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The Influence of English Speed Reading on Japanese EFL Learners' Predictive Inference Encoding

英文速読が日本人英語学習者の予期的推論符号化に与える影響

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Abstract

In recent years, Japan has seen a trend of English word increases in its university entrance examinations. Therefore, EFL learners must increase their reading speed and improve their textual comprehension. However, speed reading (SR) that does not match the learner's proficiency level can have negative consequences, such as poor content comprehension and inference generation. SR studies have been conducted, but they have mainly investigated whether SR instructions help improve reading speed, or whether extensive reading work improves reading speed. However, few studies have investigated the relationship between SR and inference generation. This study aims to verify whether differences in reading style made a difference in readers' encoding of predictive inferences. The differences include SR versus normal reading (NR) and texts with differing ease of predictive inference generation. To verify the degree of encoding, this study uses a cued-recall task with a target probe word for possible predictive inference. The experiment's results suggest that differences in NR and SR methods cause differences in inference generation, while text differences cause differences in SR conditions. Readers may be psychologically rushed to read too fast, and as reading speed increases, eye–mouth reading may occur in which readers follow the letters, but only pretend to understand their meaning. In particular, this study's results showed that some recalls could be taken as guesswork. The findings point to SR of instructions, which is a popular way to reading instructions in Japan.

Keywords

speed reading, Japanese EFL readers, predictive inference generation

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1. Introduction

1.1 High Demand for Speed Reading

In recent years, Japan has seen a trend of English word increases in its university entrance examinations (e.g., a rising number of English words in the Common Test for university admissions). The number of English words—passages and comprehension questions— increased 1.4 times over a decade from 4187 in 2014 to 6000 in 2023. Niimi (2021) reportes that in everyday English classes, students are taught to read a story carefully and, then, to summarize and narrate its contents to classmates. However, some questions in university examinations require students to simply fill in blank spaces by extracting possible contents from the text as quickly as possible, which requires readers to process the English passages as fast as possible. The trends in these tests seem to be driving the need for speed reading (SR), for both learners and instructors. Owing to the increasing number of academic articles published each year, English-as-a-foreign-language (EFL) learners must read a large number of texts and set aside time to read multiple texts. To solve this problem, EFL learners can increase their reading speed and improve their textual comprehension (Karim, 2022).

What precisely is SR? It is defined as the process of seeing, decoding, and comprehending words (Sutz, 2009). Generally, the speed of reading in English is said to be 300 words per minute (wpm) for native speakers (Nuttall, 1996). Other research has revealed that the lower limit of wpm for native English speakers is 138 wpm when reading for memory, 300 wpm when reading simple sentences with high comprehension, 450 wpm for skimming, and 600 wpm for scanning, although wpm varies greatly by research method and reading purpose (Beglar, Hunt, & Kite, 2012; Carver, 1992). Regarding second language (L2), Nakano (2009) calculates the wpm required to answer the questions in the National Center Test for University Admissions from 2001 to 2007. He finds that 131 wpm to 188 wpm was needed. Other studies have revealed that for L2 readers, a reading speed of approximately 100–150 wpm is a barrier to overcome (Takanashi & Takahashi, 1987; Takanashi & Ushiro, 2000). However, the speed of reading that could be defined as SR depends on each reader's proficiency, especially L2 readers, whose proficiency in English varies greatly (Suzuki, 2017).

1.2 Some Issues Relating to Speed Reading

SR that does not match the learner's proficiency level can have negative consequences, such as poor content comprehension (Collins & Daniel, 2018). Some research insists that SR is ineffective (e.g., Walton, 1957; McLaughlin, 1969; Just, Carpenter, & Woolley, 1982; Carver, 1985). It is necessary to discuss its negative influence on EFL learners' reading processes. The Course of Study's (MEXT, 2019, pp. 17, 25, 77) commentary emphasizes the importance of reading purposefully by paying attention to how paragraphs and sentences connect and progress (i.e., the story's development). The manner of reading newspapers should be quite different from that of novels. Despite this policy, some English reading comprehension questions in classroom tests are not designed for different ways of reading according to the text type (Niimi, 2021). Hence, the concern is that learners may be required to read text fast, regardless of its type (novels and expository texts). Especially in narrative text, inference generation is necessary for consistent comprehension. When we read a text, we understand both what is explicitly written and what is not necessarily written, such as the causal connections between sentences, prediction of the characters' behaviors, and the author's intentions. The reader's

inference generation plays a major role in the ideas and interpretations generated by connecting the information in the text with the reader's own background knowledge and experience, even though it is unwritten in the text. However, SR can interfere with inference generation. Carver (1984) finds that presenting words at a fast pace reduces comprehension to almost zero, even in predictable sentences.

Some studies mention that SR is not conducive to reading comprehension (Carver, 1985; Just et al., 1982). Just et al. (1982) point out that although readers can obtain the gist and answer general questions, they have difficulties in answering detailed and referential questions. Collins and Daniel's (2018) findings show the possibilities of SR preventing readers from generating inferences, which negatively influence their reading comprehension. This is because SR involves fewer eye movements and regressions(Schotter, Tran, & Rayner, 2014). In SR situations, eye-fixation duration must be reduced. Ushiro et al. (2021) point out that SR may cause eye–mouth reading and ignoring the text contents. Readers are in a hurry to read rapidly, and try to read adjacent words (i.e., the next and subsequent words), generating eye–mouth reading. Consequently, they fail to notice causal connections, and predict future outcomes in a story. Memory, including inferences, prevents readers from forgetting a story's contents over time (Kintch, 1998). In other words, memories that do not contain inferences may easily disappear. In this study, we hypothesize that SR may cause problems with the retention of English content in memory, which would lessen recall rates.

1.3 Types of Inference Generation

Several L1 studies investigate whether appropriate inferences are generated at rapid reading speeds (Collins & Daniel, 2018). Collins and Daniel's (2018) findings show that SR may have a negative impact on inference generation, and that text constraints are related to generating inferences. They conclude that readers who follow normal reading are more likely to generate appropriate predictive inferences from a more predictable passage. In this way, some studies on SR indicate that comprehension suffers as SR increases, leading to less inference generation.

SR studies have been conducted, but they have mainly investigated whether SR instructions help improve reading speed, or whether extensive reading work improves reading speed. However, few studies have investigated the relationship between SR and inference generation (Collins & Daniel, 2018). Two types of inferences exist: backward and forward (Peracchi & O'Brien, 2004; Trabasso, Van den Broek, & Suh, 1989; Van den Broek, Fletcher, & Risden, 1993). Bridging inferences (see Figure 1) build coherent and causal relationships between sentences, like a bridge (Maeda, 2021, pp. 69-70). Bridging inferences are known to be generated during reading, because they are essential for understanding the text.

Conversely, as Figure 2 shows, predictive inferences—a type of forward inference—promote readers' deep involvement in the text, imparting a richer understanding (Maeda, 2021, pp. 70-71). Thus, predictive inference helps facilitate context processing and construction of situational models (Allbritton, 2004; Kintsch, 1998; Linderholm, 2002; Schmalhofer, McDaniel, & Keefe, 2002), both of which benefit readers.

For SR, top–down processing of a story to understand its whole picture is necessary, as the Course of Study emphasizes (MEXT, 2010, p. 16). To realize top–down processing, readers are required to predict what will happen next, which

Figure 1
Image of a Bridging Inference

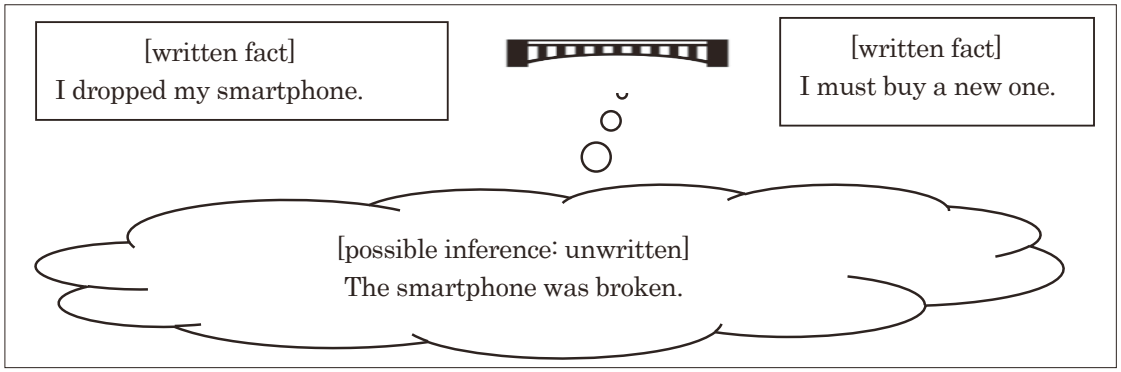
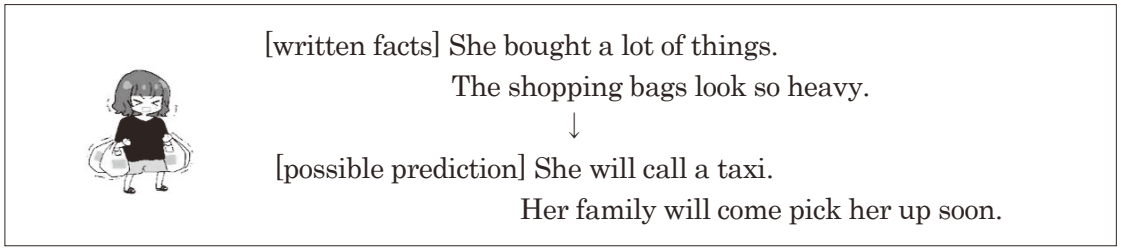


Figure 2
Image of a Predictive Inference



saves reading time. Therefore, in this study, during SR, we focus on predictive inference generation, using operated texts with different levels of easiness for predictive inference generation, and cue probe words for predictions.

1.4 Predictive Inference Encoding and Cued Recall Tasks

Inferential information is activated during reading, and encoded into mental representations. However, some studies reveal that for EFL readers, activating predictive inferences online is difficult, because their cognitive resources during reading are mainly engaged in lower-level processes, such as word recognition and sentence analysis, rather than higher-level processes, such as inference generation. Linderholm (2002) mentions that predictive inferences can play an important role in constructing situation models, processing future events in a story more smoothly, and building coherence of events, while reading. Therefore, the key to success in English reading may be successful higher-level processing. In this study, we employ a cued-recall task to clarify SR's influence on predictive inference generation, as a higher-level process in encoding inferences. The participants' productivity in cued-recall tasks provides evidence of their encoding of predictive inferences, because productivity increases when predictive inferences are produced, and then encoded in mental representation. However, it is debatable how to measure reader-generated inferences (i.e., whether online or offline techniques are appropriate). The cued-recall task, as an offline measurement, is widely used to collect evidence of readers' inference generation in both L1 and L2 studies (Klin, 1995; Murray & Burke, 2003; Nahatame, 2013; Ushiro et al., 2012). This task is also widely used as a reflection of readers' understanding of a text (Alderson, 2000; Bernhardt, 1991; Ushiro, 2009). Differences in the

information reproduced reflect variations in readers' mental representations (Ushiro, 2009). However, some authors criticize the use of the recall task as a testing technique to measure comprehension as just a memory test (Ushiro, 2009). This is because, there is a concern that the first and last items presented in the text are the most memorable; these are referred to as the primacy and recency effects, respectively. To avoid the influence of readers' memory power, cued recall tasks are sometimes used (Ushiro, 2009). Memory, including inferences, prevents readers from forgetting over time (Kintch, 1998), and predictable inferences are encoded into situation models (Fincher-Kiefer, 1996). Therefore, the recall rate should provide evidence of readers building situation models.

1.5 Study Purpose and Research Questions

This study aims to verify whether differences in reading style made a difference in readers' encoding of predictive inferences. The differences include SR versus normal reading (NR) and texts with differing ease of predictive inference generation. To verify the degree of encoding, this study uses a cued-recall task with a target probe word for possible predictive inference. The evidence of recall rates suggests the possibility that predictive inferences were activated during reading (Ushiro et al., 2012). If the participants could generate targeted predictive inferences, they would be able to recall the probe word, using cuing as a trigger. In addition, two different texts were prepared with different constraints: high-predictability target (HPT) versus control (CO), with different levels of ease of predictive inference generation toward the target probe word. The participants read different texts (HPT vs. CO) using different ways of reading (SR vs. NR). This study investigates the relationship between SR and predictive inference generation in terms of coding, using a cued free recall task. The research questions are as follows.

RQ1: Does reading style (SR vs. NR) affect EFL learners' encoding of predictive inferences into their mental representations?

RQ2: Does the text (HPT vs. CO) influence reading style (SR vs. NR)?

2. Methodology

2.1 Participants

The participants comprised 60 Japanese undergraduate students from the same university, who were majoring in language and culture courses, and approaching an intermediate level in their English ability (CEFR A2, EIKEN Grade Pre-2 to Grade 2 level). As four of these students failed to complete the task, their scores were excluded from the analysis. A few of them had studied abroad for just less than 3 months. They were divided into two homogeneous classes based on their TOEIC® IP test scores: SR versus NR. Each group's basic statistics on SR were $M = 391.58$, $SD = 53.90$ and $M = 393.03$, $SD = 52.32$. To verify the two groups' homogeneity, analysis of variance (ANOVA) was performed. The results were $F\ (1, 29) = 1.86$, $p = .36$ (ns). No significant difference was found, and thus, the two groups can be considered homogeneous. In addition to TOEIC® IP test scores, participants' vocabulary levels were tested using the "R vocabulary test" (Oba, 2016), which was created based on the *JACET 8000* (The Japan Association of College English Teachers, 2016). The results show that the vocabulary levels of Groups A and B were $M = 36.64$, $SD = 3.45$ and $M = 33.17$, $SD = 4.32$, respectively. The ANOVA result was $F\ (1, 76) = 1.75$, $p = 0.26$ (ns). As no significant differences were obtained, the two groups were considered homogeneous based on their vocabulary and reading proficiency.

2.2 Materials

Twelve English stories (two conditions: HPT vs. CO × 3) used in Cranford and Moss (2019) were cited in the experiment (see Table 1). The first scene is the same despite the versions: "Danny loved to play baseball" and "Danny was one of the best players in the league, and a particularly good outfielder," whose description is expected to work for generating a predictive inference that Danny would catch the ball. However, the next scene showed a difference between HPT and CO. In HPT, which has a strong-predictive inference passage, "Danny looked up and opened his glove as he watched the ball fly through the air," would have readers predict that he successfully caught the ball. The readers' prediction can be connected to the written fact that "Danny was one of the best players in the league, and was a particularly good outfielder," in a resultative way in HPT. Conversely, in CO, a filler passage, which is designed not to prompt any inference generation, "Danny looked over the fence and knew he had lost the game as he watched the ball fly through the air," would not have readers predict the target prediction "catch." The fact that "Danny was one of the best players in the league and was a particularly good outfielder" cannot be connected to the target prediction, which is present in the cued recall task.

Table 1

Example Passages used in This Experiment

Danny loved to play baseball. He was on one of the town's Little League teams and he and his friends often played a pickup game after school. Danny was one of the best players in the league and was a particularly good outfielder.

< High-Predictability Target version >

Today, Danny was feeling confident. He had been making great plays all day. It was the opposing team's final turn at bat and Danny's team needed one out to win the game. The pitch was thrown and the ball was hit right toward Danny in the outfield. Danny looked up and opened his glove as he watched the ball fly through the air.

< Control version >

Today, Danny was feeling nervous. It was the opposing team's final turn at bat and Danny's team needed one out to win the game. Danny was in the outfield as the best batter on the opposing team stepped up to the plate. The pitch was thrown and the ball was hit a mile in the sky. Danny looked over the fence and knew he lost the game as he watched the ball fly through the air.

Note. The stories were cited from Cranford and Moss (2019).

2.3 Procedure

Each participant received a booklet containing 12 English stories. They read six stories each with the two conditions, HPT and CO. The order of presenting the stories was counterbalanced. The participants were asked to speed-read at 100 wpm. To establish whether the proficiency level of each participant was able to speed read at 100 wpm, a pilot study was conducted. It is considered difficult for the average English learner to follow the instruction "read English sentences at the first sight in XX wpm." Therefore, in the SR condition, participants practiced beforehand by reading the text three times at 100 wpm. The SR task was conducted in the same manner, with the time displayed on the screen, and the participants were asked to speed-read at 100 wpm. By contrast, the NR group read the texts without any time constraints. They were informed that they would have to perform a task after reading but were not informed about having to perform the cued recall task. After reading all the passages, they received another booklet, which had space to write what they recalled from each passage. Then,

using the cue as a target probe word for predictive inference generation, they were instructed to recall and write down as much as they could remember about the passages in Japanese. The booklet provided a target probe word (e.g., *catch*) for each passage. This keyword would be derived if the participant successfully generated anticipatory inferences. The probe words are listed in the recall for both HPT and CO conditions. In this task, the time provided for recalling was not limited.

2.4 Analysis

Initially, all the experimental texts were divided into a set of idea units based on Ikeno (1996). Two raters carried out this division. Their agreement on the division was 89.5% (α= 0.76, substantial). Any disagreements were resolved through discussion. The two raters randomly selected and independently scored 30% of the cued recall data. Their agreement was 87.25% (α= 0.72, substantial). Disagreements were resolved through discussion, and one of the raters individually scored the remaining data.

3. Results

3.1 Quantitative (Statistical) Analysis

Participants' recall was analyzed using a 2 (text condition: HPT versus CO) × 2 (reading task: SR versus NR) mixed two-way ANOVA. Text conditions were within-participants factors, whereas reading tasks were between-participants factors.

Table 2 and Figure 3 present the recall rates in each condition group (SR vs. NR) and text condition (HPT vs. CO). The ANOVA results show an interaction between the conditions and task (F (1, 52) = 7.30, p = .01, η^2 = .25).

Table 3 presents the post-hoc analyses results, showing significant differences among the SR–HPT, NR–HPT, and NR–CO conditions. The results suggest that if readers were asked to read in the normal way, the text would make no difference in predictive inference generation; however, if they were asked to speed-read, their predictive inference generation might not occur; unless the text promotes predictive inferences, like in the HPT version.

Table 2
Recall Rates Produced in Each Condition Group and Text Condition

	HPT		CO	
Condition group	*M*	*SD*	*M*	*SD*
Speed-reading (*n* = 28)	.29	.15	.15	.10
Normal-reading (*n* = 28)	.36	.11	.17	.08
Total (*n* = 56)	.32	.13	.16	.07

Figure 3
Recall Rates in Each Condition Group

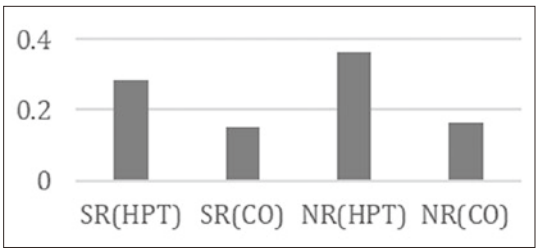


Table 3
Results of Post Analyses

Pair	*F*	*p*	η^2
SR – HPT	6.45	.01	.23
SR – CO	1.61	.22 (ns)	.07
NR – HPT	127.45	.00	.69
NR - CO	24.54	.00	.62

3.2 Qualitative Analysis Based on Participants' Comments about the Task

In addition to the quantitative analysis, participants' recall protocols were scrutinized for a qualitative analysis between the SR and NR conditions.

Table 4
Samples of Recall Comments for Danny's Baseball Story

Speed-reading	Normal-reading
· The opposite team must be a strong team. · The player must be in bad shape. · The pitcher must be disappointed, I know that because I play baseball. · I love baseball, too. · This scene must be a memorable one.	· He is a good player, so I expect him to catch the ball. · The story says "the ball flies through the air," so the pitcher was hit by a home run. · The pitcher who was hit by a home run must have felt disgusted. · It may be a "goodbye home run."

Note. These recall comments were originally written in Japanese and translated into English by the author.

Participants in the NR group were found to appropriately infer the results based on the preceding context, whereas those in the SR group

often made "guessing guesses" based on their background knowledge, rather than the written description in Table 4.

4. Discussion

4.1 Findings

This study examined the influence of SR on predictive inference generation, using different text conditions. We illuminate differences between NR and SR strategies, that is, inference generation. The experiment's results suggest that differences in NR and SR methods cause differences in inference generation, while text differences cause differences in SR conditions. Readers may be psychologically rushed to read too fast, and as reading speed increases, eye–mouth reading may occur in which readers follow the letters, but only pretend to understand their meaning. In particular, this study's results (Table 4) showed that some recalls could be taken as guesswork. The findings point to SR of instructions, which is a popular way to reading instructions in Japan.

RQ1: Does reading style (SR vs. NR) affect EFL learners' encoding of predictive inferences into their mental representations?

We found a stronger effect of text type than the effect of reading style itself on recall rates. This is a different result from that of previous studies (e.g., Collins & Daniel, 2018) where the significance of SR itself was negative.

RQ2: Does the text (HPT vs. CO) influence reading style (SR vs. NR)?

Collins and Daniel (2018) reveal that the lack of evidence for inference generation by speed readers in both low and high predictability situations suggests that SR is a poor strategy regardless of the predictability of the passage. The authors conclude that SR is not a very effective strategy, regardless of the passage's predictability. However, unlike the results of Collins and Daniel's (2018) first-language (L1) study, the present study targeted at L2 learners, suggested that readers may be more successful in generating inferences in texts with high predictability.

4.2 Educational Implications and Limitations

The measurement of evidence for generating inferences is controversial, as mentioned earlier. This study adopted cued recall tasks based on the

idea that recall rates are higher if readers generate inferences, because inferences improve their memory (Kintch, 1998). However, it is possible that the influence of memory is not excluded, and other inferences, rather than predictive ones, cannot be excluded completely. Future studies should include online measurements, such as eye-tracking, to supplement the offline measurements used in this study.

Certainly, the reading pace of participants in this study might have been disrupted by the instruction to "read at 100 wpm," but that is precisely the negative element for readers who are expected to read quickly. In classroom instruction, SR instruction is often provided by being given the instruction, "Read this story in X minutes." In this experiment, we simply reproduced that instructional situation. If the instruction caused psychological pressure on the reader and disrupted the pace of reading, it would call into question the significance of the SR instruction itself.

For SR instruction to be effective, it must be tailored to the learner's level of proficiency. Learners should not be told to read quickly if they have not mastered the process of understanding English texts. Karim (2022) suggests that instructors could train EFL learners to use scanning, skimming, previewing, and predicting techniques to predict the main idea of the text to acquire SR techniques. He suggests that students then be asked to follow SR techniques to familiarize themselves with reading fast. The order of these steps is important. Training in SR does not automatically speed up the ability to scan, skim, preview, and predict.

SR instruction should be provided as training for learners to master and accelerate the comprehension process of English texts. Reading English quickly is simply speeding up the automaticity of the comprehension process. In that sense, learning to speed-read can be compared to learning to ride a bike. At first, the speed of proceeding is very slow and unstable. However, the learner gets the hang of it, and acquires the ability to get on to the bike, their speed of proceeding becomes faster and faster. Reading must be a similar experience. Readers must master how to comprehend the text, not only the surface level of words and structure analysis, but also how to generate inferences, and connect what they read with their background knowledge. After they practice reading certain amount of texts extensively, they can read quickly and naturally. As Bilaya (2021) mentions, SR consists of two factors: technical and semantics. The technical component refers to the ability to recode printed letters (graphemes) into sounds (phonemes), to integrate letters into syllables, and to integrate syllables into words and sentences. The semantic component is the ability to understand the meaning of words and their combinations according to context and to identify the level or spectrum of meaning. A balance must be kept between these components. However, technically, teachers should not rush readers into reading fast, without teaching them how to firmly grasp the story's meaning.

5. Conclusion

According to the *Course of Study* (MEXT, 2019) for upper secondary schools, English Communication I students are expected to understand what the writer is trying to convey as a whole by focusing on understanding the necessary information, rather than trying to understand the details of all the information. In other words, students are required mainly to read the outline. However, in English Communication II, the goal is not only to be able to read the necessary information, but also to grasp the development of its text and the writer's intentions. In other words, understanding the development of a

text implies understanding its entire flow and paying attention to the connections between sentences and paragraphs. In English Communication III, the goal is to grasp the development of a story by paying attention to the connections between sentences and paragraphs and understanding the flow of the entire text. To understand the contents, it is important to understand the words and actions of the characters, and their reasons for them, in line with the text. The key to achieve these goals is to instruct learners not only on analyzing the words and structure level, but also on how to generate predictive inferences, which might not actively occur in SR, especially if students' proficiency does not match the reading instructions. We hope that this experiment's findings will raise a question to today's trend, in which reading fast is priority.

References

Alderson, J. C. (2000). *Assessing reading*. Cambridge University Press. https://doi.org/10.1017/cbo9780511732935

Allbritton, D. (2004). Strategic production of predictive inferences during comprehension. *Discourse Processes*, *38*(3), 309–322. https://doi.org/10.1207/s15326950dp3803_2

Beglar, D., Hunt, A., & Kite, Y. (2012). The effect of pleasure reading on Japanese university EFL learners' reading rates. *Language Learning*, *62*(3), 665–703. https://doi.org/10.1111/j.1467-9922.2011.00651.x

Bernhardt, E. (1991). *Reading development in a second language: Theoretical, empirical and classroom perspectives*. Ablex Publishing. https://doi.org/10.1017/s027226310001202x

Bilaya, A. (2021). Speed reading as a psychological problem. *E3S Web of Conferences*, *258*, https://doi.org/10.1051/e3sconf/202125807062

Carver, R. P. (1984). Rauding theory predictions of amount comprehended under different purposes and speed reading conditions. *Reading Research Quarterly*, *19*, 202–218. https://doi.org/10.2307/747363

Carver, R. P. (1985). How good are some of the world's best readers? *Reading Research Quarterly*, *20*(4), 389–419. https://doi.org/10.2307/747851

Carver, R. P. (1992). Reading rate: Theory, research, and practical implications. *Journal of Reading*, *36*(2), 84–95. https://doi.org/10.2307/40016440

Collins, W. M., & Daniel, F. (2018). The impact of reading at rapid rates on inference generation. *Journal of Research in Reading*, *41*(3), 564–581. https://doi.org/10.1111/1467-9817.12125

Cranford, E. A., & Moss, J. (2019). Generating predictive inferences when multiple alternatives are available. *Discourse Processes*, *56*(4), 289–309. https://doi-org/10.1080/0163853X.2018.1497921

Fincher-Kiefer, R. (1996). Encoding differences between bridging and predictive inferences. *Discourse Processes*, *22*(3), 225–246. https://doi.org/10.1080/01638539609544974

Ikeno, O. (1996). The effects of text-structuring-guiding questions on comprehension of texts with varying linguistic difficulties. *JACET Bulletin*, *27*, 51–69. http://ci.nii.ac.jp/naid/110003814657

Just, M. A., Carpenter, P. A., & Woolley, J. D. (1982). Paradigms and processes in reading comprehension. *Journal of Experimental Psychology: General*, *111*, 228–238. http://doi.org/10.1037/0096-3445.111.2.228

Karim, S. A. (2022). The speed-reading technique to boost English as foreign language learners' text comprehension. *NOBEL: Journal of Literature and Language Teaching*, *13*(1), 183–152. https://doi.org/10.15642/NOBEL.2022.13.1.138-152

Kintch, W. (1998). *Comprehension: A paradigm for cognition*. Cambridge University Press.

Klin, C. M. (1995). Causal inferences in reading: From immediate activation to long-term memory. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *21*(6), 1483–1494. https://doi.org/10.1037/0278-7393.21.6.1483

Linderholm, T. (2002). Predictive inference generation as a function of working memory capacity and causal text constraints. *Discourse Processes*, *34*(3), 259–280. https://doi.org/10.1207/S15326950DP3403_2

Maeda, M. (2021). Dictogloss wo toriireta eigoryoku wo nobasu gakushuho shidoho [Learning and teaching methodology by dictogloss to improve EFL learners' English ability]. Kenkyusha.

McLaughlin, G. H. (1969). Reading at "impossible"

speeds. *Journal of Reading*, *12*(6), 449–510.

Ministry of Education, Culture, Sports, Science and Technology, Japan [MEXT]. (2010, 2019). Kotogakko gakushu shido yoryo kaisetsu [The Commentary of Course of Study]. Kairyudo Shuppan.

Murray, J. D., & Burke, K. A. (2003). Activation and encoding of predictive inferences: The role of reading skill. *Discourse Processes*, *35*(2), 81–102. https://doi.org/10.1207/S15326950DP3502_1

Nahatame, S. (2013). Predictive inference generation during Japanese EFL reading: Focusing on contextual constraint and local coherence of text. *JACET Journal*, *56*, 19–38.

Nakano, T. (2009). Kyokasho dake de daigakunyushi ha toppa dekiru [We can get through the college entrance exam with just textbooks]. Taishukan shoten.

Niimi, T. (2021). Daigaku nyugaku kyotsu test eigo reading mondai no takakuteki kento [The multiple analysis of the common entrance examination for university]. *Jinbun × Shakai*, *1*(1), 269–278. https://doi.org/10.50942/jinbunxshakai.1.1_269

Nuttall, C. (1996). *Teaching reading skill in foreign language*. New ed. Heinemann Educational Books.

Oba, M. (2016). RLG vocabulary test. http://www.mitewakaru.com/RLG/

Peracchi, K. A., & O'Brien, E. J. (2004). Character profiles and the activation of predictive inferences. *Memory & Cognition*, *32*, 1044–1052. https://doi.org/10.3758/BF03196880

Schmalhofer, F., McDaniel, M. A., & Keefe, D. (2002). A unified model for predictive and bridging inferences. *Discourse Processes*, *33*(2). 105–132. https://doi.org/10.1207/S15326950DP3302_01

Schotter, E. R., Tran, R., & Rayner, K. (2014). Don't believe what you read (only once): Comprehension is supported by regressions during reading. *Psychological Science*, *25*(6), 1218–1226. https://doi.org/10.1177/0956797614531148

Sutz, R. (2009). *Speed reading for dummies*. Wiley Publishing, Inc.

Suzuki, Y. (2017). Nihonjin kokosei niha dorekurai no eibunsyori sokudo ga hitsuyo ka–daigaku nyushi senter shaken "eigo" no bunseki kara–[How fast do Japanese high school students need to process English sentences? Analysis of the university center test "English"]. *Kanagawa University Studies in Language*, *39*, 1–20.

Takanashi, Y., & Takahashi, M. (1987). *Eigo reading shido no kiso* [The foundation for teaching reading in English]. Kenkyusha.

Takanashi, Y., & Ushiro, U. (2000). *Eigo reading jiten* [The dictionary of English reading]. Kenkyusha.

Trabasso, T., Van den Broek, P., & Suh, S. Y. (1989). Logical necessity and transitivity of causal relations in stories. *Discourse Processes*, *12*, 1–25. https://doi.org/10.1080/01638538909544717

Ushiro, Y. (2009). *Eigo reading no kagaku – ometa tsumori no nazo wo toku–*[Science of EFL reading]. Kenkyusha.

Ushiro, U., Nahatame, S., Hasegawa, Y., Shimizu, H., Kimura, Y., Tanaka, Y., & Nakagawa, C. (2012). Activated and encoding of bridging and predictive inferences in EFL reading comprehension. *JACET Journal*, *54*, 33–52.

Ushiro, U., Ogiso, T., Hosoda, M., Nahatame, S., Komuro, R., & Nishi, T. (2021). How Japanese EFL readers maintain the local and global coherence of protagonist, intentionality, and causality in narratives: Evidence from eye movements. *ARELE*, *32*, 65–80. https://doi.org/10.20581/arele.32.0_65

Van den Broek, P., Fletcher, C. R., & Risden, K. (1993). Investigations of inferential processes in reading: A theoretical and methodological integration. *Discourse Processes*, *16*, 169–180. https://doi.org/10.1080/01638539309544835

Walton, H. N. (1957). Vision and rapid reading. *American Journal of Optometry and Archives of American Academy of Optometry*, *34*(2), 73–82. https://doi.org/10.1097/00006324-195702000-00002