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# The Relationship Between Metacognitive Awareness Of Reading Strategies Use And 10Th Grade Students' College And Career Readiness Achievement In English Language Arts

Davida Smith-Keita  
*University of Mississippi*

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THE RELATIONSHIP BETWEEN METACOGNITIVE AWARENESS OF READING  
STRATEGIES USE AND 10TH GRADE STUDENTS' COLLEGE AND CAREER  
READINESS ACHIEVEMENT IN ENGLISH LANGUAGE ARTS

A Dissertation presented for the degree of  
Doctor of Philosophy  
in the Department of Teacher Education  
School of Education  
University of Mississippi

by

DAVIDA R. SMITH-KEITA

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## ABSTRACT

This study examined the relationship between 10<sup>th</sup> grade students' metacognitive awareness of readings strategies use and their college and career readiness achievement in English language arts as a primary focus of research and, secondarily, the relationship between metacognitive awareness of reading strategies use and Lexile<sup>®</sup> growth as a measure of reading ability. The explanatory research design for this quantitative study included a statistical analysis of scores from the Metacognitive Awareness of Reading Strategies Inventory (MARSI) (Mokhtari & Reichard, 2002), existing college and career readiness achievement scores from the 2016-2017 Georgia Milestones 9<sup>th</sup> Grade Literature and Composition summative assessment, and existing 2016-2017 Lexile<sup>®</sup> growth scores. A Pearson *r* correlational analysis revealed a moderately positive relationship between students' metacognitive awareness of reading strategies with regard to the use of global reading strategies and their achievement with college and career readiness standards for English language arts.

## DEDICATION

I dedicate this work to the memory of my beloved grandmother, Mrs. Darkies A. Smith whose love for me and support of me was so very instrumental to the woman and mother that I have become. From Head Start to the Ph.D., this journey would not have been possible had it not been for her and my grandfather, Mr. Joe Smith, Sr.

This dissertation is also dedicated to the memory of my dear aunt, Mrs. Carolyn J. Smith Barnes.

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A special acknowledgement is extended in memory of Mrs. Mildred E. Dixon, my third, fourth, fifth, and sixth grade teacher at Double Tree Elementary School in Memphis, Tennessee, for the potential that she recognized in me early on in the formative years.

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## CHAPTER 1

### INTRODUCTION

Public opinion, policy, and practice in the realm of public education has shifted in recent years to a fundamental focus on ensuring that all students are prepared for college and careers after having matriculated through the grade levels, K-12 (Edwards, 2014). Today, there is ever more increasing attention being given to the outcomes of high stakes tests that are designed to measure the college and career readiness (CCR) standards born out of the Common Core State Standards, but which are now particularly repackaged and implemented per the goals and priorities of individual states in the United States. (National Governors Association Center for Best Practices, Council of Chief State School Officers, 2010; McNeil & Gewertz, 2013; Wallender, 2014). With the measurement of these standards comes an almost momentous opportunity for English education practitioners (i.e., English teachers) and other pertinent stakeholders to learn more about our students in terms of skill mastery and/or the need for further development, particularly when coupled with additional information about students' use of strategies and the automaticity with which they overcome challenges or solve problems when reading, comprehending, and analyzing complex texts (Logan, 1997; Rasinski, Chang, Edmondson, Nageldinger, Nigh, Remark, Kenney, Walsh-Moorman, Yildirim, Nichols, Paige, & Rupley, 2017).

Teachers have long used assessment data to make informed instructional decisions to positively impact their students' academic growth and achievement. Formative assessment data,

for example, in the form of benchmark or interim assessments are a common presence in the English language arts classroom. As put forth by Calfee et al, who proposed a model for formatively assessing the Common Core literacy standards, formative assessment “is a multilevel system of ongoing inquiry into student learning, orchestrated by the classroom teacher with increasing student participation” (Calfee, Wilson, Flannery, & Kapinus, 2014, p. 10). These formative assessments provide a timely look into how students are progressing with standards-based instruction that will later be predicated or substantiated by results on state-administered summative assessments, data which are often not readily accessible by teachers, if at all (Gewertz, 2014). Research has shown that the more far removed statewide assessment results are from the classroom, the less opportunity there is for these data to positively impact instructional improvements at the teacher and student level (Datnow & Hubbard, 2015; Rogosa, 2005; Supovitz, 2009). However, in instances where teachers do have access to state level summative assessment data, they should be encouraged to seek innovative ways to use these data to know more about how to meet the learning needs of their students and to further inform their teaching practices for the skills embedded in the standards (Darling-Hammond, 2013; Herman & Linn, 2014).

### *Statement of the Problem*

In my years of experience as a high school English teacher working with struggling readers – many of whom who have entered my classroom as general education students reading as much as five and six instructional reading levels below their current grade level placement – I have often wanted to know more specifically what these students believed about themselves as readers and if perhaps there is recognition on their part to think more intently about how to

independently resolve any reading skill deficits in need of remedy. In addition, and with the current focus in the English education field on engaging students in the reading and analysis of more complex text, I have been challenged to appropriately match complex texts that are on grade level placement with similar yet more challenging texts that meet instructional reading levels for those students who need them (Hiebert, 2013). This is all in consideration of the staircase of text complexity as proposed in the Common Core State Standards and the current college and career readiness standards that now operate at the center of curricular and instructional decision-making (Fontichiaro, 2013; National Governors Association Center for Best Practices, Council of Chief State School Officers, Appendix A, 2010).

But this presents yet another challenge, as likewise one must also consider the fact that students are expected to read and respond to complex exemplar texts (cite evidence, make inferences, determine where the text leaves matters uncertain, identify the meanings of words in context, etc.) that are on grade level (for example, per the Lexile<sup>®</sup> band for on grade level passages) on state-mandated summative assessments (Fisher & Frey, 2013; Hiebert, 2013).

As English teachers, we are challenged to know explicitly what strategies our students conscientiously employ in any given moment of any given reading situation, particularly one situated in a high stakes testing environment. We simply do not know what strategies our students actually draw upon when reading challenging texts in these particular moments; we do not typically receive insights into their behaviors or dispositional abilities to use strategies, or whether or not they are in fact using such strategies as stopping to think about what they are reading, questioning the text, and setting a purpose for reading expressly when taking these summative assessments (Arabsolghar & Elkins, 2001).

### *Purpose of the Study*

Although studies have shown that the pressures inherent in high stakes testing have no bearing on student achievement (Ullman, 2005; Nichols, 2007), we are still appropriately inclined to expect that our students' preparedness has equipped them to demonstrate mastery of the college and career readiness standards for English language arts, for which items on these high stakes summative assessments are designed to measure and report. As teachers, we want to know and believe that our students have done well. Moreover, the argument may be put forth that, pressures aside, an analysis of state level summative assessment data, when made accessible to English teachers, may identify important insights beneficial to understanding our students as readers and critical analyzers of texts when coupled with understandings gleaned from additional research-based instruments (Gummer & Mandinach, 2015). Thus, the purpose of this quantitative study was to determine statistical correlations between students' achievement with college and career readiness standards for English language arts and their metacognitive awareness of reading strategies use (and secondarily, statistical correlations between metacognitive awareness of reading strategies use and reading ability) in order to understand students better as readers and potentially inform instructional practice. Learning more about the relationship between English language arts achievement and students' metacognitive awareness of *what good readers do* when reading complex texts could lead to more targeted reading instructional practices and strategies for struggling readers in the high school English classroom (Henning, 2006; Datnow, Park, & Kennedy-Lewis, 2012).

## *Research Questions and Hypotheses*

In an effort to identify any statistical correlations that may exist between achievement with college and career readiness standards for English language arts and students' metacognitive awareness of the reading strategies they use, answers to the following two overarching questions were sought for this quantitative study:

Research Question 1. Is there a statistically significant relationship between students' metacognitive awareness of reading strategies use and their English language arts college and career readiness achievement scores? The dependent variable is the metacognitive awareness of reading strategies score. The independent variable is the English language arts college and career readiness achievement score.

Research Question 2. Is there a statistically significant relationship between students' metacognitive awareness of reading strategies use and their Lexile<sup>®</sup> growth scores? The dependent variable is the metacognitive awareness of reading strategies score. The independent variable is the Lexile<sup>®</sup> growth score.

The following null and alternative hypotheses were asserted in this quantitative study:

Research Question 1:

H<sub>01</sub>: There is no statistically significant relationship between students' metacognitive awareness of reading strategies use and their English language arts college and career readiness achievement scores.

H<sub>1</sub>: There is a statistically significant relationship between students' metacognitive awareness of reading strategies use and their English language arts college and career readiness achievement scores.



### Research Question 2:

H<sub>02</sub>: There is no statistically significant relationship between students' metacognitive awareness of reading strategies use and their Lexile<sup>®</sup> growth scores.

H<sub>2</sub>: There is a statistically significant relationship between students' metacognitive awareness of reading strategies use and their Lexile<sup>®</sup> growth scores.

Statistical analyses were conducted to examine the strength of a possible relationship between metacognitive awareness of reading strategies use and college and career readiness achievement in English language arts, in addition to a secondary examination of a possible relationship between metacognitive awareness of reading strategies use and Lexile<sup>®</sup> growth.

### *Significance of the Research Topic*

There has been prior research published involving testing data and inventories or tools that facilitate understanding of students' metacognitive strategy use and evidence of metacognition in student achievement. A number of these studies have largely been outside of the context of college and career readiness standards in English language arts, particularly as we know them today. Several studies to note have been conducted outside of the United States, have focused on metacognitive strategy use by college students, or have been qualitative in nature in content areas outside of English language arts.

A study conducted by Nett, Goetz, Hall, and Frenzel explored seventy (70) 11th grade European high school students' "learning-related cognitions prior to an in-class achievement test, with a focus on metacognitive strategy use" (Nett, et al., 2012, p. 1). Through the experience sampling method, the researchers sought to analyze the students' ability to self-regulate testing-related cognitions with the metacognitive strategies of planning, monitoring, and evaluation.

Monitoring was found to have the strongest statistical link to test performance. Similarly, a study involving a sample of 180 secondary school students in India found no significant difference in metacognitive awareness of activities such as reflection based on school setting, management of the school, and gender (Jaleel, 2016).

By contrast, Young and Fry conducted a study with 178 undergraduate and graduate level college students to determine correlations between metacognitive skills and grade point average (GPA), as a broad-based score, and an achievement score on an end-of-course test. Participants voluntarily took part in the study and voluntarily completed the Metacognitive Awareness Inventory (MAI) (Young & Fry, 2008; Schraw & Dennison, 1994). Through a Spearman's Rho, nonparametric correlation analysis, the researchers found a correlation between "knowledge of cognition and regulation of cognition . . . and end of course grades" (Young & Fry, 2008, p. 7).

Still, insights into college students' metacognitive strategy use as keys to increasing student beliefs and behaviors have been studied outside of the English language arts context as reported most recently by Siegesmund (2016). Through the concepts of classroom community or learning centers and self-assessment, Siegesmund conducted her study with biology students using a mixed methods approach of a qualitative, epistemological nature, along with administering the Learning Skills Inventory (LSI), an instrument comprised of a study skills inventory and the Metacognitive Skills Inventory (MSI). Siegesmund found evidence to support the notion that students have the ability to effectively identify their strengths and weaknesses in self-regulating such metacognitive activities as "evaluating, planning, monitoring, and reflecting on their learning" (Siegesmund, 2016, p. 212).

Gaps in the literature exist regarding metacognitive awareness of reading strategies in light of college and career readiness standards born out of the Common Core State Standards and

which warrant the need for an empirical look into this area. The current study is significant in that it seeks to add to the literature by examining the extent to which summative assessment data captured from items that were vetted and selected as valid and reliable for measuring the college and career readiness achievement of high school students in English language arts are correlated with students' metacognitive awareness of reading strategies, using as an anchor of inquiry the Metacognitive Awareness of Reading Strategies Inventory (MARSII) developed by Mokhtari and Reichard (2002). In addition, it is my hope that the findings will also lead to the identification of practical strategies to support students in the metacognitive domains of English language arts.

### *Definition of Important Terms*

Important terms central to the research topic are *metacognition*, *metacognitive awareness*, *academic materials*, *college and career readiness*, *Lexile*, and *statistical significance*. These terms provide common understanding of underlying concepts under study.

Hacker, Dunlosky, and Graesser define *metacognition* as cognitive processes supported first by the *knowledge* of cognition and secondly by the *regulation* of cognition (2009). As defined by Conley, *metacognitive learning* is “all learning processes and behaviors involving any degree of reflection, learning-strategy selection, and intentional mental processing that can result in a student's improved ability to learn” (Conley, 2013, par. 7). *Metacognitive awareness*, in regards to reading, is defined by Mokhtari and Reichard (2002) as a reader's own knowledge about his or her cognition as a reader and his or her recognition of the processes fundamental to self-monitoring and self-regulation for the comprehension of texts.

Academic materials are materials – whether printed, digital, or audio-visual – that are used to facilitate teaching and learning. The Metacognitive Awareness of Reading Strategies

Inventory (MARSI) asks respondents to indicate how often a reading strategy is used when “reading academic materials” (Mokhtari & Reichard, 2002, p. 2). It is important to make the distinction that reading passages and items on a standardized summative assessment (such as those which are state-mandated) do constitute as *academic materials* even though students do not engage with them on a daily or regular basis.

The College and Career Readiness and Success Center at the American Institutes for Research reported that some thirty-six (36) states and the District of Columbia in the United States have a definition of *college and career readiness*, thirty-three (33) of which have a single definition to describe both aspects of readiness. The generally accepted definition is the “concrete knowledge, skills, and dispositions that students must demonstrate mastery of to be prepared for postsecondary success” (College and Career Readiness and Success Center, 2014, p. 3). ACT, however, empirically defines college and career readiness as the “acquisition of the knowledge and skills that students need in order to enroll and succeed in credit-bearing first-year courses at a postsecondary institution, such as a two- or four-year college, trade school, or technical school” (ACT, 2012, p. 1; ACT, 2010).

The term *Lexile* refers to a measure that describes a student’s reading ability, further indicating the text demands of reading materials in regards to complexity and a student’s ability to comprehend a complex text. The Lexile<sup>®</sup> Framework for Reading is the psychometric tool and reading scale from which a Lexile<sup>®</sup> score is derived (i.e., based on the results of a reading or achievement test). The framework is owned and developed by MetaMetrics, Inc., who maintains that the tool “personalize[s] instruction and accelerate[s] the path to college and career readiness for millions of students” (MetaMetrics, 2018, par. 3). Additional information on The Lexile<sup>®</sup> Framework for Reading is provided in Chapter 2.

*Statistical significance* refers to the confidence that the occurrence of a result found in a sample is true and not due simply to a chance in probability (Gallo, 2016).

### *Assumptions and Initial Limitations*

There was a basic assumption during this study that the state-mandated summative assessment – from which existing achievement data for this study were analyzed – were administered under testing security protocols that helped to ensure reliability and the data’s integrity and that the items themselves were evaluated for construct validity so as to accurately assess the standards being measured (Ferrara, 2014; Ferrara, 2017; Haertel & Lorie, 2004; American Educational Research Association, American Psychological Association, National Council on Measurement in Education, Joint Committee on Standards for Educational and Psychological Testing, 2014). It was assumed that the test was administered in a standardized manner, and that the testing environment was consistently appropriate throughout the session, with any timed testing requirements in place strictly adhered to (Ferrara, 2017).

It was also assumed that some items on the summative assessment measured those standards for reading literary and informational texts as well as language, or more specifically the key ideas and details, craft and structure, and integration of knowledge and ideas of texts (reading passages) along with vocabulary acquisition and use (National Governors Association Center for Best Practices, Council of Chief State School Officers, 2010). These are some of the focal mastery elements of the college and career readiness standards for reading and language development in English language arts. (As the current study did not particularly focus on any of the college and career readiness standards for writing in English language arts, as generally assessed by written constructed and extended response items on state summative assessments, it

is acknowledged, however, that some multiple choice or multiple select items may have assessed standards for writing in addition to reading.) There was also an assumption that the academic materials (i.e., reading passages) on the assessment were on grade level. Still, there was the assumption that if the assessment was administered in an online, electronic format (i.e., via software over a school district's computer network), then this format was also secured for the sake of protecting students' responses and for accountability purposes (Schaffhauser, 2011).

Some initial limitations existed. The existing achievement data used in this study represented a snapshot in time, so to speak, it that it yielded a scale score based on participants' performance in that particular testing situation and moment (Wood, Hart, Little, & Phillips, 2016). The use of any additional achievement scores were not considered in this current study. Other limitations included the following: historical attendance data that could perhaps indicate students' amount of availability for instruction with the standards or factors related to student mobility or transferability were not included (Superville, 2017); students' socioeconomic status was not taken into account (Hancock, Lawrence, Shepherd, Mitrou, & Zubrick, 2017); no measures of the effects of test anxiety on achievement were considered (Williams, 1993; Von der Embse, Schultz, & Draughn, 2015); item level analyses were not conducted; the Metacognitive Awareness of Reading Strategies Inventory (MARSİ), although deemed reliable and valid as determined through statistical analyses, is a self-report instrument, thus subjectivity must be mentioned here (Greene, 2015; Mokhtari & Reichard, 2002).

In addition, there was no consideration given to whether or not the state-mandated summative assessment was administered online versus on paper and the potential of either format impacting or influencing students' performance or their achievement (Parshall & Kromrey, 1993; Retnawati, 2015). Any of these aspects mentioned above may present

themselves for further investigation in a future study or studies as they relate to college and career readiness standards.

### *Audience for the Study*

The audience for this study consists of English teachers, curriculum developers, and other English education professionals who want to know to what extent performance on assessments designed to measure a high school student's college and career readiness in English language arts are correlated with a student's individual metacognitive awareness of reading strategies, and furthermore to what extent there is a relationship involving a student's determined Lexile<sup>®</sup> growth. It is my hope that the audience for this study will in turn glean insights from this study leading to additional instructional practices that support students as readers, critical thinkers, and communicators.

### *Summary of the Introduction*

The researcher, a practicing high school English teacher, studied statistical correlations between students' metacognitive awareness of the reading strategies they use and their achievement with college and career readiness standards for English language arts. The results of this study may contribute to a greater understanding of students as readers and potentially lead to the identification of additional ways to support students as readers.

## CHAPTER 2

### LITERATURE REVIEW

This chapter presents a review of scholarly research, findings, and other related literature regarding assessing students, educational research focused on metacognition and metacognitive awareness, and college and career readiness standards, among other connecting topics. The theoretical framework that undergirds this study is also expounded upon.

#### *An Historical Context for Standardized Assessment*

The history of standardized testing in America can be traced back to the mid-19th century when Horace Mann proposed the written essay as a more objective and practical means for assessing the massive number of students entering public education as a result of compulsory education (Gallagher, 2003). Prior to this, children were assessed orally in that their achievement with content, such as the English language, was measured by their ability to recite passages from memory (Huddleston & Rockwell, 2015). Oral recitation as the primary assessment tool understandably proved to be a cumbersome feat, as Linn (2001) has noted, because of enrollment increases in the high school student population in America during the span of 1890 to 1918, a staggering 711% (Wigdor & Garner, 1982). In any case, these early assessments were used to further track and group students by ability, separating the elite from the masses (Haladyna, Haas, & Allison, 1998).



Replicating the work of French psychologists Binet and Simon, who in 1905 published the first Intelligence Quotient (IQ) test, American psychologists Goddard, Huey, and Terman released the Stanford-Binet test in 1914 for assessing American students (Huddleston & Rockwell, 2015). Comparatively, Thorndike at this time was also developing a set of standardized achievement tests to scientifically measure American students in the areas of “arithmetic, handwriting, spelling, drawing, reading, and language ability” (Wigdor & Garner, 1982, p. 86). Following these happenings, political factors and theoretical policies began to predominate the discussion around instituting standardized testing in schools, which in large part were individualized and “required a large amount of time in the aggregate for their administration and as well as expert skill on the part of the person giving the test” (Colvin, 1924, p. 5).

The earliest use of assessment data to gauge the effectiveness of a school and its teachers can be traced back to 1929, by which time students in the United States had completed some five million standardized achievement tests annually, thus establishing the use of the results of these achievement tests to essentially classify schools as elite versus non-elite in the same manner in which students themselves had been segregated and grouped (Thorndike & Bregman, 1934; Gallagher, 2003).

By the mid-20th century, and with the advent of regularly testing students, issues related to inequities in standardized testing, bias, and social marginalization began to surface and dominate the discussion. The use of standardized testing data to determine a school’s effectiveness in advancing student achievement exposed further issues around race and class. On the one hand, the data from these assessments were instrumental in determining “inadequacies in predominantly minority schools” during the 1960s civil rights movement (Gallagher, 2003, p.

91; Berliner & Biddle, 1995). However, critics argued that these assessments were inherently biased as they did not consider students' social and cultural backgrounds, thus substantiating "social and economic inequality" (Gallagher, 2003, p. 91; Grodsky, Warren, & Felts, 2008). It is important to note here also that the prominence of *testing* as a topic of scholarly research appearing in the educational literature peaked around the mid-1960s (Clarke, Madaus, Horn, and Ramos, 2000).

The United States government has played a detached role in standardized testing in that there are no federal policies dictating what states should be assessing and how state education agencies must go about implementing testing in its districts and public schools. What federal lawmakers have been concerned about is evidence-based accountability measures as a way to gauge the effectiveness of federal educational programs for which states receive federal funding, many of which such programs benefit disadvantaged students (U.S. Congress, Office of Technology Assessment, 1992).

Testing data has been the primary means by which federal lawmakers make decisions about continuing or discontinuing a program that has the potential to impact millions of public school students nationally. One testing instrument that has aided Congressional lawmakers in making evidence-based decisions is the National Assessment of Educational Progress (NAEP). Developed in 1964, the first NAEP assessments were administered in 1969 and tested students in the subject areas of citizenship, science and writing. Today, federal policymakers, states, and other stakeholders depend on NAEP results to give an accurate picture of national student achievement in reading, writing, and math for students in grades 4, 8, and 12 (U.S. Department of Education, 2017). Not all students or school districts, however, participate in this assessment. The NAEP is administered to a sample of students in school districts from across the country,

with neither individual student score reports nor school-level results being made available to participating schools (U.S. Department of Education, 2017; Vinovskis, 1998).

The 1990s saw the rapid rise and proliferation of public debate about states administering standards-based tests to students. Standardized testing was described as “a dominant force in American education that has triggered a powerful reaction” (McCurdy & Speich, 1991, p. 121). By 1998, 47% of states had in place an assessment of some kind to measure students’ performance with academic standards in specific content areas, typically English and mathematics (Clarke, Madaus, Horn, and Ramos, 2000). Some states during the 1990s created and administered their own standards-based tests in the high school grades (assessing standards for English, mathematics, science and social studies) while relying on commercially available assessments such as the Iowa Tests of Basic Skills to measure competency in the lower grades.

Testing students at the end of a course, in a content area, or with the culmination of grade twelve in high school is not a new enterprise as we know, extending back to the 19th century. In recent times, moreover, many states have required students to meet certain testing requirements and scores in order to receive a high school diploma. By the turn of the 21<sup>st</sup> century, Olson, on findings released by the Center on Education Policy, reported that some twenty-two (22) states (with three additional states considering such requirements) had instituted high school exit exams, affecting seven out of ten students in general but more than eight out of ten high school students from minority backgrounds (Olson, 2006).

Still today, graduation exit exam requirements and the development of the next generation of assessments to measure students’ postsecondary readiness speak to the larger concern of employers and industries who have repeatedly expressed the need for a better educated and better prepared workforce, including calling for assessments that mimic the real

world as scenario-based and evidence-centered (Finn, 2015; Finkel, 2010; Deane, Sabatini, Feng, Sparks, Song, Fowles, O'Reilly, Jueds, Krovetz, & Foley, 2015). In fact, recently reauthorized federal legislation, the Every Student Succeeds Act (ESSA) of 2015, places increased accountability pressures on states where testing students in reading and math is concerned. One stipulation of the act is that states must show a 95% participation rate on state-sanctioned tests such as the ACT and the SAT, both tests of which speak quantitatively to college and career readiness, suggesting that federal lawmakers have heard and answered the call for a better prepared and better educated workforce (Meibaum, 2016).

Two leading non-profit assessment consortia established in recent years to answer the call for improved assessments include the Partnership for the Assessment of Readiness for College and Careers (PARCC) and the Smarter Balanced Assessment Consortium (Smarter Balanced). Both organizations' missions express a commitment to developing a new generation of summative assessments that explicitly measure the Common Core State Standards for English language arts and literacy as well as mathematics (both exams are closely aligned to the Common Core State Standards for English language arts and math) (Doorey, 2012; Herman & Linn, 2014).

Other researchers have found that while high stakes testing such as high school graduation exams is not a determining factor in student achievement, there is, however, a slightly positive effect in the reading proficiency of low achieving students with high school graduation testing (Jacob, 2001). Most recently, at least one state (New Jersey) has begun phrasing-in a requirement that by the year 2021, students must pass the Partnership for Assessment of Readiness for College and Careers (PARCC) exam in order to graduate from high school, with a

portfolio review of coursework option being available as a pathway to graduation for those students who do not pass the exam (Harris, 2016).

*Theoretical Framework: Self-regulated Learning Theory*

The theoretical framework supporting this study of the relationship between students' metacognitive awareness of the reading strategies they use and their achievement with college and career readiness standards for English language arts is *self-regulated learning* theory, as most notably postulated by Zimmerman's theories on self-efficacy and personal agency (Zimmerman, 1995; Zimmerman, 2008). Self-regulated learning theory purports that "the degree to which students are metacognitively, motivationally, and behaviorally active participants in their own learning process" has some bearing on the academic outcomes they experience in any given context of learning, particularly as it relates to self-assessing one's own learning through personal volition and cognitive self-regulation (Zimmerman, 2008, p. 167; Brooks & Young, 2011; Roebbers, 2017). Some researchers maintain that when taken together, the concepts of metacognition and self-regulation function prominently within Bandura's social cognitive theory, James's stream of consciousness theory and habit and will theory, Piaget's developmental stages and intellect and affect theories, as well as the theories on abstraction and voluntary attention maintained by Vygotsky (Zimmerman, 1986; Fox & Riconscente, 2008).

In relationship to the context of English language arts, self-regulation comes into play, for example, when students engage in the cognitive activities of making predictions about a text before reading, questioning the text during reading, and summarizing or paraphrasing a text after reading, all of which are important functions of reading skill that necessitate self-regulatory capacity (Souvignier & Mokhlesgerami, 2006; Furnes & Norman, 2015). In these instances,

students exhibit some level of cognitive control, thereby actively participating in their own learning through metacognition, self-regulation, and self-regulated learning (Schunk, 2008). Similarly, Miller, Heafner, and Massey's qualitative research into high school students' self-regulated learning abilities revealed an important finding as it relates to "metacognitive awareness of various academic demands and expectations" that support a learning orientation more so than one focused specifically on performance or grading (Miller, Heafner, & Massey, 2009, p. 134).

Processes of motivation and behavior also function prominently as key components of self-regulation and self-efficacy. Linkages exist inextricably between these spheres in that self-regulation, as a conduit of self-control, encompasses acknowledgement of the emotional self and any effort to exhibit some behavior favorable to a desired outcome, as determined by some specific action taken of one's own volition (Schunk & Zimmerman, 2007). Apart from the intrinsic value of motivation that this suggests, some researchers have found that from an operant theoretical point of view, self-regulated learning is influenced by extrinsic values such as "rewards . . . social approval, enhanced status, or material gain" while conversely phenomenological research has found a basis for students' "global sense of self-esteem or self-actualization" (Zimmerman, 1990, p. 6). Dweck and others would liken this to the idea that "the most motivated and resilient [efficacious] students [also of their own volition] . . . believe that their abilities can be developed through their effort and learning" regardless of whether or not that motivation stemmed from intrinsic or extrinsic factors (Dweck, 2007, p. 6; Wigfield, Gladstone, & Turci, 2016; Efklides, 2011; Harter, 1981; Landine & Stewart, 1998).

Comparatively, another theory connected to that of self-regulated learning theory is *self-determination* theory. Self-determination theory considers the intrinsic motivation at play when

students are self-determined to achieve a goal, show mastery of learning, and practice self-selection and self-choice in the classroom and it is also relevant to our understanding of students as metacognitive learners (Ryan & Deci, 2000; Brooks & Young, 2011; Svinicki, 2016).

### *Educational Research on Metacognition*

The study of metacognition, or *thinking about thinking*, has its origins in the field of psychology. The work of Flavell, who conducted extensive research on metamemory development, metacognition, and cognitive monitoring, has been instrumental in discerning and adapting applications from developmental psychology to educational research in particular in an effort to offer practical benefits such as signifying for students' goal orientation the importance of "active[ly] monitoring cognitive processes to achieve cognitive goals" and continually invoking self-reflection of "ongoing experience" in learning situations (Hacker, Dunlosky, & Graesser, 1998, p. 7; Flavell, 1976, p. 252; Flavell & Wellman, 1977).

Flavell has argued further that in these learning situations an interplay of making progress and monitoring occurs between students' metacognitive experiences (that is, the thinking associated with recognizing that there is a gap in one's knowledge in meeting some academic goal) and cognitive experience (the application of a cognitive strategy that leads to strategy implementation that fills the gap in knowledge, thus meeting the academic goal) (Flavell, 1979; Schraw, 1998).

Flavell has also presented a model to explain the cognitive actions that one takes based on his or her "metacognitive knowledge, metacognitive experiences, goals (or tasks), and actions (or strategies) (1979). Metacognitive knowledge encompasses our belief about our own natural abilities to cognitively process information that we receive (information received from the world

and stored in our memories), our knowledge of a task to be undertaken and the demands and conditions by which the task is to be completed, and the determination of which strategies to employ in order to complete the task (Hacker, Dunlosky, & Graesser, 1998). In a practical sense, Flavell's model has been applied to explain the metacognitive processes that students engage when composing text, comprehending a text, or generating questions about a text (Hacker, Keener, & Kircher, 2009; Tobias & Everson, 2009; Otero, 2009).

Flavell's groundbreaking work in helping to explain the cognitive development of children and metacognition has led to a myriad of studies and investigations into the phenomena. Researchers have investigated many different aspects of metacognition and reading, for example, using self-report instruments, such as questionnaires, and other quantitative tools and measures to answer important questions about students, their higher-order cognitive processes, and strategy use.

Furnes and Norman (2015) conducted a comparative study of twenty-two (22) documented dyslexic readers' metacognitive knowledge, metacognitive reading strategies use, and metacognitive experiences with that of twenty-two (22) normal readers. The researchers wanted to know if differences exist between these two distinct groups of readers. Metacognitive knowledge pertains to what students understand about themselves as thinkers in terms of their ability to think through a task's requirements and apply appropriate strategies for the completion of the task (Flavell, 1979; Furnes & Norman, 2015). Metacognitive strategies are those strategies of background knowledge activation, comprehension, surveying text features, stopping and re-reading text, and making connections between ideas presented in texts used purposefully to control cognition (Efklides, 2008; Furnes & Norman, 2015). Metacognitive experience deals directly with the affective aspects of one's awareness of performance of a task in regards to the



“feelings, judgements and task specific knowledge” (Furnes & Norman, 2015, p. 274; Efklides, 2008).

To measure these three facets of metacognition (metacognitive knowledge, metacognitive reading strategies use, and metacognitive experiences), Furnes and Norman (2015) first administered the Naglieri Nonverbal Ability Test (2008) and a component of The Reading and Spelling Test for College and University Students (1997) to determine the reading speed of and to validate distinguishing dyslexic readers from non-dyslexic readers (Naglieri, 2008; Strømsø, Hagtvet, Lyster, & Rygvold, 1997). The two groups of readers were measured for childhood reading motivation and childhood reading habits using four-point Likert scale items aimed at capturing any differences in the reading histories of the two groups. Self-report questionnaires were given to participants to measure more directly metacognitive knowledge (before text reading for the purpose of the study), metacognitive reading strategy use (to pinpoint deep learning strategies versus surface learning strategies versus a lack of learning strategies), and metacognitive experience (conducted “in conjunction with text reading” and meant to gather “predictions of performance . . . and judgements of learning”) (Furnes & Norman, 2015, p. 277).

The results of statistical t-tests revealed that there were no significant differences in nonverbal ability between dyslexic and non-dyslexic readers among significantly lower scores for dyslexic readers in regards to reading speed, reading comprehension, childhood reading motivation, and childhood reading habits – these aspects being important markers for distinguishing dyslexic and normally developing readers. As pertains to the metacognitive processes of dyslexic readers and non-dyslexic readers, the researchers found that the former “reported less knowledge of strategies” but that there was no difference in the two groups’ “tendency to apply deep and surface reading strategies during text reading” (Furnes & Norman,

2015, p. 280). A limitation of the study, however, included the inability to measure a fuller gamut of reading situations, such as text complexity and the reading of text for comprehension, for differences in dyslexic and non-dyslexic readers because of the limited scope of the study.

Students with and without a history of reading challenges were the subjects of another study conducted by Chevalier, Parrila, Ritchie, and Deacon, examining to what extent metacognitive reading strategy use can predict academic achievement, among additional interacting relationships between metacognitive study, behavioral study, and learning strategies for the specified groups (2017). Participants in the study included a sample of 437 incoming freshman college students of which seventy-nine (79) reported a history of reading difficulty (HRD) and 298 reported no history of reading difficulty (NRD). There have been a number of studies showing the connections between college students' reading comprehension, vocabulary aptitude, and prior knowledge and the "important role that reading plays in postsecondary education" (Chevalier, Parrila, Ritchie, & Deacon, 2017, p. 35; Taraban, Ryneerson, & Kerr, 2000; Taraban, Kerr, Ryneerson, 2004). In this study, however, the researchers sought to investigate an area of metacognitive research that had not previously been explored, and that is, a direct comparison of "a general population of [college] students with and without reading disabilities on the use of metacognitive reading strategies specifically" (Chevalier, Parrila, Ritchie, & Deacon, 2017, p. 35).

Five components of measurement helped to ensure the validity of the results of this study conducted by Chevalier, Parrila, Ritchie, and Deacon. Three instruments were used to measure reading history, metacognitive reading strategies use, and learning strategies use: a version of the *Adult Reading History Questionnaire* (alpha value range .90 to .96 and used to gather data about participants' early experiences with learning to read); the *Metacognitive Reading*

*Strategies Questionnaire* (Cronbach's alpha .85 and used to gather insights into participants' analytic reading skills of inferencing and evaluating); and the *Learning and Study Strategies Inventory* (coefficient alpha range .73 to .89 and used to gather information about participants' strategy use with selecting main ideas, processing information, self-testing, studying, test taking, and time management) (Chevalier, Parrila, Ritchie, & Deacon, 2017; Parrila, Georgiou, & Corkett, 2007; Lefly & Pennington, 1991; Finucci, Whitehouse, Isaacs, & Childs, 1984; Taraban, Rynearson, & Kerr, 2000; Weinstein & Palmer, 2002; Kirby, Silvestri, Allingham, Parrila, & LaFave, 2008) . A fourth and fifth measure included the number of times a participant sought ancillary academic services such as study skills workshops, academic advising, writing center assistance, and student accessibility services, as well as freshman year grade point average (GPA), respectively. One key finding of this study, as revealed through multiple regression analysis, was that metacognitive reading strategy use is a strong predictor of academic achievement as expressed by a history of reading difficulties (HRD) student's GPA (Chevalier, Parrila, Ritchie, & Deacon, 2017).

It has been noted that students' knowledge of reading strategies does not always correlate with an awareness of when to actually employ a specific reading strategy. In any given situation involving a reading task, some students will automatically employ strategies such as re-reading for comprehension after realizing some information just read was not understood, scanning the text for keywords and headings in order to make a prediction, and determining what would constitute as an objective summary of the text, thereby engaging in cognitive activities to regulate their own learning (Brown, Bransford, Ferrara, & Campione, 1983). Others look to their teachers for support and more guided or targeted instruction for improving their use of a particular metacognitive reading strategy or thinking process about a text.

A study conducted by Arabolghar and Elkins (2001) concerned teachers' expectations of students' metacognitive strategy use when reading, their reading knowledge, and their reading behaviors. Participants in the study included forty-five (45) teachers of general education students in grades 3, 5, and 7 who responded to a four-part questionnaire designed to measure teachers' expectations of students they deemed of high (top 5%), average (middle 20%), or low ability (bottom 5%) in regards to their use of metacognitive reading strategies, knowledge of the strategies, and behaviors with the strategies (Arabolghar & Elkins, 2001). A three-way analysis of variance (ANOVA) revealed that there is a strong correlation between a teacher's expectations of high performing students' ability to employ and monitor metacognitive reading strategies in contrast to expectations for low performing students and their ability to do the same. However, teachers' expectations for average and low ability students in regards to reading knowledge (which involves teachers' perceptions about students' ability to know themselves as readers) were "relatively high[er]" (Arabolghar & Elkins, 2001, p. 159). The authors of the study also concluded that teachers perceived high performing students as more strategic readers in exhibiting metacognitive behaviors, such as planning, problem-solving when reading, and correcting reading errors, among other metacognitive skills (Arabolghar & Elkins, 2001).

Research into the role of metacognition in educational contexts has spanned a range of perspectives and areas of interest. One such study, conducted by Berkowitz and Cicchelli, investigated the metacognitive reading strategy use of gifted high achieving and gifted underachieving urban eighth grade students, examining these two groups further by type of global, problem-solving, or support strategy used (2004). The Metacognitive Awareness of Reading Strategies Inventory (MARSI) was administered as a self-report instrument to a

stratified sample of five (5) gifted underachievers and five (5) gifted high achievers to collect information on their use of metacognitive reading strategies (Mokhtari & Reichard, 2002).

Other information-gathering tools for Berkowitz and Cicchelli's study included verbal protocols and face-to-face interviews based on think-aloud readings where the participants were asked to elaborate on statements they made during the think aloud reading, to identify words that presented difficulty and what they did to overcome a word's difficulty, and to tell what they were looking for when they decided to stop and think while reading (Berkowitz & Cicchelli, 2004). In addition, two academic years' worth of report card grades for language arts and the participants' English Language Arts scores on the Winter 1999 New York State English Language Arts test (administered to the participants in this study when they were in fourth grade) were used as measures in the study.

The methodology for Berkowitz and Cicchelli's study employed primarily statistical t-tests to analyze the means and standard deviations of the two groups of gifted students (global, problem-solving, and support as subscale components of the MARSII) and to investigate any statistical differences between them, with significance set at a level of .05. Transcriptions of the participants' think-aloud readings were prepared and analyzed for "speech production, such as false starts, self repairs, and pauses, all of which could provide important information related to cognitive processing" (Berkowitz & Cicchelli, 2004, p. 48; Kasper, 1998).

Overall, the results of Berkowitz and Cicchelli's study indicated that high achieving gifted students and underachieving gifted students are on par in terms of their knowledge of metacognitive reading strategies and perceptions of strategy use, as there were no statistical differences found in these regards between the two groups. However, the researchers reported that there was some variability in self-reported strategy use: high achieving gifted students' use

of global and problem-solving reading strategies were more homogeneously similar as a group than that of underachieving gifted students, whose strategy use was described as heterogeneous (Berkowitz & Cicchelli, 2004).

Gascoine, Higgins, and Wall recently published the results of a systemic review of research involving assessment instruments used to measure metacognition. The overarching research question focused on these tools being used between the years of 1992-2012 to measure or assess metacognition in children aged 4-16. The researchers aimed to provide insights into the assessment of metacognition, themes and trends from the field of research, and initiate discourse about issues of methodology in the area of research (Gascoine, Higgins, & Wall, 2017).

The systemic review was more qualitative in nature (with some analytics provided, for example, regarding the percentage of tools and assessments used categorically with children by age), rather than strictly quantitative, as no meta-analyses were conducted to yield any statistical effect sizes of metacognitive concepts such metacognitive control, metacognitive knowledge, metacognitive experience, and metacognitive skills (Gascoine, Higgins, & Wall, 2017; Veenman, & Spaans, 2005; Efklides & Vlachopoulos, 2012; Togerson, 2003).

The methodology for Gascoine, Higgins, and Wall's review consisted of an initial screening and database search of the Educational Resources Information Center (ERIC) and the British Education Index (BEI) using *AND/OR* language strings for such keywords as *metacognit\**, *assess\**, and *evaluat\**. In total, some eight databases were searched including Psych Articles, PsychINFO, and First Search Journal Articles (Gascoine, Higgins, & Wall, 2017). For an article to be included in the review, the following criteria had to be met: record date between January 1992 and November 2012, focus of measurement on metacognition, a sample population of participants aged 4-16 (a minimum of 50% of participants meeting this age

range requirement), the presence of empirical data gleaned from a valid tool with the potential for replicability, and written in the English language (Gascoine, Higgins, & Wall, 2017).

Full text screenings were completed, yielding a list of eighty-four (84) “data extracted tools or methods” based on reliability, validity, and replicability. However, only eighty (80) of these were included in the final systemic review (Gascoine, Higgins, & Wall, 2017, p. 15). Some key findings of the systemic review were that the preponderance of the tools (61%) consisted of self-report measures that raised questions for further research including looking into the dominance of self-report questionnaires, surveys, and tests, the existence of tools perhaps overlooked and not readily used by researchers, and the potential limitations that may exist when using self-report instruments with children in varying age ranges (Gascoine, Higgins, & Wall, 2017). The findings also revealed that the self-report instruments included in this review measured metacognition in children over age seven (7), which may speak more pointedly to Hofer and Sinatra’s assertion that a thorough examination of younger children’s metacognitive development requires consideration of multi-dimensional complexities grounded in evidence (2010).

In summary, research into metacognition, as it involves education, originated in the field of psychology with a theoretical focus on cognitive processes. Empirical evidence in this area has revealed important insights into the role that *thinking about thinking* plays in the interaction between students’ knowledge, experiences, goal orientation, and the selection and implementation of reading strategies in the classroom.

## *College and Career Readiness in the Context of Literacy Development*

College and career readiness standards for English language arts are intended to measure students' competency with reading literary and informational texts as well as language use and vocabulary acquisition, among other skill developments, such as writing and research that are embedded throughout and detailed in the standards. College and career readiness standards for English language arts inform teachers, students, and parents of the skills pertinent for students to become effective communicators and critical thinkers, not only in English language arts contexts but in any academic or nonacademic context or endeavor. Thus, the following section highlights literature on college career readiness standards as well as research centered around and supporting the myriad of literacy skills development aspects inherent in the standards that prepare students for postsecondary academic and nonacademic experiences and success.

The Common Core State Standards for English languages arts, when first released in 2010, called for all students (regardless of the various reading abilities and communicative backgrounds that are present in a given classroom setting and irrespective of any specific issues related to intellectual, cultural, and cognitive differences) to be given increasing access to complex texts as they matriculate through the K-12 grade levels, essentially preparing students for post-secondary success in college and careers (Gardner & Smith, 2016; Rothman, 2012; VanTassel-Baska, 2015). Through a consideration of text complexity, teachers are positioned to use qualitative and quantitative measures (such as the Lexile<sup>®</sup> Framework for Reading) to make determinations about the layers of meanings that they desire their students to garner after having grappled with a complex text (Nesi, 2012; Nelson, Perfetti, Liben, & Liben, 2012; Smith, 2000).

One important factor in students' ability to access complex texts (as deemed necessary for college and career readiness) and other materials is strong vocabulary knowledge.



Vocabulary knowledge is an essential contributor to students having meaningful encounters with texts that are rich in complexity (Aspen Institute, 2012). Vocabulary knowledge has also been shown to be a critical determinant or strong predictor of reading comprehension growth in first language learners (Lervag & Aukrust, 2010). Likewise, Duff, Tomblin, and Catts found that students' range of vocabulary widens with exposure to reading materials thus inevitably contributing to vocabulary growth (2015). The reciprocal relationship between vocabulary knowledge and reading comprehension has also been linked as a key facilitator of inferencing as a skill among other aspects (Steensel, Gelderen, & Schooten, 2016; Pearson, Hiebert, & Kamil, 2007).

High school-aged students, particularly those of low socioeconomic status (SES), however, often encounter much difficulty with accessing rich texts because of low word decoding, reading comprehension and independent reading accuracy. Independent reading accuracy levels for these students has been shown to be below the ideal or expected 99% for word recognition and 95% for comprehension of a text, which by contrast is typically not an area of deficiency for students of more affluent, literate backgrounds (Allington, McCuiston, & Billen, 2015). Likewise, students whose familial backgrounds are impacted by low socioeconomic status are often at a disadvantage when it comes to regulating between self-efficacy practices that foster an awareness of appropriate independent reading strategies leading to successful outcomes and experiences with reading and the mastery of Tier 2 vocabularies, or words that are content domain specific (Beach, Sanchez, Flynn, & O'Connor, 2015).

Steensel et al (2016) investigated the degree to which the reading comprehension skills of students considered to be low achieving may be predicted by their ability to decode words (which is considered a lower order skill), to apply vocabulary knowledge, and acknowledge their

metacognition (both of which are considered higher order skills). They also examined the effect of these variables when moderated by the age of the low achieving students and their ability to speak more than one language (bilingualism).

The study's participants consisted of 7th grade students attending prevocational classes and 9th grade students attending classes in a pre-exam year. These participants were drawn from schools located in low socioeconomic areas of the Netherlands and consisting of first language speakers of Dutch and second language speakers from a multitude of bilingual backgrounds. Regarding the measurement of vocabulary knowledge in this study, the authors administered a researcher-developed vocabulary test that had previously been statistically validated with a .85 Cronbach's alpha coefficient, which places the reliability of the instrument and the correlation of items on the test at a high level for internal consistency (Steensel, Oostdam, Gelderen, & Schooten, 2016). The findings regarding vocabulary were that low achieving monolingual and bilingual students' knowledge of vocabulary and of the processes of metacognition are significant factors in students' aptness with grasping texts, regardless of a student being younger (in the 7th grade) or older (in the 9th grade).

Li and Kirby studied the relationship between breadth and depth of vocabulary and the effects of these two constructs on reading comprehension for Chinese-English-immersion high school students (2015). The authors found a moderate correlation between breadth of vocabulary knowledge and depth of vocabulary knowledge in that the former had a far stronger effect in contributing to word reading while the latter proved to be a strong predictor of students' ability to demonstrate reading comprehension through summary writing.

Comparatively, longitudinal studies have been conducted on breadth of vocabulary knowledge, using as a measure Schmitt's Vocabulary Levels Test (VLT) to gather evidence

between that and vocabulary fluency. Zhang and Lu (2014) reported that students' growth rate in vocabulary breadth of knowledge is significantly affected by the frequency level at which this happens. Again, however, this study was conducted with a focus on first language students at a Chinese university, limiting the scope of the implications suggested by this study for students developing their vocabulary skills in light of college and career readiness standards implemented in the United States.

Still, however, Teng conducted a quasi-experimental study to examine the relationship between vocabulary learning strategies use (both direct strategies, such as memorization and guessing at the meaning of a word, and indirect strategies, such as self-planning, self-monitoring, and self-evaluating) and depth and breadth of vocabulary knowledge and found that the English as a Foreign language students in this study tended to rely on direct strategies when exhibiting reading (learner) autonomy (2015). The results of these studies is further supported by the work of Nagy and Scott (2000) around metalinguistic knowledge, application, and manipulation of vocabularies.

Hall, Greenburg, Laures-Gore, and Pae (2014) studied the relationship between expressive vocabulary knowledge and the reading skills of struggling adult readers, the closest and most recent study to look at breadth and depth of vocabulary knowledge outside of the context of second language acquisition. Participants in the study included 215 African Americans, nine Caucasians, three Hispanics, and five Other/Mixed ethnic background participants. The authors found evidence that the triangle model of reading development supports the notion that "individual differences in vocabulary knowledge are related to individual variability in word-reading knowledge" (Hall, Greenburg, Laures-Gore, & Pae, 2014, p. S96).

Reading ability is a critical factor in students successfully meeting the goals of college and career readiness standards with the added potential of impacting one's earning power as a working adult meeting text demands on the job (Kirsch, Jungeblut, Jenkins, Kolstad, 2002; Stenner & Wright, 2000; Erazik, 2005). Perhaps the biggest measure of students' readiness for college-level coursework, which inherently entails vast amounts of reading across disciplines, is the remediation rate or the number of high school graduates who are required to complete remedial reading coursework upon entering college as freshmen (Braun, Kirsch, & Yamamoto, 2011). Henry and Stahl (2017) claimed that too many students enter post-secondary institutions unprepared to meet the demands of matriculation through college and university programs, particularly due to reading deficiencies, and that this points clearly to a college readiness gap.

This perspective is further supported by Dougherty and Fleming (2012) who conducted a national study and reported on the extent to which high school students are *on track*, *off track*, or *far off track* in their preparedness for college level success as evidenced by their performance on the EXPLORE test (in 8th grade) and the ACT, which both include an assessment of reading. Specifically in regards to the issue of some high school graduates being unprepared for college, researchers have found a link between reading comprehension and fluency (word recognition accuracy and word recognition automaticity) as determining factors for reading success with secondary and college level texts (Rasinski, Chang, Edmondson, Nageldinger, Nigh, Remark, Kenney, Walsh-Moorman, Yildirim, Nichols, Paige, & Rupley, 2017; Wilkins, Hartman, Howland, and Sharma, 2010).

Reading tasks and students' attention to them require, as a first step, close reading of a text to gain meaning, whether the text is informational or literary and regardless of the context or setting in which the text is being read or examined. A key component in meeting these and other

demands around multiple reads of a text is the engagement of critical thinking skills (Gormley, 2017). Critical thinking advances the higher order skills of analysis, evaluation, and creation while also requiring students to attend to their reasoning of text during close reading in particular (Athanassiou, McNett, & Harvey, 2003; Elder & Paul, 2004). Bloom's revised taxonomy has provided a classification of these higher order skills that has a natural fit in the development of English language arts curriculum planning, instruction and assessment (and in any number of other educational settings) when developing learning objectives that call for students to employ the higher order skills necessary to demonstrate mastery of the standards upon which the objectives are based (Bloom, 1956; Anderson & Krathwohl, 2001; Seaman, 2011).

Afflerbach, Cho, and Kim (2015) have offered a framework for conceptualizing higher order thinking skills in regards to reading tasks. While the focus on higher order skills involving the cognitive processes mentioned above (of analysis, evaluation, and creation) might suggest that lower order or basic thinking skills are less important, the opposite is quite true as the authors purport. Both sets of skills are needed for text processing that lead to students comprehending what they have read, having worked through the complexities of the text and the reading task, in addition to deriving meaning (Afflerbach, Cho, & Kim, 2015).

Still, as the authors posit, a conceptual framework that incorporates assessment along with the higher order thinking required by the Common Core State Standards for English language arts (to as it were, *read closely to determine what the text says explicitly*) warrants an updated structure to what Krathwohl presented in his taxonomy, thereby "increasing complexity of the reading strategies and skills along the hierarchy of multiple types of thinking: remember, understand, analyze, apply, evaluate, create, and reflect" (National Governors Association Center

for Best Practices, Council of Chief State School Officers, 2010; Afflerbach, Cho, & Kim, 2015, p. 205; Krathwohl, 2002).

Essentially, the formative assessment of *close reading*, as an example here, involves a myriad of foundational and higher order cognitive processes (i.e., metacognitively applying reading strategies for basic comprehension, summarizing and noting details, judging the relevance of textual elements, etc.) that each aspect in the hierarchy requires for reading task completion on summative assessments designed to measure the Common Core State Standards (Afflerbach, Cho, & Kim, 2015). Thus, as an instructional support for students in the area of higher order thinking in reading, Afflerbach, Cho, and Kim's *Conceptual Frame for Assessing Basic to Complex Thinking in Reading* entails the revised cognitive dimensions as listed above with the subprocesses, respectively, of recognizing, recalling, interpreting, exemplifying, classifying, summarizing, inferring, comparing, explaining, differentiating, organizing, attributing, executing, implementing, checking, critiquing, generating, planning, producing, and (metacognitively) monitoring, controlling, and revising (2015).

The framework espouses a definition of reading as taken from the National Assessment of Educational Progress (NAEP) in that reading is “a dynamic cognitive process that allows students to understand written text, develop and interpret meaning, and use meaning as appropriate to the type of text, purpose, and situation” (National Assessment Governing Board, 2013, p. iii; Afflerbach, Cho, & Kim, 2015). In addition, anchor standards from the Common Core State Standards for reading are integrated with a representative (but not exhaustive) set of reading strategies tied to each cognitive dimension (e.g., *Standard R3. Analyze how and why individuals, events, or ideas develop and interact over the course of a text* is addressed with the reading skill of dividing text according to ideas or concepts and attending to words and phrases

that indicate relationships between ideas). The framework also offers what the authors call “representative assessment types and tasks suitable for particular types of thinking” (Afflerbach, Cho, & Kim, 2015, p. 206). The framework presents a noteworthy structure for helping students to meet college and career readiness standards for reading.

It must be noted here that while there are valid conceptual frameworks and measures for assessing college readiness (e.g., summative assessments and other benchmark assessments that assess the Common Core State Standards) there is still more research and development needed for determining students’ *career* readiness particularly. As Camara has pointed out in regards to a criterion-based understanding, “career readiness has not been defined as a measurable construct,” pointing further to a lack of empirical studies to help solidify understanding or identify a valid measure of students’ readiness for a variety of post-secondary careers and vocational avenues specifically (Camara, 2013, p. 21; Loomis, 2011). Furthermore, the attention given within the past decade to postsecondary readiness (in general for all students) highlights the need for targeted constructs that focus on *careers* and makes it all the more important as we consider potential implications on the future workforce, including careers in the military (Williamson, 2006).

### *The Lexile<sup>®</sup> Framework for Reading*

The Lexile<sup>®</sup> Framework for Reading has been used extensively for more than thirty (30) years and it stands as one of the first psychometric tools developed to “make test scores more actionable by connecting assessments to instruction” in the realms of reading comprehension and text complexity (MetaMetrics, 2018, par. 1; Stenner, 1996). The tool is used to predict the extent to which a student will comprehend reading materials that are rich in verbal and syntactic

complexity (Smith, Stenner, Horabin, & Smith, 1989). Students receive a Lexile<sup>®</sup> reader measure (signified with a number followed by the letter *L*) per their performance on a reading test or state assessment, providing a measure for *good fit*, independent reading by which students are matched with appropriate reading materials, thus minimizing the experience of frustration (i.e., selected materials that fall within 100 Lexiles below or 50 Lexiles above a student's reported Lexile<sup>®</sup> reader measure) (MetaMetrics, 2018).

The Lexile<sup>®</sup> scale is organized from beginning reader status to advanced reader status. The scale ranges from below 0L to above 2000L. The Lexile<sup>®</sup> scale is also used to identify a Lexile<sup>®</sup> text measure for books and other reading materials. School media specialists, teachers, and parents use the Lexile<sup>®</sup> scale to identify challenging yet not-above-reading-level books and other reading materials in an effort to engage students and in effect personalize their learning (MetaMetrics, 2018; Stenner, 1999; Kachka, 2012).

In regards to college and career readiness, the Lexile<sup>®</sup> Framework for Reading purports that students' ability to read independently near the 1300L range is a reliable indicator of readiness to meet the demands of texts found in college coursework and in career settings. The Common Core State Standards, when first published in 2010, included guidance for teachers on how to select challenging texts based on Lexiles and other qualitative and quantitative measures of readability (e.g., the Flesch-Kincaid) (MetaMetrics, 2018; National Governors Association Center for Best Practices, Council of Chief State School Officers, Appendix A, 2010).

### *Summary of the Literature Review*

The history of standardized testing for the purpose of gathering information about students and schools extends back to the mid-19th century when there was a blossoming demand



to also know more about the quality of teaching and learning in public schools. Today, that tradition continues with increased attention now being placed on the outcomes of student achievement as evidenced by performance on standardized summative assessments that measure the college and career readiness standards first outlined in the Common Core State Standards (National Governors Association Center for Best Practices, Council of Chief State School Officers, 2010). Additionally, in regards to the skills embedded in college and career readiness standards for English language arts – for which students are expected to demonstrate mastery prior to graduating from high school – there is valid and reliable research available in the areas of metacognition, reading and vocabulary development, and college and career readiness to support further study of the integration of these components and how they inform teachers about their students as critical readers and thinkers.

## CHAPTER 3

### METHODOLOGY

This study examined the extent to which students' achievement with college and career readiness standards for English language arts are statistically related to students' metacognitive awareness of the reading strategies they use, in addition to the statistical relationship between metacognitive awareness of reading strategies use and students' reading ability as measured by Lexile<sup>®</sup>.

#### *Research Design*

This quantitative study employed an explanatory research design and investigated the strength of the relationship between students' self-reported metacognitive awareness of reading strategies and their achievement with college and career readiness standards for English language arts. Additionally, the study investigated the strength of the relationship between students' self-reported metacognitive awareness of reading strategies and their Lexile<sup>®</sup> growth measure, which is used by teachers, students, and parents to match students with texts that correspond to students' reading ability (Creswell, 2015; MetaMetrics, 2017). As a primary goal, the study sought to add to the body of knowledge regarding metacognition in educational research and statistical analysis of achievement with college and career readiness standards for English language arts and metacognitive awareness of reading strategies use. A secondary goal was to

add to the body of knowledge regarding metacognitive awareness of reading strategies use and reading ability as measured by the Lexile<sup>®</sup> Framework for Reading.

### *Population, Sample, and Participants*

The target population for this study was 10<sup>th</sup> grade students attending a public high school in the state of Georgia during the 2017-2018 school year. Demographic data for the study site for the 2016-2017 school year include the following: the student population, grades 9-12, consisted of 1669 students; of this number, 484 students were enrolled in 9<sup>th</sup> Grade Literature and Composition classes; 96.3% of these students participated in the administration of the 9<sup>th</sup> Grade Literature and Composition assessment; 92.3% of students with disabilities completed the assessment; the number of limited English proficient test takers was too few and thus for this reason, the participation rate for these students was redacted and not reported on the school's state report card. No information was available regarding whether or not all reported participants were first time test takers. The school's college ready rate, or "the percentage of students who are likely to be successful in first year college courses (not requiring remediation or learning support)" was 40.5% for the 2016-2017 school year, based on an index that includes multiple measures such as the ACT and the SAT (The Governor's Office of Student Achievement, Report Card, 2017; The Governor's Office of Student Achievement, Georgia School Grades Reports, College Ready, 2017, par. 1).

A convenience sample drawn from the population consisted of approximately ninety-three (93) actively enrolled students in my 2017-2018 English classes. Of this number, fifty-four (54) students met the first criteria of being *true* 10<sup>th</sup> graders – that is, they were students rostered in a 10<sup>th</sup> grade homeroom because they had earned by this time the required number of credits to

be considered a sophomore in high school – and the second criteria of having also sat for the 2016-2017 Georgia Milestones summative assessment for 9th Grade Literature and Composition (which served as a measure of achievement for Georgia’s college and career readiness standards in English language arts). Thus, these fifty-four (54) students were invited to participate in the study. Of the fifty-four students invited to participate, twenty-one (21) returned signed assent, consent, and release forms as required. According to Creswell, with convenience sampling, “the researcher cannot say with confidence that the individuals are representative of the population. However, the sample can provide useful information for answering questions and hypotheses” (Creswell, 2015, p. 144).

### *Instrumentation*

The data collected for analysis came from three instruments or sources: (1) The Metacognitive Awareness of Reading Strategies Inventory (MARSİ) (Mokhtari & Reichard, 2002); (2) existing scale scores from the 2016-2017 Georgia Milestones summative assessment for 9th Grade Literature and Composition; and (3) existing 2016-2017 Lexile® growth scores for reading ability.

The Metacognitive Awareness of Reading Strategies Inventory (MARSİ) provided insights into the extent to which students are metacognitively aware of the strategies they use to support themselves as readers and to problem-solve while reading. Items on the inventory represent the most robust of measures from an original set of 100 items written by the authors to measure the subscales of global, problem-solving, and support reading strategy use (with each subscale yielding its own score for in-depth analysis). The final thirty (30) reading strategy statements selected for inclusion in the MARSİ Version 1.0 inventory were evaluated by “a

group of three expert judges . . . who were knowledgeable about and experienced in the teaching and assessment of reading strategies” (Mokhtari & Reichard, 2002, p. 251).

The inventory has been validated for metacognitive awareness use measure through statistical analysis with the authors reporting a Cronbach’s alpha coefficient range of .89 to .93 and a reliability score of .93 (Mokhtari & Reichard, 2002). The MARSI has been deemed a beneficial tool for students to use to self-assess and self-report their reading strategies use and habits of mind when it comes to reading. The MARSI provides English teachers an easy tool for “assessing, monitoring, and documenting the type and number of reading strategies used by students” in addition to serving as a useful tool for “monitoring students’ progress in becoming constructively responsive readers” (Mokhtari & Reichard, 2002, p. 255).

The Georgia Milestones summative assessment for 9th Grade Literature and Composition assesses the domains of reading, vocabulary and writing, and language for content standards for which students are expected to demonstrate a “level of expertise” (Georgia Department of Education, 2014, p. 7). In addition to providing scale scores that represent achievement with the college and career readiness standards for 9th Grade Literature and Composition, the Georgia Department of Education also provides a Lexile<sup>®</sup> reader measure for each test taker through its partnership with MetaMetrics, owner and developer of The Lexile<sup>®</sup> Framework for Reading. In the current study, I refer to this measure as a Lexile<sup>®</sup> growth score to indicate specifically my interest in the 2016-2017 Lexile<sup>®</sup> reader measure (the most recent one for the subjects of this study) rather than any previous or longitudinal Lexile<sup>®</sup> information that was also made available for each student, namely information that extends back to when students were tested in elementary and middle school – in effect creating an opportunity for discerning a student’s reading growth over time.

The Lexile<sup>®</sup> Framework for Reading has been used to show connections between students' achievement on standardized high school exit-level assessments for reading in English language arts and to measure students' "ability to read and comprehend textbooks used in entry-level (freshman) English courses" (Wilkins, Hartman, Howland, and Sharma, 2010, p. i). Additionally, the Lexile<sup>®</sup> Framework for Reading has been deemed useful for "compar[ing] different reading assessment instruments" such as the 12th grade National Assessment of Educational Progress (NAEP) and the National Assessment of Adult Literacy (NAAL) (White & Clement, 2001; p. 50). Thus for this study, I was confident in examining participants' Lexile<sup>®</sup> growth scores and existing achievement scores from the aforementioned state summative assessment in addition to collecting data from Mokhtari and Reichard's Metacognitive Awareness of Reading Strategies Inventory (MARSİ) Version 1.0 (2002) to answer the research questions posed for this study.

### *Procedure*

I sought written permission from the University of Mississippi Institutional Review Board (IRB) to conduct this study before taking any steps outlined in its original proposal. In addition, I sought written permission from the study site's school district and the school's principal to access and examine the existing 2016-2017 9th Grade Literature and Composition scales scores and accompanying 2016-2017 Lexile<sup>®</sup> growth scores. Upon receiving full permission from these entities, I sought the permission of the invited convenience sample's parents and guardians via a letter explaining the purpose of the study and voluntary participation in the study. A list of names with signed parental/guardian permission (returned to me by the twenty-one participants) was generated and served as the participant list. This participant list

was used to assign a randomly-generated, alpha-numeric code name to each participant (via the random number generator function available in the Microsoft Excel spreadsheet program). A password-protected spreadsheet was created to match participants by alpha-numeric code name with their 2016-2017 9th Grade Literature and Composition scale scores and their 2016-2017 Lexile<sup>®</sup> growth scores.

I printed copies of the Metacognitive Awareness of Reading Strategies Inventory (MARSI) and administered it to participants during the English class periods (to help minimize disruptions or potential threats to the validity of the study, participants were moved to a computer lab and the school's media center to complete the inventory). Each participant received a blank copy of the inventory with the alpha-numeric code name assigned to him or her written thereon. The inventory took approximately twenty (20) minutes for participants to complete.

I hand scored the participants' MARSI forms for the overall score and the subscale scores for global, problem-solving, and support reading strategy use. The accompanying overall mean and the means for global, problem-solving, and support strategy use was also hand calculated. I entered all MARSI scores (overall and subscales) and means into the Excel spreadsheet mentioned above per alpha-numeric code name. Each alpha-numeric code name had these data points entered in unique, individual cells per the particular participant. I also entered into the spreadsheet, for each alpha-numeric code name, scale scores from the 2016-2017 9th Grade Literature and Composition summative assessment (indicating *beginning*, *developing*, *proficient*, or *distinguished* achievement) and the 2016-2017 Lexile<sup>®</sup> growth scores. The password-protected data saved in the spreadsheet were analyzed using statistical methods available in Statistical Package for Social Sciences (SPSS) version 23.0 software (2015).

### *Research Questions and Null Hypotheses*

The research questions that this study sought to answer are as follows: (1) Is there a statistically significant relationship between students' metacognitive awareness of reading strategies use and their English language arts college and career readiness achievement scores? (2) Is there a statistically significant relationship between students' metacognitive awareness of reading strategies use and their Lexile<sup>®</sup> growth scores?

The null hypotheses for this study are as follows: (1) There is no statistically significant relationship between students' metacognitive awareness of reading strategies use and their English language arts college and career readiness achievement scores. The alpha level to test this hypothesis was set at .05. (2) There is no statistically significant relationship between students' metacognitive awareness of reading strategies use and their Lexile<sup>®</sup> growth scores. The alpha level to test this hypothesis was set at .05.

### *Statistical Testing*

A correlational Pearson  $r$  analysis using Statistical Package for Social Sciences (SPSS) version 23.0 (2015) was conducted with scores from the 2016-2017 9th Grade Literature and Composition summative assessment for college and career readiness in English language arts (including the 2016-2017 Lexile<sup>®</sup> growth score) along with the scores from the Metacognitive Awareness of Reading Strategies Inventory (MARSII). Correlational analyses, and related multiple regression analyses, are among the most prominent and respected methodologies in the field of statistics for determining statistical relationships between such variables or constructs as metacognitive awareness of reading strategies, achievement with college and career readiness standards in English Language arts, and Lexile<sup>®</sup> growth level (Creswell, 2015; Cowles, 1989).



This is because correlation statistics allow researchers to discuss the direction (positive or negative), form (linear or nonlinear), and strength of the relationship between data, such as the aforementioned scores included per participant in this study (9th grade English language arts achievement scores, Lexile<sup>®</sup> growth scores, and MARSIS scores). Correlational analyses furthermore helped to explain the predicted outcomes as set forth in the null and alternative hypotheses for this study.

### *Summary of the Methodology*

This study's explanatory, quantitative research design allowed for an investigation of statistical relationships between metacognitive awareness of reading strategy use and achievement with college and career readiness standards for English language arts. In addition, the relationship between metacognitive awareness of reading strategies use and Lexile<sup>®</sup> growth was also examined. Instruments for analysis included the Metacognitive Awareness of Reading Strategies Inventory (MARSIS), existing scale scores from the 2016-2017 Georgia Milestones summative assessment for 9<sup>th</sup> Grade Literature and Composition, and accompanying 2016-2017 Lexile<sup>®</sup> growth scores. The primary statistical test used to answer the research questions posed for this study was the Pearson  $r$  correlational test. The Pearson  $r$  correlation is deemed appropriate for determining statistical relationships between variables.

## CHAPTER 4

### FINDINGS

The purpose of this study was to determine if statistically significant relationships exist between students' achievement with college and career readiness standards for English language arts and their metacognitive awareness of the reading strategies they use, as well as between metacognitive awareness of reading strategies use and students' Lexile<sup>®</sup> growth. The significance of the study is that it may inform instructional practice in the English language arts classroom. Understanding the relationship between college and career readiness achievement in English language arts and students' metacognitive awareness of *what good readers do* when reading complex texts are important aspects with the potential to lead to targeted instructional practices for supporting struggling readers in the high school English classroom (Henning, 2006; Datnow, Park, & Kennedy-Lewis, 2012).

Data analyzed for this study were collected from the following three instruments and sources: (1) The Metacognitive Awareness of Reading Strategies Inventory (MARSİ) (Mokhtari & Reichard, 2002); (2) existing scale scores from the 2016-2017 Georgia Milestones summative assessment for 9th Grade Literature and Composition; and (3) existing 2016-2017 Lexile<sup>®</sup> growth scores for reading ability. The Metacognitive Awareness of Reading Strategies Inventory (MARSİ) presented an opportunity to gain insights into the extent to which students were metacognitively aware of the reading strategies they use when engaged with academic reading materials.

The 2016-2017 Georgia Milestones summative assessment for 9th Grade Literature and Composition assessed the state's standards for college and career readiness in English language arts, providing information regarding students' demonstrated "level of expertise" in the domains of reading, vocabulary and writing, and language (Georgia Department of Education, 2014, p. 7). Scale scores from this summative assessment represented achievement with the college and career readiness standards for 9th Grade Literature and Composition. Additionally, a Lexile® growth score for each test taker accompanied this information.

Participants' scores on the MARSII were matched by their unique identification (an alphanumeric code name) to their 2016-2017 9th Grade Literature and Composition scale scores and their 2016-2017 Lexile® growth scores. Data were recorded and saved in a password-protected Excel spreadsheet. The Excel spreadsheet was imported into Statistical Package for Social Sciences (SPSS) version 23.0 (2015) for analysis.

Chapter four is organized by a discussion of the convenience sample's demographics. Then, instrument reliability for the sample is discussed. This is followed by an elucidation of descriptive statistics and data screening. Lastly, the research questions and hypotheses results are tested and explained, followed by the study's statistical conclusions. What follows is a demographic profile of the sample.

#### *Demographic Profile of the Sample*

The target population for this study consisted of 10<sup>th</sup> grade students attending a public high school in the state of Georgia during the 2017-2018 school year. A convenience sample drawn from the population for the study consisted of approximately ninety-three (93) actively enrolled students in my current 2017-2018 English classes. Of this number, fifty-four (54)

students classified as *true* 10<sup>th</sup> graders and meeting established inclusion criteria for this study were invited to participate in the study. Twenty-one (21) students accepted the invitation and provided the required assent, consent, and release forms (i.e., student and parental/guardian permission) for full participation in this study. Of this number, 61.9% ( $n = 13$ ) were females and 38.1% ( $n = 8$ ) were males.

*Instrument Reliability for the Sample*

The reliability of the Metacognitive Awareness of Reading Strategies Inventory (MARSI) for the sample was tested with Cronbach’s alpha. There are three subscales on the MARSI, which include global reading strategies ( $\alpha = .76$ ), problem-solving strategies ( $\alpha = .54$ ), and support reading strategies ( $\alpha = .71$ ). For all thirty (30) items, the MARSI had good internal consistency ( $\alpha = .83$ ). Reliability coefficients and their interpretations are provided in Table 1.

Table 1

*Reliability Coefficients*

Variable	N of Items	Cronbach’s alpha	Interpretation
Global Reading Strategies	13	.763	Acceptable
Problem-Solving Reading Strategies	8	.542	Unacceptable
Support Reading Strategies	9	.714	Acceptable
All Items	30	.826	Good

*Note.* Interpretation of coefficients was based on generally accepted criteria ( DeVellis, 2012).

### *Descriptive Statistics*

For the MARSI, the global reading strategies mean scores ranged from 2.23 to 4.31 ( $M = 3.46$ ,  $SD = 0.60$ ). Problem-solving reading strategies mean scores ranged from 3.25 to 5.00 ( $M = 4.08$ ,  $SD = 0.48$ ). Support reading strategies mean scores ranged from 2.00 to 4.56 ( $M = 3.11$ ,  $SD = 0.70$ ). College and career readiness in English language arts achievement scores ranged from 429 to 563 ( $M = 503.90$ ,  $SD = 33.19$ ). Lexile<sup>®</sup> scores ranged from 945 to 1450 ( $M = 1171.43$ ,  $SD = 123.67$ ). Descriptive statistics are presented in Table 2.

Table 2

### *Descriptive Statistics*

Variable	<i>Minimum</i>	<i>Maximum</i>	<i>M</i>	<i>SD</i>
GLOB Mean	2.23	4.31	3.46	0.60
PROB Mean	3.25	5.00	4.08	0.48
SUP Mean	2.00	4.56	3.11	0.70
Overall Mean	2.60	4.57	3.52	0.47
Achievement Score	429	563	503.90	33.19
Lexile <sup>®</sup> Score	945	1450	1171.43	123.67

As aforementioned, the MARSI provided insights into the extent to which participants were metacognitively aware of the strategies they use to support themselves as readers and to problem-solve while reading. Participants rated their awareness of their use of reading strategies from 1 (“I **never or almost never** do this.”) to 5 (I **always or almost always** do this.”). Mean responses for each item on the MARSI were arranged in descending order of the means to show how important or how often the specific strategies were used by the participants. Thus, the three items that participants rated the highest were items 27 ( $M = 4.67$ ,  $SD = 0.58$ ), 11 ( $M = 4.57$ ,  $SD =$

0.60), and 16 ( $M = 4.43$ ,  $SD = 0.60$ ), which referred to re-reading to increase understanding when text becomes difficult; trying to get back on track when losing concentration; and paying closer attention to what one is reading when text becomes difficult. Conversely, the three items that participants rated the lowest were items 17 ( $M = 2.67$ ,  $SD = 1.15$ ), 2 ( $M = 2.67$ ,  $SD = 1.11$ ), and 22 ( $M = 2.67$ ,  $SD = 1.53$ ), which were rated equally in the extent of their use and referred to using text features such as tables, figures, and images to increase understanding; taking notes or making annotations while reading; and using key information identifiers such as bold face and italicized words. Descriptive statistics for all items on the MARSF are provided in Table 3.

Table 3

*Descriptive Statistics for All Items on the MARSJ (Mokhtari & Reichard, 2002)*

Item	<i>M</i>	<i>SD</i>
27. When text becomes difficult, I re-read to increase my understanding.	4.67	0.58
11. I try to get back on track when I lose concentration.	4.57	0.60
16. When text becomes difficult, I pay closer attention to what I'm reading.	4.43	0.60
21. I try to picture or visualize information to help remember what I read.	4.10	1.04
3. I think about what I know to help me understand what I read.	4.10	0.94
19. I use context clues to help me better understand what I'm reading.	4.05	0.97
13. I adjust my reading speed according to what I'm reading.	4.05	0.97
8. I read slowly but carefully to be sure I understand what I'm reading.	3.95	1.02
4. I preview the text to see what it's about before reading it.	3.95	1.28
24. I go back and forth in the text to find relationships among ideas in it.	3.81	1.12
1. I have a purpose in mind when I read.	3.81	0.81
25. I check my understanding when I come across conflicting information.	3.76	0.94
29. I check to see if my guesses about the text are right or wrong.	3.67	1.15
20. I paraphrase (restate ideas in my own words) to better understand what I read.	3.62	1.16
6. I summarize what I read to reflect on important information in the text.	3.52	1.50
26. I try to guess what the material is about when I read.	3.52	1.25
23. I critically analyze and evaluate the information presented in text.	3.52	0.98
18. I stop from time to time and think about what I'm reading.	3.48	1.08
7. I think about whether the content of the text fits my reading purpose.	3.43	1.16
30. I try to guess the meaning of unknown words or phrases.	3.38	1.53
28. I ask myself questions I like to have answered in the text.	3.05	1.20
12. I underline or circle information in the text to help me remember it.	3.00	1.30
10. I skim the text first by noting characteristics like length and organization.	3.00	1.55
14. I decide what to read closely and what to ignore.	2.86	1.39
15. I use reference materials such as dictionaries to help me understand what I read.	2.86	1.28
9. I discuss what I read with others to check my understanding.	2.76	1.18
5. When text becomes difficult, I read aloud to help me understand what I read.	2.71	1.45
17. I use tables, figures, and pictures in text to increase my understanding.	2.67	1.15
2. I take notes while reading to help me understand what I read.	2.67	1.11
22. I use typographical aids like bold face and italics to identify key information.	2.67	1.53

The subscales and the overall mean scores for the MARSJ were grouped into categories based on the range of values for the scores. This was done to provide further insight into the nature of the data. Table 4 provides information pertaining to the group classifications.

Table 4

*Group Classifications for Mean Responses on the MARSI Subscales and Overall Score*

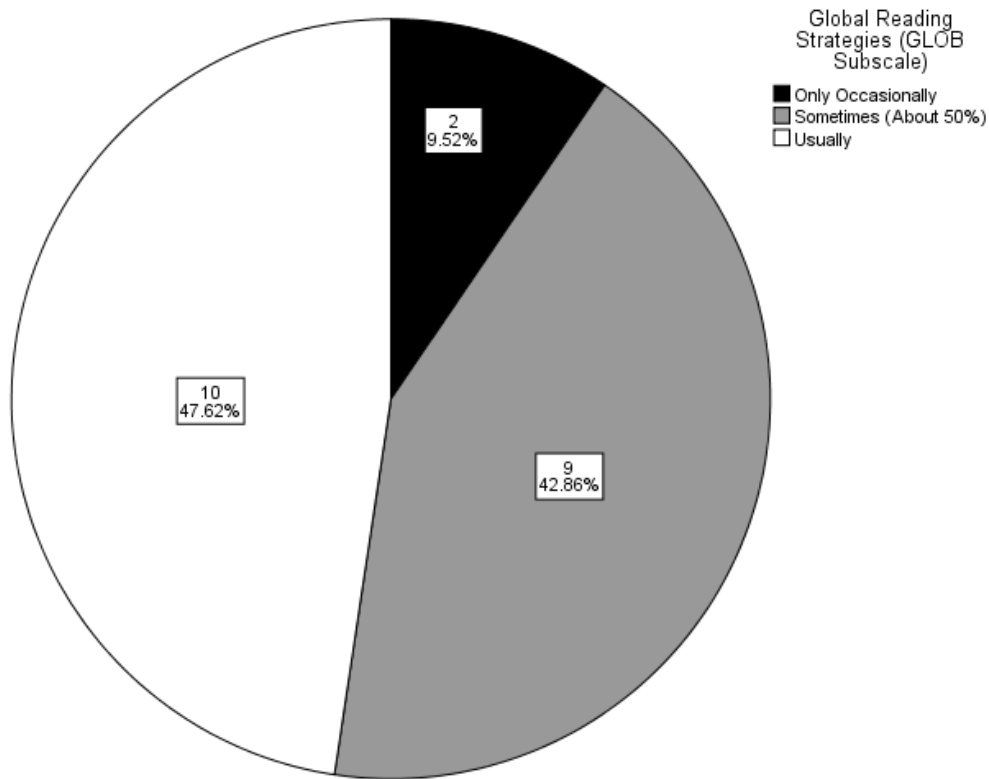
Numerical Value	Range of Values	Classification
1	1-1.49	1 means “I never or almost never do this.”
2	1.50-2.49	2 means “I do this only occasionally.”
3	2.50-3.49	3 means “I sometimes do this.” (About 50% of the time.)
4	3.50-4.49	4 means “I usually do this.”
5	4.50 or higher	5 means “I always or almost always do this.”

*Global Reading Strategies*

Regarding global reading strategies, 9.5% ( $n = 2$ ) of participants only occasionally used them. However, 42.9% ( $n = 9$ ) sometimes used them, and 47.6% ( $n = 10$ ) usually used them.

This is illustrated in Figure 1.





*Figure 1.* Extent of Global Reading Strategies Used by Participants

### *Problem-Solving Strategies*

Regarding problem-solving reading strategies, 14.3% ( $n = 3$ ) of participants sometimes used them while 61.9% ( $n = 13$ ) usually used them, and 23.8% ( $n = 5$ ) always or almost always used them. This is illustrated in Figure 2.

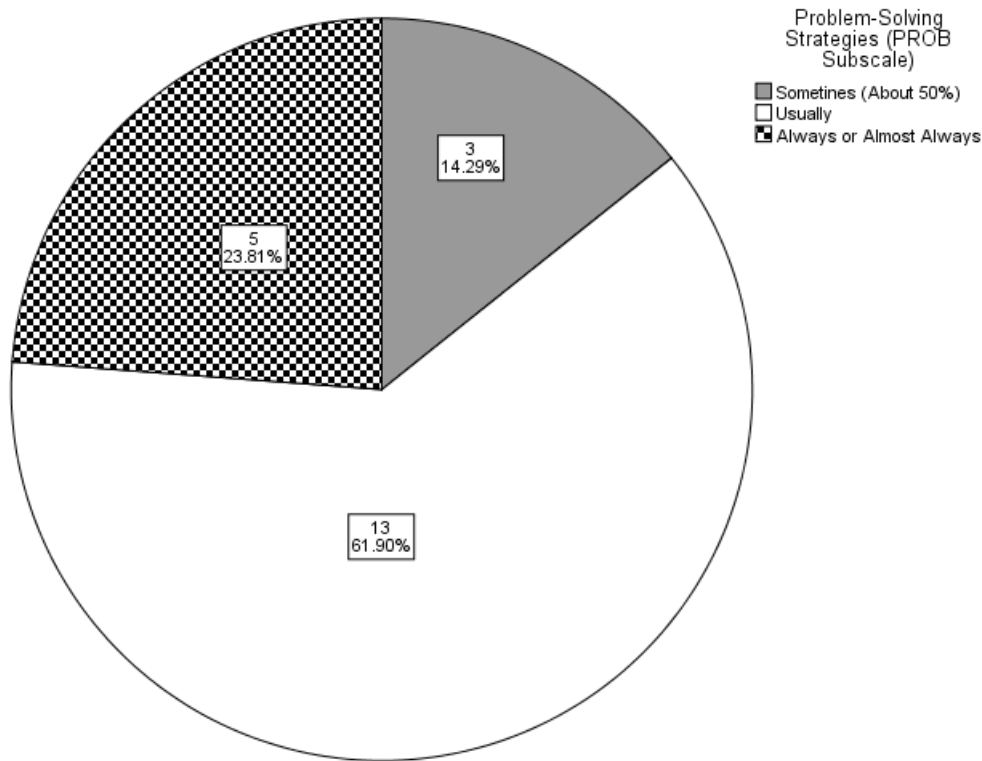
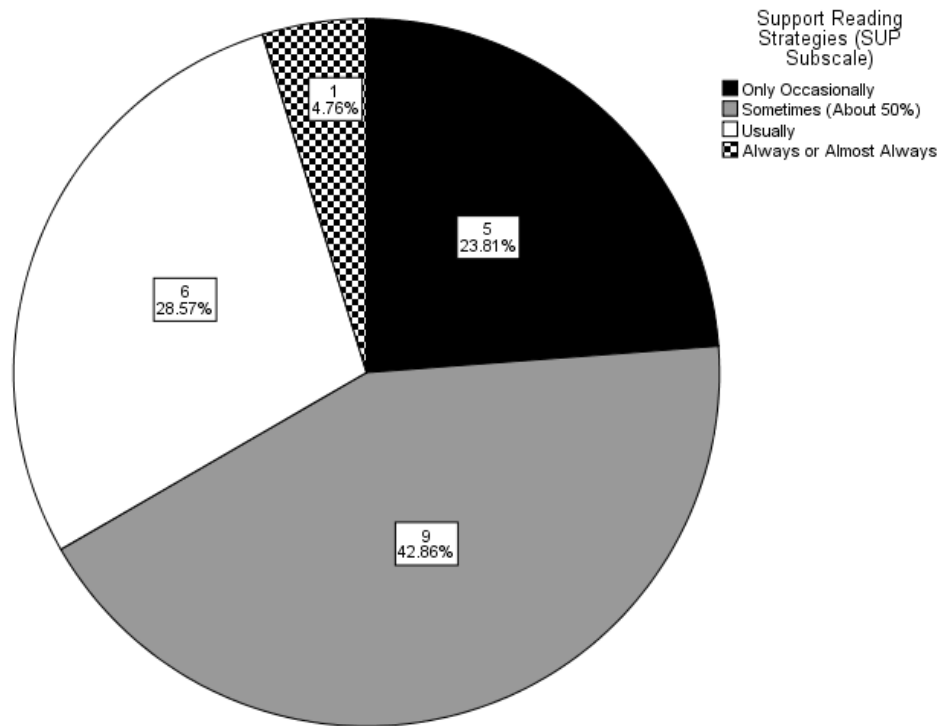


Figure 2. Extent of Problem-Solving Reading Strategies Used by Participants

### Support Reading Strategies

Regarding support reading strategies, 23.8% ( $n = 5$ ) of participants used them only occasionally. However, 42.9% ( $n = 9$ ) sometimes used them while 28.6% ( $n = 6$ ) usually used them. The extent of support reading strategies used by participants is illustrated in Figure 3.



*Figure 3. Extent of Support Reading Strategies Used by Participants*

### *Overall Reading Strategies*

Regarding the mean overall reading strategies, 42.9% ( $n = 9$ ) of participants sometimes used them. About half, 52.4% ( $n = 11$ ) usually used them while 4.8% ( $n = 1$ ) always or almost always used them. This is illustrated in Figure 4.

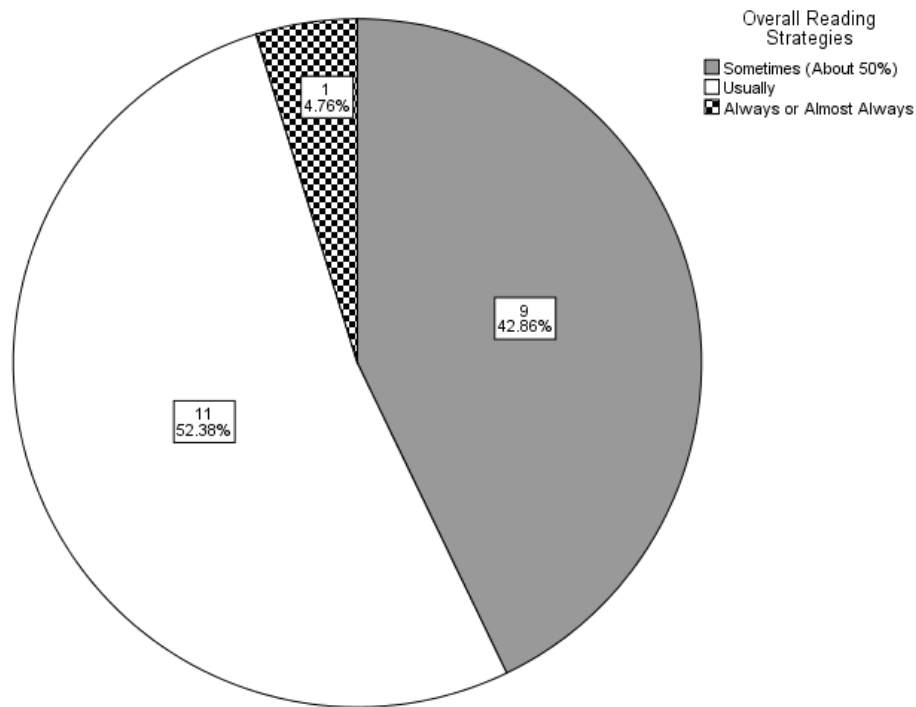


Figure 4. Extent of Overall Reading Strategies Used by Participants

The extent to which participants utilized the reading strategies are summarized in Table 5.

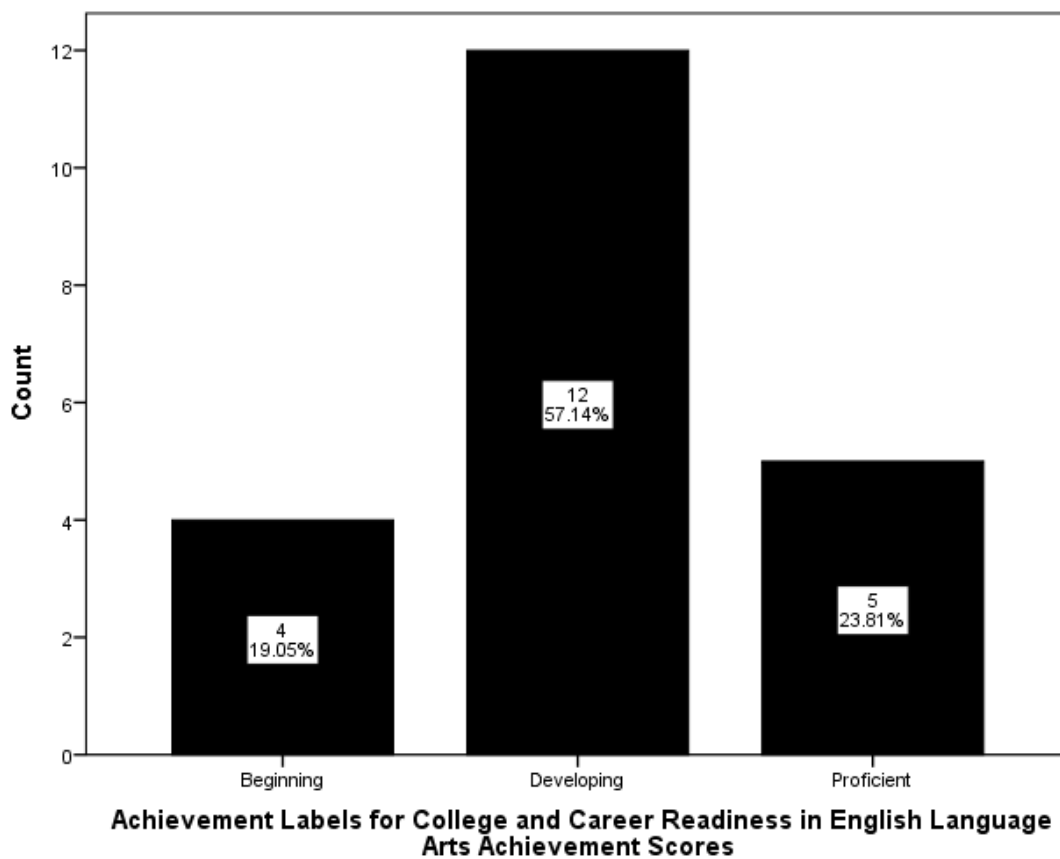
Table 5

*Extent of Reading Strategies Used by Participants*

Strategy	Never or Almost Never <i>n</i>	Only Occasionally <i>n</i>	Sometimes (About 50%) <i>n</i>	Usually <i>n</i>	Always or Almost Always <i>n</i>	Total <i>N</i>
Global Reading Strategies (GLOB Subscale)	0	2	9	10	0	21
Problem-Solving Reading Strategies (PROB Subscale)	0	0	3	13	5	21
Support Reading Strategies (SUP Subscale)	0	5	9	6	1	21
Overall Reading Strategy	0	0	9	11	1	21

### *College and Career Readiness in English Language Arts Achievement Scores*

As aforementioned, achievement scores for college and career readiness in English language arts ranged from 429 to 563 ( $M = 503.90$ ,  $SD = 33.19$ ). Each alpha-numeric code name's scale scores from the 2016-2017 9th Grade Literature and Composition summative assessment were assigned a proficiency level indicating *beginning*, *developing*, *proficient* or *distinguished* achievement (specifically according to Georgia Department of Education designations). Thus, 19% ( $n = 4$ ) were classified at the beginning level of achievement; 57.1% ( $n = 12$ ) were categorized as developing; and 23.8% ( $n = 5$ ) were determined to be proficient. This is illustrated in Figure 5.



*Figure 5.* Achievement Label for College and Career Readiness in English Language Arts Achievement Scores

### *Data Screening*

The data were screened for normality with skewness and kurtosis statistics and illustrated with histograms. In SPSS, distributions are considered normal when the absolute values of their skewness and kurtosis coefficients are less than two times their standard errors. All distributions were within normal range. Skewness and kurtosis coefficients for the variables of interest are presented in Table 6.

Table 6

#### *Skewness and Kurtosis Coefficients*

Variable	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
GLOB Mean	-.383	.501	-.673	.972
PROB Mean	-.052	.501	-.615	.972
SUP Mean	-.051	.501	-.600	.972
Overall Mean	.145	.501	.343	.972
Achievement Score	-.400	.501	.326	.972
Lexile <sup>®</sup> Score	.367	.501	.247	.972

For the global reading strategies, the skewness was 0.76 times the standard error. The kurtosis was 0.69 times the standard error. The histogram for global mean reading strategies is presented in Figure 6.

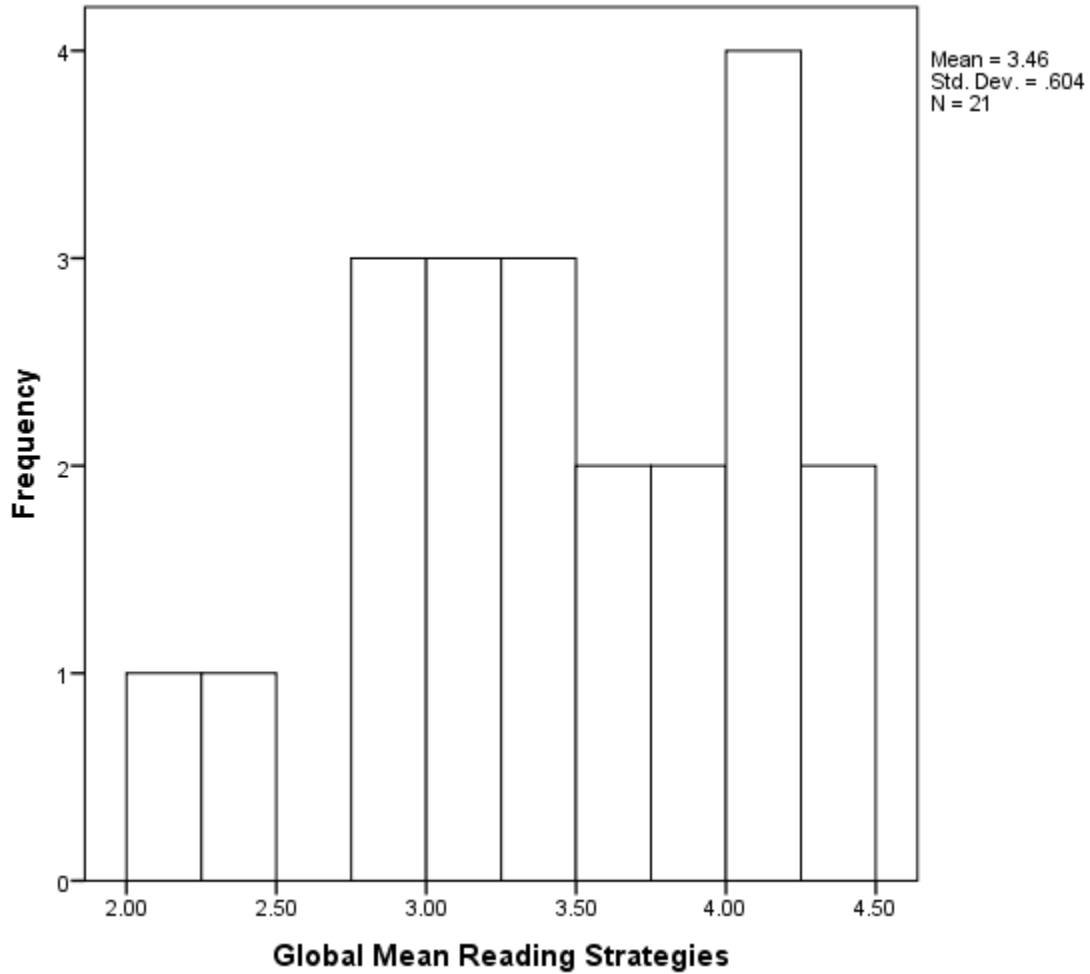
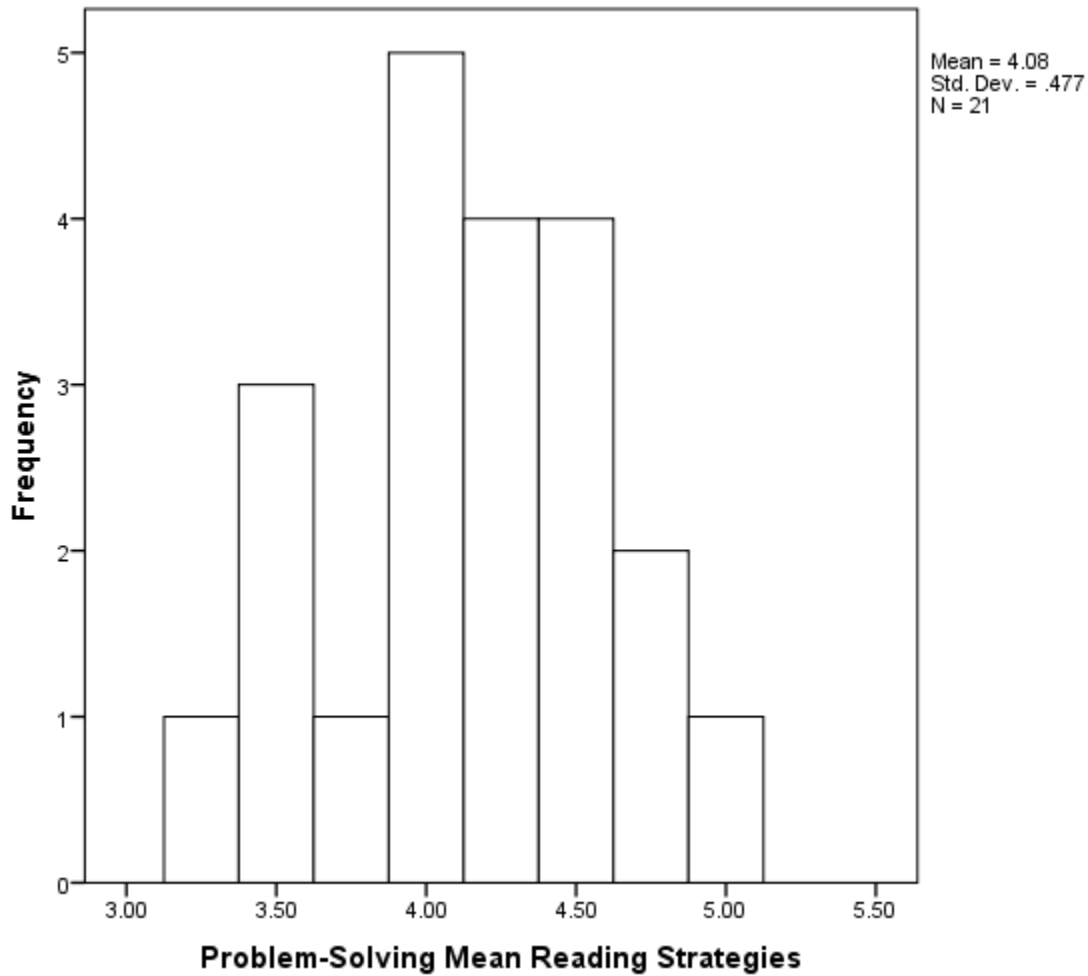


Figure 6. Histogram for Global Mean Reading Strategies

For the problem-solving reading strategies, the skewness was 0.1 times the standard error. The kurtosis was 0.63 times the standard error. The histogram for problem-solving reading strategies is presented in Figure 7.



*Figure 7.* Histogram for Problem-Solving Mean Reading Strategies

For the support reading strategies, the skewness was 0.1 times the standard error. The kurtosis was 0.62 times the standard error. The histogram for support reading strategies is presented in Figure 8.



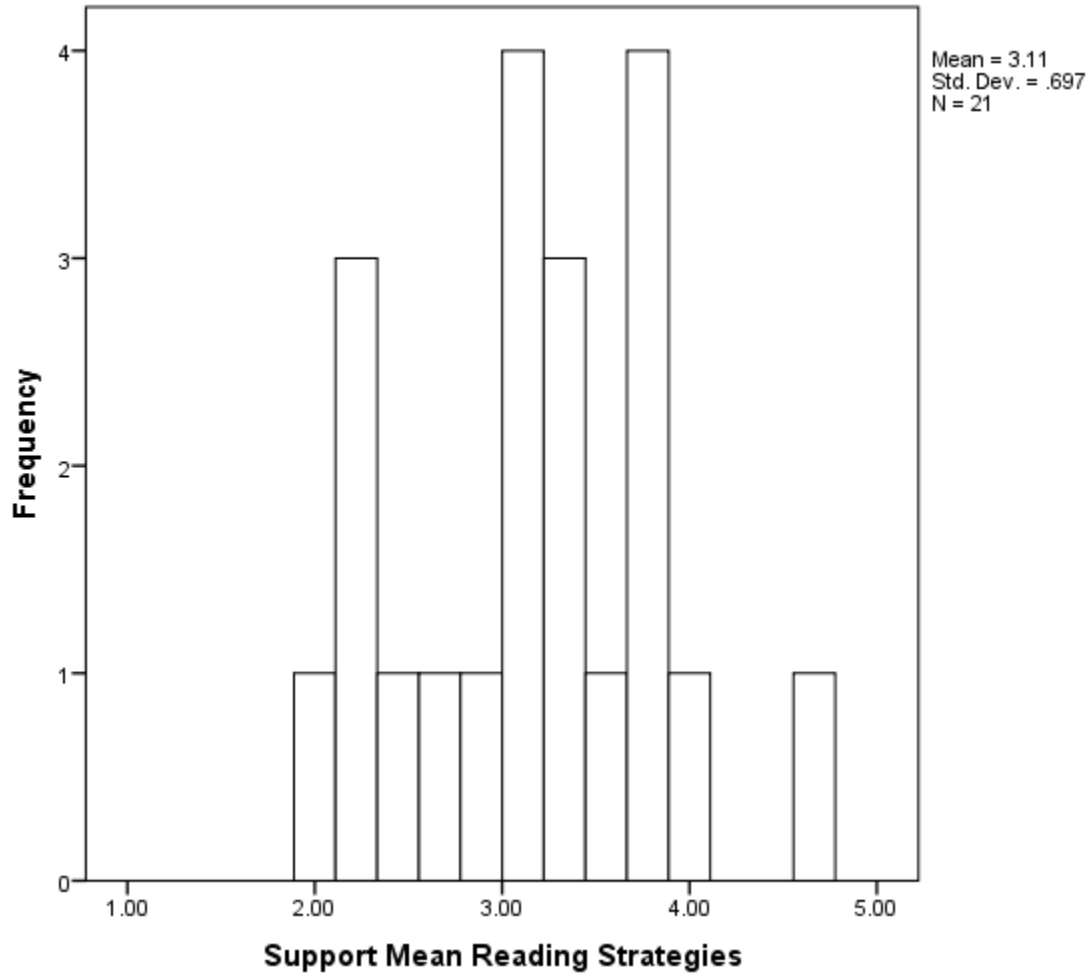


Figure 8. Histogram for Support Mean Reading Strategies

For the overall reading strategies, the skewness was 0.29 times the standard error. The kurtosis was 0.35 times the standard error. The histogram for overall reading strategies is presented in Figure 9.

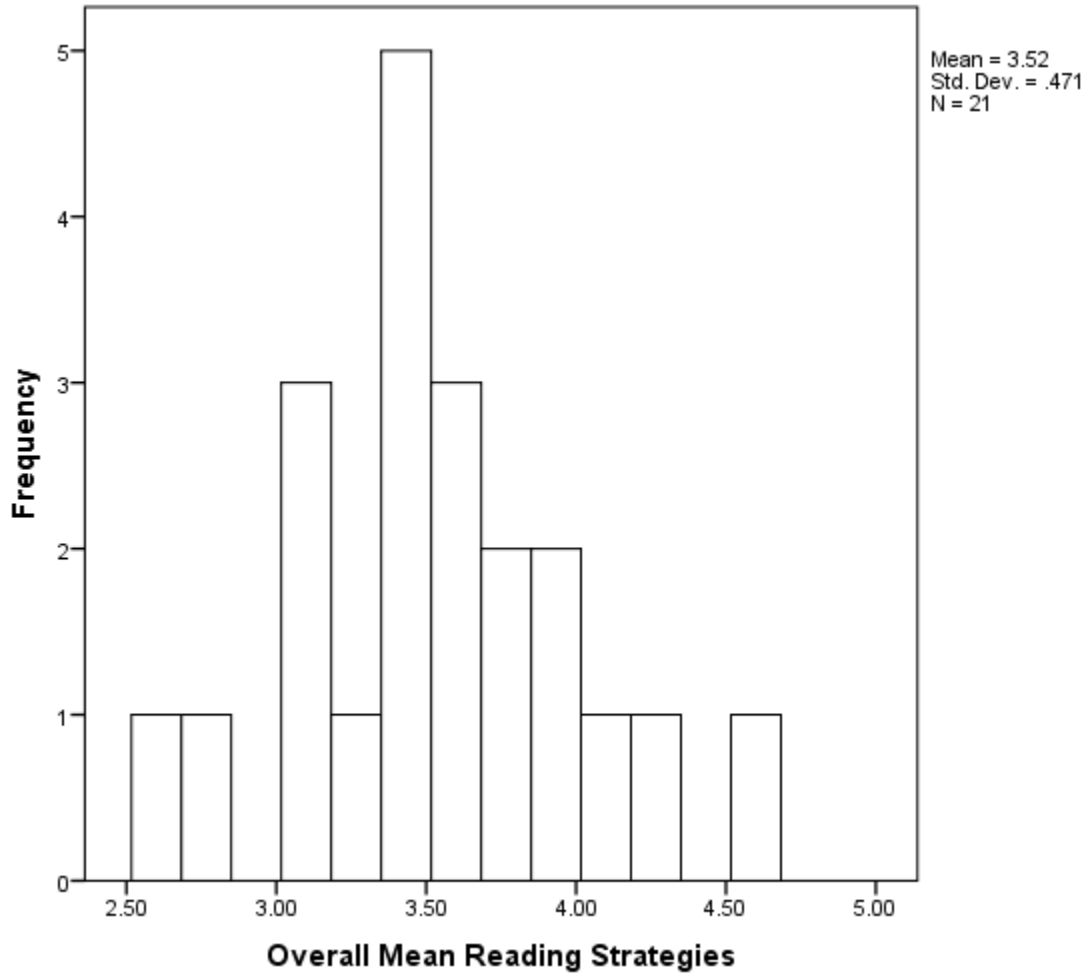


Figure 9. Histogram for Overall Mean Reading Strategies

For the college and career readiness in English language arts achievement scores, the skewness was 0.80 times the standard error. The kurtosis was 0.34 times the standard error. The histogram for college and career readiness in English language arts achievement scores is presented in Figure 10.

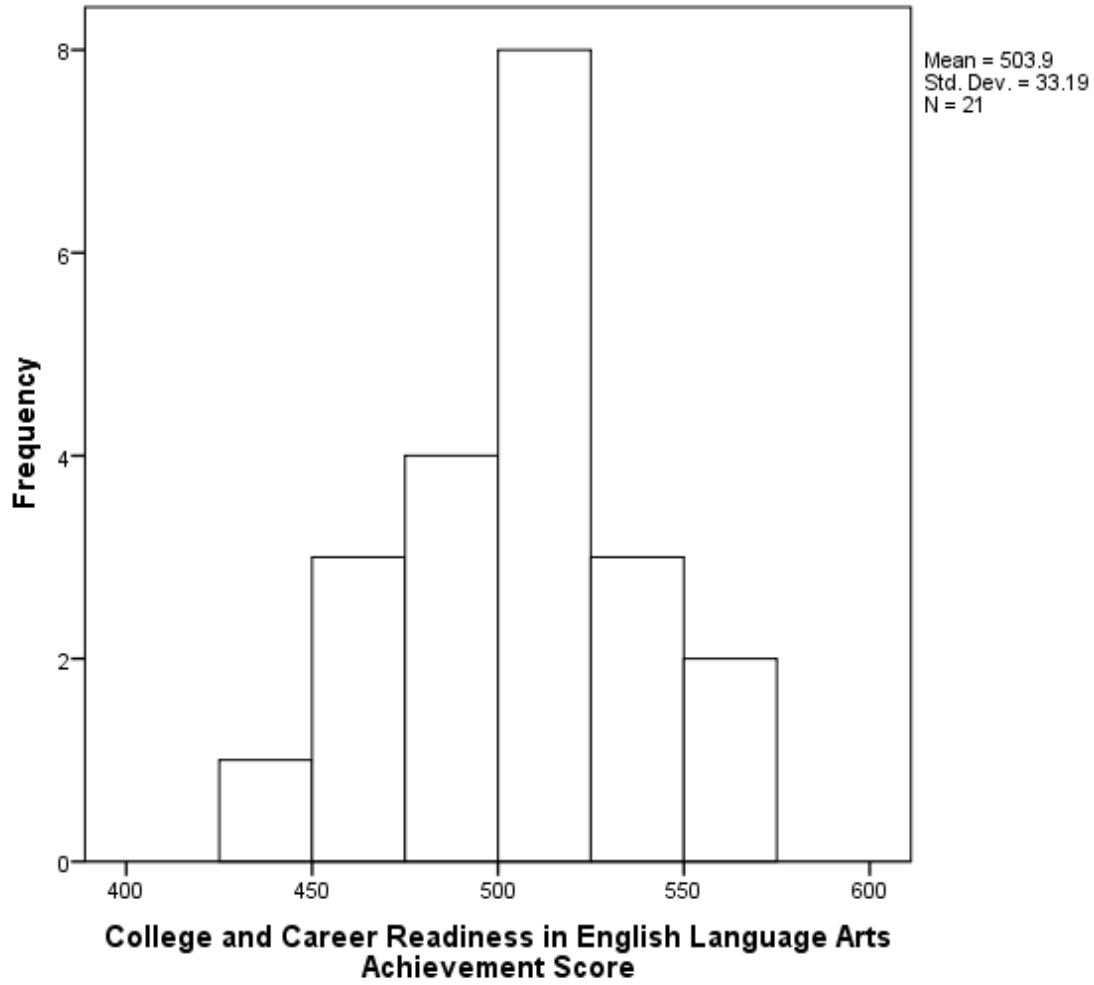


Figure 10. Histogram for College and Career Readiness in English Language Arts Achievement Scores

For the Lexile<sup>®</sup> scores, the skewness was 0.73 times the standard error. The kurtosis was 0.25 times the standard error. The histogram for Lexile<sup>®</sup> scores is presented in Figure 11.

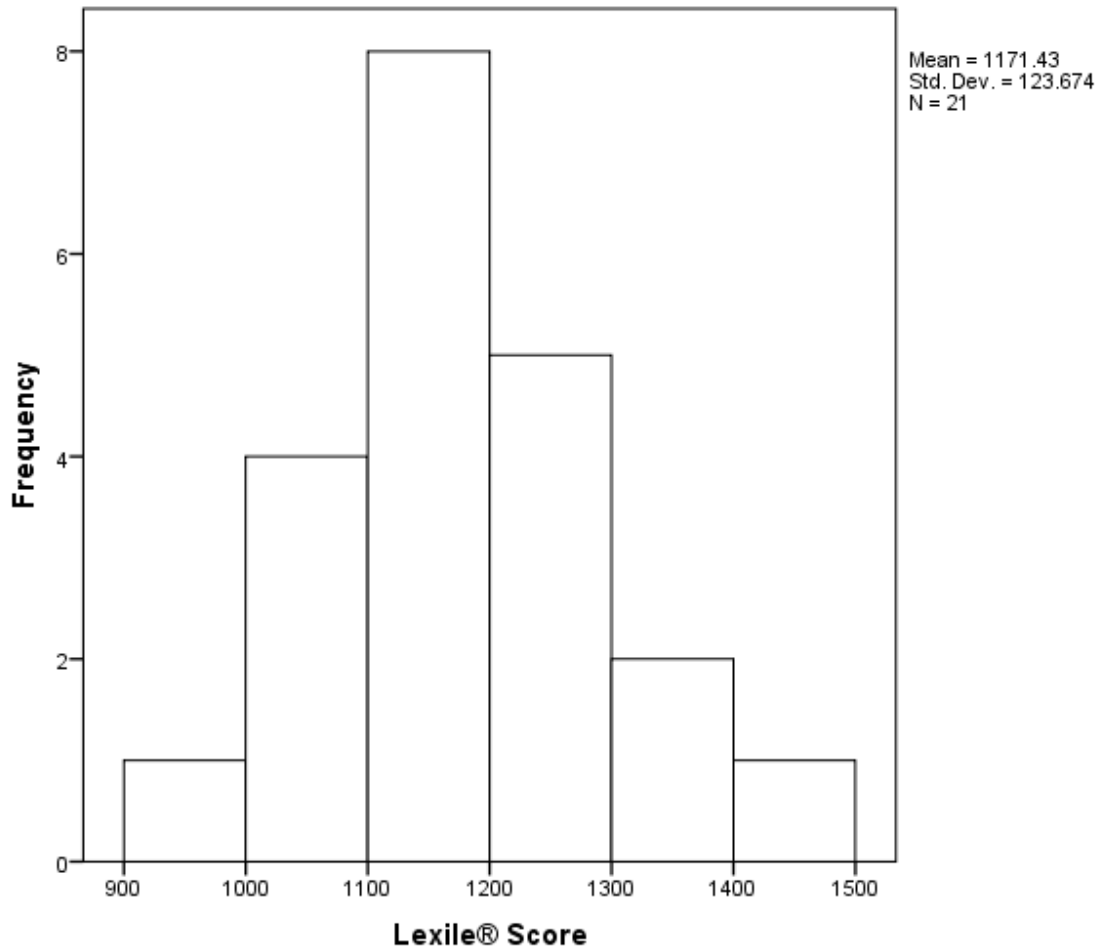


Figure 11. Histogram for Lexile® Scores

*Research Questions and Hypothesis Testing*

Since the distributions approximated normality for the variables of interest, the analyses proceeded as planned. Two research questions and two related hypotheses were formulated for testing. They were as follows:

Research Question 1. Is there a statistically significant relationship between students’ metacognitive awareness of reading strategies use and their English language arts college and career readiness achievement scores?

H<sub>01</sub>: There is no statistically significant relationship between students' metacognitive awareness of reading strategies use and their English language arts college and career readiness achievement scores.

H<sub>1</sub>: There is a statistically significant relationship between students' metacognitive awareness of reading strategies use and their English language arts college and career readiness achievement scores.

Research Question 2. Is there a statistically significant relationship between students' metacognitive awareness of reading strategies use and their Lexile<sup>®</sup> growth scores?

H<sub>02</sub>: There is no statistically significant relationship between students' metacognitive awareness of reading strategies use and their Lexile<sup>®</sup> growth scores.

H<sub>2</sub>: There is a statistically significant relationship between students' metacognitive awareness of reading strategies use and their Lexile<sup>®</sup> growth scores.

The research questions and hypotheses were tested with the Pearson *r*. A correlation matrix for the variables of interest is presented in Table 7.

Table 7

*Correlation Matrix*

Variable	1	2	3	4	5	6
GLOB Mean (1)	—	.434*	.472*	.883***	.463*	.348
PROB Mean (2)		—	.240	.618**	.335	.247
SUP Mean (3)			—	.771***	.078	-.015
Overall Mean (4)				—	.383	.253
Achievement Score (5)					—	.892***
Lexile <sup>®</sup> Score (6)						—

Note. \*\*\**p* < .001, \*\**p* < .01, \**p* < .05; two-tailed, *N* = 21

### *Research Question One – Hypothesis One*

Is there a statistically significant relationship between students' metacognitive awareness of reading strategies use and their English language arts college and career readiness achievement scores? The dependent variable was the metacognitive awareness of reading strategies score. The independent variable was the college and career readiness in English language arts achievement score. There was a moderate, positive relationship between college and career readiness in English language arts achievement scores and students' metacognitive awareness of reading strategies for global mean reading strategies:  $r(19) = .46, p = .035$ , two-tailed. Thus, this is deemed statistically significant. As college and career readiness in English language arts achievement increased, there was a corresponding increase in students' metacognitive awareness of reading strategies for global mean reading strategies. The coefficient of determination ( $r^2$ ) = 0.21, which means 21% of the variance in students' metacognitive awareness of reading strategies for global mean reading strategies can be explained by college and career readiness in English language arts achievement scores. A scatterplot of this relationship is illustrated in Figure 12 on the following page.

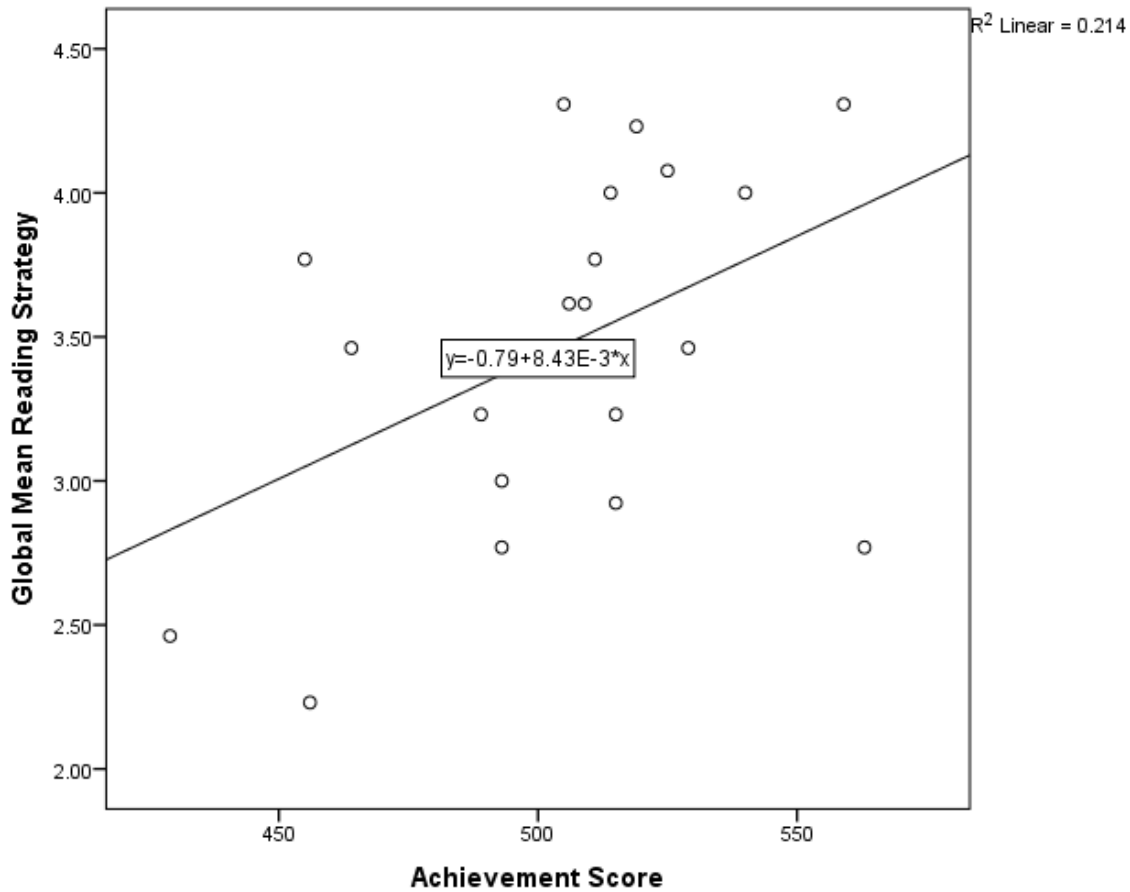


Figure 12. College and Career Readiness in English Language Arts Achievement Score and Global Mean Reading Strategy

There was no statistically significant relationship between college and career readiness in English language arts achievement scores and students' metacognitive awareness of reading strategies for problem-solving mean reading strategies:  $r(19) = .34, p = .138$ , two-tailed. There was no statistically significant relationship between college and career readiness in English language arts achievement scores and students' metacognitive awareness of reading strategies for support mean reading strategies:  $r(19) = .08, p = .735$ , two-tailed. There was no statistically significant relationship between college and career readiness in English language arts

achievement scores and students' metacognitive awareness of reading strategies for overall mean reading strategies:  $r(19) = .38, p = .087$ , two-tailed.

H<sub>01</sub> stated that there is no statistically significant relationship between students' metacognitive awareness of reading strategies use and their English language arts college and career readiness achievement scores. There was a moderate, positive relationship (a statistically significant relationship) between college and career readiness in English language arts achievement scores and students' metacognitive awareness of reading strategies for global mean strategies:  $r(19) = .46, p = .035$ , two-tailed. Therefore, the null hypothesis was rejected.

#### *Research Question Two – Hypothesis Two*

Is there a statistically significant relationship between students' metacognitive awareness of reading strategies use and their Lexile<sup>®</sup> growth scores? The dependent variable was the metacognitive awareness of reading strategies score. The independent variable was the Lexile<sup>®</sup> growth score. There was no statistically significant relationship between the Lexile<sup>®</sup> growth score and students' metacognitive awareness of reading strategies for global mean reading strategies:  $r(19) = .35, p = .122$ , two-tailed. There was no statistically significant relationship between the Lexile<sup>®</sup> growth score and students' metacognitive awareness of reading strategies for problem-solving mean reading strategies:  $r(19) = .25, p = .281$ , two-tailed. There was no statistically significant relationship between Lexile<sup>®</sup> growth score and students' metacognitive awareness of reading strategies for support mean reading strategies:  $r(19) = -.02, p = .948$ , two-tailed. There was no statistically significant relationship between the Lexile<sup>®</sup> growth score and students' metacognitive awareness of reading strategies for overall mean reading strategies:  $r(19) = .25, p = .268$ , two-tailed.



H<sub>02</sub> stated that there is no statistically significant relationship between students' metacognitive awareness of reading strategies use and their Lexile<sup>®</sup> growth scores. There was no statistically significant relationship between students' metacognitive awareness of reading strategies for global:  $p = .122$ ; problem-solving:  $p = .281$ ; support:  $p = .948$ ; overall:  $p = .268$ ) and their Lexile<sup>®</sup> growth scores. Therefore, the null hypothesis was not rejected. The hypotheses and outcomes are summarized in Table 8.

Table 8

*Hypothesis Summary and Outcomes*

Hypothesis	Significance	Outcome
H <sub>01</sub> : There is no statistically significant relationship between students' metacognitive awareness of reading strategies use and their English language arts college and career readiness achievement scores.	$p = .035$ for global mean	Null Rejected
H <sub>02</sub> : There is no statistically significant relationship between students' metacognitive awareness of reading strategies use and their Lexile <sup>®</sup> growth scores.	p-values ranged from .122 to .948	Null Not Rejected

*Summary of the Findings*

Two research questions and two associated hypotheses were investigated. It was determined that there was a moderate, positive relationship (a statistically significant relationship) between college and career readiness in English language arts achievement scores and students' metacognitive awareness of the reading strategies they use relative to global mean reading strategies. There was no statistically significant relationship between students' metacognitive awareness of the reading strategies they use relative to global mean reading

strategies, problem-solving mean reading strategies, support mean reading strategies, and overall mean reading strategies and their Lexile<sup>®</sup> growth scores. Implications and recommendations for future research are discussed in Chapter 5.

## CHAPTER 5

### DISCUSSION, IMPLICATIONS, AND CONCLUSION

The purpose of this study was to examine the strength of relationships between students' metacognitive awareness of the reading strategies they use and their achievement with state-mandated English language arts standards created to prepare students for college and career success, in addition to relationships between metacognitive awareness of reading strategies use and students' reading growth, as measured through Lexile<sup>®</sup>. Its significance offers the potentiality of informing instructional planning and practices in the high school English classroom. This chapter presents a discussion of the hypotheses and theoretical connections central to the results of this study (as detailed in Chapter 4). Implications, limitations, and recommendations for future research are also presented.

#### *Hypotheses Discussion and Theoretical Connections*

This study sought to answer two overarching research questions in order to examine the strength of statistically significant relationships between students' metacognitive awareness of reading strategies, college and career readiness achievement in English language arts, and Lexile<sup>®</sup> growth measure.

For Research Question 1 (*Is there a statistically significant relationship between students' metacognitive awareness of reading strategies use and their English language arts college and career readiness achievement scores?*) the findings of this study indicate that there

does exist a moderate, positive relationship (i.e., a statistically significant relationship) between metacognitive awareness of reading strategies and achievement with college and career readiness standards for English language arts, but specifically in regards to students' use of global reading strategies. Thus, the alternative hypothesis posed (presented above in Chapter 1) for Research Question 1 of this study was supported: There is a statistically significant relationship between students' metacognitive awareness of the reading strategies they use and their English language arts college and career readiness achievement scores. Increases in students' metacognitive awareness of reading strategies, with respect to global reading strategies, corresponded with increases in college and career readiness achievement in English language arts. This speaks in part to what Flavell (1979) referred to as the management of cognitive enterprises whereby one gauges "what strategies are likely to be effective in achieving what subgoals and goals in what sorts of cognitive undertakings" and further suggests that the students who participated in this study employed global reading strategies while engaging with the academic reading materials (i.e., reading passages and test items) they encountered on the 9<sup>th</sup> Grade Literature and Composition summative assessment (Flavell, 1979, p. 907). Global reading strategies include such self-regulated, cognitive choices as making predictions while reading, thinking about what is known in order to understand what is read, using context clues, previewing the text, having a purpose in mind when reading, checking for understanding when encountering conflicting information, surveying the text for length and organization, critically analyzing information in the text, and making decisions about close reading – all of which are the processes, as it were, that may be referred to as "involv[ing] agency, purpose, and instrumentality" as they relate to self-regulated learning (Mokhtari & Reichard, 2002; Zimmerman, 1990, p. 5).

Interestingly, however, neither of the three reading strategies rated highest by students (i.e., re-reading to increase understanding when text becomes difficult; trying to get back on track when losing concentration; and paying closer attention to what one is reading when text becomes difficult) are global reading strategies – all three are instead classified as problem-solving reading strategies – while two of the three reading strategies rated lowest by students are global in nature (i.e., using text features such as tables, figures, and images to increase understanding and using key information identifiers such as bold face and italicized words). While students may have actually used any number of the various reading strategies while taking the 9<sup>th</sup> Grade Literature and Composition summative assessment, this seems to suggest that students more readily self-regulate toward a preference for using problem-solving reading strategies (thus, the three highest rated reading strategies) and have perhaps used them consistently over a long range of schooling and interacting with texts (namely increasingly complex texts) or perhaps due to receiving repeated instruction over time to use these types of strategies specifically to achieve some reading goal (Flavell, 1976; Zimmerman, 1986). This seems to further speak to literacy processing theory as purported by Clay, in that students engage in an “on-going, ever-changing assemb[ly] of working systems [neural networks] supporting proficient reading” of which strategy use is an important aspect (Doyle, 2013, p. 648). Still, the findings related to Research Question 1 show that students’ self-reported use of global reading strategies has a moderately positive relationship to their achievement with college and career readiness standards for English language arts, which is a beneficial finding for students and teachers in the high school English classroom.

For Research Question 2 (*Is there a statistically significant relationship between students’ metacognitive awareness of reading strategies use and their Lexile<sup>®</sup> growth scores?*),

the findings of this study indicate that a statistically significant relationship between students' metacognitive awareness of the reading strategies they use and their Lexile<sup>®</sup> growth level does not exist. Thus, the null hypothesis posed for Research Question 2 was accepted: There is no statistically significant relationship between students' metacognitive awareness of reading strategies use and their Lexile<sup>®</sup> growth scores. This was true regarding all reading strategies for which students self-reported their metacognitive awareness of reading strategies, including global reading strategies, problem-solving reading strategies, and support reading strategies. When it comes to overall reading strategies, students' metacognitive awareness had no statistically significant bearing on Lexile<sup>®</sup> growth. This may be due to the fact that a Lexile<sup>®</sup> reader measure is a reflection of the level of text complexity and challenge with which a student may comfortably grapple with and comprehend a text, with minimal frustration. To a large degree, the Lexile<sup>®</sup> reader measure is personalized for a student per his or her reading ability. Therefore, it may be that, for example, when students use the global reading strategy *I use context clues to help me better understand what I'm reading* there is no statistically significant influence or bearing on readability because of the already relative *good fit* of the reading material, having been selected per the student's Lexile<sup>®</sup> level for the purpose of presenting to the student reading material that may be comprehended with minimal difficulty. It is plausible then that the construct of *using context clues* is already accounted for in the Lexile<sup>®</sup> reader measure received, based on verbal and syntactic considerations and the student's performance on the reading test or assessment that yielded the measure (Mohktari & Reichard, 2002).

### *Implications for English Language Arts and Beyond*

A key finding of this study reveals a moderate, positive relationship (a statistically significant relationship) between achievement with college and career readiness standards for English language arts and metacognitive awareness of reading strategies, with regard specifically to the use of global reading strategies (such as those discussed above) (Bishop, Reyes, & Pflaum, 2006). For the high school English language arts classroom, this presents an opportunity for teachers to emphasize global reading strategies use in their instructional practices, as doing so may positively impact their students' achievement as evidenced by performance on standardized tests that measure the literacy skills inherently necessary for college and career readiness. This does not in any way suggest that English teachers teach to the test, but rather supports equipping students with the most effective reading strategies with which they may respond to and interact with complex texts, whether in a college or postsecondary setting or in a career situation. The assertion here is that students should, with regularity, be provided with opportunities to practice using global reading strategies as these are promising strategies for moving students toward success with the standards.

The support reading strategy *I take notes while reading to help me understand what I read* is most closely akin to *annotation*, which is a regular and generally accepted staple of English language arts reading instruction, particularly since the 2010 publication of the Common Core State Standards for English language arts (Mohktari & Reichard, 2002). Conversely, however, the results of this study found no statistically significant relationship between metacognitive awareness of reading strategies with regard to the use of support reading strategies and students' achievement with college and career readiness standards for English language arts. Thus, this is an indication that supports placing more emphasis on global reading strategies

instruction, but not to the detriment of such direct reading support practices as annotating the text during close reading (Brown & Kappes, 2012).

In regards to post-secondary educational opportunities, the results of this study offer some perspective on the types of readings strategies most closely associated with college and career readiness success as measured through high-school level assessments for college and career readiness standards (i.e., global reading strategies). The strong connection between students' level of college and career readiness as garnered through their high school English experiences (for example) and whether or not (as determined through a college placement test) they will be required to enroll in developmental reading and writing courses as college freshmen cannot be denied (ACT, 2012). College and university faculty and administrators well understand the high costs of remediating underprepared students and thus many have supported the implementation of the Common Core State Standards (or the college and career readiness standards per the states in which they have been implemented). Remarkable efforts have been made to collaborate with high school teachers and administrators to address the issues associated with college remediation rates (American Association of Community Colleges, 2016). In addition, state governmental entities from across the United States are currently working in close partnership with one another through alliances such as Complete College America, a non-profit founded in 2009 in part to improve college completion rates. The alliance is a platform by which solutions to college completion issues may be brought to scale.

It is not enough for high school graduates to purportedly achieve success with college and career readiness standards and not go on to achieve some postsecondary success as well, most notably the attainment of a college degree. In its 2012 publication, *Remediation: Higher Education's Bridge to Nowhere*, Complete College America reports that thirty percent (30%) of



underprepared students required to register for remedial courses do not “show up for the first course or subsequent remedial courses . . . [and] 30% of those who complete their remedial courses don’t even attempt their gateway courses within two years” (Complete College America, 2012, p. 2). Complete College America is calling for a policy shift away from remediation to a focus that provides co-requisite support in credit bearing courses such as first-year college English (which is reading and writing intensive) whereby “extra help is embed[ed] in the context of [the course]” (Complete College America, 2012, p. 2). In regards to this, I assert that global reading strategies use, as revealed through this study, may effectively function as a co-requisite instructional support mechanism for first-year and second-year college students in academic need, ultimately benefitting them further as they matriculate through various programs of study and beyond (wherein they may demonstrate competence and confidence when engaging in academic or non-academic discourse through reading, speaking, and writing).

### *Limitation of the Study*

Because the convenience sample for this study was small in size (twenty-one participants represented in a participation rate of 39%), it is not possible to generalize the statistical significance regarding the relationship between metacognitive awareness of reading strategies (with regard to the use of global reading strategies) and college and career readiness in English language arts achievement to the overall population of 10<sup>th</sup> grade students enrolled in English classes at the site of this study. Thus, this presents itself as the primary limitation of the current study.

### *Recommendations for Future Research*

One recommendation for future study of the relationships between metacognitive awareness of reading strategies, achievement with college and career readiness standards for English language arts, and Lexile<sup>®</sup> growth would be to replicate this study at the school district level where the possibility of a much larger sample size may reveal new insights (i.e., effect size and statistical significance) generalizable to and representative of the population in answer to the research questions and hypotheses posed for this study. For example, a school district in the state of Georgia may administer the Metacognitive Awareness of Reading Strategies Inventory (MARSİ) (Mokhtari & Reichard, 2002) to its 9th grade students at the start of the school year to gain an understanding of students' metacognitive awareness of reading strategies. This information, along with achievement data from the Georgia Milestones 9<sup>th</sup> Grade Literature and Composition summative assessment (administered later in the same school year) could be analyzed for statistical significance that may further lend itself to a longitudinal investigation (with a re-administration of the MARSİ) when those same students enter 11<sup>th</sup> grade and subsequently take the Georgia Milestones American Literature and Composition summative assessment (from which scale scores will be obtained). Furthermore, metacognitive awareness of reading strategies and first-year college English course completion rates for these same students could thusly be studied longitudinally. This in fact may lead to research questions and hypotheses that may provide more implications for English language arts instruction as well as first-year English courses and beyond. Additional variables such as gender and socioeconomic status are recommended for multivariate investigation as well.

Similar research could potentially be conducted in any number of school districts in the United States where college and career readiness summative assessments for English language

arts are administered across the grade bands. And with that, I recommend that permission be sought from the authors of the Metacognitive Awareness of Reading Strategies Inventory (MARSİ) (Mokhtari & Reichard, 2002) to digitize the instrument so that school districts may use it more efficiently to collect and analyze students' responses (currently, to my knowledge, there is only a *paper* option available for administering the MARSİ).

Other recommendations for future research include: measuring to what extent metacognitive awareness of reading strategies changes over time (as suggested in part by the longitudinal recommendation given above); the relationship between metacognitive awareness of reading strategies and students' proficiency levels for written constructed response assessments for English language arts; and the impact of direct instruction emphasizing global reading strategies on achievement with college and career readiness standards for English language arts.

### *Conclusion of the Study*

Relationships between students' metacognitive awareness of the reading strategies they use, college and career readiness achievement in English language arts, and Lexile<sup>®</sup> growth were important and timely concepts to investigate for statistical significance at this time. As we are now well into working with and teaching the 21<sup>st</sup> century student, we must continue to seek ways to bridge our understanding of students as learners, critical thinkers, and critical readers with an acknowledgement of best practices and a commitment to continually seek them out and implement them. It is my hope that the elucidation of research and the pertinent findings contained in this study will prove to be valuable for many English teachers with the potential to favorably impact many more students.

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## APPENDIX



**Metacognitive Awareness of Reading Strategies Inventory  
(MARS) Version 1.0**

Kouider Mokhtari and Carla Reichard © 2002

**DIRECTIONS:** Listed below are statements about what people do when they read academic or school-related materials such as textbooks, library books, etc. Five numbers follow each statement (1, 2, 3, 4, 5) and each number means the following:

- **1** means “I **never or almost never** do this.”
- **2** means “I do this **only occasionally**.”
- **3** means “I **sometimes** do this.” (About **50%** of the time.)
- **4** means “I **usually** do this.”
- **5** means “I **always or almost always** do this.”

After reading each statement, **circle the number** (1, 2, 3, 4, or 5) that applies to you using the scale provided. Please note that there are **no right or wrong answers** to the statements in this inventory.

TYPE	STRATEGIES	SCALE				
GLOB	1. I have a purpose in mind when I read.	1	2	3	4	5
SUP	2. I take notes while reading to help me understand what I read.	1	2	3	4	5
GLOB	3. I think about what I know to help me understand what I read.	1	2	3	4	5
GLOB	4. I preview the text to see what it's about before reading it.	1	2	3	4	5
SUP	5. When text becomes difficult, I read aloud to help me understand what I read.	1	2	3	4	5
SUP	6. I summarize what I read to reflect on important information in the text.	1	2	3	4	5
GLOB	7. I think about whether the content of the text fits my reading purpose.	1	2	3	4	5
PROB	8. I read slowly but carefully to be sure I understand what I'm reading.	1	2	3	4	5
SUP	9. I discuss what I read with others to check my understanding.	1	2	3	4	5
GLOB	10. I skim the text first by noting characteristics like length and organization.	1	2	3	4	5
PROB	11. I try to get back on track when I lose concentration.	1	2	3	4	5
SUP	12. I underline or circle information in the text to help me remember it.	1	2	3	4	5
PROB	13. I adjust my reading speed according to what I'm reading.	1	2	3	4	5
GLOB	14. I decide what to read closely and what to ignore.	1	2	3	4	5
SUP	15. I use reference materials such as dictionaries to help me understand what I read.	1	2	3	4	5
PROB	16. When text becomes difficult, I pay closer attention to what I'm reading.	1	2	3	4	5
GLOB	17. I use tables, figures, and pictures in text to increase my understanding.	1	2	3	4	5
PROB	18. I stop from time to time and think about what I'm reading.	1	2	3	4	5
GLOB	19. I use context clues to help me better understand what I'm reading.	1	2	3	4	5
SUP	20. I paraphrase (restate ideas in my own words) to better understand what I read.	1	2	3	4	5
PROB	21. I try to picture or visualize information to help remember what I read.	1	2	3	4	5
GLOB	22. I use typographical aids like bold face and italics to identify key information.	1	2	3	4	5
GLOB	23. I critically analyze and evaluate the information presented in the text.	1	2	3	4	5
SUP	24. I go back and forth in the text to find relationships among ideas in it.	1	2	3	4	5
GLOB	25. I check my understanding when I come across conflicting information.	1	2	3	4	5
GLOB	26. I try to guess what the material is about when I read.	1	2	3	4	5
PROB	27. When text becomes difficult, I re-read to increase my understanding.	1	2	3	4	5
SUP	28. I ask myself questions I like to have answered in the text.	1	2	3	4	5
GLOB	29. I check to see if my guesses about the text are right or wrong.	1	2	3	4	5
PROB	30. I try to guess the meaning of unknown words or phrases.	1	2	3	4	5

**Reference:** Mokhtari, K., & Reichard, C. (2002). Assessing students' metacognitive awareness of reading strategies. *Journal of Educational Psychology*, 94 (2), 249-259.

**Metacognitive Awareness of Reading Strategies Inventory**  
**SCORING RUBRIC**

Student Name: \_\_\_\_\_ Age: \_\_\_\_\_ Date: \_\_\_\_\_

Grade in School:       6<sup>th</sup>  7<sup>th</sup>     8<sup>th</sup>  9<sup>th</sup>     10<sup>th</sup>  11<sup>th</sup>  12<sup>th</sup>     College  Other

1. Write your response to each statement (i.e., 1, 2, 3, 4, or 5) in each of the blanks.
2. Add up the scores under each column. Place the result on the line under each column.
3. Divide the score by the number of statements in each column to get the average for each subscale.
4. Calculate the average for the inventory by adding up the subscale scores and dividing by 30.
5. Compare your results to those shown below.
6. Discuss your results with your teacher or tutor.

Global Reading Strategies (GLOB Subscale)	Problem- Solving Strategies (PROB Subscale)	Support Reading Strategies (SUP Subscale)	Overall Reading Strategies
1. _____	8. _____	2. _____	GLOB _____
3. _____	11. _____	5. _____	
4. _____	13. _____	6. _____	PROB _____
7. _____	16. _____	9. _____	
10. _____	18. _____	12. _____	SUP _____
14. _____	21. _____	15. _____	
17. _____	27. _____	20. _____	
19. _____	30. _____	24. _____	
22. _____		28. _____	
23. _____			
25. _____			
26. _____			
29. _____			
_____ GLOB Score	_____ PROB Score	_____ SUP Score	_____ Overall Score
_____ GLOB Mean	_____ PROB Mean	_____ SUP Mean	_____ Overall Mean

**KEY TO AVERAGES:** 3.5 or higher = High      2.5 – 3.4 = Medium      2.4 or lower = Low

**INTERPRETING YOUR SCORES:** The overall average indicates how often you use reading strategies when reading academic materials. The average for each subscale of the inventory shows which group of strategies (i.e., global, problem-solving, and support strategies) you use most when reading. With this information, you can tell if you are very high or very low in any of these strategy groups. It is important to note, however, that the best possible use of these strategies depends on your reading ability in English, the type of material read, and your purpose for reading it. A low score on any of the subscales or parts of the inventory indicates that there may be some strategies in these parts that you might want to learn about and consider using when reading (adapted from Oxford 1990: 297-300).

VITA

VITA  
**David R. Smith-Keita**  
*keitaeducator@gmail.com*

***Professional Profile***

A professionally licensed, highly qualified English teacher who works to improve students' reading, writing, speaking, and critical thinking skills through a well-grounded English education and many years of experience as a teacher-leader and collaborator.

- Holds a Master's degree in English and Ph.D. in Education, Secondary Education, English.
- Experienced in teaching and advancing students' mastery with college and career readiness standards for English language arts, providing support to English teachers through demonstration lessons, coaching, co-teaching, and facilitating professional learning communities.
- Dedicated to student-centered, dynamic teaching as a way to foster a lifelong love of learning.

***Education and Certification***

Ph.D. in Education, Secondary Education, English Specialization  
University of Mississippi, University, MS, 2018

Dissertation Title: The Relationship between Metacognitive Awareness of Reading Strategies Use and 10<sup>th</sup> Grade Students' College and Career Readiness Achievement in English Language Arts

National Board Certification

English Language Arts/Adolescence and Young Adulthood

National Board for Professional Teaching Standards, November 2010 – November 2020

Teacher Certification Program

University of Memphis, Memphis, TN, 2005

Master of Arts in English

University of Memphis, Memphis, TN, 2002

Bachelor of Arts in Communication and Fine Arts

University of Memphis, Memphis, TN, 1998

### ***Teaching and Teacher Leadership Experience***

- ELA Teacher, Atlanta Public Schools, Atlanta, GA, July 2017–Present
- Instructional Coach/English Teacher, GRAD Academy, Memphis, TN, July 2016–June 2017
- Literacy Coach/English Teacher, GRAD Academy, Memphis, TN, July 2015–July 2016
- English Teacher, GRAD Academy, Memphis, TN, July 2013–July 2015
- English Teacher, Memphis City Schools, Memphis, TN, August 2004–June 2013
- Substitute Teacher, Memphis City Schools, Memphis, TN, December 2003–July 2004

### **Key Qualifications**

Instructional leadership team experience favorably impacting school-wide learning outcomes around literacy and college/career readiness standards, instructional practices, and processes.

Testing coordinator experience (TNReady, ACT, NWEA/MAP, testing security administration, etc.).

English department chair experience from December 2004 to July 2015.

Experience with delivering job-embedded professional development (i.e., Common Core State Standards, text complexity, lesson planning, literacy-related instructional strategies).

Past member of various committees at the local and state levels (English End-of-Course Item Review and Standards Setting, Tennessee Comprehensive Assessment Program for Writing, textbook adoption).

### ***Stewardship***

America Achieves Fellowship for Teachers and Principals, 2012-2015

New Tech Network Literacy Cohort, 2014-2015

TNCore Coach (Summer Professional Development Facilitator for Tennessee Teachers on Common Core State Standards), 2015

Best in Network Judge, New Tech Annual Conference 2015

National Writing Project, Summer 2015

Edreports.org Textbooks Content Reviewer (ELA), 2016 – Present

CenterPoint Education Solutions Advisor, 2016 – Present

Tennessee Educator Fellowship, 2016-2017

Scholastic Art & Writing Awards Judge, 2017

### ***Publications***

Tennessee Department of Education’s Classroom Chronicles: “Voices from the Classroom: Davida Smith-Keita,” December 2013

Education Post: “Why Must My Students Wait?” (Posted February 11, 2015)

*English Journal*, National Council of Teachers of English (NCTE):

Book Review – “Intentional and Targeted Teaching: A Framework for Teacher Growth and Leadership,” May 2017

Book Review – “Reading Reconsidered,” July 2017

Continuous Becoming: Moving Toward Mastery Column – “On Responsibilities, Results, and Relationships,” September 2017