

# The effect of structure-based instruction: L2A of Japanese sentential modifiers

Mamiko Akita & Kyoko Oga

## 1. Introduction

### 1.1 The effect of explicit instructions in SLA

Despite the common practice in second language (L2) classrooms to explicitly teach grammar and correct learners' errors, the role of classroom input (i.e., *direct negative evidence* such as grammar teaching and error correction) in triggering modifications in behavior in learners of Japanese as a second language is not yet clear.

Researchers such as White previously maintained that direct negative evidence is effective in L2 classrooms (White, 1990/1991, 1991). On the other hand, Schwartz and her colleagues (Schwartz, 1993; Schwartz & Gubala-Ryzak, 1992) argue that the behavior change in L2 learners was not based on the restructuring of interlanguage grammar. Rather, they suggest that the generalization was merely made on the basis of surface pattern and a separate system of learned linguistic knowledge (Schwartz, 1993). Acknowledging the possibility that parameter resetting does not occur on the basis of explicit classroom input, White argues that "this does not imply that explicit input is ineffective in second language acquisition, only that whatever it affects is not the system of UG-based principles and parameters" (White, 2003: 171). Irrespective of whether the changes in linguistic behavior of L2 learners are the result of restructuring of the interlanguage system, we too believe that the role of classroom input warrants further investigation.

It should be noted that regarding the effects of classroom input, most of the experimental studies on it were carried out with English learners. See Nunan (1999: 42-50) who discussed the effect of instruction on L2 acquisition citing over fourteen experimental studies. For example, Ellis (2001) investigated form-focused instruction and second language learning. Muranoi (2000) investigated the acquisition of English articles by Japanese learners, and found that interaction enhancement is effective. Tanaka (2001) studied Japanese college students on psychological verbs (e.g. love) and found that having two types of practice (i.e.

comprehension and production) in instruction was found to be most effective. Moreover, Norris & Ortega (2000) reported systematic procedures for research synthesis and meta-analysis to summarize finding from experimental and quasi-experimental investigations into the effectiveness of L2 instruction published between 1980 and 1998. They looked at 49 studies and found that explicit instruction is more effective than implicit ones, and focus on form is indeed effective.

As mentioned earlier, few studies on L2 learners of the Japanese language have examined quantitative data (especially using a *control* group). Among those, Koyanagi (1998) examined the effectiveness of explicit instruction on conditional sentences. In her study, she carried out an experiment with 30 English speakers (university students in the U.S.) and conducted four types of tests: grammaticality, listening comprehension, oral and (written) picture description test. Tests were conducted on three occasions: ten days before the treatment; immediately after the treatment; and two months after the treatment. There were four experimental groups depending on the treatment they received: (1) input group (explicit instruction); (2) output group (explicit instruction followed by interaction with the teacher); (3) drilling group (audiolingual drilling; no grammar instruction); (4) control group. The treatment was carried out over six sessions of 50 minute lessons which was spread out over a fortnight. She found that groups which received explicit instruction (i.e. input group and output group) sustained improvement in the delayed posttest.

As Noda et al. (2001: 225-226) states, it is important to investigate the effect of explicit instruction with various native languages (such as Japanese) examining various elements of grammar of the target language.

## 1.2 The linguistic input in Japanese language classrooms

We now examine in detail the linguistic input that Japanese language learners in L2 classrooms typically receive. Along with *positive evidence* from the teaching materials and native-speaker input from the teachers, learners often receive *direct negative evidence* in the form of *structure-based* instructions and corrective feedback. The instruction is composed of (1) an explanation of rules on the target construction and (2) explicit information regarding what is ungrammatical. The instruction also often includes oral and written exercises with a variety of classroom activities using the structures in question.

Moreover, there is *indirect negative evidence*, which helps the learners determine that certain structures or cues are absent or non-occurring. This is considered to motivate learners to reset their first language (L1) setting to the appropriate target language (TL)



(3) \*[[Taro-ga kaita-no] hon] ‘the book that Taro wrote’  
Taro-NOM wrote-\*NO book

(4) \*[[ Hanako-o shotaishita-no] hito] ‘the person that invited Hanako’  
Hanako-ACC invited-\*NO person

The aims of this study are as follows: (i) to discuss the structure of Japanese sentential modifiers with reference to Chinese; (ii) to determine whether *structure-based instruction* can effectively help learners to recognize the IP structure of sentential modifiers in Japanese, and based on the results, discuss the synergistic effect of the two *negative evidences* (i.e., *direct* and *indirect*).

## 2. The basic properties of Japanese sentential modifiers and Chinese relative clauses

In this paper, we focused on six types of Japanese sentential modifiers. They are categorized as: (i) object-gap, (ii) subject-gap, (iii) time-gap, (iv) place-gap, (v) possessor-gap, and (vi) gapless sentential modifiers, depending on what is gapped within a sentential modifier as below:

### Object-gap sentential modifier

(5) [[Taro-ga  $e_i$  kaita] hon<sub>i</sub>] ‘the book that Taro wrote’  
Taro-NOM wrote book

### Subject-gap sentential modifier

(6) [[ $e_i$  Hanako-o shotaishita] hito<sub>i</sub>] ‘the person that invited Hanako’  
Hanako-ACC invited person

### Time-gap sentential modifier

(7) [[Mary-ga  $e_i$  gakkoo-ni itta] hi<sub>i</sub>] ‘the day when Mary went to school’  
Mary-NOM school-to went day

### Place-gap sentential modifier

(8) [[Mary-ga  $e_i$  tabeta] mise<sub>i</sub>] ‘the restaurant where Mary ate’  
Mary-NOM ate restaurant

Possessor-gap sentential modifier

- (9) [[Tokyo-ni [<sub>e</sub> ie]-ga aru] gakusei<sub>i</sub>] ‘the student whose house is in Tokyo’  
Tokyo in house-NOM is student

Gapless sentential modifier

- (10) [[sakana-ga yakeru] nioi] ‘(Lit.) the smell that the fish burns’  
Fish-NOM burn smell

In this section, we will discuss the properties of Japanese sentential modifiers and Chinese relative clauses. In the present paper, the term *Japanese sentential modifiers* covers so-called “relative clauses” including a gap within the clause and relative clause-like prenominal modifiers that lack a gap within the clause.

We will first consider the syntactic properties of Japanese sentential modifiers with respect to Subjacency and reconstruction effects and examine their structure. We will then consider Chinese relative clauses and discuss the differences between Japanese sentential modifiers and Chinese relative clauses.

**2.1 The structure of Japanese sentential modifiers**

As shown in (1), repeated below, Japanese sentential modifiers are known as head-final:

- (1) [[Taro-ga <sub>e</sub> kaita] hon.<sub>i</sub>] ‘the book that Taro wrote’  
Taro-NOM wrote book

Keenan (1985: 161) points out that Japanese is a unique language in that the main verb of a “relative clause” is in the finite form. It is also important to note that neither a complementizer nor a relative pronoun appears in Japanese sentential modifiers.

Let us consider the derivation of Japanese sentential modifiers. In the cross-linguistic syntax of relative clauses, two approaches have been pursued. The one is the “adjunction” analysis that involves a null/overt operator movement within the relative clause CP that is adjoined to the N-head (Chomsky, 1977). The other one is the “raising” analysis that involves the N-head raising from within the relative clause CP (Schachter, 1973; Kayne, 1994). The question arises whether either syntactic movement is involved in the derivation of Japanese sentential modifiers.

Subjacency is known as a constraint on syntactic movement. Chomsky (1977) argues

that movement in one step crossing two bounding nodes is prohibited by Subjacency. If sentential modifiers in Japanese are derived by any kind of movement of an item from within the clause, that should obey Subjacency.

Kuno (1973: 239) points out that “relativization” of the subject from within the Japanese sentential modifier does not exhibit Subjacency effects in the following case:

- (11) [[<sub>NP</sub> [<sub>S</sub>  $e_i$   $e_j$  Kitieru] yofuku]<sub>i</sub>]-ga yogoreteiru] shinshi<sub>i</sub>  
 Wearing suit -NOM dirty gentleman  
 (Lit.) ‘The gentleman that the suit that he wears is dirty.’

In (11), *shinshi* ‘gentleman’ may seem to be extracted out of the complex noun phrase, crossing two bounding nodes, NP and S, but the example is grammatical.

In Time-gap and Place-gap sentential modifiers, the gaps seem to be of the category PP. As Murasugi (1991: 131) points out, they do not exhibit the Subjacency effects as below:

- (12) [[<sub>NP</sub> [<sub>S</sub>  $e_i$  mensetu-o  $e_j$  uketa] gakusei]<sub>i</sub>]-ga minna ukaru] hi<sub>i</sub>  
 Interview-ACC received student-NOM all pass day  
 (Lit.) ‘the day<sub>i</sub> that all of the students that received the interview  $e_i$  pass’

- (13) [[<sub>NP</sub> [<sub>S</sub>  $e_i$  mensetsu-o  $e_j$  uketa] gakusei]<sub>i</sub>]-ga minna ukaru] kaigishitsu<sub>i</sub>  
 Interview-ACC received students-NOM all pass conference-room  
 (Lit.) ‘the conference room<sub>i</sub> that all of the students that received the interview  $e_i$  pass’

Further, possessor-gap sentential modifiers do not exhibit the Subjacency effects in the following case:

- (14) [[<sub>NP</sub> [<sub>S</sub>  $e_i$  [ $e_j$  ie]-ga aru] basho]<sub>i</sub>]-ga shinsuishita] gakusei<sub>i</sub>  
 house-NOM is place-NOM flooded student  
 (Lit.) ‘the student<sub>i</sub> that the place where  $e_j$  house stands flooded’

The lack of Subjacency effects observed above indicates that there is no syntactic movement involved in the derivation of Japanese sentential modifiers.

In addition to Subjacency, it is also important to see the relation between the seemingly extracted N-head and its gap by exploring reconstruction effects regarding binding. As

pointed out by Hoji (1985), reconstruction effects regarding binding are not observed in the Japanese sentential modifier involving a bound pronoun *jibun* ‘self’:

- (15)\*[[John<sub>i</sub>-ga e<sub>j</sub> taipusita][jibun<sub>i</sub>-no ronbun]<sub>j</sub>]  
 John-NOM typed self-GEN paper  
 (Lit. ) ‘self<sub>i</sub>’s paper (that) John<sub>i</sub> typed’

This indicates that the N-head *jibun-no ronbun* ‘self-GEN paper’ can not be “reconstructed” back in the gap position within the sentential modifier. That is, the N-head is not moved in the derivation of the sentential modifier, and thus reconstruction is not available.

Based on the nonmovement properties of Japanese sentential modifiers observed above, Murasugi (1991, 2000) proposes that sentential modifiers in adult Japanese are of the category IP, not CP, and the gap is a *pro* base-generated in the position. In the case of the gapless sentential modifier, the structure is the same IP, wherein no *pro* is base-generated. The structure of Japanese sentential modifiers is as below:

### Japanese sentential modifiers

- (16) [<sub>NP</sub> [<sub>IP</sub> (*pro*) ] NP<sub>i</sub> ]

The IP is adjoined to the following N-head as an NP. Murasugi suggests that the IP and the modified NP are licensed by an “aboutness” relation (Kuno, 1973).

There may be a logical possibility that Japanese sentential modifiers are of the category CP headed by an empty C as below:

- (17)[<sub>NP</sub> [<sub>CP</sub> [<sub>IP</sub> Taro-ga *pro*<sub>i</sub> kaita] [<sub>C</sub> Ø]] [<sub>hon</sub>]<sub>i</sub>] ‘the book that Taro wrote’  
 Taro-NOM wrote book

However, Murasugi (1991, 2000) rules out the possibility by suggesting that this structure is excluded by the ECP, since the empty C is not properly governed in this structure (Kayne, 1981; Stowell, 1981). Hence, Murasugi concludes that Japanese sentential modifiers are all accounted for as of the category of IP, lacking the CP projection.

In the next section, we turn to Chinese relative clauses, which share the same head-final property with Japanese sentential modifiers, but differ in Subjacency and reconstruction effects.





differ with respect to the (non) movement properties. Aoun & Li (2003: 159) propose that the relative construction in Chinese is derived by the N-head movement from within the relative clause as a CP as illustrated below:

### Chinese relative clauses

(22) [<sub>NP</sub> [<sub>CP</sub> [<sub>IP</sub>  $t_i$  ]]] NP<sub>i</sub>]

This contrasts with the structure defended for Japanese sentential modifiers by Murasugi (1991, 2000). The structure of Chinese relative clauses is of the category CP and it involves NP-movement, whereas that of Japanese sentential modifiers is of the category IP and no syntactic movement is involved.

Having discussed the syntactic properties of Japanese sentential modifiers and Chinese relative clauses, we conclude that Japanese sentential modifiers and Chinese relative clauses differ in their categorial statuses (IP or CP), and also their (im)possibility of syntactic movement within the sentential modifiers.

Since sentential modifiers such as relative clauses are accounted for as of the category CP in many languages, the categorial status, IP, of Japanese sentential modifiers is quite unique cross-linguistically. We turn next to the question as to how the acquisition of such unique sentential modifiers proceeds in L1 and L2 Acquisition of Japanese.

### 2.3 L1 and L2 Acquisition of Japanese sentential modifiers

#### *L1A*

Murasugi (1991) reports developmental errors in the L1 acquisition of Japanese sentential modifiers. Some errors observed in her 16-month longitudinal study of Emi (2;11-4;2) are as follows:

(23)\*[[Toomorokoshi tabeteru no] butasan] 'the piggy that is eating the corn'  
 Corn eating\*NO piggy

(24)\*[[Papa-ga kaita no] tako-no e] 'the picture of an octopus that Father drew'  
 Father-NOM drew\*NO octopus-GEN picture

The question that arises here is what is the category of the overgenerated *no* in these errors.

Murasugi proposes that there are three types of *no* in Japanese: (i) *no* as a genitive case marker, (ii) *no* as a pro-form that corresponds to *one* in English, and (iii) *no* as C, corresponding to *that* in English. She claims that the overgenerated *no* by Japanese-speaking children is C. She argues that that there is a parametric difference between the structure of sentential modifiers in Japanese and that of relative clauses in, for instance, English, and Japanese-speaking children form the initial hypothesis that a Japanese sentential modifier is CP, whose head C is realized as *no*. However, at a later stage, after attaining the knowledge that Japanese sentential modifiers are of the category IP, rather than CP, they cease to generate *no* in sentential modifiers.

### **L2A**

It is interesting to note that L2 learners of Japanese construct the same type of errors associated with *no* such as (3) and (4). We argue that L2 learners of Japanese form the same (incorrect) initial hypothesis that Japanese sentential modifiers are of the category CP as Japanese-speaking children do.

In the event that there is no *positive evidence* that can make the L2 learners aware of their incorrect hypothesis in their input, learners will presumably be required to make use of *indirect negative evidence* (i.e., absence of *no*). As discussed earlier in the introduction, learners may experience difficulty in using *indirect negative evidence* without the help of *direct negative evidence*; therefore, those who do not receive explicit instructions are in disadvantage to recognize that Japanese sentential modifiers are not CP. Hence, we hypothesize the following: L2 learners of Japanese who do not receive explicit instructions regarding the IP structure of Japanese sentential modifiers can not successfully improve their interlanguage competence, and vice versa.

To investigate the effect of structure-based instructions on Japanese sentential modifiers, a *pretest-treatment-posttest* design study was carried out. Thirty-two Chinese students enrolled in a Japanese university participated in the study where we had two experimental groups: an *instructed* group (N = 19) and a control group (N = 13). In section 3, the treatment given to each group will be outlined. To measure the acquisition of Japanese by Chinese learners, two types of tests were conducted: the acceptability test (reported in section 4) and a production test (reported in section 5).

### 3. Treatment: structure-based instruction on Japanese sentential modifiers

During the one-month treatment (10 min × 8 sessions), identical teaching material was used for both groups in order to standardize the input received by the learners. The sentential modifiers discussed in this paper were introduced in the following order: object-gap > subject-gap > time-gap > place-gap > possessor-gap > gapless. The aforementioned six types of sentential modifiers were also tested in the pretest and posttest, which were carried out a week before and after the treatment.

#### 3.1 Treatment given to the instructed group

The instructed group received *structure-based* training, which included oral/written exercises and corrective feedback, by way of treatment in order to produce correct clauses. With regard to the *control* group, learners participated in similar comprehension and production exercises; however, they did not receive explicit instructions regarding target constructions. Hereinafter provided are sample lessons for both experimental groups taking the example of subject-gap sentential modifiers.

For example, the treatment for subject-gap sentential modifiers given to the instructed group proceeded as follows. A clause given in (25) was chosen as a target structure for this type of modifier, where the noun *gakusei*, i.e., ‘student,’ is modified by the subject-gap sentential modifier *nihongo-o benkyoshiteiru*, i.e., ‘Japanese-ACC studying’:

#### Subject-gap sentential modifier

(25) Sumisu-san-wa [[*e* nihongo-o benkyoshiteiru] *gakusei*] desu.

Smith-Mr.-TOP Japanese-ACC studying student is

‘Mr. Smith is a student who is studying Japanese.’

With regard to the instructed group, one of the tasks given by the instructor to the learners was an integration task, where they were asked to transform the sentence provided and integrates it into the target construction. First, the instructor provided the learners with a target construction that contained blanks for prenominal modifiers, as shown in (26):

**Target construction**

- (26) Sumisu-san-wa \_\_\_\_\_ gakusei desu.  
Smith-Mr.-TOP student is  
'Mr. Smith is a student \_\_\_\_\_.'

Second, the instructor provided a sentence that was required to be integrated into the blank and was as follows:

- (27) Sumisu-san-wa amerika-kara kimashita.  
Smith-Mr.-TOP America-from came  
'Mr. Smith came from America.'

Next, the instructor instructed the learners to integrate the underlined portion of (27) into the blank within the target construction after transforming the verb *kimashita*, i.e., 'came,' into its plain form *kita* as follows:

**Learner:**

- (28) Sumisu-san-wa amerika-kara kita gakusei desu.  
Smith-Mr.-TOP America-from came student is  
'Mr. Smith is a student who came from America.'

When the learners produced correct sentences, as shown in (28), the instructor provided positive feedback and ensured that the correct sentences were repeated several times. When the learners produced incorrect sentential modifiers associated with the unnecessary use of *no*, explicit negative feedback was provided and helped them produce the correct clause. The learners repeated the corrected sentences several times. Oral exercises were followed by written exercises. On completion of the integration task, the instructor directed the learners to describe their classmates and teachers by using the subject-gap sentential modifier.

**3.2 Treatment given to the control group**

For the control group, learners were asked to answer the instructor's quizzes entitled *Yumeijin Kuizu*, i.e., 'Celebrities Quiz,' which were based on renowned people around the world. The instructor ensured that the quizzes comprised subject-gap sentential modifiers. The session proceeded as follows:

**Instructor:**

- (29) Harii pottaa-o      kaita sakka -wa    dare desu ka?  
Harry Potter-ACC wrote novelist-TOP who is Q  
'Who is the novelist that wrote *Harry Potter*?'

**Learner:**

- (30) J. K. Rooringu desu.  
J. K. Rowling is  
'It is J. K. Rowling.'

During the session, the learners appeared to understand the questions and enjoyed answering them. After the instructor finished quizzing the learners, they were asked to quiz each other about the celebrities known to them. They produced several quizzes themselves, some of which contained subject-gap sentential modifiers associated with the unnecessary use of *no*; however, the instructor restrained from providing any explicit feedback regarding the constructions used during their quizzes.

#### 4. The acceptability test

##### 4.1 Methodology

In order to test the learners' perceptual abilities, a 6-point scale (0-1-2-3-4-5) acceptability test was conducted by our collaborator at a Japanese university in Chiba prefecture. There were four grammatical and four ungrammatical sentences. Grammatical sentences included correct target sentential modifiers, while the sentential modifiers within ungrammatical sentences were associated with the unnecessary *no*. Ungrammatical sentences were included to test whether the informants possessed the ability to reject the incorrect sentential modifiers containing the unnecessary *no*. Therefore, the total scores were 120 points for both grammatical and ungrammatical sentences. Twelve distracter sentences were also included in the test.

##### 4.2 Results

Since the informants were not randomly selected, Mann Whitney test, a nonparametric between groups form of T-test, was performed to compare the two groups in order to determine whether there was a significant difference among the groups. It must be noted that

the level of improvement is indicated by the number of asterisks in the figures/tables: the significance level of  $p < 0.05 = *$ ,  $p < 0.01 = **$ ,  $p < 0.001 = ***$ , and (ns)=not significant.

It was found that no significant differences were observed among the groups either in the pretest or the posttest for grammatical and ungrammatical sentences, as shown in Table 1.

Table 1. Comparisons Among the Two Experimental Groups: acceptability test

Test phase	Type of sentences	P value
Pretest	Grammatical	P = 0.6870 (ns)
	Ungrammatical	P = 0.5911 (ns)
Posttest	Grammatical	P = 0.4659 (ns)
	Ungrammatical	P = 0.8626 (ns)

Posttest changes in both experimental groups were then calculated. Wilcoxon matched-pairs signed-rank test, a non-parametric repeated measure matched T-test, was performed to evaluate the degree of changes as well as the direction of the differences.

Regarding the grammatical sentences, both groups exhibited improvement in correctly accepting grammatical sentences as shown in Table 2 and Figure 1.

Table 2. Significance Level of Perceptual Abilities: pretest vs. posttest

Type of sentences	Experimental groups	P value
Grammatical	Control group	P = 0.0171*
	Instructed group	P = 0.001***
Ungrammatical	Control group	P = 0.1748 (ns)
	Instructed group	P = 0.0238*

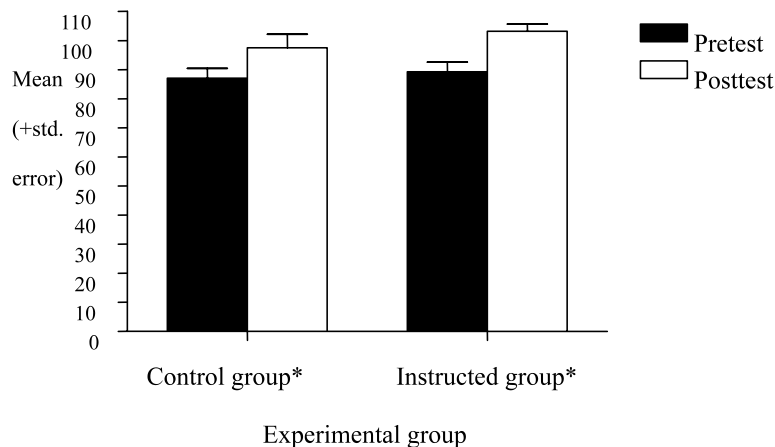


Figure 1. Improvement in the acceptability test: grammatical sentences

Ungrammatical sentences were included to test whether the informants possessed the ability to reject the incorrect sentences containing the unnecessary *no*. While the control group did not show improvement in rejecting the ungrammatical sentences, the instructed group was found to be successful in rejecting them, i.e. informants successfully placed lower points for ungrammatical sentences in the posttest, therefore the mean score of the group ended in a lower score compared to the pretest, as shown in Figure 2 and Table 2.

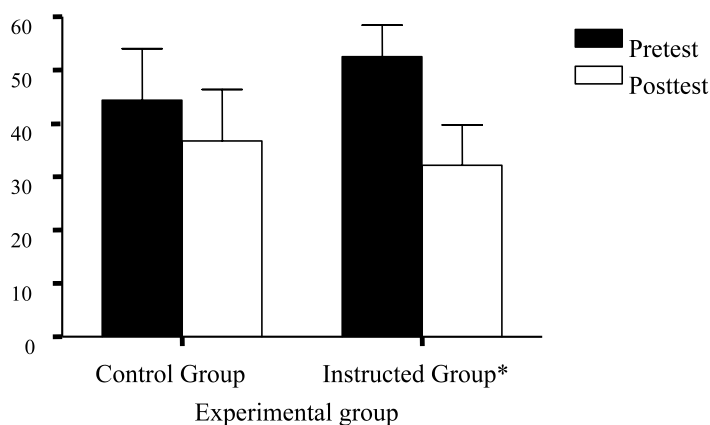


Figure 2. Improvement in the acceptability test: ungrammatical sentences

## 5. The Production test

### 5.1 Methodology

The same collaborator conducted the production test by showing the informants a number of picture cards. The informants were instructed to write down their answers on an answering sheet. The test was composed of four sentences for each sentential modifier type. Hence, there were twenty-four test sentences in total. We also had twelve distracter sentences. For example, the collaborator shows the informants a picture of a classroom and asks what kind of room it is. The informants answer to the question using a place-gap sentential modifier:

- (31) [[gakusei-ga e<sub>i</sub> benkyoo-suru] heya<sub>i</sub>] desu.  
 Student-NOM study-do room is  
 ‘the room where the students study’

The obtained data were scored and evaluated by one of the investigators, with the help of a research assistant majoring in syntax. The informants’ productions were scored as: (1) *grammatical*, when the informants produced a target construction; (2) *ungrammatical*, when an informant produced a sentential modifier with the unnecessary *no*; (3) *invalid*, when an informant did not produce a target construction despite several attempts to induce this production by the investigator.

### 5.2 Results

Since the informants were not randomly selected, Mann Whitney test, a nonparametric between groups form of T-test, was performed to compare the two groups in order to determine whether there was a significant difference among the groups. It must be noted that the level of improvement is indicated by the number of asterisks in the tables: the significance level of  $p < 0.05 = *$ ,  $p < 0.01 = **$ ,  $p < 0.001 = ***$ , and (ns)=not significant.

It was found that no significant differences were observed among the groups either in the pretest or the posttest, as shown in Table 3.

Table 3. Comparisons Among the Two Experimental Groups: production test

Test phase	P value
Pretest	P = 0.5901 (ns)
Posttest	P = 0.2178 (ns)



Posttest changes in both experimental groups were then calculated. Wilcoxon matched-pairs signed-rank test, a non-parametric repeated measure matched T-test, was performed to evaluate the degree of changes as well as the direction of the differences.

It was found that while the control group did not exceed the significance level of  $p < 0.05$ , the instructed group exhibited significant improvement as shown in Table 4 and Figure 3.

Table 4. Significance Level of Production Abilities: pretest vs. posttest

Experimental group	P value
Control group	P = 1.0625 (ns)
Instructed group	P = 0.0353*

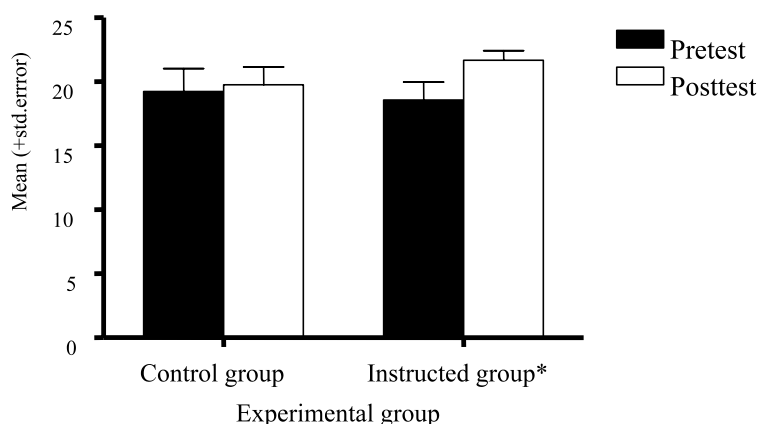


Figure 3. Improvement in the production test: pretest vs. posttest

## 6. Discussion and conclusion

An experimental study was conducted to investigate whether *structure-based instruction* could effectively help L2 learners of Japanese recognize and produce the IP structure of sentential modifiers.

The results of the acceptability test according to sentential modifier type can be summarized as follows. Regarding grammatical sentences, both groups exhibited improvement in correctly accepting grammatical sentences (Table 2 & Figure 1), while only the instructed group showed improvement in rejecting ungrammatical sentences (Table 2 & Figure 2). We suggest that explicit instruction is particularly helpful in providing learners with the linguistic knowledge required to reject ungrammatical structures, thus reshaping learners'

interlanguage closer to native speakers. Regarding the production abilities, it was found that only the instructed group exhibited significant improvement (Table 4 & Figure 3).

The results of the study can provide pedagogical evidence to indicate that explicit *structure-based instructions* were effective in modifying the linguistic behavior of learners. It should be noted that when we carried out a pilot study in 2004 spring (see Oga & Akita 2005 a, b for details of the study), we collected oral data with various language backgrounds and obtained similar results with learners who received explicit instruction.

However, several factors may have affected the outcome of the study and the results should be interpreted with caution.

To begin with, the number of test sentences per type was extremely limited, with only four sentences per type and only twenty-four grammatical sentences in total. Since the tests were conducted during class hours, together with twelve distracter sentences, this was the maximum number of sentences that we could include in the performed two tests.

One may also question the validity of writing down the answers on the answering sheet instead of producing the answers orally. This may have allowed informants to monitor their answers and resulted in better scores, comparing to answering orally. We argue that since all informants were asked to perform the same test, the emerged pattern of the results was not expected to change.

Furthermore, one may argue that the changes in behavior in the instructed groups may be short-term (see for example, Schwartz, 1993 and Schwartz & Gubala-Ryzak, 1992). A follow-up study is required to examine whether the treated groups of this study can sustain their post-instructional behavior after a certain period. In fact, we did plan to carry out a delayed posttest half a year after the posttest, however was unable to do so due to the coordinators' health situation.

Coming back to the role of classroom input, we argue that the results of the study provide educational evidence that explicit *structure-based instruction* was effective in improving learners' interlanguage competence. The fact that only the instructed group exhibited improvement in production shows that classroom input was indeed effective. In contrast, the control group was exposed to *positive evidence* and *indirect negative evidence* from the teaching materials and various classroom activities. The difference in performances between the two groups implies that the *direct negative evidence* provided to the instructed group effectively helped them to make use of the *positive evidence* and *indirect negative evidence* to modify their linguistic behavior. Therefore, we suggest that the two negative evidences (i.e., *direct* and *indirect*) have a synergistic effect in changing the linguistic behavior of L2 learners.

## 7. References

- Akita, M. (2005). The effectiveness of a prosody-oriented approach in L2 perception and production. In A. Brugos, M. R. Clark-Cotton & S. Ha (Eds.) *Proceedings of the 29<sup>th</sup> Annual Boston University Conference on Language Development*, 1, 24-36.
- Akita, M. (2006). Global Foreign Accent and classroom input in L2 perception and production. In D. Bamman, T. Magnitskaia & C. Zaller. (Eds.) *Proceedings of the 30<sup>th</sup> Annual Boston University Conference on Language Development*, 1, 1-14.
- Aoun, J. & Li, Y.-H. A. (2003). *Essays on the Representational and Derivational Nature of Grammar*. Cambridge, MA: MIT Press.
- Chomsky, N. (1977). *On Wh-movement*. In P. W. Culicover, T. Wasow & A. Akmajian (Eds.) *Formal Syntax*. New York, NY: Academic Press, 71-132.
- Chomsky, N. (1981). *Lectures on Government and Binding*. Dordrecht: Foris.
- Ellis, R. (2001). *Form-Focused Instruction and Second Language Learning*. Malden, MA: Blackwell.
- Hoji, H. (1985). *Logical Form Constraints and Configurational Structures in Japanese*. Ph.D. diss., University of Washington.
- Huang, C.-T. J. (1982). *Logical Relations in Chinese and the Theory of Grammar*. Ph.D. diss., MIT.
- Kayne, R. S. (1981). ECP Extensions. *Linguistic Inquiry* 12, 93-133.
- Kayne, R. S. (1994). *The Antisymmetry of Syntax*. Cambridge, MA: MIT Press.
- Keenan, E. L. (1985). Relative Clauses. In T. Shopen (Ed.) *Language Typology and Syntactic Description II: Complex Constructions*. Cambridge: Cambridge University Press, 141-170.
- Kitagawa, C. & Ross, C. (1983). Prenominal modification in Chinese and Japanese. *Linguistic Analysis*, 9, 19-53.
- Koyanagi, K. (1998). Jyookunbun shuutoku ni okeru instruction no kooka. (The effect of instruction on the acquisition of Conditionals) *Dainigengo Toshiteno Nihongo Noshuutoku Kenkyuu*, 2, 1-26.
- Kuno, S. (1973). *The Structure of the Japanese Language*. Cambridge, MA: MIT Press.
- Lightfoot, D. (1999). *The Development of Language: Acquisition, Change and Evolution*. Oxford: Blackwell.
- Muranoi, H. (2000). Focus on form through interaction enhancement: integrating formal instruction into a communicative task in EFL classrooms. *Language Learning*, 50, 617-673.
- Murasugi, K. (1991). *Noun Phrases in Japanese and English: A Study in Syntax, Learnability*

- and Acquisition*. Ph.D. diss., University of Connecticut.
- Murasugi, K. S. (2000). Japanese Complex Noun Phrases and the Antisymmetry Theory. In R. Martin, D. Michaels & J. Uriagereka (Eds.) *Step by Step*. Cambridge, MA: MIT Press, 211-234.
- Noda, H., Sakoda, K., Shibuya, K. & Kobayashi, N. (2001). *Nihongo Gakushuusha no Bunpoo Shuutoku*. Tokyo: Taishuukan Shoten.
- Norris, J. M., & Ortega, L. (2000). Effectiveness of L2 Instruction: a research synthesis and quantitative meta-analysis. *Language Learning*, 50, 417-528.
- Nunan, D. (1999). *Second Language Teaching & Learning*. Boston, MA: Heinle & Heinle.
- Oga, K. & Akita, M. (2005a). Prenominal modification in L2 learners of Japanese. *Journal of Hokkaido University of Education (Humanities and Social Sciences)*, 55 (2), 1-16.
- Oga, K. & Akita, M. (2005b). The acquisition of the IP structure of relative clauses in L2 learners of Japanese. *Proceedings of the 2004 International Symposium on Applied Linguistics and Language Teaching Beijing-Shanghai*, 544-549.
- Schachter, P. (1973). Focus and Relativization. *Language*, 49, 19-46.
- Schwartz, B. D. (1993). On explicit and negative data effecting and affecting competence and 'linguistic behavior'. *Studies in Second Language Acquisition*, 13, 386-402.
- Schwartz, B. D. & Gubala-Ryzak, M. (1992). Learnability and grammar reorganization in L2A: against negative evidence causing unlearning of verb movement. *Second Language Research*, 8, 1-38.
- Stowell, T. (1981). *Origins of Phrase Structure*. Ph.D. diss., MIT.
- Tanaka, T. (2001). Comprehension and production practice in grammar instruction: does their combined use facilitate second language acquisition? *JALT Journal*, 23, 6-30.
- Trahey, M. & White, L. (1993). Positive evidence and preemption in the second language classroom. *Studies in Second Language Acquisition*, 15, 181-204.
- White, L. (1990/1991). The verb-movement parameter in second language acquisition. *Language Acquisition*, 337-360.
- White, L. (1991). Adverb placement in second language acquisition: some effects of positive and negative evidence in the classroom. *Second Language Research*, 7, 133-161.
- White, L. (2003). *Second Language Acquisition and Universal Grammar*. Cambridge: Cambridge University Press.
- Wu, X-Z. Z. (2001). *Grammaticalization and the Development of Functional Categories in Chinese*. Ph.D. diss., University of Southern California.

## Acknowledgements

Firstly, we wish to express our sincere gratitude to Ms. Yoshie Nakazora, our research coordinator, for carrying out the labor intensive data collection. She has played a crucial role in the present research and we are ever so grateful for her help. We wish to thank the Chinese students for their contribution to this study. Special thanks go to Ms. Izumi Nishimura for her assistance in the data entry; Tomoharu Orie for consistent encouragement. An earlier version of this paper was presented at the Sixth International Symposium on Processability, Second Language Acquisition and Bilingualism (2006 September, Malta). We appreciate the audience for their feedback.

## NOTES

- 1 In Aoun & Li's analysis, the categorical status of *de* remains open. *De* occurs in the pattern like [XP *de* NP]. Some linguists claim that *de* is the head C of the relative clause (See Wu 2001). Aoun & Li (2003: 146 fn.12), however, point out the fact that *de* can form a constituent with the preceding XP and the sequence of two [XP-*de*] can be coordinated as below (Aoun & Li 2003, 150):

- (i) [zhuyao *de*] erqie [women yijing taolun-guo *de*] shiqing  
main DE and we already discuss-ASP DE matter  
'the main matters that we have discussed'

From the above observation, Aoun & Li suggest that *de* cannot head a projection.