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SILENT AND ORAL READING FLUENCY: WHICH ONE IS THE BEST PREDICTOR OF READING COMPREHENSION OF TURKISH ELEMENTARY STUDENTS?

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ABSTRACT

The aim of this research was to learn whether silent reading fluency was the predictor of reading comprehension and which variable including silent or oral reading fluency was the best predictor of reading comprehension. With this aim, the study used correlational design and the study sample consisted of total 100 fifth-grade Turkish elementary students studying in two elementary schools. The schools were located in low socioeconomic status and the students` families had low socioeconomic level. The informed consent obtained from all participants before the study began. For silent and oral reading fluency assessments, an appropriate grade level text was chosen and the students` silent and oral reading fluency were measured through one-on-one sessions in the suitable place in the elementary schools provided by the school principals. After this process, the reading comprehension test related to the grade level text read was administered to all students. The data obtained from testing process were analyzed and the findings were presented in respond to research questions. The research findings showed that silent and oral reading fluency were moderately related to each other and had significant correlations with reading comprehension. They both explained together 23% of the variance in reading comprehension and silent reading fluency had more significant contribution to prediction of reading comprehension than oral reading fluency. Additionally, the total variance of reading comprehension explained by silent and oral reading fluency varied according to gender of the students.

Key Words: Silent reading fluency, oral reading fluency, reading comprehension.

INTRODUCTION

Reading is very sophisticated structure and includes many skills that require simultaneous coordination to successfully complete many reading tasks (Logan, 1997). Learning to read is perhaps child's greatest school accomplishment (National Institute of Child Health and Human Development [NICHD], 2000; Rasinski & Padak 2008). It comprises a wide of skills and is not accomplished quickly or easily (Paris & Jacobs, 1984), so learning to read is valued by many societies and the ability to read is considered most important aim of education (Strommen & Mates, 2004).

Reading involves the understanding of a complex and difficult concept by interpreting written language and making sense of it. In other words, it is a process of constructing meaning from a written text as a result of thinking with the guidance of the existing text (Rosenblatt, 2004; Ruddell, 2002; Rumelhart, 1980, 2004).

As identified, skilled reading is the ability to extend meaning from text accurately and effectively. Becoming good reader requires both the ability to recognize words and the ability to comprehend text. Although instruction for word recognition is critical process for students, some students continue to struggle with derive meaning or acquiring knowledge from text in spite of possessing sufficient word recognition skills. Additionally,

these students experience greater difficulty in upper elementary grades seeing attention switch from learning to read to read to learn. Particularly, the students encounter problems about finding main idea, making predictions, using background knowledge, making connections, creating mind images, asking questions, drawing inferences, and summarizing information (Gersten, Fuchs, Williams, & Baker, 2001; William, 2005).

There is accumulating research shows that there are underlying skills of reading which need to be taught to students and lead to increase in children's reading performance at school. These reading skills are stated as phonemic awareness, reading comprehension, vocabulary, reading strategies and reading fluency. Particularly, reading fluency is gaining new recognition as an important part of school programs and for students with reading difficulties (Hudson, Lane, & Pullen, 2005; NICHD, 2000).

Reading fluency has been identified as a key component in effective reading instruction and instruction toward reading fluency has been revealed to lead to improvements in children's reading achievement (Rasinski, Samuels, Hiebert, Petscher, & Feller, 2011). The ability to read connected text fluently is one of the essential requirements for successful reading comprehension (NICHD, 2000). Reading fluency has three main components that construct a way to get meaning from text. The first component is decoding. Readers must be able to define words in the text correctly with minimal errors. The second component of reading fluency is automaticity. Readers need to use as little cognitive effort as possible in the word recognition process so that they can devote their mental resources for making meaning (Rasinski, 1989; Rasinski, Padak, Linek, & Sturtevant, 1994). The third component is reading prosody. The reader must be able to read a text syntactically and semantically using appropriate units in the text. If readers read quickly and accurately but with no expression in their voices, if they put same emphasis on every word and have no sense of phrasing and if they do not pay attention to punctuation and other markers showing pauses, then it is not possible that they will make sense of what they read (Rasinski, 2004).

Oral reading fluency is widely used to carefully watch students' reading performance in the early elementary grades due to its strong empirical relations with reading comprehension. Most research reveals that there is a robust and significant relationship between reading comprehension and oral reading fluency in different grade levels (e.g., Good, Simmons, & Kame'enui, 2001; NICHD, 2000; Rasinski et al., 2011; Rasinski, Padak, McKeon, Krug-Wilfong, Friedauer, & Heim, 2005; Rasinski, Rikli, & Johnston, 2009). However, given the literature about reading comprehension and fluency, few studies have empirically examined the components of reading fluency, and much less is known about silent reading fluency (e.g., L. S. Fuchs, D. Fuchs, Hosp., & Jenkins, 2001; Kim, Wagner, & Foster, 2011) since oral reading fluency draws more attention to monitoring students' reading progress in early elementary grades levels (Ridel, 2007). We would say that there is not enough research giving consideration to silent reading fluency and its' relation with reading comprehension and oral reading fluency. It may be resulted that difficulty in measuring of silent reading fluency accurately may be one explanation for lack of research about silent reading fluency compared with oral reading fluency that can be assessed easily. Another reason is that the lack of consideration given to silent reading fluency may result from the assumption that silent reading fluency may develop naturally from oral reading fluency (L. S. Fuchs et al., 2001; Hiebert, Wilson, & Trainin, 2010). In addition, standardized tests such as Dynamic Indicators of Basic Essential Literacy Skills used widely focus on oral reading tasks (Hiebert, Samuels, & Rasinski, 2012) and also this situation may decrease consideration to silent reading fluency. Given the information above, we would say that many researches need to be done to make clear relations among silent reading and oral reading fluency, and reading comprehension. Reviewed literature about those that are oral reading fluency and silent reading fluency, and their relations with reading comprehension, there are few studies (e.g., Hiebert et al., 2012; Kim et al., 2011; Rasinski et al., 2011). Therefore, this study attempted to provide more information by investigating oral reading fluency and silent reading fluency, and their relations with reading comprehension. We hope that this study will also make more contribution to researchers to be conducted many empirical studies in this area.

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PURPOSE AND RESEARCH QUESTIONS

The aim of the research was to explore whether or not oral and silent reading fluency were predictors of reading comprehension. Whit this major aim of the study, the research questions were as flows:

1. Was oral reading fluency a predictor of reading comprehension?
2. Was silent reading fluency a predictor of reading comprehension?
3. Did silent or oral reading fluency make more contribution to predicting reading comprehension?
4. To what extend did silent and oral reading fluency together account for variance in reading comprehension?
5. Did the total variance of reading comprehension explained by silent and oral reading fluency vary according to sex of the students?

METHOD

The research used correlational design to figure out essential answers to the research questions. In the correlational designs, the aim of researcher is to find relations across variables or to predict possible impact of any independent variable on dependent variable (Creswell, 2005). For this research, we tried to find out possible impacts of oral reading fluency and silent reading fluency on reading comprehension.

Subjects

This study was conducted at two elementary schools in Turkey-Kirsehir province with the elementary school students studying in fifth-grade level. The study used convenience sample and selected the volunteer fifth graders since they were willing and available. The participants were 100 fifth-grade students of two elementary schools located in Kirsehir city center, aged from 10 through 11. There were 54 female and 47 male students in the sample group. The family background of the students was also similar.

Instruments

For this research, we used different methods to assess the student's reading skills including oral and silent reading fluency, and reading comprehension.

Text

This study used an expository text (337 words long) chosen from Turkish language arts course materials recommended for fifth-grade students by the Ministry of National Education (MoNE). The same text was used in all assessment procedure to measure the students' oral and silent reading fluency, and reading comprehension skills.

Oral Reading Fluency

For oral reading fluency, we assessed the students' reading rate (automaticity). Reading rate means that the total number of words read correctly in a text in one minute. Similar to many other studies (e.g., Hasbrouck & Tindal, 1992; NICHD, 2000; Rasinski, 1990; Rasinski & Padak, 2005; Hasbrouck & Tindal, 2006), this study also measured the students' reading fluency as the number of words read correctly in the text in one minute (word correct per minute, [WCPM]). Two raters independently scored the students' oral reading fluency to establish inter-rater reliability. The average agreement between the scores of the two raters across all measures of the students' oral reading fluency was .87.

Silent Reading Fluency

For silent reading fluency, we looked for smilar masuraments tools in the reading literature utilized for assesing silent reading fluency of students. Test of Silent Contextual Reading Fluency (TOSCRF) is the one of them, designed to measure contextualized silent reading fluency in students. It aims to measure contextual fluency. During the administration of this test, the words in a text are printed in uppercase, spaces and punctuations

between words are omitted. Then, students are allowed 3 minutes to draw lines between boundaries of words when they read the text silently (Traylor, Price, & Meisinger, 2011). In the present study, the same procedure was employed to assess the students' silent reading fluency based on the expository text chosen. The scoring practices of the students' silent reading fluency skill consisted of counting the words the students identified correctly in 3 minutes through the text attempted. Two raters independently scored the students' silent reading fluency to establish inter-rate reliability. The average agreement between the scores of the two raters across all measures of the students' silent reading fluency was .97.

Reading Comprehension

To measure the students' reading comprehension skill, the sentence verification technique (STV) was used. The STV is developed by writing one of four types of test sentences for each sentence in an original text. The first type of test sentence is an exact repetition of the sentence as it appears in the original text. The second one is developed by changing as many words as possible in the text sentence without changing the meaning. The third type of test sentence is developed by changing one or two words in the original text sentence so that the meaning of the sentence is changed. The fourth type of test sentence consists of a sentence that is similar in syntactic structure to the text sentence and consistent with the theme of the text. However, it is not related to any sentence in the original text. The SVT is administered by asking students to read through the original text without returning to the original text and to judge the each sentence in the test as "Yes" or "No". If the student's response is "Yes" to a test sentence that the sentence is same as the original text sentence and if the student's response is "No" to a test sentence that the sentence has different meaning from the original text sentence (Royer, Greene, & Sinatra, 1987). For this study, the same procedure was processed to measure the students' reading comprehension skill. After having been read through the text once, the students were instructed to turn to the next page and not to turn back to the passage while taking the test. While every right answer, which the students responded, was scored as "1 point", the wrong answers were scored as "0 point" on the test. The reliability coefficient of the responses of the students in the actual sample was .73 for the test including 16 sentences.

FINDINGS

We used multiple regression and multiple-group analyses by means of AMOS and SPSS to see relations among silent reading and oral reading fluency, and reading comprehension.

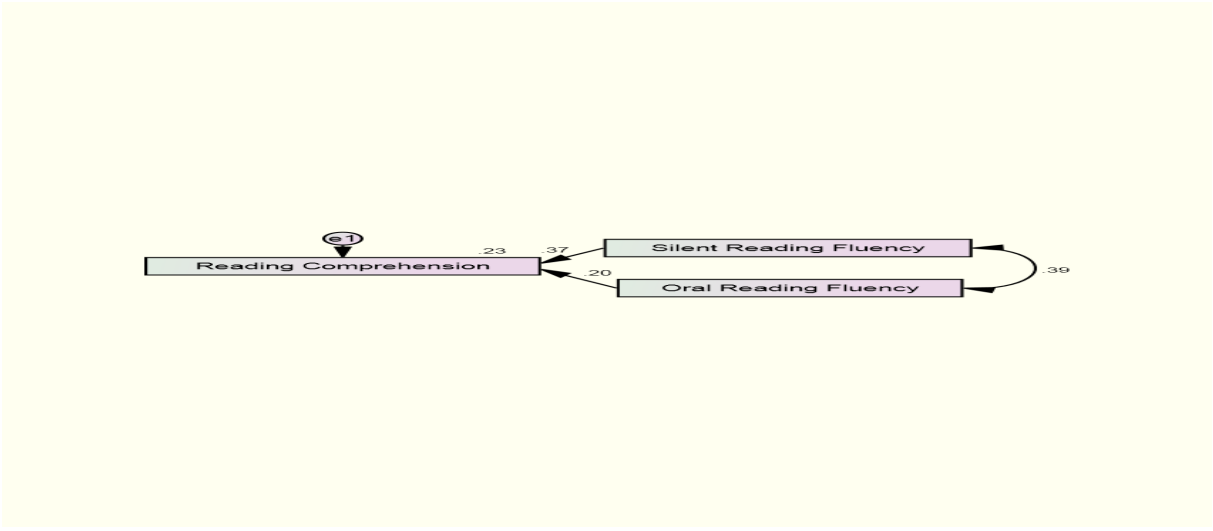


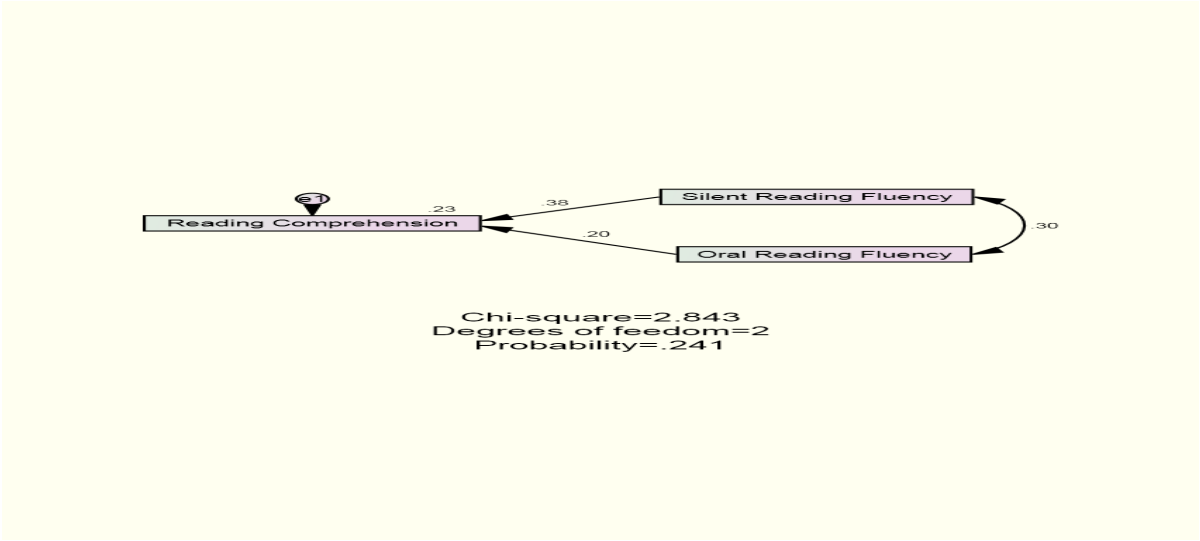
Figure 1: Correlations, standardized regression weights, and squared multiple coefficients in path diagram for regression of reading comprehension

Table 1: Summary of Hierarchical Regression Analysis for Variables Predicting Reading Comprehension

		B	*SE B*	β
Step 1	Constant	9.79	.41	
	Silent Reading Fluency	.05	.01	.45***
Step 2	Constant	8.24	.85	
	Silent Reading Fluency	.04	.01	.37***
	Oral Reading Fluency	.02	.01	.20*

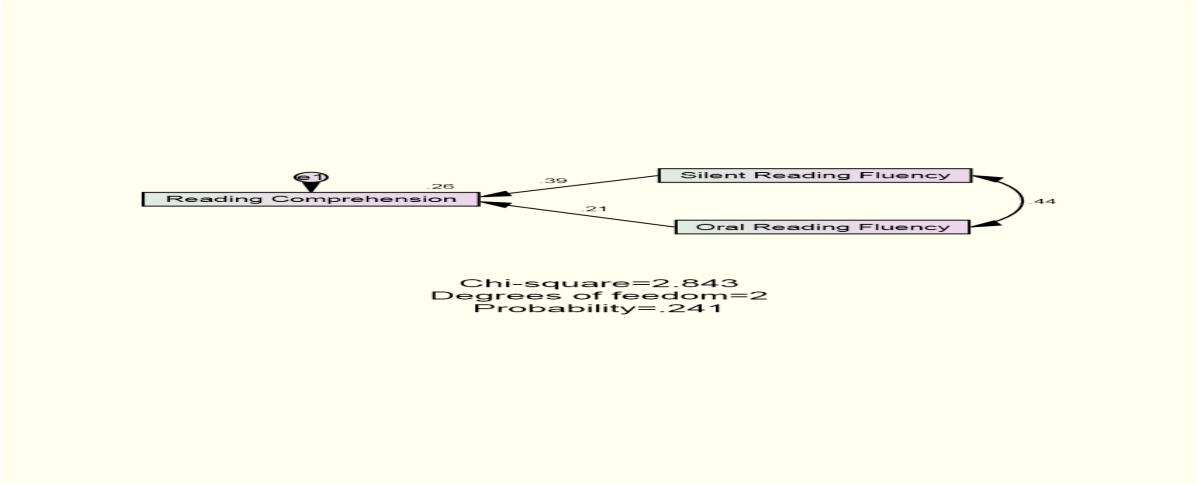
Note. R^2 = .20 for Step 1; ΔR^2 = .03 for Step2 (p <. 001).*p < .05, ***p < .001

Hierarchical multiple regression was used to assess two variables' (silent and oral reading fluency) prediction degrees of reading comprehension. Preliminary analyses were conducted to ensure no violation of the assumptions of normality, linearity, and multicollinearity. According to these analyses, two cases having extreme scores were removed from the data and all analyses were run on 98 cases. Silent reading fluency was entered at Step1 and accounted for 20% of the variance in reading comprehension. After entry oral reading fluency at Step 2, the total variance explained by the model as a whole was 23%, F (2,95)= 14.560, p < .001. The change in R^2 for Step 2 was .03, F change (1,95) = 4.259, p< .05. Given the standardized regression coefficients (β) in the path diagram and Table 1 for regression of reading comprehension, silent reading fluency (β =.37, p<.001) made a more significant contribution to predicting reading comprehension than oral reading fluency (β = .20, p < .05). Silent reading fluency was the stronger predictor of reading comprehension. In addition, as seen in Figure 2 and Figure 3we also run multiple-group analysis in AMOS and the analysis showed that the total variance of reading comprehension explained by silent and oral reading fluency varied according to gender of the students.



Note. For correlations, standardized regression weights, and squared multiple coefficients in path diagram, structural weights model in multiple-group analysis was taken account. Since there is any latent variable and constraint in the model, unconstrained model's chi square and degrees of freedom statistics is equal to 0, and probability level cannot be computed.

F*igure 2*. Correlations, standardized regression weights, and squared multiple coefficients in path diagram for regression of reading comprehension for female students



Note. For correlations, standardized regression weights, and squared multiple coefficients in path diagram, structural weights model in multiple-group analysis was taken account. Since there is any latent variable and constraint in the model, unconstrained model's chi square and degrees of freedom statistics is equal to 0, and probability level cannot be computed.

Figure 3. Correlations, standardized regression weights, and squared multiple coefficients in path diagram for regression of reading comprehension for male students

In both path diagrams (Figure 2 and Figure 3), regression coefficients of silent and oral reading fluency were statistically significant and they both were significant predictors of reading comprehension. According to multiple-group analysis, silent and oral reading fluency explained 23% of the variance in reading comprehension of the female students and silent reading fluency (β = .38, p < .001) was stronger predictor of reading comprehension than oral reading fluency (β = .20, p < .05). In addition to this, silent and oral reading fluency explained 26% of the variance in reading comprehension of the male students and silent reading fluency (β = .39, p < .001) was stronger predictor of reading comprehension than oral reading fluency (β = .21, p < .05). Also, when reviewed overall model fit summary indices in multiple-group analysis, the χ^2 test yielded a value of 2.843, which was evaluated with 2 degrees of freedom, had a corresponding p-value of .241. Additionally, the RMSA was 0.066. The TLI was .936 and CFI was .979. We would say that all of the three tests suggested that the model appeared by multiple-group analysis was a good fit to the data.

DISCUSSION

In the present study, we aimed to investigate influence of silent and oral reading fluency on reading comprehension. The research findings revealed that silent and oral reading fluency were moderately related to each other and had significant correlations with reading comprehension. Both two variables were significant predictors of reading comprehension as well. They both explained together 23% of the variance in reading comprehension and silent reading fluency had more significant contribution to prediction of reading comprehension than oral reading fluency. Additionally, the total variance of reading comprehension explained by silent and oral reading fluency varied according to gender of the students. According to multiple-group analysis, silent reading fluency was stronger predictor of reading comprehension than oral reading fluency for both the female and male fifth-grade students. Also, the overall model fit appeared quite good.

In this study, we found that silent and oral reading fluency were significant predictors of reading comprehension. Our findings were consistent with the previous research findings (e.g., Denton, Barth, Fletcher, Wexler, Vaughn, Crino, Romain, & Francis, 2011; L. S. Fuchs et al., 2001; Hiebert et al., 2012; Kim et al., 2011;

Rasinski et al., 2011). Also, the study reported by Torgesen, Nettles, Howard, & Winterbottom (2003) indicated that there were positive and significant relations among oral reading and silent reading fluency, and reading comprehension. According to this finding, we can argue that and silent and oral reading fluency instructions should become salient parts of teaching reading skills to students and as well as reading programs and it should be given more attention to silent reading fluency as much as oral reading fluency at schools to raise good readers for future since most research has documented that whereas many students have good oral reading fluency levels (reading rate-WCPM-), they have a lack of reading comprehension (Hiebert et al., 2012; Klauda & Guthrie, 2008; Kuhn, Schwanenflugel & Meisinger, 2010; Kuhn, Schwanenflugel, Morris, Morrow, Woo, Meisinger, Sevcik, Bradley, & Stahl, 2006; NICHD, 2000; Nichols, Rupley, & Rasinski, 2009; Rasinski et al., 2009; Rasinski et al., 2011). One reason may be that it is not drawn consideration to importance of silent reading fluency and silent reading habits in early years of elementary school and it has been marginalized (Hiebert, et al., 2012). As contended by Rasinski et al. (2011), "although fluency is normally considered within the domain of oral reading, silent reading fluency a salient concept in reading. Moreover, instruction aimed at improving silent reading fluency can have similarly positive effects on reading achievement as oral reading instruction" (p. 95).

Another important finding in the present study was that silent reading fluency was stronger predictor of reading comprehension than oral reading fluency of the fifth-grade students. Although this result was not consistent with some of research findings (e.g., L. S. Fuchs et al., 2001; Kim et al., 2011), the research carried out by Denton et al. (2011) concluded that the correlation coefficients among silent and oral reading fluency, and reading comprehension varied in terms of measurement types used to assess silent reading fluency, oral reading fluency, and reading comprehension. Some assessments of oral reading fluency such as ORF Curriculum-Based Measurement Passage Fluency (ORF CBM-PF) had high correlation with reading comprehension compared with the correlation between silent reading fluency and reading comprehension. In contrast, some assessments of silent reading fluency such as Test of Silent Reading Efficiency and Comprehension (TOSREC) had high correlation with reading comprehension compared with the correlation with the oral reading fluency and reading comprehension. In the other research reported by Rasinski et al. (2011) indicated that the instruction toward enhancing silent reading fluency of the students had positive influence on reading achievement.

The differences between the present study result and the previous research findings concerning prediction degrees of silent and oral reading fluency on reading comprehension may be resulted that research focuses on different grade levels to measure similar reading skills of students. As stated, the process of becoming literate can be classified as a serious of different stages in which learners progress as they become increasingly with print (Chall, 1996; Kuhn & Stahl, 2000). In our research, the fifth-grade students were enrolled in the study and according to Chall's classification, fifth-grade is involved in "reading for learning the new" stage (1996). As argued, silent reading skill and silent reading habits becomes more effective than oral reading for students' reading success in this stage identified. It is contended that while learning to read is important in early years of elementary school, read to learn is more important in later years of elementary school (Akhondi, Malayeri, & Samad, 2011; Best, Floyd, & McNamara, 2008; Durkin, 1989; Gajria, Jitendra, Sood, & Sacks, 2007; RAND Reading Study Group [RRSG], 2002). For example, in the study conducted by Kim et al. (2011), their primary focus in the study was to examine predictors of reading comprehension with a focus on reading fluency. Their research results of structural equation modeling analyses indicated that oral reading fluency was a better predictor of reading comprehension than silent reading fluency for the first–grade students. Taken account of Chall's (1996) classification, first-grade is involved in "decoding "stage. At this stage, teaching activities focus on developing students' recognition of main sound-symbol correspondences and increasing phonological awareness while providing them with enough opportunity to improve their decoding skills (Kuhn & Stahl, 2000).

Given that the differences among the stages identified by Call (1996) affect the focus of instruction activities toward the process of becoming literate in early and later grades of elementary school. The same reason may have affected to which extend silent and oral reading fluency would make contribution to prediction of reading comprehension and changed their importance for reading comprehension according to grade level.

RECOMMENDATIONS

Based on our findings and the previous researches about silent reading fluency and silent reading habits (Denton et al., 2011; Hiebert et al., 2010; Hiebert et al., 2012; Rasinski et al., 2011; Reutzel, Jones, Fawson & Smith, 2008), we argue that it should be provided more insights into importance of silent reading fluency instruction and acquisition of silent reading habits as much as oral reading fluency instruction in early and later years of elementary education. It has documented that, silent reading rates exceed oral reading rates in the acquisition of reading proficiency (Hasbrouck & Tindal, 2006; as cited in Hiebert et al., 2012). As the findings of the National Reading (NRP) (NICHD, 2000) revealed that providing silent reading venues will not guarantee that student's time will be used effectively and they will become proficient readers. However, under the proper circumstances in which students read texts at suitable difficulty levels, they read more words in silent than in oral reading (Hiebert et al., 2012).

Although the existence of opportunities to read silently in schools makes contribution to prediction of reading achievement (Anderson, 2000; Garan & DeVoogd, 2008; Reutzel, Fawson, & Smith, 2008), most of students do not use considerable periods of reading time effectively (e.g., Brenner, Hiebert, & Tompkins, 2009; Gambrell, 1984; Foertsch, 1992). When students have opportunities to read silently, they take a little scaffolding from their teachers and parents (Hiebert et al., 2012; Rasinski et al., 2009; Reutzel et al., 2008). As the report of the NRP (NICHD, 2000) concluded that if students do not get enough scaffolding during silent reading, they cannot catch up with the expectations which are expected. Without appropriate support, students often get involved in fake reading during sustained silent reading process (Griffith & Rasinski, 2004).

There is increasing research indicating that the effective scaffolding can support the development of effective silent reading habits among readers (Hiebert et al., 2012; Rasinski et al., 2011; Reutzel et al., 2008).

One of the recent studies on silent reading also (Reutzel et al., 2008) has suggested that silent reading practice that includes: "(a) teacher guidance about how students can select appropriately challenging texts to read; (b) control of the time allocated for reading practice; (c) teacher interaction with students around reading texts; (d) positive feedback to students about the quality and quantity of their reading; and (e) student accountability, purposes, or goals for the time in reading practice" (p. 205), will result in improvements in students' reading fluency.

Also, the study reported by Hiebert et al. (2012) has suggested that Chall's (1996) classification about development stages of children's reading proficiency can be taken account to improve children' silent reading habits. For example, in stage zero, conversations activities about reading can be made between adults and children. As students move into stage 1, short periods of time would be dedicated to reading. These periods would be carefully controlled and monitored. In stage 2, silent reading episodes would be increased somewhat. In stage 3 and four, it would be focused on effective silent reading activities in classroom settings and given more consideration to quality of scaffolding for students' silent reading process to be reached optimal silent reading rates. In stage 5 and 6, it would be made changes to baseline silent reading rates which challenge students to do their best.

When we take account of knowledge presented above, it would be given attention to silent reading fluency instruction and silent reading practices at schools as much as oral reading fluency instruction and provided appropriate scaffolding to students to get more benefit from these independent reading activities, also parents

can create more home-reading activities with children and this process also would help student become good readers. In addition, it would be taught essential scaffolding skills to teachers and parents how to help their students during silent reading activities at schools and home, and how to diagnose and remediate students' reading difficulties. It should not be forgotten that for many student, good silent reading habits require that they are involved in guided reading activities that model efficient reading.

STUDY LIMITATIONS AND DIRECTIONS FOR FUTURE

We obtained the data from the expository text at appropriate grade level, for future research, text type and text difficulty can be employed to see whether or not predictor impacts of silent and oral reading fluency on reading comprehension will vary. The number of demographic variables can be increased and they all can be inserted into SEM model to see relations among silent reading and oral reading fluency, and reading comprehension. Also, listening comprehension would be involved in SEM model as an observed or latent variable to see effects of silent and oral reading fluency on it as well as its relation with reading comprehension. Also, range of grades represented can be used as a variable in the model to see how to affect prediction degree of variables. In the research, the total 100 fifth-grade students were enrolled. To increase of reliability and generalization of study, similar research can be conducted with big sample groups representing population and to reach good fit values. For this research, oral reading fluency was measured as the number of words read correctly in the text in one minute and prosody were not taken account. Prosody, another indicator of oral reading fluency, can be also employed to contiribute to reliable results and to see its effects on oral reading fleuncy and reading comprehension. Different measurement types of silent and oral reading fleuncy can be used as indicators to see their influences on reading comprehension.

CONCLUSION

In this study, we attempted to provide new insights into relations among silent and oral reading fluency, and reading comprehension. Also, it was given consideration to importance of silent reading fluency and silent reading habits that need to be acquired for life success in the digital-global age and presented some facts the reason why silent reading habits should be enhanced by means of scaffolding. We believe that the present study will make contribution to be conducted new research in both national and international contexts to raise awareness of silent reading fluency for children reading success and extend knowledge relative to silent reading fluency and its relations with oral reading fluency and reading comprehension, and other reading skills.

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