, b) and (5a, b), where the verb is followed by either an object or a particle. The exception is that if the object is a pronoun, it must go in front of the particle, as in (6a).

Ungrammatical sentences were marked with an asterisk (*) on the blackboard. Note that in the explanation, because of the difficult technical term that most subjects were not familiar with, the term 'particle' was not used; instead, it was replaced by 'the word which is not a preposition, i.e., adverb.' The treatment provided to Group B was 5

minutes long.

The subjects in Group C were given treatment individually, on a one-to-one basis with the teacher. They were simply told that their responses were wrong whenever they made an error in 6 test items of Test (A) (Nos. 1, 2, 4, 10, 14, 20) mentioned above, and they were given a correct response (modeling). The total amount of time spent in this treatment was 10 minutes.

Note that the treatments in the three experimental groups were provided only once in a class; otherwise, it may be extremely difficult to control variables in an experiment in order to discover long-term effects of instruction. Group Z, the control group, was given no treatment.

[Stage 4: Post-test 1 session in the Main experiment]

The 10-minute Test (A) and the 20-minute Test (B) were given separately 5 minutes after the completion of treatment during the same class period as the Pre-test (see Appendix 2).

[Stage 5: Post-test 2 session in the Main experiment]

In January 1996, one month after the Treatment, the subjects were given Post-test 2 (see Appendix 2), which was the same as Post-test 1.

[Stage 6: Post-test 3 in the Main experiment]

Post-test 3, the same as the previous tests, was administered only to Group A in December 1996, one year after the treatment. Out of 24 subjects who took all three previous tests, 5 subjects were absent in Post-test 3.

2.6. Data Analysis

24 subjects in each group were selected by random sampling out of a total of 131 subjects who were given all three tests in the Main experiment (Pre-test, Post-tests 1 and 2); therefore, the data of 96 subjects were basically analyzed in this research.

A .05 level of significance ($\alpha = .05$) was selected. A t-test and a one-way/two-way repeated-measures analysis of variance (ANOVA) were

employed to analyze the data. Unlike the test in the Preliminary experiment, the tests in the Main experiment were not analyzed on a basis of a multiple-group Item Response Theory for estimating the parameters, because of the time constraints.

On Test (A) in the Preliminary experiment and the Main experiment, one point was given when the subjects responded correctly to both (a) and (b). In Test (B), misspellings and errors in tense/aspect were not ignored in scoring, neither were misused words/phrases except prepositional/phrasal verbs. In the case of prepositional verbs one point was given when one correct sentence was produced; in the case of phrasal verbs one point was scored when two word-orders (a lexical phrasal verb) were written correctly or when only one word-order (a phrasal verb with a pronoun 'it') was produced correctly; otherwise, no point was scored.

3. Results

3.1. Test (A) in the Main experiment

The total score for the Pre-test was 20 points. Table 1 shows the means and standard deviations by group. Table 2 demonstrates the results of a one-way repeated-measures ANOVA in the Pre-test. The results indicate that group differences were not significant ($F_{(3,92)}=0.61$, ns). Hence, it may be correct to claim that any comparative effects due to treatment

Table 1 : Means and standard deviations by group in the Pre-test

Group	n	Mean	SD
A	24	9.25	3.30
B	24	10.13	2.05
C	24	9.58	2.39
Z	24	9.96	1.85

Table 2 : Results of one-way repeated-measures ANOVA in the Pre-test

	SS	df	MS	F	p
Between Groups	11.04	3	3.68	0.61	.6122
Within Groups	557.92	92	6.06		
Total	568.96	95			

$F_{critical(3,92)} = 2.68$

Table 3 : Means and standard deviations by group and test in Test (A)

Group	n	Mean	SD
Pre-test			
A	24	9.25	3.30
B	24	10.13	2.05
C	24	9.58	2.39
Z	24	9.96	1.85
Post-test 1			
A	24	11.21	2.38
B	24	13.88	1.36
C	24	11.04	2.58
Z	24	10.25	1.67
Post-test 2			
A	24	10.88	1.70
B	24	12.00	1.89
C	24	10.88	2.69
Z	24	10.50	1.77

were not related to prior knowledge or language ability of any one group. In addition, the sufficiently low scores on the Pre-test revealed that there was room for improvement that would take place after treatment.

Table 3 shows the means and standard deviations by group and test.

Figure 2 : Means of correct responses in Test (A)

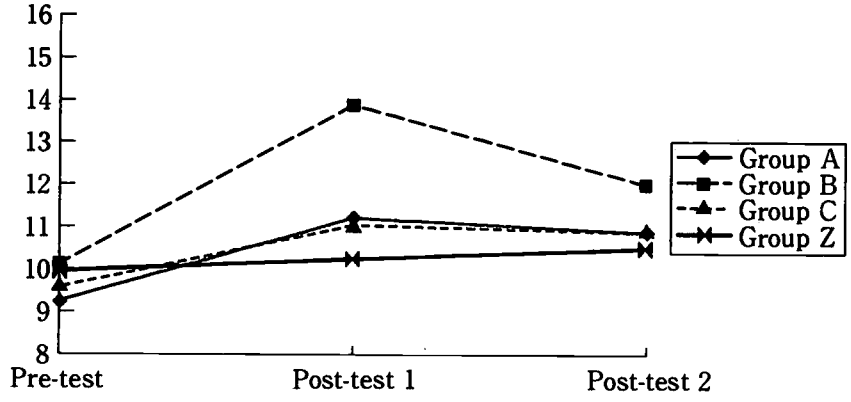


Table 4 : Results of a two-way repeated-measures ANOVA in Test (A)

	SS	df	MS	F	p
Between subjects	888.91	95			
Groups	142.15	3	47.38	5.84	.0011
Subjects within groups	746.76	92	8.12		
Within Groups	844.00	192			
Tests	177.17	2	88.59	27.70	<.0001
Groups x tests	78.38	6	13.06	4.08	.0007
Tests x Sub W. groups	588.44	184	3.20		
Total	1732.91	287			

$F_{critical(3,92)}=2.68$; $F_{critical(2,184)}=3.00$; $F_{critical(6,184)}=2.10$

The means of correct responses are depicted in Figure 2.

Table 4 displays the results of a two-way repeated-measures ANOVA in Test (A). The results indicate that group differences ($F_{(3,92)}=5.84$), test differences ($F_{(2,184)}=27.70$), and the group by test interaction ($F_{(6,184)}=4.08$) were statistically significant. Therefore, the simple main effects were tested to determine which factors influenced the results.

Table 5 displays the analysis of the simple main effects in Test (A). The results show that group differences were statistically significant at

Table 5 : Analysis of the simple main effects in Test (A)

	SS	df	MS	F	p
Groups at Pre-test	11.18	3	3.73	0.59	ns
S at Pre-test	581.45	92	6.32		
Groups at Post-test 1	179.68	3	59.89	13.58	$<.05$
S at Post-test 1	405.79	92	4.41		
Groups at Post-test 2	30.29	3	10.10	2.30	$<.10$
S at Post-test 2	403.95	92	4.39		
Tests in Group A	52.86	2	26.43	8.26	$<.05$
Tests in Group B	168.75	2	84.38	26.38	$<.05$
Tests in Group C	30.78	2	15.39	4.81	$<.05$
Tests in Group Z	3.51	2	1.75	0.55	ns
S x Tests	558.44	184	3.20		

$F_{critical(3,92)}=2.68(p<.05)$; $2.13(p<.10)$; $F_{critical(2,184)}=3.00$

Post-test 1 ($F_{(3,92)}=13.58$). Group differences were not significant at Post-test 2 ($p>.05$), but there existed a trend toward statistical significance ($F_{(3,92)}=2.30$, $p<.10$; $F_{critical(3,92)}=2.13$). It was also found that test differences were significant in Groups A, B, and C, respectively ($F_{(2,184)}=8.26$, $F_{(2,184)}=26.38$, $F_{(2,184)}=4.81$).

Multiple comparisons of the simple main effects were made to determine which levels were different from each other, using Fisher's LSD. The results of between-group comparisons of means at Post-tests 1 and 2 are shown in Table 6, whereas the results of between-test comparisons of means in Groups A, B, and C are displayed in Table 7. As shown in Table 6, Group B significantly outperformed Groups A, C, and Z in Post-test 1. The same result was obtained in Post-test 2, as displayed in Table 6. Accordingly, it is concluded that the treatment provided to Group B (explicit metalinguistic information) was more effective for one month than the other treatments (Groups A and C) and no treatment (Group Z). The null hypothesis (H1) was not upheld; H2 was supported in that the

Table 6 : Multiple comparisons of groups at Post-tests 1 and 2 in Test (A)

Mean	Group	A	B	C	Z
Post-test 1					
11.21	A				
13.88	B	−5.17**			
11.04	C	0.32	5.49**		
10.25	Z	1.86	7.02**	1.53	
Post-test 2					
10.88	A				
12.00	B	−2.18*			
10.88	C	0.00	2.18*		
10.50	Z	0.73	2.91**	0.73	

**p<.01, *p<.05

Table 7 : Multiple comparisons of tests in Groups A, B, C in Test (A)

Mean	Test	Pre-test	Post-test 1	Post-test 2
Group A				
9.25	Pre-test			
11.21	Post-test 1	−3.79**		
10.88	Post-test 2	−3.15**	0.65	
Group B				
10.13	Pre-test			
13.88	Post-test 1	−7.26**		
12.00	Post-test 2	−3.63**	3.63**	
Group C				
9.58	Pre-test			
11.04	Post-test 1	−2.82**		
10.88	Post-test 2	−2.50*	0.32	

**p<.01, *p<.05

experimental groups outperformed the control group, and more precisely H3 was confirmed by the data because the group receiving explicit metalinguistic information did better than the other groups.

As illustrated in Table 7, in Group A the scores on Post-tests 1 and 2 were significantly better than those on the Pre-test. That is, the effects of treatment for Group A continued over one month. In Group B, Post-tests 1 and 2 differed from the Pre-test, and Post-test 1 was different from Post-test 2; therefore, the effects of treatment lasted over one month, but the treatment had a greater impact on the learning of grammatical knowledge in Post-test 1 than in Post-test 2. In Group C, the scores in Post-tests 1 and 2 were significantly better than those in the Pre-test; the effects of treatment provided to Group C lasted over one month. Therefore, H5 was supported in that the experimental groups responded better in Post-tests 1 and 2 than in the Pre-test.

Post-test 3 was given to Group A (n=19) one year after treatment. Table 8 shows the means and standard deviations on Test (A). As demonstrated in Table 9, the results of a one-way repeated-measures ANOVA demonstrated that there was no statistically significant difference between tests ($F_{(3,54)}=1.75$, ns).

Table 8 : Means and standard deviations in Group A on Test (A)

Test	n	Mean	SD
Pre-test	19	9.74	3.36
Post-test 1	19	11.26	2.33
Post-test 2	19	11.00	1.76
Post-test 3	19	10.42	2.39

Table 9 : Results of a one-way repeated-measures ANOVA in Group A on Test (A)

	SS	df	MS	F	p
Between subjects	191.16	18	10.62		
Within Subjects	295.00	57			
Between Groups	26.16	3	8.72	1.75	.1675
Error	268.84	54	4.98		
Total	486.16	75			

$F_{critical(3,54)} = 2.76$

3.2. Test (B) in the Main experiment

Test (B) was worth 10 points. Table 10 shows the means and standard deviations by group in the Pre-test. Table 11 displays the results of a one-

Table 10 : Means and standard deviations by group in the Pre-test

Group	n	Mean	SD
A	24	4.67	1.74
B	24	4.63	1.28
C	24	4.96	1.60
D	24	5.42	1.10

Table 11 : Results of one-way repeated-measures ANOVA in the Pre-test

	SS	df	MS	F	p
Between Groups	9.58	3	3.19	1.52	.2154
Within Groups	193.75	92	2.11		
Total	203.33	95			

$F_{critical(3,92)} = 2.68$

way repeated-measures ANOVA in the Pre-test. The results indicate that group differences were not significant ($F_{(3,92)}=1.52$, ns). Accordingly, it may be correct to claim that any comparative effects due to treatment were not related to prior knowledge or language ability of any one group. In addition, the sufficiently low scores on the Pre-test revealed that there was room for improvement that would take place after treatment.

Table 12 shows the means and standard deviations by group and test in Test (B). The means of correct answers are illustrated in Figure 3.

Table 13 demonstrates the results of a two-way repeated-measures ANOVA in Test (B). It was revealed that the group differences ($F_{(3,92)}=3.69$), the test differences ($F_{(2,184)}=6.80$), and the group by test interaction ($F_{(6,184)}=6.38$) were significant. Therefore, the simple main effects

Table 12 : Means and standard deviations by group and test in Test (B)

Group	n	Mean	SD
Pre-test			
A	24	4.67	1.74
B	24	4.63	1.28
C	24	4.96	1.60
Z	24	5.42	1.10
Post-test 1			
A	24	5.54	1.35
B	24	6.33	0.96
C	24	4.63	1.58
Z	24	5.33	1.17
Post-test 2			
A	24	4.67	1.76
B	24	5.88	1.11
C	24	4.46	1.53
Z	24	5.63	1.10

Figure 3 : Means of correct answers in Test (B)

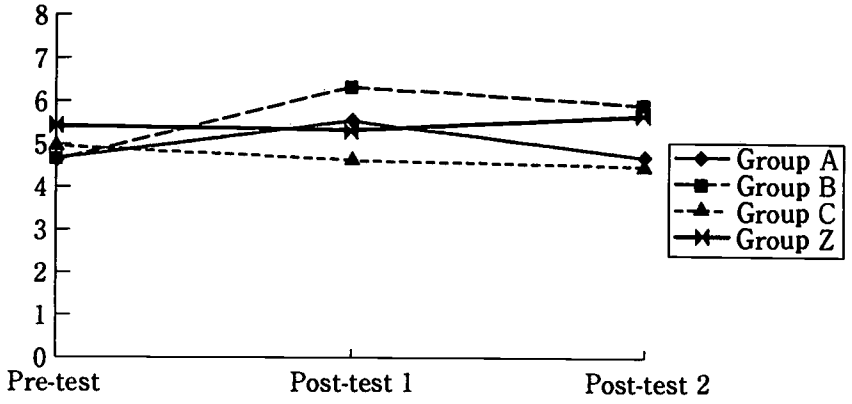


Table 13 : Results of a two-way repeated-measures ANOVA in Test (B)

	SS	df	MS	F	p
Between subjects	376.64	95			
Groups	40.45	3	13.49	3.69	.0147
Subjects within groups	336.18	92	3.65		
Within Groups	245.33	192			
Tests	14.15	2	7.07	6.80	.0014
Groups x tests	39.83	6	6.64	6.38	<.0001
Tests x Sub W. groups	191.36	184	1.04		
Total	621.97	287			

$F_{critical(3,92)}=2.68$; $F_{critical(2,184)}=3.00$; $F_{critical(6,184)}=2.10$

were tested to determine which factors influenced the results.

Table 14 demonstrates the analysis of the simple main effects in Test (B). The results show that the differences between groups at Post-tests 1 and 2 were significant and that the test differences in Groups A and B were significant.

Multiple comparisons of the simple main effects were made to determine which levels differed from each other, using Fisher's LSD. The

Table 14 : Analysis of the simple main effects in Test (B)

	SS	df	MS	F	p
Groups at Pre-test	9.56	3	3.19	1.45	ns
S at Pre-test	202.46	92	2.20		
Groups at Post-test 1	35.26	3	11.75	6.82	$<.05$
S at Post-test 1	158.63	92	1.72		
Groups at Post-test 2	35.27	3	11.76	5.70	$<.05$
S at Post-test 2	189.67	92	2.06		
Tests in Group A	12.11	2	6.06	5.82	$<.05$
Tests in Group B	37.24	2	18.62	17.90	$<.05$
Tests in Group C	3.10	2	1.55	1.49	ns
Tests in Group Z	1.14	2	0.57	0.55	ns
S x Tests	191.36	184	1.04		

$F_{critical(3,92)}=2.68$; $F_{critical(2,184)}=3.00$

Table 15 : Multiple comparisons of groups at Post-tests 1 and 2 in Test (B)

Mean	Group	A	B	C	Z
Post-test 1					
5.54	A				
6.33	B	-2.69^{**}			
4.63	C	3.11^{**}	5.80^{**}		
5.33	Z	0.71	3.40^{**}	-2.41^{*}	
Post-test 2					
4.67	A				
5.88	B	-4.10^{**}			
4.46	C	0.71	4.81^{**}		
5.63	Z	-3.26^{**}	0.85	-3.96^{**}	

$^{**}p<.01$, $^{*}p<.05$

results of between-group comparisons of means in Post-tests 1 and 2 are displayed in Table 15, while Table 16 shows the results of between-test comparisons of means in Groups A and B. At Post-test 1, as shown in Table 15, Group B significantly outperformed Groups A, C, and Z, and Groups A and Z did significantly better than Group C. At Post-test 2, Group B significantly outperformed Groups A and C, and Group Z did better than Groups A and C. Therefore, it is concluded that the treatment for Group B was more effective over one month than the treatments for Groups A and C. However, Groups A and Z showed instability of grammatical knowledge demonstrated in Post-tests 1 and 2. The results reveal that the null hypothesis (H1) was not supported, and H2 was partially upheld in that the treatment was beneficial in inducing a positive learning effect. H3 was supported in that the group receiving explicit metalinguistic information outperformed the other groups.

As shown in Table 16, in Group A the scores on Post-test 1 were significantly better than those on the Pre-test and Post-test 2, whereas in Group B the scores on Post-tests 1 and 2 outperformed those on the Pre-test. It was discovered that there existed only temporary effects of

Table 16 : Multiple comparisons of tests in Groups A and B in Test (B)

Mean	Test	Pre-test	Post-test 1	Post-test 2
Group A				
4.67	Pre-test			
5.54	Post-test 1	−2.97**		
4.67	Post-test 2	0.00	2.97**	
Group B				
4.63	Pre-test			
6.33	Post-test 1	−5.80**		
5.88	Post-test 2	−4.25**	1.56	

**p<.01, *p<.05

treatment for Group A. In Group B, however, the effects of treatment lasted over one month. H5 was partially upheld in that two experimental groups out of three did significantly better in Post-test 1 than in the Pre-test.

Post-test 3 was given to Group A (n=19) one year after treatment. Table 17 shows the means and standard deviations on Test (B). The results of a one-way repeated-measures ANOVA, shown in Table 18, demonstrated that there was a statistically significant difference between tests ($F_{(3,54)}=3.38$).

Multiple comparisons of tests in Group A on Test (B) were made in order to decide which levels differed from each other, using Fisher's LSD (see Table 19). The results show that the scores in Post-test 1 significant-

Table 17 : Means and standard deviations in Group A on Test (B)

Test	n	Mean	SD
Pre-test	19	4.74	1.91
Post-test 1	19	5.68	1.45
Post-test 2	19	4.42	1.84
Post-test 3	19	4.95	1.27

Table 18 : Results of a one-way repeated-measures ANOVA in Group A on Test (B)

	SS	df	MS	F	p
Between subjects	105.79	18	5.88		
Within Subjects	104.00	57			
Between Groups	16.42	3	5.47	3.38	.0248
Error	87.58	54	1.62		
Total	209.79	75			

$F_{critical(3,54)}=2.76$

Table 19 : Multiple comparisons of tests in Group A on Test (B)

Mean	Test	Pre-test	Post-test 1	Post-test 2	Post-test 3
4.74	Pre-test				
5.68	Post-test 1	−2.29*			
4.42	Post-test 2	0.76	3.06**		
4.95	Post-test 3	−0.51	1.78	−1.27	

**p<.01, *p<.05

ly outperformed those in the Pre-test and Post-test 2. It was concluded that the treatment provided to Group A had only an immediate effect on the learning of grammatical knowledge.

4. Discussion

In Test (A) of the Main experiment, it was discovered that the treatment provided to Group B (positive evidence and negative evidence with explicit metalinguistic information) was more effective for one month than the other treatments to Group A (positive evidence), to Group C (explicit response rejection and positive evidence (modeling)), and to Group Z (no treatment). Furthermore, the effects of treatment for Group A continued over one month. In Group B, the effects of treatment lasted over one month, but the treatment had a greater impact on the learning of grammatical knowledge on Post-test 1 than on Post-test 2. In Group C, the effects of treatment provided to Group C lasted over one month.

In Test (B) of the Main experiment, the treatment for Group B was more effective over one month than the treatments for Groups A and C. However, Groups A and Z showed instability of grammatical knowledge in Post-tests 1 and 2. In addition, there existed only temporary effects of treatment for Group A. In Group B, however, the effects of treatment lasted over one month.

Accordingly, the result common to Tests (A) and (B) revealed that the treatment given to Group B was more effective over one month than the other treatments. This finding suggests that it may be advantageous for teachers to provide learners with both positive evidence and negative evidence with explicit metalinguistic information. The result that explicit metalinguistic information is beneficial is in accord with Carroll and Swain (1993). Another result common to Test (A) and (B) indicated that the treatment given to Group (B) had beneficial effects over one month on the learning of grammatical knowledge, and that the treatment to Group (A) had only a temporary effect. This fact indicates that the effects of instruction are durable in the case of prepositional/phrasal verbs presented as positive evidence and negative evidence with explicit metalinguistic information. Such factors as (1) opportunities for input and output of the target structure after the treatment is over, (2) the nature of the linguistic structure investigated, and (3) the learners' perception of the importance of the structure may influence the result (Ellis 1993: 17, 1994: 637-638). In this research, another factor—task requirements (the grammaticality judgment test in Test (A) or the translation test in Test (B)) might have determined the durability of instructional effects. Concerning Factor (1), after Post-test 2 was finished, the subjects reported orally that they had very few opportunities for hearing, producing, and studying prepositional/phrasal verbs during the previous month. Even if there is a possibility that they had such opportunities unconsciously, it may be plausible to state that Factor (1) was trivial in this research. With regard to Factor (2), Ellis (1994: 637-638) argued on a basis of two significant types of linguistic features that 'developmental features' (features which are constrained by developing speech-processing mechanisms and are thus acquired in a fixed order, e.g., word-order, question formation; Meisel et al. 1981) may be less susceptible to influence by input, but once acquired through instruction or through communication, they constitute stable interlanguage rules, while

the acquisition of 'variational features' (features whose development reflects variation at different rates by different learners, e.g., *be* copula; Meisel et al. 1981) may be more amenable to input but such forms may continue to be unstable in the learner's interlanguage and so easily atrophy. Prepositional/phrasal verbs are considered as variational features, since they seem not to be acquired in a strict chronological order, and the degree of simplification that learners are willing to resort to is high when the structures are prefabricated patterns (one word-order in prepositional verbs and two word-orders in phrasal verbs). Hence, the result in this research shows that variational features are amenable to instruction, as Pienemman (1984) pointed out. Furthermore, prepositional/phrasal verbs are regarded as 'syntactically simple structures,' because the former has verb-preposition combinations and the latter has two word-orders. It is discovered that the grammatical accuracy of 'syntactically simple structures' as opposed to 'syntactically complex structures' improves with instruction. Therefore, Factor (2)—the nature of the linguistic structure investigated (i.e., variational features and syntactically simple structures in this research) may have had a great impact on the durability of instructional effects.

Regarding Factor (3), the subjects reported orally that the difference between prepositional and phrasal verbs was not important for successful communication. In this research, Factor (3) was minimal because there were no communicative tasks nor little input of target prepositional/phrasal verbs in normal class.

It should be noted that such issues as the time of treatment and the amount of information given to the subjects may have influenced the results. The time of treatment allotted to groups was different (5 minutes to Groups A and B collectively; less than 1 minute to each subject in Group C; no minutes to group Z), and that the amount of information given may have differed between groups. The most informative type of treatment provided to Group B, consisting of a detailed, complete, and

accurate grammatical description, might have been a key factor in determining the effects of instruction.

Post-test 3 of both Tests (A) and (B) in the Main experiment was given respectively to Group A (n=19) one year after treatment. On Test (A) positive evidence did not have significant gains in grammatical knowledge, whereas on Test (B) it had only an immediate effect on the learning. Therefore, task requirements may have had an impact on the results: producing sentences by translation could lead more easily to retaining grammatical knowledge, so that the knowledge of the grammaticality judgment based on a 50% chance of responding correctly tends to be unstable.

A post-hoc analysis reveals the acquisition of phrasal verbs with a pronoun 'it' as an exception. On Test (A), 'it' matched Nos. 6 and 10, while the lexical phrasal verbs matched Nos. 2, 5, 7, 11, 12, 14, 17, and 19. Because of the unequal numbers of items in each type (2 vs 8 items), the raw scores of 'it' were weighted by a factor of four in order for each type to be worthy of 8 points. The results show that the sentences with the pronoun 'it' were easier to make a correct grammaticality judgment than the lexical phrasal verbs, as demonstrated in Table 20. It may be argued that the learners easily retain the grammatical knowledge that the pronoun precedes the particle when the object is a pronoun, since the knowledge is very simple to remember. Note that on Test (B) the analysis was not made because there existed only one test item (No. 3) of 'it' and four items in the lexical phrasal verbs.

5. Conclusion

The following major results and pedagogical implication emerged from this classroom research:

(1) The treatment provided to Group B was more beneficial over one month than the other treatments. It may be advantageous for teachers to provide learners with the most informative type of instruction consisting

Table 20 : Means and standard deviations of phrasal verbs in Test (A)

	n	Pre-test	Post-test 1	Post-test 2
Test (A)				
Phrasal verbs with it	96	3.63	3.67	3.67
SD		(3.18)	(2.94)	(3.11)
Lexical phrasal verbs	96	1.73	2.82	2.20
SD		(1.61)	(1.81)	(1.81)
t (2-tailed)		4.90	2.48	3.56
df		95	95	95
p		<.0001	.0149	.0006

of a detailed, complete, and accurate grammatical description;

(2) The treatment given to Group B had beneficial effects over one month on the learning of grammatical knowledge, and that the treatment to Group A had only a temporary effect. This fact shows that the effects of instruction are durable in the case of prepositional/phrasal verbs presented as positive evidence and negative evidence with explicit metalinguistic information. The nature of the linguistic structure investigated (i.e., variational features and syntactically simple structures in this research) may have had a great impact on the durability of instructional effects;

(3) The results of the Pre-test, and Post-tests 1, 2, 3 revealed that the provision of positive evidence on Test (A) did not have significant gains in grammatical knowledge, whereas on Test (B) it had only an immediate effect on the learning. Therefore, task requirements may have had an impact on the results—producing sentences by translation could lead more easily to retaining grammatical knowledge than a grammaticality judgment test;

(4) The phrasal verbs with the pronoun 'it' were easier to make a correct grammaticality judgment than the lexical phrasal verbs. It may be

argued that the learners easily retain the grammatical knowledge that the pronoun precedes the particle when the object is a pronoun, since the knowledge is very simple to remember.

It should be noted that this classroom research derived from the small-scale research—the number of subjects in each group: basically n=24, only two written tests with no oral test given, and no discourse-based analysis of word-order in phrasal verb constructions. In addition, the differential effects of instruction on the learning of grammatical knowledge of each verb type (prepositional or phrasal verbs) were not examined in detail because of the small numbers of items in each verb type, and the differential effects of instruction on the feedback items and the guessing items were not analyzed either, because of the time constraints. These issues should be taken into account in future experiments.

Further research should replicate this experiment on a basis of multiple-group Item Response Theory (e.g., *BILOG-MG 1.0*; Zimowski 1996), using various reception/production tasks (e.g., oral production task, picture-description task, oral interview) with different linguistic structures so as to examine what types of instruction will be beneficial for long-term retention.

Notes

*I would like to thank Sara M. Luna and anonymous reviewers for their valuable comments on an earlier version of this research.

1. Halliday (1994: 207) does not distinguish prepositional verbs from phrasal verbs. There are three kinds of phrasal verbs: (1) verb+adverb, (2) verb + preposition, and (3) verb + adverb + preposition.

2. A particle is one of adverbs in that neither of them requires an object on a syntactical level. Edmonds (1972) and Jackendoff (1973) proposed that particles should be identified as 'intransitive prepositions.' On a semantic level, most particles are place adverbs (e.g., *away*, *up*, *down*, *in*, *off*, *out*) (Leech and Svartvik 1994: 337, Shimada 1985: 7).

3. In American English, even when the object is a pronoun, the separation of the verb and the particle is optional (Konishi (ed.) 1988: 1466):

[Phrasal verb] a . The bus *ran* him *over*.
b . The bus *ran over* him.
[Prepositional verb] a .*They *ran* the bridge *over*.
b . They *ran over* the bridge.

4 . Bolinger (1971) pointed out the difference between (1a) and (1b) in the following example:

1 . (a) Sharon turned off the light.
(b) Sharon turned the light off.

Bolinger suggested that the degree of newness or importance of the direct object was a factor in determining word-order. Sentence (1a) was preferred in contexts where the direct object *the light* was truly new (or emphasized) information; sentence (1b) was preferred in contexts where the direct object had already been mentioned but was not sufficiently recent or well established as old information to merit use of the pronoun, as in *Sharon turned it off* (see Celce-Murcia 1990: 140). Chen (1986) used discourse analysis to demonstrate Bolinger's principle empirically (see Celce-Murcia 1990: 140). Such a discourse-based analysis of word-order in phrasal verb constructions needs further investigation.

Rohdenburg (1996: 150) stated that the difference between sentences (2a) and (2b) involves different information structures or different ways of highlighting or backgrounding part of the information conveyed (Creider 1979: 8, Erteschik-Shir 1979: 457-463, Halliday 1994: 207-209, Chen 1986): in (2a) the focus is on the verb, while in (2b) it is on the object phrase.

2 . (a) She put the fire out.
(b) She put out the fire.

Rohdenburg (1996: 150) stated as follows:

Hawkins (1990) took the view that the choice of the variants involved is primarily conditioned by the syntactic weight (or length) of the object. The frequency of occurrence of (2b) increases steadily with the weight of the object expression. Unstressed pronouns are restricted to (2a), whereas object phrases containing three or more than three words occur overwhelmingly in (2b). This finding is attributed to a universally valid processing strategy whose purpose is said to ensure the speedy recognition of the immediate constituent structure. In the case of (2a), an increasingly complex object expression is apt to delay the perception of the discontinuous constituent *put out*, thus making the recognition of the overall syntactic structure more and more difficult. On this interpretation, (2b) assumes a special compensatory function: it is used mainly to speed up the processing of an otherwise overly complicated predicate phrase.

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Appendix 1: Tests in the Preliminary experiment

Test (A): Write O if the sentence is grammatically correct, and write X if the sentence is not grammatically correct.

1. a. Tim takes his father after.
   b. Tim takes after his father.
2. a. Ken turned the radio on.
   b. Ken turned on the radio.
3. a. The plane took off on time
   b. The plane took on time off.
4. a. I'm looking for my shopping list.
   b. I'm looking my shopping list for.
5. a. Mary put on her coat.
   b. Mary put her coat on.
6. a. Mike ran into an old friend.
   b. Mike ran an old friend into.
7. a. I agreed with John.
   b. I agree John with.
8. a. You should ask for further information.
   b. You should ask further information for.
9. a. I'm working a new book on.
   b. I'm working on a new book.
10. a. Bill threw away it.
    b. Bill threw it away.

Test (B): Put the following into English, using the verb assigned in the parenthesis. If you can give two answers, please write them down.
[NB: Answers are given in the underlined part.]

1. トムはトムの母の世話をしている。(look/after)
   Tom looks after his mother.
2. 私がその食事代を払った。(pay/for)
   I paid for the meal.
3. 彼はそれを取り上げた。(take/up)
   I took it up.
4. このペンは私のものだ。(belong/to)

This pen belongs to me.

5．私はその会議を延期した。(put/off)

I put the meeting off./ I put off the meethig.

6．ラジオの音を下げて下さい。(turn/down)

Please turn the radio down./ Please turn down the radio.

7．私は昨日テストの準備をした。(prepare/ for)

I prepared for the test yesterday.

8．私は喫煙をやめた。(give/ up)

I gave smoking up./ I gave up smoking.

9．私はトムに電話した。(call/ up)

I called Tom up./ I called up Tom.

10．彼女はJohnのことを笑った。(laugh/ at)

She laughed at John.

Appendix 2: Tests in the Main experiment [Pre-test, Post-tests 1, 2, and 3]

Test (A): Write O if the sentence is grammatically correct, and write X if the sentence is not grammatically correct.

1．a．Tim takes his father after.
　b．Tim takes after his father.
2．a．Ken turned the radio on.
　b．Ken turned on the radio.
3．a．These red shoes don't go your green pants with.
　b．These red shoes don't go with your green pants.
4．a．I'm going to wait the next bus for.
　b．I'm going to wait for the next bus.
5．a．Mike cleaned the table up.
　b．Mike cleaned up the table.
6．a．I paid back it to the bank.
　b．I paid it back to the bank.
7．a．Mary put on her coat.
　b．Mary put her coat on.
8．a．You should ask for further information.
　b．You should ask further information for.
9．a．I'm working a new book on.
　b．I'm working on a new book.

10. a . Bill threw away it.
    b . Bill threw it away.
11. a . Mary pulled down a blind.
    b . Mary pulled a blind down.
12. a . I put a spoon back on the table.
    b . I put back a spoon on the table.
13. a . The car crashed the wall into.
    b . The car crashed into the wall.
14. a . John sorted out the letters.
    b . John sorted the letters out.
15. a . I hinted at the truth.
    b . I hinted the truth at.
16. a . The game resulted in a draw.
    b . The game resulted a draw in.
17. a . I pointed out the mistake to the manager.
    b . I pointed the mistake out to the manager.
18. a . Ken applied a job for.
    b . Ken applied for a job.
19. a . I brought up three children.
    b . I brought three children up.
20. a . John fought the rule against.
    b . John fought against the rule.

Test (B)—NB: This test in the Main experiment is the same as Test (B) in the Preliminary experiment.

Appendix 3: The test results in the Preliminary experiment, based on Item Response Theory

Item		Intercept S.E.	Slope S.E.	Threshold S.E.	Dispersion S.E.	Asymptote S.E.
1	TEST A	1.061543	.398262	−2.665437	2.510909	.000000
		.219103	.119594	.829851	.754001	.000000
2	TEST A	−.352161	.398262	.884245	2.510909	.000000
		.228278	.119594	.350167	.754001	.000000
3	TEST A	1.484640	.398262	−3.727794	2.510909	.000000
		.245322	.119594	1.145986	.754001	.000000
4	TEST A	2.215653	.398262	−5.563303	2.510909	.000000
		.315926	.119594	1.700215	.754001	.000000
5	TEST A	−.183466	.398262	.460666	2.510909	.000000
		.224388	.119594	.263602	.754001	.000000
6	TEST A	−3.059230	.398262	7.681447	2.510909	.000000
		.439657	.119594	2.348188	.754001	.000000
7	TEST A	1.538137	.398262	−3.862122	2.510909	.000000
		.248857	.119594	1.186156	.754001	.000000
8	TEST A	.669193	.398262	−1.680282	2.510909	.000000
		.203046	.119594	.543894	.754001	.000000
9	TEST A	.706210	.398262	−1.773230	2.510909	.000000
		.210452	.119594	.572563	.754001	.000000
10	TEST A	−.318155	.398262	.798859	2.510909	.000000
		.203235	.119594	.314406	.754001	.000000
1	TEST B	.251430	1.022412	−.245919	.978079	.000000
		.229922	.125065	.231882	.119642	.000000
2	TEST B	−.535783	1.022412	.524039	.978079	.000000
		.230114	.125065	.238876	.119642	.000000
3	TEST B	−2.349612	1.022412	2.298107	.978079	.000000
		.318081	.125065	.424498	.119642	.000000
4	TEST B	2.190735	1.022412	−2.142713	.978079	.000000
		.309106	.125065	.405271	.119642	.000000
5	TEST B	−1.189064	1.022412	1.162999	.978079	.000000
		.258908	.125065	.295418	.119642	.000000
6	TEST B	−1.094860	1.022412	1.070860	.978079	.000000
		.251844	.125065	.283873	.119642	.000000
7	TEST B	.867152	1.022412	−.848144	.978079	.000000
		.240500	.125065	.261923	.119642	.000000
8	TEST B	−2.626842	1.022412	2.569260	.978079	.000000
		.369425	.125065	.485022	.119642	.000000
9	TEST B	−2.188306	1.022412	2.140337	.978079	.000000
		.312363	.125065	.407574	.119642	.000000
10	TEST B	1.438610	1.022412	−1.407075	.978079	.000000
		.270782	.125065	.320854	.119642	.000000

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