Reading speed in L1 and L2

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The paper discusses the results of an experimental study of the correlation between the oral reading speed developed by Japanese learners of English in their native language (L1) and in English (L2). The reading tasks used in the experiment included Japanese and English language versions of two paragraphs (of expository and narrative genres) from *The Book of Tea*, by Okakura Tenshin. Sixty-seven first- and third-year students majoring in English participated in the study. Oral reading tests were self-administered and the reading time for each student and for each paragraph was recorded. *SPSS Statistics 17.0* software was used to calculate the correlation between different variables. The results of the preliminary investigation suggest some correlation between the oral reading speed demonstrated by participants in their L1 and in the L2, and that it is different for different genres of texts. However, there may be various factors contributing to these results. Further studies would be required to make any reliable conclusions about the transfer of oral-reading automaticity from one language to another.

本稿は、日本語を母語として話し、且つ、英語を学ぶ学生を対象にして施行された日本語および英語の音読速度の相互関係に関する実験研究の結果報告である。本研究では、岡倉天心著『茶の本』の英日対訳から、解説文体および物語文体で記述された段落を各2つ選択、使用した。また、英語コミュニケーションを専攻する67名の大学1年生及び3年生が参加した。実験には、自己管理型音読テストを採用し、且つ、段落毎に音読速度の測定を行った。また、各変数間の相関測定は、SPSS Statistics 17.0ソフトウェアを用いて算出した。予備調査の結果には、異なる文体において、参加者の母語である日本語の音読速度と英語音読速度に相関が見られた。この研究で得られた結果の原因を探求するには、音読における言語間の相互速読技術の進捗性に関する効果をさらに検討することが必要である。

Oral reading fluency is one of the most important indices of language proficiency both for native and foreign language speakers (Grabe, 2010; Hasbrouck, 2008; Macalister, 2010; Nation, 1991; Oakley, 2003; Rasinski, 2004; Waldman, 1958; Winston, 2010). Development of oral reading fluency, however, remains one of the biggest challenges for Japanese learners of English (Kitao & Kitao, 1995). Ongoing criticism of the methodologies presently used in English language classrooms in Japan has placed oral reading fluency in the focus of researchers' attention. New ways of assessing and developing oral reading fluency are suggested and discussed in a number of recent publications (Irujo, 2007; Iwahori, 2008; Kitao & Kitao, 1995; Nation, 2007; Nation & Malarcher, 2007; Oakley, 2003; Rasinski, 2004; Richards & Sayenko, 2009). The problem, however, will remain unsolved unless we understand what oral reading fluency is and what psychological mechanisms are involved in its development (Blumenthal, 1970, pp. 142-171).

According to the U. S. National Reading Panel, oral reading fluency is "the ability to read text with accuracy, appropriate rate, and good expression" (National Institute of Child Health and Human Development, 2000). Rasinski (2004) argues that all three dimensions of reading fluency—accuracy in word decoding, quick and automatic recognition of words in connected text, and expressive and meaningful interpretation of text—are related to one another and are important for effective comprehension and overall good reading. "Fluent readers decode words accurately and automatically, without (or with minimal) use of their limited attention or conscious cognitive resources" and "use cognitive resources to construct meaning through expressive interpretation of the text" (Rasinski, 2004, p. 4). Researchers agree that, although not always directly related to comprehension (Grabe, 2010), reading rate nevertheless provides a way of determining students' level of automaticity in word recognition and/or phonological decoding (Rasinski, 2004, p. 4; Wagner, 2008). It may be hypothesized that development of automaticity in reading may be similar to development of other automatic behaviors (e.g., dancing, typing, playing musical instruments, etc.). Thus, reading fluency skills developed in one's native language may be an advantage in foreign language learning, since fundamental mechanisms of native and non-native language decoding and processing may be similar (Dekydtspotter, Schwartz & Sprouse, 2006). Achieving oral reading automaticity in L2 then should be less difficult for those students who are more fluent readers in their native language.

Previous studies of the mechanisms of reading speed development show that there is a transfer effect from reading practice in L2 (English) to the L1 (Bengali) (West, 1955) and from the L1 (Indonesian) to L2 (English) (Bismoko & Nation, 1974). In addition, Macalister's (2010) study suggests that reading speed gains on controlled speed-reading texts may contribute to faster reading speeds on authentic texts with unknown elements.

The goal of the present research was to determine whether there is any correlation between the students' oral reading speed in their L1 (Japanese) and L2 (English); in other words, whether there is any oral reading automaticity transfer from the L1 to L2.

Reading rate as a dimension of oral reading fluency

Oral reading fluency is usually understood as an uninterrupted speech flow, correlated with speech rate and expressiveness. Timothy Rasinski points out that "fluency is more than reading fast: it is reading at an appropriately fast rate with good expression and phrasing that reflects solid understanding of the passage" (Rasinski, 2004, p. 23). He identifies three inseparable components of fluency: *accuracy*, or accurate decoding of words in text; *automaticity*, or decoding words with minimal use of attention resources; and *prosody*, or the appropriate use of phrasing and expression to convey meaning. Rasinski concludes:

In essence, reading fluency refers to accurate and automatic decoding of the words in the text, along with expressive interpretation of the text, to achieve optimal comprehension. Fluency is important in reading, then, because it affects how well readers understand what they read… It may be helpful to think of reading fluency as a bridge between the two major components of reading—word decoding and comprehension. At one end of this bridge, fluency connects to accuracy and automaticity in decoding. At the other end, fluency connects to comprehension through prosody, or expressive interpretation (2004, pp. 2-3).

Automaticity and accuracy of word recognition are considered to be prerequisites for a rapid reading rate (Macalister, 2010), and reading rate is recognized as an indicator of automaticity in word recognition (Rasinski, 2004). Although oral reading fluency is usually tested using graded texts with controlled vocabulary, a number of researchers argue that reading fluency involves automaticity not only in word recognition, but also in

phonological decoding (Adams, 1990; Jorm & Share, 1983; Wagner, 2008). Accurate word decoding is not necessarily based on word recognition. It may be a result of phonological decoding. According to Richard Wagner (2008, p. 7), "phonological decoding is a basic building block upon which fluent single-word reading and fluent reading of connected texts for comprehension are based".

The theory of automaticity in reading suggests that "proficient word decoding occurs when readers move beyond conscious, accurate decoding to automatic, accurate decoding" (LaBerge & Samuels, 1974; Rasinski, 2004, p. 3). "Without automaticity, an excessive amount of readers' available cognitive resources are used up in lower level processing, leaving insufficient resources for the higher level cognitive processes necessary for comprehension" (Oakley, 2003). Early research in the psychology of reading reveals that fluent readers develop wider *eye-voice span* and can visually scan up to 7 words ahead when reading aloud (Blumenthal, 1970, p. 144). Thus, automaticity in reading allows the reader to see larger sentences and phrases as wholes, which assists in reading more quickly. Poor readers are fixed mostly on the act of comprehending individual words, while good readers may observe grammatical relations (Blumenthal, 1970, p. 159) and focus on comprehension.

A number of studies confirm that Japanese college students read very slowly in English (Kitao & Kitao, 1995). Yoshida & Kitao's (1986, cited in Kitao & Kitao, 1995, p. 150) research results show that "Japanese college students could read only 105 words per minute in a situation when they were asked to read fast, and when they did read at that rate, their comprehension was only 54%".

Researchers found several different reasons why Japanese read English passages slowly (Kitao & Kitao, 1995). First of all, letters of the Roman alphabet are not easy for Japanese readers to recognize. As a result, they "pay close attention to the individual words"; "their eye-span is narrower and they cannot grasp whole phrases. Japanese tend to see one word at a time". Second, Japanese are not used to reading from left to right. Besides, it takes more time for Japanese readers to understand English sentences that have a word order different from Japanese. If Japanese readers find a word they do not know, "they are likely to stop reading and worry about that new word" (Kitao & Kitao 1995, pp. 150-151). Some Japanese students, however, increase their reading speed in English much faster than their classmates. A question is whether the reading automaticity developed in the L1 (Japanese) can contribute, at least to some degree, to faster reading in L2 (English). The following study is an attempt to address this question.

Research method

Participants

This paper discusses the results of the preliminary investigation conducted at the Department of International Communication of Nagoya University of Commerce and Business. Sixty-seven first- and third-year students (of mixed English language proficiency levels) majoring in English participated in the study. Oral reading tests were self-administered in the English Reading I class (for the first-year students) and the English Communication V class (for the third-year students) in April-May 2010.

Testing Materials

The Book of Tea by Tenshin Okakura (1999) was chosen as a source text for the testing materials for two reasons. First, the book was originally written in literary English. The text is authentic, not adapted, but it is accessible for general readers. Second, the book is written by a Japanese author and it introduces a part of Japanese culture, therefore the realities described, at least theoretically, might be familiar to Japanese readers. Since

our goal was not to assess the students' reading comprehension or overall reading fluency, but to test and compare their reading speed (as a function of automaticity in word recognition and phonological decoding) in Japanese and English on authentic, naturally occurring texts (of the same genre and the same level of difficulty), we did not use graded texts. Testing materials included two passages of expository and narrative genres from the bilingual English and Japanese edition of *The Book of Tea*: Japanese Text 1 (JT1 - expository passage in Japanese), Japanese Text 2 (JT2 - narrative passage in Japanese), English Text 1 (ET1 - expository passage in English, 100 words), and English Text 2 (ET2 - narrative passage in English, 164 words). Versions of the text passages in English (ET1 and ET2) are shown below:

> ET1: "Tea began as a medicine and grew into a beverage. In China, in the eighth century, it entered the realm of poetry as one of the polite amusements. The fifteenth century saw Japan ennoble it into a religion of aestheticism-Teaism. Teaism is a cult founded on the adoration of the beautiful among the sordid facts of everyday existence. It inculcates purity and harmony, the mystery of mutual charity, the romanticism of the social order. It is essentially a worship of the Imperfect, as it is a tender attempt to accomplish something possible in this impossible thing we know as life." (p. 35)

> ET2: "In this connection there is a story of Rikiu which well illustrates the idea of cleanliness entertained by the teamasters. Rikiu was watching his son Shoan as he swept and watered the garden path. "Not clean enough", said Rikiu, when Shoan had finished his task, and bade him try again. After a weary hour the son turned to Rikiu: "Father, there is nothing more to be done. The steps have been washed for the third time, the stone lanterns and the trees are well sprinkled with water, moss and lichens are shining with a fresh verdure; not a twig, not a leaf have I left on the ground." "Young fool," chided the tea master, "that is not the way a garden path should be swept." Saying this, Rikiu stepped into the garden, shook a tree and scattered over the garden gold and crimson leaves, scraps of the brocade of autumn! What Rikiu demanded was not cleanliness alone, but the beautiful and the natural also." (pp. 123-124)

The passages were copied on a sheet of paper (A4), with JT1 and JT2 passages in the left column and ET1 and ET2 passages in the right column. Spaces were provided to write the student's name and ID number, and to note the time spent on reading each of the passages.

Description of the experimental test

The students were given sheets of paper with testing materials and the following Timed Reading Instructions:

> Note the exact time. Read each of the passages (starting from JT1 to ET2) aloud. Try to read fast. When you finish, note the number of seconds it has taken you to read each passage and write down the information in the space provided. Circle the words (in Japanese and English passages) that you did not know and/or had difficulty to read. Write down your name and student number in the spaces provided.

Students were asked to read the passages in Japanese first, for consistency. If they found an unfamiliar word, they had to guess how to read it and go on reading, without stopping. The test was not designed to assess students' reading accuracy and expression, or text comprehension.

Fifteen of the third-year students (from one class) were asked to audio record (using PC@LL system) their readings in Japanese and English, save the sound files, and send them to the teacher.

The sound files were used for more accurate interpretation of the research results.

Data processing

The reading time (in seconds) for each student (and for each text: JT1, JT2, ET1, ET2) was registered. *SPSS Statistics 17.0* software was used to calculate the correlation between different variables (JT1 and ET1; JT2 and ET2; JT1 and JT2; and ET1 and ET2).

Research results and interpretation

The results of the preliminary investigation showed that even when students marked the same words in English, or in Japanese, passages as "unfamiliar", the time they spent on reading the passages was different. Some students demonstrated faster reading both on Japanese and English texts. Others read Japanese passages much faster than English, or read both Japanese and English passages very slowly. The reading speed in English varied from 42 words per minute to 122 words per minute on the expository passage, and from 50 words per minute to 147 words per minute on the narrative passage.

The results of the statistical analysis suggest that there is some correlation between the students' reading speed in the L1 (Japanese) and L2 (English). The correlation between the reading time for the narrative genre passage in Japanese (JT2) and its version in English (ET2) (with correlation coefficient .435, significant at the 0.01 level) is stronger than the correlation between the reading time on the expository passage in Japanese (JT1) and its English version (ET1) (with correlation coefficient .338, significant at the 0.01 level) (see Tables 1 and 2). This can be at least partially explained by the greater structural predictability and less sophisticated vocabulary used in narrative genre texts than in expository texts. Therefore, it could be easier for the students to read the narrative passage in English than the expository one. In the ET1 passage, 12% of the words were marked as unfamiliar or difficult to read, while only 6% of the words in ET2 were unfamiliar to most of the students taking part in the experiment. In addition, the expository passage in English included longer unfamiliar words of 3-4 syllables, whereas the narrative passage had shorter (and therefore easier to decode) unfamiliar words of 2-3 syllables. Thus, some of the "unfamiliar" words were easy to decode and read accurately, whereas others (e.g., "aestheticism" from ET1) were difficult for most of the students to decode and articulate.

Table 1. Correlation coefficients between the reading time for JT1 and ET1

		JT1	ET1
JT1	Pearson Correlation	1	.338**
	Sig. (1-tailed)		.003
	N	67	67
ET1	Pearson Correlation	.338**	1
	Sig. (1-tailed)	.003	
	N	67	67

**. Correlation is significant at the 0.01 level (1-tailed).

Table 2. Correlation coefficients between the reading time for JT2 and ET2

		JT2	ET2
JT2	Pearson Correlation	1	.435**
	Sig. (1-tailed)		.000
	N	67	67
ET2	Pearson Correlation	.435**	1
	Sig. (1-tailed)	.000	
	N	67	67

**. Correlation is significant at the 0.01 level (1-tailed).

The strongest correlation (.647, significant at the 0.01 level) was found between the students' reading time on passages ET1 and ET2 (see Table 3), and between the reading time on passages JT1 and JT2 (.645, significant at the 0.01 level) (see Table 4). Similar degrees of correlation between the reading time on the same passages in English and in Japanese may suggest that similar factors could influence the students' reading speed both in English and in Japanese: level of grammatical and lexical difficulty of the expository and narrative passages, and students' reading automaticity level.

Table 3. Correlation coefficients between the reading time for JT1 and JT2

		JT1	JT2
JT1	Pearson Correlation	1	.645**
	Sig. (1-tailed)		.000
	N	67	67
JT2	Pearson Correlation	.645**	1
	Sig. (1-tailed)	.000	
	N	67	67

**. Correlation is significant at the 0.01 level (1-tailed).

Table 4. Correlation coefficients between the reading time for ET1 and ET2

		ET1	ET2
ET1	Pearson Correlation	1	.647**
	Sig. (1-tailed)		.000
	N	67	67
ET2	Pearson Correlation	.647**	1
	Sig. (1-tailed)	.000	
	N	67	67

**. Correlation is significant at the 0.01 level (1-tailed).

Preliminary analysis of the fifteen audio recordings of the students' readings reveals that reading time does not always directly correlate with oral reading fluency. Longer reading time may be a result of long hesitation pauses before one or two "unfamiliar" words with rapid reading of the rest of the passage, or it may be truly a result of slow and labored word-by-word reading. Moreover, a reader with high accuracy can demonstrate a low reading rate, and a reader with high reading speed can make many decoding errors. Some participants, fluent readers in Japanese, were also able to read even unfamiliar English words rapidly and accurately, however without genre-specific expressive interpretation of the text. Further, detailed study of recorded readings is required for a more reliable interpretation of the obtained results.

Conclusion and discussion

The results of the preliminary analysis suggest that there is some correlation between the oral reading fluency demonstrated by the participants in their native (Japanese) and foreign language (English), and that it is different for different genres of texts. The correlation between the oral reading rate in Japanese and English is stronger for the narrative genre than for the expository text.

One of the interesting findings was that students showed different (although correlated) reading rates for different genres of passages both in Japanese and in English. However, the factors contributing to these results may not be the same. Several students, fluent and expressive in Japanese, demonstrated high reading speed and accuracy—even on unfamiliar words—in the English passages they recorded, but they paid little attention to genre-specific expressive intonation and punctuation when reading the L2 text.

The research discussed in this paper is a preliminary investigation of the correlation between the students' reading speed

on authentic text passages in the L1 and L2 . The study has a number of limitations that would need to be addressed in future work. First, some of the timing could be inaccurate and, since we did not have all the readings recorded, there was no provision to check the accuracy of the measurements. Second, for better accuracy, future investigations should compare the reading rates on familiar (prepared) and new texts to determine what factors may be responsible for any differences in reading rates. It would be also useful to compare the data with the oral reading speed of native speakers of English on the same texts, to determine the optimal reading rate for these genres. Application of specially designed tests to assess students' "eye-span" in reading Japanese and English, and comparison of the results could provide for better understanding of the correlation between reading automaticity transfer from Japanese to English. Finally, to make any reliable conclusions about the reading automaticity transfer from one language to another, we would need to analyze differences in progress made in developing L2 reading speed among students with different levels of reading speed (in Japanese), after an experimental speed reading course in English (Nation & Malarcher, 2007). These issues will be addressed in future research.

Bio data

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