

Lower-level Text Structure in Reading Expository Prose in L1 and FL

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1. Introduction

In recent years, cognitive psychology has made a great contribution to our understanding of the reading process: reading is not merely the decoding process by the reader but the interactive process of the reader and the writer. Many researchers (Meyer, Brandt, & Bluth, 1980; Meyer, 1985, 1987; van Dijk & Kintch, 1983, 1985) have revealed that use of text structure plays an important role in reading comprehension, especially in reading expository prose. An effective use of text structure enables the comprehender to facilitate communication between the author and the reader.

In reading English as a second language (ESL) as well as reading English as the first language, analyses of readers' recall protocols showed that skilled readers employed a more effective strategy of using top-level text structure and comprehended and retained meaning of text more successfully than less skilled readers (Meyer et al., 1980; Carrell, 1984). In reading English as a foreign language (EFL), most Japanese university-level students utilized top-level structure in reading their native language (L1); however, they failed to transfer the structure strategy from L1 reading to FL reading unless they had sufficient proficiency in FL (Nagasaka, in press).

Analyses of use of structure in written recall, the most widely used measure, show readers' employment of text structure at the top level. However, a deeper probing of students' awareness and use of text structure at lower levels is needed to understand the entire process of reading. The purpose of this

study is to examine awareness and use of text structure at all levels by university-level students in reading in their native language (Japanese) and in a foreign language (English).

2. Method

2.1. Subjects

A total of 100 university-level students (50 undergraduates majoring in international politics, economics and business, and 50 junior college students majoring in English) participated in this study. They were all in the first year, and most of them had been educated in Japan. Their academic background was basically the one that most Japanese university-level students had. All the subjects took an English proficiency test (Max=100) in structure, written expression, vocabulary and reading comprehension based on TOEFL by Strichers et al. (1990). The test results were as follows: undergraduates, mean=70.08, SD=13.94, range 96-46; junior college students, mean=49.58, SD=8.66, range 71-29. The t-test, two-tailed mean comparison, showed that the difference of the mean scores between the two groups was significant: $t=8.74$, $p<.01$. Since the subjects had gained their basic knowledge of the English language through the required 6-year English education in high school, their English proficiency was considered to be high intermediate for the undergraduates and low intermediate for the junior college students. Because of their different English proficiency levels, the results of the experiments with the two groups were separately analyzed. Although 10% of the undergraduates had attended school abroad, no significant difference was observed in the results between those who had been educated entirely in Japan and those with some schooling abroad.

2.2. Materials

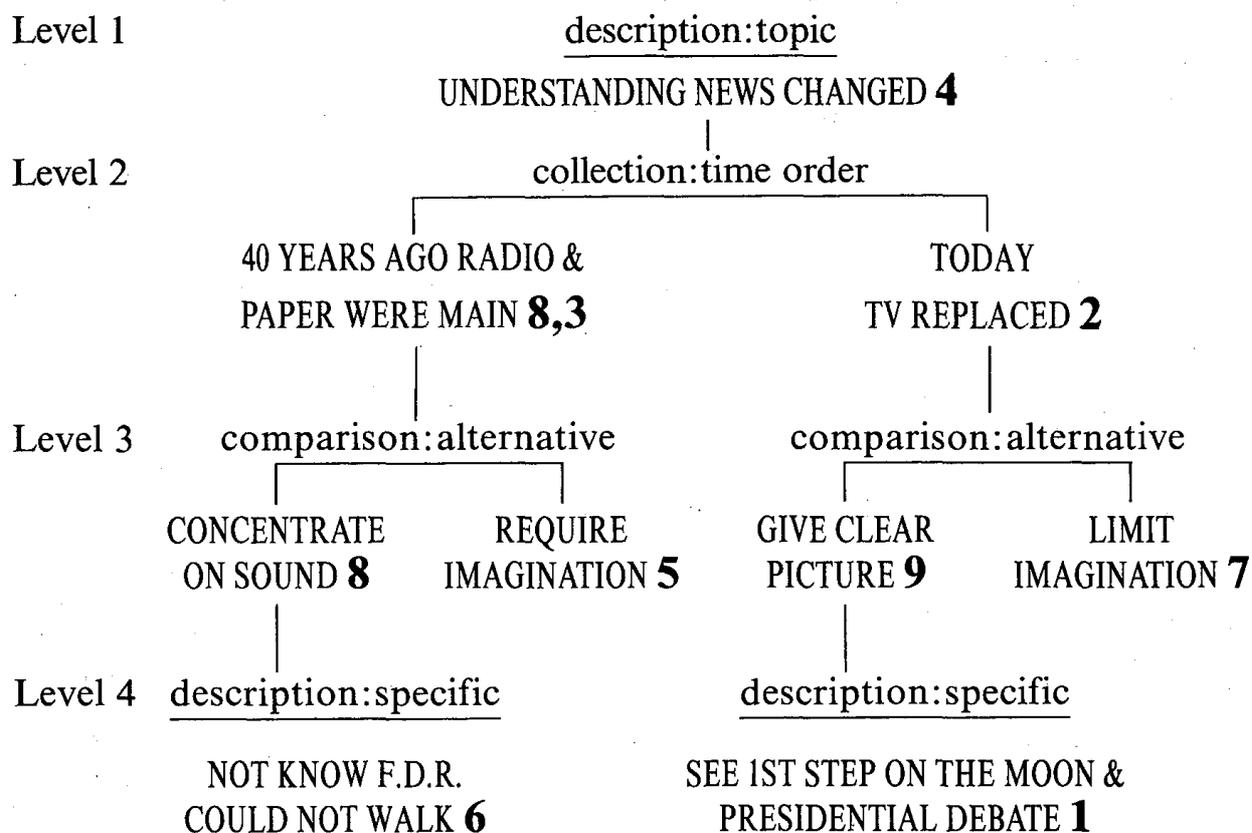
An expository essay from an ESL composition textbook by Johnston and Zukowski/Faust (1986) was used for this experiment. The passage was

originally written in English; therefore, a translation version of the passage was used for reading Japanese. The passage was 176 words long with 9 sentences, and its readability was at the 11th grade level by Fry's (1968) index.

According to the prose analysis system developed by Meyer (1985), the text structure and the content of the passage is shown in Figure 1. The text structure is presented in small letters, and the content is described in capital letters. One of the merits of Meyer's content structure system is that each content unit, as well as each rhetorical relationship in a hierarchical order, can be separately scored.

Nine sentences of the passage were put in a random order. The numbers 1 to 9 in Figure 1 indicate the numbers of the sentences in a random order.

Figure 1 Content Structure



*The correct order of the sentences is 4-8-6-3-5-2-1-9-7.

2.3. Procedure

The experiment was conducted during the first regular English period of the first semester. Each student read the sentences of the passage in a random order in English or in Japanese and put them in the correct order. In addition, they explained the reasons for their choices of order as much as possible in Japanese. The direction was given in Japanese.

In order to do the task of putting the sentences in order and reasoning of it, the reader has to pay attention to the sentences at lower levels as well as at the top level. Moreover, the explanation of the order will clearly show whether or not the reader recognizes and utilizes text structure at all levels. This method is more suitable than recall protocols for analyzing use of text structure at lower levels, because most readers write down the major points of text in their recall protocols, and the use of top-level structure is well depicted; while awareness and use of lower-level text structure are vaguely shown.

The students were given 30 minutes to do the task in the English version and 27 minutes in the Japanese version. Since average Japanese students read English at the rate of 100 words per minute (Ando, 1979), and average Japanese adults read Japanese at the rate of 600 characters per minute (Kindaichi et al., 1988), most of the subjects had about 25 minutes to do the task, besides reading the sentences three times.

2.4. Scoring

First, the number of the sentences in the correct order was scored. Second, the explanation written by the students was analyzed to investigate whether or not the students used the text structure to determine the order. If the students mentioned the same text structure as the author had used, they identified and utilized the text structure. Furthermore, the content units in the explanation were also scored to examine how many content units at each level of the text structure were used to decide the order. The frequency for use of text structure as well as content units was counted according to Meyer's content structure system in Figure 1.

3. Results

As can be seen from Table 1, the students in both groups tended to obtain more correct answers in reading Japanese than in English. In the low intermediate English proficiency group, the difference between Japanese and English was statistically significant: $t=5.19$, $p<.01$. In the high intermediate English proficiency group, however, there was no difference between the two languages. Between the two groups, no difference was observed in reading Japanese; while in English the difference was significant: $t=6.11$, $p<.01$.

Table 2 presents the mean scores of frequency for use of text structure in the students' explanations for their choice of orders. The students with low intermediate English proficiency used the text structure significantly less frequently in English than in Japanese: $t=3.38$, $p<.01$. The students with high intermediate English proficiency, on the other hand, utilized text structure in English as often as in Japanese. In reading English, the difference between the two groups was great: $t=5.73$, $p<.01$; while in reading Japanese there was no difference.

Among the mean scores of frequency for use of content units, which are shown in Table 3, there was no significant difference between either the two groups or the two languages.

The two-way ANOVA design was used to investigate the contrast validity of the test for the three scores: the number of the sentences in the correct order, the frequency for use of text structure and the frequency for use of text contents. The two independent variables were English proficiency and languages. The results of the two-way ANOVA are reported in Table 4. In doing the task of putting the sentences in the correct order, both factors of English proficiency and languages were important. The F value for the interaction of the two factors was also significant. Similar results were gained in the frequency for use of text structure. However, there were no significant F values in frequency for use of content units.

Table 1
Mean Scores of Sentences
in the Correct Order and Standard Deviations

Group	High intermediate	Low intermediate
English Mean (SD)	3.64 (1.63)	1.00 (1.35)
Japanese Mean (SD)	4.08 (1.82)	3.20 (1.58)
Max=9.00		
n=25 for each group		

Table 2
Mean Scores of Frequency
for Use of Text Structure and Standard Deviations

Group	High intermediate	Low intermediate
English Mean (SD)	2.32 (1.08)	0.72 (0.84)
Japanese Mean (SD)	2.00 (1.00)	1.60 (0.95)
Max=6.00		
n=25 for each group		

Table 3
Mean Scores of Frequency
for Use of Content Units and Standard Deviations

Group	High intermediate	Low intermediate
English Mean (SD)	2.08 (2.29)	2.08 (1.78)
Japanese Mean (SD)	2.08 (1.75)	1.84 (1.52)

Max=9.00
n=25 for each group

Table 4
ANOVA for the Three Scores
Related to English Proficiency and Languages

	Sentences in the correct order	Use of text structure	Use of content units
E proficiency	F=24.87**	F=27.97**	F=0.13
Languages	F=19.28**	F= 4.06*	F=0.08
E proficiency × languages	F= 8.57*	F= 7.03*	F=0.08

**p< .01 *p< .05

Since each level does not have the same number of sentences, text structure or content units, Figures 2, 3 and 4 respectively show the proportions of the frequency for use of these elements at each level. Figure 2 reveals at which level the readers tended to answer the correct orders. The students gained more correct orders at higher levels in reading English as well as in Japanese. The proportions of the low intermediate English proficiency group was significantly small when reading the English version; however, there was no difference among the other three. Figure 3, which presents the proportions of frequency for use of text structure, also shows that the proportions gained by the low intermediate English proficiency group were small at all levels in English. In addition, the proportions sharply drop at level 3 in both groups in reading Japanese and English. In Figure 4, no difference was observed in the proportions of frequency for use of text contents between the two groups as well as the two languages.

Figure 2
Proportion of the Number of Sentences
in the Correct Order at Each Level of Text Structure

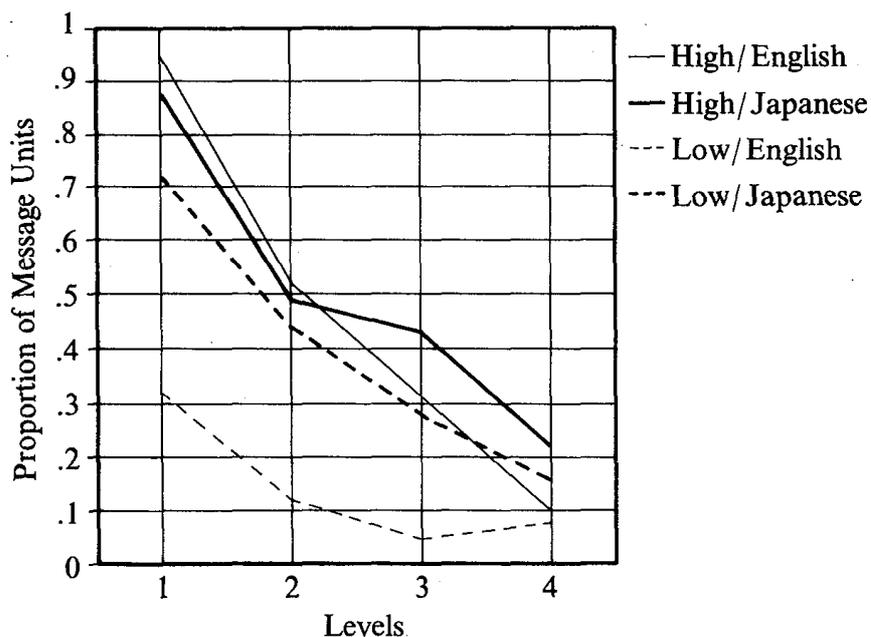


Figure 3
 Proportion of Frequency for Use of
 Text Structure at Each Level of the Text Structure

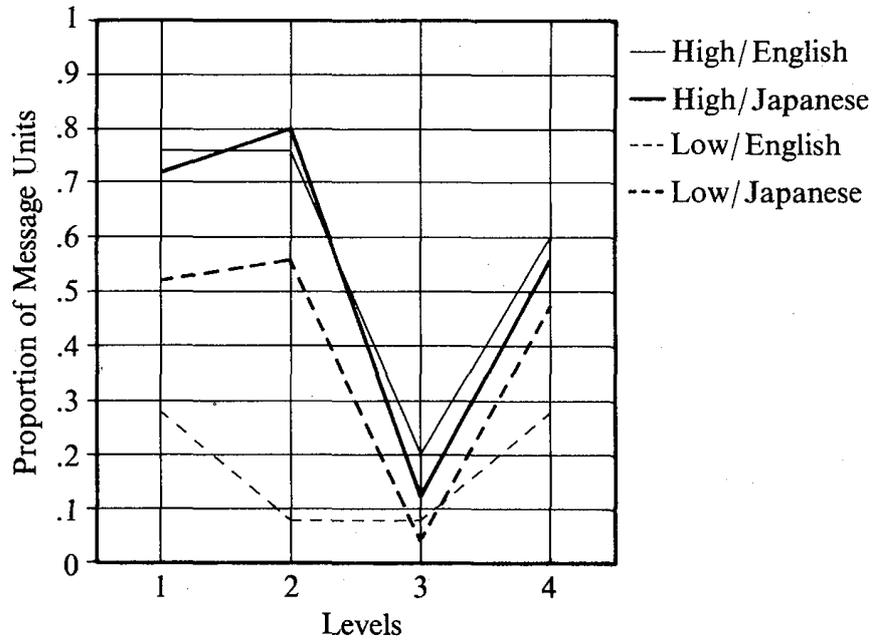
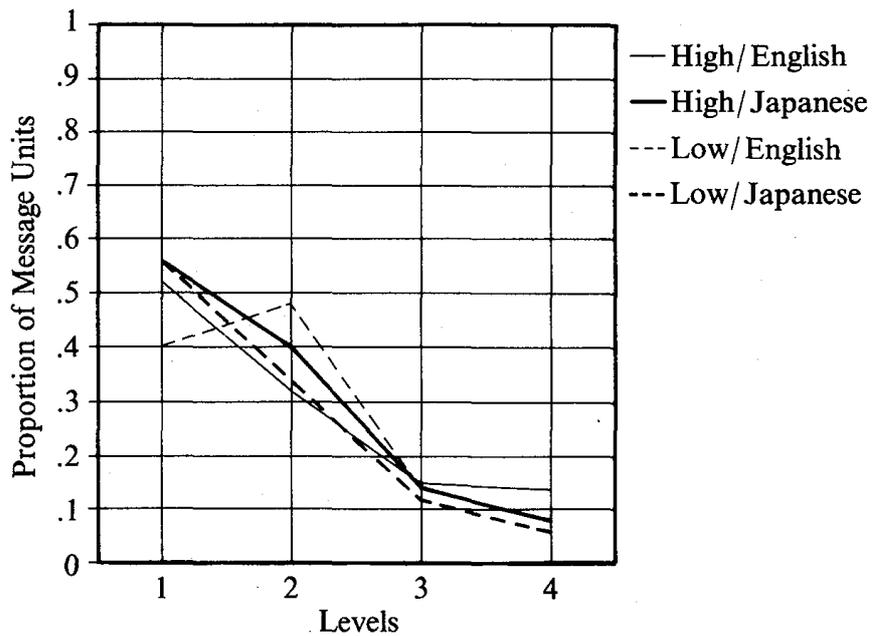


Figure 4
 Proportion of Frequency for Use of
 Content Units at Each Level of the Text Structure



4. Discussion

In this experiment, awareness and use of text structure not only at the top level but also at lower levels in reading L1 and FL were clarified to some extent.

First, in reading Japanese and English, the college-level students tended to utilize both text structure and text contents more frequently at higher levels; as a result, the proportions of sentences in the correct order were larger at higher levels. This result seems to prove that the reader grasps information at higher levels and makes use of it to activate information at lower levels in reading L1 and FL. In other words, awareness and use of information at higher levels influence those of lower levels in the process of reading comprehension. Especially in reading expository prose in English as L1 and L2, use of top-level text structure plays an important role for the reader to reconstruct the meaning of text that the writer intended (Meyer et al. 1980; Carrell, 1984). In this experiment, there were significant differences observed in the use of text structure, but not in that of text contents. In fact, the students with low intermediate English proficiency who read the English version gained the smallest proportions of frequency for use of text structure at almost all levels, and they showed the lowest percentages of the correct order at all levels. Furthermore, the differences between this group and the other groups were greater at higher levels and the greatest at the top level. Consequently, less proficient FL readers are likely to fail in using text structure at all levels, and the failure at the top level may be a deathblow to their reading comprehension.

Another important finding is the significant role of text structure at middle levels for skilled readers. Skilled readers can make use of top-level structure in their L1 reading. Meyer et al. (1980) and Taylor (1980) reported approximately 80% of adult English readers at college level and 50% of junior college students used top-level text structure when they read and recalled well-organized passages in their native language. In the present study, the same

results as Meyer's and Taylor's were observed at level 1 in reading Japanese. At level 3, however, most of the subjects had significantly sharp drops in the proportions of use of text structure in reading Japanese as well as English. It was rather easy for them to employ text structure at level 4, which had a concrete structure pattern like presenting examples. In addition, the students recognized and utilized text structure at level 2, but their proportions of sentences in the correct order was not satisfactorily high. Therefore, many skilled readers seemed to have difficulty in identifying and using text structure at middle levels not only in L1 but in FL.

Finally, according to Figures 2 and 3, the students with high intermediate English proficiency showed very similar results in Japanese and English. This may mean the university-level students with appropriate linguistic competence used the same strategy of text structure not only at the top level but also at lower levels in reading L1 and FL, and the process of skilled reading seems to be quite similar in reading different languages. This idea will be supported by the psycholinguistic model of reading, which indicates some reading strategies can be transferred from L1 to L2 and the process of reading is universal (Coady, 1979; Cummins, 1980; Goodman, 1967; Hudson, 1982).

5. Implications for FL Reading Instruction

Since reading comprehension of expository prose is greatly influenced by recognition and activation of text structure at high levels, the first priority should be placed on teaching how to use top-level text structure. Teachers of English often find that students cannot gain the meaning of text even though they look up all unfamiliar words in dictionaries, refer to grammar books, and translate every single sentence into Japanese. The major cause of this problem is that students just put pieces of information one after another on their list of memory without understanding the interrelations among them, i.e., the text structure. Most Japanese college-level students have gained text structure strategy in their native language; therefore, they will be able to

transfer this strategy into reading English as a foreign language if provided with appropriate instruction. It is often the case in reading L1 that readers use text structure strategy without real awareness. Conscious use of text structure in reading FL may make readers recognize the process of reading in L1 as well as in FL.

Another suggestion for reading English as a foreign language at college is to place more emphasis on text structure at middle levels. As it is shown in this experiment, many skilled readers had more difficulties in using text structure at middle levels than that of the top level. Even reading in L1, few students could identify and utilize text structure at middle levels. Therefore, teaching how to activate text structure at middle levels will improve students' reading ability, not only in FL but also in L1.

It is now generally accepted that reading ability critically relates to language proficiency; however, teaching discrete point grammar and vocabulary show little or no correlation with development in L2 reading (Divine, 1989). In this study, the students with low intermediate English proficiency who read the English version showed similar results in using the content units with the other groups. They mentioned more content units at higher levels than lower levels; and this means that they followed the basic steps of the reading process in FL as they do in reading in L1. What is more, in reading Japanese they used the strategy of text structure as successfully as the students with high intermediate English proficiency. Therefore, FL reading should not be considered only as a problem of language proficiency, and it should not be separated from L1 reading. It is necessary to develop students' linguistic competence; however, it is also indispensable for teachers to encourage students to discover the process of reading by constructing the meaning of text.

At most educational institutions in Japan, more stress is placed on products rather than processes of education. In many classes of reading English as a foreign language, grammar, vocabulary and translation are mostly taught,

because it is easy for both teachers and students to see the results of them. The nature of reading instruction and the pleasure of learning to read, however, can be found not in the products easily gained but in the process that teachers and students discover together.

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Appendix Passage in English

Put the following sentences in the correct order and explain the reasons for your choice of order as much as possible in Japanese.

1. The first step on the moon or the presidential debates can be seen live and in color, each halting step or evasive expression immediately evident.
2. Today, television has replaced both the radio and the newspaper as the main source of information for most Americans.
3. In addition to the radio, newspapers were also a main source for information.
4. The understanding of news has changed dramatically in the United States in the last 40 years

because of the changes in mass communication.

5. Reading newspapers required that readers use their imagination to interpret events.
6. This meant, for instance, that very few Americans knew that F.D. Roosevelt was crippled and could not walk without support because few had actually seen him.
7. However, the clarity and explicitness of this communication medium may also limit the imagination.
8. Forty years ago, all important announcements were made over the radio, with the audience concentrating on and listening to the sound of the words.
9. Obviously, television presents a very clear picture of the world that was not possible 40 years ago.