

The Relationship Between Natural Speech Rate and Oral Reading Fluency Rate and Reading  
Comprehension among Third Grade Students

By Meghan Neumer

Submitted in Partial Fulfillment of the Requirements for the  
Degree of Master of Education

May 2013

Graduate Programs in Education

Goucher College

## Table of Contents

List of Tables	i
Abstract	iii
I. Introduction	1
Statement of Problem	2
Hypothesis	2
Operational Definitions	2
II. Review of the Literature	4
Defining Reading Comprehension and Fluency	4
Debates about Fluency	5
Instructional Practices to Improve Fluency and Comprehension	7
What is Left Behind: Oral Language	9
Summary	12
III. Methods	13
Participants	13
Instruments	15
Procedures	16
IV. Results	18
V. Discussion	19
Threats to Validity	20
Implications for Future Research	22
References	27

## **List of Tables**

1. Pearson Correlation of Oral Speaking WPM, DIBELS WPM and Reading Benchmark Percentage	20
---	----

## **Abstract**

The purpose of this study was to investigate the relationship between students' natural speech rate and oral reading fluency rate and reading comprehension. A correlational study design was used. Participants in the study were 22 third grade students who were enrolled in a public elementary school in Baltimore County, Maryland. The 22 students who participated in the study represented a wide range of ability levels and included four students with Individualized Educational Plans, students who were considered reading on grade level, and several students who were considered having above average reading achievement. Data were collected and analyzed for each student's natural speech rate, reading fluency rate, and comprehension assessments. The analysis did not reveal a significant relationship between natural speech rate and reading fluency and comprehension rate. Recommendations for future research include using different assessment tools to gather a student's speech rate, fluency rate, and comprehension rate to strengthen validity and creating different guidelines for speech that would involve collecting data on the speech rate when conversing with an adult.

# CHAPTER I

## INTRODUCTION

Under the No Child Left Behind Act [NCLB] of 2001 Congress became more involved in classroom instructional decisions. Most influential was the mandated Annual Yearly Progress [AYP] requirements that schools across the nation had to achieve. In addition, as part of the AYP requirement, each state had to determine how that state would assess reading for all students on an annual basis (Allington, 2006). The Reading First Program was created to offer guidelines on what schools were mandated to include in the curriculum and what standards and outcomes would be measured by required assessments. Reading First organized reading into five major categories including phonics, phonemic awareness, fluency, vocabulary, and comprehension. Schools that did not meet AYP in these areas would be subject to consequences that could include the replacement of school staff or an implementation of a new curriculum. In 2013-2014, the new Common Core Curriculum will be fully implemented. This curriculum is reported to be “largely based upon the assumptions of the National Reading Panel” (Boomer & Maloch, 2011, p. 38). In other words, the limited and restrictive vision of reading as being divided into five “pillars” is reflected in the Common Core standards.

Over the past decade under NCLB much emphasis has been placed on improving reading skills in public schools. For example, much focus has been placed on the area of reading fluency. Some educators believe that increasing the rate at which one reads would result in improved comprehension (Walczyk & Griffith-Ross, 2007). However, this assumption has not been established through research (Altwerger, Jordan, & Shelton, 2007). A test commonly used to assess the fluency rate of students is the Dynamic Indicators of Basic Early Literacy Skills, Sixth edition [DIBELS] (Altwerger et al., 2007 ). As part of the fluency tests, DIBELS provided

a benchmark score, or a number of words correct per minute a student in a given grade should be reading depending on the time of year. No scientific evidence has been provided though that states how DIBELS determined the number of words read per minute a student should be reading. How then could this fluency assessment tool be used across the nation and not take into account the different dialects or native language of the region?

There has been such emphasis on reading as defined in terms of fluency that little research has been done to explore some of the other domains of reading, such as the relation between oral reading proficiency and oral language. This study explores the relationship between oral language speaking rate and reading fluency and comprehension.

### **Statement of Problem**

The purpose of this study is to determine whether and to what degree a relationship exists between oral speaking rate, reading fluency rate, and reading comprehension.

### **Hypothesis**

There will be no relationship between the oral speaking rate of third grade students and their reading fluency rate and reading comprehension.

### **Operational Definitions**

The three variables being measured are reading fluency rate, comprehension, and natural speaking rate. Fluency rate as outlined in the National Reading Panel Report as the rate in which a child reads (Altwerger et al., 2007) will be measured using the DIBELS Sixth Edition Benchmark Progress Monitoring test will be given to the twenty-two students to calculate the correct words per minute read (Good & Kaminski, 2009). The Baltimore County Public School (2013a) Reading Benchmark II will be given to all twenty-two students to assess the twenty-two students' comprehension, or the act of making meaning during reading (Smith, 2004). A voice

recorder program called Voice Notes Recorder Pro will be used to capture the students' natural speech rate, or the number of words per minute spoken (P & A Studio, 2013).

## **CHAPTER II**

### **REVIEW OF THE LITERATURE**

This literature review will discuss factors related to reading fluency and reading comprehension. The first section of the review defines reading comprehension and reading fluency. The second section examines debates about reading fluency. The third section describes instructional practices for increasing reading fluency and comprehension. Finally, a consideration of spoken language or the accuracy in which an individual speaks is offered.

#### **Defining Reading Comprehension and Fluency**

According to Smith (2004), comprehending a text is more than just naming individual words correctly. Comprehension is “the act of meaning-making while reading” (Altwerger et al., 2007, p. 37). Meaning from the text occurs when the reader’s prior knowledge and the author’s intended purpose combine to create new meaning to that reader (Pressley, 1998). Rosenblatt (2005) coined the act of making meaning during reading as reader-response theory. The reader-response theory posits that a reader transacts, or uses what he or she knows and what the text presents to make meaning. Meaning does not lie solely within the reader or in the text but rather is created through a combination of both reader and text.

Another leading theory in the domain of comprehension is schema theory. Schema theory suggests “reading is an active process, whereby readers construct new ideas and concepts based on prior knowledge” (Morrison & Wlodarczyk, 2009, p. 113). New ideas then are created using what a reader already knows and combining that with the new incoming information. As well as transacting with the text and having some prior knowledge, good readers also monitor their comprehension during reading and use fix up strategies to clarify when they do not understand

the meaning of what they have read (Weaver, 1994). Some believe that if a reader lacks the ability to decode words, or read fluently, this will interfere with reading for meaning.

According to Hudson, Lane, & Pullen (2005), fluency is the determining factor between a good and poor reader. Rasinski (2006), who defined fluency as the “accuracy in word decoding, automaticity in recognizing words, and appropriate use of prosody or meaningful oral expression while reading,” (p.704) theorized that having all of these things would help in the area of comprehension. Fluent readers have automaticity, or the effortless ability to identify a word quickly. Having this ability to automatically identify a word means that the student’s cognitive efforts are free to focus on comprehension (Hudson et al., 2005, p. 704). LaBerge & Samuels (1974) reported that automaticity is not necessarily a prerequisite for comprehension, although having it does aid in understanding a text. Readers who lack automaticity still can comprehend a text, but a majority of their cognitive function is dedicated to the decoding of words. Having automaticity means that comprehending can occur at an even higher level. Fluent readers also have prosody, or a rhythmic ability to read as if they were speaking with expression (Hudson et al., 2005).

### **Debates about Fluency**

Even though fluency is one of the five pillars of reading according to Reading First, there is no agreement for the definition of fluency. The definition of fluency changes based upon the person using it and the intended purpose (Altwerger et al., 2007). Altwerger and colleagues clarify that fluency is understood from five possible perspectives. These perspectives are:

- a) recoding perspective, which is the speed and accuracy with which the written-oral recoding is achieved;
- b) automaticity perspective;

- c) integrative perspective, which is the “speed and accuracy of word identification that leads to comprehension”;
- d) interactive perspective, meaning fluency is helped with comprehension and demonstrates and understanding of the text; and
- e) transactive perspective in which “fluency is re-conceptualized as a flow, reflecting the variable rate with which a reader progresses through a text in the process of comprehending” ( p. 11).

The National Reading Panel offers support for the definition of automaticity in their statement that good readers read with speed, decoding words quickly (Alterwerger et al. 2007).

The controversy among educators with regard to fluency appears to be related to the supported definition of fluency, or speedy word recognition. Even the most fluent readers can have comprehension issues. Walczyk et al., (2007) report that 10% to 15% of children suffer with comprehension difficulties but are speedy readers. A focus on reading achievement as equaling fast, fluent readers has caused the goal of instructional practices to shift to meaningless word recall which, as a result, has lost the focus of making meaning while reading (Rasinki, 2006). “Students in these classrooms have become faster readers, but their reading comprehension has not improved” stated (p. 705). Rasinki appears to agree that increased comprehension is not parallel with increased fluency rate. On the other hand, Hudson et al., (2005) state that achieving a fast reading rate *will* increase comprehension. They suggest that without automaticity, the reader will miss the intended meaning of the text. The authors further state that switching from reading word identification to meaning making means that neither comprehension nor fluency actually is achieved to its greatest potential.

This debate about reading fluency defined as fast reading verses reading with expression and understanding relates to the intended purpose of this study. If there are differing perspectives of the rate at which someone reads as reflected in the different perspectives presented by Rasinski (2006) and Hudson et al. (2005), it is relevant to study the role of an individual's speaking fluency on the measurement of fluency and reading comprehension.

### **Instructional Practices to Improve Fluency and Comprehension**

Regardless of which definition of fluency a teacher accepts, reading fluency and comprehension are assessed fundamentals of reading and therefore are a part of the general classroom curriculum. The discussion below describes classroom-based comprehension and fluency instructional strategies.

Before any instructional strategies are taught, the teacher should understand that the way a text is interpreted is based on the reader's prior experiences (Allington & Cunningham, 2007). Because schema is a part of the interpretation of a text, in order to aid students in their comprehension of a text the teacher may need to provide background knowledge instruction prior to reading the text. Effective teachers provide comprehension instruction that encourages their students to monitor for meaning what they read. Pausing while reading to reflect upon whether the reader understands the content he or she just read and looking back into the text to clarify or reread is an effective way to monitor for comprehension (Walczyk et al., 2007). Reading the text aloud can help students to focus if the reader is in a noisy environment, if the text is challenging, or if the student has attention issues. Setting a purpose for reading causes readers to focus on meaning while reading by asking a question before they read with the intention of explaining it to others.

Motivation is another factor the teacher will need to build upon in order to help students comprehend the text. A student needs the desire to read and to understand what has been read. Therefore, using engaging materials will increase comprehension (Cunningham, Cunningham, Moore, & Moore, 2004). Reading often is considered a social act, so students should have opportunities to discuss what they are reading in order to extend their comprehension of the text (Weaver, 1994).

Rasinski (2006) reflects that good fluency instruction would include “accuracy, automaticity, and prosodic reading in unison” (p.705). Ways to achieve this would be through using poetry, writing songs, creating rhymes and chants, acting out plays, and writing letters. Using texts that emphasize expression, such as a dialogue, monologues, or plays would strengthen prosody. The author also states that the focus of reading fluency should be expression, not speed. When students focus on what and how they are reading a given text they are building *both* fluency and comprehension.

Other researchers suggest specific reading strategies that would improve reading fluency. These strategies include slowing the reading rate so that readers are more focused on what they are reading and can use prosody to read it correctly (Walczyk et al., 2007). Reading the text aloud is another method to provide automatic feedback so the students can hear if they are reading the text fluently. These authors also suggest teaching students to sound out words and memorize sight words. They suggest teaching guessing of a word if the student cannot automatically identify it. Students also might “jump over” a word if it would take too much time to decode, although this could impact comprehension.

## **What is Left Behind: Oral Language**

This literature review has presented definitions of fluency and comprehension, as well as a summary of debates related to fluency. Effective instructional strategies for both reading comprehension and fluency have been offered. As outlined in *Reading First*, fluency and comprehension are three of the five pillars in reading that are viewed as being so important that they are the focus of both curriculum and assessment. Nowhere in *Reading First* is there any mention of the spoken language or the accuracy with which an individual speaks. Consideration of spoken language as an important component of reading appears to be appropriate, as reading and speaking a language are intricately linked to each other. Learning one strengthens the other (Smith, 2004). The discussion below considers important components of reading that were outlined in NCLB and subsequently the Common Core that are related to what is known about spoken language and its relation to reading (Allington, 2006; Boomer & Maloch, 2011).

Spoken language is reading's "silent partner" who often goes unnoticed. Oral language makes reading possible because it is through the spoken language that an individual has first acquired that provides the prior knowledge needed to understand how to read a word and then to understand what it means (Smith, 2004). Spoken language allows students to make sense of what they read (Allington & Stayter, 1991). Discussions in a reading class can extend comprehension of a reading text further because speech offers clues to understand the concept more than written language does because a speaker can change his or her pitch and tone and add facial expressions to demonstrate understanding of the text. Oral language also includes intonation and a shared physical surrounding that written language does not (Beck, Kucan, & McKeown, 2002). Spoken language also is naturally changed as the speaker attempts to have the listener understand it, essentially creating a natural accommodation that a reading text cannot.

Talk plays an important role in the understanding of reading but is not given much attention as it is not included in the student's grade. More weight is given to what is deemed easier to assess such as the five pillars of reading and oral language is a difficult component to measure (Allington et al., 1991). However, deficits in reading are linked with language problems although little is done to acknowledge this (Walczyk et al., 2007). Instead, when a student demonstrates some difficulty with language a teacher refers the student to the speech pathologist and the child then is pulled out of the classroom to receive intervention for speech and language delay (Nation, Clarke, Marshal, & Durand, 2004). Spoken language then is considered separate from the classroom as a child is removed from his or her natural learning environment for an intervention rather than receiving that intervention within his or her classroom.

When a person has a problem with speech and language that individual typically has a problem with reading (Nation et al., 2004). Paul and Roth (2011) found a link between developmental delays in language and delays in reading proficiency later in life. These authors Roth reported that "approximately 17% of children in the United States have a developmental disability" and that many of these disabilities are linked to a language delay (p. 331). Signs of a developmental delay include:

...limited interest in social interactions, failure to respond to speech or name, reduced or atypical babbling, restricted prelinguistic communication acts such as engaging interests with others, limited use of communicative gestures such as point, delayed acquisition of first words... [and] poor speech intelligibly for developmental level (Paul et al., p. 331).

Biological factors, such a low birth weight, fetal alcohol syndrome, or a brain hemorrhage also can cause language delays.

Paul and Roth (2011) suggest that anyone who had a language delay in the first three years of his or her life should receive speech and language services to “catch up” and reduce the impact on reading. Bowyer-Crane , Snowling, Duff, Fieldsend, Carrol, Miles, Gotz, & Hulme (2007) recommend that these early interventions should target speaking, listening, and oral language skills. The study done by these authors found that oral language interventions improve vocabulary and grammatical skills including “aspects of receptive and expressive language” (p. 430). There is a definite link between a student having a reading deficit and an oral language deficit.

A problem experienced by children who have oral language delays is that their delays often go undetected, undocumented, or untreated. At a young age language delay diagnosis is sometimes difficult, especially for children from low-income families who lack the accessibility to medical attention. Some children with language delays have no documentation of ever having one so when entering a public school these children are labeled instead with a reading disability that fails to address the root of their learning problem (Paul et al., 2011). These researchers also report that children who enter pre kindergarten and have received no intervention for their language delay typically remain a struggling language-delayed student.

Nation et al. (2004) acknowledge the gaps in what is known about the relation between spoken language skills and poor comprehension as needing to be further researched. They state that “no study has explored a range of spoken language skills in the same group of poor comprehenders using task that are routinely used to assess speech and language skills in children with speech and language impairments” (p. 200). This means that the students who are demonstrating difficulty with reading may actually have had a problem with oral language that was never addressed, but nowhere in the mandated curriculum under NCLB is there provision to

address this concern (Allington, 2006). Of even greater concern is that teachers who recognize a child struggling in the reading classroom typically suggest there is a reading deficit instead of a language problem (Nation et al., 2004). Teachers are not to be blamed as being inadequate by misdiagnosing children as they are merely following what has been required of them to include in their curriculum, instruction, and assessment as laid out in Reading First.

Language deficits are one area of difference in oral expression; differing dialects and natural speech rates are another consideration that has been ignored by Reading First and now Common Core. Students are assessed by the rate in which they read aloud with no consideration being given to their natural speech rate. Classroom teachers need to consider whether it is reasonable to expect all their students to read at a predetermined rate of speed when they do not naturally speak at a similar rate. No research appears to be available in databases or fluency researchers that investigates the possible connections between an individual's natural speech rate and his/her oral reading rate.

### **Summary**

Political mandates outlined in NCLB have labeled comprehension and fluency as part of the five pillars of reading that are to be emphasized in curriculum development and assessment. Oral reading rates are used to label readers as proficient readers, and this data generally determine what instruction they will receive. What is missing from the mandated law is consideration of oral language development, which is what children learn before they read or write (Beck et al., 2002). Oral language supports comprehension. Children can comprehend more sophisticated topics through speaking and listening before, during, and after reading and writing. It is necessary to examine further the relationship between the comprehension, fluency, and natural speech rate of a child.

## **CHAPTER III**

### **METHODS**

The purpose of this study was to determine if and to what extent a relationship exists among oral speaking rate and reading fluency and comprehension. Since the relationships between and among three different variables are being measured, a correlational analysis was conducted. The relationship among oral speaking rate, reading fluency rate, and reading comprehension rate was measured using a correlational coefficient.

#### **Participants**

The subjects in this research study were enrolled in Relay Elementary School. Relay is located in the South West region of Baltimore County. According to the 2012 Maryland State Department of Education (MSDE) data, 524 students were enrolled in Relay Elementary School during the 2011-2012 school year. Of those students, 41 were Asian, 78 were Black/African American, 16 were Hispanic/Latino, 353 were White, and 36 were two or more races. There were 262 male students and 262 female students enrolled in the school. In 2011-2012 Relay Elementary School students had an attendance rate that was greater than 95%. Among the teachers at Relay Elementary, 70.8% held an advanced professional degree and 29.2% members who held a standard professional degree (MSDE).

Relay Elementary School had one pre kindergarten class, four kindergarten classes, four first grade classes, four second grade classes, four third grade classes, three fourth grade classes, and three fifth grade classes. The school also had a primary and intermediate Functional Academic Learning Support (FALS) class (BCPS, 2013b). With its enrollment of 524 students the school was overpopulated as BCPS (b) reported it had a capacity of just 415 students. In 2011, three relocatable trailers were added to the school grounds to accommodate the growing

population. The school had a racially, linguistically, academically, and socio-economically diverse population. BCPS (2013b) reported that 3% of the population consisted of English Language Learners. It also was reported that 34% of the student population participated in the Free and Reduce lunch program; 10% of students received Special Education services; and 11% were in the Gifted and Talented program.

Third, fourth, and fifth graders at Relay Elementary School participated in the Maryland State Assessment (MSA) test to track the reading and math achievement of students in these intermediate grades. Statewide, fifth grade is the only grade that participates in the science MSA. The school performed well as a whole on the MSA. In the 2011 - 2012 school year at least 95% of third grade students at Relay Elementary scored at the proficient level in reading and math (MSDE, 2012). Fourth and fifth grade students at the school also scored greater than or equal to 95% in reading and math. Fifth grade students scored 80.8% in the science test.

The students in this research study consisted of 22 students from one of the four third grade classes at Relay Elementary School. There were 11 male students and 11 female students. Fourteen students were White, six were African American, and two were Asian. This class was considered to be heterogeneously grouped as it included four students with IEPs and one with a 504 plan. The class also had very capable students who received As, Bs, and Cs on tests. In order to assist the four students with IEPs and the one with a 504 plan, the reading specialist met with these students daily for one hour during reading instruction to co-teach Baltimore County's reading curriculum with the general educator.

## **Instruments**

The three variables measured in this research were oral reading fluency rate, comprehension, and natural oral speaking rate. To measure these variables, three instruments were used: the DIBELS Sixth Edition Benchmark test, the Baltimore County Reading Benchmark II, and the Voice Notes Recorder Pro program.

DIBELS is a reading assessment program intended to assess the early literacy skills from kindergarten to third graders (Good et al., 2009). The tests are short measures of a student's fluency rate in a given area of literacy, including phonemic awareness, nonsense words, phonics, and fluency. In this research study, the DIBELS Sixth Edition benchmark progress monitoring assessment for third graders was given to measure the oral reading fluency rate. The purpose of the tests are to determine a student's strengths and weaknesses in reading and to identify him/her as proficient (on or above grade level), strategic (suggesting the student is in need of some intervention in reading), or at risk (suggesting the student is below the expected grade level in reading).

To measure students' comprehension, the Baltimore County (2013a) Reading Benchmark II was given. This is a mandatory assessment that is required by Baltimore County Public Schools to be given in the middle of the year. Reading Benchmark I was given during the first quarter of the year. The assessment measured an accumulation of comprehension skills that third grade students have been taught during the first quarter in third grade. The test consisted of a total of 35 questions. Eight questions were multiple-choice items that focused on vocabulary knowledge (BCPS, 2013a). The remainder of the test had three short stories with eight multiple-choice questions and one written brief constructed response that followed each story. The questions ranged from basic recall such as identifying the narrator in the story to more inferential

questioning including naming a character trait that would best describe a character in the text read.

The final instrument used in the study was a voice-recording app entitled VoiceNotes Recorder Pro (P&A Studio, 2013) that was downloaded onto an iPad. VoiceNotes Recorder Pro is advertised as a business friendly recording device that is user friendly and can be downloaded to the Apple product of iPhone, iPad, or iPod (P&A Studio). This recording software allows the user to record voices using three different qualities of recording (low, medium, or high). The user can then play back the recording an unlimited amount of times pausing and rewinding with little effort. The recording also can be edited and copied in order to shorten the length but still keep the original copy.

### **Procedures**

The students' oral reading fluency rate was gathered by using the DIBELS Sixth Edition benchmark progress monitoring for third graders. The teacher gave each student the test individually. Students were asked to read three different short narratives as directed by the DIBELS administration manual. While reading, the teacher timed the student for one minute by using a stopwatch. During that minute the teacher kept track of any miscues in all three narratives while the student was reading them. When the student finished reading, the teacher found the average of the words read correctly per minute to determine the reading fluency rate of each student.

To measure students' comprehension, the teacher used the Baltimore County Reading Benchmark Test II (BCPS, 2013a). The timed test was given over a period of two days to all students at the same time. The test consisted of thirty-five questions including three brief constructed response questions and 32 multiple-choice questions. The test was scored by

entering the results into a Baltimore County Public School assessment program called Assesstrax (BCPS(a)). Correctly answered multiple-choice questions received one point. If an answer was left blank, it was considered wrong and a one-point deduction was given. Brief constructed response questions were worth up the three points. In order to earn three points in the brief constructed response the student must answer the question using at least three text details and demonstrate new knowledge. These questions were hand scored by the researcher and then entered into Assesstrax. The final test score then was calculated and converted into a percentage.

In order to determine the students' natural speaking rate, the teacher used a voiced recording program entitled VoiceNotes Recorder Pro (P&A Studio, 2013) on the iPad. The iPad was set around the classroom during natural conversational times, typically twenty minutes during the indoor recess period and fifteen minutes during dismissal time. This was done over a period of six weeks. During the recording times, students were not told they were being recorded to enable the researcher to measure their natural speaking rate. For that reason, the researcher kept the recording device disguised by placing it under papers or a nearby object. The researcher discretely kept notes on a sheet of paper and documented dates and times for which students were near the recording in order to help identify students' voices later.

During the six weeks of the study the researcher would play back the voice recordings. When the researcher could identify a specific student speaking, the spoken language was transcribed using paper and pencil. Then the researcher would replay the recording and count the number of words per minute being spoken by using a stopwatch. Students never spoke in a consecutive manner so the researcher would have to transcribe and time bits and pieces of the conversation. Once 15 seconds of spoken language was recorded and tallied, the resulting tally was multiplied by four to determine the number of words per minute being spoken.

## CHAPTER IV

### RESULTS

The purpose of this study was to determine whether or not a relationship existed between oral speaking rate, reading fluency rate, and reading comprehension. The relationship of third grade students' oral speaking rate to their DIBELS words per minute rate and Reading Benchmark percentage were analyzed using a Pearson Correlation. The results are presented in Table 1 below.

**Table 1**

**Pearson Correlation of Oral Speaking WPM, DIBELS WPM and Reading Benchmark Percentage**

	<b>DIBELS wpm</b>		<b>Reading Benchmark</b>	
	<b>Correlation</b>	<b>Significance</b>	<b>Correlation</b>	<b>Significance</b>
<b>Oral Speaking Rate</b>	0.115	0.620	0.300	0.186

The null hypothesis that there would not be a relationship between the oral speaking rate of third grade students and their reading fluency rate and reading comprehension is somewhat supported. A very small relationship exists but not a significant one.

## **CHAPTER V**

### **DISCUSSION**

This study intended to determine if there was a relationship between a third grader's natural speech rate and fluency rate, and speech rate with comprehension. Findings from this study suggested that there is a correlation between oral speaking words per minute and the DIBELS fluency words per minute, but not a significant one. The correlation between these two factors was a 0.115 with the significance being 0.62. This study also suggested a slight relationship between the oral speaking words per minute and a student's comprehension score as measured by the reading benchmark. There was a correlation between speech rate and comprehension of 0.300 with a significance of 0.186. Although the data between oral speech rate and comprehension is stronger than the relationship between oral speech rate and fluency rate, it would still not be considered significant. That is not to say that this study was not an important contribution to the literature. On the contrary, the study relates directly to what is happening in school systems today and raises further research questions that should be explored.

This study reflects the importance of questioning current literacy testing in schools, and what is to come with the Common Core and the Partnership for Assessment of Readiness for College and Careers (PARCC) assessment (PARCC, 2013). Currently, many schools and school systems rely on using the DIBELS fluency test as a means to identify a child's reading proficiency level based on the number of words the child can read in a minute. These data influence instructional decisions made about students. It appears that little or no consideration is given to the time it takes a child to speak naturally and how that information could affect a child's reading rate. Although DIBELS is a nationwide literacy assessment, consideration is not given to the different dialects spoken in specific regions of the country. For example, comparing the

reading rate of a child who is a rapid natural speaker to the reading rate of a child who exhibits a drawl and elongates vowels, taking additional time to pronounce a word, does not appear to be a valid approach. More emphasis needs to be given to a child's natural rate of speaking if great emphasis continues to be given to results from a fluency test, such as DIBELS.

The Common Core State Standards will be fully implemented in the academic year of 2013-2014 along with PARCC, a new standardized test (2013). This assessment is described as measuring student achievement in three main areas in Reading, English, and Language Arts. These areas are reading and comprehending literary and information texts; analyzing a text through writing, and speaking and listening skills. Data on students' achievement on these three language proficiencies will be collected three times a year. Assessments will include a beginning of the year diagnostic test, a midyear formative assessment, and a summative end of the year assessment that will be the PARCC. Speaking and listening is a component of reading assessment that has not been emphasized in recent years. With the advent of new high stakes testing, more studies are needed before these assessments are implemented to learn how speaking affects a child's overall performance in language arts. This study raises awareness of the importance of speech in its relation to comprehending while reading silently and in determining a quantitative reading fluency rate.

### **Threats to Validity**

The study presented some threats to validity. The first threat coincides with the time of day the voice capturing was done. The voice capturing took place either during indoor recess or dismissal during the school day. The recording device was disguised to encourage a natural speaking rate. However, it became obvious to the researcher that children have multiple registers of rate of speech that can vary depending on the time of day and environmental situation in

which that speech occurs. Some students did not like indoor recess and therefore were less inclined to speak during that time. For example, there was one student whose speech rate was not captured at all because she could not or would not speak at recess.

The time of day during which natural speech is assessed affects whether or not the natural speech rate found was an accurate representation of a students' natural speech ability. Students' emotions appeared to affect the number of words spoken. For example, one student who was angry at another spoke loudly and slowly, annunciating each word, which resulted in the student exhibiting a slower speaking rate. The link between rate of speech and students' emotions causes one to question whether one true speech rate actually exists for a student. This question also relates to how to calculate a student's reading fluency rate. Such questions lead the researcher to wonder if a single rate can be an accurate reflection of a student's reading ability.

The issues discussed above cause the researcher to question whether or not the assessments used actually assessed what they were intended for based on what was found in the literature review. For example, one must examine the DIBELS assessment that was used to assess fluency rate. Hudson et al. (2005) observed that fluency should have prosody, or a fluent and rhythmic speech. When the students in this study read during the DIBELS assessment, the students read with little to no expression, ignoring punctuation, almost as if in a 400 meter sprint. Allington et al., (1991) reported that oral reading fluency is related more to comprehension, than the decoding of words. If this link between comprehension and fluency is valid, then considering fluency as a rate at which a student reads does not measure fluency in an accurate manner.

Two foundational theories of reading comprehension, schema and reader-response theory, also bring to the forefront the issue of measuring comprehension through use of a stagnant number. Rosenblatt's (2005) reader response theory states that reading takes place

whenever a reader transacts with the text. Morrison et al., (2009) defined schema theory as what occurs when a reader uses prior knowledge and combines it with new knowledge from the text to make meaning. In neither definition is it mentioned that a student's reading achievement level can be described by using a single number. Furthermore, reflecting on the conclusions of these theorists, one concludes that comprehension will vary depending on a reader's depth of prior knowledge about the given text and his or her motivation to engage or transact with the text. Thus, a reader will have multiple reading rates depending on the specific texts read. Assigning a number to any kind of reading does not reflect the purpose of reading which is to make meaning (Altwerger et al., 2007).

### **Implications for Future Research**

The purpose of this study was to capture a student's natural speaking rate and compare this rate to their reading fluency rate and comprehension. The three tools used to measure students' level of performance were the Voice Notes Recorder Pro, the DIBELS fluency test, and the Baltimore County Public Schools Reading Benchmark. In future studies it would be worthwhile to collect the same type of data, using different assessment tools to determine whether results from the assessments were valid. For example, instead of using a timed DIBELS test, the researcher could assess a student's fluency informally by recording a student reading and then using one minute of that recording to calculate the number of words read per minute. This procedure would alleviate the pressures a timed one-minute DIBELS test may place on a student.

Capturing the natural speaking rate of students should be done in a setting different from indoor recess or school dismissal. Students have different registers of speaking, so it would be ideal to identify a child's reading rate in the home, with friends, or at a setting such as a church

and then compare this rate with the register of language and rate he or she uses at school. Collecting and analyzing these results would offer teachers more information related to the validity of the PARCC (2013) assessment, in particular the speech and language portion.

During this study no guidelines were given to students regarding the assessment of their natural speech rate to enable it to be captured accurately. It is important to investigate what would happen to a child's speech rate if more structure had been provided. At the end of the study the researcher wanted to explore what would happen if a student had been interviewed by the researcher and then his or her oral speech rate was calculated. The researcher found from working with two students that their speaking rate decreased more than the natural speaking rate when directly asked a question by the researcher as opposed to another student. These results did not support the purpose of this study, but another study that explores a student's speaking rate during a dialogue exchange between teacher and student would give more information about a child's testing anxiety, hence strengthening conclusions regarding whether or not all environmental conditions have been considered for the PARCC assessment.

The researcher believes that although the correlation between oral speech rate and reading comprehension was not significant, relying solely on numbers is not sufficient to conclude that no relationship exists. Conducting this study as a qualitative study would be more beneficial because the numbers suggest inconsistencies with students' performance that a qualitative study might explain. Qualitative analysis might lead to identification of additional factors that influence a student's oral language and its role in learning. Factors such as observing a student's social standing in the class, connecting oral language to the cognitive task required, or content area being discussed, time of day coupled with level of physical activity engaged in before speech acts are measured are examples of areas that might influence a student's talk.

With the anticipated transition to a nationwide curriculum that has not been tested before implementation, further research in the area of speech and its relation to fluency rate and comprehension is needed.

## REFERENCES

- Allington, R. L. (2006). *What really matters for struggling readers: Designing research-based programs* (2<sup>nd</sup> ed.). Boston, MA: Pearson Education, Inc.
- Allington, R. L. & Cunningham, P.M. (2007). *Schools that work: Where all children read and write* (3<sup>rd</sup> ed.) Boston: Allyn and Bacon.
- Allington, R. L. & Stayter, F. Z. (1991). *Fluency and the understanding of texts. Theory into Practice*, XXX (3), 143-148. Retrieved from Academic Premier, EBSCO. Retrieved from <http://search.ebscohost.com>.
- Altwerger, B., Jordan, N., & Shelton, N. (2007). *Rereading fluency: Process, practice, and policy*. (2007). Portsmouth, NH: Heinemann.
- Baltimore County Public Schools. (2013a). *Baltimore county public schools: Office of assessment*. Retrieved from [https://intranet.bcps.org/offices/special\\_projects/Elem-Directions/elem-reading-assessments-directions.html](https://intranet.bcps.org/offices/special_projects/Elem-Directions/elem-reading-assessments-directions.html) on February 24, 2013.
- Baltimore County Public Schools. (2013b). *Baltimore county public schools: Our system*. Retrieved from [http://bcps.org/system/about\\_us.html](http://bcps.org/system/about_us.html) on February 11, 2013.
- Beck, I.L., Kucan, L., & McKeown, M.G. (2002). *Bringing word to life: Robust vocabulary instruction*. New York, NY: The Guilford Press.
- Boomer, R. & Maloch, B. (2011, September). Relating policy to research and practice: The common core standards. *Language Arts*, 89 (1), 38-43.
- Bowyer-Crane, C, Snowling, M. J., Duff, F. J., Fieldsend, E., Carrol, J. M., Miles, J., Gotz, K., & Hulme, C. (2007). Improving early language and literacy skills: Differential effects of an oral language versus a phonology with reading intervention. *The Journal of Child Psychology and Psychiatry*, 49 (4), 422-432. doi: 10.1111/j.1469-7610.2007.01849.x.

- Cunningham, J. W., Cunningham, P. M., Moore, D. W. & Moore, S. A. (2004). *Reading and writing in elementary classrooms: Research based k-4 instruction* (5<sup>th</sup> ed.). Boston: Allyn and Bacon.
- Good, R.H. & Kaminski, R. A. (2009). *Dynamic measurement group: Supporting school success one step at a time*. Retrieved from <http://dibels.org/dibels.html> on February 24, 2013.
- Hudson, R. F., Lane, H., & Pullen, P. C. (2005). Reading fluency assessment and instruction: What, why, and how? *The Reading Teacher*, 58 (8), 702-714. doi: 10.1598/RT.58.8.1.
- Laberge, D. & Samuels, J. (1974). Towards a theory of automatic information processing in reading. *Cognitive Psychology*, 6, 293-323.
- Maryland State Department of Education. (2012). *2012 Maryland Report Card*. Retrieved from <http://www.mdreportcard.org/index.aspx?K=031310> on February 7, 2013.
- Morrison, V. & Wlodarczyk, L. (2009). Revisiting read-aloud: Instructional strategies that encourage student engagement with texts. *The Reading Teacher*, 63, 110-118.
- Nation, K., Clarke, P., Marshal, C., & Durand, M. (2004). Hidden language impairment in children: Parallels between poor reading comprehension and specific language impairment? *Journal of Speech, Language, and Hearing Impairment*, 47, 199-211. doi: 1092-4388/04/4701-0199.
- PARCC (2013). Partnership for readiness of college and careers. Retrieved from <http://www.parcconline.org/> on April 3, 2013.
- P&A Studio (2013). Voice notes recorder pro. Retrieved from <https://itunes.apple.com/us/app/voicenotes-recorder-pro/id513676457?mt=8> on February 24, 2013.

- Paul, R. & Roth, F. P. (2011). Characterizing and predicting outcomes of communication delays in infants and toddlers: Implications for clinical practice. *Language, Speech, and Hearing Services in Schools*, 42, 331-340. Retrieved from Academic Search Premier, EBSCO. Retrieved from: <http://search.ebscohost.com>.
- Pressley, M. (1998). *Reading instruction that works: The case for balanced teaching*. New York: The Guilford Press.
- Rasinski, T. (2006). Reading fluency instruction: Moving beyond accuracy, automaticity, and prosody. *The Reading Teacher*, 59 (7), 704-706. doi: 10.1598/RT.59.7.10.
- Rosenblatt, L. M. (2005). "Retrospect" from transactions with literature. *Voices from the Middle*, 12, 13-20.
- Smith, F. (2004). *Understanding reading* (6<sup>th</sup> ed.). New York, NY: Routledge.
- Walczyk, J. J. & Griffith-Ross, D. A. (2007). How important is reading skill fluency for comprehension? *The Reading Teacher*, 60 (6), 560-569. doi: 10.1598/RT.60.6.6.
- Weaver, C. (1994). *Reading process and practice: From socio-psycholinguistics to whole language* (2<sup>nd</sup> ed.). Portsmouth, NH: Heinemann.
- .