

Does Integration of Listening into Reading Text Passages Affect Comprehension for Japanese EFL Students?

教養教育 Chikako Nagao

Abstract: The main purpose of the present study is to investigate the effects of integrating the listening process into silent and oral reading activities. No main effect was found for the reading mode variable, revealing that in the three reading modes (silent reading, reading with listening and reading with shadowing), no statistically significant differences were found with respect to written recall scores. In contrast, the main effect for the text variable was statistically significant. The most familiar text was recalled significantly better than the least familiar text in the overall analysis. The separate analyses showed that reading with shadowing could facilitate comprehension in the familiar text with visual or auditory images. Reading with listening also proved to be an effective way to facilitate comprehension in the least familiar text.

Keywords: silent reading, reading with listening, reading with shadowing, processing efficiency, cognitive capacity, familiarity

1. Introduction

The traditional controversy over a superior mode of reading has converged into apparent agreement that neither mode of reading, silent or oral, holds a dominant position for a better comprehension in L1 learners (Holms, 1985). The previous indecisive settlements came from the fact that proponents of either silent or oral reading have their own convincing argument and research findings. The proponents of silent reading (Cole, 1938; Durkin, 1978; Sawyer, Watson, & Adams, 1989) pointed out the attention-demanding aspect of

vocalization in oral reading, which they insisted, would hamper comprehension on new text. Conversely, the proponents of oral reading (Collins, 1961; Rowell, 1976; Elgart, 1978) considered articulation of each sound as a facilitating factor in comprehension because it accelerates the reader's attention to be focused on individual words and increases the amount of information by gaining visual and aural information simultaneously.

In EFL reading research, Takanashi & Takahashi (1987) examined a generally acknowledged view among classroom researchers that silent reading was more advanta-

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geous than oral reading for better comprehension in reading text for the first time. Takanashi & Takahashi (1990) also attached importance to precedence of semantic understanding on a new text by silent reading before reading it orally. Furthermore, Ushiro & Sakuma (1999) demonstrated that oral reading requiring simultaneous processing of remembering words and comprehension, causing trade-off between the two. In addition, Takanashi & Ushiro (2000) suggested that oral reading should be encouraged as an integral part of classroom instruction because repeated oral reading of the same text would help EFL learners be more aware of English rhythm and syntactic structure, and to be familiar with thinking in English. If we synthesize the above views, silent reading could be advantageous in remembering a new material for comprehension whereas oral reading would be more suited for training to improve English skills in general, as the advocators of oral reading (Toyama, 1965; Shibazaki, 1979; Watanabe, 1990; Shimozaki, 1998; Suzuki, 1998; Kunihiro, 1999; Miyasako, 2002) strongly suggest.

The distinction between silent and oral reading has become a complex matter. The increasing availability of materials on cassette tapes or CDs has prompted more teachers to allow students to read the text while they listen to what was being read on a cassette recording or CD player. Indeed as audio-assisted learning has become a commonplace at school and at home, classroom researchers have been more concerned about instructional effects of silent reading with listening and oral reading with listening in both L1 and L2 reading

research. Silent reading with listening has been proven appropriate as an instructional method for L1 learners (Collins, 1961; Holms, 1985; Reitsma, 1988; Rasinski, 1990; Shany & Biemiller, 1995). Moreover, the empirical studies on EFL reading (Suzuki, 1991, 1998, 1999, 2001; Noro, 2001; Kuramoto & Matsumura, 2001; Kuramoto, 2001) have examined instructional effects of reading with listening, whether it is done silently or orally.

What distinguishes the audio-assisted reading mode from the traditional silent and oral reading modes is integration of listening process into reading activity in the former. The researchers have demonstrated the appropriateness of integrating listening with reading skills and the instructional effects of audio-assisted reading. What remains unexamined as a research question seems to be an investigation of whether silent reading with listening and oral reading with listening (or reading with shadowing) could be effective in reading new text only once, as compared with traditional silent reading. Therefore, the main purpose of the present study is to investigate the effects of integrating the listening process into silent and oral reading activities.

2. Background of the Study

2.1 Definitions of Reading with Listening and with Shadowing

Reading-while-listening is a formal term for reading with listening, and oral reading-while-listening is a formal term for reading with shadowing. Reading-while-listening is defined as a reading mode that is assisted by a teacher's oral reading or a prerecorded

material in the form of cassette or CD in which vocal information and visual information are presented simultaneously (Noro, 2001). Oral reading-while-listening is a variation of the reading-while-listening mode in which readers repeat the oral messages while listening to them. In either case, the readers keep their eyes running through the text with assistance of the pace provided by the tape. Kuramoto and Matsumura (2001) took up the oral reading-while-listening mode as shadowing with text presentation.

Reading with listening or shadowing involves reading and listening skills concurrently. Reading and listening may have a respective processing procedure at the lower-level information processing because of the different processing routes to visual and vocal representations, but it is assumed that a common processing procedure is performed at higher-level processing (Curtis, 1980; Canale, 1984; Stitch & James, 1984; Just & Carpenter, 1992; Levelt, 1993; Kadota, 1987, 2001; Noro, 2001). How listening activities can be integrated into reading comprehension through simultaneous exposure to visual and vocal information is the focal point of instructional effects examined on reading with listening or shadowing. Another point is whether simultaneous tasks of reading and listening or shadowing would still facilitate comprehension in first reading due to the common information processing, or hamper comprehension from the viewpoint of the human cognitive capacity.

2.2 Theoretical Background

Reading comprehension is one of essential

cognitive tasks in which working memory plays an important role. Baddeley and Logie (1999) proposed a well-known model of working memory in which a controlling attentional system called Central Executive supervises and coordinates subsidiary slave systems: Phonological Loop and Visuo-spatial Sketch Pad. The phonological loop, in particular, is assumed to play an essential role in learning to read, in the comprehension of language and in the acquisition of vocabulary. In their model, the phonological loop is comprised of two components, a phonological store that is capable of holding speech-based information, and an articulatory control process based on inner speech. Memory traces within the phonological store fade unless they are refreshed by the articulatory process underlying subvocal rehearsal. Written material is converted into a phonological code, and registered in the phonological store.

The point of contact between reading and listening lies in the phonological processing. In the reading process, written material is encoded via visual information processing into phonological information and registered in a phonological store. In the listening process, aural material is directly converted into speech-based information to be registered in a phonological store (Kadota, 1987, 2002; Noro, 2001). Kuramoto & Matsumura (2001) suggests that two series of phonological processing in reading and listening should synchronize when learners are simultaneously exposed to visual and vocal information of the same content in reading with shadowing.

Hirai (2001) introduces the 'comprehension/

production model' by Levelt (1993) in her argument on effective integration of listening and reading skills in case of L1 learners. In the model, visual and aural information are processed respectively at the presentation level, but once they are decoded into the common inner speech, they proceed from word level (lexemes), syntax level (lemmas), to discourse level (concepts) to reach semantic understanding of the material.

It is predictable that L1 learners can easily integrate listening skill already acquired in their developing process into reading skill to be mastered later in their development. Japanese EFL learners, however, have disadvantages in terms of much less opportunities to acquire listening skill. The deep orthography or spelling-to-sound irregularities of English also makes it difficult for them to master the grapheme-phoneme correspondence rules, which should be necessary for the integration of the two skills. Conversely, visual representation in reading with listening or shadowing will make it easier for them to recognize aurally presented words due to synchronous phonological processing. Instructional effects of reading with listening or shadowing would then arise. It could be assumed that the training might help students to develop word recognition skills to a point of automaticity.

Another advantage of integrating listening with reading skills is that prosodic information delivered in chunks while listening would activate listeners' access to sense units and facilitate them to be aware of meaning chunks or syntactic structures in the process of reading comprehension. If phonological coding while reading for comprehension also provides

readers with prosodic information as Kadota demonstrated in his empirical studies (1984, 1987, 1997), listening to model reading will help readers to improve reading fluency.

There remains a question of the human cognitive capacity entailing language comprehension in general. Just & Carpenter (1992) viewed working memory as the pool of operational resources and explained the differences among individuals in their comprehension performance in terms of their working memory capacity. They presented a computational theory in which both storage and processing are fueled by activation. In this framework, capacity can be expressed as the maximum amount of activation available in working memory to support either of the two functions. The trading relationship between storage and processing is assumed to occur under an allocation scheme that takes effect when the activation maximum is about to be exceeded. When the task demands exceed the available resources, both storage and computational functions are degraded. They called this theory *capacity constrained comprehension*.

The reading comprehension process entails both bottom-up processing such as recognition of phonemes, letters, or words and top-down processing such as inferential understanding of sentences or a text. We could assume that an allocation of the cognitive processing capacity might be executed at the unconscious level depending on the degree of readability of the reading material or individual difference on reading proficiency on the part of readers. Poor readers would spend the most of their cognitive resource on bottom-up processing whereas good readers would be

able to spare the resources on top-down processing, because of their skills on automatic processing of lower-level information. It is reported that working memory capacity is a powerful indicator of reading comprehension (Daneman & Carpenter, 1980; Osaka & Osaka, 1994).

Just and Carpenter (1992) refer to processing efficiency along with the notion of resource allocation in explaining individual differences in comprehension performance. A change in processing efficiency is assumed to result from practice or some instructional intervention. As intensive practice in several simple tasks induces large changes in the speed of responding, intensive practice in reading might similarly induce greater efficiency in some component processes of comprehension.

Thus, we can presuppose two aspects entailed in reading with listening or shadowing. Simultaneous presentations of written and vocal languages might facilitate comprehension due to the common procedure at higher-level processing when the intensive practice accelerates integration of listening and reading skills. On the other hand, the dual task demands at lower-level processing would possibly exceed the available resource at the time of first reading due to the constrained capacity, to hamper comprehension during reading with listening or shadowing.

2.3 Previous Empirical Studies

The Holmes (1985) study seems to have put an end to the previous controversies over a superior mode, silent or oral, for understanding or remembering. What is unique about his

research is that he introduced situational variables and variables of comprehension types. The results of his study indicated that no significant differences occurred between reading orally to oneself and reading silently. Both of the two modes, however, were found superior to the oral-audience mode. Oral reading with the presence of an audience could require extra attention of the subjects in vocalization performance, whereas oral reading for the sake of oneself could not always be attention-demanding, because the oral production can be automatic with little need for attention in case of L1 learners. In addition, silent reading was found superior to silent reading with listening. He attributes the poor performance of the readers in the silent-listening mode to the slower speed of the tape recorder than their normal silent reading rate and the difference in pronunciation of words between the voice on the tape and themselves. It is likely in case of L1 learners that reading with listening could break their concentration and cause lapses in their comprehension rather than facilitate comprehension due to simultaneous presentations of written and spoken languages.

In L2 research, Matsumi, Ikeda & Mizuhara (1995) formed a synthesized view of the controversy over a superior mode of reading. They examined the effects of oral and silent reading on recall of a text in English by introducing two dependent variables: readability level and the aspect of text comprehension. The results showed the dominance of oral reading over silent reading in the literal memory of the easy text and that silent reading led to better recall performances than oral reading in the

semantic memory of the difficult text. What should be noted is that they allowed the subjects to read each text as many times as they could within the time limit of ten minutes. Therefore, we should not simply compare their findings for L2 learners with those of the Holmes study for L1 learners conducted under the restricted conditions.

No subsequent research has been done to determine a superior mode of reading which would best facilitate comprehension. Instead, the concern of researchers has shifted to instructional effects of assisted readings. Rasinski (1990) picked up reading with listening along with repeated reading as good instructional methods to promote reading fluency in L1 learners. Shany and Biemiller (1995) also investigated the effects of assisted reading practice over a 4-month period with poor readers in grades 3 and 4. Assisted practice significantly improved the text reading rates and reading comprehension scores of the experimental groups compared to a control group. Amer (1997) investigated the effect of the teacher's reading aloud on the reading comprehension of EFL students. Namely, he compared two modes of reading, silent reading and reading with listening. The results showed that the experimental group outperformed the control group on both measures.

The above major studies show that reading with listening was a good instructional method mainly employed for beginners for reading comprehension or poor readers. In a series of his empirical studies, Suzuki (1991, 1998, 1999, 2001) has demonstrated the effectiveness of both silent and oral reading with listening for Japanese EFL learners who are

supposed to have the disadvantages mentioned before. He first suggested that presentation of vocal language while reading would promote the comprehension speed of EFL learners. The points of his studies have been further on the effectiveness of insertion of pauses in listening material and the importance of oral reading while listening to an audio-recorded material. The results of his empirical studies (1998, 1999, 2001) show that the above two combinations would produce the utmost effects on listening comprehension and reading speed.

Suzuki (1998) attributes the effectiveness of inserting pauses in listening material to Kohno's theory (1993) on perceptual sense unit (PSU), which is defined as a semantically well-defined linguistic group or syllables generally consisting of 7 ± 2 or less syllables. Kohno says that listening comprehension is a mix of both holistic and analytic processes and that the existence of the PSUs perceived holistically is crucial to efficient listening comprehension. Suzuki assumes that the material divided by pauses would facilitate learners to recognize the unit of a phrase mostly corresponding to PSU and allow them to have time for analytic work of prediction-testing processing. We can expect that information presented in chunks or sense units would even more produce synergy effect in the process of reading with listening, because prosodic information delivered in sense units in the listening procedure would activate phonological coding of visual information in the reading process (Kadota, 2001).

Noro (1999) applied reading-while-listening practice to promoting incidental vocabulary learning. Moderate correlation was found

between frequency of words appearing in the text and learning gains. Noro (2001) suggests that English teachers should introduce reading-while-listening practice into their reading comprehension classes for extensive reading in promoting learners' word recognition skill. According to his instructional implication, if learners are careful not to read backward or not to resort to translation, they will be able to read English sentences faster.

Based on the findings by the above researchers, Kuramoto & Matsumura (2001) and Kuramoto (2001) picked up the issue of reading with shadowing as a superior variation of reading with listening for EFL students, and demonstrated its instructional effects on listening comprehension outcomes. The two-way ANOVA yielded a significant effect for the administration of the TOEIC tests ($F(1,170)=47.524, p<.001$), and a significant effect for the groups ($F(2,179)=3.081, p<.05$). The results showed that the addition of an advance organizer to reading with shadowing generated the best result in the listening comprehension, followed by reading with shadowing without it and silent reading with listening. Their research confirmed Suzuki's findings (1998) that reading with shadowing caused learners to achieve significant scoring gains on a comprehension test.

3. The Purpose of the Experiment and Hypothesis

The previous studies for L2 learners above indicate that integrating listening into reading activity would help Japanese EFL learners to accelerate phonological processing due to

synchronous presentations of vocal and written languages. Suzuki (1999, 2001) and Kuramoto & Matsumura (2001) have demonstrated that the integrated practice of reading and listening via shadowing over a certain period of time can best facilitate comprehension. The point is that it would take a great deal of training for students to activate lower-level processing and acquire word-recognition skills that will lead to facilitating comprehension.

The first research question of the present study is whether the integrated tasks of listening or shadowing into reading would still facilitate comprehension of EFL students without much training in their first reading of a written text. The second research question is whether the degree of familiarity toward each reading material would have significant influence on their reading practices. An additional purpose of the present study is to determine which of the three modes of reading (silent reading, reading with listening and reading with shadowing) would best predict their proficiency of English.

If we go back to the issue of the constrained capacity in the case of oral reading compared with silent reading, it is easier to assume that silent reading is advantageous as a reading mode when it comes to comprehension or recall of a new material. Even if we compare silent reading with reading with listening, silent reading appears to have an advantage because it will allow the readers to have time to pay attention to important information in the new text by reading faster than the other reading modes through skimming or scanning, allowing the subjects to read back freely for semantic confirmation. The pacemaker may also

work as an obstacle to reading back of a new text presented only once. However, if we reconsider phonological coding, the common process executed during reading silently and orally, we can theoretically assume that either reading with listening or reading with shadowing would possibly facilitate comprehension in terms of the processing efficiency.

As to the issue of influential factor on reading practice, we should briefly refer to the experiment conducted by Sato, Takeuchi, & Sakai (1999) who investigated how the brain could be activated efficiently in the processing of oral language by means of an optical topography. It was revealed that Welnicke's Area, the nucleus of language, could get twice as activated when the subjects listened to a familiar or scene-suggestive story as when they listened to the same monotonous sentence repeatedly (Sakai, 2002). We should also note that comprehension of a text infers a mental condition in which one can picture a scene or a concept depicted in the text vividly to oneself (Kintch, 1998; Nishimoto, 2001). An extensive literature on schema theory also leads to the prediction that familiarity with the content of text material will affect its comprehensibility and memorability (Ross & Bower, 1981; Anderson & Pearson, 1984).

We can now suggest the following hypotheses.

1. Reading with shadowing will best facilitate comprehension on a new text among the three reading modes, followed by reading with listening and silent reading.
2. Reading comprehension will be significantly influenced by the degree of familiarity of a given text.

4. Method

4.1 Subjects and Grouping Procedure

The initial participants of Experiment consisted of 113 Japanese college students enrolled in the general education course from six different classes taught by the instructor using the same type of texts and the same communicative approach. The six classes were divided into three groups, each of which consisted of one class of first year students and one class of second year students.

All the students took a cloze test prepared by the instructor. Two levels of passages were taken from *Power Reading 1 & 2* (See Appendix 1) in which every 10th-word deletion was employed for Cloze Test I and every 5th-word deletion was basically employed for Cloze Text II. There are 25 blanks in the elementary level text and 25 blanks in the intermediate level text to measure students' language proficiency level. One point was given for each correct answer. The reliability of the cloze test was checked by GTELP, the criterion text that was recently given to the half of the participants. The test was found to be reliable ($r = .805$), which is considered an acceptable level. In order to make three groups of equal proficiency level, 30 students from each of the three roughly divided groups were selected as the subjects for the sake of statistical analysis. The grouping was based on the cloze test scores by ANOVA. No significant differences were found among the three groups ($F(2,87) = .030, p > .10$).

4.2 Materials

Three different texts of approximately the

same length and readability level were used in this study. To control for any effects of content schemata, all of the texts used in testing were the same type of narrative. They are the opening passages of three fairy tales (“Snow White” “Beauty and the Beast” and “Hansel and Gretel”: hence, SW; BB; HG, See Appendix 2) taken from *The History of European Fairy Tales* by S. Brown (1989). Each text was slightly altered and tape-recorded by a native speaker with approximately the same reading speed. In order to minimize the differences among the texts, the following factors as shown in Table 1 were placed under control.

Table 1: A list of the texts and the controlled factors

	SW	BB	HG
Number of words	271	270	273
Flesch Reading Ease	86.4	85.5	87.9
F-K Grade Level	5.1	4.5	4.7
WPM	125	125	125
Number of chunks	67	67	68

4.3 Task Procedure

All attending students in the instructor's classes had three written recall tests after reading three different materials in three different ways in each single session at the time of mid-term examinations. Presentation order of reading modes were placed under control as shown in Table 2.

Table 2: A procedure for the three reading modes

	SW	BB	HG
Group 1	Silent Reading	R with Lis	R with Sh
Group 2	R with Listening	R with Sh	Silent R
Group 3	R with Shadowing	Silent R	R with Lis

The general directions stated that each script was to be read within the same time limit at the rate of 125 WPM, which is considered appropriate for normal reading by

Japanese college students (Takanashi & Ushiro, 2000). The silent reading mode afforded the students the opportunity to read a given script silently. In the reading-with-listening mode, the students listened to the oral message of a given text being read aloud by the native speaker and played on a cassette recorder. The students were to read silently keeping pace with the voice on the tape. The reading-with-shadowing mode required the students to repeat the oral message while listening to the recorded tape.

When the students finished reading each given script, they were asked to write everything they could remember about the content of each text in Japanese as a written recall test, which is an established method for measuring proficiency in reading comprehension (Kawabata, 2001).

After completing three written recall tests, all the participants were given a questionnaire, the main purpose of which was to survey to what extent they found familiarity with each given text and which mode of reading they found the most difficult or easiest.

4.4 Scoring and Analysis Procedures

The instructor divided each script into idea units, each of which consists of a single clause according to Carrell's definition of the term (Carrell, 1985). Scoring was done by assigning 1 point to perfect recall of 1 idea unit and 0.5 point to partial recall on 1 idea unit. The total score on the test SW and BB amounted to 67 and on the test HG to 68 points.

For the purpose of comparing the three reading modes, a one-way ANOVA for all 90 subjects was conducted with difference in reading

mode as between group variables. Another one-way ANOVA was conducted for all 90 subjects with difference in text as between group variables. The questionnaire (See Appendix 3) results determined which text the subjects found most or least familiar. Furthermore, three separate one-way ANOVAs with the reading modes as the variable were conducted for each text to investigate if there was any interaction between each text and the reading modes.

Lastly, Pearson correlation coefficient was examined among the three different modes of reading and the cloze test to check which of the reading modes would best predict general proficiency in English and the correlations among the three modes of reading.

5. Results

No main effect was found for the reading mode variable, revealing that none of the three reading modes statistically differed with respect to written recall scores on three different scripts as shown in Table 3. In contrast, the main effect for the text variable was statistically significant as shown in Table 4. A post hoc test of means using Bonferroni's multiple comparisons revealed that the meaning units of SW were recalled significantly better than those of HG. The discrepancy in mean scores between the two was 3.361 (* $p < .05$). The questionnaire results on Q1 and Q2 indicate that the participants found silent reading the easiest (46.0%) and reading with shadowing the most difficult (47.8%) while those on Q3 and Q4 indicate that they found SW the most familiar (54.9%) and HG the least familiar (46.0%).

As a result, familiarity toward a given text was found to be a more influential factor than mode of reading in reading comprehension.

Three separate one-way ANOVA with the reading modes as the variable showed that

Table 3: Means and standard deviations for recall scores of three reading modes with F values of one-way ANOVA

Mode	N	Mean	SD
Silent R	90	21.556	9.493
R with L	90	20.217	8.841
R with S	90	18.933	8.600

$F(2, 267) = 1.916, p > .10$

Table 4: Means and standard deviations for recall scores of three different texts with F values of one-way ANOVA

Text	N	Mean	SD
SW	90	21.855	8.525
BB	90	20.356	9.160
HG	90	18.494	9.134

$F(2, 267) = 3.190, *p < .05$

SW and BB yielded no significant differences in mean scores among the three reading modes. One significant interaction was found between HG, the least familiar text and the modes of reading. Reading with listening facilitated the subjects to recall the script of HG significantly better at 20.887 than reading with shadowing, the most difficult mode at 14.716 ($F(2, 87) = 4.217, *p < .05$). The discrepancy in mean scores between reading with listening and reading with shadowing was 6.150 (* $p < .05$). One thing to be noted is that SW, the most familiar text yielded the reverse results of HG at 23.983 for reading with shadowing and 19.716 for reading with listening though no significant difference was found in mean scores between the two modes.

The Pearson correlation matrix in Table 5 indicates that there were strong positive correlations not only between each recall

scores and the cloze test scores, but also among scores by respective reading mode. Reading with listening was found to best predict proficiency in English, followed by silent reading and reading with shadowing.

Table 5: Pearson correlation matrix

	Silent	R w L	R w S	Cloze
Silent	1	.696**	.653**	.532**
R w L	.696**	1		.600**
R w S	.653**	.598**	1	.480**
Cloze	.532**	.600**	.480**	1

**p<.01

6. Discussion

The present study addressed two research questions. One was whether integration of listening or shadowing into reading would facilitate better comprehension on a new text than reading silently even without special instruction and practice. The second was whether the degree of familiarity toward a given text would influence comprehension. The results provided a negative answer to the first issue and a positive answer to the second.

Reading with shadowing, the best training mode shown by previous examination, was found to be no better than silent reading in case of reading a new text once. One probable reason for the negative result is that the subjects were not familiar enough with the method requiring articulation. The questionnaire shows that they found it most difficult among the three modes of reading. From the point of view of processing efficiency, reading with shadowing might stimulate rehearsal mechanisms in the phonological loop to

facilitate information processing as Kuramoto and Matsumura (2001) examined in their experiments. In terms of cognitive capacity, however, the task-demanding aspect of reading with shadowing could cause trade-off between storage and processing by exceeding the available resources in working memory. The effect of rehearsal enhancing mechanism working during reading with shadowing might have been wiped off by impairment of storage and computational functions due to the excessive task. This is especially apparent in case of the subjects of lower proficiency level in particular.

Although the first hypothesis was rejected, it is notable still that the oral reading mode with listening proved to be a good match for the traditional silent reading mode generally acknowledged as a superior mode of reading for Japanese EFL learners. Even in HG, the least familiar text yielded no significant difference in mean scores between silent reading and reading with shadowing. A possible explanation for the statistical equivalence in mean scores is that the given texts turned out to be easy enough for the subjects of higher proficiency level in particular to pay attention to semantic understanding with little attention needed for lower-level processing. While the poor readers would have lowered the mean scores for reading with shadowing because of the constrained capacity, the good readers might have raised the mean scores for the same reading mode due to the effect of synchronous phonological processing.

As the positive results by the text variable show, familiarity toward given materials proved to be an influential factor in reading

comprehension. There are two questions concerning the issue of familiarity in the present experiment. The first key question is why SW, the most familiar text were recalled significantly better than HG, the least familiar text in the overall analysis. The second question comes from the itemized results that there was no significant difference in mean scores by the mode variable in case of SW whereas there was significant difference by the mode variable in case of HG. Why does the least familiar text cause the subjects in reading with shadowing to recall the script least while allowing the subjects in reading with listening to recall best?

We can discuss the issue of familiarity firstly in terms of efficient activation of the brain mentioned earlier. SW, the allegedly most familiar text, has indeed two conspicuously familiar scenes known to many students. One is the scene in which the heroine's real mother wishes her baby to be "as white as snow, as red as blood, and as black as ebony" while sewing and watching the falling snow against black trees and drops of blood falling on the unmarked snow. The other is the scene in which the new queen looks in her magic mirror and say, "Mirror, mirror on the wall, who is the fairest of them all?" It is quite probable that the subjects could vividly imagine the first picturesque scene and the second scene with melodious lines while reading. What should be admitted here, as a flaw of the present experiment is that the script of SW contains repetitions of the two phrases quoted above. The repetitions themselves could have caused the subjects to recall the particular text significantly better than the least

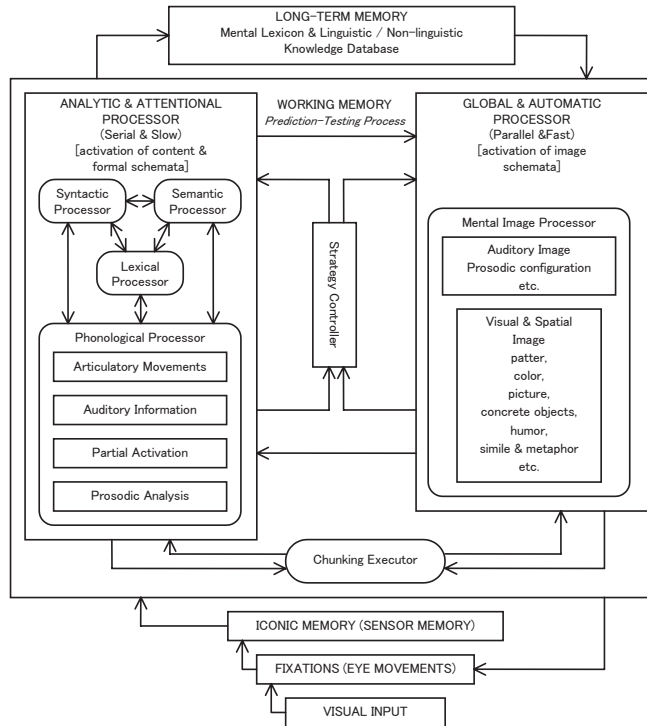
familiar text. The above assumption, however, would probably not be denied in the sense that the repetitions could help the picturesque scene and the melodious lines being efficiently processed and stored in working memory by means of rehearsal mechanism. On the other hand, HG, the allegedly least familiar text had no typically familiar scenes that could activate the reader's brain through vivid images.

Secondly, we can also discuss the issue of familiarity in terms of Kadota's "Tentative Model of Dual Processing in Reading" (2002) based on Paivio's "Dual Coding Theory" (1971) (Figure 1). According to Kadota's model, SW could be regarded as a type of text that might activate Mental Image Processor within GLOBAL & AUTOMATIC PROCESSOR as is shown in Figure 1 below whereas HG could be regarded less so in this respect.

The model assumes that ANALYTIC & ATTENTIONAL PROCESSOR and GLOBAL & AUTOMATIC PROCESSOR are interactive and that the degree of activation of each processor depends on variables such as proficiency level of the individual's language performance and the readability of the material, and so on. As the readability of the texts is almost equal in the present experiment, it is assumed that the familiar text with the vivid scene of visual images and the melodious lines of auditory imagery could have activated IMAGE SCHEMATA of GLOBAL & AUTOMATIC PROCESSOR. The least familiar text did not have such advantages.

Why did SW, the most brain-activating text yield no significant differences in mean scores among the three reading modes whereas HG, the least brain-activating text was found to be

Figure 1: Tentative Model of Dual Processing in Reading(Kadota, 2002)



disadvantageous in doing reading with shadowing? The probable reason is that in the former case, vocalization activity worked rather effectively by the activation of image schemata through visual and aural stimuli, whereas in the latter, the same activity worked rather unfavorably for the lack of scene suggestive familiarity, requiring too much attention on vocalization. If we refer back to Just & Carpenter's capacity theory (1992), we can assume here that the scene suggestive familiarity of SW worked to lessen the cognitive load in working memory in the process of shadowing and that the unfamiliarity of HG worked to heighten the cognitive load during vocalization activity, causing trade-off between storage and processing.

Then why was reading with listening

significantly more advantageous than reading with shadowing in the least familiar text? Kadota's model (2002) would again help us assume that the integration of listening without the attention-demanding task of vocalization could have readily activated content & formal schemata based on Phonological Processor within ANALYTIC & ATTENTIONAL PROCESSOR. We can assume again theoretically that simultaneous presentations of visual and oral languages in reading with listening could have facilitated the subjects to recall the unfamiliar text better due to synchronous phonological coding.

Lastly, we should briefly discuss the correlations between the cloze test scores reflecting general proficiency of English and the recall scores by respective mode of reading.

What draws our attention in the Pearson correlation matrix (Table 5) is the lowest r -value ($=.480$) between the cloze text and reading with shadowing, showing that this mode of reading reflects English proficiency least among the three reading modes. It can be explained in terms of nature of tasks. Reading with shadowing entails production skill in the process of articulation. The active task of production could have influenced passive or unwilling subjects unfavorably regardless of their English proficiency. The production skill involved in reading with shadowing might not always reflect English proficiency.

7. Conclusion

The statistical analyses of the present study indicated that reading with listening or shadowing turned out to be in equal terms with silent reading even under the restricted condition without much instruction and practice. Although 46.0% of the participants found silent reading the easiest and 47.8% of them found reading with shadowing the most difficult, the questionnaire results on Q6 (Which mode of reading do you think would help you develop your English?) revealed the potential of reading with shadowing as a good instructional method. 58.4% of the participants chose reading with shadowing as the most effective mode of reading for developing their English, followed by 34.5% for reading with listening, and only 7.1% for silent reading. The results on Q7 (Which mode of reading would you like to have most in your English class?) would also support the potential efficacy of introducing oral material into reading comprehension

exercise. 46.0% of the participants chose reading with listening and 45.1% reading with shadowing as favorable modes during class hours. These findings would even more lead us to believe that repeated practice of listening or shadowing while reading would help Japanese EFL learners in acquiring word recognition skill as to facilitate comprehension.

Another unexpected finding was that degree of familiarity could be an influential factor on the mode of reading as well as on the comprehension scores. Reading with shadowing, the attention-demanding mode, turned out to facilitate comprehension if the text were familiar or repetitive enough with visual scenes or auditory images. Reading with listening also proved to be effective for the unfamiliar text in reading comprehension due to the synchronous phonological processing.

In conclusion, the findings would suggest as an educational implication, that reading a text assisted by vocal language should be recommended to Japanese EFL students as a synthetically effective method of learning English. As the emphasis has been more on developing communicative competence of students in the general education course at universities, slow and precise silent reading for Japanese translation has been replaced with faster and extensive reading for skimming or scanning. Making the most use of audio-assisted materials would surely be a possible key to a successful reading class.

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Appendix 1

Cloze Test I

Family life in the United States is changing. About thirty years ago, the housewife cleaned the house, (1. cooked) the family breakfast, lunch, and supper, and took care (2. of) the children. Her work was very important in the (3. home). The father got the money for the family. He (4. worked) outside the home all day long. He came home (5. late) in the evening. So he did not see the (6. children) very much, except on Saturday and Sunday. His work (7. at) home was outside in the

garden. Cooking and cleaning (8. were) only women's work.

These days many women work outside (9. the) home. They can't be at home with their children (10. all) day. They, too, come home late in the evening. (11. They) don't want to use their time for cooking dinner (12. in) the evening. They do not have time to clean the house or wash the clothes. So who is going (13. to) take care of the children now? Who is going (13. to) do the housework?

Every family may have a different (14. answer) to these questions. But the wife does not have (15. to) do all the work herself. Today she can get (16. help) with her children. One kind of help is the day-care center. Then she can go to work during the (17. day). Most of children enjoy playing with games, and with (18. other) children in these centers.

When a woman works for (19. a) company, the company may give the woman another kind (20. of) help. The company may allow her to work part-time. That way, she can get some money, and she can (21. also) be with her children part of her every day

A woman can get the most important help from her (22. husband). Today many men do some of the housework. In these families, the men clean the kitchen and wash the (23. clothes). On some nights, the wife cooks dinner. On other (24. nights) the husband does. They both go shopping and they clean the children. Some men may even stop working for some time or work only part-time. People call these men "house-husbands." In the United States, more and more men are (25. becoming) househusbands every year.

Takahashi, K. (2002). *Power Reading 1*. Tokyo: Kenkyusha. p. 34.

Flesch Reading Ease 74.6 Flesch-Kincaid Grade Level 5.4

Cloze Test II

There are some people (1. who) have studied how to (2. make) people buy more food (3. in) a supermarket. They do all kinds of things that (4. you) do not even notice. For example, the food that everybody must buy, like bread, milk, and

vegetables, is spread (5. all) over the store. You have to walk by all the more interesting—and more (6. expensive)—things to find the (7. things) you need. The more expensive food is in packages (8. with) bright-colored pictures. This food is put at eye level, and so you see (9. it) and want to buy (9. it). The things that you (10. have) to buy anyway are usually put on a higher (11. or) lower shelf. However, candy and other things that children (12. like) are on lower shelves. One study showed that when (13. a) supermarket moved four products (14. from) floor to eye level it sold 78 percent more.

(15. Another) study showed that after a person has been in (16. a) supermarket for thirty minutes, she or he spends 50 cents every minute. For example, (17. if) someone stays forty minutes, the supermarket has 5 dollars (18. more). So stores have comfortable temperatures in summer and winter, (19. and) it plays soft music. (20. They) are pleasant places for (21. people) to stay and spend (22. more) money. Some stores have (23. red) or pink lights over the meat, and so the (24. meat) looks redder. They put light green paper around lettuce and put apples in red plastic bags. So be careful in the supermarket. You may (25. go) home with a bag of food you were not planning to buy.

Takahashi, K. (2002). *Power Reading 2*. Tokyo: Kenkyusha. p. 46.

Flesch Reading Ease 68.7. Flesch-Kincaid Grade Level 7.4.

Appendix 2

The passages used for written recall tests

Snow White

It was winter, and the queen was sewing by the window, watching the falling snow against black trees. As she sewed, she pricked her finger and three drops of blood fell on the unmarked snow. She looked at the spots of bright red blood and thought: 'I wish my daughter to be as white as snow, as red as blood, and as black as ebony.'

And so, when a daughter was born, she was a

beautiful girl with skin as white as snow, lips as red as blood and hair as black as ebony. And she was called Snow White.

But the queen died, and the king married another wife who was very cold and unloving. She wanted to be the most beautiful woman in the world, and every day she would look in her magic mirror and say:

'Mirror, mirror, on the wall,
Who is the fairest of them all?'

And the mirror would answer,
'You are the fairest in the land.'

But as Snow White grew up she became more and more lovely, and one day the queen went to her mirror and asked as usual:

'Mirror, mirror, on the wall,
Who is the fairest of them all?'

But the mirror replied:

'Snow White is the fairest in the land.'

The wicked queen was so angry she ordered a servant to take Snow White into the forest and kill her. The servant did as he was ordered, but he could not kill such a beautiful and gentle little girl. Instead he left her in the forest thinking she would die from the cold or be attacked by wild beasts.

Beauty and the Beast

Long ago there lived a rich man who had three daughters. They were all very beautiful, but the youngest was the fairest of them all and she was called Beauty. Her two sisters were very jealous of her, and they were also bad tempered and lazy. When they went to parties and dances, Beauty visited the poor and sick. She was always cheerful and smiling and everyone loved her.

One day their father came home and called them all together. He told them the sad news that he was no longer rich. All his ships had been wrecked at sea and this had left him poor.

Beauty wept when she heard. 'What shall we do now, father dear?' she asked.

'We must sell our house and go and live in a poor country cottage, and we must work on the farm with our own hands,' he replied.

'I will help you all I can,' Beauty said. 'I can cook, sew and knit.' But the sisters said nothing, for they

did not want to work.

So the family left their large house and went to live in a poor farmhouse. Beauty cleaned the house, put flowers in the rooms, cooked dinner and was always cheerful.

Two years passed. Then one day a messenger came with the news that one of the ships had been rescued in a port far away. Beauty helped her father prepare for his long journey. Before he left, he asked each daughter what gift he should bring them back. The eldest wanted pearls, the second asked for diamonds, but Beauty asked for nothing but a white rose.

Hansel and Gretel

Near a great forest, a poor woodcutter lived with his two children and his second wife. The children were called Hansel and Gretel. But times were hard for the woodcutter, and there was less and less to eat in his house.

“What will become of us, wife?” the poor man sighed one night. “How will we find enough to live on and feed the children?”

Then his wife replied that they must take the children away, to the wildest part of the woods, and give them some bread and light a fire and leave them. At first, the man could not find it in his heart to abandon his children to the beasts of the forest. But his wife said, “You fool, then we must all die. You had better start making our coffins.”

So the woodcutter sadly agreed to do what his wife wanted.

But the boy and girl, unable to sleep from hunger, heard what their stepmother said. The little girl cried, but Hansel said, “Hush, Gretel, I will help you.”

In the night, when all was quite, he got up and slipped out of the back door. He looked for white pebbles that shone like silver under the moon, and he filled his pockets with as many as they would hold.

Then he crept back into bed and said to Gretel, “Sleep in peace, dear sister. All will be well.”

Next morning, at sunrise, the wife woke the children, saying they were all going to the forest to chop wood. She gave them each a piece of bread, warning them not to eat it too soon, and they set out.

Appendix 3

The questionnaire given to the participants

Questionnaire on Written Recall Tests

The questionnaire is intended for better English classes. Choose the best answer for you.

Q1 What is the easiest mode of reading?

1. Silent reading
2. Reading with listening
3. Reading with shadowing
4. No difference

Q2 What is the most difficult mode of reading?

1. Silent reading
2. Reading with listening
3. Reading with shadowing
4. No difference

Q3 What is the most familiar story?

1. Snow White
2. Beauty & Beast
3. Hansel & Gretel
4. No difference

Q4 What is the least familiar story?

1. Snow White
2. Beauty & Beast
3. Hansel & Gretel
4. No difference

Q5 What is your most favorite mode of reading?

1. Silent reading
2. Reading with listening
3. Reading with shadowing

Q6 Which mode of reading do you think would help you develop your English?

1. Silent reading
2. Reading with listening
3. Reading with shadowing

Q7 Which mode of reading would you like to have most in your English class?

1. Silent reading
2. Reading with listening
3. Reading with shadowing

➤ Please give your requests or comments on your English class, if any.

リーディングとリスニングの統合が EFL 読解に与える影響

大阪樟蔭女子大学人間科学部教養教育学科

長尾知子

概要

音声教材の普及に伴い、黙読対音読という従来のモード比較研究は影をひそめ、最近では伝統的黙読に対しリスニングを取り入れた黙読（リスニング読み）及び音読（シャドーイング読み）の訓練効果が注目されている。しかし初見テキストに関しては、日本人 EFL の場合、音読に対して黙読が有利だとする定説があるため、音声支援読みによるモード比較はなされていない。本研究では、リーディングとリスニングの統合が初見テキストの英文読解に及ぼす影響を、3種類の読み方比較により調査した。条件を統制した3編の物語冒頭文を、等質の3グループの EFL 学生に順序を違え、それぞれ3通りの読み方（黙読、リスニング読み、シャドーイング読み）で読んでもらい、直後に行った筆記再生法によるテストのスコアを比較した。読み方の変数による統計的有意差はみられなかったが、テキスト別比較では、物語に対する馴染み度の違いにより有意差がみられた。個別分析の結果から、シャドーイング読みは視覚的・聴覚的イメージの豊かな馴染みあるテキストの場合、読解を促進し、一方リスニング読みは、一番馴染みのないとするテキストの場合でも、読解を促進することがわかった。