

Competence and Performance in English Learning

— With a Focus on the Difference between Japanese Learners and Native Speakers —

Hironobu MATSUOKA

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English is a language with a parameter of strict verb-object adjacency. In this study research was made on the acquisition of the adjacency, targeting at the difference between Japanese learners of two different proficiency levels and native speakers with respect to three factors: grammatical competence, linguistic knowledge, and linguistic performance. The results clearly show the difference between Japanese learners and native speakers: regarding the reaction time for answering the grammaticality judgment task correctly, native speakers are not affected by the sentence kind, i.e. grammatical or ungrammatical, nor by the number of adjuncts inserted between verb and object. However, regarding the accuracy of answers, the differences between the Japanese and native speakers are not so big as those on the reaction time in both the sentence kind and the number of adjuncts.

The results of this study suggest that research on the language acquisition should include not only linguistic knowledge but also linguistic performance in its models, and that it be necessary to design teaching and evaluating methods attaching great importance to the reaction time for processing and judging English sentences, which hints at what should be improved in the teaching of English in Japan.

Key Words: Strict adjacency, Linguistic knowledge, Linguistic performance

Introduction

In Japan there has been a tendency that English teachers attach more importance to accuracy than to fluency, which might be said to be oriented to the entrance examinations of high schools and universities. But recently some people have come to assert that fluency should be regarded as more important in English learning, especially for the purpose of communication; in other words, there has arisen more conflict than ever over the two traits among English teachers.

This study was originally designed to investigate what should be improved in the learning process of students in Japan, and why most Japanese learners remain at the early stage of acquisition of fluency.

1. Linguistic Competence and Performance

According to Tarone (1988), there have been two typical models of Interlanguage imposed on the process of foreign language acquisition:

- (1) Chomskyan Models
- (2) Psychological Processing Models

Chomskyan models are developed from the Interlanguage Hypothesis suggesting that learners make use of the knowledge from L1 or cause overgeneralization in case that UG (innate grammatical competence) is not available. This mechanism persists so strongly in the UG-centered position that learners' grammatical knowledge brings some

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variation in language performance that it never spotlights the process of performance. On the other hand, Psychological Processing Models are based on the cognition-centered view that the variation in Interlanguage depends on how quickly and accurately learners can access their linguistic knowledge, i.e., how strongly they can control their performance; however, these models do not try to elucidate linguistic knowledge itself.

There have been heated arguments on "Which plays a major role in the variation in Interlanguage, general cognitive ability or UG?" (Bley-Vroman 1989, Clahsen and Muysken 1989, Felix 1988, Flynn 1988, Schachter 1988) Among them are White (1991, 1992), Trahey & White (1993), and Trahey (1996), which reported that French learners of English sometimes do not observe the VO strict adjacency; that is, they keep a tendency to insert adjuncts between verbs and objects over a long period, which is allowed in French. These studies attempt to clarify an aspect of the variations in Interlanguage, making an inquiry into the results of the experiment on language performance

This study starts from the point mentioned above and aims at building a new Interlanguage model with an experiment using native speakers and Japanese learners of English as subjects, through which it is expected to propose a new teaching system to the English teaching circles in Japan. Seeking a more appropriate model to explain the relationship between linguistic knowledge and performance process, this study orients itself to pointing out the problems and presenting some practical implications for the improvement of Japanese English education which has been pressed to raise students' performance of English in communication.

2. Research questions

As for both time and accuracy for judgment, this study raises the following three research questions:

1. Are there differences between the three different proficiency levels (low, intermediate and advanced: native speakers) in the length of reaction time and the degree of accuracy in making judgment on the grammaticality of the sentences?
2. How does the number of adjuncts between V and O relate to the length of reaction time and the degree of accuracy on the grammaticality judgment task (GJT)?
3. Are there any differences in the length of reaction time and the degree of accuracy on the GJT between the grammatical and the ungrammatical sentences?

3. Research Design

3.1. Subjects

The subjects from Japanese learners are 26 female university students whose major is English and English literature. 20 male native speakers living in California State in the U.S., whose age ranges from 21 to 48, also cooperated by being the subjects of this project.

3.2. Materials

3.2.1. English Proficiency Test

For a proficiency test of English, in this study CELT(grammar) was used so as to divide Japanese learners into two groups according to the proficiency in English grammar. Since all native learners can be thought to belong to a group with the highest proficiency in English of the three groups, CELT was naturally not conducted on them.

3.2.2. Grammaticality Judgment Task (GJT: see Appendix)

The GJT was composed in the following way.

- (1) Three different kinds of sentences in number of adjunct (adverbial word): sentence with one adjunct, with two, with three. These adjuncts also vary in their semantic roles: manner, time, and place. Totally 27 sentences were composed (set A). Another set of sentences were made up (set B), so eventually 54 grammatical sentences were composed.
- (2) Out of these sentences mentioned above ungrammatical sentences were created. 27 grammatical sentences were combined with 27 ungrammatical sentences from the other set. Therefore, each subject is expected to make judgment

on 54 sentences over all.

(3) 12 dummy questions were mingled as distracters.

Table 1 shows the kinds of tasks for each of the subject groups.

Table 1. Tasks for the Subjects

	proficiency test	GJT
Native speakers	—	
Japanese learners	CELT	27(grammatical) + 27(ungrammatical) + 12(distracting) sentences

The GJT was divided into two parts and there was a short intermission between the two parts while it was conducted. Half of each of the two groups, Japanese learners and native speakers were given 27 grammatical sentences from set A, 27 of the ungrammatical from set B and 12 of the distracting, while the other half were given 27 grammatical sentences from set B, 27 of the ungrammatical from set A and another 12 distracters.

All the subjects were expected to type the key "J" on computers as soon as possible when they thought the sentence grammatically correct, and type "F" when they judged it to be incorrect. The order for the sentences to appear on the screen was automatically controlled by computer so that they could show up at random. The reaction time for the task was measured by one hundredth of a second.

All the data from the experiment on accuracy and reaction time were respectively analyzed in a 3 (proficiency level) \times 2 (sentence kind) \times 3 (word number) analysis of variance (ANOVA). The details are as follows:

- Dependent variables:
 - (Analysis 1): accuracy
 - (Analysis 2): reaction time
- Independent variables:
 - (for both of Analysis 1 and Analysis 2)
 - (1) English proficiency (Japanese-low, Japanese-middle, native)
 - (2) sentence kind (grammatical, ungrammatical)
 - (3) word number (one, two, three)

4. Results

Reaction time. The reaction time data in making a judgment on the grammaticality of each sentence are presented in Table 2 and Figure 1. Here the time only for correct answers has been collected so as to avoid making the results too complex to be analyzed. Main effects were observed in (1)English proficiency, (2)sentence kind, and (3)word number. The result of ANOVA shows there are significant differences in the reaction time ($F(2, 43)=20.869, p=0.0000$) among the three English proficiency levels. Also there are significant differences in time between the two kinds of sentences ($F(1, 43)=20.981, p=0.0000$). Furthermore, there are significant differences again in time among the three sentences, one-word, two-word, and three-word adjuncts ($F(2, 86)=10.571, p=0.0001$). These results also show that native learners are more likely to make quicker judgment on the grammaticality than the others in both of the sentence kind and the word number.

There is an interaction between Factor A(proficiency level) and B(sentence kind) ($F(2, 43)= 5.315, p=0.0087$), which shows the reaction time on the two kinds of sentences vary according to the proficiency in English. Furthermore, Multiple Comparison with Ryan's Method was conducted on the results at the significant level of $p<0.001$ and the interaction between the two sentence kinds on the two proficiency level (middle and low) showed that there are significant

differences between grammatical and ungrammatical types of presentation, whereas no significant differences could be found between the two sentence kinds for native speakers. Out of these results it can be said that the presentation types of the GJT do not have any effects on the performance of native speakers.

On the other hand, there was no significant interaction observed between Factor A and C(word number) ($F(4, 43)=4.369$, $p=0.0029$), which means that proficiency in English is not significantly related to the time for processing sentences with one-word, two-word, or three-word adjuncts.

Accuracy. Table 3 and Figure 2 show the data on the accuracy of the judgment on the grammaticality of the sentences. Highly significant differences were observed among the three levels of English proficiency ($F(2, 43)=10.823$, $p=0.0002$), which shows that the subjects with higher English proficiency are likely to make more accurate judgment.

In the case of the accuracy concerning B (sentence kind), the difference is not significant ($F(2, 43)=0.006$, $p=0.9393$) with no interaction between A and B.

As seen in Table 3, there are three kinds of interactions observed between A and C ($F(4, 86)=3.162$, $p=0.0178$), B and C ($F(2, 86)=4.045$, $p=0.0209$) and A, B and C ($F(4, 86)=3.901$, $p=0.0058$). Multiple Comparison with Ryan's Method (at the significant level of $p<0.01$) shows that among the scores of native speakers significantly low is the accuracy of the answers for the grammatical sentences with one adjunct. Also Japanese learners with low proficiency gained significantly lower scores for the sentences with three adjuncts than those with one or two.

Table 2.

source	SS	df	MS	F	p
A: English proficiency	372.9978286	2	186.4989143	20.869	0.0000 ****
error[S(A)]	384.2814145	43	8.9367771		
B: sentence kind	64.2478300	1	64.2478300	20.981	0.0000 ****
AB	32.5516904	2	16.2758452	5.315	0.0087 **
error[BS(A)]	131.6716765	43	3.0621320		
C: word number	38.0193471	2	19.0096736	10.571	0.0001 ****
AC	4.8625397	4	1.2156349	0.676	0.6104
error[CS(A)]	154.6555101	86	1.7983199		
BC	2.1885424	2	1.0942712	0.650	0.5246
ABC	10.3802814	4	2.5950703	1.542	0.1974
error[BCS(A)]	144.7710236	86	1.6833840		

+ $p<.10$, * $p<.05$, ** $p<.01$, *** $p<.005$, **** $p<.001$

Table 3.**Analysis 2 – Accuracy**

source	SS	df	MS	F	p
A: English proficiency	284.8259313	2	142.4129657	10.823	0.0002 ****
error[S(A)]	565.7897436	43	13.1579010		
B: sentence kind	0.0853411	1	0.0853411	0.006	0.9393
AB	53.0473149	2	26.5236575	1.821	0.1741
error[BS(A)]	626.3128205	43	14.5654144		
C: word number	46.1356555	2	23.0678278	5.911	0.0039 ***
AC	49.3569424	4	12.3392356	3.162	0.0178 *
error[CS(A)]	335.5948718	86	3.9022660		
BC	25.9587808	2	12.9793904	4.045	0.0209 *
ABC	50.0714078	4	12.5178520	3.901	0.0058 **
error[BCS(A)]	275.9333333	86	3.2085271		

+ $p<.10$, * $p<.05$, ** $p<.01$, *** $p<.005$, **** $p<.001$

Analysis 1 – Reaction Time

5. Discussion and Pedagogical Implications

The results of the experiment can be summarized in the following way. In accuracy, native speakers gained significantly higher score than the Japanese learners of low proficiency level but not than those of middle proficiency level (Native speakers gained significantly low scores at one-adjunct grammatical sentences). Japanese learners with low proficiency gained significantly low scores at three-adjunct grammatical sentences. On the contrary, in reaction time native speakers responded to the sentences in question at far quicker speed than the two groups of Japanese learners. And both groups of Japanese learners are strongly influenced by the sentence kind, i.e. the sentences being grammatical or ungrammatical, whereas native speakers are much less influenced by the sentence kind. It can be imagined that they can grasp sentences holistically, while Japanese learners are apt to view them analytically from one word to next, which is one of the traits of those who have not yet got to the high level in the second language proficiency.

Figure 1. Reaction Time

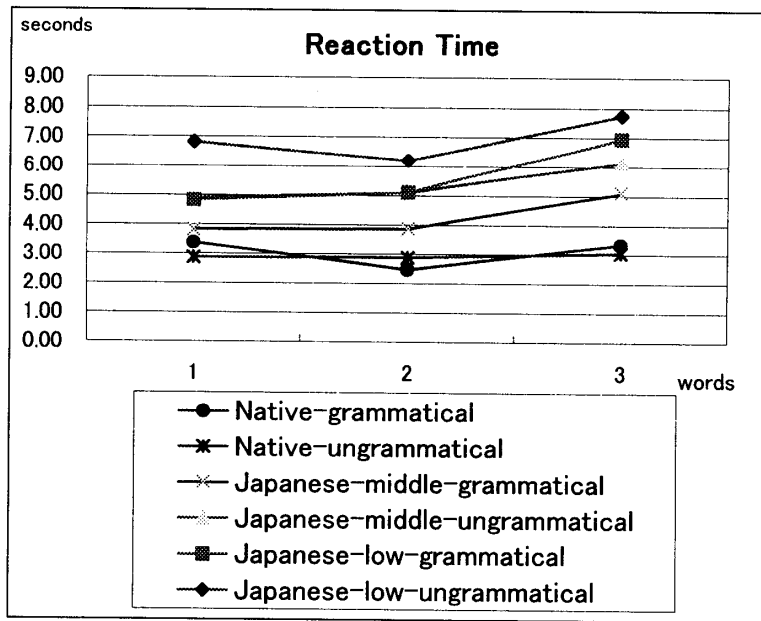
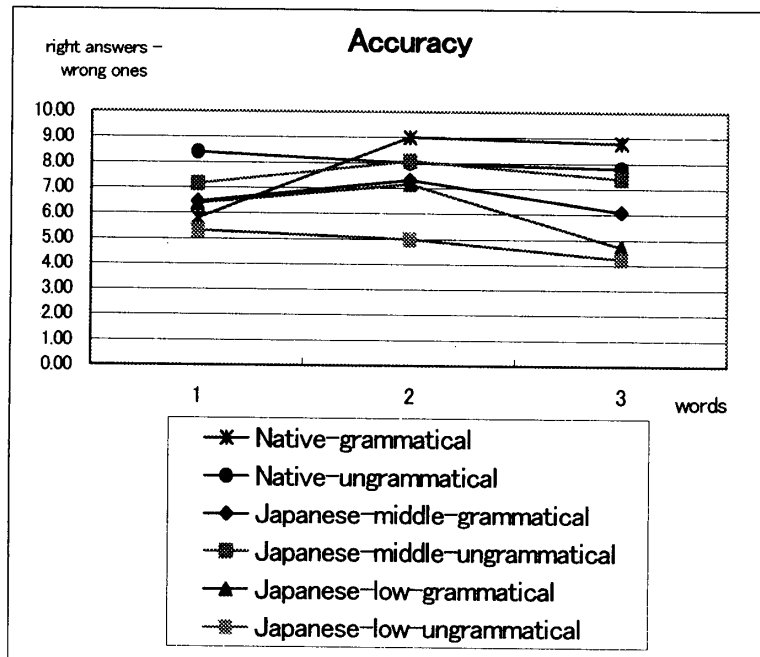


Figure 2. Accuracy



As for accuracy, native speakers are liable to judge not simply according to the sentence grammar but also to the discourse grammar even though the sentences show up by themselves without a context. Some native speakers judge the following sentences like "Tom wrote the letter then" and "Bill wrote the letter there" ungrammatical. Usually then and there are words for anaphoric use relating themselves to the information in the preceding utterances. Lack of cohesion may be one of the reasons some native speakers did not judge these sentences "grammatical."

It could be easily perceived that the differences between Japanese learners and native speakers in accuracy are not so big as in reaction time. In fact the results of this research confirmed our perception; even the group of Japanese learners who gained close scores to native speakers in accuracy needed much more time to respond to the GJT correctly. This means that Japanese learners are especially poor at dealing with English sentences in a rapid manner. Also the results reveal that Japanese learners with lower proficiency cannot process the sentences with three adjuncts in the same way they do those with one or two. This shows that they cannot grasp the three-word phrases as one chunk immediately because of lack in proficiency. The more proficiency they obtain, the more they will be able to regard the phrases as a whole like native speakers.

The research gives us two kinds of implications; in theoretical way and practical way.

First, it indicates that not only fulfilling linguistic knowledge but also developing language performance, i.e. reducing response time, a major problem confronting second language learners. However, there have been few studies so far which dealt with reaction time of the GJT. The results of this study suggest that research on the language acquisition should include not only linguistic knowledge but also linguistic performance in its models.

Second, it also suggests that it be necessary to design teaching and evaluating methods attaching great importance to the reaction time for processing and judging English sentences, which hints at what should be improved in the teaching of English in Japan. Traditional teaching with the intensive reading method has been popular in Japan, and it eventually attaches less importance to the rapid processing in performance. What is needed to introduce to this current situation in Japan is practical activities which stress rapid processing skills. As a matter of fact, the TOEIC and STEP test require the examinees to answer the questions as fast as possible in a limited short time, whose methods are apparently different from those of the entrance examinations for Japanese universities or high schools. In other words, English education in Japan has not been in pursuit of fluency (language performance) but only accuracy (linguistic knowledge).

Doubtless, language is fundamentally a tool for communication. That is why language performance should be regarded as a more important element than ever. Along with acquiring the linguistic knowledge, second language learners should try to understand and respond to what is going on in their target language as quick as possible. This study shows how much Japanese learners are behind native speakers in the ability for a quick response.

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Appendix

A – grammatical sentence

Bill wrote the letter poorly.

Tom wrote the letter then.

Susie wrote the letter there.

Bill ate dinner quickly.

Tom ate dinner then.

Susie ate dinner there.

Bill watched the video quietly.

Tom watched the video then.

Susie watched the video there.

Bill wrote the letter in a hurry.

Tom wrote the letter at that time.

Susie wrote the letter in the room.

Bill ate dinner in a hurry.

Tom ate dinner at that time.

Susie ate dinner in the room.

Bill watched the video in a hurry.

Tom watched the video at that time.

Susie watched the video in the room.

Bill wrote the letter very quickly.

Tom wrote the letter last night.

Susie wrote the letter at college.

Bill ate dinner very quickly.

Tom ate dinner last night.

Susie ate dinner at college.

Bill watched the video very quickly.

Tom watched the video last night.

Susie watched the video at college.

A — ungrammatical sentence

Bill draw beautifully the picture.

Tom draw yesterday the picture.

Susie draw here the picture.

Bill saw quietly the movie.

Tom saw yesterday the movie.

Susie saw here the movie.

Bill drank slowly milk.

Tom drank yesterday milk.

Susie drank here milk.

Bill draw too rapidly the picture.

Tom draw last evening the picture.

Susie draw at home the picture.

Bill saw too rapidly the movie.

Tom saw last evening the movie.

Susie saw at school the movie.

Bill drank too rapidly milk.

Tom drank last evening milk.

Susie drank at school milk.

Bill draw with great care the picture.

Tom draw around six thirty the picture.

Susie draw on the plane the picture.

Bill saw with great care the movie.

Tom saw around six thirty the movie.

Susie saw on the plane the movie.

Bill drank with great care milk.

Tom drank around six thirty milk.

Susie drank on the plane milk.

ダミー

Bill had seen the movie last week.

Bill saw the movie last week.

Tom was drawing the picture by himself.

Tom was drawn the picture by himself.

Tom mentioned his new idea.

Tom mentioned about his new idea.

Susie is leaving Kyoto tomorrow.

Susie is starting Kyoto tomorrow.