



The Role Reading Fluency Plays in Reading Abilities of Advanced Korean EFL Readers

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ABSTRACT

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The current study aimed to explore the effects of reading fluency on reading comprehension abilities. In doing so, different levels of reading fluency (i.e., word and text level) and different measures of reading fluency (i.e., oral and silent reading fluency) were considered. A total of 31 advanced Korean EFL readers in high schools were opted for, and the data were analyzed with hierarchical and multiple regression analyses. The results showed that oral reading fluency, which includes word and text level reading fluency, did not take up unique variance when silent reading fluency and vocabulary knowledge were taken into consideration. However, these results were mainly attributed to word reading fluency, revealing that text level reading fluency was a significant contributor to reading abilities. To be specific, while both oral and silent text level reading fluency took up additional predictive power when controlling for each other, the predictability of the latter was larger than that of the former. These results imply that for advanced readers, rapid reading of a passage silently as well as orally will positively affect their reading comprehension abilities, while silent text reading fluency has a more crucial role in boosting their reading abilities.

I. INTRODUCTION

Reading entails intricate cognitive processes with various sub-component skills such as vocabulary knowledge, reading fluency, word recognition, listening comprehension, syntactic knowledge, and so on (Cutting & Scarborough, 2006; Y. S. G. Kim, 2017, 2020; Nakamoto et al., 2008; Protopapas et al., 2012). Several research studies have attempted to grasp which variable can have potent predictive power in explaining reading comprehension so as to gain a more reliable picture of the reading comprehension processes. In this vein, reading fluency has been referred to as a crucial predictor of reading comprehension abilities (Kirby & Savage, 2008). In fact, several studies have demonstrated an interactive or bidirectional relation (Baker et al., 2011; Y. S. G. Kim, 2020) as well as the

positive relationship (Crosson & Lesaux, 2010; Cutting & Scarborough, 2006) between reading fluency and reading comprehension.

Yet, compared to first language (L1) contexts, the importance of reading fluency has not been well regarded in second language (L2) contexts, especially in English as foreign language (EFL) settings such as Korea. To be specific, in investigating the relation of reading fluency and reading comprehension, disparate levels of reading fluency such as word and passage level and/or different measures of reading fluency such as oral and silent reading fluency were not considered. Given that the predictive power of different levels in reading fluency on reading comprehension was dissimilar (Jenkins et al., 2003; Klauuda & Guthrie, 2008) and that the importance of oral and silent reading fluency changes depending on readers' age

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and proficiency level (Y. S. Kim et al., 2011; Y. S. Kim et al., 2012), containing different levels and/or measures in a single study will be meaningful for solid understanding of the relationship between reading fluency and reading abilities. In doing so, including advanced readers seems pertinent since in L2 contexts, correlation between oral reading fluency and reading comprehension was higher among readers with more advanced English proficiency (Lems, 2003), and assessing reading fluency of proficient readers whose decoding abilities do not negatively affect their reading abilities can be a more legitimate approach to test it (Wolf & Katzir-Cohen, 2001).

Therefore, the current study aims to explore the effects of reading fluency on reading abilities of advanced readers while encompassing different levels and measures in reading fluency. This study will be able to verify whether the research results in EFL contexts can reconfirm those in L1 contexts by investigating the relation of reading fluency and reading comprehension abilities. In addition, through the results, information about which level and measure in reading fluency are more appropriate for boosting advanced readers' reading abilities will be further provided.

II. THEORETICAL BACKGROUND

Among several theories which attempted to explain sub-components in reading comprehension processes, the Simple View of Reading (SVR), a reading model explaining reading comprehension as joint effects of decoding and language comprehension abilities (Gough & Tunmer, 1986), has been widely accepted as a valid reading model (Cutting & Scarborough, 2006; Lonigan et al., 2018; Richard & Jon, 2016). That is, previous studies have demonstrated that ability of pronouncing discrete real and pseudo words and of listening comprehension well explains one's reading comprehension abilities. However, some research studies conducted in L1 (Kirby & Savage, 2008; Ouellette & Beers, 2010) and L2 contexts (M. Ji & S. Baek, 2019) have suggested that other factors should be considered in explaining comprehensive reading comprehension processes. For instance, considering the contribution of decoding abilities to reading comprehension incrementally decreases with reading development (Adolf et al., 2006; Foorman et al., 2015; Hoover & Gough, 1990; Y. S. Kim, 2015; Y. S. G. Kim, 2020), other components deemed needed to explain reading abilities of readers with diverse English proficiency. In this vein, reading fluency can be a good candidate in explaining reading comprehension since its interactive and bidirectional relation with reading comprehension has been observed (Baker et al., 2011; Jenkins et al., 2003; Y. S. G. Kim, 2020) as well as it can even predict more advanced readers' reading abilities (Y. S. Kim et al., 2011). In L2 contexts too, the significant contribution of reading fluency to reading comprehension was confirmed (Y. Kang, 2011, 2013, 2020; H. Kim, 2012).

Reading fluency refers to reading individual words and text with accuracy and speed (Crosson & Lesaux, 2010).

It can be measured orally or silently, which is referred to as oral reading fluency (ORF) and silent reading fluency (SRF), respectively. Compared to research studies on ORF, relatively few studies have been conducted on SRF while enlarging role of SRF was confirmed with reading development and age (Y. S. Kim et al., 2011; Y. S. Kim et al., 2012). Such trend is partly due to the difficulty in measuring readers' silent reading processes and the speculation that reading fluency may develop naturally as ORF develops (Y. S. Kim et al., 2011). In addition, reading fluency encompasses word reading fluency (i.e., pseudoword- and word-reading fluency) and text reading fluency. Even though reading fluency at word and text level have overlapped areas (Jenkins et al., 2003), several research studies revealed that text reading fluency predicts reading abilities beyond word reading fluency (Crosson & Lesaux, 2010; Jenkins et al., 2003; Klaua & Guthrie, 2008; Wolf & Katzir-Cohen, 2001). Such findings may be derived from the fact that text reading fluency turned out to be intertwined with various reading skills (Fuchs et al., 2001; Jenkins et al., 2003), thus requiring more advanced cognitive abilities while processing meaningful linkages within and between sentences (Y. Kang, 2020). In other words, provided that the effects of dissimilar levels and measures in reading fluency on reading abilities are disparate, diverse aspects of reading fluency needs to be considered in order to paint a more complete picture in comprehending the relation between reading fluency and reading abilities.

In terms of text reading fluency, compared to L1 contexts where strong correlation between text reading fluency and reading abilities has been demonstrated (Fuchs et al., 2001; Jenkins et al., 2003; Roehrig et al., 2008), in L2 contexts, research studies on reading fluency are still very restricted, and much less is known about text reading fluency (E. H. Jeon, 2012) since reading fluency has started to draw attention. For example, with respect to the studies on ORF, the association of word level fluency and reading comprehension has been more explored (Y. Kang et al., 2011; Y. A. Lee, 2017) as studies conducted in L1 contexts did in the past (Klaua & Guthrie, 2008). Also, the studies on SRF measured it at the sentence-level, not at the discourse-level (H. Ahn & Y. Kang, 2016; Y. Kang, 2020; Y. Kang et al., 2014). However, having good command over decoding does not necessarily mean they are adept in reading comprehension since L2 readers, especially who are in EFL contexts, can be more likely to be word callers (Y. Kang, 2020). That is, even though they seem to be skillful in decoding discrete words, they possibly do not know the meaning of the words they decode in reality. Additionally, sub-processes of reading such as word recognition and syntactic parsing, which is related to sentence level reading fluency, will be automatized while readers' proficiency level develops (LaBerge & Samuels, 1974; Perfetti, 1985), so it may be difficult to evaluate advanced readers' reading fluency with word and sentence level reading fluency. In this regard, reading fluency at the discourse level can be more legitimate in measuring reading fluency comprehensively since text level reading fluency is hard to be autom-

atized in that it encompasses not only cognitive area but the knowledge of general organization and coherence of text.

Admittedly, some studies explored the relationship between word- and text-reading fluency and reading comprehension in L2 contexts, but inconclusive results have emerged. For instance, in J. Park's (2018) study with ninth grade whose proficiency level was low-intermediate, not text reading fluency but pseudoword reading fluency played a significant role in explaining reading comprehension. On the contrary, in Jiang et al.'s (2012) study with adult intermediate readers, pseudoword reading fluency was not significantly correlated with reading abilities. Plus, E. H. Jeon's (2012) study documented that text reading fluency was the strongest predictor for reading abilities of grade 10 Korean EFL students whose proficiency level was not specified, while the contribution of word reading fluency was minimal. Such dissimilar findings may be attributed to the fact that the readers' English proficiency in the abovementioned studies was not unified and that vocabulary knowledge, which was referred to as the foundational reading skill (Y. S. G. Kim, 2017, 2020), was not taken into consideration [except in E. H. Jeon's (2012) study] while testing reading fluency. It is natural for the readers who know large amount of vocabulary to get a higher score in reading fluency test. In this regard, a study which controls for the foundational reading skill (i.e., vocabulary knowledge) will contribute to accurate understanding of reading fluency. In doing so, given that measuring fluency of proficient readers whose decoding abilities do not harm their reading abilities can be more legitimate approach to test it (Wolf & Katzir-Cohen, 2001), delving into multiple levels of reading fluency with advanced/older readers will be helpful for understanding the relationship between reading fluency and reading comprehension.

The disparate research results can be attained depending not only on whether researchers measured word-level or text-level in reading fluency, but also on whether the studies explored the relation of reading comprehension and ORF (Fuchs et al., 1988; E. H. Jeon, 2012; Lems, 2003; J. Park, 2018) or SRF (Y. Kang, 2020; Y. S. Kim et al., 2015; Rasinski et al., 2011). In L1 contexts, it appears that the relation between the latter and reading comprehension is less clear than that of the former and reading comprehension (Y. S. Kim et al., 2011). For example, Price et al. (2016) conducted their research with American students without finding any positive correlation between silent reading fluency and reading comprehension. Conversely, significant correlation was found in the other studies (Denton et al., 2011; Y. S. Kim et al., 2015; Rasinski et al., 2011). However, unlike the relation of SRF and reading comprehension, strong correlation between ORF and reading abilities has been well supported (Fuchs et al., 1988; Samuels, 2006). The dissimilar research results according to the measurement method led to the research studies exploring the different role ORF and SRF play in explaining reading abilities. In this vein, in L1 contexts,

there have been a few attempts to investigate which better explains reading comprehension between ORF and SRF, revealing that the importance of SRF grows with reading development and age (Jenkins & Jewell, 1993; Y. S. Kim et al., 2011; Y. S. Kim et al., 2012). For example, the longitudinal study with Grade 1 and 2 students conducted by Y. S. Kim et al. (2012) showed that ORF not SRF explained unique variance in reading abilities of Grade 1, but the reverse was observed in Grade 2.

On the contrary, to my knowledge, in L2 contexts, especially in EFL contexts, few research studies have investigated both SRF and ORF in a single study. But this kind of study seems needed since the results of L1 contexts cannot be generalizable to EFL contexts. In EFL contexts, such as Korea, exposure time to the target language is restricted to school instruction (Y. Kang, 2020), which implies that the time for honing decoding abilities will be longer. Indeed, compared to the research results in L1 contexts where decreasing effects of decoding abilities have been observed from elementary school (Jenkins & Jewell, 1993; Y. S. Kim et al., 2011), J. Park's (2018) study with EFL middle school third graders revealed that word reading and pseudoword reading fluency were still significant predictors of reading comprehension abilities. Even the research studies with high school second graders showed decoding skills made a unique contribution beyond SRF in explaining reading comprehension (Y. Kang et al., 2014). That is, unlike L1 contexts where readers can naturally be exposed to the target language with sufficient volume of input, readers in EFL contexts have comparatively limited opportunity for reading target language out loud, and thus the time that decoding abilities affect their reading abilities can plausibly be elongated.

To sum up, although the potential power of reading fluency on reading abilities has been confirmed in L1 contexts, further analyses are required in L2 contexts, too. To be specific, given that the importance of text reading fluency and silent reading fluency shifts with readers' reading development, exploration of reading fluency beyond word level fluency and oral reading fluency will contribute to explaining reading fluency of readers with diverse English proficiency. For these, research questions are set as following:

- 1) Does oral reading fluency have additional predictive power when controlling for silent reading fluency in explaining reading comprehension of advanced high school Korean EFL readers?
- 2) Between word level reading fluency and text level reading fluency, which has stronger predictive power in explaining reading comprehension of advanced high school Korean EFL readers when controlling for each other?
- 3) Do oral and silent text level reading fluency have differential predictive power in explaining reading comprehension of advanced high school Korean EFL readers when controlling for each other?

III. METHOD

1. Participants

A total of 31 Korean students (16 male and 15 female students) attending high schools in Seoul participated in this study. Among them, 11 students were from 10th grade whose reading abilities were equivalent to that of the rest of the 11th graders. The proficiency level of the whole participants was advanced in that they all got first or second grade in their mock test (80-100) which was implemented on March 24th, 2021 developed for 11th graders. All participants had been taught English for at least seven years and had spent extra hours outside school such as private academies to learn English. None of them had lived in English-speaking countries for more than a year. Data were collected from three teachers including the researcher who were familiar to the testing procedures.

2. Instruments

1) Vocabulary Knowledge

Vocabulary Level Test Version 2 (Schmitt et al., 2001) was employed to measure how many words the participants knew and to control for the participants' overall reading comprehension abilities. The students were originally given 20 questions (three sub-items per question), which were comprised of five questions from both 2000 and 5000 frequency levels and 10 questions from 3000 frequency level. The 7th National Curriculum states that high school students are expected to reach a 3000-word level after they finished the curriculum, but considering the participants were all advanced in their English proficiency, a part of 5000 frequency level items were included. For each question, six words with three definitions were presented. They were asked to choose the appropriate words among six options and match them with the relevant definitions by writing down the number. For example, students should choose "wall" in response to the given explanation "part of a house." Students were informed that the test was timed (seven minutes), but this only intended to reduce the time for sticking to some unfamiliar or confusing items. In other words, more time was allowed if the participants asked. Each question contained three answers, but for test reliability, five sub-items were removed from both 3000 and 5000 frequency levels. That is, the maximum possible score the participants could be rewarded was 50. The Cronbach's alpha for this test was above .90.

2) Oral Reading Fluency

(1) Word level reading fluency

Both pseudoword and word reading tests were administered to measure students' ability of quickly and accurately decoding English nonwords/words into their

corresponding phonemes. The tests were not timed but the participants were notified that pausing for more than three seconds would be recorded as an incorrect answer. Both tests were implemented individually in a quiet place.

Firstly, for pseudoword reading test, students were given 50 items collected from DIBELS 8th edition (University of Oregon, 2020), which has been proven to be accredited measures in assessing reading fluency. All acceptable pronunciations were correctly scored following Wang and Koda's (2005) scoring system. For instance, both /hif/ and /hef/ were rated to be correct for the pseudoword "heaf." The maximum score one could get was 50, and the interrater reliability for this test was .62. Secondly, for word reading test, students were given a total of 52 items randomly extracted from a list of 3,000 words in the 2015 revised national curriculum (Ministry of Education, Science and Technology, 2015). Ministry of Education, Science and Technology (2015) suggested a series of words which should be used in the high school textbooks. Given that such words were the ones the participants had actually encountered, the researcher collected a total of 52 words alphabetically evenly. Among them, 20 words were easy and 32 words were more difficult in that the former were recommended for primary school and the latter for high school students. Wrong accent was not counted as an incorrect answer and a slightly inaccurate pronunciation was rated to be correct since the focus of word reading test was neither on accent nor on precise pronunciation. For example, although the accent of the word "adult" is on "u" not on "a," both accents were rated to be correct. Also, even though /tain/ should be a silent syllable in the word "mountain," students got a full score since it was not deemed to do any harm for decoding abilities. The maximum possible score was 52, and the interrater reliability of the test was .82.

(2) Oral text level reading fluency

Oral text level reading fluency test was administered to measure the readers' capability of reading connected text fast and accurately. Students were given 274 word-long passage imported from DIBELS 8th edition. The test was timed, asking the participants to read as many words as possible within a minute. The readability index of the test (57.07) measured with Flesh Reading Ease (FRE) was matched with the mean readability of the randomly sampled five different High School English 1 textbooks (60.81), which were used for 11th graders. While rating the score of the test, prosody was not included since prosodic reading was unrelated to reading comprehension (Schwanenflugel et al., 2004) and getting acceptable reliability was difficult (Jiang et al., 2012). That is, when evaluating the total score of the test, omitted words, replaced words, or hesitation for more than three seconds were rated to be incorrect. For example, the pronunciation of /æ/ rather than /e/ for the middle sound in "species" was not considered as an incorrect answer since this type of error did not true to the three abovementioned error categories. Total words read, total errors, and total words correct were

recorded after the test was over. The maximum possible score for this test was 274 and the interrater reliability was above .90.

3) Silent Text Level Reading Fluency

Silent text level reading fluency was administered to measure the participants' more advanced cognitive abilities and comprehension level beyond meager decoding skills. In measuring silent text reading fluency, maze test from DIBELS 8th edition was utilized. The test was timed, requiring the participants to check a word among three options as fast as they could within three minutes. The text consisted of 407 words with 59 response items, each worth one point, and thus the maximum possible score the participants could get was 59. With the help of FRE, the readability index of the silent text reading fluency (58.44) was matched with the mean readability of the five randomly selected High School English 1 textbooks (60.81).

4) Reading Comprehension

In assessing the students' English reading comprehension abilities, the subset of the mock test for 11th graders (implemented on March 24th, 2021) administered by the Korea Institute for the Curriculum and Evaluation (KICE) was utilized. Among the 28 reading comprehension items in the mock test, three types of reading questions were removed. Firstly, the item asking grammatical knowledge was deleted. Secondly, the items which asked to choose true or not true following the passage were eliminated since those tapped into mere translation ability. Lastly, to have one passage and one question type, some questions were excluded. In this way, a total of 20 questions were extracted. The rater scored responses either as correct (1 point) or incorrect (0 point), so the maximum possible score for this test was 20. The reliability (Cronbach's alpha) of the test was .59.

IV. RESULTS

The descriptive statistics of all variables was examined to explore the basic properties of the test results (see Table 1). To begin with, the mean score of reading comprehension was 15.77 ($SD = 2.60$) and of vocabulary knowledge was 43.87 ($SD = 5.41$). These scores can be a corroboration that the participants were advanced in their English proficiency. Also, as for the word reading fluency, the mean score of pseudoword reading fluency was 47.74 ($SD = 1.83$) and of word reading fluency was 48.55 ($SD = 2.53$), reporting close scores to the total scores. Among the variables, two types of text reading fluency were noticeable in that large variance was observed compared to the other variables. The scores of oral and silent text reading fluency range from 65 to 163 and 11 to 54, respectively. In addition, out of the maximum possible score for oral text reading fluency (274) and silent text reading fluency (57),

the mean score of the former was 116.39 and of the latter was 26.29. Such results can be attributed to the fact that even advanced readers had lack of rapid reading skills.

Next, correlation analyses were run (see Table 2) in order to find out the relationship among the examined variables in the current study. The results revealed that two types of text reading fluency (OTRF and STRF) and overall English proficiency measured by vocabulary knowledge were significantly correlated with reading comprehension abilities ($r = .37, p < .05$; $r = .44, p < .05$; $r = .38, p < .05$). However, the relationship between word reading fluency and reading comprehension abilities was marginally significant ($r = .33, p < .10$) and between pseudoword reading fluency and reading comprehension abilities was not significant. Such findings imply that decoding skills are possibly automatized for advanced EFL Korean readers. In terms of reading fluency, oral text reading fluency was significantly correlated with word reading ($r = .36, p < .05$) and pseudoword reading fluency ($r = .46, p < .01$), while the correlation between word and pseudoword reading fluency was marginally significant

TABLE 1
Descriptive Statistics of the Examined Variables ($n = 31$)

Week	Min	Max	SD	M	Total score
Reading comprehension (RC)	12	20	2.60	15.77	20
Vocabulary knowledge (VK)	19	49	5.41	43.87	50
Pseudoword reading fluency (PWR)	44	50	1.83	47.74	50
Word reading fluency (WR)	40	52	2.53	48.55	52
Oral text reading fluency (OTRF)	65	163	22.19	116.39	274
Silent text reading fluency (STRF)	11	54	10.19	26.29	57

TABLE 2
Correlation Among the Examined Variables

	OTRF	WR	PWR	STRF	VK	RC
OTRF	1.00	.36*	.46**	-.04	.24	.37*
WR		1.00	.31~	.08	.19	.33~
PWR			1.00	.17	-.09	.17
STRF				1.00	.32	.44*
VK					1.00	.38*

* $p < .05$, ** $p < .01$

($r = .31, p < .10$). Additionally, silent text reading fluency was not significantly correlated with any measures in oral reading fluency, which reconfirms the previous results that oral and silent reading fluency can be referred to as dissociable constructs (Y. S. Kim et al., 2011; Y. S. Kim et al., 2012).

With regard to the first research question asking whether oral reading fluency can predict advanced readers' reading comprehension abilities beyond silent reading fluency, a first set of hierarchical regression analyses were performed (see Table 3). Vocabulary knowledge was entered in step 1 so as to control for readers' general language proficiency, and it significantly predicted 14.5% of the variance in reading comprehension ($\Delta F = 4.934, p < .05$). Next, silent reading fluency at the text level was entered in step 2, followed by three measures of oral reading fluency in step 3. The results revealed that silent text reading fluency took up additional 11.3% unique variance when the effects of vocabulary knowledge were taken into consideration ($\Delta F = 4.253, p < .05$); however, oral reading fluency did not significantly predict the advanced readers' reading comprehension abilities ($\Delta F = 1.918, p = .153$). When the step 2 and 3 were reversed, the regression results showed that oral reading fluency seemed to take up additional 11.5% of the variance but that was statistically insignificant ($\Delta F = 1.339, p = .283$). On the contrary, silent reading fluency made significant 13.7% unique variance above and beyond the effects of vocabulary knowledge and oral reading fluency ($\Delta F = 5.685, p < .05$). That is, for advanced Korean EFL high school readers, practicing of rapid silent reading will be more beneficial in boosting their reading comprehension abilities. However, such results should be reconsidered since the statistically insignificant results of oral reading fluency can be attributed to either word level or text level reading fluency.

TABLE 3
Hierarchical Regression Analyses Predicting Reading Comprehension Abilities

Steps	Variables	R ²	ΔR ²	ΔF	Sig.
1	VK	.145	.145	4.934	.034
2	STRF	.229	.113	4.253	.049
3	WR, PWR, OTRF	.397	.139	1.918	.153
2	WR, PWR, OTRF	.260	.115	1.339	.283
3	STRF	.397	.137	5.685	.025

Next, to explore the differential role word level and text level reading fluency play in reading abilities of advanced Korean EFL readers, another set of hierarchical regression analyses was conducted (see Table 4). Similar to the first set of hierarchical regression analyses, vocabulary knowledge was entered in the first step, and word level and text level reading fluency were added in second and third step, respectively. The former explained 8.4% variance, but that was not statistically significant ($\Delta F = 1.455, p = .251$). In

contrast, the latter significantly predicted an additional 16.8% of the variance in reading comprehension abilities ($\Delta F = 3.489, p < .05$) beyond and above vocabulary knowledge and word level reading fluency. In line with such findings, when second and third step were switched, text level reading fluency explained an additional 22.1% unique variance ($\Delta F = 4.718, p < .05$) while word level reading fluency failed to prove a unique significant prediction ($\Delta F = 0.625, p = .543$). Thus, it can be said that for the readers whose English proficiency is well developed, reading fluency at the text level is more related to their reading abilities than that at the word level. These results imply that reading associated words and sentences both silently and orally can be a legitimate approach to further improve their English reading abilities.

TABLE 4
Hierarchical Regression Analyses Predicting Different Levels of Reading Fluency

Steps	Variables	R ²	ΔR ²	ΔF	Sig.
1	VK	.145	.145	4.934	.034
2	WR, PWR	.229	.084	1.455	.251
3	OTRF, STRF	.397	.168	3.489	.046
2	OTRF, STRF	.367	.221	4.718	.017
3	WR, PWR	.397	.030	0.625	.543

In response to the third research question asking which text level fluency (i.e., OTRF and STRF) had more potent predictive power in reading abilities, multiple regression analysis was conducted. As presented in Table 5, two types of text level fluency accounted for 29.5% of reading comprehension variance. Both oral and silent text reading fluency turned out to make a significant contribution to reading comprehension of advanced Korean EFL readers ($t = 2.955, p < .05; t = 2.510, p < .05$, respectively). Specifically, between the two variables, the latter seemed to be a more potent predictor ($\beta = .453$) than the former ($\beta = .385$). Therefore, while reading fluency at the text level was related to reading comprehension abilities of the advanced readers regardless of whether it was measured in an oral or silent manner, silent text reading fluency could better explain their reading abilities.

TABLE 5
Multiple Regression Analyses Predicting Different Types of Text Reading Fluency

Predictors	B	SEB	β	T	R	ΔR ²
Constant	7.467	2.401		3.110**		
STRF	0.116	0.039	.453	2.955*	.342	.295
OTRF	0.045	0.018	.385	2.510*		

* $p < .05$, ** $p < .01$

V. DISCUSSION AND CONCLUSION

The present study investigated the potential predictive power of reading fluency on reading abilities of advanced Korean EFL readers in high schools. To this end, both word level/text level reading fluency and oral/silent reading fluency were considered, and the participants' overall English proficiency was accounted for with vocabulary knowledge test. Overall, given that the contained reading subskills variables together took up about 39.7% of the variance in reading abilities, and reading fluency predicted 25.2% of that variance, it can be referred to as a crucial sub-component in reading abilities even for advanced readers. When the differential role oral reading fluency and silent reading fluency play in reading comprehension was explored, the latter significantly contributed to reading comprehension abilities while the former did not take up any unique variance. However, such results heed caution in that previous research studies found out that the contribution of the variables in oral reading fluency such as word and text reading fluency to reading comprehension was dissimilar (Crosson & Lesaux, 2010; Jenkins et al., 2003; Walczyk et al., 2004). In other words, further analyses on whether reading fluency at the word level and the text level had different predictive power were required and conducted next.

Between text level and word level reading fluency, the former demonstrated unique significant prediction when the latter was controlled for, but when the former was taken into account, the latter failed to make a significant contribution to reading comprehension abilities of advanced Korean EFL readers. Simply put, for the students whose English proficiency was sufficiently developed, reading discrete words did not affect their reading abilities any longer, but the ability of reading a passage was still related to their reading comprehension abilities. Such results reconfirm the previous findings that the two levels of reading fluency can be referred to as dissociable constructs (Crosson & Lesaux, 2010; Fuchs et al., 2001; Klauda & Guthrie, 2008; Walczyk et al., 2004) in that each construct affect reading abilities differently, and that the effects of word recognition skills on reading comprehension abilities decreases with readers' reading development (Y. S. Kim et al., 2012; Lonigan et al., 2018), undergoing automatization (LaBerge & Samuels, 1974; Perfetti, 1985), while text reading fluency made a significant contribution beyond word reading fluency (Jenkins et al., 2003; Wolf & Katzir-Cohen, 2001).

To further investigate which text reading fluency had a larger role in explaining reading abilities of advanced readers, the effects of silent and oral text reading fluency were compared. The research results showed that both types of text reading fluency turned out to be significant contributors, but silent text reading fluency better predicted reading comprehension abilities. Such findings coincide with the previous research results that the power of silent reading fluency on reading comprehension increases as readers' English proficiency grows (Jenkins & Jewell,

1993; Y. S. Kim et al., 2011; Y. S. Kim et al., 2012). The weaker predictability of oral text reading fluency may be attributed to the fact that word reading abilities, which are sub-components of reading fluency, become automatized. In other words, given that word and pseudoword reading fluency were positively correlated with oral text reading fluency (see Table 2), it is natural that weakening predictive power of word reading fluency leads to diminution of it. In contrast, considering silent and oral reading fluency have been regarded as separable constructs (Y. S. Kim et al., 2011; Y. S. Kim et al., 2012), and silent text reading fluency had no correlation with word reading abilities (see Table 2), automatization of word recognition skills does not seem to affect its predictive power on reading abilities, and thus it may predict reading abilities beyond oral text reading fluency.

Taken together, for advanced Korean EFL readers, spending more time in rapid reading of a text silently and orally will positively affect in further enhancing their English proficiency, but practice of silent text reading fluency will be more beneficial. However, abilities of fluent word reading no longer contribute their reading abilities since those skills are automatized to the extent to which they do not interfere with the readers' reading processes. Therefore, in a classroom setting where most of the students are advanced in their English proficiency, focusing on how to read a passage fast with appropriate comprehension level, not on precise pronunciation of discrete words, can be a legitimate teaching approach. In doing so, reading a passage aloud needs to be considered as well. On the contrary, if students with diverse proficiency levels are mingled, differential teaching approaches should be provided depending on their levels. Despite these implications, this study included only advanced readers in high schools. Provided that the research results on reading fluency are somewhat sensitive to readers' age and English proficiency level (J. Song & Y. Kang, 2021), further studies with diverse age and English proficiency are required to fully comprehend the relation between reading fluency and reading comprehension abilities. Still, the current study is a unique attempt to delve into both word/text level reading fluency and silent/oral reading fluency in a single study, reconfirming the research results on reading fluency conducted in L1 contexts where the rising effects of text level reading fluency and silent reading fluency on reading abilities have been demonstrated depending on English proficiency (Crosson & Lesaux, 2010; Y. S. Kim et al., 2012).

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APPENDIX I
Part of Vocabulary Knowledge Test

1. coffee		1. decent	
2. disease	_____ money for work	2. frail	_____ weak
3. justice	_____ a piece of clothing	3. harsh	_____ concerning a city
4. skirt	_____ using the law in the right way	4. incredible	_____ difficult to believe
5. stage		5. municipal	
6. wage		6. specific	

APPENDIX II
Part of Pseudoword and Real Word Reading Test

Pseudoword Reading Test

hon	ut	cag	het	hib	sar
yort	mog	...			

Real Word Reading Test

accent	background	death	error	exit	farm
focus	giraffe	...			

APPENDIX III
Part of Oral Text Reading Fluency Test

Crows are scavengers. The birds will eat almost anything, from vegetables and fruit, to nuts and seeds. They'll devour insects, frogs, lizards, mice, smaller birds, basically any animal they can fit into their mouths. And they'll happily pick at the flesh of carrion, which probably accounts for why ancient people associated crows with death.

Crows are playful birds, very sociable with their own kind, and they live in large extended family groups. They frequently indulge in silly games, such as carrying a twig high into the air, dropping it, then quickly swooping down and catching it. They've also been observed executing acrobatic backflips in flight. ...

APPENDIX IV
Part of Silent Text Reading Fluency Test

A circus is a traveling group of skilled performers comprised of jugglers, acrobats, tightrope walkers, equestrians, animal tamers, strongmen, clowns and others. A circus typically moves around a (1) **[full / lot / part]** in any single country and sometimes (2) **[goes / keeps / shows]** all over the world. Circus performers (3) **[perform / stand/ watch]** their acts in the middle of (4) **[a / so / to]** big tent called the Big Top. (5) **[And / Here / This]** middle part of the tent is (6) **[called / shown / spoken]** the ring. The Ringmaster is the (7) **[animal / person / tent]** in charge of all the acts (8) **[such / that / who]** take place in the ring.

The (9) **[every / modern / unknown]** circus was invented by a man (10) **[also / by / in]** Great Britain named Sergeant Major Philip Astley. (11) **[He / It / The]** was a British military veteran and (12) **[a / but / for]** skilled horse-trainer who had performed equestrian (13) **[bags / meals / tricks]** all over Europe. Finally, he settled (14) **[in / on / with]** London, where he opened his own (15) **[country / horse / theater]**. Since the theater had a circular (16) **[arena / booth / plane]** for galloping horses, it became known (17) **[as / by / in]** a "circus."...