

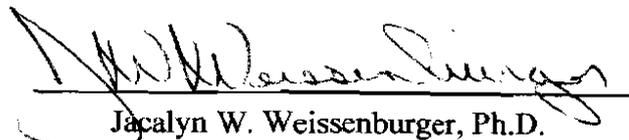
THE ACHIEVEMENT GAP: COMPARING CHILDREN'S READING TREND LINES  
BY SOCIOECONOMIC STATUS OVER TIME

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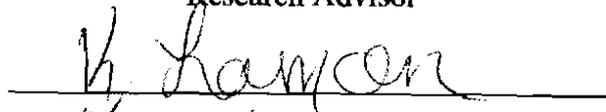
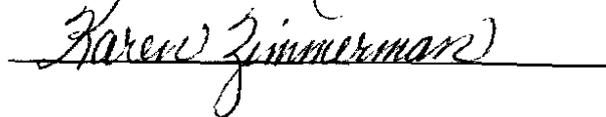
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ABSTRACT

The acquisition of basic reading skills is necessary for children to be academically successful. More importantly, the failure to obtain such skills can have drastic repercussions on adult life. Research suggests that some children are at a greater risk for reading failure than others. Children who come from economically disadvantaged families typically score lower on reading tasks than children from more advantaged families, resulting in a reading achievement gap. Furthermore, students from economically disadvantaged families are more likely to experience summer reading setback due to their limited resources and opportunities compared to their more affluent peers. Research suggests that reading achievement varies between students with differing socioeconomic status and with changes in the academic calendar.

This research project utilizes the *Monitoring Basic Skills Progress* as a means to track the reading development of children. In this study, the reading achievement of less advantaged students is compared to that of more advantaged students, and the reading

achievement trend lines for both groups of students is analyzed with respect to breaks in the academic calendar.

Results indicated that students in grades two through six generally made comparable gains in reading achievement skills over the course of the school year regardless of their socioeconomic status. In only one grade level, the fourth grade, were significant differences noted in approximately half of the administered reading tasks, indicating that high SES fourth graders outperformed their low SES peers in terms of reading skills during the course of the school year. During the winter break, both high and low SES students continued to make comparable and significant gains in reading achievement. On the contrary, over the course of the summer break, both the high and low SES students made no significant gains or losses in their reading skills.

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## Chapter I: Introduction

The ability to read and read well is an invaluable skill in American society. Literacy has been described as a type of currency. Those with such a resource will be able to pursue their dreams, whether they are social, political, civic, or economic (Kirsch, Jungeblut, Jenkins & Kolstad, 1993). Unfortunately, those who are less literate or, worse, completely illiterate will have less means to fulfill their aspirations. In addition, a number of social problems are linked to low reading achievement. These social problems include delinquency, dropping out of school, teenage pregnancies, unemployment, and homelessness (McGill-Franzen, 1987; McGill-Franzen & Allington, 1991).

Shockingly, achievement levels at the end of first grade can predict quite accurately who will be successful later in life (McGill-Franzen & Allington, 2001). Simply put, limited literary proficiency and low reading achievement can be the apex of a downward spiral. Those who struggle while learning to read are likely to struggle in school. Individuals who do not finish school or who have fewer skills will likely obtain lower-paying jobs, resulting in less resources and opportunities (Gardener, 2001; Kirsch et al., 1993). Therefore, it is not hard to believe that reading achievement and socioeconomic status are directly connected.

Studies have shown that children who come from low socioeconomic families may have the most to lose from a lack of resources and opportunity. These children tend to exhibit less developed reading skills than children who come from more affluent families (Bracey, 2003; Plisko, 2003; Lyon, 1999). This has become known as the achievement gap (Bracey, 2003; Plisko, 2003; Lyon, 1999). Nearly forty years ago, the United States government believed that the achievement gap was a cause for national concern. In response to this concern, the Title I program was specifically created to provide supplemental funding to educate less advantaged

students. Regardless of such efforts, it appears that Title I and other remedial programs have not been effective in closing the achievement gap. More affluent students continue to make gains in reading skills, while less affluent students fall further and further behind (Plisko, 2003; PIRLS, 2001; Lyon, 1999).

Several researchers believe they have found the cause of the reading achievement gap. Many believe that the lack of resources and learning opportunities for less affluent students during the summer months are detrimental. Whereas more affluent students typically make gains during the summer time, less advantaged students often remain idle or actually lose ground academically. This phenomenon has been termed summer reading setback (Allington & McGill-Franzen, 2003; Entwisle, Alexander & Olson, 2001; Cooper, Nye, Charlton, Lindsay & Greathouse, 1996). The concept of summer reading setback makes more sense when there is some evidence that less advantaged and more advantaged students make comparable gains in reading achievement when school is in session (Cooper et al., 1996; Entwisle, Alexander & Olson, 1997; Entwisle et al., 2001). Likewise, most Title I programs do not run through the summer months, when additional resources and learning opportunities would be beneficial. Entwisle et al. (1997; 2001) refer to this as "The Faucet Theory." Not only are home-based resources limited for children from low socioeconomic homes, but also school-based resources are shut off for such children during the summer months.

Researchers like Allington and McGill-Franzen (2003) have suggested that summer reading setback is a phenomenon that has been overlooked for too long. They criticize those in charge of programs, such as Title I, that have not taken this phenomenon into account. Seen in a different light, this lack of response could be interpreted as a need for more information on the reading trends of America's children and the impact of summer reading setback. Regardless,

continual tracking of the reading skill of American children appears necessary to ascertain the effects of programming by examining the variations in reading trend lines according to socioeconomic status.

New assessment techniques have been developed in the last twenty years to evaluate the attainment of skills such as reading. Created by Deno and his colleagues at the University of Minnesota, curriculum-based measurement (CBM) has been acclaimed for its efficiency and ability to measure student standing and growth over time (Fuchs & Fuchs, 2002). CBM was originally used with special education students to assess student progress and the effects of instruction. Researchers have found CBM to be more sensitive to academic growth than standardized tests (Marston, Fuchs, & Deno, 1986), and CBM can accurately determine changes in performance after academic breaks (Allinder & Fuchs, 1994).

CBM assessments of reading originally required one-on-one timed assessments of reading passages. Such assessments can be a time consuming process if every student were to be assessed on a regular basis. More recent developments of computerized CBM tests, such as the Monitoring Basic Skills Progress (MBSP, 1997) Test by Fuchs, Hamlett and Fuchs, have made the collection and storage of data for all students more feasible. Therefore, it seems that the use of CBM, especially the MBSP Test, is ideal to track the reading trend lines of American children.

#### *Rationale and Significance of the Study*

This study will examine two elements. First, a comparison of reading trend lines will be conducted between children who are eligible for free and reduced-price meals and those who are not eligible. Second, an analysis of children's reading trend lines will be conducted to trace variations in reading scores that coincide with breaks in the academic calendar. The

computerized Monitoring Basic Skills Progress (MBSP) Test will be used to assess student achievement in reading once every two weeks.

### *Research Questions*

The following research questions will be addressed in the current study:

1. Over the course of the school year, how do the trend lines for reading achievement vary between students who are eligible for free and reduced-price meals and those who are not?
2. How are the trend lines for both groups of students affected by breaks in the academic calendar, particularly winter and summer breaks?

### *Definition of Terms*

For clarity, the following definitions of terms are provided.

*Achievement Gap*: The difference in educational achievement gains between more affluent and less affluent students.

*Cloze Procedure*: A method of systematically deleting words from a prose selection and then evaluating the success a reader has in accurately supplying the words deleted (McKenna & Robinson, 1980).

*Curriculum-Based Measurement (CBM)*: Short, accurate, and easy-to-use formative evaluation tools used to assess a student's progress during the course of instruction.

*Free and Reduced-Price Meals*: Meals provided to children who come from a family with a household income less than 130% of the Federal Poverty Guideline, and meals provided at a lesser cost to children who come from families that have a household income between 130% and 185% of the Federal Poverty Guidelines (United States Census Bureau, 2005, p. 324).

*Literacy:* The ability “[to use] printed and written information to function in society, to achieve one’s goals, and to develop one’s knowledge and potential” (National Center for Education Statistics, n.d., ¶1).

*Maze-CBM:* A method of implementing CBM by means of the cloze procedure and maze technique, in which the number of correctly selected multiple-choice words is counted.

*Maze Technique:* A multiple-choice cloze reading technique which has been validated for use as a curriculum-based measurement strategy (Shinn, 1998).

*Reading-CBM:* A method of implementing CBM by having students read connected text aloud from their general education curriculum for one minute, and the number of words read correctly is counted (Shinn et al., 2002).

*Summer Reading Setback:* The phenomenon of experiencing a setback in reading development over the summer months due to low socioeconomic status and limited access to reading materials.

*Title I:* A program created under the Elementary and Secondary School Act (ESEA) of 1965 and amended within the reauthorization of ESEA by the No Child Left Behind Act of 2001 in which financial assistance is provided to educational agencies that serve a high percentage of low-income families.

## Chapter II: Literature Review

This chapter will discuss the most recent literature on the literacy skills of American adults, the importance of becoming literate, and some of the most current information on the reading skills of American children. It will also discuss the achievement gap between more advantaged and less advantaged youth, Title I efforts to close the achievement gap, and the impact of summer reading setback. Furthermore, the importance of tracking children's reading skills will be addressed. The use of curriculum-based measurement and, more specifically, the use of the Monitoring Basic Skills Progress Test to track such skills over time are then examined. Finally, a critical analysis of the limitations of current research on the topic of summer reading setback and the use of standardized tests to assess this phenomenon will be discussed.

### *The Literacy Skills of American Adults*

The most current and thorough description of the literacy skills of American adults can be found in the results of the 1992 National Adult Literacy Survey (NALS). The NALS is sponsored by the United States Department of Education's National Center for Education Statistics (NCES). The 1992 NALS findings were obtained by randomly selecting nearly 13,600 Americans aged 16 and older to represent the nation's adult population. Data was collected by staff members who were trained to interview the participants. According to this survey, literacy was defined as the ability "[to use] printed and written information to function in society, to achieve one's goals, and to develop one's knowledge and potential" (National Center for Education Statistics, n.d., ¶1).

Unlike past measures of adult literacy, the NALS does not portray literacy as an all or none situation. Rather, to discuss various skill levels, five different literacy scales were created. Labeled as Levels 1 through 5, these scales represent an evolution of skills from Level 1 (basic)

to Level 5 (most advanced). In addition to these five levels of proficiency, adults were evaluated in three areas of literacy: prose, document and quantitative literacy. Prose tasks required participants to locate, integrate, and elaborate on written information (e.g., newspaper stories, written instructions and poems). Document tasks required participants to use short forms of graphically displayed information to function in everyday life (e.g., job applications, transportation schedules and graphs). Quantitative tasks required participants to locate, integrate, and perform operations with information presented numerically or on charts and graphs within prose and document tasks (e.g., balancing a checkbook, completing an order form and calculating interest). Adults who scored at literacy Level 1 of the 1992 NALS demonstrated the lowest level of prose, document, and quantitative proficiency. Conversely, the adults who demonstrated the highest proficiency in these areas scored at literacy Level 5.

In summarizing the NALS Findings, Kirsch et al. (1993) reported that, according to the 1992 NALS, 40-44 million of the then 191 million adults in America (or approximately 21-23 percent) would score at literacy Level 1. Approximately 50 million (or 25-28 percent of American adults) would score in the next highest level of proficiency at literacy Level 2. Thus, approximately half of the American adult population (47-49 percent) would be expected to demonstrate the most basic or simple literacy skills and strategies. Comparatively, 57-67 million adults (30-35 percent) would likely receive scores placing their performance at the Level 3 literary classification, and 34-40 million adults (18-21 percent) would likely receive scores consistent with literacy Levels 4 and 5.

The 1992 NALS results indicated a strong correlation between the number of years of educational achievement and the adults' literacy proficiency levels. Virtually two-thirds of the adults at literacy Level 1 had abandoned their education before finishing high school. Seventy-

five to eighty percent of adults who had less than eight years of school were at literacy Level 1. In contrast, only 16-20 percent of adults who had finished high school were at literacy Level 1, and another 10-13 percent of adults who had received their high school diplomas were at the top two literacy levels. When education was extended beyond high school, their literacy rates again increased drastically. Of those Americans with four-year college degrees, only four percent were at literacy Level 1, while 44-50 percent were in the two highest literary proficiency levels.

### *The Importance of Becoming Literate*

Surprisingly, the roughly 90 million Americans at literacy Levels 1 and 2 may not have believed they were "at-risk" because of their limited literacy. Sixty-six to 75 percent of adults in Level 1 and 93-97 percent of adults in Level 2 described themselves as being able to read or write English "well" or "very well," although the survey clearly demonstrated that their skills were much more limited (Kirsch et al., 1993). These results suggest that adults who see themselves as able to effectively communicate in American society may not perceive how their opportunities have been limited due to their lack of literary proficiency.

Many social problems are linked to low reading achievement. These include delinquency, dropping out of school, teenage pregnancies, unemployment, and homelessness (McGill-Franzen, 1987; McGill-Franzen & Allington, 1991). The National Institute of Child Health and Development (NICHD) has identified reading failure as a significant public health problem because of its enormous psychological, social, and economic consequences (Lyon, 1999). Findings from the 1992 NALS report indicate that American adults with higher literary proficiency levels were more likely to have jobs, work more weeks throughout the year, and earn larger incomes than those at the lower proficiency levels. Likewise, American adults at literacy

Level 1 were far more likely to receive food stamps and less likely to collect interest from a bank account than adults at literacy Levels 4 and 5 (Kirsch et al., 1993).

Literacy has been described as a type of currency in today's society (Kirsch et al., 1993). Those with literacy skills will likely have more resources to pursue their aspirations, whether they are social, political, civic, or economic. Kirsch et al. argued that although more Americans are literate today than at any other time in our nation's history, technological advancements have created a larger demand for literate adults. In the article, *Job Opportunities for the Next 30 Years*, Gardner (2001) supports this position by stating, "to obtain a job in the new economy, young people will be required to be educated" (p. 2). Gardner adds that Americans will need a good education, training, and a commitment to learning to be successful and sustain employability. Evidence again affirms that those who do not possess these characteristics will be subject to lower paying jobs. Gardner asserts, "Society cannot afford poorly prepared youth . . . [therefore] the challenge is on all our shoulders to promote achievement and to support the aspirations of all of our youth" (p. 3).

Shockingly, statistics indicate that achievement levels at the end of first grade can accurately predict who will be successful in life (McGill-Franzen & Allington, 2001). McGill-Franzen and Allington (2001) state, "Children become adults; children who don't learn to read become adults who can't" (p. 86). It is important to realize that reading is a challenge that strikes fear in almost 60 percent of America's children; and, for approximately 20-30 percent of these children, learning to read will be the most difficult assignment they ever attempt (Lyon, 1999).

The ability to read, and read well, is a fundamental skill that cannot be overlooked. Dr. Reid Lyon (1999), Chief of the Child Development and Behavior Branch of the NICHD at the National Institute of Health, claims, "Reading skills serve as THE major foundational academic

ability for all school-based learning” (p. 1). When reading skills suffer, so do all other academic skills that directly hinge upon them, including general knowledge, spelling and writing abilities, math, science, and language skills, as well as any other subject matter. Most importantly, Lyon (1999) states, “Difficulty in learning to read crushes the excitement and love for learning” (p. 1). Thus, if individuals do not develop a desire to learn, they will not make a commitment to learning in their lives. Literacy is a concern that needs to be addressed before the lack of literacy takes a devastating toll on a child’s future.

All things considered, limited literary proficiency and low reading achievement can be the impetus for a downward spiral. Individuals who do not learn how to read or, more likely, those who struggle to learn to read will have difficulty in school. Individuals who struggle in school will likely have less educational attainment than those who do not. Individuals with fewer skills will be less likely to obtain jobs that pay well. Low-paying jobs mean less resources and opportunities. All in all, a lack of reading skill can be directly connected with low socioeconomic status. Such a cycle cannot be easily broken. The key, then, is to stop the sequence before it begins. This can be accomplished by ensuring that all children have an opportunity to learn and be successful at reading. More so, it means that educators must be vigilant of children who may be at-risk of reading failure or low reading achievement.

### *The Reading Skills of American Children*

According to the results of the 2001 Progress in International Reading Literacy Study (PIRLS), the United States scored ninth out of 35 countries when considering the reading achievement, habits, and attitudes of the nation’s fourth graders. Results of the 2001 PIRLS have been viewed in both a positive and negative light in America. Some assert that a ninth place finish is less than stellar and indicates that American children are struggling to learn to read

(Bracey, 2003). Others take a different stance. When statistical tests are applied, only three other countries scored higher than the United States (Bracey, 2003). The PIRLS (2001) International Report claims that the United States “performed well” and scored as high as or higher than all the other countries in the study. According to Bracey (2003), concern about the United States performance should not focus on how America’s students compare to other countries’ students, but on how America’s students compare to one another.

Bracey (2003) noted that poor students, or those considered eligible for free and reduced-price meals, scored considerably lower on the 2001 PIRLS Reading Assessment. As the percentage of students eligible for free and reduced-price meals increased, the average score on the reading assessment decreased. With an international average score of 500, American schools with only 10-24.9 percent of students receiving free and reduced-price meals scored an average of 567. American schools with 25-49.9 percent, 50-74.9 percent, and 75 percent or more students receiving free and reduced-price meals obtained average scores of 551, 519, and 485, respectively (Bracey, 2003).

Similar findings can be found in the results of the 2003 National Assessment of Educational Progress (Plisko, 2003). Since 1969, the United States government has periodically tracked and published the educational progress of American students. The National Assessment of Educational Progress (NAEP), also known as “The Nation’s Report Card,” monitors fourth and eighth grade achievement in key academic areas. Based on performance in each area, the NAEP divides students into three different achievement levels: Basic, Proficient, and Advanced.

Results of the 2003 NAEP Reading Assessment indicated that our nation’s fourth grade reading scores were not measurably different than scores from 1992 or 2002. In contrast, the 2003 NAEP Reading Assessment results for eighth graders showed a slightly different trend.

Though eighth graders' 2003 average reading scores were higher than those in 1992, they were slightly lower than those from 2002. When considering national statistics from the 2003 NAEP Reading Assessment, it appears that a greater percentage of students are increasing their reading achievement levels than in the past. More of America's fourth graders were at or above the Proficient level in reading in 2003 compared to those in 1992. Likewise, the percentage of eighth grade students at or above the Basic and Proficient levels in reading had increased from 1992 to 2003.

Reading scores can also be analyzed by states and jurisdictions. Forty-two states and jurisdictions were involved in the 2003 NAEP fourth grade reading assessment. When compared with results from 1992, 13 of the 42 states and jurisdictions increased their average score, five exhibited decreases, and there were no measurable differences for 24 states.

Thirty-nine states and jurisdictions were involved in the 2003 NAEP eighth grade reading assessment. When compared with results from 1998, eight of the 39 states and jurisdictions exhibited increases in their average reading score, seven exhibited decreases, and there were no measurable differences for 24 states. Thus, only 31 percent of fourth-grade and 21 percent of eighth-grade states and jurisdictions considered in the 2003 NAEP demonstrated progress in their reading achievement. An interesting aspect of these findings is the type of student who was most likely to make gains.

Though a greater percentage of students attained higher levels of reading achievement, percentile scores paint another picture. The NAEP results verify that only those fourth grade students who read at the 75<sup>th</sup> percentile had higher reading scores compared to their peers in 2003 than in 1992. Comparatively, from 1992 to 2003, all eighth-graders made improvements in reading achievement (except those at the 90<sup>th</sup> percentile). However, from 2002-2003, eighth-

graders performing at the 10<sup>th</sup> and 25<sup>th</sup> reading percentiles demonstrated *lower* achievement levels in reading. These results suggest that students who performed well on reading tasks made gains, whereas those struggling to learn to read remained idle or actually lost ground when it came to reading achievement.

The Associate Commissioner of the NCES drew another connection from the NAEP results. She reported, “Students from lower-income families have lower scores than students from higher-income families” (Plisko, 2003, p. 2). Children from economically disadvantaged homes predominantly participate in the Federal lunch program by receiving free and reduced-price meals, and they also score in the lowest quartile for early reading skills (Lyon, 1999). In fact, when students eligible for free and reduced-price meals are compared to those who are not eligible, gaps in scores are noticeable. The results of the 2003 NAEP showed that the gaps in scores for both fourth and eighth graders in the eligible and non-eligible groups stayed the same from 1998 to 2003. In addition, the gap in reading scores for eighth graders actually increased between 2002 and 2003.

### *The Achievement Gap*

Results of the PIRLS (2001) and the NAEP (2003) exemplify a social divide that has been a concern for many years. There is a significant advantage in the academic achievement for students with more financial resources. This difference is known as the achievement gap (Bracey, 2003; Plisko, 2003; Lyon, 1999). The achievement gap may not seem so shocking unless the downward spiral of events for adults with lower level literacy is considered. Earning less money affords limited resources and opportunities to the children of those less literate. Thus, these impoverished children are less likely to become proficient readers and are more likely to be at-risk of reading failure themselves.

The United States Department of Education (2002) released a brief fact sheet based on the 2002 NAEP results that suggested the achievement gap will get worse before it gets better. Two key pieces of evidence were cited. First, long-term trends indicated that the gap is widening. From the late 1980s to 1999, NAEP scores in low-poverty schools increased, while NAEP scores in high-poverty schools decreased. Secondly, fourth-grade scores on the 1998 NAEP revealed that twice as many low-income students (i.e., those eligible for free and reduced-meals) performed at the Basic level of reading proficiency compared to those who were not low-income, and significantly less low-income students achieved at the Proficient level (Allington & McGill-Franzen, 2003).

The achievement gap is not a new public education concern. Lyon (1999) referred to the reading difficulties that economically and socially disadvantaged children in the United States face as an epidemic. It is unfortunate that this issue of inequality was first addressed nearly four decades ago, yet the gap continues as one of the largest educational issues to date.

*Title I: Improving the Academic Achievement of the Disadvantaged*

The Elementary and Secondary Education Act (ESEA) of 1965, Public Law 89-10, appears to be the first attempt by the United States government to address the issue of the achievement gap. Title I of the ESEA authorized grants to fund elementary and secondary school programs for children from low-income families. With the reauthorization of the No Child Left Behind (NCLB) Act by President Bush in 2001, which became Public Law 107-110 in 2002, the achievement gap has again come to the forefront of public policy. As part of the reauthorization of ESEA through NCLB, Title I was amended and given a new subtitle, Title I: Improving the Academic Achievement of the Disadvantaged (<http://www.ed.gov/programs/titleiparta/legislation.html>).

Title I addresses many educational concerns including the opportunities allotted to low-income families. Title I's stated purpose is "to ensure that all children have a fair, equal, and significant opportunity to obtain a high-quality education and reach, at a minimum, proficiency on challenging state academic achievement standards and state academic assessments" (United States Department of Education, n.d., ¶2). Some of the central goals of Title I are to: meet the educational needs of low-achieving children, especially those in America's highest-poverty schools; provide reading assistance to young children in need; close the achievement gap between advantaged and disadvantaged children; and hold educators and states responsible for the academic achievement of all students, particularly those in low-performing schools.

Title I provides financial assistance to educational agencies that serve a high percentage of low-income families. Funded schools must specifically focus their Title I services on those children who are either failing or at-risk of failing academically. Schools with a population comprised of at least 40 percent of children from low-income families may run school-wide Title I programs with the ESEA subsidy. Funding for this program has not been a small matter for the American people. In 2002 alone, 10.4 billion tax dollars went into serving those in Title I, and the budget request for 2003 was 11.4 billion dollars (United States Department of Education, 2002). Though Title I funds may be used for children from preschool through the twelfth-grade, 77 percent of Title I funds are used to provide assistance to children from preschool through the sixth grade. It seems logical that services would be centered on building basic reading skills before weaknesses in these skills became an insurmountable detriment in all other areas of education. Entwisle et al. (2001) advise that children's cognitive development around the age of six proceeds twice as fast as it will by age eight or nine. Several reading initiatives for young children have been created under Title I. These reading initiatives include the Reading First and

Early Reading First programs, Even Start, and Improving Literacy through School Libraries (United States Department of Education, 2004). One may ask, why after forty years of commitment to equity in education, billions upon billions of dollars in funding, and numerous educational programs for young children, is the achievement gap growing?

Research shows that current programs are not enough to address and combat the prevailing literacy issues concerning children (PIRLS, 2001; Plisko, 2003). Lyon (1999) affirms, “Despite the existence of educational programs supported through Title I funding, the proliferation of reading failure among disadvantaged children continues, in the main, unabated” (p. 2). Regardless of these findings, the United States government continues to raise standards for America’s children and educators. By the year 2009, all 52 states and jurisdictions are expected to increase the number of low-income students that score in the Proficiency or Advanced categories on the NAEP (United States Department of Education, 2004). Before standards are raised again for those already struggling, key elements of the widening achievement gap and current program failures must be identified and managed. Some researchers believe that they have pinpointed one crucial factor in this complex equation: summer reading setback.

#### *The Impact of Summer Reading Setback*

Many researchers believe that it is not necessarily what happens during the school year that causes differences in academic achievement between disadvantaged and more advantaged children, but more so, what happens in the summer (Allington & McGill-Franzen, 2003; Cooper et al., 1996; Entwisle et al., 2001). Considering most school calendars are nine months long, summer break accounts for roughly one third of the academic year. For some students, especially the disadvantaged, such a long break may be more than they can afford (McGill-Franzen & Allington, 2001). Too often, these children return to school in the fall with fewer reading skills

than they had in the spring (Allington & McGill-Franzen, 2003). This phenomenon has been termed summer reading setback, or summer reading loss. Therefore, programs such as Title I that limit allocations of reading resources to the school year may not be effective in addressing the reading gap between disadvantaged children and their more advantaged peers (Allington & McGill-Franzen, 2003).

Cooper et al. (1996) provides a thorough history of the study of summer reading setback. It is believed that the first study to address summer loss was performed by William White in 1906 to address the development of mathematical skills. It was not until 1924 that Brueckner and Distad performed the first empirical test to determine if summer loss occurred in the reading skills of children with different abilities. In their study, Brueckner and Distad did not find a general loss. However, their attempts provided the momentum for other efforts through the 1920s to study this phenomenon. Regrettably, the findings of these studies were inconsistent. Through the 1930s and 40s, studies of reading setback dwindled. Those who did take up this cause tended to focus on the relation between intelligence and summer setback. In the late 1960s, Hayes and Grether (1969) made a discovery while comparing the number of students who received free lunches in various schools. These researchers found that children from poorer schools demonstrated losses in reading over the summer and children from richer schools made gains. Heyns' 1978 study on summer reading setback with Atlanta school children is one of the most notable. Heyns compared changes in word recognition test scores when school was in session to scores when school was not in session. Similar to Hayes and Grether's 1969 study, Heyns found that going to school improved achievement, but parental socioeconomic status was a better predictor of learning when children were not in school. The results of the Heyns study suggested summer vacation widened the achievement gap between the rich and the poor.

Another study by Entwisle and Alexander in 1992 compared the reading comprehension setback among samples of Baltimore school children over the span of two summers. These students were divided by racial groups (i.e., Black and White) as well as by whether they attended an integrated or segregated school. The Entwisle and Alexander study showed that the children of parents who had dropped out of high school lost more ground in reading than children of parents who had not dropped out. They also found that Black students in segregated schools experienced more reading setback over the summer than Black students from integrated schools.

In a meta-analytic review, Cooper et al. (1996) examined 39 different studies on the effects of summer vacation on achievement. They used two different methodologies to determine effect size. First, they calculated a standardized mean difference of the sample's average achievement score in the spring from the average achievement score in the fall. Secondly, when possible, they calculated the simple difference of a sample's average fall grade-level equivalent score to the spring grade-level equivalent score. Overall, Cooper et al. (1996) concluded that summer reading loss, as measured by achievement test scores, occurred more often with lower-class students, while middle-class students made gains in reading achievement over the summer months.

Some studies have found that all groups of students, regardless of their financial resources at home, make similar gains during the school year (Cooper et al., 1996; Entwisle et al., 1997; Entwisle et al., 2001). For example, a study by Entwisle et al. (2001) used the results of standardized test scores to compare the performance of disadvantaged first graders to their more affluent peers. Students were tested once in the fall and then again in the spring to measure their educational attainment during the school year. The less advantaged children gained 57

standardized points in reading. Likewise, their more advantaged peers gained a comparable 61 points in reading.

Unfortunately, it seems that comparative gains may not be maintained throughout the summer months. Entwisle et al. (2001) continued their study through the summer by evaluating the students' performance in the spring to that in the fall. Results indicated the more affluent first graders gained 15 standardized points in reading over summer, whereas their less advantaged classmates lost four standardized points. The findings of Entwisle et al. (2001) are representative of "The Matthew Effect," taken from the gospel of Matthew 25:29, meaning that the rich get richer and the poor get poorer. The Matthew Effect, then, would support the notion that less affluent students fail to make gains while their more affluent peers make considerable gains in achievement. As such, the less affluent students continue to fall further and further behind academically.

Entwisle et al. (1997; 2001) make metaphorical sense of the change in reading achievement scores of the disadvantaged by means of "The Faucet Theory." Simply put, when children are in school, the faucet is turned on and numerous reading resources are available to them. When they are not, such as during the summer months, resources are turned off and reading achievement suffers. Allington and McGill-Franzen (2003) report that the best predictor of whether or not a child will read over the summer months is if he or she owns books. Because low-income families are on restricted budgets, they are less likely to have the financial resources to buy books. Therefore, many disadvantaged children count on school libraries to obtain reading material. When these facilities are closed for summer, these authors argue that finding transportation to public libraries and fear of fines can inhibit low-income families from taking advantage of summer reading opportunities (McGill-Franzen & Allington, 2003).

The negative impact of “the faucet being shut off” becomes more problematic over time. The Entwisle et al. (2001) study supports that the gap in students’ reading achievement occurs because more advantaged students continue to make gains throughout the summer, but those who are less advantaged fail to further develop or maintain their reading skills. Furthermore, Entwisle et al. (2001) point out that because of summer reading loss, poor children start from a lower skill level in the fall. Though they make comparable gains as their peers during the school year, continued losses over the summer months coupled with their peers’ gains further widens the achievement gap from year to year. Through the course of the first five summers of elementary school, Entwisle et al. (2001) found that less advantaged students in their study gained less than one point in reading, while their more advantaged peers gained forty-seven points. Cooper et al. (1996) estimates that an annual achievement gap of three months occurs between disadvantaged and more advantaged students every summer. Thus, between Kindergarten and the end of fifth-grade, less advantaged students will score, on average, one and a half years behind their peers. Cooper et al. (1996) further estimated that when the reading gap is considered with the achievement gap, many low-income students might be two to three years behind their peers by the time they enter middle school.

#### *The Importance of Tracking Reading Skills over Time*

Allington and McGill-Franzen (2003) suggest that summer reading setback is a phenomenon that has been overlooked for too long. They criticize those in charge of programs such as Title I because they have not changed programming to provide services to disadvantaged youth during the summer months. This raises an important question. Is more evidence needed to determine the reading trend lines of America’s children to ascertain the impact of summer reading setback?

Tracking the reading skills of children seems to be a crucial element to understanding how the reading trends of children change throughout the course of the school year and summer. It is widely acknowledged that the more children practice their reading, the more their reading skills will develop. Children who are not provided opportunities to practice reading skills are less likely to have well-developed skills and are more likely to be unmotivated to read (Lyon, 1999). The No Child Left Behind Act of 2002 defines the last element of reading to be “the development and maintenance of the motivation to read” (United States Department of Education, 2004). Lyon (1999) declares that one way to combat the decline in the motivation to read, and likewise help those children with limited reading skills, is prevention and early intervention. Fortunately, developments in education have given rise to early intervention methods to track the reading skills of children. One such method is known as curriculum-based measurement.

#### *Curriculum-Based Measurement*

Curriculum-based measurement (CBM) is a set of techniques used to measure academic competence and monitor progress (Deno, Fuchs, Marston & Shin, 2001). CBM was developed by Dr. Stanley Deno and his colleagues at the University of Minnesota in the 1980s in an attempt to find an alternative measurement system for students receiving special education services (Fuchs & Fuchs, 1991). CBM is noted for the efficient manner in which it obtains accurate, meaningful information to determine academic standing and growth; answers questions about the effectiveness of programs by measuring learning; and assists in the development of better instructional programs (Fuchs & Fuchs, 2002). Since the 1980s, CBM has been used to monitor students in remedial programs such as Title I, and it is starting to be used in general education classrooms (Shinn, Shinn, Hamilton & Clarke, 2002).

Assessments like CBM aim to measure student growth over time, also known as formative evaluation (Shinn et al., 2002). Formative evaluation methods are meant to “inform” teaching and are based on the idea that learning is a dynamic activity. An example of using CBM in the domain of reading would be to take a one-minute sampling of a reading passage and count the number of words that a student reads correctly. The number of words read correctly (WRC) in one minute can be viewed as a performance indicator. When WRC scores are tracked over time, they can be graphed to create a trend line. Trend lines represent a student’s rate of progress. Thus, trend lines can be used as performance indicators to produce a spread of scores across individuals of the same age or students in the same classroom. They also may be used to rank students based on performance. By these means, interindividual differences and intraindividual improvements in scores can be detected (Shinn et al., 2002). CBM also can be used to compare students to one another to reflect their relative standing. When sampling is done across time, CBM can also be used to compare one student’s performance to his or her past performance.

CBM has been given attention because it integrates standard measurement principles with behavioral and observational assessment methods. CBM incorporates the use of repeated performance sampling, fixed time recording, graphic displays of time series data, and qualitative descriptions of performance (Deno et al., 2001). More importantly, CBM has been found to be sensitive to academic change. For example, a study by Marston, Fuchs, and Deno (1986) found that CBM measured more academic growth in students during a ten-week period than traditional achievement tests. Allinder and Fuchs (1994) also have found CBM useful to determine changes in academic performance after breaks by measuring slopes.

As was previously mentioned, CBM is a set of techniques. As a result, there are a number of ways academic domains can be assessed using this method. In the domain of reading, two

techniques are most common: the Reading-CBM (R-CBM) and the Maze-CBM. Described earlier, the R-CBM is used primarily to measure the developing reading skills of individual students. Students are asked to read connected text aloud from their general education curriculum for one minute, and the number of words read correctly is counted (Shinn et al., 2002). In contrast, the Maze-CBM technique uses the cloze procedure. Maze-CBM requires a student to read connected text silently for a period of two and a half minutes. However, every seventh word in the text is deleted and the child must choose one of three or four words to fill in the blank while preserving the meaning of the text (Shinn et al., 2002). Just as there are many techniques in which to implement CBM, so too have a number of devices been developed to make CBM an efficient tool. One such device is the *Monitoring Basic Skills Progress* measurement program.

#### *The Monitoring Basic Skills Progress Measurement Programs*

Developed by Lynn Fuchs, Carol Hamlett, and Douglas Fuchs in 1990, the *Monitoring Basic Skills Progress* (MBSP) is a computer software program consisting of a series of three computer administered and scored versions of CBM. The programs include measures for *Basic Reading*, *Basic Spelling*, and *Basic Math*, and they are based on the research generated by Dr. Stanley Deno and his colleagues over the past 20 years (Fuchs, Hamlett & Fuchs, 1997). The primary purpose of the development of the MBSP was to help facilitate the use of CBM (Fuchs et al., 1997). Since its original publication, both the *Basic Reading* and *Basic Math* programs have been updated from the Apple to the MAC format (McLellan, n.d.).

The *Basic Reading* program utilizes the Maze-CBM approach. The student reads a passage from the computer screen. Within the passage, approximately every seventh word is deleted. The student then uses the mouse, clicking on the blank, to select one of three possible words to fill the blank. This is known as a cloze procedure. Much like a maze, the student must

understand the provided words, the context of the sentence, as well as the context of the passage to select the correct word from those provided. The MBSP can be used with students in first through seventh grade. There are a total of 30 reading passages, ranging from 350 to 400 words long, for each grade level and reading ability. The reading levels of the passages are determined by Fry's Readability formula (McLellan, n.d.). Each *Basic Reading* task of the MBSP lasts for two and one half minutes. At the end of this time, the computer automatically scores the session. Then, the computer screen changes and provides the student with feedback on his or her performance. Finally, the MBSP saves student scores in its database. The teacher can then access these scores and also retrieve individual or group trend lines.

The MBSP is considered to be psychometrically adequate. Measures of reliability calculated by assessing the stability of scores with alternate forms and over multiple administrations were found to range from .73 to .99 (McLellan, n.d.). It should be noted that even though the aim of the MBSP is to track small groups of people, some have criticized the MBSP because its reliability measures are based on only a small number of tests and very small sample sizes (Smith, n.d.). Adequate criterion validity has also been reported for the MBSP (McLellan, n.d.). The MBSP has been stated to be a good measure of reading comprehension, as students must understand the passage to select the correct word from the alternatives. However, Smith (n.d.) cautions that educators should not "teach to the test" per se or overlook the broader language-arts approach to literacy.

#### *Critical Analysis & Conclusions*

A direct connection between reading skill and socioeconomic status has been established. Numerous studies support that adults who are less literate are more likely to have lower educational attainment; and, in turn, obtain jobs that pay less (Gardener, 2001; Kirsch et al.,

1993; National Center for Education Statistics, n.d.). Similarly, studies support that children from low socioeconomic families exhibit less developed reading skills than children who come from more affluent families. This is known as the achievement gap (Bracey, 2003; Plisko, 2003; Lyon, 1999). For nearly forty years, the United States government has funded Title I, a program meant to specifically address this concern. However, it appears that Title I and other remedial programs have not been effective in closing the achievement gap. More affluent students continue to make gains in reading skills, while less affluent students fall further and further behind (Plisko, 2003; PIRLS, 2001; Lyon, 1999).

Many researchers believe that the cause of the reading achievement gap is due to a lack of resources and learning opportunities for less affluent students in the summer, resulting in reading setback (Allington & McGill-Franzen, 2003; Entwisle et al., 2001; Cooper et al., 1996). However, there is not a vast amount of information substantiating the occurrence of summer reading setback. Beside this, several key studies linking the phenomenon of summer reading setback and low socioeconomic status are largely outdated and based on outdated information (Cooper et al. 1996, Allington & McGill-Franzen, 2003). In addition, almost every study to date, including the most recent (Entwisle et al., 2001), tends to rely on standardized achievement tests to assess summer reading setback. There appears to be inadequate information on the use of newly supported assessments designed to assess progress, such as CBM, to evaluate summer reading setback.

CBM is an ideal method to assess children's reading trends. Because CBMs are very efficient to administer, they are more conducive to multiple administrations and are ideal in charting reading growth over time. Past studies have used standardized tests to provide only a snapshot of a student's performance at the end of the year and the beginning of the next school

year. CBM techniques provide a more thorough and accurate depiction of a student's acquisition of reading skills throughout the course of the entire school year. CBM scores can indicate how such skills may vary over time, and assess any changes occurring over the summer break. It is believed that CBM may be more effective at measuring summer reading setback for all students, especially those from low socioeconomic status families. In conclusion, use of CBM in the school system can be viewed as a means of emphasizing how assessment can be utilized to prevent and take early intervention steps to combat early reading failure.

### Chapter III: Methodology

This chapter covers the methodology of the current study. It begins by describing subject selection and characteristics. Next, the instrumentation and data collection procedures are addressed. Data analysis techniques are then described.

#### *Subject Selection and Description*

The participants of the study were 83 second, third, fourth, fifth, and sixth grade students from a small rural school district in central Wisconsin. The participating classes were chosen based on school district agreement and teacher willingness. The students in the study were separated into one of two groups to differentiate their low and high socioeconomic (SES) status. SES status was determined by using eligibility criteria for free and reduced-price meals. Confidentiality was maintained by the use of a coding system. Each student was assigned a number code, and only school personnel were aware of the identity of each student's code.

Subject characteristics and demographic information can be seen in Table 1. Participants were equally divided by gender, as almost exactly half were males and the other half females. The number of students participating from each grade appears to be evenly distributed. However, it may be noted that there were fewer students enrolled in the fourth and sixth grades. Listed ages were the chronological ages of the students at the beginning of the yearlong study. With this in consideration, no one age group appears to be over-represented for the given subject population. On the other hand, when subjects are examined in regards to ethnicity, it is evident that almost all of the students were White/Non-Hispanic. In terms of socioeconomic status, the participants were nearly equally divided in regards to whether or not they received free/reduced price meals or regular meals.

Table 1

*Subject Characteristics (N = 83)*

Demographic	<i>n</i>	Percentages
Gender		
Male	42	51
Female	41	49
Grade		
Second	22	26.5
Third	22	26.5
Fourth	11	13.3
Fifth	17	20.5
Sixth	11	13.3
Age		
Seven	17	20.5
Eight	23	27.7
Nine	12	14.5
Ten	19	22.9
Eleven	10	12.1
Twelve	2	2.4
Ethnicity		
Asian	1	1.2
White / Non-Hispanic	82	98.8
Socioeconomic Status		
Free/Reduced Meals	37	44.6
Regular Meals	46	55.4

*Instrumentation*

All students were assessed using the *Monitoring Basic Skill Progress (MBSP) Basic Reading* computer software designed by Fuchs, Hamlett, and Fuchs (1997). The *Basic Reading* portion of the MBSP is a computer administered and scored version of a Maze-CBM. A Maze-CBM is a multiple choice cloze reading technique requiring a student to complete a passage

containing omissions by selecting one of three words provided for each blank. The MBSP program can be used to assess students in grades 1-7. The computer administers a reading passage to the student depending on his or her grade level and reading skill. Reading skill was determined through the use of Fry's Readability formula (McLellan, n.d.). This method ensures that students progressively take tests that are appropriate in difficulty level. There are a total of 30 reading passages for each grade level, and each passage ranges from 350 to 400 words in length. The student has two and one half minutes to complete each reading task. After two and one half minutes, the computer automatically scores the student's responses.

#### *Data Collection Procedures*

Each student completed a *Basic Reading* task on a computer once every two weeks. Each reading task was completed within two and a half minutes. After the student completed the task, the computer automatically saved that student's scores in its database. The MBSP created a graph of the student's progress over time, which can be referred to as a performance indicator, a progress line, or a trend line. The trend line is a continuous line from the first date that a *Basic Reading* passage was administered to the last date of administration. Trend lines can be analyzed in numerous ways, including weekly, monthly, or yearly. It is possible to examine an individual's trend line over time or to compare the trend lines of multiple individuals at a specific point in time or over a specified time period. Trend lines can also be compared to aim lines, or lines created after goals are set.

#### *Data Analysis*

The information was analyzed using descriptive statistics. Frequency data, such as means, standard deviations, and percentages were obtained. Means and percentages were used to compare the reading trend lines of those students who received free and reduced-price meals to

those who did not, as well as to analyze how the reading trend lines varied in regards to the academic calendar. Visual inspection was used to analyze the graphed data points and trend lines. In addition to visual inspection, a statistical analysis of the data was performed using dependent *t*-test and repeated measures ANOVA. Due to the exploratory nature of the study, a probability value of .05 was adopted to determine whether any differences were statistically significant. The Statistical Program for Social Sciences was used to analyze the data.

## Chapter IV: Results

The purpose of this study was to track the reading development of children and to compare any differences in reading progress based on socioeconomic status. Evaluations between low and high SES students were made in two ways. First, the reading achievement trend lines over the course of the school year were compared. Second, the reading achievement trend lines between winter and summer breaks were analyzed. The data obtained from this study were examined in terms of the following two research questions:

*Research Question 1: Over the course of the school year, how do the trend lines for reading achievement vary between students who are eligible for free and reduced-price meals and those who are not?*

### *Visual inspection.*

The yearlong trend lines for reading achievement can be found in Appendix A and are depicted by grade level in Figures 1A through 5A. A visual comparison of these graphs reveals that the higher SES students began the school year with higher reading achievement scores than the lower SES students at all five grade levels. The overall mean reading achievement score for the high SES student population was 23.9 words per test (wpt) at the beginning of the school year, as compared to a mean of 16.8 wpt for the low SES students. The overall mean reading achievement score for high SES student population was 28 wpt at the end of the school year, as compared to a mean of 20.4 wpt for the low SES students.

Regardless of these differences in their overall levels, a further inspection of the trend lines reveals some variation in the students' progress by grade level. In the second grade, the low and high SES students appeared to make similar gains in reading achievement throughout the year. The trend line slopes in the other grade levels appear to indicate different results. In the third and

fifth grades, the lower SES students seemed to make greater gains in reading achievement throughout the year than their higher SES peers. In the fourth and sixth grades, the higher SES students appeared to make greater gains in reading achievement throughout the year compared to their lower SES peers. Similar to the beginning of the school year, the general trend was that high SES students generally out performed their low SES peers at the end of the school year. A further analysis by grade level reveals that four out of the five high SES groups continued to out performed their low SES counterparts by the end of the school year. In only one of the five grade levels (i.e., third grade), did the low SES students end the year with a higher reading achievement score than their high SES peers.

#### *Statistical Analysis.*

The effects of time and instruction on the reading scores are depicted in Appendix D on Table D1. To examine whether the reading scores increased over time throughout the school year, a mixed between-within-subjects Analysis of Variance was conducted. For both groups combined, a significant main effect was found for time/instruction between October and May ( $F(1,75) = 141.07, p < .001$ ). However, no significant between group effects were found ( $F(1,75) = 2.93, p = .091$ ). Further, no interaction effects were demonstrated ( $F(1,75) = 5.21, p = .473$ ).

The yearlong reading trend lines can also be analyzed on a point-by-point basis through tests of statistical significance (independent *t*-test analyses). Each reading test score for both low and high SES student groups can be found in Appendix B and are depicted by grade level on Tables B1 through B5. As with the visual inspection method of data analysis, *t*-test comparisons revealed some variations between the grade levels. In the second and fifth grades, no statistically significant differences were found between the low and high SES student reading scores at any point during the school year. In the third grade, a statistically significant difference in the

students' reading scores was noted only once, at the beginning of May. Likewise, in the sixth grade only two statistically significant scores were found, one in mid-March and the other in the beginning of May. The fourth grade class demonstrated the most statistically significant differences between the groups according to their socioeconomic status. Significant differences were noted for the 4<sup>th</sup>-grade students in mid-October, the beginning of November, mid-November, the beginning of January, mid-January, mid-February, mid-April, and in mid-May. It is noteworthy to mention that 47% of the tests administered to the fourth grade class throughout the course of the school year revealed significant differences between the reading scores of low SES students compared to their high SES peers. Given these significant differences in scores, and referring back to the analysis of reading trend lines by visual inspection, evidence suggests that the high SES students in the fourth grade class consistently demonstrated higher reading achievement than their low SES peers throughout the school year.

*Research Question 2: How are the trend lines for both groups of students affected by breaks in the academic calendar, particularly winter and summer breaks?*

*Visual inspection.*

The trend lines for reading achievement during breaks in the academic calendar can be found in Appendix C. These scores are derived from a combination of all grade levels, two through six, and are separated by winter and summer breaks in Figures 1C and 2C, respectively. Analysis of this data by means of visual inspection suggests that the high SES combined grade level group had higher reading achievement scores than the lower SES group at the beginning of winter break. When combining all students from grades 2 through 6, the mean reading achievement score for the high SES student population at the beginning of winter break was 24.5 words per test (wpt), as compared to 22.2 wpt for the low SES group. Over the course of winter

break, both groups appeared to make significant gains in their reading achievement. Ending break scores for the high and low SES groups were 26.1 wpt and 24.4 wpt, respectively. At first glance, the gains of these two groups of students appear to be comparable. However, upon further inspection, the low SES group appeared to make slightly more gains than the high SES group during winter break. Regardless, the high SES group appeared to demonstrate higher reading achievement scores than the low SES group at the end of winter break.

A visual inspection of the summer break data suggests that the high SES group from all grade levels had higher reading achievement scores than the lower SES group at the beginning of summer break. The mean reading achievement score for the high SES student population at the beginning of summer break was 27.5 words per test (wpt), as compared to 24.6 wpt for the low SES group. During the summer months, both groups appeared to lose ground in terms of reading achievement. These losses appeared to be slight and comparable in scope. Mean reading achievement scores at the end of summer break for all students were 27.1 wpt and 24.2 wpt, respectively. Similar to the winter break results, the high SES group appeared to have a higher mean reading achievement score than the low SES group at the end of summer break.

#### *Statistical analysis.*

The effects of the winter break on the mean reading achievement scores for both socioeconomic groups can also be analyzed through a mixed between-within subjects ANOVA. Scores from such tests may be found in Appendix D on Tables D1 and D2. For both groups combined, a significant main effect was found for time between December and January ( $F(1,72) = 21.87, p < .001$ ). However, despite the differences apparent through visual inspection, no significant between group effects were found ( $F(1,72) = 1.08, p = .303$ ). Further, there was no indication of an interaction effect ( $F(1,72) = .32, p = .572$ ). These results indicate that all

students made significant gains in their reading scores over the winter break, and no differential group effects were found according to the students' socioeconomic status.

The effects of summer break were also analyzed through the repeated measures ANOVA procedures. For both groups combined, no significant main effect was found for time between the May and September mean scores ( $F(1,73) = .798, p = .374$ ). Further, despite the conclusions drawn through visual inspection analyses, no significant group effects were found ( $F(1,73) = 1.81, p = .183$ ), and no interaction effect was identified ( $F(1,73) = .001, p = .980$ ). These results indicate the total student group made no significant gains or losses in their reading scores over the summer break, with no interaction effect or significant between-group differences according to the students' socioeconomic status.

## Chapter V: Conclusions and Discussion

This chapter discusses the noteworthy results of the current study. It begins with addressing the major findings and the limitations. Next, implications for future research are identified, along with implications for future practice. The chapter concludes with a summary of the current study.

### *Conclusions*

The first research question was: Over the course of the school year, how do the trend lines for reading achievement vary between students who are eligible for free and reduced-price meals and those who are not? As expected, a visual comparison of the data found that the high SES group in each grade, two through six, demonstrated greater reading achievement skills at both the beginning and end of the school year compared to their low SES peers. However, during the course of the school year, few classes produced statistically significant differences in reading achievement task mean scores when comparing the high and low SES students. In only the fourth grade, approximately half of the reading task mean scores revealed statistically significant differences when comparing high and low SES students, which supported that the high SES students out performed their low SES peers. Furthermore, ANOVA results found no statistical differences between the groups according to their socioeconomic status when all grades were combined. Regardless of their socioeconomic status, students at all grade levels generally made comparable gains in reading achievement over the course of the school year.

The second research question was: How are the trend lines for both groups of students affected by breaks in the academic calendar, particularly winter and summer breaks? Unexpectedly, a visual inspection of the trend lines found that both combined high and combined low SES groups, grades two through six, seemed to make gains in reading achievement skills

over the winter break. Moreover, tests of statistical significance supported this increase in skills. No statically significance interaction effect was found within each combined groups reading score at the beginning and end of winter break, and no statistically significant differences were found between the high and low SES groups' reading scores at the beginning and end of winter break. These findings do not support previous findings suggesting that high SES students continue to gain reading achievement skills over break while low SES student maintain or lose ground in terms of reading achievement.

Other results were found for summer break. Visual inspection results indicated students from both high and low SES groups had a slight and equal decline in their reading achievement skills over summer break. However, tests of statistical significance did not support this apparent decrease in skills. According to ANOVA results, neither group made significant gains or losses over summer break. Again, it was expected that high SES students would continue to gain reading achievement skills over summer while the low SES students would maintain or lose ground in terms of reading achievement. This expectation was not confirmed by the results of this study.

There are several reasons why the findings from the current study may not support those from previous studies. One explanation may simply be due to the limited sample size. It is likely that the differences that were evident by means of visual inspection could not be supported statistically by ANOVA tests due to the small sample size. Another explanation could be that new school initiatives were effective in closing the achievement gap between the low and high SES students. The participating school district was a part of the Reading Excellence and Demonstration of Success (READS) grant during the 2004-2005 school year. This grant provided funding to selected schools for implementation of scientifically-based reading

instruction strategies, including: small reading classes, intense instruction and guided reading. This initiative was directly connected to the No Child Left Behind Act and the Response to Intervention approach, both of which focus on closing the achievement gap between students.

### *Limitations*

The greatest limitation of this study was the limited size and location of the sample group. Since this data came from such a small region with a select group of participants, educators should not generalize these findings to larger and more diverse populations. On the same note, many of the tendencies or generalizations from visual inspection could not be confirmed due to the lack of statistically significant evidence. It is plausible that a greater sample size would have produced more pronounced differences in the reading scores between the low and high SES groups.

The lack of treatment integrity during data collection is yet another limitation. The researcher became aware of some inconsistencies in the data collection during the assessment period. In some classes, particularly the second and third grades, not every student in each class completed the reading tasks at each assessment interval. Further, the reading assessments were completed at differing intervals between classes. These implementation errors make the comparison of reading achievement scores at each collection point and across time challenging.

### *Recommendations*

A recommendation for future research would include a replication study with a larger and more diverse population. For the sake of treatment integrity and data analysis, a future replication study should aim to have all students tested on the same day and/or week. Researchers could develop a test schedule for teachers to follow based on the academic calendar. Further research could investigate the effects of implementing a summer reading program for all

students or solely for those students eligible for Title I services. Such a program would attempt to combat negative effects of the “faucet theory” and provide resources to students during the summer months when reading materials are limited. The continued monitoring of reading achievement skills at regular intervals throughout the summer months would be recommended. Pre-summer reading scores between high and low SES children could then be compared to post-summer reading scores for each group.

The results of this study do have some implications for future practice. In this particular school district, it appears a summer reading program for all students would be beneficial as students in both the low and the high SES groups appeared to make no gains in their reading achievement over the summer months.

#### *Study Summary*

The acquisition of basic reading skills is necessary for children to be academically successful. More importantly, the failure to obtain such skills can have drastic repercussions on adult life. Research suggests that some children are at a greater risk for reading failure than others. Children who come from economically disadvantaged families typically score lower on reading tasks than children from more advantaged families, resulting in a reading achievement gap. Furthermore, despite the results of this study, previous studies have found that students from economically disadvantaged families are more likely to experience summer reading setback due to more limited resources and opportunities. Previous research suggests that reading achievement varies between students with differing socioeconomic status and with changes in the academic calendar.

This research project utilized the MBSP as a means to track the reading development of children. In this study, the reading achievement of less advantaged students was compared to that

of more advantaged students, and the reading achievement trend lines for both groups of students were analyzed over the course of the school year and during academic breaks.

Results indicated that students in grades two through six generally made comparable gains in reading achievement skills over the course of the school year regardless of their socioeconomic status. In only one grade level, the fourth grade, were significant differences noted in approximately half of the administered reading tasks, indicating that high SES fourth graders outperformed their low SES peers in terms of reading skills during the course of the school year. During the winter break, both high and low SES students continued to make comparable and significant gains in reading achievement. On the contrary, over the course of the summer break, both the high and low SES students made no significant gains or losses in their reading skills.

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## Appendix A: Reading achievement trend lines over the course of the school year

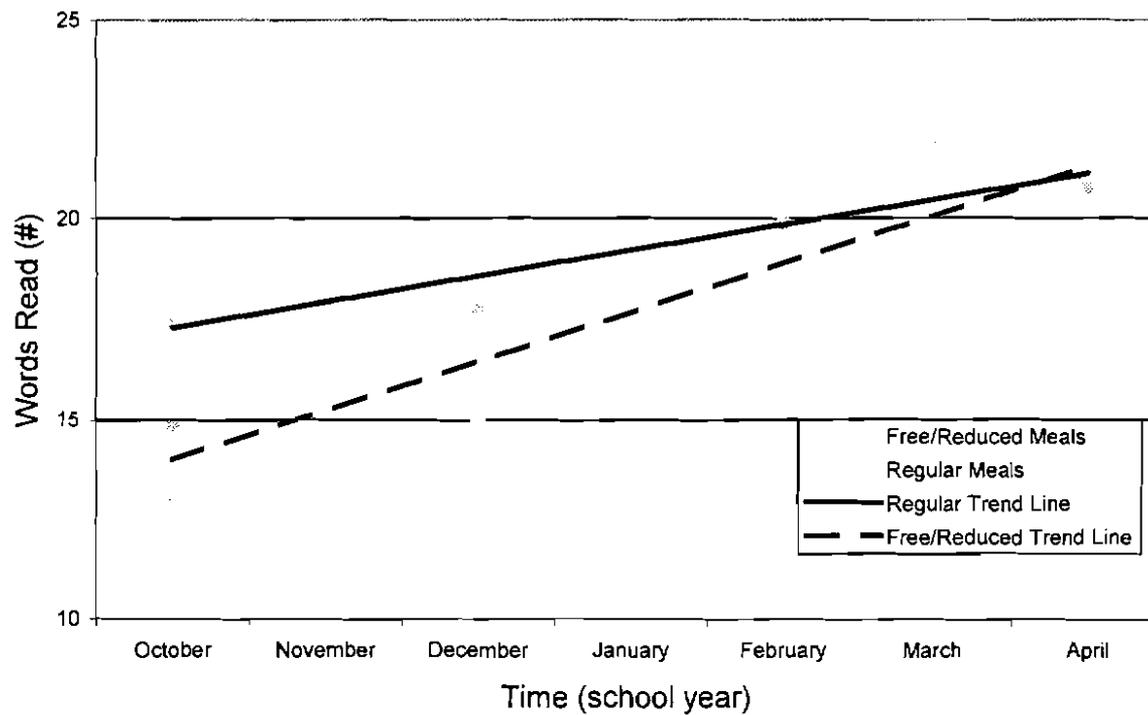


Figure 1A. Second grade comparison of reading trend lines by socioeconomic status.

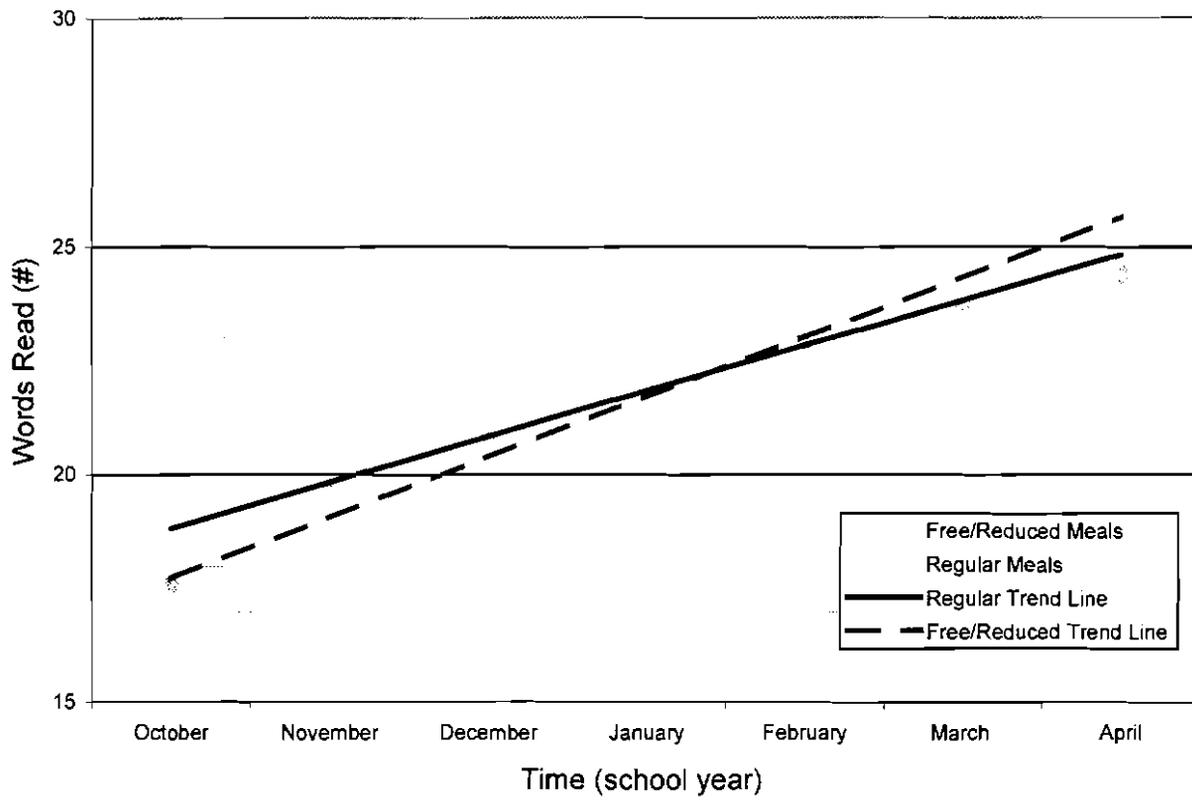


Figure 2A. Third grade comparison of reading trend lines by socioeconomic status.

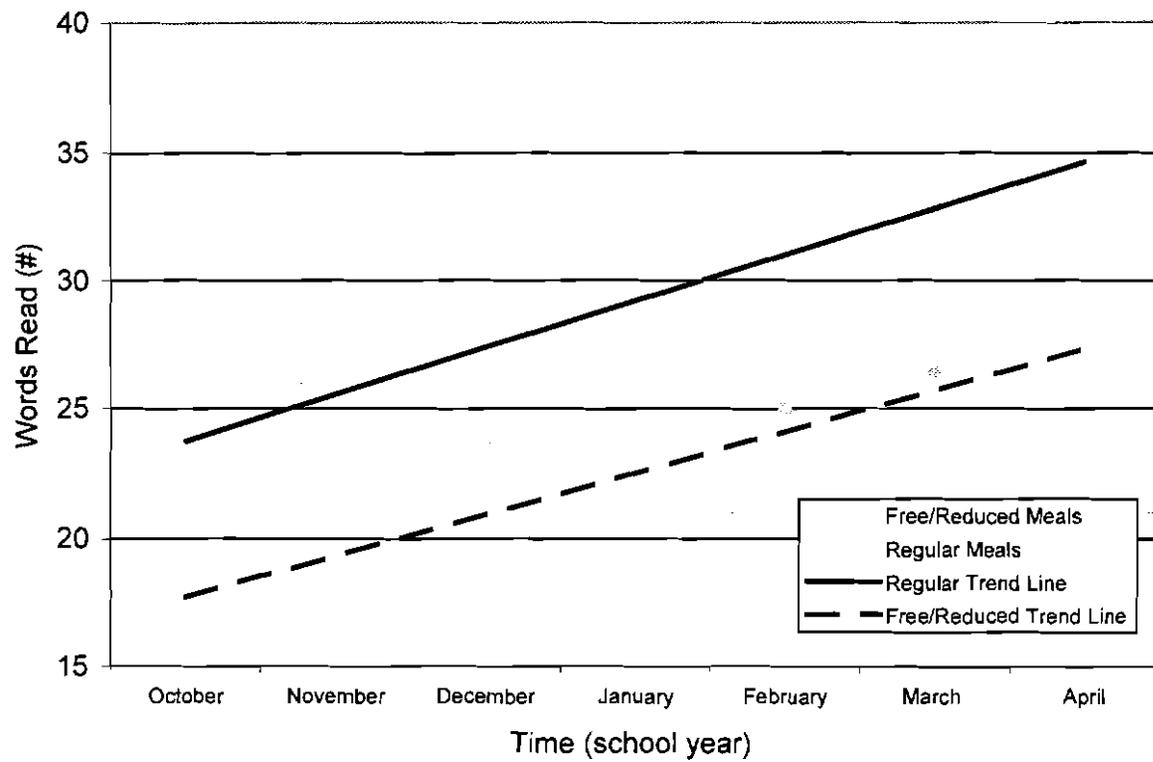


Figure 3A. Fourth grade comparison of reading trend lines by socioeconomic status.

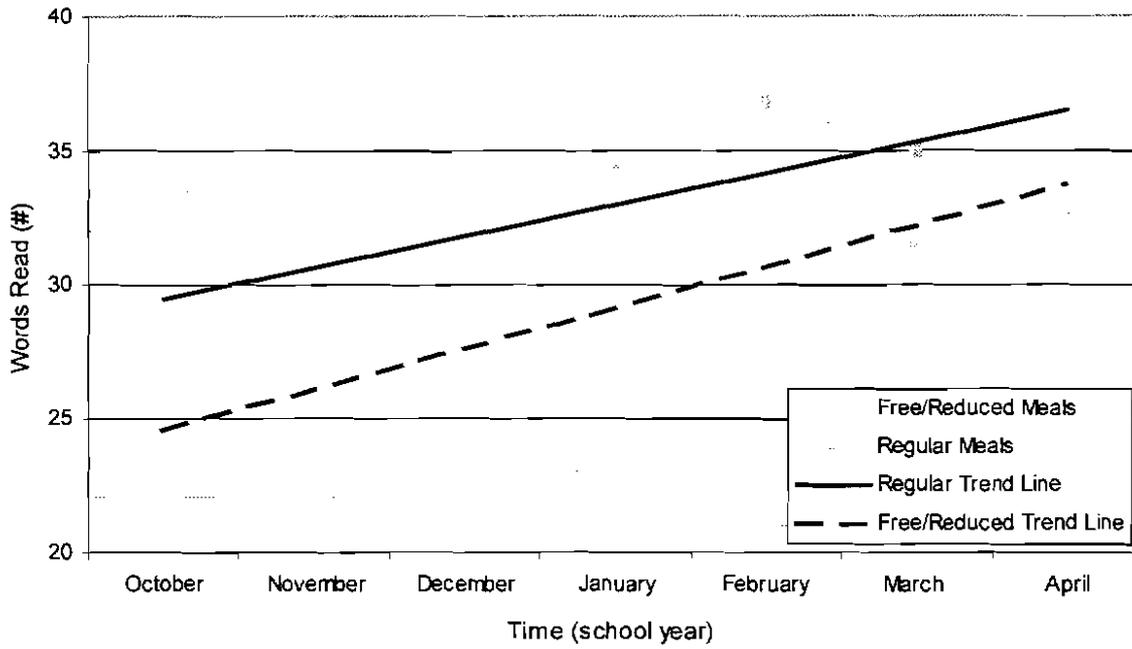


Figure 4A. Fifth grade comparison of reading trend lines by socioeconomic status.

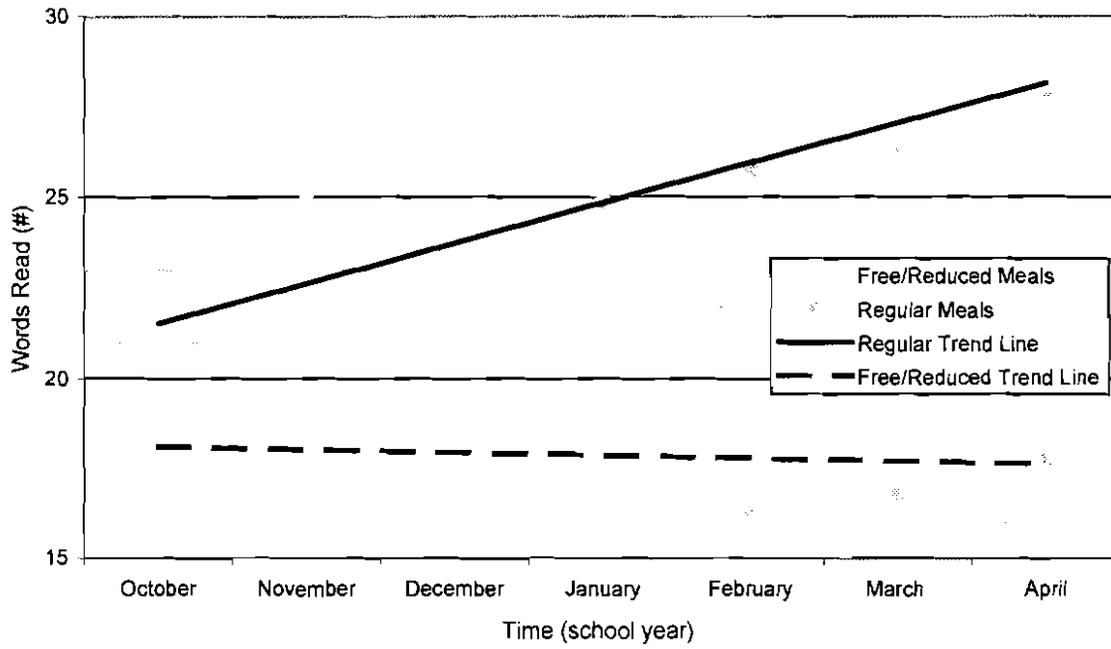


Figure 5A. Sixth grade comparison of reading trend lines by socioeconomic status.

## Appendix B: Statistical differences in reading achievement over the course of the school year

Table B1

*Second grade reading achievement by month (N = 22)*

Month	<u>Free/Reduced meals</u>			<u>Regular meals</u>			<u>Difference</u>	
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>df</i>	<i>t</i>
October								
Middle	8	14.8	3.6	13	17.5	6.4	19	-1.12
November								
Beginning	7	15.0	7.3	13	14.6	6.8	18	0.12
Middle	3	10.0	5.6	4	21.3	9.9	5	-1.75
December								
Beginning	8	15.0	6.6	12	17.8	8.9	18	-0.75
January								
Beginning	4	20.5	6.6	11	21.3	7.0	13	-0.19
February								
Beginning	6	19.2	7.9	4	16.3	11.5	8	0.48
Middle	5	20.6	7.4	8	17.0	8.0	11	0.81
March								
Beginning	7	19.1	6.6	12	21.8	8.9	17	-0.67
April								
Beginning	8	20.8	7.1	14	21.3	8.6	20	-0.15
May								
Beginning	8	22.4	9.3	14	23.4	9.2	20	-0.24
Middle	8	23.5	9.2	14	22.9	8.1	20	0.16
End	8	20.4	8.2	14	23.5	8.1	20	-0.87
October								
Beginning	7	21.0	8.9	13	22.2	10.1	18	-0.27
Beginning	7	21.9	10.5	13	24.0	11.1	18	-0.42

Note. \* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

Table B2

*Third grade reading achievement by month (N = 22)*

Month	<u>Free/Reduced meals</u>			<u>Regular meals</u>			<u>Difference</u>	
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>df</i>	<i>t</i>
October								
Beginning	10	15.8	4.3	11	17.2	7.5	19	-0.51
Middle	7	16.3	4.7	11	17.9	8.1	16	-0.48
November								
Beginning	10	19.5	5.5	12	20.0	7.2	20	-0.18
Middle	10	19.8	6.1	12	22.1	6.8	20	-0.83
December								
Beginning	10	18.9	4.2	12	20.7	5.7	20	-0.81
Middle	10	21.7	6.8	10	21.1	7.2	18	0.19
January								
Beginning	10	24.0	5.7	12	22.0	6.9	20	0.73
February								
Beginning	10	22.3	6.1	12	22.3	5.9	20	-0.01
Middle	10	23.4	7.0	11	23.6	7.3	19	-0.05
March								
Beginning	4	25.5	5.4	6	22.8	10.3	8	0.47
Middle	9	23.6	6.4	12	24.5	8.4	19	-0.28
April								
Beginning	10	22.7	5.0	11	24.1	6.9	19	-0.52
Middle	4	25.8	6.4	5	24.8	5.7	7	0.24
May								
Beginning	4	29.0	7.4	5	16.0	4.8	7	3.21*
Middle	10	23.5	6.1	12	23.5	9.7	20	0.00
September								
Beginning	9	21.6	7.4	11	20.7	8.4	18	0.23
Middle	9	23.4	5.4	10	23.6	9.8	14	-0.04

Note. \* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

Table B3

*Fourth grade reading achievement by month (N = 11)*

Month	<u>Free/Reduced meals</u>			<u>Regular meals</u>			<u>Difference</u>	
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>df</i>	<i>t</i>
October								
Beginning	5	14.0	5.8	6	22.2	7.7	9	-1.95
Middle	5	19.4	5.8	6	26.5	4.6	9	-2.28*
November								
Beginning	4	15.8	1.5	6	27.0	3.8	8	-5.49***
Middle	5	19.4	2.7	6	26.3	4.9	9	-2.82*
December								
Beginning	5	22.4	5.2	6	28.7	6.6	9	-1.72
Middle	5	25.0	2.0	6	30.3	5.1	9	-2.19
January								
Beginning	5	22.2	4.3	6	30.2	4.4	9	-3.00*
Middle	5	23.6	4.4	6	32.0	5.1	9	-2.91*
February								
Beginning	5	24.4	5.3	6	29.7	2.7	9	-2.13
Middle	5	25.6	3.2	6	33.7	6.0	9	-2.69*
March								
Beginning	5	25.6	5.7	6	30.5	4.5	9	-1.60
Middle	5	27.4	3.6	6	35.0	7.2	9	-2.14
April								
Beginning	5	26.6	5.8	6	34.2	7.2	9	-1.90
Middle	5	24.0	6.4	6	32.2	3.5	9	-2.68*
May								
Beginning	5	24.8	4.1	6	32.3	6.7	9	-2.19
Middle	5	24.8	5.4	6	35.8	9.0	9	-2.40*
End	5	23.8	6.3	5	30.8	5.5	8	-1.87
September								
Beginning	5	23.8	5.7	6	31.5	6.5	9	-2.07
Middle	5	25.4	6.7	6	35.5	5.0	9	-2.87*

Note. \* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

Table B4

*Fifth grade reading achievement by month (N = 17)*

Month	<u>Free/Reduced meals</u>			<u>Regular meals</u>			<u>Difference</u>	
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>df</i>	<i>t</i>
October								
Beginning	9	25.4	8.1	8	29.4	8.1	15	-1.00
Middle	9	21.4	7.1	8	25.5	7.4	15	-1.15
November								
Beginning	8	26.6	8.8	8	31.3	8.9	14	-1.05
Middle	8	26.3	6.2	8	31.8	7.2	14	-1.63
December								
Beginning	9	26.9	6.6	8	30.8	8.0	15	-1.09
Middle	9	27.8	6.9	8	31.8	7.4	15	-1.14
January								
Beginning	9	27.7	7.5	8	33.0	10.4	15	-1.23
Middle	8	33.1	7.6	8	35.5	10.5	14	-0.52
February								
Beginning	8	32.9	11.7	8	36.5	10.1	14	-0.67
Middle	8	30.8	9.0	8	37.0	8.9	14	-1.40
March								
Beginning	8	32.3	8.2	8	35.9	7.8	14	-0.90
Middle	8	30.8	9.4	7	34.1	12.4	13	-0.60
April								
Beginning	8	33.6	9.2	8	34.1	10.9	14	-0.10
Middle	8	32.0	9.7	7	34.3	9.6	13	-0.46
May								
Beginning	8	32.4	7.6	7	33.9	10.8	13	-0.31
Middle	7	31.3	9.8	8	32.8	7.9	13	-0.32
End	7	32.4	7.5	8	35.5	9.4	13	-0.69
September								
Beginning	7	31.3	10.2	8	36.4	9.8	13	-0.99
Middle	7	34.0	9.0	8	36.4	7.4	13	-0.56

Note. \* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

Table B5

*Sixth grade reading achievement by month (N = 11)*

Month	<u>Free/Reduced meals</u>			<u>Regular meals</u>			<u>Difference</u>	
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>df</i>	<i>t</i>
October								
Beginning	4	13.8	7.6	5	15.8	2.0	7	-0.58
Middle	4	15.3	7.4	5	20.8	8.0	7	-1.07
November								
Beginning	5	19.6	11.1	6	21.8	6.2	9	-0.42
Middle	5	23.8	10.2	6	28.0	8.7	9	-0.74
End	4	18.0	9.6	6	25.2	6.2	8	-1.46
December								
Beginning	4	21.8	12.8	6	25.2	8.4	8	-0.52
Middle	4	18.8	9.6	5	26.6	10.7	7	-1.14
January								
Beginning	4	18.0	10.8	6	25.5	6.7	8	-1.38
Middle	4	19.8	10.5	6	24.2	8.1	8	-0.76
February								
Beginning	4	15.8	11.6	6	27.3	7.6	8	-1.93
Middle	4	16.5	9.3	6	24.0	5.5	8	-1.63
March								
Beginning	4	17.0	13.8	6	24.7	5.6	8	-1.25
Middle	4	16.5	8.7	5	28.0	4.5	7	-2.59*
April								
Beginning	3	17.3	11.0	5	27.8	7.6	6	-1.62
Middle	4	18.0	8.8	6	27.5	7.7	8	-1.81
May								
Beginning	3	15.0	2.6	6	28.2	7.5	7	-2.88*
Middle	4	21.0	10.2	6	28.7	8.8	8	-1.27
End	4	19.5	10.6	6	26.7	7.7	8	-1.25
September								
Beginning	3	16.7	10.8	6	24.7	8.5	7	-1.23
Middle	4	20.8	7.0	6	28.7	11.5	8	-1.22

Note. \* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

## Appendix C: Reading achievement trend lines during breaks in the academic calendar

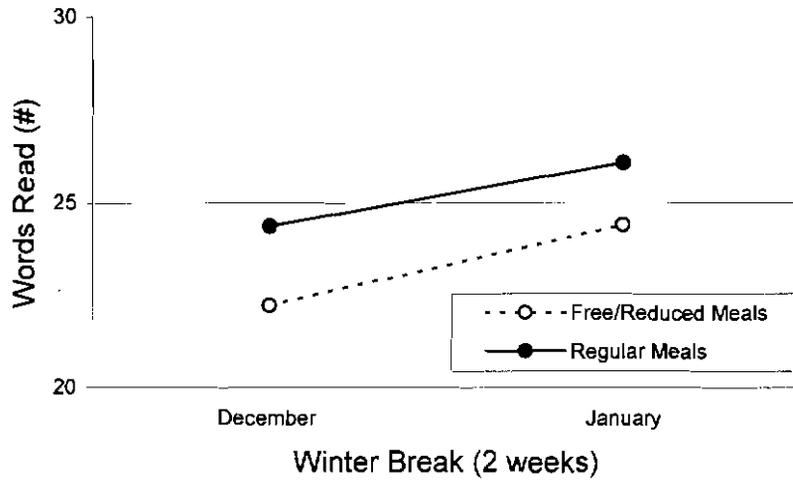


Figure 1C. Winter break comparison of reading trend lines by socioeconomic status for students in all grades.

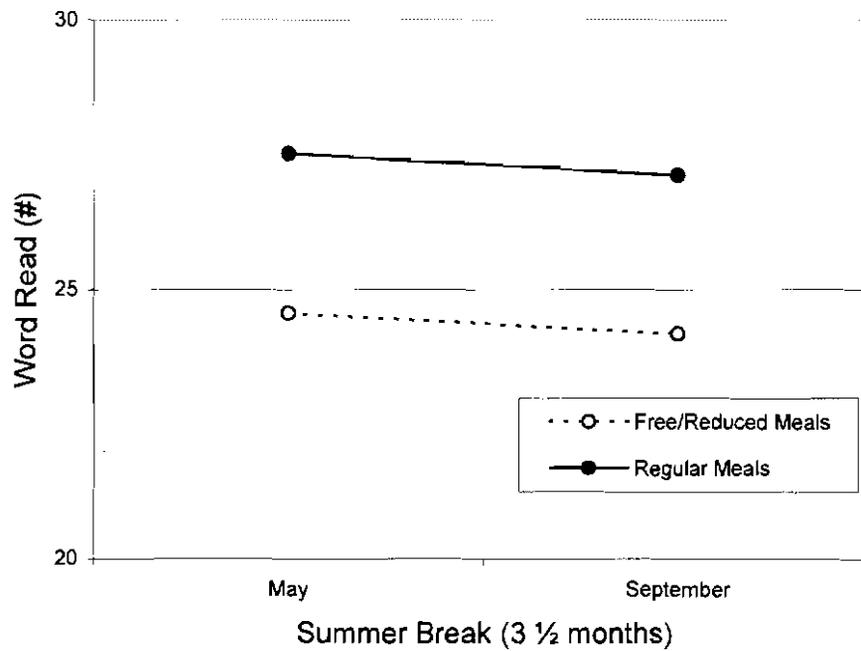


Figure 2C. Summer break comparison of the reading trend lines by socioeconomic status during summer for all grades.

## Appendix D: Statistical differences in reading achievement during the school year

Table D1

*School year combined mean reading achievement scores (N = 77)*

Source	<i>df</i>	<i>F</i>	<i>p</i>
Between subjects			
Intercept	1	654.296	.000
Free/Reduced	1	2.93	.091
Error	72	116.713	
Within subjects			
Scores	1	141.07	.000
Scores X Free/Reduced	1	.521	.473
Error	75		

*Note.* \* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

## Appendix E: Statistical differences in reading achievement during academic breaks

Table E1

*Winter break combined mean reading achievement scores (N = 74)*

Source	<i>df</i>	<i>F</i>	<i>p</i>
Between subjects			
Intercept	1	703.346	.000
Free/Reduced	1	1.075	.303
Error	72	121.754	
Within subjects			
Scores	1	21.866	.000
Scores X Free/Reduced	1	.322	.572
Error	72		

*Note.* \* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

Table E2

*Summer break combined mean reading achievement scores (N = 75)*

<i>Source</i>	<i>df</i>	<i>F</i>	<i>p</i>
Between subjects			
Intercept	1	563.846	.000
Free/Reduced	1	1.807	.183
Error	73		
Within subjects			
Scores	1	.798	.374
Scores X Free/Reduced	1	.001	.980
Error	73		

*Note.* \* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .