EXAMINING THE RELATIONSHIP BETWEEN AUTOMATICITY AND ORAL READING COMPREHENSION IN ENGLISH LEARNERS

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EXAMINING THE RELATIONSHIP BETWEEN AUTOMATICITY AND ORAL READING COMPREHENSION IN ENGLISH LEARNERS

A dissertation submitted in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

to the faculty of the

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THE SCHOOL OF EDUCATION at

ST. JOHN'S UNIVERSITY

New York

by

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ABSTRACT

EXAMINING THE RELATIONSHIP BETWEEN AUTOMATICITY AND ORAL READING COMPREHENSION IN ENGLISH LEARNERS

Annamaria M. Miller

This doctoral dissertation examined the relationship between automaticity and oral reading comprehension in English Learners (ELs) by comparing outcomes with non-English Learners. High fluency rate, or automaticity, is often used as a predictor of reading comprehension in students. Much of the prior research conducted on the relationship between reading rates and oral reading comprehension involved monolingual populations. Few studies have investigated this correlation among EL populations. In this present study, secondary assessment data were retrieved for third-grade students ($N = 1,583$) across 13 public schools within a single diverse school district in southern Colorado during the 2017-2018 and 2018-2019 school years. The school district includes 20.8% EL students. The researcher chose this approach as most appropriate to examine the relationship between oral reading rate and reading comprehension in ELs and non-English learners. The Dynamic Indicators of Basic Early Literacy Skills (DIBELS) Oral Reading Fluency (DORF) was utilized as the measure for assessing third-grade reading fluency (word-level decoding and accuracy) and the Colorado Measures of Academic Success (CMAS) was used as the measure for assessing third-grade reading comprehension in language arts. Results indicated that ELs who read at a high automatic rate still scored significantly lower on reading comprehension than non-English learners who read at the same rate. Future research should consider conducting additional studies that analyze EL comprehension levels within the context of automaticity.
DEDICATION

To my friends and family, thank you for praying me through. You know who you are! To my husband. You know I couldn’t have done this without you. Thank you for your love and support through this journey. To Jadon, Micah, Isaac, and Aniyah. You loved me through all of my busy days and celebrated with me when I made even the smallest accomplishments. To Dr. Grace. God sent you to be tangible grace. You jumped in the trenches with me and stayed there until the very end. Marty, thank you for being there and introducing us to such a wonderful woman! To Jackie. Thank you for your encouragement and support, especially our writing sessions!

Finally, to my beautiful mother. Although you are gone, you kept me going. Above all of this, only God alone sustained me from start to finish. Thank you God!
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To Dr. Kyle Cook, I am so thankful for the support that you gave me throughout this journey. You have been a friend, mentor, and a comfort. I was grateful to be under your mentorship in classes and on our project. I hope that I can give that same support when mentoring my students. #partner4life
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CHAPTER 1
Introduction

Since the introduction of the No Child Left Behind Act (NCLB) of 2001, literacy proficiency has been required in every state (U.S. Department of Education, 2009). Federal policy has mandated that all schools produce literate students and accountability measures have created a new type of schooling. The drive for acquiring grants, as well as the avoidance of school closures, has increased the use of standardized testing and progress monitoring. Many teachers and students have become overwhelmed and, for some students, learning has become stifled (Wakefield, 2017). With the demand that students become competent in reading, teachers may rely on measures of oral reading rate, or automaticity, as a means of determining reading mastery (Rasinski et al., 2011).

Misunderstandings about reading comprehension and how it is used in classrooms to improve reading fluency have long been studied by experts like Dolores Durkin, who in a 1978 study of elementary students in Grades 3 through 6 found that teachers valued the mastery of facts over comprehension instruction. In fact, no comprehension instruction was found by Durkin in her study and more than three decades later, a fact that remains to be true within classrooms is that speed and accuracy continue to be primary indicators of success of reading fluency and comprehension. According to the National Reading Panel (2000), oral reading fluency has been neglected in the past due to the popular assumption that “fluency was the immediate result of word recognition proficiency” (p. 3). Consequently, literacy attainment has led to an emphasis on and the promotion of basic reading skills at the neglect of higher order critical thinking and reading comprehension (Harper et al., 2008; Wright & Choi, 2006). This could present
challenges in linguistically diverse children reading in a second language and whose levels of reading achievement hold a large gap when compared to monolingual learners (e.g., Durgunoglu & Verhoeven, 1998; August & Shanahan, 2006). When reading fluency is defined as word recognition proficiency, ramifications could result in erroneous measures of assessments for English Learners (ELs). This is significant considering that high-stakes testing has an impact on academic achievement, program placement, grade promotion, and high school graduation (Menken, 2008).

**Purpose of the Study**

Durkin (1978) conducted a study of third and sixth graders to observe the existence of adequate primary level reading comprehension instruction in classroom, only to report that such instruction was non-existent. In her observations, Durkin not only found that comprehension instruction had become obsolete, but that a significant focus on assignments and workbooks had failed to capture the level of comprehension students had of not only what they were reading, but the words that they were introduced to in classroom stories. According to Durkin, comprehension instruction was replaced with phonics instruction. At present, challenges in implementing comprehension instruction subsist (Wakefield, 2017). Teachers utilize high reading rate as a construct of assessing reading fluency, but are realizing its inadequacy (Goodman, 2006; Pressley, Hilden, & Shankland, 2005; Rasinski, 2006; Samuels, 2006, 2007). If reading comprehension instruction has been defective in schools for decades, what challenges does this present in a country that grows in diversity every year? When reading comprehension is a critical component of academic and professional success, having an instructional foundation based on automaticity can be a challenge where multilingual populations are concerned.
The increase in multilingual populations expands the necessity for comprehension instruction. Today, according to the National Center for Education Statistics (NCES, 2018), ELs in U.S. public schools have grown from two million in 1990 to 4.8 million in 2015. In addition, there has been a consistent academic achievement gap between EL students and their English monolingual peers (U.S. Department of Education, 2017). In the United States, 9 percent of fourth grade ELs scored at or above proficient in reading while 40 percent of non-ELs scored at or above proficiency on the 2017 National Assessment of Education Progress (NAEP) (The Nation’s Report Card, n.d.). This reveals that literacy acquisition in ELs is more challenging than expected and that there is a need for holistic assessment and curriculum implementation practices for ELs.

Programs for ELs face challenges with accommodating and addressing the needs in the areas of social, cultural, and linguistic diversity. It is often the case that many policymakers, administrators, and educators make the assumption that ELs will gain equal benefit from the same instructional approach presented in the mainstream classroom (Gil & Bardack, 2010). However, EL students benefit from high-quality instruction that includes an understanding of the student’s native language structures and a knowledge of the student’s cultural and social development at home (Adams and Jones, 2006). ELs are able to employ linguistic elements of their first language to master their second language. With this knowledge, teachers could make use of these same strategies to facilitate an EL’s learning of the second language (Verhoeven, 2011).

In addition to consideration of sociocultural influences, teachers and administrators must understand that not all students who speak English as a second language learn the same way. There are some students whose first language has an
association to the English language through cognates, while others do not. Consequently, students who have first languages that include distant orthographies (e.g., Mandarin, Arabic, Vietnamese) to English would have more difficulty obtaining English as their second language, and thus require varied methods of instruction (National Council of Teachers, 2008). Often, ELs are taught by teachers who lack a thorough understanding of second language acquisition and do not modify practice within the mainstream classroom (Adams and Jones, 2006). This could, in turn, fail to meet the needs of language proficiency and comprehension for these students. There is a necessity for general educators to be aware that students may have linguistic weaknesses in general literacy (reading and writing) that may not be obvious even after the student seems to have mastered social language (McLaughlin, 1992). If elementary level teachers view the mastery of oral language within the social domain as the sole measure of English language proficiency, academic gaps may continue to persist at the middle and high school levels (U.S. Department of Education, 2017; McLaughlin, 1992). This acknowledges the need for a more comprehensive approach to achieve the simultaneous attainment of academic and English language proficiency (Gil & Bardack, 2010, p. 8). The purpose of this study is to examine the relationship between oral reading rate and comprehension in ELs, thus providing a way toward determining appropriate implementation practices that exceeds an ELs’ ability to comprehend beyond automaticity.
Theoretical/Conceptual Framework

Theory of Automatic Processing in Reading Fluency

Reading fluency, a component of reading development, has been described in the past as the ability to recognize words in an automatic way (Cattell, 1886). In 1968, Huey stated that fluency was recognizing words quickly so that one could concentrate on the content of the reading. Following that, the theory of automaticity, presented by LaBerge and Samuels (1974) asserted that reading at a word level proficiency (e.g., letter sounds, blending, word recognition) contributed to reading fluency. Accomplishing this automaticity or reading automatically would create mental capacities to accomplish comprehension of the text (Unrau et al., 2019).

It is clear that accuracy and rate influence how we view reading fluency. Often, when one mentions reading fluency, it refers to oral reading with fluidity. As mentioned earlier, LaBerge and Samuels in their theory of automaticity (1974) believed that one should read at an automatic rate so that they can utilize their cognitive capacity toward understanding the text (Figure 1). They hypothesized that poor comprehenders existed because too much time was spent on the decoding of words or the slow processing of text (Rasinski et al., 2011). Samuels (1974) then hypothesized that readers could learn to read automatically through repeated reading of the text. He believed that students were not mastering the reading content because teachers did not spend enough time developing accuracy and automaticity. He argued that when readers practiced repeating passages, it increased the readers’ ability to read other texts automatically. Perfetti (1985) also supported this viewpoint by emphasizing the efficient verbal processing of texts through word identification. Perfetti’s theory asserted that, when a reader masters the lower level
processes (e.g., decoding and word recognition), they effectively utilize higher level processes (i.e., comprehension) for reading fluency (Rasinski et al., 2011). Thus, theories of the automatic processing of text influenced the pedagogy of reading development in education (Figure 1).

**Figure 1**

*Automatic processes in Reading (Farah & Malone, n.d.)*

Today, reading rate and the ability to recognize words accurately have been used to measure oral reading proficiency in students. Reading inventories and diagnostic assessments in elementary schools have been utilized in determining reading developmental levels for years (Rasinski et al., 2011). It provides a way to collect the information necessary for literacy grants and other accountability requirements implemented by the state.
Significance/Importance of the Study

Although there are challenges in the education of ELs, the review of literature in chapter 2 will examine how utilizing measurements of oral reading as a predictor of reading comprehension in ELs may hinder academic success for this group. It will also reveal that there are multiple variables that impact reading comprehension in ELs. High oral reading rate or automaticity is often used as a predictor of reading comprehension in students (Grabe, 2010). Much of the research conducted on the relationship between reading rates and oral reading comprehension involve monolingual populations. There are few studies that have investigated this correlation among ELs. This study addresses this gap. It will examine the connections between automaticity (high or rapid oral reading rate) and oral reading comprehension in ELs and add to the current research to reflect multilingual populations. With the analysis of this study, findings can be employed to promote the advancement of comprehension instruction within the mainstream classroom, create curriculum that will support practices to increase comprehension in EL students, and possibly close the reading proficiency gap between ELs and non-ELs.

Research Questions

The purpose of this study is to investigate the relationship between automaticity and reading comprehension in ELs. The following research questions guided the study:

1. What is the automaticity rate of 3rd grade monolingual and English learner students?

2. What is the average state assessment score for 3rd grade monolingual and English learner students?
3. Do English learners and monolingual students with high automaticity rates have similar Language Arts Colorado state assessment scores?

4. What is the association between 3rd-grade students’ automaticity rates and their reading comprehension score for their Language Arts Colorado state assessment scores?

Definition of Terms

**Annual Measurable Achievement Objectives (AMAO):** A federal program under the No Child Left Behind Act intended to hold teachers accountable for student success.

**Automaticity:** Fast, effortless, and accurate word recognition.

**Colorado Measures of Academic Success (CMAS):** The State of Colorado’s assessments for third to eighth graders measuring students’ progress in language arts, math, science, and social studies at the end of the school year.

**Comprehension Instruction:** Instruction that focuses on teaching students strategies that will ensure a full understanding of terms and stories they are reading.

**Culturally and linguistically diverse students:** Students who come from an environment where a language other than English is spoken and whose cultural and background beliefs are different from mainstream society.

**DIBEL Oral Reading Fluency (DORF):** Assessments that measure fluency and accuracy in text recognitions or decoding of terms with little to no effort.

**English Learner (EL):** A student who receives English Language services at an educational establishment.
**Language Status:** The position, or standing, of a language against other languages as primary or secondary in terms of the speaker’s use.

**Monolingual Learner:** A student who speaks one language. In this case, English.

**Multilingual Learner:** A student who speaks two or more languages.

**Non-English Learner (Non-EL):** A student whose primary language is English or who does not receive English language services from an educational establishment.

**Oral reading rate:** The speed with which a person reads written text aloud.

**Oral reading fluency:** The ability to read with speed, accuracy, and proper expression.

**Reading comprehension:** The understanding and interpretation of what is read.

**Reading fluency:** The ability to read with prosody, accuracy, and automaticity.
CHAPTER 2

Review of Related Research

Research on the development of reading fluency with monolingual students from the primary grades through middle school demonstrates a robust relationship between reading fluency and reading comprehension (e.g., Fuchs, Fuchs, & Maxwell, 1988; Hosp & Fuchs, 2005; Riedel, 2007; Shinn et al., 1992; Wiley & Deno, 2005). However, there are few studies that have investigated the correlation between automaticity and reading comprehension among ELs. The review of literature in this section will examine how utilizing measurements of oral reading rate alone as a predictor of reading comprehension in ELs may hinder academic success for this group.

Assessment and Achievement Gaps for ELs

The history of ELs in the United States has been filled with adversities and advancements. Although the founding fathers had a strong respect for the diversity of languages, the standardizing of English was still asserted by educational establishments (Heath, 1977). During this time, it was an acceptable norm to assimilate certain groups (e.g., Native and African Americans) by often forcing them to conform to Eurocentric mentality as well as learn the English language while discarding their own (Wiley, 2000). Beginning in the 1900s, the move toward monolingualism began to dominate as learning and speaking English became a symbol of true Americanism (Olneck, 1989). Soon, legislation shifted to require that English be made the official language of the United States, while prohibiting the teaching of other languages to young children (de Jong, E., 2011b). As a result, students who spoke languages other than English were placed in English-only classrooms without accommodations. Assessment procedures also
led to mislabeling and placement in special education classes, which also increased early
dropout rates of multilingual learners. In order to defend their proposals, those who
supported English-only policies claimed that the United States cultivated a nation of
immigrants who had succeeded economically by learning English and by denying their
ethnic roots (Schmidt, 2000). Although bilingual education and other bilingual programs
attempted to impact the mindset of English-only supporters by increasing awareness and
the benefits of learning more than one language, monolingual (English-only) policies
have continued into the 21st century (de Jong, E., 2011).

With the emergence of the Elementary and Secondary Education Act (ESEA) by
President Lyndon B. Johnson in 1965, the first Bilingual Education Act (BEA) in 1968,
and the Equal Educational Opportunity Act in 1974, lawmakers wanted to ensure that
students from low poverty, as well as minority students, would succeed at the elementary
and secondary levels (de Jong, E., 2011). However, the definitions of bilingual education
within the context of BEA would soon mean the sole teaching of English language
instruction (de Jong, E., 2011). These policies increased the federal government’s
involvement in educational institutions. However, when the No Child Left Behind Act
(NCLB) of 2001 came into effect, BEA was discontinued, and government accountability
measures heightened their involvement to keep track of the financial investments allotted
to schools (Klein, 2015).

For years, ELs have lagged behind their monolingual speaking peers on
assessments offered by the state. For decades, the gap in academic achievement between
EL and non-EL populations has existed within the United States. Accountability
outcomes have created environments in which teachers feel overwhelmed with the
pressure to improve test scores, thus impacting curriculum implementation. Although ESEA has evolved over its 50-year history and from NCLB to the Every Student Succeeds Act (ESSA) in 2015, the necessity to determine how to address the needs of ELs remains a challenge. Through annual measurable achievement objectives (AMAOs), states must develop English language proficiency standards and assessments that measure progress and proficiency (de Jong, E., 2011). Consequently, literacy attainment has led to an emphasis on and the promotion of basic reading skills at the neglect of higher-order critical thinking and reading comprehension (Harper et al., 2008; Wright & Choi, 2006).

**Modern Day Comprehension Instruction**

Reading fluency has its foundations in oral reading. In early American society, reading was best known for the eloquence of spoken word over the comprehension of the text (Hyatt, 1943; Smith 1965; Hoffman & Segel, 1983; Hoffman, 1987). Schools and homes were filled with the dictation of the passage. Toward the end of the 19th century, psychologists began to see weaknesses in the educational practices of reading development and began to emphasize the need for understanding the text (Hyatt, 1943; Parker, 1884). They discovered that 90% of reading students did not comprehend what they read (Mann, 1891). Even after the realization that comprehension instruction should be included in the classroom, the struggle over its importance remained (Pearson & Cervetti, 2017). In the late 1970s and early 1980s, when the need to assess comprehension was apparent while the comprehension skills taught remained at surface level (Pearson & Cervetti, 2017). An important milestone during this period was Durkin’s 1978 study on comprehension instruction implementation. She found that many teachers taught very little direct instruction of comprehension. Assessments of comprehension
revealed students who regurgitated practice material given from their teachers. Quality comprehension instruction through the activation of schemata and discussion was close to obsolete.

Although comprehension instruction, especially through the use of strategies, has improved over the years, even today there is a struggle for teachers to find time to explicitly teach comprehension (Pearson & Cervetti, 2017). Curriculum demands as well as accountability measures required by the states make it difficult to sustain teaching practices that promote the mastery of higher level thinking. Teachers resolve to teach and assess comprehension through the use of text-based questions in which the student only had to locate the answer (Pearson & Cervetti, 2017). Although the instruction of reading comprehension has been endorsed as one of the essential elements of reading development (National Reading Panel, 2001), in many classrooms, phonics, automaticity, phonemic awareness, and vocabulary receive the most attention. Reading comprehension is often taught through the means of strategies which become ineffective after two weeks of instruction (Wexler, 2019). This presents a challenge when considering the needs of the EL student.

**EL Reading Comprehension Growth Rate Comparison**

In a six-year longitudinal study on the growth rates of reading comprehension in ELs and their monolingual counterparts, researchers found that the reading comprehension growth patterns of ELs and monolingual learners were not identical and that there was a significant gap between the two groups (Farnia & Geva, 2013). This gap revealed that ELs assimilate information in a different manner. Although their cognitive abilities or word level reading skills did not differ, ELs developed English oral language
skills over time and had a poor command of certain components of the language as compared to the monolingual group, especially in the area of comprehension. Although there is a desire to make certain that ELs are within inclusive environments, there must be a recognition that ELs comprehend text differently from their monolingual counterparts. As a result, the measurements for assessment should be adjusted.

**The Impact of Schema on Reading Comprehension**

In addition to the disproportionate growth patterns in reading comprehension, background knowledge is a function that is necessary for mastery of the English language for the EL student. In a study conducted by Reyes and Azuara (2013), young Mexican children were observed to identify how they learned language and literacy through their interactions in their immediate environments. As they observed how the participants acquired literacy from the sociocultural perspective, the schema formed was influenced by interactions with community, and environment as well. Schema is the process by which one organizes their knowledge of the world which creates the foundations for learning and comprehending their environments (Anderson, 2013). According to the authors, when a reader is able to bring to mind the schema that aid in understand the passage, comprehension comes naturally. Schema assists in summarizing information, it sets up space in the memory in an orderly method, helps in knowing where to use the information, and allows logical reconstruction to form new schema (Anderson, 2013). Students may misunderstand what a phrase or passage is saying because their lack of experience with the subject. Their environmental interactions and backgrounds across cultures may create gaps in understanding.
In presenting evidence for the role of schema theory in comprehension, Anderson (2013) wrote about a cross-cultural experiment conducted by Steffensen, Joag-Dev, and Anderson (1979). In this study, people from India and America read letters about weddings that took place in their societies. Among the deficiencies in learning and memory, a major gap was found in the area of comprehension when the participants read the wedding passage unrelated to their own culture. What was realized is that if the participants were made aware of culturally appropriate schema, comprehension would increase.

This reveals the necessity of culturally sensitive comprehension instruction in the classroom. It also shows how students can read material, and if comprehensive inquiries are not performed, they could leave the classroom with little understanding about the subject. Teacher and teacher educators must recognize how schema theory impacts comprehension. They also must understand how culture, language, and social factors influence schema. In the article, *Schema Theory Revisited*, McVee, Dunsmore, and Gavelek (2013) introduce an example of a Hmong student named Deng. The videotaped session (Brock, 1997, as cited by McVee, Dunsmore, & Gavelek, 2013) revealed a teacher who presented a unit on the concept of racism and prejudice. During the unit, the teacher had the students read the book Maniac Magee and listen to the *I have a Dream* speech by Martin Luther King. The teacher also incorporated other activities so that the students could grasp the concepts that were being presented. In one lesson, the teacher read an excerpt from Maniac Magee. This led to a discussion about the various shades of colors in people. From this discussion, the teacher then had the students hold out their hands to present their own shades of color. Deng, who had only been in the United States
for 2 years, had not completely understood the purpose of the hand displaying activity. He thought that the teacher just wanted the students to look at each other’s hands. He did not realize that the activity was for the purpose of creating more clarity of the concept of racism. In fact, Deng, did not fully comprehend the idea of racism. His schema was not sufficient enough for him to master the unit. Here, again, we see that there are other factors that influence fluency.

Linguistic Distance and Reading Comprehension

Another aspect in EL reading comprehension is the relationship between oral reading fluency and comprehension among ELs of different first language backgrounds. One hundred and forty-nine adult EL students with four different language backgrounds (Arabic, Japanese, Spanish, and Chinese) participated in a study that examined the relationship between oral reading fluency and reading comprehension (Jiang, 2016). Four elements of oral reading fluency were tested which included oral reading rate, accuracy, efficiency, and prosody. The results revealed that participants with Chinese and Japanese first language backgrounds, prosody was a significant predictor of reading comprehension in English. The significant predictor for ELs whose first language was Arabic, was oral reading efficiency. Participants whose background was Spanish, both accuracy and rate were significant predictors of English reading comprehension. Here we find that the relationship between oral reading fluency and reading comprehension was found to vary across language groups. It was also found that the distance between the students’ first languages and the English language determined how easily they were able to learn the language.
In another study, 24 native Cantonese speaking second graders from Hong Kong primary schools participated in a study (Choi et al., 2017) that assessed reading comprehension difficulties in students who were considered poor comprehenders. The bilingual students were evaluated in the areas of word reading, phonological awareness, vocabulary, reading comprehension, nonverbal intelligence, and lexical tone and stress. The researchers found that the reading difficulties exhibited in the learner appeared not to be “universal” but suggested “potentially different linguistic and cognitive underpinnings of reading comprehension” (Choi et al., 2017, p. 194). The place of lexical tone was an additional discovery in this study. It was found that poor Chinese comprehenders and poor English comprehenders showed a weakness in lexical tone awareness or prosody in comparison with average comprehenders. Again, we see that learners of second languages had difficulties based on factors dissimilar to L1 learners.

Choi et al. (2017) also discovered that there were students who could decode well but lacked comprehension. This conflicted with prior findings of monolingual poor comprehenders (e.g., Nation et al., 2007). “While the current definition of poor comprehenders emphasizes normal word decoding, the present data seem to suggest that poor comprehenders might have intact semantic representation of words” (Choi et al., 2017, p. 195). It is evident that ELs not only experience the attainment of oral reading components unequally but may possess adequate decoding abilities and still not comprehend what is being read.

**Oral Reading Fluency and Poor Comprehenders**

Piper et al. (2015), analyzed reading acquisition in a multilingual environment. Two thousand children aged 6 to 15, from the provinces of Central and Nyanza
participated in this study. Four languages were represented in this group: English, Kiswahili, Dholuo, and Gikuyu. The multiple language assessment measured decoding fluency skills and comprehension.

A large population of multilingual students were found to be proficient in reading in English but did not comprehend what was being read. The students read more fluently in English than in their first language. Yet, their comprehension of English words was lower than their ability to comprehend in their first language. “Children’s oral reading fluency scores in their first language were more predictive of reading comprehension than were those in their second language. However, these children’s reading comprehension scores were significantly higher in their mother tongue than in English” (Piper et al., 2015, p. 145). Although the children could recognize words in English, the results showed that their understanding was limited. It revealed that a linear relationship between automaticity (reading accurately and quickly) and reading comprehension was often assumed especially in monolingual learners. It was found that children who read in their first language held different levels of automaticity and comprehension when reading in a second or third language. Although reading fluently is shown to have associations to reading success in students, it is important to distinguish differences in multilingual and monolingual learners’ reading comprehension levels.

**Word Callers**

Teachers have reported an existence of students who can read fluently but have little comprehension, called “word callers” (Stanovich, 1986). These students are able to call out words but not able to understand the meaning of the words within a broader context. Although previous studies (Hamilton & Shinn, 2003; Meisinger et al., 2009)
have suggested that word callers do not exist in appreciable numbers, some studies (Quirk & Beem, 2012; Knight-Teague, Vanderwood & Knight, 2014) reveal that they may exist regardless of grade levels, especially within the EL population. The concern for this group of word callers is that many are misidentified because their reading comprehension problems go unnoticed. Findings suggest that utilizing data from reading fluency assessments misinform reading comprehension for a significant amount of EL students (Quirk & Beem, 2012; Knight-Teague, Vanderwood & Knight, 2014).

Research on ELs also indicates that there could be many reasons for inadequacies in reading (Chiappe & Siegel, 1999; Vaughn et al., 2006). For example, ELs could lack decoding skills and automaticity of words. On the other hand, ELs could also have high automaticity skills and accurate decoding but not comprehend what they read. In both cases, it appeared that teachers were not equipped to assess reading comprehension in ELs. In one study, data were collected from a group of third and fifth grade EL students whose first language was Spanish (Knight-Teague, Vanderwood & Knight, 2014). About 6% of third-graders and 8% of fifth-graders were identified as word callers and were assessed with AIMSweb Curriculum-Based Measurement (R-CBM), California Standards Tests – English Language Arts Reading Comprehension (CST-ELA-RC), and California English Language Development Test (CELDT). The study revealed that while the subsample of students was relatively small, the teacher’s endorsement of Oral Reading Fluency (ORF) was not sensitive to the word callers’ below average comprehension skills.
Relationship Between Prior Research and Present Study

The purpose of the present study was to examine the relationship between automaticity and reading comprehension in ELs and to begin promotion for more explicit and adequate comprehension instruction within the mainstream classroom. It contributes to the existing literature on the relationship between reading fluency and comprehension. It extends the previous research by examining reading rates and comprehension in ELs and comparing those rates to that of their monolingual peers. Furthermore, it fills a gap in the literature by analyzing multilingual populations within the United States whereas much of the literature on this topic is conducted outside of the United States.

Although elementary-level teachers may feel pressured to produce positive academic results within a given time period, utilizing reading rate and accuracy as a measure of determining fully fluent readers may hinder academic success for ELs. The literature suggests that there is a weak correlation between oral reading rate and reading comprehension in ELs and reveals that oral reading rate or automaticity should not be a sole predictor of reading comprehension in ELs. It revealed that there are various factors that affect reading comprehension in ELs. Prosody, accuracy, automaticity, and schema combined assist in determining reading comprehension rates in ELs, but there are other factors that influence the lack of proficiency such as socioeconomic environment (Heppt et al., 2014).

History has shown that educational institutions, especially on the elementary level, have struggled to determine measures that are appropriate for accommodating ELs and are unsure about how to address the academic achievement gap. The pressure of teaching to the test has created surface level reading and comprehension. Federal and
state policies that have promoted literacy proficiency for the general population make it difficult for teachers to implement practices that aid in second language acquisition in ELs. If policymakers, administrators, and educators recognized that there may be an existence of ELs whose reading levels exhibit similar characteristics of non-ELs but experience challenges in comprehension, greater access to appropriate comprehension instruction may be established.

As an educator of ELs, this proposed study would be instrumental in addressing the academic achievement gap of ELs. Educators, administrators, and policymakers must understand that ELs acquire language through a system that is nonlinear. Explicit reading comprehension instruction could improve their language acquisition process within the mainstream classroom. In addition, this study informs practice by revealing the challenges that could occur when educators accept reading rate as the sole component of fully fluent readers. It is important to understand that the academic gaps that may be present in minority and linguistically diverse students will not be addressed if comprehension is not thoroughly addressed. Additionally, it is my hope that policymakers will acknowledge the benefit in giving teachers quality time to teach comprehension or critical thinking skills which will impact not just the EL population, but the general student population as well. Overall, adjustments made to the curriculum to address EL needs within the mainstream classroom could also benefit the whole classroom. Improving instruction for ELs, could mean improving instruction for all.
CHAPTER 3
Methods and Procedures

Research Approach

This study will use a quantitative research approach. The researcher chose this approach as most appropriate to examine the relationship between oral reading rate and reading comprehension in monolingual and English learners. This will be achieved through analyzing secondary data that was previously collected by one school district in Colorado.

Research Questions

This study will examine the following research questions:

1. What is the automaticity rate of 3rd grade monolingual and English learner students?
2. What is the average state assessment score for 3rd grade monolingual and English learner students?
3. Do English learners and monolingual students with high automaticity rates have similar Language Arts Colorado state assessment scores?
4. What is the association between 3rd-grade students’ automaticity rates and their reading comprehension score for their Language Arts Colorado state assessment scores?

Sample & Context

The sample includes data from the full population of third-grade students enrolled in 13 public schools within a single school district in southern Colorado during the 2017-2018 and 2018-2019 school years. The district spans 19 square miles of urban and rural
areas and serves more than 11,000 students with a high percentage living in or near poverty. The total amount of participants for this study included 1,583 third-grade students. From this total, 148 ELs and 606 non-ELs were from the year 2017-2018 ($N = 754$) and 114 ELs and 715 non-ELs were from the year 2018-2019 ($N = 829$).

Non-English Proficiency (NEP) students are in the English language program and receive additional support, however, this particular subsample has been omitted from the study. NEPs in some cases speak no English at all. The researcher required participants who could read fluently and, for this study, NEP sample in the data revealed that a limited amount of NEP participants read at the desired reading rate. Table 1 shows descriptive statistics for the sample population in this study.

**Table 1**

*Demographics of Study Sample for 2017-2018 School Year*

<table>
<thead>
<tr>
<th>2017-2018 School Year</th>
<th>Variables</th>
<th>Total Sample</th>
<th>Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>F</td>
<td>329</td>
<td>43.6</td>
<td>43.6</td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>425</td>
<td>56.4</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td>n = 754</td>
<td></td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>EL Status</td>
<td>ELs</td>
<td>148</td>
<td>19.6</td>
<td>19.6</td>
</tr>
<tr>
<td></td>
<td>Non-ELs</td>
<td>606</td>
<td>80.4</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td>n = 754</td>
<td></td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>Race/Ethnicity</td>
<td>American Indian or Alaskan Native</td>
<td>5</td>
<td>0.7</td>
<td>0.7</td>
</tr>
<tr>
<td></td>
<td>Asian</td>
<td>7</td>
<td>0.9</td>
<td>1.6</td>
</tr>
<tr>
<td></td>
<td>Black or African American</td>
<td>98</td>
<td>13.0</td>
<td>14.6</td>
</tr>
<tr>
<td></td>
<td>Hispanic</td>
<td>389</td>
<td>51.6</td>
<td>66.2</td>
</tr>
<tr>
<td>Variables</td>
<td>Total Sample</td>
<td>Percent</td>
<td>Cumulative Percent</td>
<td></td>
</tr>
<tr>
<td>------------------------------------------</td>
<td>--------------</td>
<td>---------</td>
<td>--------------------</td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>436</td>
<td>52.6</td>
<td>52.6</td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>393</td>
<td>47.4</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>EL Status</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ELs</td>
<td>114</td>
<td>13.8</td>
<td>13.8</td>
<td></td>
</tr>
<tr>
<td>Non-ELs</td>
<td>715</td>
<td>86.2</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>Race/Ethnicity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>American Indian or Alaskan Native</td>
<td>3</td>
<td>0.4</td>
<td>0.4</td>
<td></td>
</tr>
</tbody>
</table>

Table 2

Demographics of Study Sample for 2018-2019 School Year
<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Count</th>
<th>Percentage</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asian</td>
<td>3</td>
<td>0.4</td>
<td>0.7</td>
</tr>
<tr>
<td>Black or African American</td>
<td>113</td>
<td>13.6</td>
<td>14.4</td>
</tr>
<tr>
<td>Hispanic</td>
<td>430</td>
<td>51.9</td>
<td>66.2</td>
</tr>
<tr>
<td>Native Hawaiian or Other Pacific Islander</td>
<td>11</td>
<td>1.3</td>
<td>67.6</td>
</tr>
<tr>
<td>Two or More Races</td>
<td>74</td>
<td>8.9</td>
<td>76.5</td>
</tr>
<tr>
<td>White</td>
<td>195</td>
<td>23.5</td>
<td>100.0</td>
</tr>
</tbody>
</table>

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Free or Reduced Lunch</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>177</td>
<td>21.4</td>
<td>21.4</td>
</tr>
<tr>
<td>Yes</td>
<td>652</td>
<td>78.6</td>
<td>100.0</td>
</tr>
</tbody>
</table>

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Special Education Services</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>711</td>
<td>85.8</td>
<td>88.5</td>
</tr>
<tr>
<td>Yes</td>
<td>118</td>
<td>14.2</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Procedures

The administrative secondary data for the 2017-2018 and 2018-2019 school years includes the full population of third graders for those years. First, a request was made by completing the school district’s research application. After obtaining initial approval for data retrieval from the district, approval was obtained from the St. John’s University Institutional Review Board. Once the investigator received IRB approval, she obtained a signed data sharing agreement from the district prior to the transfer of data. All data was stored on an encrypted thumb drive and only transferred via secure file transfer. The investigator collaborated with the district analyst to determine variables needed for the
study. All retrieved data was anonymized to maintain privacy.

**Measures**

The Dynamic Indicators of Basic Early Literacy Skills (DIBELS) Oral Reading Fluency (DORF) was the benchmark assessment of reading and the Colorado Measures of Academic Success (CMAS) was the Colorado state standardized assessment of language arts scores. The independent variable (IV) of interest in this study was automaticity rate or DORF (word accuracy and speed). The dependent variable (DV) was the standardized state assessment scores or CMAS (reading comprehension). The means and standard deviations of both the DORF and the CMAS were used as descriptive analyses (research questions 1 – 3). Language status (EL or non-EL), sex, race/ethnicity, free or reduced-price lunch status, and special education status were included as control variables in the regression models to determine the strength of the predictors (research question 4).

*The Dynamic Indicators of Basic Early Literacy Skills (DIBELS) Oral Reading Fluency (DORF)*

The DORF was used as the measure for assessing third grade reading fluency (word-level decoding and accuracy) (University of Oregon, 2018). The DORF measures fluency (automaticity) as reading words with minimal effort. It is expected that the student will recognize accurately and read words at an automatic rate. Students are given an unfamiliar passage to read according to grade level and are asked to read the passage for one minute. If substitutions, omissions, or hesitations for more than three seconds are present, it is counted as an error. The score is the result of the median number of words
read correctly and the median number of errors read across three passages. Figure 2
provides an example of DORF assessment material.

**Figure 2**

*The Dynamic Indicators of Basic Early Literacy Skills (DIBELS) Oral Reading Fluency*

(DORF) Scoring Sheet Example

![Model DORF Scoring Sheet](http://www.shastacoe.org/uploaded/Dept/is/2016_3rd_Grade_Testing_Materials.pdf)
For this study, third grade middle of the year (MOY) DORF scores were analyzed for automaticity levels. The oral reading fluency words correct benchmark goals for third graders include a percentage of 86 for “At levels” and a percentage of 105 for “Above levels.” For oral reading word accuracy, benchmark goals for third graders include a score of 96% for “At levels” and a score of 99% for “Above levels.”

The DIBELS ORF 6th edition test-retest and alternate form reliability for third grade scores had median coefficients of .91 and .93 (National Center on Intensive Intervention, n.d.). A full chart of benchmark goals can be found in Appendix B.

The Colorado Measures of Academic Success (CMAS)

The CMAS was used as the measure for assessing third grade language arts reading comprehension. The CMAS is the state of Colorado’s annual assessment of student proficiencies in subject matters that include language arts and is focused specifically on the testing of third to eighth graders. With regard to English Language Arts, the CMAS is designed to measure reading comprehension, written expression, knowledge and use of language conventions. CMAS assessments, according to the state’s department of education website, are administered in a single testing window. For example, within the 2020-2021 school year the testing window is April 12th through April 30th. All students are required to participate in the state’s assessment system, including those students with Individualized Education Programs or IEPs and EL students. Given state and federal laws regarding the measurability of assessments in the mastery of skills within English Language Arts for third graders, the following scoring rubric is used to measure a) reading comprehension and written expression; b) knowledge of language and conventions; c) written expression; and d) knowledge of language and conventions.
When the researcher refers to the reading comprehension measurement, she is referring to all elements of assessment within the CMAS language arts domain. For the purposes of this study, third grade scaled scores in language arts ($\alpha = .90$) were analyzed.

**Table 3**

*CMAS Scoring Rubric for Prose Constructed Response Item. Research Simulation Task (RST) and Literary Analysis Task (LAT) for Grade 3*

<table>
<thead>
<tr>
<th>Construct Measured</th>
<th>Score Point 3</th>
<th>Score Point 2</th>
<th>Score Point 1</th>
<th>Score Point 0</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reading Comprehension and Written Expression</strong></td>
<td>The student response • demonstrates full comprehension by providing an accurate explanation/description/comparison; • addresses the prompt and provides effective development of the topic that is consistently appropriate to task, purpose, and audience; • uses clear reasoning supported by relevant, text-based evidence in the development of the topic; • is effectively organized with clear and coherent writing; • uses language effectively to clarify ideas.</td>
<td>The student response • demonstrates comprehension by providing a mostly accurate explanation/description/comparison; • addresses the prompt and provides some development of the topic that is generally appropriate to task, purpose, and audience; • uses reasoning and relevant, text-based evidence in the development of the topic; • is organized with mostly clear and coherent writing; • uses language in a way that is mostly effective to clarify ideas.</td>
<td>The student response • demonstrates limited comprehension; • addresses the prompt and provides minimal development of the topic that is limited in its appropriateness to task, purpose, and audience; • uses limited reasoning and text-based evidence; • demonstrates limited organization and coherence; • uses language to express ideas with limited clarity.</td>
<td>The student response • does not demonstrate comprehension; • is undeveloped and/or inappropriate to the task, purpose, and audience; • includes little to no text-based evidence; • lacks organization and coherence; • does not use language to express ideas with clarity.</td>
</tr>
<tr>
<td>Knowledge of Language and Conventions</td>
<td>The student response to the prompt demonstrates full command of the conventions of standard English at an appropriate level of complexity. There may be a few minor errors in mechanics, grammar, and usage, but meaning is clear.</td>
<td>The student response to the prompt demonstrates some command of the conventions of standard English at an appropriate level of complexity. There may be errors in mechanics, grammar, and usage that occasionally impede understanding, but the meaning is generally clear.</td>
<td>The student response to the prompt demonstrates limited command of the conventions of standard English at an appropriate level of complexity. There may be errors in mechanics, grammar, and usage that often impede understanding.</td>
<td>The student response to the prompt does not demonstrate command of the conventions of standard English at the appropriate level of complexity. Frequent and varied errors in mechanics, grammar, and usage impede understanding.</td>
</tr>
<tr>
<td>Written Expression</td>
<td>The student response • is effectively developed with narrative elements and is consistently appropriate to the task; • is effectively organized with clear and coherent writing • uses language effectively to clarify ideas.</td>
<td>The student response • is developed with some narrative elements and is generally appropriate to the task; • is organized with mostly coherent writing; • uses language in a way that is mostly effective to clarify ideas.</td>
<td>The student response • is minimally developed with few narrative elements and is limited in its appropriateness to the task; • demonstrates limited organization and coherence; • uses language to express ideas with limited clarity.</td>
<td>The student response • is undeveloped and/or inappropriate to the task; • lacks organization and coherence; • does not use language to express ideas with clarity.</td>
</tr>
</tbody>
</table>
Table 4 shows CMAS score ranges and benchmarks. For the purpose of this study, participants who met expectations (725-809) and exceeded expectations (810-850) were considered proficient in the area of reading comprehension.

**Table 4**

**CMAS ELA and CSLA Scale Score Ranges**

<table>
<thead>
<tr>
<th>CMAS ELA Content Area</th>
<th>Grade</th>
<th>Scale score ranges for meeting expectations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Did Not Yet Meet</td>
</tr>
</tbody>
</table>
Data Analysis

Automaticity for each student was measured with the DIBELS Next benchmark goals in the DORF domain. Reading comprehension for each student was measured by means of the CMAS state assessment in the area of Language Arts. Descriptive analysis of data was conducted for all variables in the study. This analysis provides average, mean, and benchmark percentages of DORF and CMAS state assessment scores for both EL and non-EL participants. It also includes a description of those who scored proficient and above for each group. A multiple regression analysis of the variables automaticity (IV-DORF) and reading comprehension (DV-CMAS) controlling for EL status, sex, race/ethnicity, free or reduced lunch status, and special education status were analyzed and reported using the Statistical Package for the Social Sciences (SPSS) software. The interaction between DORF and EL status was analyzed to determine if the association between automaticity and reading comprehension was moderated by EL status. The questions were addressed through the following analyses:

- RQ1: (A) Comparisons of the average DORF for ELs and non-ELs, (B) Percent of ELs and non-ELs meeting benchmark at mid-year timepoint.

- RQ2: (A) Comparisons of average state assessment scores for ELs and non-ELs, (B) Percentage of each group that is proficient and above.

- RQ3: (A) Comparisons of the mean state assessment scores for ELs that met benchmark and mean of state assessment scores for non-ELs that met benchmark, (B) Percentage of ELs who met DORF Benchmark who were deemed proficient or above on state assessment and Percentage of non-ELs who met DORF Benchmark who were deemed proficient or above on state assessment.
• RQ4: Regression analyses examining the association between DORF scores and state assessment scores, controlling for EL status, sex, race/ethnicity, free or reduced-priced lunch status, and special education status. Regression analysis examining the interaction between DORF and EL status.
CHAPTER 4

Results

The purpose of this study was to examine the relationship between automaticity and reading comprehension in ELs, and to determine whether automaticity alone could predict reading comprehension in ELs. This study found that the automaticity rate (DORF) of 3rd grade monolingual (Non-EL) students in the 2017-2018 school year exceeded English Learner (EL) students by 30%. Data within the 2018-2019 school year showed that the automaticity rate (DORF) of 3rd grade Non-ELs students exceeded EL students by 24%.

This chapter includes analysis of two years (2017-2018 & 2018-2019) of secondary assessment data. The sample of both the EL and Non-EL students combined included 1,663 3rd grade students from a single district in Colorado. Results are organized by research question.

Research Question 1

What is the automaticity rate of 3rd grade monolingual and English learner students?

Average DIBELS Oral Reading Fluency scores for ELs and non-ELs are described in Tables 5 and 6. The percentage of ELs and non-ELs meeting mid-year benchmark are described in Figure 3.

Table 5

*DIBELS Oral Reading Fluency (DORF) Means and Standard Deviations of English Learners (ELs) and Non-English Learners (Non-ELs) for 2017-2018 School Year*

<table>
<thead>
<tr>
<th></th>
<th>DORF Accuracy 2017-2018 School Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
</tr>
<tr>
<td>ELs 17-18</td>
<td>148</td>
</tr>
</tbody>
</table>

34
Table 6

DIBELS Oral Reading Fluency (DORF) Means and Standard Deviations of English Learners (ELs) and Non-English Learners (Non-ELs) for 2018-2019 School Year

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>SE</th>
<th>CI Lower Bound</th>
<th>CI Upper Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELs 18-19</td>
<td>114</td>
<td>92.42</td>
<td>8.310</td>
<td>0.778</td>
<td>90.88</td>
<td>93.96</td>
</tr>
<tr>
<td>Non-ELs 18-19</td>
<td>715</td>
<td>94.89</td>
<td>9.417</td>
<td>0.352</td>
<td>94.20</td>
<td>95.58</td>
</tr>
<tr>
<td>Total</td>
<td>829</td>
<td>94.55</td>
<td>9.306</td>
<td>0.323</td>
<td>93.91</td>
<td>95.18</td>
</tr>
</tbody>
</table>

Table 5 and 6 shows DORF means and standard deviations of EL and Non-EL students for the years 2017-2018 and 2018-2019. The data had a sample of 148 ELs and a sample of 606 Non-ELs for 2017-2018 school year. For the 2018-2019 school year, the data had a sample of 114 ELs and a sample of 715 Non-ELs. For the 2017-2018 school year, ELs scored a mean of 91.98 (SD =9.26), and Non-ELs scored a mean of 95.33 (SD = 8.49). For the 2018-2019 school year, ELs scored a mean of 92.42 (SD =8.31) and Non-ELs scored a mean of 94.89 (SD = 9.42). For the 2017-2018 school year, ELs (90.48, 93.48) and Non-ELs (94.66, 96.01) had 95% confidence interval estimated mean ranges that did not overlap. For the 2018-2019 school year, ELs (90.88, 93.96) and Non-ELs (94.20, 95.58) also had 95% confidence interval estimated mean ranges and did not overlap.
Figure 3

Percentage of English Learners (ELs) and Non-English Learners (Non-ELs) Meeting Mid-Year DIBELS Oral Reading Fluency (DORF) Benchmark for the 2017-2018 & 2018-2019 School Years

The 2017-2018 & 2018-2019 data in Figure 3 indicates the percentage from the chi square of EL status and the DORF benchmark. The 2017-2018 data reveal that 67.8% of non-ELs that had an At or Above benchmark was significantly ($\chi^2 = 45.36; df=2; N=7, p<.001$) more than ELs (37.8%). The 2018-2019 data reveal that 57.3% non-ELs that had an At or Above benchmark was significantly ($\chi^2 = 22.82; df=2; p<.001$) more than ELs (33.3%).

Research Question 2

What is the average state assessment score for 3rd grade monolingual and English learner students?
Average state assessment scores for ELs and non-ELs are described in Table 7 and 8. The percentage of each group that is proficient and above is described in Figure 4.

### Table 7

*Colorado Measures of Academic Success (CMAS) Means and Standard Deviations of English Learners (EL) and Non-English Learners (Non-ELs) 2017-2018 School Year*

<table>
<thead>
<tr>
<th>CMAS Scaled Score 2017-2018 School Year</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>SE</th>
<th>CI Lower Bound</th>
<th>CI Upper Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELs 17-18</td>
<td>148</td>
<td>718.85</td>
<td>33.36</td>
<td>2.743</td>
<td>713.43</td>
<td>724.27</td>
</tr>
<tr>
<td>Non ELs 17-18</td>
<td>606</td>
<td>746.25</td>
<td>40.43</td>
<td>1.642</td>
<td>743.02</td>
<td>749.47</td>
</tr>
<tr>
<td>Total</td>
<td>754</td>
<td>740.87</td>
<td>40.61</td>
<td>1.479</td>
<td>737.97</td>
<td>743.77</td>
</tr>
</tbody>
</table>

### Table 8

*Colorado Measures of Academic Success (CMAS) Means and Standard Deviations of English Learners (EL) and Non-English Learners (Non-ELs) 2018-2019 School Year*

<table>
<thead>
<tr>
<th>CMAS Scaled Score 2018-2019 School Year</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>SE</th>
<th>CI Lower Bound</th>
<th>CI Upper Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELs 18 – 19</td>
<td>114</td>
<td>709.33</td>
<td>26.693</td>
<td>2.500</td>
<td>704.38</td>
<td>714.29</td>
</tr>
<tr>
<td>Non ELs 18 – 19</td>
<td>715</td>
<td>737.86</td>
<td>39.514</td>
<td>1.478</td>
<td>734.96</td>
<td>740.76</td>
</tr>
<tr>
<td>Total</td>
<td>829</td>
<td>733.94</td>
<td>39.246</td>
<td>1.363</td>
<td>731.26</td>
<td>736.61</td>
</tr>
</tbody>
</table>

Tables 7 and 8 revealed CMAS means and standard deviations for EL and Non-EL students for the years 2017-2018 and 2018-2019. In the 2017-2018 school year, the data included 148 ELs and 606 Non-ELs. For the scaled score, ELs scored a mean of 718.85 (SD = 33.36) and the Non-ELs scored a mean of 746.25 (SD = 40.43). For the 2018-2019 school year, the data included 114 ELs and 715 Non-ELs. For the scaled score, ELs scored a mean of 709.33 (SD = 26.69) and non-ELs scored a mean of 737.86
(SD = 39.51). For the 2017-2018 school year, ELs (713.43, 724.27) and Non-ELs (743.02, 749.47) had a 95% confidence interval estimated mean ranges that did not overlap. For the 2018-2019 school year, ELs (704.38, 714.29) and Non-ELs (734.96, 740.76) had a 95% confidence interval estimated mean ranges that did not overlap.

**Figure 4**

*Percentage of English Learners (ELs) and Non-English Learners (Non-ELs) for Colorado Measures of Academic Success (CMAS) Meeting Proficiency 2017-2018 & 2018-2019 School Year*

Figure 4 indicates percentages of ELs and non-ELs who met CMAS proficiency measures for the school years 2017-2018 and 2018-2019. In the 2017-2018 school year, data shows that 47.7% of non-ELs who met or exceeded expectations for the CMAS
measures was higher than the EL (18.2%) sample. In the 2018-2019 school year, data show 39% of non-ELs who met or exceeded expectations for the CMAS measures was significantly ($x^2 = 52.52; df = 2; p < .001$) more than the EL (6.1%) sample.

**Research Question 3**

*Do English learners and monolingual students with high automaticity rates have similar Language Arts Colorado state assessment scores?*

The mean of CMAS state assessment for ELs and non-ELs that meet benchmark are described in Table 9 and Table 10. Percentage of ELs and non-ELs who meet DORF Benchmark who are deemed proficient or above on the CMAS state assessment is described in Figure 5.

**Table 9**

*Colorado Measures of Academic Success (CMAS) Means for ELs and Non-ELs who Meet Benchmark for 2017-2018 School Year*

<table>
<thead>
<tr>
<th></th>
<th>CMAS Scale School Year 2017-2018</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
</tr>
<tr>
<td>ELs 17-18</td>
<td>56</td>
</tr>
<tr>
<td>Non ELs 17-18</td>
<td>411</td>
</tr>
<tr>
<td>Total</td>
<td>467</td>
</tr>
</tbody>
</table>
Table 10

*Colorado Measures of Academic Success (CMAS) Means for ELs and Non-ELs who Meet Benchmark for 2018-2019 School Year*

<table>
<thead>
<tr>
<th></th>
<th>CMAS Scale School Year 2018-2019</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
</tr>
<tr>
<td>ELs 18 – 19</td>
<td>38</td>
</tr>
<tr>
<td>Non ELs 18 – 19</td>
<td>410</td>
</tr>
<tr>
<td>Total</td>
<td>448</td>
</tr>
</tbody>
</table>

Table 9 and Table 10 shows CMAS means for ELs and Non-ELs who met benchmark for the school years 2017-2018 and 2018-2019. The data for the year 2017-2018 included 56 ELs, and 411 Non-ELs. For those who met At or Above benchmark, ELs scored a mean of 737.16 (SD = 26.60) and non-ELs scored a mean of 763.86 (SD = 32.02). The data for the year 2018-2019 included 38 ELs and 410 Non-ELs. For those who met At or Above benchmark, ELs scored a mean of 727.47 (SD = 24.08) and non-ELs scored a mean of 757.93 (SD = 32.55). For the 2017-2018 school year, ELs (730.04, 744.28) and Non-ELs (760.76, 766.97) had 95% confidence interval estimated mean ranges that did not overlap. For the 2018-2019 school year, ELs (719.56, 735.39) and non-ELs (754.77, 761.09) had 95% confidence interval estimated mean ranges that did not overlap.
Figure 5

Percentage of English Learners (ELs) and Non-English Learners (Non-ELs) Meeting Benchmark and Met Colorado Measures of Academic Success (CMAS) Proficiency of Measures for All Groups 2017-2018 & 2018-2019

Figure 5 indicates percentages of ELs and Non-ELs who met DORF at or above benchmark and who met or exceeded expectations on the CMAS state assessment in the 2017-2018 and 2018-2019 school years. In the 2017-2018 school year, data shows that 69.9% of non-ELs met or exceeded expectations who were “At or Above” in the DORF benchmark. For the EL sample, 30.4% met or exceeded expectations who were “At or Above” in the DORF benchmark. In the 2018-2019 school year, data show that 59.8% of non-ELs who were “At or Above” in the DORF benchmark met or exceeded expectations. For the EL sample, 6.8% who were “At or Above” in the DORF benchmark met or exceeded expectations.
Research Question 4

What is the association between 3rd-grade students’ automaticity rates and their reading comprehension score for their Language Arts Colorado state assessment scores?

Results from the multiple regression analysis examining the association of DORF Accuracy scores with CMAS state assessment scores, controlling for EL status, sex, race/ethnicity, free or reduced-priced lunch status, and special education status are described in Table 11 and Table 12.

Table 11

*Regression Between DIBELS Oral Reading Fluency (DORF) scores and Colorado Measures of Academic Success (CMAS) Assessment Scores of English Learners (ELs) and Non-English Learners (Non-ELs) 2017-2018*

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE</td>
<td>Beta</td>
<td>t</td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>526.84</td>
<td>15.99</td>
<td>32.95</td>
</tr>
<tr>
<td></td>
<td>DORF Accuracy</td>
<td>2.11</td>
<td>0.15</td>
<td>0.45</td>
</tr>
<tr>
<td></td>
<td>Non-ELs</td>
<td>17.21</td>
<td>3.36</td>
<td>0.17</td>
</tr>
<tr>
<td></td>
<td>Free &amp; Reduced Lunch Special Education Services</td>
<td>-8.22</td>
<td>3.16</td>
<td>-0.08</td>
</tr>
<tr>
<td></td>
<td>Special Education Services</td>
<td>-17.65</td>
<td>4.13</td>
<td>-0.14</td>
</tr>
<tr>
<td></td>
<td>African American</td>
<td>-8.99</td>
<td>4.10</td>
<td>-0.07</td>
</tr>
<tr>
<td></td>
<td>Hispanic</td>
<td>-8.05</td>
<td>3.19</td>
<td>-0.10</td>
</tr>
<tr>
<td></td>
<td>Two or More Races</td>
<td>-3.00</td>
<td>4.64</td>
<td>-0.02</td>
</tr>
</tbody>
</table>
### Table 12

*Regression Between DIBELS Oral Reading Fluency (DORF) scores and Colorado Measures of Academic Success (CMAS) Assessment Scores of English Learners (ELs) and Non-English Learners (Non-ELs) 2018-2019*

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>543.93</td>
<td>14.86</td>
<td>36.60</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>DORF Accuracy</td>
<td>1.73</td>
<td>0.14</td>
<td>0.41</td>
<td>12.57</td>
</tr>
<tr>
<td>Non-ELs</td>
<td>24.48</td>
<td>3.36</td>
<td>0.21</td>
<td>7.29</td>
</tr>
<tr>
<td>Free &amp; Reduced Lunch</td>
<td>-10.37</td>
<td>2.70</td>
<td>-0.11</td>
<td>-3.84</td>
</tr>
<tr>
<td>Special Education Services</td>
<td>-18.42</td>
<td>3.67</td>
<td>-0.16</td>
<td>-5.02</td>
</tr>
<tr>
<td>African American</td>
<td>-19.74</td>
<td>3.69</td>
<td>-0.17</td>
<td>-5.34</td>
</tr>
<tr>
<td>Hispanic</td>
<td>-5.81</td>
<td>2.86</td>
<td>-0.07</td>
<td>-2.03</td>
</tr>
<tr>
<td>Two or More Races</td>
<td>-7.44</td>
<td>4.24</td>
<td>-0.05</td>
<td>-1.75</td>
</tr>
<tr>
<td>Other Race</td>
<td>-5.44</td>
<td>7.83</td>
<td>-0.02</td>
<td>-0.69</td>
</tr>
<tr>
<td>Sex</td>
<td>-3.65</td>
<td>2.17</td>
<td>-0.05</td>
<td>-1.68</td>
</tr>
</tbody>
</table>

*Note: Dependent Variable: SCALE_SCORE*
In Table 11 and Table 12, a multiple linear regression analysis was used to predict 2017-2018 CMAS assessment scores based on DORF Accuracy assessment scores controlling for EL status, sex, race/ethnicity, free or reduced-priced lunch status, and special education status. A significant regression equation was found \( F(9, 744) = 48.83, p < .001 \), with an \( R^2 \) of 0.371. The results of the regression indicated that predictors explained 37.1% of the variance in CMAS scores. Individual predictors were further examined and indicated that DORF Accuracy scores \( (B = 2.11, p < 0.001) \), free or reduced-price lunch \( (B = -8.22, p = 0.009) \), special education status \( (B = -17.65, p < 0.001) \), EL status (non-ELs) \( (B = 17.21, p < 0.001) \), Race-African American \( (B = -8.99, p = 0.029) \), and Race - Hispanic \( (B = -8.05, p = 0.012) \) were significant predictors in the model. For every one point increase in DORF accuracy, a student was predicted to exhibit a 2 point increase in CMAS scaled scores. There was an 8 point decrease in CMAS scaled scores for students who were eligible for free or reduced-price lunch. There was a 17 point decrease in CMAS scaled scores for students who were in special education services. It was predicted that, compared to the white sample, African American students scored 9 points lower and Hispanic students scored 8 points lower in the CMAS. In addition, students were who considered non-ELs were predicted to have 17 point increase in CMAS scaled scores.

In the 2018-2019 school year, a significant regression equation was found \( F(9, 819) = 57.58, p < .001 \), with an \( R^2 \) of 0.388. The results of the regression indicated that predictors explained 38.8% of the variance in CMAS scores. Individual predictors were examined further and indicated that DORF Accuracy scores \( (B = 1.73, p < 0.001) \), free or reduced-price lunch \( (B = -10.37, p < 0.001) \), special education status \( (B = -18.42, p < \)
0.001), EL status (non-ELs) (B = 24.48, p< 0.001), Race-African American (B = -19.74, p< 0.001), and Race - Hispanic (B = -5.81, p = 0.043) were significant predictors in the model. For every one point increase in DORF accuracy, a student was predicted to exhibit a 1.7 point increase in CMAS scaled scores. There was a 10 point decrease in CMAS scaled scores for students who were eligible for free or reduced-price lunch. There was an 18 point decrease in CMAS scaled scores for students who were in special education services. It was predicted that, compared to the white sample, African American students scored 19 points lower and Hispanic students scored 5 points lower in the CMAS. In addition, students who considered non-ELs were predicted to have 24 point increase in CMAS scaled scores. Next, the same regression models were conducted with interaction terms between DORF scores and EL status. See Tables 13 and 14.

**Table 13**

*Regression Between Colorado Measures of Academic Success (CMAS) Assessment Scores and Interaction Variable between DIBELS Oral Reading Fluency (DORF) scores and English Learner (ELs) Status Year 2017-2018*

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients B</th>
<th>SE</th>
<th>Standardized Coefficients Beta</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong> (Constant)</td>
<td>555.92</td>
<td>55.69</td>
<td></td>
<td>9.98</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>DORF * EL Status</td>
<td>0.18</td>
<td>0.33</td>
<td>0.19</td>
<td>0.55</td>
<td>0.586</td>
</tr>
<tr>
<td>DORF Accuracy</td>
<td>1.79</td>
<td>0.60</td>
<td>0.39</td>
<td>2.99</td>
<td>0.003</td>
</tr>
<tr>
<td>Non-EL</td>
<td>0.47</td>
<td>30.89</td>
<td>0.00</td>
<td>0.02</td>
<td>0.988</td>
</tr>
<tr>
<td>Free &amp; Reduced Lunch</td>
<td>-8.14</td>
<td>3.16</td>
<td>-0.08</td>
<td>-2.57</td>
<td>0.010</td>
</tr>
</tbody>
</table>
Table 14

Regression Between Colorado Measures of Academic Success (CMAS) Assessment Scores and Interaction Variable between DIBELS Oral Reading Fluency (DORF) scores and English Learner (ELs) Status Year 2018-2019

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE</td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>591.38</td>
</tr>
<tr>
<td></td>
<td>DORF * EL Status</td>
<td>0.27</td>
</tr>
<tr>
<td></td>
<td>Non-EL DORF Accuracy</td>
<td>-0.52</td>
</tr>
<tr>
<td></td>
<td>Free &amp; Reduced Lunch Special Education Services</td>
<td>-10.35</td>
</tr>
<tr>
<td></td>
<td>African American</td>
<td>-19.68</td>
</tr>
<tr>
<td></td>
<td>Hispanic</td>
<td>-5.82</td>
</tr>
</tbody>
</table>

Note: Dependent Variable: SCALE_SCORE
To measure the interaction effect between the 2017-2018 and 2018-2019 CMAS scaled scores with DORF and English Learner status, a moderated regression analysis was conducted and the results are presented in Table 13 and Table 14. The interaction variable was coded as the combined variables: DORF Accuracy * EL status. However, the added interaction variable controlling for EL status, sex, race/ethnicity, free or reduced-priced lunch status, and special education for both school years was not significant, suggesting that the relationship between DORF scores and CMAS scores did not statistically significantly vary by EL status.

<table>
<thead>
<tr>
<th></th>
<th>Coefficient</th>
<th>Standard Error</th>
<th>t-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two or More Races</td>
<td>-7.40</td>
<td>4.24</td>
<td>-1.74</td>
<td>0.082</td>
</tr>
<tr>
<td>Other Race</td>
<td>-5.44</td>
<td>7.83</td>
<td>-0.02</td>
<td>0.488</td>
</tr>
<tr>
<td>Sex</td>
<td>-3.55</td>
<td>2.17</td>
<td>-1.63</td>
<td>0.103</td>
</tr>
</tbody>
</table>

*Note: Dependent Variable: SCALE_SCORE*
CHAPTER 5

Discussion

This study examined the relationship between automaticity and reading comprehension in English Learners (ELs). The researcher to provide evidence that automaticity could not be the sole determiner of reading comprehension, especially within the EL population. This chapter summarizes and discusses the study’s findings in accordance with the research questions presented. Recommendations for further research and limitations of the study are also outlined.

This study utilized secondary data obtained from the Colorado Measures of Academic Success (CMAS) and the Dynamic Indicators of Basic Early Literacy Skills (DIBELS) Oral Reading Fluency (DORF) assessment and represented a third-grade student population from 13 public schools within a single school district.

Summary of Findings

Research question one pertained to the automaticity rate of 3rd grade students who were classified as non-ELs and ELs. The results indicated that the majority of Non-EL students scored higher on their mid-year DIBELS oral reading fluency assessment as compared to EL students. Accordingly, EL students’ automaticity rates were significantly lower than Non-ELs.

For research question two, average state assessment scores, CMAS, for both ELs and non-ELs were analyzed. The results indicated that the majority of Non-EL students scored higher on their CMAS state assessment than EL students. Accordingly, EL students’ state assessment rates were significantly lower than Non-ELs. Given CMAS criteria within Table 3 of Chapter 3, results indicated that studied ELs “partially met
expectations” as compared to their Non-EL counterparts who “approached expectations” within state literacy standards. Which means that compared to their Non-EL counterparts, EL student scores generally fell within the rubric criteria (Table 3).

Research question three included analyses of ELs and non-ELs who had high automaticity rates. This question analyzed whether these students had similar CMAS assessment scores. The results indicated that the majority of Non-EL students who were “At and Above” on the mid-year DORF assessment scored higher on their CMAS state assessment than EL students who were “At and Above” on the mid-year DORF assessment. Results indicated that although students who are learning English as an additional language read at a similar rate as their monolingual counterparts, they scored significantly lower on their CMAS state assessment. Consequently, it was revealed that ELs and Non-ELs with high automaticity rates do not have similar language arts Colorado state assessment scores.

The association between 3rd-grade students’ automaticity rates and their reading comprehension score for their CMAS state assessment scores was analyzed by question four. The multiple regression analysis revealed that the association between third grade automaticity rates (DORF measure) and reading comprehension scores (language arts CMAS measure) had a 2 point increase that was significant. Additionally, the individual predictor EL status revealed that Non-ELs scored 17 points higher in the CMAS state assessment than EL students for the 2017-2018 school year. In the 2018-2019 school year, the individual predictor EL status revealed that Non-ELs scored 24 points higher in the CMAS state assessment than EL students. This reiterates that monolingual or Non-EL students scored significantly higher than English Learners on the language arts CMAS.
state assessment. It should be noted that the EL status and DORF interaction variable that was included in the regression, was not significant.

**Implications of Findings**

There are several implications from the findings for this study. First, it was shown that even when ELs read quickly and at a similar rate as their monolingual counterparts, English learners scored significantly lower in their state assessment scores than non-ELs. Here, it is evident that the rate in which a student reads cannot be the dominant form of predicting reading comprehension in ELs. There is a consistent misunderstanding that the mastery of reading fluency is attained through automatic decoding or the rate at which one reads. The ability to recognize words accurately and the amount of time a student is able to do so, has been utilized in elementary schools to measure reading proficiency through inventories and through assessments that monitor developmental reading (Rasinski et al., 2011). Some believe that the rate at which one reads is also a predictor of reading comprehension (Grabe, 2010). This was established by theories of automatic processing in which researchers believed that reading development was the result of recognizing words quickly so that one could focus on making meaning with the content being read. It was asserted that once automaticity was established, readers can acquire reading comprehension with minor obstruction (Cattell, 1986; Huey, 1968; Laberge & Samuels, 1978; Perfetti, 1985). However, many of these studies included monolingual populations. For non-ELs, using accuracy and rate alone as reading fluency achievement could be an acceptable measurement. However, for ELs, this poses challenges that could lead to a gap in academic success. This study revealed that there is a consistent gap between ELs and non-ELs.
The second implication is that although rating rate, or automaticity, should not be used as the only predictor of reading mastery, it is still significant to reading comprehension. The regression analysis revealed that high oral reading rate (DORF) is associated with higher assessment scores. Learning to decode words accurately and at an automatic rate enhances reading development. However, to utilize automaticity alone as a predictor of reading fluency, particularly reading comprehension attainment, would cause challenges for ELs. Reading comprehension is a complex process and becomes more challenging when a student is learning additional languages. Many factors such as vocabulary acquisition, linguistic associations, background knowledge, and socioeconomic environment have an influence on language acquisition (Reyes and Azuara, 2013; Anderson, 2013; Jiang, 2016). Farnia and Geva’s (2013) study on growth rates in the reading comprehension ELs and non-ELs revealed that the growth patterns between the two groups were dissimilar. ELs comprehend text differently and it is pertinent to include comprehension instruction that exists beyond basic skill sets. This study revealed that relying solely on automaticity to assess reading mastery, has its limitations when considering English learners.

The final implication is that of linguistic distance. Particularly the Jiang (2016) study which indicated that the distance between students’ first languages and the English language determined how quickly they could learn the language. It was found that accuracy and rate in reading English words (automaticity) were significant predictors in reading comprehension for the sample of participants who spoke Spanish as their primary language. In this current study, the research found that the sample group for both the 2017-2018 and the 2018-2019 school year included a majority Hispanic population. This
study revealed that there was a significant relationship between DORF scores (automaticity) and CMAS scores (reading comprehension). With the knowledge that students with Hispanic descent revealed reading comprehension abilities through reading rate and accuracy, it is possible that the strength of the DORF scores compared with the CMAS scores in this study could be the result of the linguistic distance of the Hispanic population.

Overall, implications reveal the necessity of creating curriculum that will address the comprehension needs of English learners within the general education classroom. In addition, those conducting formal assessments including diagnostic measures for students should consider that English learners assimilate information differently than monolingual students. Utilizing automaticity as a main predictor of reading mastery could hinder academic success of students learning English as an additional language. It is also important to emphasize that policy makers have the power to facilitate the change necessary to increase quality reading comprehension instruction within the classroom. When the advancement for more explicit reading comprehension that goes beyond automaticity is enacted, English learners may have a greater opportunity of closing the existing academic gap.

**Limitations and Recommendations for Future Research**

The State of Colorado Department of Education includes 179 school districts, with 14 of those districts located within Colorado Springs. Data used for the study were limited to students within a single school district in Colorado Springs. Moreover, the researcher found that the percentage of EL students that participated in state CMAS
testing in the 2017-2018 and 2018-2019 school years, were less than that of their non-EL counterparts.

While the study illustrated that automaticity should not be the sole predictor of reading fluency, specifically reading comprehension, in English learners, there are additional questions that will require further research. First, there may be a threat to internal validity because of the participants sampled. As mentioned in chapter 2, the EL students could have greater difficulty learning an additional language depending on the linguistic (Jiang, 2016). For results to be generalizable, future researchers should examine associations with a participant’s first language, additional languages, and influence of their proficiencies on reading comprehension.

Second, due to the COVID-19 pandemic, the 2019-2020 school year was truncated. Consequently, the researcher chose to conduct the study using secondary data from the school years 2017-2018 and 2018-2019. Future investigations should include current data for that particular year, as well as post COVID-19, to see the pandemic’s implications on EL learning.

Third, as mentioned in chapter 3, the Colorado Measures of Academic Success (CMAS) was not a specific reading comprehension assessment. Although the sub-measures utilized within the CMAS are adequate for assessing reading comprehension in ELs, there are other specific assessments which test comprehension that could be used in future studies. Additionally, DIBELS Oral Reading Fluency (DORF) assessment, which was the automaticity measurement within this data set, also had limitations. For this study the DORF assessment used was from the mid-year assessment. The DIBELS assessment is given at the beginning of the school year, middle of the school year, and the end of the
school year. The DORF assessment used for this study reflects the performance of the third-grade students in the middle of the school year. End of the year performance may reflect variant outcomes. Future research could investigate the replication of this study and aim to collect primary assessment data for reading comprehension and reading rate.

Fourth, as previously mentioned, English learners’ reading comprehension levels can be determined through reading rate, accuracy, efficiency, or prosody, depending on linguistic distance. Future studies should include examining relationships between automaticity and reading comprehension within the context of linguistic diversity and distance from the English language.

Last, although the multiple regression analyses controlled for sex, race, EL status, special education service status, and free or reduced-price lunch status, there may be other factors that were significantly related to the EL scores. Future research could investigate possible factors that could relate to EL scores on automaticity assessments (DORF) and standardized state assessments (CMAS).

Results of this study implied that there is a necessity to find a balanced approach to teaching reading fluency to English learner students. For this population, explicit reading comprehension instruction is critical in reading development. When the mastery of reading comprehension is emphasized, English learners will be more than Word Callers (Stanovich, 1986). Consequently, the existent academic gap may close.
APPENDIX A

IRB Approval

Date: 1-29-2021

IRB #: IRB-FY2021-203
Title: EXAMINING THE RELATIONSHIP BETWEEN AUTOMATICITY AND ORAL READING COMPREHENSION IN ENGLISH LEARNERS
Creation Date: 11-4-2020
End Date:
Status: Approved
Principal Investigator: Annamaria Miller
Review Board: St John’s University Institutional Review Board
Sponsor:

Study History

<table>
<thead>
<tr>
<th>Submission Type</th>
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<th>Decision</th>
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Key Study Contacts

<table>
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<tr>
<th>Member</th>
<th>Role</th>
<th>Contact</th>
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<tbody>
<tr>
<td>Clare Irwin</td>
<td>Co-Principal Investigator</td>
<td><a href="mailto:irwinc@stjohns.edu">irwinc@stjohns.edu</a></td>
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<tr>
<td>Annamaria Miller</td>
<td>Principal Investigator</td>
<td><a href="mailto:annamaria.miller18@stjohns.edu">annamaria.miller18@stjohns.edu</a></td>
</tr>
<tr>
<td>Annamaria Miller</td>
<td>Primary Contact</td>
<td><a href="mailto:annamaria.miller18@stjohns.edu">annamaria.miller18@stjohns.edu</a></td>
</tr>
</tbody>
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**DIBELS Next: Summary of Benchmark Goals and Cut Points for Risk**

<table>
<thead>
<tr>
<th>DIBELS Composite Score</th>
<th>36</th>
<th>75</th>
<th>104</th>
<th>133</th>
<th>162</th>
<th>191</th>
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<tbody>
<tr>
<td>First Sound Fluency (FSF)</td>
<td>16</td>
<td>10</td>
<td>43</td>
<td>30</td>
<td>17</td>
<td>8</td>
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<tr>
<td>Phonoeme Segmentation Fluency (PSF)</td>
<td>44</td>
<td>56</td>
<td>47</td>
<td>26</td>
<td>17</td>
<td>8</td>
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<tr>
<td>Nonsense Word Fluency (NWF)</td>
<td>59</td>
<td>81</td>
<td>54</td>
<td>72</td>
<td>17</td>
<td>8</td>
</tr>
<tr>
<td>Core of Label Sounds</td>
<td>8</td>
<td>15</td>
<td>18</td>
<td>33</td>
<td>17</td>
<td>1</td>
</tr>
<tr>
<td>Whole Words Read</td>
<td>0</td>
<td>3</td>
<td>6</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

**DIBELS Oral Reading Fluency (DORF)**

| Words Corrected | 23 | 47 | 52 | 72 | 87 | 70 | 86 | 100 | 90 | 103 | 115 | 111 | 120 | 130 | 107 | 109 | 120 |
|-----------------|----|----|----|----|----|----|----|-----|----|-----|-----|-----|-----|-----|-----|-----|
| Accuracy | 78% | 90% | 90% | 96% | 97% | 95% | 96% | 97% | 96% | 97% | 98% | 98% | 99% | 97% | 97% | 98% |
| Retell | 15 | 16 | 21 | 27 | 20 | 26 | 30 | 27 | 30 | 33 | 36 | 36 | 27 | 29 | 32 |
| Real Quality of Response | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 2 |
| Date Adjusted Score | 11 | 16 | 19 | 15 | 17 | 24 | 18 | 20 | 24 | 18 | 19 | 21 | 30 | 31 | 32 |

**Note:** There is no benchmark goal for Letter Naming Fluency (LNF).

This is a summary of the DIBELS Next benchmark goals. For a full description, see the DIBELS Next Benchmark Goals and Composite Score document available from http://dibels.org.

**DIBELS Composite Score:** A combination of multiple DIBELS scores, which provides the best overall estimate of the student's reading proficiency. For information on how to calculate the composite score, see the DIBELS Next Benchmark Goals and Composite Score document available from http://dibels.org.

**ABOVE BENCHMARK** (small blue number in each box): Students scoring above the benchmark are highly likely to achieve important reading outcomes (approximately 90% to 99% overall). These scores are identified as Above Benchmark. While students scoring Above Benchmark are likely to need Core Support, some may benefit from instruction on more advanced skills.

**BENCHMARK GOAL** (large bold number in the middle of the box): Students scoring at or above the benchmark goal have the odds in their favor (approximately 80% to 90% overall) of achieving later important reading outcomes. These scores are identified as At or Above Benchmark and the students are likely to need Core Support.

**CUT POINT FOR RISK** (small red number in each box): Students scoring at or above the cut point for risk are likely to achieve subsequent goals without receiving additional, targeted instructional support. These scores are identified as Well Below Benchmark and the students are likely to need Intensive Support.

Scores below the benchmark goal and at or above the cut point for risk are identified as Below Benchmark. In this range, a student’s future performance is harder to predict, and these students are likely to need Strategic Support.
## APPENDIX C

### CMAS

#### Quick Reference on Federal and State Required Assessments

<table>
<thead>
<tr>
<th>Subject</th>
<th>Federal Statute ESSA, Title I, Part A</th>
<th>State Statute Colorado Revised Statutes</th>
<th>State Purpose</th>
</tr>
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<tbody>
<tr>
<td><strong>English Language Arts (ELA):</strong></td>
<td>3rd – 8th grade and not less than once during 9th – 12th grade §1111(b)(2)(B)(v)(l)</td>
<td>3rd – 8th grade §22-7-1006.3(3)(e)(l)</td>
<td>The state uses these assessment results for evaluating students’ mastery of and growth in the Colorado Academic Standards and postsecondary readiness, as well as for evaluating the performance of districts and schools.*</td>
</tr>
<tr>
<td></td>
<td>Colorado Measures of Academic Success (CMAS), including Colorado Spanish Language Arts (CSLA) form</td>
<td>3rd and 4th grade Spanish Reading and Writing §22-7-1006.3(4)(b)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SAT</td>
<td>11th grade college entrance exam §22-7-1006.3(2)(b)</td>
<td></td>
</tr>
<tr>
<td><strong>Math:</strong></td>
<td>3rd – 8th grade and not less than once during 9th – 12th grade §1111(b)(2)(B)(v)(l)</td>
<td>3rd – 8th grade §22-7-1006.3(3)(e)(l)</td>
<td>The state uses these assessment results for evaluating students’ mastery of and growth in the Colorado Academic Standards and postsecondary readiness, as well as for evaluating the performance of districts and schools.*</td>
</tr>
<tr>
<td></td>
<td>CMAS</td>
<td>11th grade college entrance exam §22-7-1006.3(2)(b)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SAT</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Science:</strong></td>
<td>Not less than once during 3rd – 5th grade, not less than once during 6th – 9th grade, and not less than once during 10th – 12th grade §1111(b)(2)(B)(v)(l)</td>
<td>Once in elementary, once in middle school, and once in high school, in specific grades identified by CDE, but not in 12th grade. §22-7-1006.3(3)(e)(l)</td>
<td>The state uses these assessment results for evaluating students’ mastery of the Colorado Academic Standards and evaluating the performance of districts and schools.*</td>
</tr>
<tr>
<td></td>
<td>CMAS</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Social Studies:</strong></td>
<td>N/A</td>
<td>Once in elementary and once in middle school, in specific grades identified by CDE (shall include sampling method of every school at least once every three years). §22-7-1006.3(3)(e)(l)</td>
<td>The state uses these assessment results for evaluating students’ mastery of the Colorado Academic Standards.*</td>
</tr>
</tbody>
</table>
WHAT IS CMAS?

The Colorado Measures of Academic Success, or CMAS, is the Colorado state assessment for language arts, math, science and social studies. CMAS is a summative assessment that provides information on how well your child has mastered the key concepts and skills at his or her grade level.

Two of the assessments – language arts and math – are created by PARCC, the Partnership for Assessment of Readiness for College and Careers, and aligned to the Common Core State Standards for language arts (which includes reading, writing and communicating) and math. The other two assessments – science and social studies – are created by Colorado and aligned to the Colorado Academic Standards.

CMAS English Language Arts and Math tests are given each year to all 3rd-9th grade students. CMAS Science is given each year to 5th and 8th grade students, and CMAS Social Studies is given each year to 1/3 of all 4th and 7th grade students.

WHEN IS MY CHILD BEING TESTED?

CMAS assessments are administered in one testing window. In spring 2016, schools can begin testing as early as March 14th and end on April 29th. Your child will only test on certain days based on grade and subject, not during the entire window. Consult your child’s school for his/her specific testing schedule.

In most cases, students will take their tests online. These online tests feature a variety of interactive questions that foster increased student engagement with items types such as science simulations and technology-enhanced response items.

Similar to years past, the Colorado Department of Education estimates a typical student’s testing time will be less than 1.5% of their total yearly instructional time. Specific to CMAS, students will spend between 8-14 hours taking CMAS tests this year. The exact amount of time is determined by grade and subject.
REFERENCES


Fuchs, L. S., Fuchs, D., & Maxwell, L. (1988). The Validity of Informal Reading
https://doi.org/10.1177/074193258800900206


doi:10.1002/rrq.83


https://doi.org/10.1080/14417040601145166

https://charts.intensiveintervention.org/screening/tool/?id=ffb663c84848b9bf#Reliability


Vita

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Date Graduated  August 2009
Other Degrees and Certificates  Bachelor of Arts/Science, Oakwood University, Huntsville, Major: Elementary Education
Date Graduated  May 2004