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Does Voluntary Reading Matter? The Influences of Voluntary Reading on Student Achievement

Maika J. Yeigh
Portland State University

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Reading on Student Achievement

by

Maika Jolene Yeigh

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Dissertation Committee:
Susan J. Lenski, Chair
Dannelle Stevens
Dot McElhone
Tucker Childs

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Abstract

Does voluntary reading matter? While there is much known about the benefits to children who engage in sustained silent reading, commercial reading programs implemented as a result of the No Child Left Behind Act of 2001 often displace time for children to silently read. An increase in the amount of time children spend with a commercial reading program has meant a decrease in time provided for in-school voluntary reading during the elementary literacy block (Brenner & Hiebert, 2010). This quantitative study used the 2011 restricted-use National Assessment of Educational Progress (NAEP) data to determine whether opportunities provided to children for in-school voluntary reading impacted fourth grade students' achievement levels. The study also considered whether there were differences in the amount of time provided for in-school voluntary reading and choice in reading material to children of differing income levels and ethnic backgrounds. Contingency tables and a multiple linear regression model were used to find associations between achievement data and questionnaire responses. Findings concluded that children who qualified to participate in the National School Lunch Program, as well as Black, Hispanic, and Native American children, have fewer opportunities to silently read, and choose their own books during the school day. For most children, there was a positive relationship between time and choice in reading at school with achievement scores. Black, Hispanic, and Native American children experienced a commercial reading program at a higher rate than their white and Asian peers; there were no detected differences in reading program structure based on economic

affluence. The discussion includes consideration of time to silent read at school and choice in reading material as a part of an "opportunity gap" (Darling-Hammond, 2013) that causes disparities in the quality of education provided to children from different backgrounds, and which could also be a factor to the larger achievement gap. Policy implications are discussed.

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CHAPTER ONE

INTRODUCTION

Purpose of Study

The purpose of this study was to determine the association between in-school voluntary reading and fourth grade students' reading achievement levels as measured on the 2011 National Assessment of Educational Progress (NAEP) reading assessment at grade four. Additionally, I analyzed the opportunity for in-school voluntary reading provided to students from differing income-levels (determined by participation and non-participation in the NSLP) and ethnic minority group identification to determine whether the amount differs between low-income children and their more affluent peers or differs between minority children and their white peers. I determined whether opportunity to read can be associated with reading achievement levels as reported by the 2011 NAEP reading assessment at grade four.

In this chapter I explain the importance of in-school voluntary reading, defined here as when children spend time reading books that they choose based on their own interests. The structure of the literacy block was examined and compared against theoretical underpinnings found to improve reading competencies through critical thought. Ultimately, questions were investigated through this research project.

Research Problem

NAEP Scores and Achievement Gaps

The presence, or lack thereof, of opportunities to read silently predicts reading achievement (Foorman et al., 2006; Guthrie, Schafer, & Huang, 2001). Reading achievement is measured in a number of ways, one being the NAEP. The NAEP is given to a sampling of American children every two years, most recently in 2011. The 2011 NAEP scores are published as *The Nation's Report Card* (National Center for Educational Statistics [NCES], 2011b). This publication shows few gains in fourth grade reading achievement scores in the last few years. At the fourth grade level there was a 1% increase in reading achievement scores between 2009 and 2011 (NCES, 2011b). For fourth grade students achieving in the lowest ranges—at the tenth and twenty-fifth percentile range—there were no significant changes between 2009 and 2011. There was also little change to the persistent achievement gap between low-income children and their more affluent peers or the achievement gap between students of different ethnic backgrounds.

In the late 1990s, concerns emerged over the disparity in the achievement levels between minority children and their white peers. Over and over again, NAEP scores have showed a gap between the performance of white children and minority groups (NCES, 2009). Additionally, a large gap in achievement between low-income and more affluent children was revealed (NCES, 2009). National statistics collected through the Current Population Survey and the American Community Survey confirmed the existence of a gap and also found that minority students dropped out of high school at substantially

higher rates than their white peers (NCES, 2012). As larger recognition of the disparity grew, the government intervened to address this *achievement gap*—the differences in achievement levels between low-income minority children and their more affluent white peers. Reading was one area where disparities in achievement appeared.

Reports were commissioned to examine ways to prevent reading difficulties early in a child's schooling (Snow, Burns, & Griffin, 1998) and research panels were formed to identify the most promising reading practices (National Institute of Child Health and Human Development [NICHD], 2000). One key finding was that children who were reading below grade level by the end of third grade were at a higher risk of later reading failure (Snow et al., 1998). According to the Snow et al. report, early interventions were needed to target children in kindergarten through the third grade to prevent later problems such as students leaving high school prior to graduation. These interventions were found to be especially necessary for children coming from low-income homes (Snow et al., 1998).

Achievement Gaps: Income Levels and Ethnicity

The 2011 NAEP reading assessment at grade four found the achievement gap persisted between low-income students and their more affluent peers (NCES, 2011b). On average, students not eligible to receive free or reduced school lunch had reading achievement scores of 235. This average falls just under the cut score of 238 for the *proficient* category, which is where students should score for their grade level. In contrast, students eligible to receive reduced price lunch had average scores of 218. Children who were eligible to receive free lunch had average scores of 206, which falls

below the *basic* category and indicates limited mastery of grade level skills (NCES, 2011b). The difference between each of the three respective groups of students—students who do not qualify for the NSLP, students who qualify to receive reduced price lunch, and students who qualify for free school lunch—are statistically significant. The NCES (2011b) determines statistical significance by making pair-wise combinations that are analyzed using a *t* test in order to evaluate the means between two groups, with the significance level *p* < .05.

Disparities in achievement also exist at statistically significant levels when comparing students of different ethnic backgrounds. Minority children score at lower levels than their white peers. In 2011, Black fourth graders' average score was 205 while the average score of white fourth graders was 231. Hispanic children scored 206, on average. The gap in achievement between these three groups of children is statistically the same gap that existed in 1992 (NCES, 2011b); while scores have crept slowly upward, the gap between these three groups has remained constant.

While overall achievement scores remained relatively stable in the past few years—and the achievement gap remained in place—the 2011 NAEP demonstrated a positive impact of voluntary reading outside of school on reading achievement at the fourth grade level (NCES, 2011b). The 2011 NAEP found statistically significant differences between children who read for pleasure every day and children who did not. Children who said they never read for pleasure outside of school demonstrated scores of 210, significantly lower than their reading peers; students who reported engagement in voluntary reading once or twice per month for pleasure scored 214; children who

engaged in voluntary reading once or twice per week scored 221; and children who engaged in voluntary reading almost every day scored 228—18 points above students who never read for pleasure outside of school.

Although *The Nation's Report Card* (NCES, 2011b) includes data on pleasure reading *outside* of school, it does not report the correlation between *in-school* voluntary reading and achievement levels. Survey data *are* collected through teacher and students questionnaire that measures whether students are provided the opportunity to read during the school day, how often they are provided the opportunity to read during the school day, and whether they read materials of their own choosing during the school day. Those data are not analyzed to see whether associations exist between the opportunity for in-school voluntary reading and achievement scores, nor to see whether opportunities differ by income-levels or ethnic backgrounds. The differences in time provided for in-school voluntary reading could be a contributing factor to the achievement gaps between poor children and their more affluent peers, as well as to the persistent achievement gap between minority children and their white peers.

The Literacy Block

Recent policies have impacted the amount of time provided for elementary school age children to read voluntarily during the school day (USDOE, 2002a). Some of these policies require schools to teach reading using a "scientifically research-based" program during the literacy block. These programs are referred to as the *core reading program*. The *literacy block* is the chunk of time during the school day dedicated to literacy. Students often spend at least 90 minutes in a literacy block interacting with the core

curriculum (Brenner & Hiebert, 2010). During the literacy block children spend time

reading and rereading excerpts of stories in basal readers, filling out skill instruction

worksheets, and using decodable texts to practice specific phonics sounds (USDOE,

2008a). Core reading programs come with a variety of materials, including an anthology

of stories, as well as decodable readers, guided reading or leveled texts, "big" books,

songbooks, phonics flashcards, and vocabulary workbooks.

　　In an evaluation of how much time children spent reading when a core curriculum

in used in the literacy block, Brenner and Hiebert (2010) analyzed the teacher's editions

of the five leading core reading programs. The teacher editions can be as long as 2,350

pages (Brenner & Hiebert, 2010). Brenner and Hiebert found that within the literacy

block, children spent very few minutes actually reading when the teacher followed the

teacher's edition provided with the program. The range of minutes that children spent

reading—as dictated by the teacher edition of the core reading program—was between

10.2 and 24.4 minutes per day, with an average of 15 minutes of reading per day

(Brenner & Hiebert, 2010). The types of reading that students did during the literacy

block are important to note, as well. Children spent time reading "round-robin" style (in a

small group with one child reading at a time), reading with a partner, choral reading

(reading a story aloud collectively), and reading along while the teacher read a story, all

of which are instructional formats suggested in the teacher's editions and lacking in

proven effectiveness for reading improvement (Orpitz, Rasinski, & Bird, 1998). The

researchers' findings suggest that core reading programs contain a wide variety of

strategies and activities; however, children have little or no time for voluntary reading as part of the literacy block (Brenner & Hiebert, 2010).

One goal of No Child Left Behind Act of 2001 (NCLB) was to combat achievement disparities between children from different income levels and ethnic backgrounds. NCLB targeted low-income, low-performing schools and tied together achievement gains with school funding. As a result, many low-income schools received Reading First grants that required the use of a core reading program. Researchers are finding that the implementation of prescriptive reading programs with low-income students has the potential to restrict opportunities to learn and may increase educational inequities (Glupczynski Spencer, 2009; Pease-Alvarez & Samway, 2008). In an ethnographic study examining how a child experienced a mandated core reading program, Glupczynski Spencer (2009) spent one school year in an elementary classroom in New York City where 96% of the students qualified for the National School Lunch Program (NSLP). Struggling first-grade students were placed in a phonics-based pull-out commercial reading program that was scripted to include questions for the teacher to ask students and the responses the teacher should make to students. The student was pulled out of his regular classroom three to four days a week to participate in the reading program. Through observations Glupczynski Spencer noticed that the child made much more complex responses to the text than what the reading program anticipated. However, the responses from the teacher—which were scripted—were inadequate to capitalize on the knowledge that the child displayed. While the program expected the child to do simple decoding and make simplistic responses to the text, the student was making

deeper interpretations about both the text and the curriculum itself. At the end of the school year, the child was still considered "struggling" as a result of scoring poorly on phonetic measures even though he demonstrated critical thought and strong comprehension (Glupczynski Spencer, 2009). For this student, the reading program restricted opportunities for deeper learning.

Pease-Alvarez and Samway had similar findings when they studied one large urban elementary school that had implemented a scripted reading program. The local school board mandated the implementation of the program after determining that the school was facing a "literacy crisis" (Pease-Alvarez & Samway, 2008, p. 34.) The elementary school population was low-income and ethnically diverse; approximately 20% of the students were English learners. Ten teachers participated in the interview and observation process over a 2-year period. Additionally, two teachers and the school principal participated in interviews two years later. The main focus of the study was on teacher agency—the degree to which teachers felt they had control of what and how they taught—but the findings expanded beyond the scope of the initial considerations. One finding was that once the reading program was mandated, the program was prominent both during the literacy block as well as during the rest of the school day. Teachers reported that they felt they could no longer focus on the needs of individual students; the program decided the pacing and instructional focus for the teachers. Additionally, independent reading rarely occurred.

Both the Glupczynski Spencer (2009) and the Pease-Alvarez and Samway (2008) studies suggest that the implementation of a core reading program changes literacy

instruction for low-income children, and possibly results in restricted opportunities to read. Both studies focused on the use of mandated programs which restricted opportunity for children to spend time voluntary reading (Glupczynski Spencer, 2009; Pease-Alvarez & Samway, 2008). Could these mandates increase educational inequities and potentially contribute to gaps in achievement?

Low-income students—the poorest 25% of children—depend on schools to become literate (Brenner & Hiebert, 2010). These children are also more likely to be in a school with a mandated core-reading program that provides limited time for voluntary reading (Brenner & Hiebert, 2010) than their more affluent peers. However, if poor children are more likely to experience literacy taught through a core reading program— and if the core reading programs potentially restrict time for in-school voluntary reading—could the use of the core reading programs negatively impact student achievement scores and exacerbate the difference in achievement levels between low-income children and their more affluent peers, as well as achievement differences between minority children and their white peers?

All children deserve access to high-quality schools. However, it is especially critical for low-income children. Children living in low-income communities tend to have fewer opportunities to interact with print resources than their more affluent peers. Many of these children access the majority of their reading through the school (McGill-Franzen & Allington, 2006; Mraz & Rasinski, 2007; Schacter, 2003). To alleviate the achievement gap between low-income children and their more affluent peers, and those between children of different ethnic backgrounds, children need literacy experiences at

school requiring deep thinking and meaningful learning. When reading is viewed through a stance that promotes a democratic agenda, children are empowered to engage with the world through text experiences (Mills, Stephens, O'Keefe, & Waugh, 2004). Providing time in school for children to engage with text through voluntary reading is an important part of empowering literacy instruction (Krashen, 2009). Voluntary reading advances critical thinking—which is needed in order to be successful on the NAEP.

Critical Thinking and the NAEP Assessment

Critical thinking is a cognitive process measured on the 2011 NAEP reading assessment at grade four. The NAEP is designed around a reading framework that specifies the knowledge and skills that will be measured on the assessment (National Assessment Governing Board, 2010). The NAEP test questions are designed to measure three cognitive targets that are indicative of the kinds of thinking needed for comprehension. There are three types of questions on the 2011 NAEP reading assessment at grade four designed to measure the cognitive targets: Locate and recall questions, integrate and interpret questions, and critique and evaluate questions. Thirty percent of the fourth grade questions require students to identify and remember information stated directly in the reading. Fifty percent of the test questions ask fourth grade students to interpret what they have read and integrate the reading with other information—implied or specified. Twenty percent of the test questions measure a student's ability to critique a text and synthesize the reading against other knowledge the student holds (National Assessment Governing Board, 2010). Seventy percent of the test questions require students to use deeper comprehension strategies that go beyond locating information or

literal recall. However, the majority of the questions asked through the core reading

programs used in the literacy block when teachers follow the teacher's edition are literal

recall questions (Brenner & Hiebert, 2010).

In classrooms where core reading programs are used, children read fewer

authentic texts (Ede, 2006). Children who read less encounter fewer words-in-context so

their vocabularies are smaller (Stanovich, 1986). Core reading programs emphasize

decoding words—one important element of reading—at the expense of comprehension

and application (Altwerger, Jordan, & Shelton, 2007). When a core curriculum is used,

children have fewer choices in what they read, which negatively impacts reading

motivation (Guthrie, Hoa, Wigfield, Tonks, & Perencevich, 2006). Children who do not

enjoy reading, read less; children who read more tend to be better readers (Allington,

2005; NICHD, 2000).

The use of a core reading program is especially problematic because it promotes a

conception of literacy as neutral, when in fact the type of literacy instruction a child

receives reflects a stance on the larger role of literacy in a democratic society (Freire,

1970; Glupczynski Spencer, 2009). Providing children with the opportunity to read

voluntarily honors the reader's culture and interests while offering a means to think

deeply about critical issues (Freire, 1970; Glupczynski Spencer, 2009).

Core Reading Programs Seep into American Schools

The late 1990s saw a decline in the use of core reading programs in American

schools as reported by teachers (Baumann, Hoffman, Duffy-Hester, & Ro, 2000).

However, with NCLB legislation and grant funding that required the use of core reading

programs, their use is on the rise (USDOE, 2008b). As of June 2007, Reading First grants that required the use of a core reading program impacted more than 6,000 schools in 1,700 school districts across the United States—10% of the public school population (USDOE, 2009). A nonpartisan government watchdog group, The Center on Education Policy (2006), reported that, "Reading First has affected schools and districts that do not participate directly in Reading First. Many districts have expanded Reading First instructional programs and assessment systems to non-Reading First schools" (Center on Educational Policy, 2006, p. 1). Reading First grant funding ended in 2009 but the use of core reading programs has left an imprint on the reading instruction children receive nationwide, curbing the amount of time provided during the literacy block for in-school voluntary reading and potentially decreasing reading achievement levels as measured on the 2011 NAEP reading assessment at grade four.

Research Questions

1. Do fourth grade students who identify as members of an ethnic minority (as identified by NAEP) have opportunities to read voluntarily in school as frequently as their white peers? Do fourth grade students eligible to participate in the NSLP have opportunities to read voluntarily in school as frequently as their more affluent peers?

2. To what extent are the achievement scores on the 2011 NAEP reading assessment at grade four associated with the frequency of opportunities for in-school voluntary reading while controlling for other factors, such as participation in the NSLP and student ethnicity?

3. Do fourth grade students who identify as members of an ethnic minority experience literacy block structured using a commercial reading program more frequently than their white peers? Do fourth grade students who are eligible to participate in the NSLP experience literacy blocks structured using a commercial core reading program more frequently than their more affluent peers?

Chapter Summary

America's poorest children are more likely to attend a school that uses a mandated program with limited opportunity to read silently (Brenner & Hiebert, 2010). Yet some evidence exists to support the connection between time and opportunity to in-school silent read and reading achievement levels (Krashen, 2004). What is missing in the research base is the connection between in-school voluntary reading, whether the reading block is structured around a core reading program, and achievement, as well as how the intersection of these three may be different depending on student ethnicity and income level. If poor children are more likely to experience literacy instruction taught through a core reading program—and if the core reading programs do not provide time for in-school voluntary reading—then the use of the core reading programs could exacerbate the difference in achievement levels between low-income students and their more affluent peers, as well as achievement levels between children from varying ethnic backgrounds. Exploring the associations between in-school voluntary reading and achievement levels via the 2011 NAEP reading assessment at grade four is of value because it could illuminate differences in opportunity to read among children from different income levels and among children with different ethnic backgrounds.

CHAPTER TWO

LITERATURE REVIEW

In the following chapter I explain the theoretical underpinnings upon which this research study is based and review literature related to instructional factors that support reading achievement, and how reading achievement is measured on the NAEP. I also explain what the research I have read states regarding the role of sustained silent reading and how opportunity to engage in voluntary reading during the school day intersects with gaps in achievement between children participating in the NSLP and children who do not qualify for free or reduced price lunch, as well as gaps in achievement between children of differing ethnic backgrounds. At the end of the chapter, the argument is made that the opportunity to voluntary read at school is especially important for children who come from homes where there is limited access to print.

Theoretical Framework

Social Constructivism

In this study I am viewing constructivism and social constructivism as theories that seek to explain how people learn. A central tenet of constructivism is that people learn by taking new knowledge and adding it to what is already known, blending what is new with what is known to formulate new thinking. Learners first feel a sense of disequilibrium between what is known and the new information. Meaningful learning is created when the new and the known are balanced. Constructivists believe that through

this new-to-known process, learning is *constructed* (Piaget, 1972). *Social constructivism*

builds on the foundation of constructivism, but adds that learning is enhanced when

people work together—when collective knowledge is used to build new understandings.

Social constructivists purport that schools should not only be places to learn but also

places to learn how to live (Dewey, 1902). In social constructivist classrooms, students

experience learning through experimentation and interactions. Learning occurs within a

meaningful context, rather than being compartmentalized into "school learning" and

"real-life learning" (Vygotsky, 1962). The curriculum in social constructivist classrooms

is interactive in the sense that students link their own prior knowledge to the content and

other learners, allowing for deep connections between learner and content knowledge.

Content knowledge is not a specific set of predetermined skills; instead the knowledge is

indicative of both the learners' connection to the content and the prior experiences

brought to the learning by the learner. Learning is a social and interactive process based

on relationships (Dewey & Bentley, 1949). Children learn by "doing" versus through rote

skill-based instructional techniques (Dewey & Bentley, 1949). In *Knowing and the*

Known, Dewey and Bentley described learning as a "transaction" between the learner and

the context.

Transactional Theory

Rosenblatt (1968) linked Dewey and Bentley's work on transactional theory

directly to the field of literacy when she described how a reader and a text come together

to make new meaning. This transactional theory of reading considers reading to be an

active process, where the reader brings personal knowledge and experience to the page

they are reading. Readers actively manipulate text meaning by engaging their own experiences. Rosenblatt described the transaction as a "continuously reciprocal influence of reader and text in the making of meaning" (Rosenblatt, 1995, p xvi). Rosenblatt saw this transaction as having deep importance beyond the classroom. In classroom settings, students socially engaged in a transaction of ideas with peers and the text. In this regard, learning prepared students to take an active stance in their classroom learning as well as in the larger society outside of the school. In short, Rosenblatt believed that by connecting lived experiences to the written text, readers engaged in a democratic process. The new-to-known transaction connects texts with the reader's existing knowledge and previous text experiences.

Rosenblatt's (1995) transactional theory put the purposes for reading onto a continuum. On one end of the continuum is reading for pleasure, or *aesthetic* reading. One the other end of the continuum is *efferent* reading, the goal of which is to gain meaning. When readers read, they are tending to these two different reading stances. Successful readers need to understand the purposes and usefulness of both types of reading, and be able to utilize the one—or a blend of both—that supports deeper textual reading depending on the reading purpose. The transaction between reader and text create a continuous interplay between what is new to the reader and what the reader already knows, building deeper understanding and supporting increased metacognitive awareness. Deep comprehension of connected text and making connections to prior knowledge are both measured on the NAEP. One way that teachers foster the transaction

between text and reader is by providing children with the opportunity to engage in voluntary reading during the school day.

Reading Achievement and the NAEP

Reading achievement is considered a key ingredient to future educational skill attainment (USDOE, 2002b). Reading is a fundamental skill needed for success in areas such as math and science. Additionally, reading is considered an important component of a world-class education and is considered to be critical in the advancement of globally competitive workers (USDOE, 2012). The NAEP is one way the reading achievement of American children is measured.

The NAEP—released under the title *The Nation's Report Card*—is the largest ongoing nationally representative assessment of what American children know and can do in core subject areas (NCES, 2011). The NAEP is mandated by Congress and is administered by a division of the United States Office of Education.

The NAEP uses a multistage cluster sampling design to collect data that are representative of the geographic, racial, ethnic, and socioeconomic diversity of school and students in the United States. The core subjects of mathematics, reading, science, and writing are assessed every two years; other subjects such as arts, civics, economics, geography, and United States history are assessed less frequently. The NAEP is administered to students at the intervals of fourth, eighth, and twelfth grades. In 2011, approximately 213,100 fourth graders participated in the NAEP assessment for reading. Additionally, survey questions are given to students, teachers, school district officials, and school administrators. The teacher questionnaires ask specific questions related to the

type of reading instruction provided, as well as the amount of time spent on various reading activities including voluntary reading. School level questionnaires ask schools whether their reading block is structured using a commercial reading program. Because of the wide reach of the NAEP in both sample size and diversity of participants, NAEP scores can be used to find associations between in-school voluntary reading practices and reading achievement on a large scale. Due to the type of data collected, variables of ethnicity and socioeconomic status can be analyzed to determine how much time students in each respective category spend in-school voluntary reading, as well as whether the differences provided to students of varying ethnic groups and income levels to voluntarily read during the school day can be associated with reading achievement levels. Additionally, associations can be explored between ethnicity or socioeconomic status and whether students attend a school that uses a commercial reading program as the main delivery for reading instruction.

On the fourth grade NAEP, children read literary stories and informational texts that are between 500-1,000 words in length. Of the 31 questions on the 2011 NAEP fourth grade reading assessment, 11 required students to analyze literary texts while 20 required analysis of informational texts. The emphasis of all questions is on constructing meaning; students answer open-ended questions with both short and long written responses (NCES, 2011b). To be successful on the NAEP reading assessment at grade four, students must be able to construct meaning from *extended text* or multiple texts connected by topic, theme, or author. More specifically, this means that students may have the following five skills:

- Understand the simple meaning from a text;
- Integrate new information from a text with existing background knowledge;
- Self-monitor during reading;
- Synthesize information from multiple texts;
- Compose a well-organized written answer (Lorch & van den Brock, 1997; Pressley, 1997).

The findings are reported out on a proficiency scale, which ranges from 0-500 and categorizes student achievement into three categories: Basic, Proficient, and Advanced. The *Basic* category refers to students who attain partial mastery of prerequisite knowledge and skills that are considered essential at the measured grade level. The *Proficient* level refers to solid understanding and competence of grade-level challenging material; *Advanced* refers to students who demonstrate superior performance. Students can also score lower than the Basic category and are referred to as "below Basic." Table 2.1 illustrates the cut scores used for each category.

Table 2.1

NAEP: Fourth Grade Reading Cut Scores

Below Basic	Under 208
Basic	208
Proficient	238
Advanced	268

The number of students scoring below the Basic category in 2011 is high. Table 2.2 shows the 2011 NAEP fourth grade reading scores and the percentage of students performing at each category. Thirty-three percent of students scored in the below-Basic

category, meaning that according to the NAEP these students were unable to demonstrate partial understanding of the prerequisite knowledge for their grade level.

Table 2.2

2011 NAEP Fourth Grade Reading Achievement: All Students

Achievement Levels	Percentage
Advanced	8
Proficient	34
Basic	25
Below-Basic	33

Achievement Gap: Ethnicity

One-third of school children from the overall participant pool scored below the Basic level on the 2011 NAEP. However, a closer look at the 2011 NAEP fourth grade reading scores shows a gap in achievement between white, Black, and Hispanic children. This gap is illustrated in Table 2.3.

Table 2.3

2011 NAEP Fourth Grade Reading/Percentages by Ethnicity

Category	White	Black	Hispanic
Advanced	11	2	3
Proficient	44	17	18
Basic	23	30	30
Below-Basic	22	51	49

Eighty-one percent of Black students and 79% of Hispanic students scored below the proficient level on the 2011 NAEP fourth grade reading assessment. In contrast, 45% of white students failed to score at the proficient level on the same measure of achievement. Regardless of ethnicity, the fact that 58% of all American children scored below Proficient is reason for concern. The statistically significant gap between the achievement levels of white and non-white students warrants further investigation.

Achievement Gap: Income Level

NAEP scores show a discouraging pattern of achievement levels for children from varying income levels. In Table 2.4, the average 2011 NAEP score is shown by income level. The average score for children who qualified to receive free school lunch was 206, while their more affluent peers who did not qualify to participate in the NSLP had average scores of 235.

Table 2.4

2011 NAEP Fourth Grade Reading/Average Score by Income Level

Participation in the NSLP	Average Score
Qualify for Free Lunch	206
Qualify for Reduced-Price Lunch	218
Do Not Qualify for NSLP	235

According to the 2011 NAEP, 74% of fourth grade children scoring in the bottom quartile qualified for free and reduced lunch, while only 23% of the children scoring in the top quartile received free or reduced lunch services (NCES, 2011b). The statistically

significant gap between the achievement levels of children from differing income levels warrants further investigation.

Sustained Silent Reading

When soccer players want to improve their skills, they must put foot-to-ball and practice. Much is the same with reading: The best way to become a better reader is to read (Krashen, 2004). Reading practice improves word and phonics knowledge (Goodman & Goodman, 1979), and helps build background knowledge that children use to gain meaning from text (Krashen, 2004). There are specific educational terms used to describe in-school reading. Possibly the most commonly used term is *sustained silent reading* (SSR), which is the dedicated time within the school day set aside for students to read silently. The basic principle behind SSR is that improvement takes practice, and time spent reading silently is one way readers improve. The term SSR originated in the 1960s when Lyman Hunt of the University of Vermont put forth the goal for schools to provide time each day for students to read silently without interruption (McCracken, 1971). McCracken (1971) himself built upon this idea when he outlined steps for initiating sustained silent reading in the classroom and called silent reading the practice necessary for children to learn to read.

Since the inception of SSR, there have been many adaptations and modifications made. In the 1980s, a body of research on reading comprehension—coined "the proficient reader research"—focused on strategies that readers use when making meaning of text (Afflerbach & Johnston, 1986; P. Anderson & Pearson, 1984). The proficient

reader research led to the addition of instructional strategies during SSR in some classrooms. In a synthesis of the research on silent reading, Garan and DeVoogd (2008) described the implementation of SSR as a "continuum" where on one end is free reading in which students choose their own books and read without assessment or instruction. On the opposite end of the continuum are classrooms in which the teacher tracks the books students read, assesses student learning from text, offers reading instruction, and facilitates discussion. Regardless of the structure, SSR is connected to improved meaning making (Garan & DeVoogd, 2008).

Although there are variations to how SSR is implemented, independent reading is a critical element. *Independent reading* is a term often used interchangeably with SSR. The hallmark of independent reading is for students to read on their own, mainly from books of their own choosing. At times during independent reading, students may read books related to a specific topic or connected to a specific theme. One difference between independent reading and SSR is that sometimes during independent reading it is not silent: Students might read with partners or read books aloud to themselves or others (Weaver, 2002). The term *free voluntary reading* is used to describe reading for pleasure (Krashen, 2004). Free voluntary reading is a form of SSR where students read books of their choosing with little additional instruction. Regardless of the terminology used— SSR, independent reading, free voluntary reading—teachers often teach children strategies for book choice so students are reading books that are both accessible and personally interesting (C. Anderson, 2000; Five & Egawa, 1998; Pilgreen, 2000).

Matthew Effects: How Good Readers Get Better

Reading is a foundational skill that is built upon during further years of schooling. In a synthesis of reading research, Stanovich (1986) described the "Matthew effects" of reading development. A Matthew effect is a Biblical reference to the accumulated advantage of a person with abundance who gains even more while someone without much has even less (Matthew 25:29). Stanovich applied the idea of accumulated advantage to children who struggled with initial reading development and then later struggled elsewhere in school. Although Stanovich found a developmental range in reading acquisition, the longer the developmental sequence, the more generalized the deficits became. Stanovich found, "Small achievement differences that appear early can be the genesis of large differences later in development" (p. 393). Deficits "seeped" into more and more areas of cognition and behavior as the student grew older.

In the area of reading and literacy development, the concept of a Matthew effect springs from findings that individuals who have advantageous early educational experiences are able to utilize new educational experiences more efficiently; students who are already achieving learn at a higher rate than students who start behind. Stanovich (1986) argued that students who start school lacking levels of phonological awareness that allow them to swiftly crack the reading code may evoke an instructional environment that will further inhibit learning to read, such as skills-focused programs; he refers to this as the poor getting poorer and explains some of the consequences of individual differences in the acquisition of literacy.

The nationally-commissioned study, *Preventing Reading Difficulties in Young Children* (NICHD, 2000), reinforces Stanovich's "rich-get-richer/poor-get-poorer"

supposition. The report found that young children who are behind in reading achievement struggle throughout the rest of their school years, and many of these struggling readers do not graduate from high school. Other studies support Stanovich's findings (Schwanenflugel et al., 2009; Ysseldyke & Algozzine, 1983). The amount of time children spend reading is an important contributing factor in Matthew effects. When struggling readers are provided less time to read, they encounter fewer words and fall further behind—and get poorer than—their more able peers. Stanovich (1986) found a direct correlation among increased amounts of reading, increased vocabulary acquisition, and greater comprehension.

Improved Reading Achievement

In the following sections, I discuss three commonalities found to positively impact reading achievement, which include but are not limited to: time and opportunity provided for children to read, the volume of words and pages a child reads, and the reading of engaging text. Additionally, I discuss how opportunities to engage in voluntary reading during the school day might assuage the effects of accumulated advantages on the achievement levels of children from differing income levels and ethnic backgrounds.

Opportunity to Voluntary Read in School

The opportunity to read contributes to reading achievement (Krashen, 2004). The National Reading Panel found that correlational evidence demonstrated that the amount of time students spent reading was a major predictor of reading achievement (NICHD, 2000). The National Reading Panel reviewed 82 studies related to SSR and increased levels of reading achievement. The majority of the studies found that the best readers

read the most and poor readers read the least; however, the panel could not determine whether there was causality between SSR and improved reading achievement—whether students became better readers through reading or if better readers just tend to spend more time reading. That said, the National Reading Panel did determine that there is a positive relationship between how much a student reads and their vocabulary and general knowledge of the world, which are two important contributors to reading achievement (NICHD, 2000, pp. 3-21).

Findings from the influential NICHD commissioned report *Preventing Reading Difficulties in Young Children* (Snow et al., 1988) suggest that authentic reading opportunities are important for reading achievement, contributing to the development of skills related to linguistics, decoding, comprehension, and writing. In a meta-analysis of research in the field of reading, the NICHD report made five reading instructional foci recommendations, two of which involve frequent opportunities to read and interact with text (NICHD, 2000).

Time to Read in School

In-school silent reading positively impacts reading achievement levels (Krashen, 2004). In 1993, a study was conducted on 125 high school students acquiring English and their experiences with in-school silent reading (Pilgreen & Krashen, 1993). The participants spent 16 weeks engaged with a SSR program that involved 12 to 15 minutes of SSR each school day. Additionally, students were encouraged to read outside of school. Students were introduced to a variety of books they could read at school or take to read at home. At the end of the 16-week period students demonstrated gains in reading

comprehension on a standardized comprehension assessment. Additionally, the students reported that they read more often and for longer periods than they did prior to involvement with the reading program. Pilgreen and Krashen found that through voluminous reading of high interest reading materials, students enjoyed reading more and read a wider variety of texts. The results suggested that voluntary reading is an effective way to increase literacy development for students acquiring English (Pilgreen & Krashen, 1993).

In an analysis of research related to free-reading and late interventions for struggling readers, Krashen and McQuillan (1996) showed that children who read more not only became better readers, their prowess stretched to other areas too. Students who read more were also the students who were better writers, better spellers, and developed superior grammatical competence and larger vocabularies (Krashen & McQuillan, 1996).

SSR studies confirm that reading itself is a motivator. Those who participate in SSR read more on their own than those who do not (Greaney & Clarke, 1973; Pfau, 1967; Pilgreen & Krashen, 1993). In a longitudinal study of middle school boys, Greaney and Clarke (1973) found that boys who had participated in an in-school free reading program read more six years later than did children who did not participate. Stephen Krashen writes, "The major problem facing the poor reader is lack of access to books and other interesting reading material. This intervention is simple: providing children with lots of good reading material, and the time and place to read," (Krashen & McQuillan, 1996, p. 416).

In a longitudinal study of low-income first and second grade students, researchers attempted to answer the question, "Under what conditions can elementary school students in high poverty schools become successful readers?" (Foorman et al., 2006). The participants in this study included 1,285 children from eight schools in Houston and nine schools in Washington, DC. Schools were chosen based on the need for school reform, as identified by the Houston superintendent and the DC school board. All of the schools fell into a NSLP participation range of 84-100%; at least five schools had 100% of their students receiving free or reduced lunch. There were 682 first graders and 603 second graders in 107 classrooms; 95% of the students were African American, while 4% were Hispanic. The researchers analyzed the types of activities teachers used during the literacy block. The literacy block ranged between 90 to 120 minutes for literacy instruction, depending on the school. At one-minute intervals, researchers noted what type of activity was taking place in the classroom. The researchers identified 20 types of activities—which they referred to as time allocation variables—including grammar, vocabulary, phonemic awareness, letter recognition, reading books, reading comprehension, spelling, and oral language. The researchers used a variety of methodologies, including hierarchical linear modeling, to find the correlation between the amount of time spent on a literacy activity and students' achievement on two measurements, including end-of-year achievement on standardized reading and spelling tests. Out of the 20 measured variables, the researchers found that time allocated for reading books was the only variable that explained gains in reading achievement levels; other variables indicated positive impacts on spelling measures (Foorman et al., 2006).

Other studies have determined that when children spend time reading, their achievement levels increase. Taylor, Frye, and Maruyama (1990) considered the relationship between time spent reading and reading achievement. Participants included 195 students in 11 fifth and sixth grade classrooms. During their 50 minute reading class, students kept daily reading logs for 17 weeks in which they reported whether they were reading an assigned text or a self-selected text during in-school reading time. In-school reading time for participants could include either reading a book assigned by the teacher or reading a book selected by the student during the silent reading time. Students kept separate records for minutes of assigned reading versus self-selected reading. Additionally, the researchers worked closely with participating teachers to teach students how to accurately complete the reading logs. Each day for the duration of the study, teachers repeated lessons with students on how to track their reading and monitored students as they filled out the reading logs. Students were discouraged from retroactively filling in the reading logs. To determine the correlation between the amount of time children spent reading and reading achievement, researchers used a multiple regression analysis. The findings indicated that the amount of time students spent reading at school was significantly related to gains in student reading achievement (Taylor et al., 1990).

Volume of Words and Pages a Child Reads

As described previously, how much time children spend reading in schools makes a difference in their achievement levels (Morrow, 1996; Taylor et al., 1990) and the presence, or lack thereof, of opportunities to read silently in school predicts reading achievement (Foorman et al., 2006; Guthrie et al., 2001; Taylor et al., 1990). While

opportunity to read silently during the school day is an important factor in reading achievement, the volume of reading (which can be measured in the number of words a student encounters or the number of pages read) makes a difference, too. Voluminous reading—reading a lot—is a cornerstone of reading achievement. People who spend time reading a lot are those who become better readers (Duke, 2000; Neuman & Celano, 2001). Additionally, studies have found that the more children read, the more their fluency, vocabulary, and comprehension improve (Duke, 2000; Neuman & Celano, 2001; Stanovich, 1986).

In a three-school study of 271 fifth grade students and 154 third grade students, Guthrie, Wigfield, Metsala, and Cox (1999) analyzed collected data from a previous longitudinal study to investigate (among other questions) to what extent comprehension was predicted by reading volume. When past achievement, prior topic knowledge, self-efficacy, and motivation were controlled, reading volume predicted text comprehension on standardized assessments (Guthrie et al., 1999). Students who read more pages tended to score at higher levels on tests of comprehension at the passage level, as well as score higher when using multiple texts to learn concepts (Guthrie et al., 1999).

Research conducted on the amount children read indicates that encountering more words makes a positive impact on achievement, as does the amount of time children spend reading. Volume of reading is a strong mechanism for school performance in literacy, including vocabulary attainment—considered an important element for reading development by the National Reading Panel (NICHD, 2002) and a component of reading measured by the NAEP. Stanovich (1986) concluded that vocabulary knowledge

contributes to reading comprehension. Although some words can be taught directly, most vocabulary growth comes from reading (R. L. Anderson, Fielding, & Wilson, 1988). In a study of vocabulary acquisition, Nagy and Anderson (1984) found that the bulk of vocabulary growth does not occur via direct instruction. Instead, most vocabulary growth takes place through the inductive learning of the meaning of unknown words encountered in oral and written language, including through reading (Nagy & Anderson, 1984). The differences in in-school text exposure begin to accumulate by the middle of first grade, and continue throughout a child's school experience. Nagy and Anderson found that less-motivated middle school students might read 100,000 words per year, an average child might read 1,000,000 words per year, but a voracious reader might read 10,000,000-50,000,000 words per year (Nagy & Anderson, 1984).

Opportunity to Read + Reading Engagement = Improved Reading Achievement

In pursuit of answers to questions about whether reading engagement predicts reading achievement and the extent to which opportunity to read contributes to reading achievement, Guthrie et al. (2001) found that highly engaged readers had higher achievement levels than moderately engaged readers. In a Maryland study of the 1994 NAEP Trial State Data fourth grade reading assessment, Guthrie et al. found that students who scored in the highest levels on the NAEP were those whose teachers provided time for engaged reading (Guthrie et al., 2001). The foundation for the study was based on an engagement model of reading previously identified and explored by Guthrie and Wigfield (2000). Guthrie and Wigfield defined *engaged reading* as the joint functioning of motivation, strategy use, and conceptual knowledge during reading. The investigation

considered opportunities to read in the classroom, as measured on NAEP questionnaires. Guthrie et al. looked at the 1994 Maryland Grade 4 NAEP student questionnaire in which students were asked how many pages they read in school each day. When considering the NAEP assessment scores, a positive association was found between students who reported having more opportunities to read and achievement scores. When accounting for gender and mothers' education, moderately engaged readers had higher achievement levels than students with low engagement. Even students whose mothers had low levels of education but were at least moderately engaged had higher achievement levels than students whose mothers had higher levels of education but were disengaged readers. After mothers' education was controlled, Guthrie et al. (2001) found that the amount of engaged reading significantly predicted reading achievement on the NAEP. The researchers found that students who read 11 or more pages in school each day had higher achievement levels than students who reported reading 6 to 10 pages each day. Students who reported reading less than five pages each day had the lowest achievement levels (Guthrie et al., 2001). Additionally, the opportunity to read influenced engaged reading after controlling for gender. "Teachers who provided students with more opportunity to read in the classroom and encouraged wide reading had significantly more highly engaged readers" (Guthrie et al., 2001, p. 157). Guthrie et al. wrote, "for minority students, a high level of opportunity to read produced a reading engagement level that exceeded the engagement level of the White and Asian group given moderate opportunity to read" (p. 158).

The Guthrie et al. (2001) study included 577 participants, all from the state of Maryland. However, as noted earlier, reading instruction during the literacy block has changed since 1994 (Brenner & Hiebert, 2010; USDOE, 2002a). With literacy block changes affecting children across the United States—and with flat NAEP assessment scores—taking a closer look at the associations between ethnicity, income levels, reading opportunities during the school day, and achievement scores with a larger group of students is warranted.

Reading Enjoyment

When it comes to the topic of reading, volume matters (Guthrie et al., 2001; Morrow, 1996; Taylor et al., 1990). However, the question persists of *what* materials children should read. Whereas some educators are convinced that children should repeatedly read stories from core reading programs or other forms of text that focus on specific letter sounds (decodable readers), others maintain that students read more frequently—and in turn have higher levels of reading achievement—when reading engaging text. Children need frequent opportunities to read in order to improve their reading; achievement is raised when children read books in which they show interest (Guthrie & Alao, 1997). Guthrie and Alao (1997) explored the impact of classroom design on student reading motivation, building on Wigfield's (1977) previous work related to intrinsic motivation. Wigfield specifically wrote about three aspects of intrinsic motivation: Goal orientation, self-efficacy, and social interaction. Guthrie and Alao considered what *design principles* would increase the three intrinsic motivators in classrooms. Guthrie and Alao described design principles as environmental

characteristics found in classrooms that are controlled by teachers, such as activities, texts, and relationships that can be reliably observed and reported. Through an extensive literature review, the researchers identified eight design principles thought to increase reading motivation. Guthrie and Alao implemented the eight design principles in classrooms over a 3-year period—one classroom the first year, four classrooms the second year, and six classrooms the third year. The experimental classrooms included second and fifth grade students; there were five comparison classrooms, as well. They found that students were more intrinsically motivated to read texts that they found interesting and that intrinsically motivated students increased their reading achievement levels at a higher rate than did students who demonstrated less intrinsic motivation (Guthrie & Alao, 1997).

According to Allington (1983b), the types of reading instruction provided for less-skilled readers are of worse quality as compared to the instruction provided to more highly-skilled readers. Through observations of elementary classroom reading groups, Allington noted that good readers tended to have more opportunities to discuss the stories they read. Less-skilled readers were more likely to focus on decoding than on meaning making. Allington also found in his observations that younger good readers had more opportunity to make meaning from text than older less-skilled readers—who more often received instruction focused on words and letters. It is worth noting that Allington advocated for more research into the differences in instruction provided to less-skilled and more highly-skilled readers.

In a meta-analysis utilizing 22 studies conducted between 1951 and 1994, Schiefele (1999) looked for correlations between student interest and learning from text. Schiefele defined *interest* as *intrinsic feeling-related beliefs*. The 22 studies chosen had to meet the following criteria: First, studies had to use *coherent* text (text from which meaning could be derived) or sentence reading (versus single word reading). The text length ranged from 1 to 10 pages. Second, all the studies had to include a measure of interest; most of the included studies measured the student's interest in the text prior to student reading. And finally, all studies had to use a test to measure understanding after the reading. An average correlation of .27 between interest and text learning was found ($p < .01$). Students who were interested in the materials they read processed those materials more deeply than did students less interested in what they were reading. Other studies had similar findings (Juel, 1988; Torgeson, 1985). In a study of 54 children, Juel (1988) examined whether children who started out as poor readers and writers in first grade remain poor readers and writers at the end of fourth grade. Juel took both decoding and comprehension into consideration in her identification of children as *poor readers* and *poor writers*. Many measures were used in Juel's study, including tests of phonemic awareness, decoding, word recognition, listening comprehension, reading comprehension, and spelling. Interviews, observations, and prompts were used to measure writing, attitude toward reading, and home reading behavior. Twenty-nine children were reading at the kindergarten level at the end of first grade; 24 of these children remained at the school for the duration of the study. At the end of fourth grade, these 24 children remained reading below grade level. Juel determined that the

probability of a child reading below grade level at the end of first grade remaining a poor reader at the end of fourth grade was .88. In a discussion of the factors that seemed to keep poor readers from improving, Juel noted that poor readers did very little voluntary reading. In interviews, only five fourth grade poor readers responded that they liked to read. Many noted that they did little reading because they "hated reading" or because of previous negative reading experiences. Overall, poor readers disliked reading and found it boring (Juel, 1988).

Choice and a Variety of Text in the Literacy Block

Having a choice in what one reads matters. Students who have a choice in what they read are more engaged (Guthrie et al., 2001; Oldfather, 1993). *What* children are reading during the literacy block makes an impact on student interest and engagement, as well (Reutzel, Fawson, & Smith, 2008). Reutzel et al. (2008) wanted to see if SSR would be as effective for supporting fluency and comprehension as traditional guided reading groups. In a study of 72 third grade students in two high-poverty schools, the researchers compared fluency and comprehension measures between two groups of randomly assigned students: One group that participated in what the researchers termed *scaffolded* silent reading. The researchers defined scaffolded silent reading as silent reading of a wide variety of independent-level texts in multiple genres while teachers monitored and interacted with students. Students were required to turn in assignments to verify that they were reading during the silent reading time. In the silent reading classrooms, students read from a selection of texts provided to them by the teacher. The second group participated in traditional guided reading groups where they repeatedly read aloud a

single text three to five times each week while receiving feedback from the teacher and other peers (Reutzel et al., 2008). The researchers used multiple quantitative measures of accuracy, expression, and comprehension to measure growth between the two groups. Observations and interviews were also used. The quantitative findings suggested that both groups showed gains in achievement. However, there were no significant differences in fluency gains or comprehension levels between the two groups, affirming scaffolded silent reading as an alternative to guided reading groups. The qualitative findings indicated that students who participated in the scaffolded silent reading were more engaged and motivated. The researchers suggested that using one text repeatedly— as in the traditional rereading of the same book for one week as a guided reading practice—might cause tedium for readers (Reutzel et al., 2008).

In a similar study, Kuhn (2004) examined the reading practices of second grade students and found comparable results. Kuhn's study compared achievement levels between students who participated in a repeated oral reading fluency group to those of children who participated in a group that engaged with a variety of texts. Twenty-four second grade students who had been identified as reading at or below the first grade level were included in the study. Kuhn used the Qualitative Reading Inventory to measure prosody, automaticity, and comprehension levels of the students both before and after their participation in the groups. A control group of students participated in the regular classroom literacy activities. The students in the repeated oral fluency group followed the weekly process of echo reading (i.e., listening to their teacher read one line of a story and then repeating what the teacher read), then choral reading the same story, rereading the

story with a partner, and then choral reading the story again at the end of the week. In contrast, the group that engaged with a variety of texts started the week either echo or choral reading a story with the teacher, then spent the rest of the week reading texts of their choice (chosen from 18 titles preselected by the teacher). Kuhn found that students in both groups increased achievement levels in both prosody and automaticity when compared to the control group; however, the group that engaged with a variety of texts also demonstrated increased levels of comprehension not found in the repeated oral reading fluency group (Kuhn, 2004). Additional findings concluded that students reading texts at their reading and in which they were interested were more engaged with the reading material than were students whose reading was teacher-directed.

In an experimental study of the influence of wide reading on students' fluency levels and the correlation of fluency levels with achievement, a team of researchers compared the effects of two approaches to reading instruction over the course of one year on standardized outcome measures (Schwanenflugel et al., 2009). The researchers examined two differing approaches to fluency instruction—Fluency Oriented Reading Instruction (FORI) and wide reading—to determine the benefits of each on short-term reading skills, motivation to read, and whether there were long-term benefits that could be associated with each approach. The study included 537 second grade students across 42 classrooms. Ten of the classrooms used the wide reading approach, 20 used FORI, and 12 served as control groups. Each classroom was analyzed to see whether students had the opportunity in a given week to interact with more than one text. In the FORI classrooms, teachers used the core reading program in which the students spent the week

focused on reading one story, rereading it in a variety of formats (choral reading, partner-reading, teacher-led reading, etc.) each day of the week. In the wide reading classrooms, teachers used the lead story from the core reading program but also provided time for students to read a broad variety of materials on an assortment of topics. Both programs included fluency instruction and practice. Researchers used measures of word reading efficiency (Sight Word Reading Efficiency), oral reading fluency (GORT-4), reading comprehension (WIAT), and motivation to read (Motivation to Read Profile) both at the beginning of the school year and at the end of the study. Researchers used classroom observations to verify the instructional approach used in the classrooms. Among other findings, the researchers found that second grade students who participated in wide reading classrooms and thus read several texts in addition to the text in the core program performed as well or better on the efficiency, fluency, and comprehension measures than students who read the program text repeatedly (Schwanenflugel et al., 2009).

Brenner and Hiebert (2010) considered the teacher's editions of the most widely purchased core reading programs. They found that when teachers follow the teacher's editions of core reading programs, students spend more time in teacher-directed reading activities than they spend reading independently. Instructional structures recommended within the core reading programs included "round robin" reading, which provides very limited time for children to read (Brenner & Hiebert, 2010). Within the reading block, children spend time answering main idea questions; however, there is no evidence that direct recall skills will transfer to more global reading comprehension skills, according to a separate study by Applegate, Quinn, and Applegate (2002). An Informal Reading

Inventory (IRI) is a type of assessment tool used commonly in schools to determine a child's instructional needs. Applegate et al. considered eight of the most widely used and cited Informal Reading Inventories to determine what types of comprehension questions were asked of children in an attempt to connect what type of comprehension students are taught most frequently (Applegate et al., 2002). The researchers categorized 900 test items and found that 91% of the questions on the assessments either required students to recall directly stated information or make low-level inferences. The researchers advocated for comprehension instruction to focus less on the reproduction of the author's thinking and focus more on the integration of what students read with what students already know (the integration between what is new and what is known contributes to the deep comprehension measured on the NAEP assessment). As a result of their findings, the researchers cautioned that teaching students through the use of low-level recall questions does not prepare children for more advanced critical thinking (Applegate et al., 2002).

Access to Print: Why Children Need to Read at School

Providing time for children to read in school is important. Many low-income children have little access to print resources outside of school. A study of children with limited access to print found that when provided with materials to read, children read more (Allington & McGill-Franzen, 2003). Researchers found that when children without opportunities to read are provided with access to reading materials they enjoy, their motivation to read increases, as does their reading achievement (Coats & Taylor-Clark, 2001).

People living in low-income communities tend to have fewer opportunities to access print resources (Coats & Taylor-Clark, 2001; McQuillan, 1998; Neuman & Celano, 2001). In a qualitative study comparing low-income neighborhoods and middle-income neighborhoods, Neuman and Celano looked at the number of businesses selling children's reading materials, posted signage, as well as the availability of public spaces for reading. In poor neighborhoods, there were significantly fewer words, signs, and public spaces for reading than in neighborhoods with middle-income families. The researchers found that poor children had to actively seek out opportunities to engage with print. In contrast, their middle-income peers were inundated with print resource encounters (Neuman & Celano, 2001). Even public libraries in low-income neighborhoods are not equal to those in middle-income areas. Low-income neighborhood libraries tend to have fewer books per child and books of poorer quality. They are also open for fewer evening hours than are libraries in middle-income communities, which tend to disenfranchise working class families with non-traditional working hours (Neuman & Celano, 2001).

With fewer print resources available within the community, times when school is closed—such as summer vacation—are especially problematic for low-income children and their reading. Coats and Taylor-Clark (2001) conducted a qualitative study of 12 low-income children for whom they provided materials to read during the summer. They found that when children who typically do not have opportunities to read during the summer are provided with access to reading materials they enjoy, their motivation to read increases, as does their reading achievement. Additionally, Worthy and McKool (1996)

found that reluctant readers are often those with less access to books; providing books to children during the summer is one way to increase motivation levels as well as maintain reading achievement levels.

While low-income children tend to show a decline in their reading achievement levels during the summer, this is not the case for all students. Children from more affluent homes maintain their reading achievement levels during the summer or even show slight gains when they return to school in the fall (Allington & McGill-Franzen, 2003; Schacter, 2003). These children have increased access to print resources within their communities. Additionally, children from affluent families have more books in their homes than do lower socioeconomic status students have access to in their homes, communities, and schools combined (Smith, Constantino, & Krashen, 1997). If poor children have less access to print resources outside of school, then they need time in school devoted to reading. However, within a literacy block that uses a core reading program and where the teacher follows the teacher's edition, there is limited time for in-school voluntary reading.

The Reading Block: How Time Spent Reading Impacts Reading Achievement

The differences in access to print resources outside of school between low-income children and their more affluent peers underscores the need for more time spent in school for voluntary reading. Unfortunately, it is low-income children who have been disproportionately impacted by mandates that require adherence to a scripted curriculum that often leaves little time within the literacy block for SSR (USDOE, 2002a). Children in classrooms with a mandated structured literacy block have fewer opportunities to read

during the school day (Allington & McGill-Franzen, 2003). Increases in the amount of time children spend reading also increases reading achievement. The best readers spend about 500% more time engaged in reading than do the least proficient readers (Guthrie, 2004); however, in a study of 36 classrooms, Kurth and Kurth found that students in first, third, and fifth grade engaged in silent reading for only 10 minutes out of a 60-minute reading block (Kurth & Kurth, 1987).

Commercial Reading Programs: Impact on SSR

The following arguments have been made so far: Children who are provided more time in school to read are better readers; children who read more pages encounter more words; children who encounter more words have deepened comprehension; children who have choice in their reading material, read more; children who read more for pleasure spend more time reading. Literacy policy mandates meant to combat depressed reading achievement levels and address the achievement gap include the NCLB Reading First grant program (USDOE, 2002a). One Reading First funding requirement was the restructuring of literacy instruction into a block of at least 90 minutes. The literacy block addressed reading instruction through the use of scientifically research-based reading programs that present reading as a systematic skill sequence made up of phonemic awareness, phonics, fluency, comprehension, and vocabulary. However, within the literacy block no time was built in for students to read books of their interest and at their instructional level, an important element for improved reading performance (Allington, 2004; Torgeson, 2000). To receive grant funding (or for Title One schools to maintain their funding levels) each school or school district was required to purchase a

comprehensive core reading program. Commercial reading programs—often referred to as "core" reading programs—include reading lessons and materials. Reading First implementation documents (USDOE, 2002a) indicate that teachers were advised to use the core reading program with *fidelity*, meaning that they needed to follow the teacher's edition as it was written. Although research exists regarding the use of several elements included in the core reading program, there are no studies in existence that validate the entirety of any core reading program, even at an individual grade level (Brenner & Hiebert, 2010).

Brenner and Hiebert (2010) conducted an analysis of six of the leading core reading program teacher's editions to see how many words were available for students to read if the teachers used the program with fidelity. The study looked at the third grade core reading programs and considered the amount and kind of reading that children were asked to do. The researchers were interested in the volume of text provided by the core reading program for third graders. Additionally, the researchers considered the types and amounts of reading experiences students would have with these texts when their teachers followed the teacher's edition. The researchers were interested to see the volume of text and opportunity to read recommended for students who "are the focus of national and state initiatives and mandates such as Reading First—the students who are at below-basic level on the NAEP" (p. 351). The research questions studied were: (a) What is the volume of words provided in the core reading program student texts? and, (b) How many words and for how many minutes would students read—or possibly reread—if their teachers followed the guidance of the teacher's edition? A core reading program comes

with a variety of materials, including an anthology of stories, as well as what are considered essential components: decodable readers, guided reading or leveled texts. Other ancillaries include "big" books, songbooks, phonics flashcards, vocabulary workbooks, and CD-ROMS. The teacher's editions can be as long as 2,350 pages.

The reading block prescribed by Reading First could range from a minimum of 90 minutes to above 180 minutes per day. Brenner and Hiebert (2010) found that within a 90-minute reading block, there were actually very few minutes spent on reading. The core reading program with the highest number of minutes for students to read provided 24.4 minutes of reading per day; the core reading program with the lowest number of minutes for students to read provided just 10.2 minutes of reading per day. The mean among the programs was 16.7 minutes of reading per day. Multiplying the amount of time allocated for reading within the programs with the number of words a student would encounter during the reading block, the total words available for students to read was an average of 85,005 words per school year if the teacher worked through all 30 of the lessons included in the programs. The number of words encountered by students ranged between 57,870 and 96,450 (Brenner & Hiebert, 2010). Although the volume of words needed for reading growth is unknown, the average of 85,005 words is based on 16.7 minutes of reading during the literacy block. The researchers' findings suggest that while core reading programs contain a wide variety of suggested strategies and activities, they may not provide sufficient text or volume of reading to improve achievement, particularly for the lowest-performing students.

If low-income children do the majority of their reading at school, do the core reading programs provide enough reading for students to make gains? In Juel's (1988) longitudinal study of 54 children mentioned earlier, Juel also found that in schools where basal readers were used, there was a large discrepancy between the number of words read by students with varying reading abilities. By the fourth grade, good readers had read 178,000 words while their struggling peers had read only 80,000 words in school. At the end of the study, children who started out in the lowest reading groups remained in those same groups (Juel, 1988). In a 1984 study, Allington looked at the number of words first grade children encountered during school. He found that the average skilled reader read approximately three times as many words in a group reading session as an average low-skilled reader. The lowest reader in the Allington study read 16 words in a week while the most-skilled reader encountered 1,933 words. In an analysis of reading comprehension, Krashen (2004) found that when comparing reading comprehension achievement scores, 93% of students who were assigned more reading or allocated more reading time in school, performed as well or better than students who did not have the added assigned reading or time allocated for reading. Replacing whatever went on in classrooms with added reading time was just as effective as, or more effective than, traditional instruction in enhancing reading comprehension performance (Krashen, 2004).

As stated earlier, Reading First classrooms were required to allocate a minimum of 90 minutes to the literacy block. But within that block of time, students are spending very little time actually reading (Calkins, Montgomery, Santman, & Falk, 1998). In contrastive studies of the reading instruction provided in first grade classrooms, Allington

(2005) found that higher-achieving students spent approximately 70% of their

instructional time reading passages, responding, and discussing. In contrast, lower-

achieving students spent 37% of their time reading, responding, and discussing. For the

majority of the reading block, low-achieving readers spent their time on word

identification drills, letter-sound activities, and spelling and penmanship activities.

Lower-achieving readers simply read less during the day than their higher-achieving

peers (Pressley et al., 2001).

Reading Instruction: A Paradigm Shift?

Reading First policy and the reliance on core reading programs have left an imprint

on reading instruction across the country. As of June 2007, the Reading First grants

impacted over 6,000 schools in 1,700 school districts across the United States—10% of

the public school population (USDOE, 2009). In the Pacific Northwest region, 202

schools received Reading First funds. The report, *Three Year Report on Oregon Reading*

First: Impact and Implementation describes Reading First as a "paradigm shift in reading

instruction" (Oregon Department of Education, 2007) and encourages non-Reading First

schools to emulate the use of core reading programs. Core reading programs can be found

in elementary schools all across the United States—at the expense of time provided for

SSR. Although the Reading First grant program ended in 2009 core reading programs are

still used in schools. The 2011 NAEP fourth grade reading assessment data include some

children from Reading First schools where the opportunity for children to voluntarily

read in-school during the literacy block could have been curtailed. The 2011 NAEP

reading assessment at grade four will include students who have experienced literacy through the use of a core reading program.

Reading Achievement and Voluntary Reading: Importance of Further Study

The purpose of this study is to determine the impact of in-school voluntary reading practices on fourth grade students' achievement levels. An additional purpose for this study is to determine whether there are differences in the amount of time provided for voluntary reading at school for children from varied income levels or ethnic backgrounds, and whether those difference impact student achievement. Poor children have fewer choices in what they read, which is tied to reading motivation (Guthrie et al., 2006). Children who do not enjoy reading, read less; children who read more, tend to be better readers (Allington, 2005; NICHD, 2000). Unfortunately, the core reading programs could be negatively impacting the very students they were designed to support by encroaching on the time students are given to participate with in-school voluntary reading during the literacy block. This research attempts to isolate the effects of the in-school time provided for voluntary reading and to measure the likelihood that voluntary reading opportunities are associated with NAEP 2011 reading scores at the fourth grade level.

CHAPTER THREE

METHODOLOGY

Introduction

In the previous chapter, the importance of taking a closer look at the connections between in-school voluntary reading practices and student achievement as measured by the NAEP was established. In this chapter, the components of the research methodology for this study will be explained in detail.

Research Problem

The purpose of this study is to determine whether associations exist between in-school voluntary reading and students' reading achievement as measured by the 2011 NAEP reading assessment at grade four, as well as whether different in-school reading opportunities are provided to students based on ethnicity or income level. Students who achieve at higher levels on the 2011 NAEP reading assessment at grade four could be the children who spend more time voluntary reading during the school day. Time spent in-school voluntary reading positively impacts student achievement, as found on a variety of smaller-scale comprehension measures (Allington, 2004; Torgeson, 2000). The NAEP collected data from more than 210,000 American fourth graders in 2011. The NAEP is often used to guide policy-makers when creating educational policy for many reasons, including that the assessment is both long-standing, and large in sample size. However, SSR has been absent in recent literacy mandates. National legislation aimed at improving

reading achievement—federal grants such as Early Reading First which targeted children younger than kindergarten, Reading First which targeted children in kindergarten through grade three, and Striving Readers which targeted middle and high school students—often include regulations about the use of instructional materials as well as guidelines that require the purchase of materials from a state-approved list of commercial core reading programs. More than 10% of the public schools in the United States received Reading First funding (USDOE, 2009); these funds required the use of a scientifically research-based reading program, often referred to as a "core" reading program.

Brenner and Hiebert (2010) analyzed the teacher's editions in six commonly used commercial reading programs and found that the amount of time for students to read independently within the literacy block was a small proportion of the time allocated for reading instruction. Although using a commercial reading program does not preclude a teacher from providing time for children to read books of their own choosing elsewhere in the school day, schools that used commercial reading programs provided children less time to independently read during the literacy block. In some cases, the total minutes of reading provided to children when teachers adhered to the teacher's editions was less than 15 minutes of the 90-minute reading block (Brenner & Hiebert, 2010).

I reviewed five of the most commonly used core reading programs as identified by Brenner and Hiebert (2010) in their evaluation of teacher editions: Harcourt *Trophies* (Beck, Farr, & Strickland, 2007); Houghton Mifflin *The Nation's Choice* (Cooper et al., 2006); SRA *Open Court Reading* (Bereiter et al., 2007); Scott Foresman *Reading Street* (Afflerbach et al., 2008); and Macmillan/McGraw-Hill, *Treasures* (Flood et al., 2007)

using criteria set forth by the National Council of Teachers of English (2007) in the *Features of Literacy Programs: A Decision-Making Matrix*. This matrix is based on the findings of the Commission on Reading, a research branch of National Council of Teachers of English. Although there are differences among the reading programs, the structure and design are quite similar. One common feature of the core reading programs is the use of a 90 to 150 minute block of structured time dedicated to literacy instruction.

Using Scott Foresman's *Reading Street* (2008) as an example, there are four segments within the 150-minute literacy block: Oral language development, word work, reading, and language arts. According to the teacher's edition, during the 60-70 minute reading segment students use word walls to practice phonics, read decodable texts to practice decoding, fill in graphic organizers, reread lead stories from the anthology in groups, and participate in discussions around the weekly theme (Afflerbach et al., 2008). Within the reading segment of the block there is no time dedicated for students to participate in the voluntary reading of independently chosen texts, although teachers in Reading First schools can provide their students time for voluntary reading outside of the literacy block. As Brenner and Hiebert (2010) found, using a commercial reading program curtails the amount of time provided for reading during the reading block—and if policies that put forth commercial reading programs as the preferred instructional model for reading are propagated throughout schools nationwide—then these policies potentially limit opportunity to read silently in school during the literacy block.

Looking for associations between in-school voluntary reading and reading achievement—as well as the differences in literacy experiences offered to students in the

various subgroups measured by the NAEP—would allow for further understanding of promising approaches to reading instruction. Additionally, these connections could expose instructional inequities that could be contributing to the achievement gap. According to the 2011 NAEP "Data Explorer" (NCES, 2011b) schools with larger numbers of students qualifying for free and reduced lunch services through the NSLP have lower achievement scores for reading.

The NAEP measures reading and comprehension skills by providing participating students with grade-appropriate literary and informational reading selections for which they answer questions. The questions fall into three cognitive processing domains: Locate and retell; integrate and interpret; and critique and evaluate. Time to read voluntarily at school supports comprehension attainment and positively impacts achievement scores (Moser & Morrison, 1998; Taylor et al., 1990). The National Reading Panel determined that children who read more have larger vocabularies and greater general knowledge of the world, two important elements for reading achievement (NICHD, 2000, pp. 3-21). Stanovich (1986) concluded that vocabulary knowledge contributes to reading comprehension; most vocabulary growth comes from reading (R. L. Anderson et al., 1988). Additionally, studies have found that the more children read, the more their fluency, vocabulary, and comprehension improve (Duke, 2000; Neuman & Celano, 2001; Stanovich, 1986).

Research Questions

1. Do fourth grade students who identify as members of an ethnic minority (as identified by NAEP) have opportunities to read voluntarily in school as frequently as their white peers? Do fourth grade students eligible to participate

in the NSLP have opportunities to read voluntarily in school as frequently as their more affluent peers?

2. To what extent are the achievement scores on the 2011 NAEP reading assessment at grade four associated with the frequency of opportunities for in-school voluntary reading while controlling for other factors, such as participation in the NSLP and student ethnicity?

3. Do fourth grade students who identify as members of an ethnic minority experience literacy block structured using a commercial reading program more frequently than their white peers? Do fourth grade students who are eligible to participate in the NSLP experience literacy blocks structured using a commercial core reading program more frequently than their more affluent peers?

Data Sources

Two data sources were used for this research: 2011 NAEP reading assessment at grade four achievement scores, and data collected on the 2011 NAEP Fourth-grade Reading Background Questionnaires (Student, Teacher, and School.) The NAEP Background Questionnaires were used to gain more information about schools, teachers, and students (NCES, 2011b). NAEP Student, Teacher, and School Background Questionnaires include questions regarding ethnicity and participation in the NSLP, also referred to as free and reduced lunch eligibility. The NAEP questionnaires were also used to gather data about educational practices, including the delivery of reading instruction.

First Data Source: NAEP Achievement Scores

The Institute of Education Statistics (IES) operates as the research arm of the United States Department of Education. The IES is non-partisan and carries out large-scale national education assessments, including the NAEP. The data sets collected are accessible to researchers; the IES encourages interested researchers to access and use these data sets. The NAEP is the largest nationally representative sample of student

achievement in the United States. Not every child takes the NAEP assessment; instead the tests are administered uniformly across the country with a sample of students (NAEP, 2011). The quantitative data collected through the NAEP provide a common measure of student achievement for schools across the country.

The NAEP assessment results are reported out on a proficiency scale, which ranges from 0-500 and categorizes student achievement into four levels, the three main levels being Basic, Proficient, and Advanced. The Basic category (cut score of 208) refers to students who attain partial mastery of prerequisite knowledge and skills that are considered essential at the measured grade level. The Proficient level (cut score of 238) refers to solid understanding and competence of grade-level challenging material. The Advanced level (cut score of 268) refers to students who demonstrate superior performance. Students who score lower than the 208 are referred to as "below Basic."

Second Data Source: NAEP Questionnaires

Alongside student achievement scores, the NAEP captures data through the use of student, teacher, and school questionnaires. Whenever feasible, NAEP collects and reports information on race, ethnicity, socioeconomic status, gender, disability, and limited English proficiency (NAEP, 2011). The data used in this research project include ethnicity and socioeconomic status variables, as well as what I refer to as "time to read" variables. Socioeconomic status is measured by student participation in the NSLP. Ethnicity and NSLP participation reported by NAEP is obtained from school records and verified by NAEP personnel. The "time to read" variables are collected from three sources: Student Questionnaire, Teacher Questionnaire, and School Questionnaire. The

responses collected on the questionnaires are reported out as nominal categorical

variables. The variables are described in detail below.

Ethnicity variables. School officials use school records to indicate the ethnicity

of the participating child; NAEP staff members verify the demographic information

provided for each participating student. The possible ethnic categories reported on the

NAEP are:

- White
- Black
- Hispanic
- Asian American/Pacific Islander
- American Indian/Native American
- Unclassified

Income level variables. The NAEP uses participation in the NSLP as an indicator

of family income. Under NSLP guidelines, children from families with incomes below

130% of the poverty level are eligible for free meals. Children from families with

incomes between 135% and 180% of the poverty level are eligible for reduced-priced

meals (NCES, 2011b, p. 73). NAEP personnel collect data on NSLP participation. The

results are reported in the following categories:

- Not eligible
- Free price
- Reduced price
- Not participating
- Unavailable/Refused

According to the NAEP website, NAEP personnel work with participating schools to

verify the accuracy of participating student demographic information (NCES, 2011a).

Time to read variables. There are four questions that provide information

regarding the amount of time provided for voluntary reading during the school day. Two

questions from the Student Background Questionnaire are worth consideration: How often does your teacher ask you to read a book you have chosen yourself? And: How often does your teacher ask you to read silently? Both questions have these possible responses:

- Never or hardly ever
- Sometimes
- Often
- Always or almost always

One question from the School Background Questionnaire will also be used to answer this question: To what extent is your school's reading program structured according to the following resources? After the question is a list of possibilities, including the response, "Commercially designed reading program" (NCES, 2011b). The question has these possible responses:

- Not at all
- Small extent
- Moderate extent
- Large extent

The fourth question used is from the Teacher Background Questionnaire: How often do you do the following things as part of reading with this class? One possible response to this question is "Give students time to read a book they have chosen themselves" (NCES, 2011b). Possible responses are:

- Never or hardly ever
- Once or twice a month
- Once or twice a week
- Almost every day

These responses related to time to read are the dependent variables that will show where any differences in amount of provided time culminate.

Participants

NAEP data are collected in a nationally representative sample (Jones, 1996). The sampling process is both painstaking and time-consuming; however, the NAEP sampling process allows for generalizability to the larger population of students in each state and nationwide. These sampling procedures include: Identifying potential schools in each state, making sure that the schools chosen are representative of the larger school population in that state by location (rural, urban, suburban), ethnicity, and student achievement (as measured by state assessment scores); then, randomly selecting students at each selected school who are then assigned one subject-area test to take. In 2011, there were 213,100 student participants in the NAEP reading assessment at grade four.

Data Analysis

NCES analyzed the NAEP data for general trends, which were reported in *The Nation's Report Card* (NCES, 2011b). The NCES did not conduct in-depth statistical analyses of all variables reported. Researchers are encouraged to apply for a Restricted Use License, which provides researchers with a CD ROM containing the entire data set, allowing for the manipulation of variables in order to test associations and find correlations. It is this Restricted Use data set that I used for this project.

The commonly used Statistical Package for the Social Sciences (SPSS) was used to analyze the 2011 NAEP reading scores at grade four (Field, 2009) and to create the statistical models.

Question 1: Do fourth grade students who identify as members of an ethnic minority (as identified by NAEP) have opportunities to read voluntarily in school as frequently as their white peers? Do fourth grade students eligible to participate in the NSLP have opportunities to read voluntarily in school as frequently as their more affluent peers?

A contingency table (Field, 2009) was used to analyze the 2011 NAEP reading assessment at grade four results to answer the first research question and determine whether there were differences in the amount of time allocated for in-school voluntary reading for children of differing ethnic backgrounds and income-levels. This question was intended to provide baseline information; a contingency table was used to analyze the relationships between categorical variables. The independent variables included both ethnicity and income levels since the question looked to see if there were differences in the amount of reading provided to children of each respective category.

In order to find associations between the opportunities offered for in-school voluntary reading and student ethnicity, three analyses were conducted. I created three more tables to find associations between the amount of time provided for in-school voluntary reading and student income level. The six tables created are shown in Table 3.1.

The variables involved were nominal (i.e., ethnicity) and ordinal (for the Likert-scale response to the time-to-read question), making a contingency table an appropriate analytical tool. The NAEP data are stored on a CD ROM in a format compatible with SPSS.

Table 3.1

Variable Combinations

Table Number	Variables Used
One	1. How often does your teacher ask you to read silently? 2. Ethnic background
Two	1. How often does your teacher ask you to read a book you have chosen yourself? 2. Ethnic background
Three	1. How often do you (Give students time to read a book they have chosen themselves) as part of reading with this class? 2. Ethnic background
Four	1. How often does your teacher ask you to read silently? 2. Income level
Five	1. How often does your teacher ask you to read a book you have chosen yourself? 2. Income level
Six	1. How often do you (Give students time to read a book they have chosen themselves) as part of reading with this class? 2. Income level

Question 2: To what extent are the achievement scores on the 2011 NAEP reading assessment at grade four associated with the frequency of opportunities for in-school voluntary reading while controlling for other factors, such as participation in the NSLP and student ethnicity?

A multiple linear regression analysis was used to analyze the 2011 NAEP reading assessment at grade four results to answer the second research question. One use of a multiple linear regression is to quantify the strength of the relationship between two or more variables. A multiple linear regression model is used when there is more than one

explanatory variable that could influence an association (Field, 2009), as was the case in answering this question. The variables were further analyzed to find associations between income levels, in-school voluntary reading time, and achievement scale scores, as well as the association between ethnicity, in-school voluntary reading time, and achievement scale scores.

To test the association between in-school voluntary reading and achievement levels on the 2011 NAEP reading assessment at grade four, the amount of time provided to students for in-school voluntary reading was an independent variable. The ethnicity and income-level variables were also independent variables in this model. The NAEP achievement scale scores were the dependent or outcome variables. Regression specifies one as predictor and one as outcome.

In order to use a regression analysis, I took into account the underlying assumptions that allow for the generalizability of the findings beyond just the sample. My original plan included tests of homogeneity of variance (Levene's test) to check to see if the variance between the assessed groups were similar. After many attempts and much frustration, further reading about NAEP sampling procedures, and communications with technicians at the IES, it was confirmed that Levene's test was not appropriate for use with the NAEP data set (A. Rogers, personal communication, September 23, 2013). Instead, researchers use jackknifing and weighting variables in each analysis. Many controls have been placed on the NAEP data through the sampling procedures used in collection; NAEP results can be generalized to larger populations as a result of the design of the assessment itself. The intent of NAEP is to collect data that shows achievement by

large regions and demographic groups—not to show achievement for individual students

or schools. Once schools are identified to participate in NAEP, a subset of students is

selected to take the assessment. However, NAEP recognizes that it would be cumbersome

and time consuming for each selected student to take the entire NAEP assessment so

participants take a shortened version of the larger assessment. According to the NCES

documents,

> by sampling students within schools and administering to different students
> different small samples of test items drawn from much larger sets representing the
> subject matter domains. When the results from the brief tests are aggregated for
> large groups of respondents, the large numbers of items represented in the
> assessment instrument gives the statistical summaries at the group level a high
> degree of stability and generalizability. (USDOE, 2003, p. 4)

Once the data were imported and processed into SPSS, I created six analyses

using the same combination of time-to-read variables listed for the first research question,

while at the same time adding in a new variable created in order to capture achievement

scores. Additionally, per communication with technicians at the IES, I added jackknifing

and weighting variables into the model (A. Rogers, personal communication, October 21,

2013).

Question 3: Do fourth grade students who identify as members of an ethnic

minority experience the literacy block structured using a commercial reading program

more frequently than their white peers? Do fourth grade students who are eligible to

participate in the NSLP experience the literacy block structured using a commercial core

reading program more frequently than their more affluent peers?

Question three was similar to the first research question, except that the "time to

read" data used was the collected information about the structure of the literacy block

within the school. On the School Questionnaire, school administrators report whether the literacy blocks in the fourth grade classrooms are structured around a commercial reading program. Again, a contingency table (Field, 2009) was used to analyze the 2011 NAEP reading assessment at grade four results to answer the question and identify whether there were differences in the structure of the literacy block for children of differing income-levels and ethnic backgrounds. The independent variables included both ethnicity and income levels since the question looked to see if there were differences in the amount of reading provided to children of each respective category.

Chapter Summary

It was worth a closer look at the association between in-school voluntary reading and achievement levels for fourth grade students as measured on the 2011 NAEP assessment. If students who spend more time in-school voluntary reading achieve at higher rates, then recommendations can be made for teachers to provide voluntary reading time during the school day. Additionally, if students from low socioeconomic backgrounds were provided with less time to read voluntarily during the school day than their more affluent peers—and the relationship is strong between voluntary reading and achievement levels—then time to read in class, or lack thereof, is a potential contributing factor to the achievement gap. This may also be true of differences in time provided for voluntary reading between children of differing ethnicities.

CHAPTER FOUR

FINDINGS

Overview

In chapter 4, I explain in more detail the statistical model used for the analysis of

the three research questions and the findings for each of the questions. An explanation of

the variable combinations is included along with the rationale for choosing from the

hundreds of available variables. I show how the analyses programs included with the

NAEP database assisted in both building of the statistical model and the resulting

analyses. The chapter is divided into three sections, one for each research question.

Within those three sections, the findings for each question are detailed.

NAEP Database

The 2011 Grade 4 NAEP Reading assessment is a rich source of information

about student achievement and includes information related to opportunities for children

in American school to participate with in-school voluntary reading. The restricted-use

data contain achievement and demographic data about students, teachers, and schools.

Additionally, students, teachers, and school and district administrators share information

by means of questionnaires about school design and classroom instruction. The restricted-

use data set also comes with tools for researchers to use in the analyses of the data.

The main tool for researchers to use with the NAEP data is called the "NAEP

Data Toolkit" which includes three programs: NAEPEXW, the NAEP Cross-tabulation

Module, and the NAEP Regression Module. These three programs are designed so researchers can create customized data extractions and load them easily into a statistical program. The Cross-tabulation Module and the Regression Module can calculate various statistics along with their accompanying standard errors and degrees of freedom; it also takes into consideration false discovery rates and minimum N requirements, which is necessary when using such a large data set (NAEP Data Toolkit; Rogers, Szyszkiewicz, & Kline, 2001, pp. 5-6).

The Data Toolkit is designed for use with common statistical packages, including the SPSS. When using SPSS, the Data Toolkit drops the desired variables into SPSS for easy analysis. Additionally, the Data Toolkit grabs all of the additional variables necessary to use in the analysis of chosen variables with accuracy—such as the comparable "weighting" variable that accounts for the differential representation of various subgroups as well as the oversampling procedures used by NAEP to capture large enough sample sizes of minority students, private schools, etc. (NAEP Data Companion; Rogers, Kokolis, Stoeckel, & Kline, 2011, p. 42).

Model of Analysis for Research Question #1

Research Question #1: Do fourth grade students who identify as members of an ethnic minority (as identified by NAEP) have opportunities to read voluntarily in school as frequently as their white peers? Do fourth grade students eligible to participate in the NSLP have opportunities to read voluntarily in school as frequently as their more affluent peers?

The first research question was intended to provide baseline information about the opportunities American children from different income levels and ethnic backgrounds were provided in-school time to read books of their own choosing. More specifically, the question was designed to see whether a relationship exists between student income level and opportunity to read, as well as student ethnicity and the opportunity to read. All of the variables used to address the first question are categorical variables. A contingency table is commonly used when analyzing the relationships between categorical variables; for the purpose of this research, a contingency table was used. In order to determine whether a relationship exists, six separate contingency tables were created, one for each of the following variable combinations:

- Ethnicity/How often does your teacher ask you to read silently?
- Ethnicity/How often does your teacher ask you to read a book you have chosen yourself?
- Ethnicity/How often do you give students time to read a book they have chosen themselves?
- Participation in the NSLP/How often does your teacher ask you to read silently?
- Participation in the NSLP//How often does your teacher ask you to read a book you have chosen yourself?
- Participation in the NSLP/How often do you give students time to read a book they have chosen themselves?

When choosing variables for analysis, the NAEP database provides an abundance of information. As a result, choices must be made about which variables to include. When considering student ethnicity, there are a few ways this information is reported in the restricted-use data set. One data collection method for student ethnicity is through student self-reporting, which is represented as the NAEP variable "DRACE10." I decided

not to use data reported by children due to concern about accuracy of the information collected. Instead, I chose to use the NAEP ethnicity variable "SDRACEM," which included ethnicity as verified from school records by NAEP testing staff. Also used in the first table are students' answers to the survey question, "How often does your teacher ask you to read silently?" Table 4.1 shows the results of this cross-tabulation.

Table 4.1

Relationship Between Read Silently and Student Ethnicity

Categories	White	Black	Hispanic	Asian American/ Pacific Islander	American Indian/ Native American	Total
Never or hardly ever	6,200 (5.4%)	2,580 (7.1%)	3,000 (7.4%)	870 (8.1%)	420 (7.7%)	13,070 (6.3%)
Sometimes	18,330 (15.9%)	8,360 (23.0%)	9,640 (23.9%)	2,170 (20.1%)	1,210 (22.1%)	39,710 (19.1%)
Often	37,640 (32.6%)	9,280 (25.6%)	10,580 (26.3%)	3,150 (29.2%)	1,270 (23.2%)	61,930 (29.7%)
Always or almost always	49,630 (43.0%)	15,000 (41.3%)	16,030 (39.8%)	4,200 (38.9%)	1,910 (34.8%)	86,760 (41.6%)
Multiple/ Omitted	3,690 (3.2%)	1,110 (3.1%)	1,040 (2.6%)	410 (3.8%)	660 (12.1%)	6,910 (3.3%)
Total	115,500	36,330	40,280	10,800	5,470	208,380
Note: 4,790 students' ethnic backgrounds were considered "Unclassified" and not included in this table.						

There were 208,280 participants included in Table 4.1. In consideration of the ethnicity of the participants, 115,500 were categorized as white; 36,330 as Black; 40,280 as Hispanic; 10,800 as Asian American or Pacific Islander; and 5,470 as American Indian/Native American.

In the first column are the possible answer choices to the question, "How often does your teacher ask you to read silently?" Each of the following column headings states the ethnicity of the participants. The entire table represents the cross-tabulation between the ethnicity and the student's answer in regards to how often the teacher asks them to read silently. Some students responded to more than one choice, while some students omitted an answer to this question. These responses are captured in the row category "Multiple/Omitted"; in the original SPSS analysis these two categories were reported separately. When considering the remaining data, white participants reported the highest percentage of "Always or almost always" being asked to read silently, with 43% response in this category. Black students also responded at a high rate to this question (41.3%) while students categorized as American Indian/Native American demonstrated the lowest response in this category, with 34.8% responding positively. In contrast, students with ethnic backgrounds classified as Asian American or Pacific Islander had the highest percentage of responses to "Never or hardly ever" at just over 8%; white students responses fell into this category at the smallest rate, 5.4%.

To find out whether there was a statistically significant relationship between student ethnicity and how often students were asked to read silently by their teachers, more information was needed. In this case, Table 4.2 considers whether a relationship existed.

Table 4.2

Chi-Square Tests: Read Silently, Ethnicity

Chi-Square	Value	*df*	Asymp. Sig. (2-sided)

Pearson Chi-Square	4288.450*	30	.000
Likelihood Ratio	3746.080	30	.000
Linear-by-Linear Association	27.310	1	.000
N of Valid Cases	213170		

In Table 4.2, the number of degrees of freedom is 30. The number of degrees of freedom is essentially the number of values that are free to vary; degree of freedom is calculated through a consideration of the number of variables being used. In the case of this first analysis, the number of ethnicity columns would be six (five listed plus "unclassified"), and the number of student response choices was six (four plus "omitted" and "multiple"). Subtract the one constant from each of those and then multiply and the degree of freedom associated with the variables in Table 4.1 to get the degree of freedom of 30, which is then rounded to the nearest 10, to become 30. The chi-square value that is generated from the contingency table is 4288.450, as found in the Value column of Table 4.2. For the degree of freedom of 30, the threshold value is 37.65 (Fields, 2009, p. 808). However, in order to understand the significance of 37.65, it is necessary to compare the chi-square value to the α-level of .05. Because 4288.450 is more than the threshold level of 37.65 the result is encapsulated by the *p*-value of .001 (found in the last column), which means that there is a statistically significant relationship between the variables in the analysis.

The results from Table 4.1 and Table 4.2 indicate that there is a relationship between student ethnicity and student responses to the question, "How often does your teacher ask you to read silently?" However, further exploration is needed to understand this relationship more fully. This exploration is conducted in the second research question.

How Often Students Read a Book They Chose Themselves and Student Ethnicity

The following analysis considered the relationship between opportunity for students to choose a book to read and student ethnicity. In the Student Questionnaire, students responded to the question, "How often do you read a book you chose yourself?" Table 4.3 shows the results of the analysis.

Table 4.3

Relationship Between How Often Do You Read a Book You Chose Yourself and Student Ethnicity

Categories	White	Black	Hispanic	Asian American/ Pacific Islander	American Indian/ Native American	Total
Never or hardly ever	14,740 (12.8%)	4,690 (12.9%)	5,100 (12.7%)	1,530 (14.1%)	690 (12.6%)	26,740 (12.8%)
Sometimes	24,510 (21.2%)	9,470 (26.1%)	11,730 (29.1%)	2,720 (25.2%)	1,410 (25.7%)	49,830 (23.9%)
Often	31,560 (27.3%)	8,180 (22.5%)	9,530 (23.7%)	2,700 (25.0%)	1,130 (20.6%)	53,100 (25.5%)
Always or almost always	40,790 (35.3%)	12,810 (35.3%)	12,850 (31.9%)	3,430 (31.8%)	1,570 (28.7%)	71,440 (34.3%)
Multiple/ Omitted	3,910 (3.4%)	1,180 (3.2%)	1,080 (2.7%)	420 (3.9%)	680 (12.4%)	7,270 (3.5%)
Total	115,500	36,330	40,280	10,800	5,470	208,380

Note: 4,790 students were considered "Unclassified" in relation to ethnicity and were not included in the table; however, they were included in the SPSS analysis.

White students and Black students responded "Never or hardly ever" and "Always or almost always" at similar rates. Asian American and Pacific Islander students

responded at a higher rate to "Never or hardly ever" than the rest of the students.

Additionally, American Indian and Native American students responded at lower levels

that they "Always or almost always" read a book they chose themselves than the rest of

the students.

Table 4.4 shows that there is a statistically significant relationship between

responses to the question, "How often do you read a book you chose yourself?" and

student ethnicity. In Table 4.4, the degree of freedom is 30. The chi-square value that is

generated from the contingency table is 1105.720, as found in the Value column of Table

4.4. For the degree of freedom of 30, the threshold value is 37.65 (Fields, 2009, p. 808).

However, in order to understand the significance of 37.65, it is necessary to compare the

chi-square value to the α-level of .05. Because 1105.720 is more than the threshold level

of 37.65 the result is encapsulated by the p-value of .001 (found in the last column),

which means that there is some sort of statistically significant relationship between the

variables in the analysis.

Table 4.4

Chi-Square Tests: How Often Do You Read a Book You Chose Yourself, Ethnicity

Chi-Square	Value	*df*	Asymp. Sig. (2-sided)
Pearson Chi-Square	1105.720*	30	.000
Likelihood Ratio	1121.920	30	.000
Linear-by-Linear Association	153.370	1	.000
N of Valid Cases	213,170		

The results from Table 4.3 and Table 4.4 indicate that there is a relationship between student ethnicity and whether students read a book they chose themselves. However, further exploration is needed to understand this relationship more fully.

Teachers Report Whether Students Read Book of Own Choosing, and Student Ethnicity

On the Teacher Questionnaire, teachers responded to the question, "How often do you give students time to read a book of their own choosing." The relationship between the teacher responses and student ethnicity are reported in Table 4.5.

Table 4.5

Relationship Between Students Read Book of Own Choosing and Student Ethnicity

Categories	White	Black	Hispanic	Asian American/ Pacific Islander	American Indian/ Native American	Total
Never or hardly ever	1,070 (0.9%)	500 (1.5%)	790 (2.0%)	210 (2.0%)	100 (1.9%)	2,670 (1.3%)
Once or twice a month	2,620 (2.3%)	1,160 (3.4%)	1,410 (3.7%)	290 (2.8%)	190 (3.6%)	5,670 (2.8%)
Once of twice a week	14,940 (13.4%)	6,170 (18.0%)	7,010 (18.3%)	1,610 (15.6%)	1,020 (19.8%)	31,760 (15.9%)
Almost every day	90,970 (81.5%)	25,420 (74.1%)	28,340 (73.9%)	8,050 (78.0%)	3,760 (72.9%)	156,540 (78.4%)
Multiple/ Omitted	1,970 (1.8%)	1,060 (3.1%)	830 (2.2%)	160 (1.5%)	90 (1.7%)	4,110 (2.0%)
Total	111,570	34,320	38,380	10,320	5,150	199,740

Table 4.5 shows the results of the cross-tabulation between the questionnaire responses and student ethnicity. According to teacher responses, 81.5% of white students were provided with the opportunity to read a book they chose themselves almost every

day, 74.1% of Black students were provided the opportunity to read a book they chose themselves almost every day, and 73.9% of Hispanic students were provided the opportunity to read a book they chose themselves almost every day. Teachers of Asian American and Pacific Islander students as well as American Indian/Native American students responded that they provided their students opportunity to read a book of their own choosing almost every day within the same range. On the other end of the response spectrum, teachers of Hispanic students, Asian American and Pacific Islander students, and students categorized as American Indian/Native American responded at twice the rate that they never or hardly ever provided students the opportunity to read a book that they chose themselves.

When considering whether there was a statistically significant relationship between teachers' responses to the question of how often they provided their students with the opportunity to read a book of their own choosing and student ethnicity, it appears that a relationship does exist. Table 4.6 shows that the degree of freedom in the cross-tabulation is 30, with the same threshold value of 37.65 as the earlier tables. The chi-square value generated from the contingency table is 1897.990, which is more than the threshold level of 37.65, indicating a statistically significant relationship exists.

Table 4.6

Chi-Square Tests: Students Read Book of Own Choosing, Ethnicity

Chi-Square	Value	*df*	Asymp. Sig. (2-sided)
Pearson Chi-Square	1897.990*	30	.000
Likelihood Ratio	1845.800	30	.000
Linear-by-Linear Association	270.090	1	.000

N of Valid Cases	204,330		

Relationship Between Read Silently and NSLP Eligibility

Table 4.7 shows the relationship between five categories of student participation in the NSLP. The five categories reported by NAEP include that children can receive subsidized lunch at two levels, which are dependent on household income levels. Children at 130% of the poverty level qualify to receive 100% free lunch (approximately $27,560 for family of four.) Children between 131 and 185% of the poverty level—up to around $39,220 for a family of four—can qualify to receive a reduced price lunch. The NAEP captures this data, alongside whether students are ineligible for NSLP participation and data from private schools that choose not to participate in the NSLP. Additionally, some NSLP participation data were unavailable to NAEP and/or refused to be provided to NAEP at the school level.

Table 4.7 shows that 32.8% of students not eligible for participation in the NSLP often were provided time to read silently at school, while 26.6% of students who qualified for free priced lunch reported that they often were provided time to read silently at school. Fifteen point seven percent (15.7%) of students who were ineligible to participate in the NSLP reported that they sometimes were provided time to read silently at school, while 22% of students who qualified for free lunch reported that they sometimes were provided time to read silently in school.

Table 4.7

NSLP Eligibility and How Often Do You Read Silently

Categories	Not Eligible	Free	Reduced Price	Not Participating	Unavailable or Refused (school)	Totals
Never or hardly ever	5,020 (5.3%)	7,060 (7.1%)	790 (6.9%)	460 (6.8%)	40 (7.4%)	13,370 (6.3%)
Sometimes	14.970 (15.7%)	21,830 (22.0%)	2,070 (18.2%)	1,530 (22.6%)	100 (19.7%)	40,500 (19.0%)
Often	31,270 (32.8%)	26,330 (26.6%)	3,290 (28.9%)	2,280 (33.8%)	140 (27.1%)	63,310 (29.7%)
Always or almost always	40,890 (42.9%)	40,480 (40.8%)	4,780 (42.0%)	2,370 (35.1%)	210 (40.8%)	88,730 (41.6%)
Multiple/ Omitted	3,220 (3.4%)	3,440 (3.5%)	450 (3.9%)	120 (1.7%)	30 (5.2%)	7,250 (4.5%)
Total	95,370	99,140	11,370	6,760	520	213,170

When considering whether there was a statistically significant relationship between student reporting of opportunity to read silently at school and student participation in the NSLP, it appears that a relationship does exist. Table 4.8 shows that the degree of freedom in the cross-tabulation is 30, with the same threshold value of 37.65 as the earlier tables. The chi-square value generated from the contingency table is 2243.060, which is more than the threshold level of 37.65, indicating that a statistically significant relationship exists.

Table 4.8

Chi-Square Tests: NSLP Eligibility, Read Silently

Chi-Square	Value	*df*	Asymp. Sig. (2-sided)
Pearson Chi-Square	2243.060*	30	.000
Likelihood Ratio	2270.850	30	.000
Linear-by-Linear Association	308.740	1	.000
N of Valid Cases	213,170		

How Often Students Read a Book They Chose Themselves and NSLP Eligibility

On the Student Questionnaire, students responded to the question, "How often do you read a book you chose yourself during the school day?" The relationship between student responses to the question and student eligibility on the NSLP is explored in Table 4.9.

Table 4.9

Relationship Between Read a Book You Chose Yourself and NSLP Eligibility

Categories	Not Eligible	Free	Reduced Price	Not Participating	Unavailable or Refused	Totals
Never or hardly ever	12,020 (12.6%)	12,690 (12.8%)	1,550 (13.6%)	1,030 (15.3%)	80 (14.5%)	27,360 (12.8%)
Sometimes	20,110 (21.1%)	26,240 (26.5%)	2,680 (23.6%)	1,660 (24.6%)	150 (29.2%)	50,850 (23.9%)
Often	26,070 (27.3%)	23,430 (23.6%)	2,830 (24.9%)	1,880 (27.9%)	120 (23.7%)	54,340 (25.5%)
Always or almost always	33,810 (35.5%)	33,140 (33.4%)	3,860 (34.0%)	2,050 (30.3%)	150 (27.7%)	73,010 (34.3%)

| Multiple/ Omitted | 3,360 (3.5%) | 3,640 (3.6%) | 460 (4.0%) | 130 (1.9%) | 30 (4.9%) | 7,610 (3.6%) |
| Total | 95,370 | 99,140 | 11,370 | 6,760 | 520 | 213,170 |

Table 4.9 shows that data on 213,170 participants were collected in response to the survey question. Twenty-seven point three percent (27.3%) of students who were not eligible to participate in the NSLP reported that sometimes they read a book they chose themselves during the school day; 26.5% of students eligible to receive free lunch responded that sometimes they read a book they chose themselves during the school day. Although there were differences between these percentages, Table 4.10 shows whether these differences are statistically significant.

Table 4.10

Chi-Square Tests: Read a Book You Chose Yourself, NSLP Eligibility

Chi-Square	Value	*df*	Asymp. Sig. (2-sided)
Pearson Chi-Square	1105.720*	30	.000
Likelihood Ratio	1121.920	30	.000
Linear-by-Linear Association	153.380	1	.000
N of Valid Cases	213,170		

When considering whether there was a statistically significant relationship between students reporting of how often they read a book they chose themselves at school and student participation in the NSLP, it appears that a relationship does exist. Table 4.10 shows that the degree of freedom in the cross-tabulation is 30, with the threshold value of 37.65. The chi-square value generated from the contingency table is

1105.720, which is more than the threshold level of 37.65, indicating that a statistically significant relationship exists.

Teachers Report Whether Students Read Book of Own Choosing, and NSLP Eligibility

On the Teacher Questionnaire, teachers responded to the question, "How often do you give students time to read a book of their own choosing." The relationship between the teacher responses and student participation in the NSLP are reported in Table 4.11

Table 4.11

Relationship Between Students Read Book of Own Choosing and NSLP Eligibility

Categories	Not Eligible	Free	Reduced price	Not Participating	Info unavailable or refused	Totals
Never or hardly ever	840 (.9%)	1,650 (1.7%)	150 (1.4%)	70 (1.1%)	10 (1.4%)	2,710 (1.3%)
Once or twice a month	2,090 (2.3%)	3,140 (3.3%)	320 (2.9%)	230 (3.6%)	10 (1.4%)	5,790 (2.8%)
Once of twice a week	12,220 (13.3%)	16,200 (17.1%)	1,680 (15.3%)	1,160 (18.1%)	140 (28.3%)	31,400 (15.4%)
Almost every day	75,240 (81.9%)	71,250 (75.4%)	8,590 (78.3%)	4,830 (75.1%)	330 (66.1%)	160,240 (78.4%)
Multiple/Omitted	1,520 (1.7%)	2,310 (2.4%)	220 (1.9%)	130 (2.0%)	10 (2.8%)	4,180 (2.0%)
Total	91,900	94,540	10,970	6,420	500	204,330

Table 4.11 shows that 81.9% of students not eligible to participate in the NSLP were provided with opportunities to read books that they chose themselves almost every day, while 75.4% of their peers who qualified to receive free lunch were provided with

the opportunity to read books they chose themselves almost every day. One point seven percent (1.7%) of students who qualified to receive free lunch never or hardly ever had the opportunity to read a book they chose themselves during the school day, while less than 1% of their more affluent peers never or hardly ever had the opportunity to read books they chose themselves during the school day. Table 4.12 shows whether the differences reported in Table 4.11 are statistically significant.

Table 4.12

Chi-Square Tests: Students Choose Own Book, NSLP Eligibility

Chi-Square	Value	*df*	Asymp. Sig. (2-sided)
Pearson Chi-Square	1509.320*	30	.000
Likelihood Ratio	1471.680	30	.000
Linear-by-Linear Association	117.680	1	.000
N of Valid Cases	204,330		

When considering whether there was a statistically significant relationship between teacher reporting of opportunities provided for students to read books of their own choosing during the school day and eligibility in the NSLP, it appears that a relationship does exist. Table 4.12 shows that the degree of freedom in the cross-tabulation is 30, with the same threshold value of 37.65 as the earlier tables. The chi-square value generated from the contingency table is 1509.320, which is more than the threshold level of 37.65, indicating that a statistically significant relationship exists.

Summary of Research Question #1

There appears to be a relationship between both having time to silent read during the school day and having the opportunity for students to read books they have chosen themselves with student ethnicity. Additionally, there appears to be a relationship between silent reading during the school day and students having the opportunity to read books they choose themselves with participation in the NSLP. However, in order to understand more fully what this relationship may mean, more exploration is necessary. The second research question explores this relationship in more detail.

Model of Analysis for Research Question #2

Research question #2: To what extent are the achievement scores on the 2011 NAEP reading assessment at grade four associated with the frequency of opportunities for in-school voluntary reading while controlling for other factors, such as participation in the NSLP and student ethnicity?

In order to analyze the second research question, a multiple linear regression was conducted, which is an appropriate method to use when studying an association between multiple predictor variables.

Test of Fit

Student participants are selected using random sampling procedures. However, not every student has the same probability of being selected. NAEP uses stratified cluster sampling to collect data on different populations of interest (USDOE, 2011). Once a school is chosen to participate in NAEP, 15 to 25 students in the school take the assessment—regardless of how many students are attending the school. This creates a situation in which there is not an equal probability for participant selection. As a result,

weighting procedures are used to calculate the results from that small sample into the larger sample of "units" with the same characteristics. When pulling NAEP variables into the multivariate analysis, it is necessary to also pull the appropriate weighting variables into the model, as well.

Additionally, when estimating the sampling variance with the NAEP, traditional methods do not work. Traditionally, Levene's test would be conducted to check for the homogeneity of variance. However, based on the configuration of the NAEP sample, it cannot be assumed that the data samples would resemble that of a random sample. There are variance checks in place, though, within the NAEP that can be used in place of Levene's test. The procedure recommended for use with the NAEP data is called *jackknife repeated replication*, which is based on the idea that the NAEP data can be divided into strata, which consist of two sampling units (NCES, 2011b). The two sampling units are selected independently during "first stage" sampling, after which the data selected for various stages of analysis has an equal chance of being selected randomly. According to NAEP documents, "The JRR [jackknife repeated replication] method is suitable for estimating sample errors in the NAEP design because it provides approximately unbiased estimates of the sampling error arising from the complex sample selection procedure" (NCES, 2011b, p. 66). When building the model, jackknife variables attached to the chosen variables must be utilized to create a robust model (A. Rogers, personal communication, September 23, 2013).

In order to test the model and verify that the weighting variables and jackknifing variables made a difference to the model outcomes, I originally conducted the analysis

without using any of the weighting or jackknifing variables. The results of that analysis showed that every single association was statistically significant, putting into question the robustness of the model. I added the weighting variables and jackknifing variables into the model slowly; with each addition differences emerged. Once I had all of the needed variables in the model, I found that some associations were not statistically significant.

For all of the following analysis, both weighting variables and jackknifing variables were included as part of the model.

Building the Models

To create the regression model, I added the variables into the model in stages. After organizing the data to include the necessary weighting and jackknifing variables, I included the variables that I suspected would have the greatest relationship with the overall assessment scores: Ethnicity and NSLP Eligibility, respectively. Then I added in the "reading" variables.

More specifically, I started by working with "Race/Ethnicity" alone and then added the teacher responses in regard to students having time to read books of their own choosing. Next I added in the time to silent read during the school day variable, and then finally added in student responses in regard to time to choose their own books to read. Table 4.13 illustrates the model construction.

Table 4.13

Model Building Based on Student Ethnicity

Model	Independent Variables
Model 1	Race/ethnicity from school records
Model 2	Race/ethnicity from school records Teacher response: Students read books of own choosing
Model 3	Race/ethnicity from school records Teacher response: Students read books of own choosing Time to read silently
Model 4	Race/ethnicity from school records Teacher response: Students read books of own choosing Time to read silently Student response: Opportunity to choose own book to read

For the analyses that included NSLP participation, I began by isolating that variable. I added the teacher responses in regard to students having time to read books of their own choosing next, and then I added in the time to silent read during the school day variable. Finally I added in student responses in regard to time to choose their own books to read. Table 4.14 shows the model development.

Table 4.14

Model Building Based on NSLP Eligibility

Model	Independent Variables
Model 1	NSLP Participation
Model 2	NSLP Participation Teacher response: Students read books of own choosing
Model 3	NSLP Participation Teacher response: Students read books of own choosing Time to read silently
Model 4	NSLP Participation Teacher response: Students read books of own choosing Time to read silently Student response: Opportunity to choose own book to read

Relationship Between Read Silently and Student Ethnicity

In order to analyze the relationship between student responses to the question,

"How often do you read silently at school?" and student ethnicity, data were collected on

213,146 participants. Table 4.15 shows the results of the analysis.

Table 4.15

Average Reading Score of Students: Reading Silently, Ethnicity

Students: How often do you read silently?	White	Black	Hispanic	Asian American/ Pacific Islander	American Indian/ Alaska Native
Never or hardly ever	218	194	197	215	188
Sometimes	223	198	199	219	188
Often	234	209	213	236	205
Always or almost always	230	205	207	228	199
Note: Blue = Below Basic; Yellow = Basic					

Table 4.15 shows that only students identified as American Indian or Alaska Native scored at the Below-Basic level. However, there were differences in average scores among other students, as well. It is important to understand whether the score differences are statistically significant or not. Table 4.16 provides this information.

Table 4.16

Estimates of Interaction: Silent Read, Ethnicity

Combination	Change in Reading Score	Statistical Significance
White/Never or hardly ever	4.84	.005*
White/Sometimes	10.05	.001*
White/Often	19.43	.001*
White/Always or almost always	15.44	.001*
Black/Never or hardly ever	-22.19	.001*
Black/Sometimes	-18.85	.001*
Black/Often	-7.90	.001*
Black/Always or almost always	-12.25	.001*
Hispanic/Never or hardly ever	-14.76	.001*
Hispanic/Sometimes	-14.71	.001*
Hispanic/Often	-1.35	.429
Hispanic/Always or almost always	-6.57	.001*
Asian American, Pacific Islander/Never or hardly ever	.68	.730
Asian American, Pacific Islander/Sometimes	4.05	.024*
Asian American, Pacific Islander/Often	20.02	.001*
Asian American, Pacific Islander/Always or almost always	12.19	.001*
American Indian, Alaska Native/Never or hardly ever	-24.80	.001*
American Indian, Alaska Native/Sometimes	-25.02	.001*
American Indian, Alaska Native/Often	-8.08	.001*
American Indian, Alaska Native/Always or almost always	-14.32	.001*

Note: * = Significant at the *p* < .05 level.

Table 4.16 shows that there are many statistically significant relationships included in the analysis, meaning that the time students are provided for silent reading at school along with student ethnicity influences NAEP achievement score for many children. For example, all white students and all black students saw an influenced achievement score based on the opportunity to silent read. However, there were also non-significant relationships exposed in the analysis. For example, there are complicating factors—more factors at play—between achievement scores and silent reading for students identifying as Hispanic.

Relationship Between Students Reading a Book They Chose Themselves and Ethnicity

In order to analyze the relationship between student responses to the question, "How often do you read a book you chose yourself?" and student ethnicity, data were collected on 213,146 participants. Table 4.17 shows the results of the analysis.

Table 4.17

Average Reading Score of Students: Read a Book You Chose Yourself, Ethnicity

Students: How often do you read a book you chose yourself?	White	Black	Hispanic	Asian American/ Pacific Islander	American Indian/ Alaska Native
Never or hardly ever	224	201	204	225	192
Sometimes	223	198	200	219	191
Often	232	207	211	231	204
Always or almost always	233	206	209	232	201
Note: Blue = Below Basic; Yellow = Basic					

Table 4.17 shows that all Black students scored in the Below-Basic category when their ethnicity interacted with how often they read books they chose themselves. Across ethnicities, students who responded *never or hardly ever* and *sometimes* demonstrated the lowest achievement scores for their respective ethnic reporting groups. Table 4.18 shows the statistical significance of these results.

As in the previous analysis, there seems to be an interaction between student opportunity to read a book they chose themselves and student ethnicity that impacts NAEP achievement scores. With few exceptions, students who had more opportunities to read a book of their own choosing had higher achievement scores. However, this was not true for all students. For example, Hispanic students who responded *often* or *always or almost always* did not demonstrate statistically significant changes in achievement scores, which would warrant a closer look at this relationship.

Table 4.18

Estimates of Interaction: Choose Book Yourself, Ethnicity

Combination	Change in Reading Score	Statistical Significance
White/Never or hardly ever	11.01	.001*
White/Sometimes	9.80	.001*
White/Often	18.64	.001*
White/Always or almost always	19.78	.001*
Black/Never or hardly ever	-14.98	.001*
Black/Sometimes	-17.98	.001*
Black/Often	-9.55	.001*
Black/Always or almost always	-9.87	.001*
Hispanic/Never or hardly ever	-8.63	.001*
Hispanic/Sometimes	-13.14	.001*
Hispanic/Often	-2.65	.117
Hispanic/Always or almost always	-3.95	.019*
Asian American, Pacific Islander/Never or hardly ever	10.61	.001*
Asian American, Pacific Islander/Sometimes	4.39	.013*
Asian American, Pacific Islander/Often	16.11	.001*
Asian American, Pacific Islander/Always or almost always	17.50	.001*
American Indian, Alaska Native/Never or hardly ever	-20.38	.001*
American Indian, Alaska Native/Sometimes	-22.0	.001*
American Indian, Alaska Native/Often	-9.10	.001*
American Indian, Alaska Native/Always or almost always	-12/08	.001*
Note: * = Significant at the *p* < .05 level.		

Relationship Between Teachers Providing Time for Students to Read Books of Their Own Choosing and Ethnicity

Table 4.19 shows the results of the analysis of student NAEP achievement scores when considering the interaction between how often teachers provide time for students to choose their own book to read with student ethnicity.

Table 4.19

Average Score of Students: How Often Do Students Choose Own Book, Ethnicity

Teacher: How often do students read a book they chose themselves?	White	Black	Hispanic	Asian American/ Pacific Islander	American Indian/ Alaska Native
Never or hardly ever	215	188	192	211	183
Once or twice a month	222	193	199	221	186
Once or twice a week	228	196	201	221	192
Almost every day	230	203	209	227	200
Note: Blue = Below Basic; Yellow = Basic					

Table 4.19 shows that across all ethnic groups, student achievement scores were lowest for students whose teachers never or hardly ever provided them time to read books they chose themselves. With the exception of Asian American/Pacific Islander students, achievement scores were higher for students with more opportunities to read books they chose themselves. Table 4.20 shows whether any of these differences are statistically significant.

Table 4.20

Estimates of Interaction: Students Read Books of Own Choosing, Ethnicity

Combination	Change in Reading Score	Statistical Significance
White/Never or hardly ever	-4.7	.899
White/Once or twice a month	6.44	.077
White/Once or twice a week	12.27	.001*
White/Almost every day	14.78	.001*
Black/Never or hardly ever	-27.72	.001*
Black/Once or twice a month	-23.06	.001*
Black/Once or twice a week	-19.24	.001*
Black/Almost every day	-12.85	.001*
Hispanic/Never or hardly ever	-23.16	.001*
Hispanic/Once or twice a month	-16.24	.001*
Hispanic/Once or twice a week	-14.24	.001*
Hispanic/Almost every day	-6.67	.064
Asian American, Pacific Islander/Never or hardly ever	-4.18	.317
Asian American, Pacific Islander/Once or twice a month	5.33	.185
Asian American, Pacific Islander/Once or twice a week	5.54	.132
Asian American, Pacific Islander/Almost every day	11.76	.001*
American Indian, Alaska Native/Never or hardly ever	-32.30	.001*
American Indian, Alaska Native/Once or twice a month	-29.50	.001*
American Indian, Alaska Native/Once or twice a week	-23.31	.001*
American Indian, Alaska Native/Almost every day	-15.49	.001*
Note: * = Significant at the $p < .05$ level.		

Relationship Between Read Silently and NSLP Eligibility

Table 4.21 shows the relationship between NSLP eligibility and how often students read silently at school with student achievement levels on the NAEP assessment. There were 213,146 participants in this analysis.

Table 4.21

Average Reading Score of Students: Read Silently, NSLP Eligibility

Students: How often do you read silently?	Eligible: NSLP	Not Eligible: NSLP
Never or hardly ever	196	224
Sometimes	199	228
Often	212	238
Always or almost always	208	234
Note: Blue = Below Basic; Yellow = Basic; Purple = Proficient		

As shown in Table 4.21, students who responded that they never or hardly ever read silently and who also qualified to participate in the NSLP had the lowest achievement scores. Students not eligible to participate in NSLP had the highest achievement scores on the NAEP, regardless of how often they read silently at school.

Table 4.22 shows whether these differences are statistically significant. Table 4.22 also shows that there is a positive relationship between students having time to read silently and student eligibility for the NSLP and NAEP achievement scores, with the exception of one group of students. There was no relationship on achievement scores for students who were not eligible to participate in NSLP and who never or hardly ever had time to read silently.

Table 4.22

Estimates of Interaction: Silent Read, NSLP Eligibility

Combination	Change in Reading Score	Statistical Significance
Eligible/Never or hardly ever	-23.65	.001*
Eligible/Sometimes	-21.33	.001*
Eligible/Often	-8.14	.001*
Eligible/Always or almost always	-12.72	.001*
Not Eligible/Never or hardly ever	5.79	.070
Not Eligible/Sometimes	8.15	.001*
Not Eligible/Often	17.80	.001*
Not Eligible/Always or almost always	11.18	.001*
Note: * = Significant at the $p < .05$ level.		

Relationship Between Students Reading a Book They Chose Themselves and NSLP Eligibility

Table 4.23 shows the results of the analysis of student NAEP achievement scores when considering the interaction between how often students read a book they chose with NSLP eligibility. The table also shows that students who responded never or hardly ever and sometimes had the lowest achievement scores across both NSLP categories. Table 4.24 shows that the results of the analysis were statistically significant.

Table 4.23

Average Score of Students: Students Read Book They Chose, NSLP Eligibility

Students: How often do you read a book you chose yourself?	Eligible: NSLP	Not Eligible: NSLP
Never or hardly ever	203	229
Sometimes	200	227
Often	210	237
Always or almost always	209	238
Note: Blue = Below Basic; Yellow = Basic; Purple = Proficient		

Table 4.24

Estimates of Interaction: Students Read Books of Own Choice, NSLP Eligibility

Combination	Change in Reading Score	Statistical Significance
Eligible/Never or hardly ever	-16.40	.001*
Eligible/Sometimes	-19.72	.001*
Eligible/Often	-9.62	.001*
Eligible/Always or almost always	-10.14	.001*
Not Eligible/Never or hardly ever	9.73	.001*
Not Eligible/Sometimes	7.87	.001*
Not Eligible/Often	17.05	.001*
Not Eligible/Always or almost always	18.23	.001*
Note: * = Significant at the $p < .05$ level.		

Relationship Between Teachers Providing Time for Students to Read Books of Their Own Choosing and NSLP Eligibility

Table 4.25 shows the results of the analysis of the interaction between teachers providing students the opportunity to choose their own books to read and NSLP eligibility on NAEP achievement scores.

Table 4.25

Average Reading Score: Students Choose Own Book, NSLP Eligibility

Teachers: How often do your students read books of own choosing?	Eligible: NSLP	Not Eligible: NSLP
Never or hardly ever	192	219
Once or twice a month	197	227
Once or twice a week	201	231
Almost every day	208	235
Note: Blue = Below Basic; Yellow = Basic		

As illustrated in Table 4.25, achievement levels for students who were eligible to participate in the NSLP all fell below the Basic category, with the exception of students who chose their own book to read almost every day. Table 4.26 shows whether the differences are statistically significant.

Table 4.26

Estimates of Interaction: Students Read Books of Own Choosing, NSLP Eligibility

Combination	Change in Reading Score	Statistical Significance
Eligible/Never or hardly ever	-33.05	.001*
Eligible/Once or twice a month	-28.24	.001*
Eligible/Once or twice a week	-24.52	.001*
Eligible/Almost every day	-17.69	.001*
Not Eligible/Never or hardly ever	-6.08	.026*
Not Eligible/Once or twice a month	1.69	.518
Not Eligible/Once or twice a week	5.95	.019*
Not Eligible/Almost every day	9.07	.001*
Note: * = Significant at the $p < .05$ level.		

Most of the interactions represented in Table 4.26 show a statistically significant relationship. However, there are three noteworthy aspects of Table 4.26. In consideration of the teacher variable, there was not a statistically significant relationship between achievement scores for children who did not qualify to participate in NSLP who were offered the opportunity to choose their own book to read once or twice a month. Additionally, NSLP eligible children who were offered reading choice "never or hardly ever" and "once or twice a week" showed statistical significance but at a lower level.

Model of Analysis for Research Question #3

Research Question #3: Do fourth grade students who identify as members of ethnic minority groups experience literacy block structured using a commercial reading program more frequently than their white peers? Do fourth grade students who are

eligible to participate in the NSLP experience literacy blocks structured using a commercial core reading program more frequently than their more affluent peers?

The question was intended to discover whether students from different ethnic backgrounds and students from different income-levels experience commercial reading programs at different rates. Essentially, do minority and poor children experience commercial reading programs more than their white and more affluent peers? More specifically, the question was designed to see whether a relationship exists between student ethnicity and the use of commercial reading programs, as well as student income level and the use of a commercial reading program. All of the variables used to address this question were categorical variables. Similarly to the first research question, a contingency table was used to analyze the relationships between the categorical variables; two separate contingency tables were created, one for each of the following variable combinations

- Ethnicity/To what extent is your school's reading program structured around the following resources? (Commercial reading program)

- Participation in the NSLP (NSLP)/To what extent is your school's reading program structured around the following resources? (Commercial reading program)

Reading Program Structured Around Commercial Reading Program and Student Ethnicity

The following analysis considers the relationship between whether a school structured their reading program around a commercial reading program and student ethnicity. The variable about structure of the reading program was collected at the school

level, with 8,107 schools responding to the question. Table 4.27 shows the results of the

analysis.

Table 4.27

Relationship Between School Structured Around Commercial Reading Program and Student Ethnicity

	White	Black	Hispanic	Asian American/ Pacific Islander	American Indian/ Native American	Total
Not at all	650 (16.2%)	260 (16.5%)	370 (16.9%)	40 (17.8%)	10 (27.6%)	1,330 (16.5%)
Small extent	1,360 (34.1%)	530 (33.6%)	800 (36.7%)	60 (26.7%)	10 (34.5%)	2,760 (34.5%)
Moderate extent	1,250 (31.3%)	500 (31.9%)	620 (28.7%)	80 (33.9%)	10 (27.6%)	2,460 (30.8%)
Large extent	690 (17.3%)	270 (17.0%)	350 (16.0%)	50 (20.8%)	0 (10.3%)	1,360 (16.9%)
Multiple/Omitted	50 (1.2%)	10 (0.9%)	40 (1.7%)	0 (0.8%)	0 ----	100 (1.2%)
Total	3,990	1,580	2,170	240	30	8,000

Note: Although all respondents were included in the SPSS analysis, 103 students considered "Unclassified" were not included in the table.

Table 4.27 shows that students who were classified as white and Black

experienced commercial reading programs at about the same rate throughout the various

categories. In addition, Hispanic students experienced commercial reading programs

differently, with a small difference between their experience and that of white and Black

students in the category of "Not at all" but larger differences elsewhere. Asian American

and Pacific Islander students experienced commercial reading programs to a larger extent

than white, Black, and Hispanic students; American Indian and Native American students

experienced commercial reading programs at a smaller rate than students from other ethnic groups.

Table 4.28 shows whether there was a statistically significant relationship between schools structuring their reading program around a commercial reading program and student ethnicity. In Table 4.28, the degree of freedom is 30. The chi-square value that is generated from the contingency table is 62.500, as found in the Value column of Table 4. For the degree of freedom of 30, the threshold value is 37.65 (Fields, 2009, p. 808). However, in order to understand the significance of 37.65, it is necessary to compare the chi-square value to the α-level of .05. Because 62.502 is more than the threshold level of 37.65 the result is encapsulated by the p-value of .001 (found in the last column), which means that there is some sort of statistically significant relationship between the variables in the analysis.

Table 4.28

Chi-Square Tests: School Structured Around Commercial Reading Program and Student Ethnicity

	Value	*df*	Asymp. Sig. (2-sided)
Pearson Chi-Square	62.500*	30	.000
Likelihood Ratio	37.940	30	.047
Linear-by-Linear Association	2.680	1	.101
N of Valid Cases	8,110		

The results from Table 4.27 and Table 4.28 indicate that there is a relationship between student ethnicity and whether schools structured their reading program around a

commercial reading program. However, further exploration is needed to understand this

relationship more fully and in combination with the results from the following analysis.

Reading Program Structured Around Commercial Reading Program and NSLP Eligibility

Table 4.29 shows to what extent students with differing eligibility status for the

NSLP experienced commercial reading programs. A total of 8,110 schools participated in

a school-level questionnaire that captured this data. Sixteen point eight percent (16.8%)

of students who were eligible to receive free lunch experienced commercial reading

programs at a large extent, which is right at the average for all students (16.9%.)

Table 4.29

Relationship Between Reading Program Structured Around Commercial Reading Program and NSLP Eligibility

	Not Eligible	Free	Reduced Price	Not Participating	Unavailable/ Refused (school)	Totals
Not at all	520 (16.7%)	750 (16.5%)	60 (16.6%)	0 (7.4%)	10 (25.0%)	1,350 (16.6%)
Small extent	1,020 (32.6%)	1,640 (36.0%)	120 (34.9%)	10 (25.9%)	10 (20.8%)	3,100 (38.3%)
Moderate extent	1,010 (32.4%)	1,330 (29.3%)	110 (31.5%)	20 (42.6%)	10 (37.5%)	2,490 (30.7%)
Large extent	540 (17.3%)	760 (16.8%)	50 (15.2%)	10 (20.4%)	0 (12.5%)	1,370 (16.9%)
Multiple/ Omitted	30 (0.9%)	60 (1.3%)	10 (1.7%)	0 (3.7%)	0 (4.2%)	100 (1.2%)
Total	3,120	4,550	360	50	20	8,110

Table 4.30 shows whether differences between groups were statistically significant.

Table 4.30

Chi-Square Tests: Reading Program Structured Around Commercial Reading Program and NSLP Eligibility

Chi-Square	Value	*df*	Asymp. Sig. (2-sided)
Pearson Chi-Square	30.950*	20	.056
Likelihood Ratio	30.350	20	.064
Linear-by-Linear Association	.220	1	.641
N of Valid Cases	8,110		

In Table 4.30, the degree of freedom is 20. The chi-square value that is generated from the contingency table is 30.950, as found in the Value column. For the degree of freedom of 20, the threshold value is 31.41 (Fields, 2009, p. 808). However, in order to understand the significance of 31.41, it is necessary to compare the chi-square value to the α-level of .05. The result is encapsulated by the *p*-value of .056—which is above the threshold level for significance—meaning that there is *not* a statistically significant relationship between the whether the school reading program is structured around a commercial reading program and student participation in the NSLP.

Summary

In reviewing the analysis, there is clearly a relationship between students having the opportunity to read silently at school and reading achievement. There also is a relationship between choice of text and reading achievement, which can be seen in the analysis of both teachers providing opportunity for students to read books of their own

choosing and students reporting having time to read books of their own choice. However, can the argument be made that there is a relationship between ethnicity or NSLP eligibility and silent reading or having a choice in reading material that influences NAEP achievement scores? It appears that a relationship exists for some students. However, for other students there is not a statistically significant relationship.

In relation to whether students of minority ethnic groups experience commercial reading programs at a higher rate than their white peers, it appears that a relationship may exist. However, there was not a statistically significant relationship between experiencing a commercial reading program and income levels.

CHAPTER FIVE

SUMMARY AND CONCLUSIONS

Conclusions and Discussion

The purpose of this study was to investigate whether students from different income levels and ethnic backgrounds were offered disparate opportunities to independently read books of their own choosing during the school day, and if differences were discovered, did these differences contribute to achievement levels. A second aim was to determine whether children from poverty and children from diverse ethnic backgrounds experience commercial reading programs at a higher rate than their more affluent or white peers. Three research questions were posed to accomplish this purpose: (a) Are there differences in the opportunity provided for in-school voluntary reading between fourth grade students who are eligible to participate in the NSLP compared to their more affluent peers? Are there differences in the opportunity provided for in-school voluntary reading between fourth grade students identifying as an ethnic minority (as reported on the 2011 NAEP reading assessment) compared to their white peers? (b) To what extent are the achievement scores on the 2011 NAEP reading assessment at grade four associated with the frequency of opportunities for in-school voluntary reading while controlling for other factors, such as participation in the NSLP and student ethnicity? (c) Do fourth grade students who identify as members of ethnic minority groups experience literacy block structured using a commercial reading program more frequently than their

white peers? Do fourth grade students who are eligible to participate in the NSLP experience literacy blocks structured using a commercial core reading program more frequently than their more affluent peers? This chapter contains conclusions drawn from the findings and a discussion of the results. Implications for instruction and recommendations for future research conclude the chapter.

Important Findings

Findings were broken down into three categories: Opportunity for silent reading during the school day, opportunity for students to read books they chose themselves during the school day, and exposure to literacy block structured around a commercial reading program.

Opportunity to Silent Read During the School Day

Not all children are offered the same opportunities to read silently during the school day. When students responded to how frequently they were offered time to read silently in school, differences among groups of children emerged. One area of difference was in relation to student ethnicity. Black, Hispanic, and American Indian students were offered the opportunity to read less often than children who were white or Asian/Pacific Islander. A second area of difference was in relation to NSLP eligibility. Students who qualified for free or reduced price lunch reported being offered less opportunity to read silently in school than students who did not qualify to participate in the NSLP.

Opportunity to silent read during the school day appears to have a statistically significant positive relationship with student achievement scores for most children. Students who were "always or almost always" offered time to silent read during the

school day scored the highest, regardless of ethnicity, while students who reported that they were "never" offered time to read silently during the school day scored the lowest across all ethnicity categories (see Table 4.13).

There were two ethnicity/silent reading opportunity/achievement score relationships where associations were not significant. The relationship between the achievement scores for Hispanic students who reported that they were "often" offered time to silent read during the school day were not significant. The relationship between Asian/Pacific Islander students who reported that they "never or hardly ever" were offered time to silent read during the school day and achievement scores are less straightforward and need further investigation.

There were statistically significant relationships between student participation in the NSLP, opportunity to silent read during the school day, and achievement scores. Students who were "always or almost always" or "often" offered time to silent read during the school day scored higher than students who "never" were offered time to silent read during the school day, regardless of participation in NSLP. Within NSLP eligibility levels, students eligible to participate and who were "always" offered time to silent read during the school day scored significantly higher than NSLP qualifying students who "never" were offered time to silent read in school (see Table 4.19). Students who received free or reduced price lunch and who were offered the least amount of time to silent read during the school day—"never" and "sometimes"—had the lowest overall achievement scores.

As found when considering student ethnicity, one non-significant relationship was found between students who did not qualify for the NSLP, time to silent read during the school day, and achievement scores.

Opportunity to Read Books Students Chose Themselves During Silent Reading

All students do not have the same opportunity to choose their own books to read during the school day, and having a choice in reading material appeared to have a statistically significant positive relationship with achievement scores. Findings were consistent when both teacher questionnaire responses were considered as well as student questionnaire responses. White and Asian/Pacific Islander children were offered choice in what they read most frequently; these students had the highest achievement scores, as well. In contrast, Black, Hispanic, and American Indian children were offered choice in reading material the least often; these students had the lowest achievement scores.

Students of teachers who reported that they "never" provided the opportunity for students to read books they chose themselves scored the lowest across all ethnicity groups and regardless of NSLP qualification. Students whose teachers reported that they offered opportunity for students to read books they chose themselves "almost every day" had the highest achievement scores regardless of ethnicity or NSLP participation.

Although there were statistically significant relationships found, there were also some relationships that were not statistically significant. The relationship between choice in reading material and achievement scores was not significant for Hispanic students who "often" or "always or almost always" chose their own books to read. There was a non-

significant relationship between Asian students who "sometimes" had choice in what they read at school with achievement scores, as well.

Exposure to Commercial Reading Programs

The analysis of commercial reading programs focused on whether the school structured their reading program based upon a commercial reading program, and whether differences existed for children from different income levels and ethnic backgrounds. No relationship was found between the school structure of the reading program around a commercial reading program and student participation in the NSLP. According to this analysis, students who are eligible to receive free or reduced price lunch do not experience commercial reading programs at a higher rate than their more affluent peers.

A statistically significant relationship was found between student ethnicity and whether the school reading program was structured around a commercial reading program. Asian American and Pacific Islander students attended schools that structured the reading program around a commercial reading program more frequently than white, Black, and Hispanic students; American Indian and Native American students attended schools that structured their reading program around a commercial reading program less often.

<div align="center">Conclusions</div>

The findings led me to draw the following conclusions. First, children need time to silent read during the school day. When children have time to read during the school day, their achievement levels increase regardless of income level or ethnicity identification. Second, children need to have a choice in what they read during the school

day. During the analysis of NAEP data, students who chose their own books to read had higher achievement scores than students who did not have the opportunity to choose their own books to read. Finally, children in poverty did not experience the school reading program structured around a commercial reading program more frequently than their more affluent peers. However, minority children did experience a reading block structured around a commercial reading program more frequently than their white peers.

Fourth grade children who participated in the 2011 NAEP Reading assessment received different reading opportunities during the school day—an opportunity gap in reading instruction. Children identified as Black, Hispanic, and American Indian/Native American tended to have less time to silent read in school in comparison to white peers. Additionally, students identified as white were provided more opportunities to read self-chosen books during the school day. In addition, low-income children chose their own books less frequently and had fewer opportunities to silent read than their more affluent peers. The findings also showed that both choice in reading material and having time during the school day to silent read positively impacted students' achievement scores on the NAEP. It seems especially important, as a result of the data analysis conducted for this study, for schools serving low-income and ethnically diverse children to offer time each day for children to silently read books that they choose. More information would need to be collected to determine any further relationship between ethnicity identification and exposure to commercial reading programs.

Discussion

Children in poverty and children identified with ethnic minority groups are provided with fewer opportunities to voluntary read books of their own choosing during the school day than their more affluent and white peers. The American public school system is built on the idea that schools can be an equalizer for children—all children can benefit and gain from the system. In 1848 as the Secretary of the Massachusetts Board of Education, Horace Mann put forth the idea that children from all social classes should benefit from a common learning experience provided through the public school system (Mann, 1849). If schooling were extended to children regardless of class, then less privileged children could advance socially alongside their more privileged peers. Mann described the role of the public education system as an equalizer between social classes.

The school system becomes an even more important equalizer for low-income children and children who live in ethnically diverse neighborhoods where access to print resources are more limited than in more affluent and less diverse neighborhoods (Coats & Taylor-Clark, 2001; McQuillan, 1998; Neuman & Celano, 2001). In a recent study, Neuman and Celano looked at the libraries and preschool reading opportunities in two neighborhoods of disparate economics (Neuman & Celano, 2012). The researchers compared many features and found the less-affluent library had fewer librarians holding Master's Degrees, fewer librarians with multiple years of library experience, smaller number of books-per-child, fewer amount of hours open, smaller amount of physical space within the library, and fewer offerings of adult-and-child literacy interaction opportunities. For children in low-income communities, schools become even more

important as an equalizing force. Linda Darling-Hammond and other educators describe

an *opportunity gap* that exists between schools that serve students from different ethnic

and economic backgrounds (Darling-Hammond, 2013). The term opportunity gap

describes how schools where white and affluent children attend have more resources than

schools that serve lower-income and minority students. This opportunity gap includes

differences in course offerings, teacher experience and education levels, early-literacy

opportunities, and curriculum and instruction among schools that serve different

populations of students. When the opportunity gap is present, schools no longer function

as the promised equalizer. But when those schools do not offer children the same

opportunity in regard to reading instruction, there is potential for gaps in achievement to

widen. Less time to silently read books of choice can be a contributing factor to the

achievement gap.

There were some groups of students for whom the data from this study was less

straightforward. There was no relationship between achievement scores and silent

reading for Hispanic students who reported that they "often" were given choice in what to

read, as well as Asian students who reported that they "never or hardly ever" were

provided opportunity to silent read during the school day. Although this was puzzling,

one idea for why the data did not indicate a clear relationship could be due to the lack of

nuance in the chosen NAEP variables used in this study. There were variables that

indicated student classification as an English Language Learners but those variables were

not used. As a result it was unclear as to whether there was a relationship between

student's experience using English and reading achievement levels. In addition, the

ethnicity variables did not allow for distinctions between groups within the ethnicity category. For example, the category Asian captured many ethnic groups—Chinese, Japanese, Vietnamese, Hmong, and so forth. While some groups have long histories in the American school system, other groups captured within the Asian category include more recent immigrants. The variable does not differentiate between students for whom English is their native language, those who have been exited out of English Language Learner programs yet may not have solid grasp of academic language, and children who more recently entered the American school system.

Limitations

Limitations exist in this study. One limitation is with the lack of definition in the response choices for the questionnaire questions. Terms such as "Often" and "Sometimes" are not defined and may have different meanings depending on the child.

Another limitation is that although the findings indicate that there is a significant relationship between both having time to silent read in school and having a choice in reading material, with reading achievement, those two factors are not the only contributing factors to the gap in achievement between the groups of children studied.

A third limitation is with the variable choices. Within the NAEP data set, there were hundreds of variables from which to choose. Working with the data, I tested a multitude of combinations. The traditional tests-of-fit are unsuitable for the NAEP data, which meant I tried recommended combinations until I started finding non-significant results. Once non-significant results began emerging, I could add and take away variables.

Implications

The findings from this study have practical pedagogical implications for the place of voluntary reading in the broader discussion about the achievement gap and the structure of the reading block. One concrete implication for classroom teachers is that most students demonstrate increased reading achievement when they are provided time to read books of their own choosing during the school day. As teachers set up the structure of their school day, planning time for children to silently read books of their choice is an important ingredient to include. Many schools use workshop methodologies, such as reader's workshop (Atwell, 2007) or Daily Five (Boushey & Moser, 2006). Both of these structures are built around large chunks of time for children to read books independently. One critical element of both structures is that children are engaged with books and enjoy reading—so they want to read more. Children who read more frequently are those who become better readers (Allington, 2005; NICHD, 2000); this study supports those findings.

This study also has broader pedagogical implications. The American textbook industry boasts $14 billion profits annually (Band, 2013), with a portion of those funds used for commercial reading programs. Often commercial reading programs are purchased as an antidote to lags in reading achievement. As policymakers create mandates to improve reading and school district administrators implement plans to meet mandates, they need to make sure that the structure of the reading block includes opportunities for children to choose books that they want to read—and have time to read those books—during the school day.

Education as Equalizer

Education is a political act (Apple, 2008). Viewing education through a political lens helps us see the power relationships involved in what is taught, to whom it is taught, and how and why there are differences in the education provided to children from different ethnic backgrounds and social classes. Power in the larger society is unequal—there is a dominant race and a dominant class in American society. That power disparity is reflected in classrooms across the country. One classic study of the disparate types of education provided to children from different backgrounds is Jean Anyon's 1978 study (Anyon, 1980). Anyon conducted research in New Jersey elementary schools with income levels ranging from working class to the top 1%. Anyon found that the instructional methodology between the schools was strikingly different. Children from the working class schools were expected to use rote memorization techniques and had very little decision-making or choice, teachers spent a lot of time controlling students, who were expected to stay in their seats and raise their hands to be called upon. Writing experiences involved grammatical and fill-in-the-blank style worksheets. The education provided to children in the top income bracket was strikingly different. These students spent the day problem-solving and developing analytical skills. They were given freedom to move about the classroom, and discussions were a frequent part of all content areas; students chose their topics for essay writing.

Anyon (1980) described the differences between the schools as the "hidden curriculum" that is provided to children from different economic backgrounds. She put forth the notion that children often are prepared by schools for a future much like that of

their parents—in this case, working class children were being prepared for blue-collar work that allowed for little choice and required little thought. More affluent children were being prepared for jobs where they would make decisions and hold positions of power (Anyon, 1980).

Twenty years later, former Labor Secretary Robert Reich (2002) expanded on Anyon's analysis of educational disparities for children from different social classes—and extended the analysis into the larger economic realm. When looking at the American educational system, Reich found that the disparities described by Anyon in 1978 continue to persist. My research study indicates that in 2011, differences persist in much the same way in relation to the reading block structure for children from different income levels and ethnicity identification.

Future Research

There are many questions that remain unanswered and beg for further study. The findings indicate that children of lower income levels do not experience a reading block structured around a commercial reading program at a statistically significant higher rate than their more wealthy peers. However, there *were* differences in the exposure to commercial reading programs within the literacy block between children who identified with ethnic minority groups and their white peers. But what does that mean for children of color? Further study in this area would be warranted. A large-scale qualitative study across schools that serve various ethnic groups using an interview protocol would be one way to capture data that sheds light on the quantitative data in this project. Differences exist—a qualitative study would show what those differences mean for children.

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