ABSTRACT

Title of dissertation: FOURTH GRADERS' EXPOSITORY TEXT
COMPREHENSION: INDICATORS FROM NAEP
ON THE ROLE OF INCOME, OUT-OF-SCHOOL
READING EXPERIENCES AND IN-SCHOOL
READING EXPERIENCES

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Researchers have long supported the notion that students' out-of-school and in-school experiences with reading may be related to their overall academic success (Snow, Barnes, Chandler, Goodman, & Hemphill, 1991), and some have argued that these experiences may be particularly important for children from low-income backgrounds (Darling-Hammond, 1995). Others have claimed that fourth grade may be a pivotal year for students from low-income families because this is when the demands of reading and comprehending exposition often become apparent (Chall, Jacobs, & Baldwin, 1990). Given these perspectives, the purpose of my study was to explore the contributions of fourth graders' out-of-school and in-school reading experiences to their expository text comprehension. In addition, I investigated the associations between students' family income and their abilities to comprehend exposition.

This study was a secondary analysis of data collected as part of the 2005 National Assessment of Educational Progress (NAEP). Using hierarchical linear modeling (HLM), I modeled the associations between fourth graders' expository text comprehension and their out-of-school reading experiences, in-school reading experiences, and their family income using background information from the NAEP student questionnaires and achievement data.

At the student level, I found that fourth graders' reported out-of-school reading engagement, and the in-school factors of discussions and cross-curricular reading were all positively associated with their expository text comprehension. However, students' reported frequency of in-school reading-related activities (e.g., writing book reports, making presentations, doing projects) was negatively associated with achievement. Low-income students' out-of-school reading engagement was associated with additional boosts in expository text achievement. Discussions and cross-curricular reading were not associated with low-income students' achievement any differently than it was for fourth graders overall. For low-income students, reading-related activities were associated with even lower expository text achievement than for fourth graders overall. At the school level, being in schools where students reported frequently out-of-school reading engagement and whole-class and small group discussions was associated with higher expository text achievement, while being in schools where students reported frequently engaging in reading-related activities was negatively associated with expository text achievement. School-wide reported frequency of cross-curricular reading was not significantly associated with students' expository text achievement.

FOURTH GRADERS' EXPOSITORY TEXT COMPREHENSION:
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By

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DEDICATION

To the students and staff at Maryvale Elementary in Rockville, Maryland.

You inspire me.

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CHAPTER I: INTRODUCTION

Economically-disadvantaged American children repeatedly fail to achieve at the

levels of their peers. For years the National Assessment of Educational Progress (NAEP)

reports have shown low-income 9- and 13- year olds trailing significantly far behind their

wealthier classmates on measures of reading comprehension (NCES, 2008a)[1]. In 2001,

the United States government enacted the No Child Left Behind (NCLB) Act to examine

the equality of American educational systems. In this legislation, the government

outlined an accountability plan intended to ensure that students were receiving quality

instruction by mandating assessments to compare school progress across the country.

Although there have been small gains in students' achievement levels since 2002, there is

not proof that that these changes are directly related to the NCLB legislation

(Chudowsky, Chudowsky, & Kober, 2007).

NCLB has focused particular attention on the success of disadvantaged students

(e.g., low-income students, minorities, English language learners) with the purpose of

closing the achievement gap (United States Department of Education (USDE), 2002). In

terms of reading performance, recent analyses of NAEP data showed achievement gaps

between low-income children and their wealthier peers in most states stayed constant or

narrowed since 2002 (Chudowsky, Chudowsky, & Kober, 2007). However, researchers

have not given much consideration to the potentially important role of exposition in the

achievement gap between students from various socioeconomic backgrounds (Chall,

Jacobs, & Baldwin, 1990). The RAND Reading Study Group (2000) reported that

knowledge of text structure is important for being able to understand texts. Although

many children are familiar with the structure of narratives before even entering school,

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[1] Mother's education level was used as a proxy for socioeconomic status.

they do not have the same experiences (and, consequently, knowledge about) the various

structures of exposition (Chambliss & Calfee, 1998). Therefore, children may enter the

upper elementary grades unprepared to comprehend the texts that will make up the

majority of their curriculum (Venezky, 2000).

 To clarify why reading achievement is often contingent on students' family

income, I will briefly review literature related to: (1) the academic success of low-income

children, (2) reading comprehension, and more specifically, (3) expository text

comprehension. Then, I will provide a brief overview of my study and methods.

 Factors Related to the Academic Success of the Economically Disadvantaged

 NCLB's focus on disadvantaged students should come as no surprise given the

fact that these students do not perform as well as their peers on achievement measures.

In terms of reading achievement, socioeconomic status is a particularly strong predictor

of student performance. However, many times the public places the blame for low-

income children's low achievement on the child or family and not on the school

environment (Darling-Hammond, 1995). It is well documented that children from low-

income homes often lack the support and resources at both home and in school that are

necessary to successfully participate in challenging, school-related tasks. Low-income

children living in poverty-stricken areas are at even more of a disadvantage than their

low-income peers who do not live in low-income neighborhoods (Leventhal & Brooks-

Gunn, 2000; Sampson, Sharkey, & Raudenbush, 2007). Schools in America are not

funded equally; students from wealthy backgrounds often benefit from more money

being spent per student as a result of higher-yielding property taxes, while disadvantaged

students often suffer the consequences of living in areas that do not draw in much tax

money to support the schools (Kozol, 1991). While many Asian and European countries provide equal funding opportunities for all schools, schools in the United States rely on local taxes to subsidize their programs (Darling-Hammond, 1995).

The issue is not with school funding itself. Rather, the problem lies with what services and resources better-funded schools can buy and what the consequences are for students in schools without the luxury of a large budget. Past research has shown that one of the most pressing concerns for low-income students is that low-income schools have difficulty enticing quality, prepared, certified teachers to teach in their schools. In most cases, low-income schools cannot offer teachers the salary, benefits, and resources that their wealthier neighbors can. As a result, quality teachers flee to the wealthier schools and the low-income schools are left with teachers that are often "inadequately prepared, inexperienced, and ill-qualified" (Darling-Hammond, 1995, p. 613).

In addition to having teachers who may not have the knowledge and skills to meet the needs of low-income students, schools in poverty-stricken areas are likely to have fewer and lower-quality instructional resources than wealthier schools. In many low-income areas, community, school, and classroom libraries are drastically understocked, while children from middle-class homes have plenty of books within close proximity (Lareau, 1989; Neuman, 1999). Unfortunately low-income children suffer considerably from the limited access to texts in their schools and communities, especially since they are not likely to have access to many books at home either (Wigfield & Asher, 2004).

As if inadequate teachers and low resources were not hurdles enough for low-income students to overcome, these children are often grouped for reading instruction in ways that restrict them from accessing challenging curriculum. Although children are

often grouped in schools by ability, researchers have found that a disproportionate number of low-income children are in the lowest groups (Oakes, 1985). These lower groups oftentimes consist of instruction that is not demanding for students, while the higher groups are regularly challenged (Duke, 2000b). Chall, Jacobs, and Baldwin (1990) have supported this notion, claiming that low-income children are better prepared for the academic demands of fourth grade and beyond when they are given instruction that challenges them and builds their vocabularies. The combination of low-income children and unchallenging curriculum often results in the achievement gap growing even bigger because low-income students are unlikely to be given instruction that builds the critical reading skills that they will need to successfully complete academic tasks later on (Leiter, 1983).

Reading Comprehension

All of these factors associated with low-income children are likely to influence students' general reading comprehension. However, specific out-of-school and classroom reading experiences may particularly enhance or inhibit children's comprehension abilities. In the following sections I will introduce variables that are linked to children's reading comprehension. Some of these may overlap between sections because not all of these variables are mutually-exclusive to either out-of-school or in-school reading experiences.

Out-of-School Reading Experiences

Out-of-school reading experiences are important contributors to children's abilities to comprehend texts. Factors such as children's motivation to read, their personal reading habits, the opportunities they have to talk with family and friends about

what they read, and the availability of a wide variety of reading materials (e.g., books, magazines, encyclopedias, newspapers, and the internet) in various genres (e.g., nonfiction, fiction, poetry) all influence reading comprehension (e.g., Dreher, 2003; Guthrie, 1996).

Motivation to Read

Reading motivation plays a large role in how students engage with and learn from text (Guthrie & Wigfield, 1999). Although motivation usually supports long-term achievement and reading amount, at times, certain motivations (e.g., compliance and work avoidance) will not affect student performance in the long run and may even hinder achievement (Guthrie, 1996). For example, Baker and Wigfield (1999) reported that low-income, African American students' had particularly high work avoidance motivation when compared to their peers.

Personal Reading Habits

Children's personal reading habits can greatly influence their reading achievement. Studies have shown that independent reading helps children develop the vocabularies and other reading skills they need to understand other texts (Guthrie & Wigfield, 2000; Stanovich, 1986). Likewise, children develop an awareness of the various structures of texts which may help them better understand and recall information when reading unfamiliar texts (Pappas, 1991, 1993; Smolkin & Donovan, 2003). However, national survey data revealed that the majority of fourth graders did not engage in reading activities or enjoy reading for pleasure (Guthrie, McRae, & Klauda, 2007) and these findings may be even more salient for economically-disadvantaged children.

Interactions with Families and Friends

Children from low-income homes may also face a disadvantage when compared to their middle-class peers regarding the types of verbal interactions they engage in outside of school (Sonnenschein & Schmidt, 2000). Economically-disadvantaged children may not be privileged to conversations with their families that prepare them for academic tasks (Hart & Risley, 2002; Heath, 1983; Snow, 1991). Children are also likely to benefit from engaging in spontaneous text-related conversations with their peers. Although these conversations are apparent in the daily lives of adults, few studies address how children talk about texts outside of school. It is known that peer recommendations are often the guiding force behind children's independent reading selections (Fleener, Morrison, Linek, & Rasinski, 1997; Timion, 1992), but little is know about the conversations that children have when these recommendations are made. However, studies have shown that teacher-initiated opportunities for children to engage in conversations about books have a positive effect on independent reading, motivation, and achievement (e.g., Manning & Manning, 1984).

Available reading resources. As previously mentioned, children living in poverty may not have access to texts that are interesting and diverse (Delpit, 1988; Neuman, 1999; Purcell-Gates, 1995). Studies have shown a link between the number of books in a child's home and their subsequent reading achievement (Sheldon & Carillo, 1952). However, low-income caregivers may not have the resources to buy books for their children or the time or knowledge to take them to the library (Purcell-Gates, 1995). Therefore, the inferior academic performance of economically-disadvantaged children

(Coleman, Campbell, Hobson, McPartland, Mood, Weinfeld, & York, 1966) may partially be attributed to the lack of adequate reading materials in their homes.

Classroom Reading Experiences

Children from economically-disadvantaged backgrounds may depend heavily on school for gaining the academic skills needed to become successful readers. While parents of children from wealthier homes can often afford resources (e.g., tutoring, materials) to make up for low-quality instruction or limited materials at school, low-income families are unlikely to have these same luxuries. Therefore, it is important that all children have access to high-quality classroom experiences to aid in their development as readers.

Guthrie's work with Concept-Oriented Reading Instruction (CORI) serves as a model for thinking about the aspects of classroom instruction that may influence fourth graders' comprehension of texts (See Guthrie, McRae, & Klauda, 2007). His model for reading engagement incorporates motivational, cognitive, and behavioral components (Guthrie et al., 2007) and includes aspects of classroom reading such as interesting and diverse texts, collaboration, and strategy instruction (Guthrie, 2004). Students in CORI classrooms have shown dramatic increases in their abilities to comprehend, synthesize, and write about what they read. In a meta-analysis of experimental and quasi-experimental studies, Guthrie and Humenick (2004) reported that affording choices, giving access to interesting texts, providing opportunities for collaboration with peers, executing strategy instruction, and teaching towards important conceptual goals were all classroom conditions that resulted in motivating children. Motivated children are more likely to put forth the effort to engage in complex thinking, thus leading to better reading

achievement (Guthrie, 1997). Other researchers have reported that similar teaching practices influence achievement. For example, Pressley, Wharton-McDonald, Mistretta-Hampston, and Echevarria (1998) found that "effective" fourth- and fifth-grade teachers gave children choices in what they read and opportunities for collaboration. These teachers also encouraged students to use reading strategies and had clearly-articulated instructional goals for their students.

Strategy Instruction

For decades researchers have touted the importance of explicitly teaching children how to use various reading comprehension strategies (Durkin, 1978/1979; Keene & Zimmermann, 1997). Yet in studies of real classrooms, teachers rarely showed children how to use these strategies. Instead, students were often expected to implement these strategies independently without much modeling or practice (Durkin, 1979; Pressley, Mistretta-Hampston, & Echevarria, 1998). Students in economically-disadvantaged schools could potentially receive no strategy instruction. If teachers in wealthier schools presumably have more training and expertise, yet are not giving much explicit instruction in reading strategies, it seems logical to hypothesize that the overwhelmingly untrained and/or inexperienced teachers in low-income areas are providing even less explicit strategy instruction.

Collaboration with Peers

Collaborative learning, or the process of "working together in small groups, as to understand new information or create a common product," can take many forms during reading instruction (Harris & Hodges, 1995, p. 35). While collaboration with peers often results in student engagement and literacy learning (Almasi, 1996; Slavin, 1990), this

interaction also enables children to complete tasks more proficiently that they would be able to do individually (Wentzel, 2005). The popularity of the Vygotskian theories about the social construction of knowledge are often enacted in the classroom with peers playing the role of "more knowledgeable other" for each other (Gambrell, Mazzoni, & Almasi, 2000; Vygotsky, 1978). However, for collaborative learning to work, it is important that there is a more knowledgeable peer in the group to help guide the interaction, or the group will likely founder (Johnson & Johnson, 1990). Likewise, there is evidence that students need to be held individually accountable for group work or they may rely on the strongest member for their success (O'Donnell, 2006). Students in low-income schools may be particularly at risk for instruction that uses ineffective cooperative group learning. If many children in a particular class are struggling academically, as many low-income children are, there may be very few knowledgeable student models to aid in the functioning of this type of learning.

Choice

Research has shown that providing students with opportunities to self-select their own reading activities positively influences both motivation and academic growth. In the CORI approach, students are given opportunities to choose their own questions to explore, select which materials they will need to answer those questions, and share their findings in a manner of their choice (Guthrie, 1996). The combination of these factors, amongst others, as part of CORI instruction, resulted in a substantial increase in fifth graders' performance on standardized tests (Effect size = .91)[2] (Guthrie et al., 2007). Others have also reported that when students are given the chance to choose their own materials for reading, they are likely to experience literacy growth (Fresch, 1995; Mervar

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[2] Conservative effect size using M1-M2 with the SD of the control as the denominator

& Hiebert, 1989). Fresch (1995) reported that youngsters in the primary grades reread favorite texts often, allowing them to practice using strategies before moving on to a new text. However, as mentioned previously, economically-disadvantaged children may not have interesting and diverse books in their classrooms to choose from, thus limiting their opportunities to select books that are relevant or interesting to them (Duke, 2000b).

Teacher Beliefs

Economically-disadvantaged children may be particularly vulnerable to the role that teachers' beliefs about students' abilities play in student success. Some teachers may hold low-income children to lower expectations than their wealthier peers. When teachers do not anticipate that their low-income students will achieve at high levels, a cycle of low student achievement may begin that fulfills these low expectations (Stanovich, 1986).

Other Factors Related to Reading Comprehension

In addition to those factors mentioned above, Guthrie's CORI model describes other classroom variables that may influence low-income students' reading comprehension such as autonomy support, learning and knowledge goals, real-world interactions, evaluation, and rewards and praise (Guthrie, 2004). When these variables occur concurrently with the use of interesting texts, strategy instruction, and collaboration, students are likely to experience engagement and success in understanding text.

Autonomy support is one aspect of reading instruction that promotes student comprehension by giving students the opportunity to take control over their own learning (Deci, Vallerard, Pelletier, & Ryan, 1991; Guthrie, Wigfield, & Perencevich, 2004).

Research has shown that when children set their own learning goals, engagement is a likely result (Au, 1998).

Another aspect of reading instruction that supports reading comprehension is the designation of learning and knowledge goals (Guthrie, 2004). When students are given conceptual themes, they may exhibit more motivation towards learning particular content and skills. These goals may be supported through real-world interactions with content material (Guthrie, 2004). Students who engage in hands-on, meaningful tasks such as experiments, observations, and field trips are likely to remember information more clearly than students who do not have real-world interactions (Anderson, 1998; Bruning & Schweiger, 1997).

Teachers' evaluations of student progress can also influence students' reading comprehension. In order to improve their employment of reading strategies and skills, students need specific feedback on their progress and suggestions for strategies that will help them succeed. When students are focused on competition and approval regarding their performance on reading tasks, they may be distracted from the true goal of evaluation – to show mastery (Guthrie, Cox, Knowles, Buehl, Mazzoni, & Fasulo, 2000). Students also benefit when they are able to display their knowledge in various ways (Rosenholtz & Simpson, 1984). For example, in order to show their mastery of a specific learning goal, students might make a presentation, work on a project, or take a more traditional test. Each of these tasks allows students to exhibit what they know in different ways.

Finally, the ways in which students are rewarded and praised make a difference in how they are motivated to engage in conceptual tasks that promote the acquisition of

reading skills and strategies (Guthrie, 2004). When teachers compliment their students on their reading efforts, students may become intrinsically motivated to work towards learning goals (Brophy, 1981). However, when teachers' efforts focus on rewarding children through external means such as prizes or privileges, students are unlikely to develop a desire to engage in reading tasks just for the sake of doing so (Maehr & Midgley, 1996).

While these factors are important for all children's comprehension, quality instructional experiences, like the ones discussed above, may be particularly important for low-income children. Given that school may be the only place that low-income children are exposed to meaningful reading experiences, it is important that elementary classroom instruction supports these children in attaining the reading skills and strategies that they will need to succeed in school and beyond. Unfortunately, research has shown that low-income children are often not privy to these quality classroom practices, given that many of their teachers are inexperienced and unqualified (Darling-Hammond, 1995).

Expository Text Comprehension

As if low-income students do not have enough to overcome in terms of the inadequate conditions for learning they face both in and out of school, expository texts only exacerbate the problem. Exposition, with its technical vocabulary, varying text structures, and, at times, unfamiliar content can impose difficulties for children. Around fourth grade, the instructional focus in most classrooms shifts from "learning to read" to "reading to learn" (Chall, et al., 1990). Venezky (2000) estimated that by sixth grade, approximately 75% of what children read in school is expository in nature. Likewise, researchers have found that on standardized tests a large percentage of the passages used

to measure reading comprehension is expository (Calkins, Montgomery, Santman, & Falk, 1998; Ruetschlin, Dreher, & Finger, 2005). Because there is often little instruction with and access to exposition in most primary classrooms, and even less exposure for children in low-income schools, many children have few experiences with learning how to read the texts that will later dominate their school experiences (Duke, 2000a).

Out-of-School Reading Experiences

Children's out-of-school reading experiences are likely to impact their abilities to comprehend exposition. In particular, children's personal reading habits and their access to expository texts may play a role in how well they are able to understand factual texts.

Personal Reading Habits

A large body of work exists regarding children's individual reading preferences, but few studies link these preferences to achievement outcomes. Research supports the notion that many upper elementary students enjoy a wide range of genres despite the popular belief that boys enjoy nonfiction while girls prefer fiction (Hall & Coles, 1999, Moss & Attar, 1999; Smith & Wilhelm, 2002). Although there is evidence that exposition may be particularly motivating for struggling boy readers and children with special needs (e.g., Caswell & Duke, 1998; Moss & McDonald, 2004), a large-scale survey of English 10-, 12-, and 14-year olds found that children reported reading very few nonfiction texts (Hall & Coles, 1999). The results from this study also revealed differences between what boys and girls liked to read independently. Ten-year old boys expressed interest in adventure books, humorous books, and soccer books. Girls, on the other hand, preferred animal books and books that dealt with topics like romance, relationships, and growing up.

A limitation of the above studies is that most of them are based on library borrowing records and student reports of reading habits. Although these methods allow for a basic understanding of what children might be interested in reading, the findings do not necessarily mean that children are actually reading these texts. Baker and Wigfield (1999) found that avoidance behaviors were highly correlated with race, revealing that African American children might be less likely to read than their peers. If African American children are avoiding reading and these same children are also from economically-disadvantaged homes, this finding may also partially explain why low-income and minority children regularly have lower scores on measures of reading comprehension since children build literacy skills and vocabularies by reading a lot (Nagy, Herman, & Anderson, 1985).

Access to Reading Materials and Resources

Children from various social classes are not likely to be exposed to the same types of reading materials in their homes (Wigfield & Asher, 1984). In many middle- and upper-class homes, children are exposed to a wide variety of texts, including books, newspapers, print and electronic encyclopedias, magazines, and Internet resources. However, these materials do not necessarily have a diversity of text structures. Instead, many researchers believe that most texts that children encounter at home are narrative in structure (Chambliss & Calfee, 1998). Certain resources found in these homes are often exposition such as newspapers, the Internet, and encyclopedias, but even these generalizations can be misleading. For example, Hall and Coles (1999) discovered that a fourth of the approximately 8,000 children who returned their surveys reported reading five or more periodicals regularly. When the magazines were analyzed for a predominant

text structure, Hall and Coles found that the magazines girls read were often narrative in nature while boys' magazines were loaded with expository structures. As a result, certain children in middle- and upper-class homes may be exposed to more exposition than others.

Children who live in homes that regularly get the newspaper have higher reading achievement than children who do not have access to this resource (Walberg & Tsai, 1985). Since the majority of newspaper articles are exposition, children in homes that get newspapers are likely to be exposed to exposition on a daily basis. Newspapers like *The Washington Post* even include sections written specifically for children and children may be exposed to the sharing of sports scores or relevant news obtained from the paper between adults in their homes.

Research has shown that the reading achievement of 10- to 18-year olds from low-income families is highly correlated with the amount of time they spend on the Internet at home. Children participating in the HomeNetToo intervention spent approximately a half hour a day online, most of this time for information-gathering purposes (Jackson, von Eye, Biocca, Barbatsis, Zhao, & Fitzgerald, 2006). While home Internet access may be beneficial for low-income children in terms of their reading achievement, these children are least likely to have access to this resource (Warschaer, 2002). Computer technology has also revolutionized the way that children access encyclopedias. While traditional print encyclopedias were bulky, expensive, and quickly outdated, new electronic encyclopedias offer free (e.g., Wikipedia) or relatively inexpensive (e.g. Encyclopedia Britannica) digital versions. While digital encyclopedias come with their own host of problems ranging from substandard review processes to

equipment requirements (e.g., computers, certain operating systems), they do offer new ways for children to access information.

Classroom Reading Experiences

Guthrie's previously mentioned CORI instruction aims to provide children with access to a variety of engaging reading materials that include both narrative and expository texts (Guthrie, Anderson, Alao, & Rinehart, 1999). CORI instruction is framed within broad scientific themes that allow for children to ask and answer their own questions about the world in meaningful contexts. In a meta-analysis of 11 studies, Guthrie and his colleagues (2007) reported that CORI had a positive effect on fifth graders' abilities to comprehend exposition (effect size of .73)[3]. The statistically significant gains children made in expository text comprehension as result of receiving CORI serves as a model for understanding how strategy instruction, collaboration with peers, and access to interesting and diverse texts can contribute to overall comprehension gains.

Strategy Instruction

An extensive body of research exists regarding the types of instructional practices and materials that are related to the comprehension of expository texts. In particular, researchers argue that children need explicit strategy instruction with expository texts in order to develop necessary comprehension skills (Sweet & Snow, 2003). Explicit strategy instruction with exposition may include determining the importance of ideas (e.g., Garner, Gillingham, & White, 1989; Meyer, 1975; Rasinski, 1988), questioning, organizing information (Armbruster, Anderson, & Meyer, 1991; Ogle & Blachowitz, 2002), connecting background knowledge (Anderson & Pearson, 1984; McKeown, Beck,

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[3] Conservative effect size with M1-M2 with the SD of the control as the denominator

Sinatra, & Loxterman, 1992), and searching for information (Dreher & Sammons, 1994).

Yet, as previously mentioned, children in elementary classrooms have few opportunities

to learn how to use these strategies while reading (Durkin, 1978/1979; Pressley, et al.,

1998).

Collaboration with Peers

Some researchers have cited the importance of peer collaboration for learning

information (Gambrell, Mazzoni, & Almasi, 2000; Guthrie & McCann, 1996; Slavin,

1986). Two models of cooperative learning may be particularly effective for aiding in

the comprehension of exposition. The first model, Guthrie and McCann's (1996) Idea

Circles, are groups of (preferably) three to six students that discuss a particular concept

based on information from multiple resources. Students then work together to create a

common understanding about the assigned topic by using the information that each

member has contributed to the group. Another popular model, the Jigsaw, can be used to

help children build their knowledge about a topic (Aronson & Sikes, 1977; Slavin, 1986).

In Jigsaw, students in a group each read texts with a particular purpose in mind,

becoming experts in an area related to the topic of study. Once each student has gained

expertise in an area, the group meets to discuss what each member has learned. Students

in a group are responsible for teaching their group members the new information. Later,

students are assessed individually on all topics discussed in their group. Although both

Ideas Circles and Jigsaw are interesting strategies for group learning, these methods may

not be enough for economically-disadvantaged children who may not bring to the group

the background knowledge or reading skills required for active and meaningful

participation.

Text Availability

While compared to their wealthier peers low-income children have few resources overall available in their classrooms, the gap may be even greater when looking at the expository texts they can access. And although many children do not have meaningful interactions with exposition until they reach the classroom (Chambliss & Calfee, 1998, Olson, 1977), opportunities for these interactions are likely to vary in relation to social class. In her study of 20 first-grade classrooms, Duke (2000b) found that there were 40% fewer books and magazines available in classrooms in low-income schools when compared to classrooms in high-income schools. In addition, expository texts were not as well represented in the libraries of classrooms in low-income schools (Duke, 2000a). This lack of materials was also evident in other aspects of the classroom such as in the environmental print displayed in the classroom (Duke, 2000b).

Exposure to exposition provides children with opportunities to understand the rhetorical and structural features that are unique to these texts (Jetton, 1994, Kletzien & Dreher, 2004; Meyer & Rice, 1984) as well as to build their content vocabularies (Moss, 2003). However, research has shown that simply flooding classrooms with books will not provide children with the academic and motivational benefits of having a wide variety of interesting texts in their classroom. Instead, if children's reading performance is going to change, classroom teachers need training on how to use and display these new texts (McGill-Franzen, Allington, Yokoi, & Brooks, 1999). One reason for more teacher training is that teachers are often uncomfortable with exposition, so they tend to avoid using it in their classrooms (Donovan & Smolkin, 2001). Additionally, when teachers do

use exposition in their classrooms, they may have trouble negotiating how to read it (Smolkin & Donovan, 2004).

Considering that children from economically-disadvantaged homes (and particularly those in schools with peers from similar backgrounds) face many challenges in learning to read and comprehend exposition, more research is needed to understand the factors that contribute to the success of these students. Although socioeconomic status is a large barrier for these children to overcome, particular in-school and out-of-school experiences may soften the influence of family income on reading achievement.

Problem Statement

This study aimed to identify the relationships between fourth graders' out-of-school reading experiences and in-school instructional experiences in terms of how they comprehend expository texts. If there is any hope to close the achievement gap between wealthy and low-income children, it is important to understand factors that may enable or inhibit all students' success (and then, more specifically, low-income students' success). Because expository text reading is so prominent in children's education in fourth grade and beyond, it is important to understand the roles of both school and individual reading practices in contributing to the understanding of these texts.

Fourth graders were chosen for this study because they are at a critical juncture in their education. For instance, in many schools fourth-grade students are responsible for much of their own learning and are expected to comprehend and use information they read in subject-area textbooks. By sixth grade, estimates indicate that upwards of 75% of the reading children do in school is expository in nature (Venezky, 2000). To examine how children comprehend exposition and the factors that may be associated with their

performance, I used data from the reading test from the 2005 National Assessment of Education Progress (NAEP), which gave me access to over 177,000 fourth graders' reported in-school and out-of-school reading experiences and their subsequent academic performance on measures of expository text comprehension. NAEP currently does not report separate scores for comprehension of expository texts. Although in 2009 NAEP will begin to report scores for students' comprehension of exposition (American Institutes for Research (AIF), 2005), the *Nation's Report Card* will still not include information about the literacy-related variables that influence students' performance, even though this information is collected. In this study, I report information not available in NAEP documentation. Specifically, I identify specific in-school and out-of-school variables that contribute to students' comprehension of exposition.

Research Questions

1. Are students in some schools better able to comprehend expository text than students in other schools?

    Hypothesis: Expository text comprehension varies between schools.

2. What individual reading experiences are associated with students' comprehension of expository text?

    a. Do students' out-of-school reading experiences predict their comprehension of expository text when controlling for students' gender, FARMS eligibility, and race?

    Hypothesis: Students' out-of-school reading experiences predict their achievement of expository texts, when gender, FARMS eligibility, and race are controlled for.

b. Do students' in-school reading experiences predict their comprehension of expository text when controlling for gender, FARMS eligibility, and race?

Hypothesis: Students' in-school reading experiences predict their achievement of expository texts, when gender, FARMS eligibility, and race are controlled for.

c. Do these reading experiences predict students' comprehension of expository texts equally well for FARMS and non-FARMS students, when controlling for gender and race?

Hypothesis: Out-of-school and in-school reading experiences are better predictors of FARMS-eligible students' expository text comprehension.

3. What characteristics of schools are associated with students' comprehension of expository text?

a. Do schools where students have more out-of-school reading experiences have higher levels of average expository text comprehension by their students when controlling for average school FARMS eligibility, race, and school type?

Hypothesis: Schools where students have more out-of school reading experiences have higher levels of expository text comprehension than other schools, when controlling for the average school FARMS eligibility and race, as well as the type of school.

b. Do schools where students have more in-school reading experiences have higher levels of average expository text comprehension by their students when controlling for average FARMS eligibility, race, and school type?

Hypothesis: Schools where students have more in- school reading experiences have higher levels of expository text comprehension than other schools, when controlling for the average school FARMS eligibility and race, as well as the type of school.

Originally, I also intended to ask, "Do these schools' characteristics predict average levels of students' comprehension of expository texts equally well for high-FARMS and low-FARMS schools when controlling for average school race and school type?" However, because of the way that plausible values are calculated in NAEP using students' background information to predict scores, variability between students in high-FARMS and low-FARMS schools may have been affected.

Quality of NAEP as a Secondary Source

Purpose of NAEP

NAEP, more commonly known as the "Nation's Report Card," is the only ongoing assessment of American children's academic progress. Although the Programme for International Student Assessment (PISA) (Organisation for Economic Co-Operation and Development (OECD), 2007) and the Progress in International Reading Literacy Study (PIRLS) (International Association for the Evaluation of Educational Achievement (IEA), 2006) also examine what American students already know and what they can do with this knowledge, these tests are focused on comparing children's performances across countries, not on measuring variance in achievement within the United States.

Mandated by the federal government in 1969, NAEP periodically assesses students in reading, mathematics, civics, science, writing, U.S. history, geography, and

the arts. Currently for students in fourth and eighth grades, reading achievement is assessed biyearly. Twelfth graders are assessed in reading every four years. Data on fourth- and eighth-grade reading achievement in each state are published every two years as *The Nation's Report Card*. Through NAEP, researchers are better able to understand reading achievement, instructional practices, and school environments because representative samples at the state and national levels allow researchers and policymakers to make inferences about the student population. By law, the National Assessment Governing Board (NAGB) develops the blueprints and policies for NAEP, while the National Center for Educational Statistics (NCES) administers and analyzes the test and reports the results (United States Department of Education, Institute of Educational Sciences, & National Center for Educational Statistics, 2007).

NAEP's purpose is not to provide specific data for individual students or schools, nor is enough information collected to allow for such a specific analysis. Instead, the complex survey design of this assessment provides information about achievement, instructional contexts, and experiences for various populations (e.g., fourth graders, eighth graders) and subgroups within those populations (e.g., males, Asian Americans) based on a representative sample (NCES, 2007a).

Design of NAEP

The NAEP reading test uses a matrix sampling design which means that each student takes only a small portion of all test items in one subject area. Each item on the overall NAEP assessment is seen by approximately one-fourth of the overall student sample. This design, therefore, reduces the individual burden on students because they are not answering all test questions. Since students only take a part of the full NAEP

reading test, making fatigue a non-issue, the test can be long and obtain a broad coverage of the curriculum (USDE et al., 2007).

Once the assessment is administered, NCES reports students' reading performances in *The Nation's Report Card*. Overall performance is reported as part of this document, as well as average scores comparing students in participating states. The reports also include information regarding the performance of students by race and gender as well as reporting average scores for English language learners and students with disabilities (NCES, 2007g). In order to be able to report these data in a way that is still representative of the student population, NCES statisticians use special methods, called plausible values, to predict how each student might have performed on the questions they were not given (See Chapter III for more detail) (USDE et al., 2007).

With the implementation of the No Child Left Behind Act in 2001, all states receiving federal money were required to participate in NAEP by 2002. This compliance can be somewhat complex; states mandate districts to take part in this assessment, yet individual students and schools have the right to refuse participation (NCES, 2007a).

NAEP as a Measure of Expository Comprehension

Reading passages used as part of the fourth-grade comprehension measures on the NAEP reading test are defined as either "reading for literary experience" or "reading for information." However, it may be more accurate to say that these passages are categorized by their structure (exposition vs. narrative) as opposed to their purpose (literary experience vs. information). In other words, texts classified as "reading for literary experience" required students to "explore events, characters, themes, settings, plots, actions, and the language of literary works by reading novels, short stories, poems,

plays, legends, biographies, myths, and folktales" whereas texts labeled as "reading for information" referred to the expository materials more traditionally used when reading to learn (NCES, 2007d). However, when looking more closely at retired "Reading for Information" passages (Appendix B), I found that the designations that NAEP assigned these passages were not completely clear. For example, both "Dr. Shannon Lucid: Space Pioneer" and "Watch Out for Wombats" contain aspects of both narrative and expository texts. Both passages start and end with a narrative-like structure which might be confusing for students who are trying to determine the stance with which they should read these texts. In addition, neither text wholly resembled traditional exposition (e.g., textbook writing). Many researchers would classify these texts as having attributes of mixed texts. Although many of the questions NAEP asked students about informational passages took a stance most appropriate for expository text reading, questions about some passages addressed aspects of narrative texts, such as characterization. Despite these concerns, in this study I used the "reading for information" items from the 2005 fourth-grade reading assessment to gauge students' comprehension of exposition. I made this decision because in my opinion these items appeared to represent "exposition" more accurately than it represented "informational reading."

NAEP's categorization of these passages is unclear and could potentially lead to the misinterpretation of findings. Although the category labels suggest grouping of passages by the main purpose for reading the excerpt, closer examination reveals that the structure of a text determines its membership in a particular category, not its purpose. The clearest example of this is how NAEP categorizes biographies as "reading for literary experience" as opposed to the more dominant purpose for reading this genre – *to*

learn about a person or people. The NAEP advising committee has resolved this confusion in the 2009 framework by classifying texts as being either expository, literary nonfiction, or fiction (AIF, 2005).

<center>*NAEP as a Measure of Poverty Levels*</center>

NAEP collected limited information regarding student poverty status. In the *Nation's Report Card*, poverty status is represented by students' eligibility for the Department of Agriculture's School Lunch Program. As part of this initiative, children may be eligible for free or reduced price breakfasts and lunches depending on their family income and size in relation to a "federally-established poverty level" (NCES, 2008a). NAEP collects information regarding their status on this variable by examining school records.

Some researchers have criticized the use of FARMS eligibility as an isolated proxy for socioeconomic status, one reason being that some families refuse help; therefore not all low-income children are identified as such. In other studies, composites with factors such as mother's education, father's education, and educational resources in the home have been used to make more robust measures of poverty (e.g., Guthrie, Shaefer, & Huang, 2001; Lee, Croninger, & Smith, 1997). However, NAEP has ceased collecting information about fourth graders' parental education levels because student reports of this information were found to be unreliable. In addition, the educational resource information reported in the 2005 NAEP fourth-grade assessment is part of my model. Using items such as the number of books in the home or the presence of a computer in the home was not possible because then my poverty measure and my out-of-

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school reading experiences measure would have been based on some of the same items (therefore overlapping).

Because of these challenges, I was forced to rely on FARMS as a proxy for poverty in my study. Although not an optimal solution, I do not believe that this decision negatively influenced the outcomes of my analyses. First and foremost, NAEP statisticians already use FARMS in isolation to report differences in achievement for children from various socioeconomic backgrounds in the *Nation's Report Card* (NCES, 2007g). Second, it is important to note that NAEP collects information on whether or not students are *eligible* for FARMS and not whether they are actually taking advantage of the services offered by the Department of Agriculture. If anything, using FARMS as a proxy for poverty likely makes my estimates of poverty influences more modest, given that it appears more likely that children from wealthier families would classified as low income than the reverse as a result of families having income that was not reported to the government. Assuming this theory is correct, the differences identified in my analysis between economically-disadvantaged children and their peers may be even larger than reported.

NAEP as a Measure of Out-of-School Reading Experiences

As part of the NAEP study, students were asked a series of background questions to collect information such as demographic information, reading habits, and available resources. Several of these questions can be combined to create a composite representing the out-of-school reading experiences of fourth graders. Although individual variables give only a partial picture of out-of-school reading experiences, a composite of these

variables gives a more complete view of the types of reading activities fourth graders engage in outside of school.

For this study, I examined a composite of items related to out-of-school expository reading experiences (with their NAEP item numbers in parentheses), including: number of books in the home (B013801), magazines in the home (B000905), print or digital encyclopedias in the home (B017201), computers in the home (B017101), newspapers in the home (B017001), learn a lot while reading (R830601), read as a favorite activity (R830701), read to learn about real things (R831601), read stories on the Internet for fun (R831701), and talk about things read with family and friends (B017451 and R831101). I conducted a factor analysis to see how well these items measured the same latent constructs. Items that were not correlated and related to the same construct were dropped so that the best composite of out-of-school reading experiences was used in the analyses.

NAEP as a Measure of School Reading Practices

The NAEP student questionnaire also provided information about the types of instruction they experience in school. Although teachers also filled out a questionnaire regarding their instructional practices, using teacher data would result in nesting problems because variability would be lost between students within the same classes. On the other hand, using student data allowed me to capture the variability between students in the same classes. Initially I made a composite of student-reported classroom reading activities that could be related to expository text comprehension, including: reading books and magazines for reading (R832401), science (R832501), and social studies (R832601), working in groups about texts read (R831901), having class discussions

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about texts read (R831801), choosing own books for reading (R832901), and preparing book reports (R832101), projects (R832301), and presentations (R832201) about things read.   I conducted a factor analysis to check the internal consistency of the items. Items that were not adequately related to the latent construct were not used in the final composite.

<center>Rationale for the Use of Hierarchical Linear Modeling (HLM)</center>

This study used hierarchical linear modeling to investigate the contributions that in-school and out-of-school reading experiences make to fourth graders' expository text comprehension, particularly for those students from low-income homes. My choice to use hierarchical linear modeling to examine these data was warranted because traditional analytic methods would not have accounted for sources of potential variance in this sample (e.g., regression using only school-level or only student level data). If I had chosen to use traditional methods of analysis (e.g., linear regression), I would have had more unexplained variance and would have potentially underestimated the important relationships between out-of-school reading experiences, in-school reading experiences, and students' comprehension of exposition. Finally, traditional models assume that the change in reading achievement, given different types of out-of-school reading experiences, would be the same from school to school (Bryk & Raudenbush, 1992). In initial analyses (discussed further in the next section), I found that there were likely statistically significant differences between schools, so this assumption would have been false.

Initial Research

In my initial explorations with the 2005 NAEP data, I found that fourth graders comprehended narrative text with more ease than exposition. I found that students' abilities to comprehend exposition varied significantly across schools, and thus this research project was developed to better understand factors that contributed to expository text comprehension.

A model was developed to examine the associations that both out-of-school and in-school reading experiences had with fourth graders' comprehension of exposition. The aforementioned research questions addressed this problem, using three units of analysis: (a) the child, (b) the school, and (c) the child within the school.

Importance of Using NAEP for this Analysis

It was important that I used NAEP data for this analysis because NAEP has one of the highest-quality assessments of cognitive performance available. Since this assessment used a spiraled, matrix sampling design, more questions were asked on more passages, allowing me to get a better understanding of fourth graders' comprehension of exposition. NAEP also provided a reasonable amount of background information for children so that demographics, out-of-school experiences, and in-school experiences could be associated with comprehension ability.

The large size of the NAEP fourth-grade reading dataset also provided a lot of power for statistical analyses. The dataset for the 2005 reading assessment had a nationally-representative sample of over 177,000 fourth graders. This sample allowed for more reliability of the results as well as the power to look at how poverty played a role in expository text comprehension.

Limitations

As with any study, this research project has limitations. Three major limitations that influenced this study were (a) the measurement tools, (b) the collection procedures, and (c) choices in analysis procedures.

Because I did not have the opportunity to create the measurement instruments, I needed to find variables that closely related to the constructs of interest. First, although I was initially interested in how out-of-school and in-school reading experiences were associated with students' nonfiction reading, there was no measure of nonfiction reading in this assessment. Instead, biographies and other narrative nonfiction were grouped in with "literature," making it possible to look at students' comprehension of exposition, but not nonfiction in general. However, in 2009 the test will be revised so that nonfiction can be examined as a dependent variable. This change sets the stage for future research evaluating whether out-of-school and in-school reading experiences are associated with children's comprehension of nonfiction differently than for exposition.

Similarly, the background questions asked on the student and teacher questionnaires were somewhat different than I would have asked, but they appeared to provide similar information (e.g., what resources are available at home, what books are used for social studies instruction). However, I had to be cautious that I used these variables in ways that did not misinterpret the participants' responses. I used the available literature to guide me in creating reliable constructs of out-of-school and in-school reading experiences.

One of the more significant limitations of using NAEP data is that there is no control for prior achievement. Because information about students' prior achievement

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was not available, it was difficult to disentangle what was a school effect and what was an out-of-school effect. Luckily, many of the questions students were asked on the background questionnaire specified whether the question involved what they did out-of-school or what they did in-school. For those variables that were not clearly specified (e.g., I read to learn new things), I made my best guess as to whether it fit better with out-of-school or in-school practices. In addition, I argue that because research shows that fourth graders have had very few experiences with exposition in the primary grades (Duke, 2000a; Duke 2000b), measures of prior achievement may be less informative at this point. Although I recognize the argument that students who are good readers might do better than struggling readers when faced with a new text structure (e.g., exposition), reading research supports the notion that reading narratives does not prepare students to read exposition (Chall, et al., 1990).

Since I was not a part of the collection of the NAEP data, I had to rely on the reports of NCES regarding their adherence to the collection and recording protocols. Given the fact that this assessment has been administered for 38 years, arguably NCES and its counterparts are adept at following administration procedures. Nevertheless, I had to rely on others for the collection and imputation of the data I used for this study.

Finally, my decision to use HLM to answer my research questions surely influenced my findings. The use of multilevel modeling with this dataset is both supported and encouraged by NCES. In using these analytic procedures, I was likely able to account for more variance than would have been possible through traditional analyses of variance/covariance and linear regression. Some data were lost because HLM does not

accept missing data at the school level. However, missing data analyses showed the missing schools did not differ significantly from the overall sample.

Definition of Terms

The following definitions represent the meaning of terms and how they were used in this study.

Comprehension is "the process of simultaneously extracting and constructing meaning through interaction and involvement with written language" (RAND Reading Study Group, 2002). Comprehension involves processes such as activating prior knowledge (Anderson & Pearson, 1984), interacting with the text (Rosenblatt, 1978), inferencing, and monitoring (Palinscar & Brown, 1984). It also is dependent on the reader's ability to decode, recognize vocabulary, mentally organize what they have read, and read with fluency (Block, 2003, Nathan & Stanovich, 1991).

The NAEP framework (USDE et al., 2007) recognizes four components of reading comprehension. As part of comprehension, students have an overall, or general, understanding of the text. Students also broaden their generalizations to make deeper interpretations. In addition, students make connections to the text using their own experiences. Finally, students critically evaluate texts in terms of language and organization.

NAEP identifies three contexts for reading as part of the reading assessment. Each passage in NAEP represents one of the three contexts for reading: (1) reading for literary experience, (2) reading for information, and (3) reading to perform a task. However, on the current assessments, fourth graders do not read to perform a task (USDE et al., 2007).

According to the NAEP reading framework, *reading for literary experience* requires "readers [to] explore events, characters, themes, settings, plots, actions, and the language of literary works by reading novels, short stories, poems, plays, legends, biographies, myths, and folktales" (NCES, 2007d, n.p.). To comprehend these texts, readers need to use skills needed for understanding narrative text structure.

In order to *read for information,* "readers gain information to understand the world by reading materials such as magazines, newspapers, textbooks, essays, and speeches" (NCES, 2007d, n.p.). The skills required for reading texts in this context reflect those most often associated with reading exposition.

Although not relevant to this particular study, *reading to perform a task* is the third context for reading outlined by NAEP. This requires "readers [to] apply what they learn from reading materials such as bus or train schedules, directions for repairs or games, classroom procedures, tax forms (grade 12), maps, and so on" (NCES, 2007d, n.p.).

Narrative texts follow a story structure and include elements such as characterization, plot, events, setting, problem, and solution. Oftentimes these texts are fictional and meant to entertain, though some informative books are written with narrative structures (e.g., biographies, some trade books for young children) (Kletzien & Dreher, 2004; Gunning, 2003).

Exposition is a type of writing that has a structure and purpose that is quite different than narrative text. Exposition typically employs structural patterns such as main ideas and details, cause and effect, comparison and contrast, persuasion, process, description, and classification (Frey & Fisher, 2007). These texts often use "timeless

verbs" and "generic nouns" which refer to the content in general, not specific, terms (Duke & Bennet-Armistead, 2003; Pappas, 1993). Expository texts "explain the natural and social world, including animals, places, and cultural groups" (Kletzien & Dreher, 2004, p. 14). Exposition is often likened to "textbook writing," and although most textbooks are expository, many other texts like newspaper articles, informational books, reports, and other documents also are most often exposition.

As mentioned earlier in this chapter, some "Reading for Information" passages on the 2005 NAEP assessment were not necessarily typical of exposition. Adapted from magazines and other print sources, these texts sometimes contained elements of narrative texts (e.g., vignettes, story structure) and were occasionally accompanied by questions that addressed narrative aspects of the texts (e.g., characterization). These elements may have made it difficult for some students to determine the stance with which they should have approached the passage.

For comprehension, it helps if readers recognize the global, or top, structure of exposition in order to organize information (Chambliss & Murphy, 2002; Jetton, 1994). Two strategies aid in this process: (1) using text cues to identify overall structure (Meyer & Freedle, 1984) or (2) macroprocessing ideas from the text (Kintsch, 2004).

The National Assessment of Educational Progress (NAEP) is a long-term, national study that assesses students' knowledge, instructional practices, and classroom contexts in reading, math, civics, science, writing, geography, history, and the arts (NCES, 2007g). Fourth-, eighth-, and twelfth-grade students from across the United States participate in this assessment.

Since 1988, the National Assessment Governing Board (NAGB) has developed the policies and frameworks for NAEP. This board consists of 26 bipartisan members such as senators, legislators, business representatives, members of the general public, and educators who oversee NAEP (NCES, 2007c).

The National Center for Educational Statistics (NCES) is in charge of administering, analyzing, and reporting NAEP. NCES is part of the Institute of Education Sciences (IES) (NCES, 2007g).

Hierarchical Linear Modeling (HLM) is a statistical technique that allows for modeling questions about individuals who are nested within larger groups (Bryk & Raudenbush, 1992). This technique is particularly relevant for educational researchers, who often study students nested within classrooms, nested within schools.

In this study, both economically disadvantaged and low-income describe children who are eligible for the Department of Agriculture's Free and Reduced Meals Program (FARMS). In order to qualify for these services, students' family income must be below 130% of the federally-designated poverty line for free meals and 185% of the poverty line for reduced-priced meals.

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

There is ample research that shows that students struggle with understanding exposition. Research shows that children receive minimal exposure to exposition both in and out of school (e.g., Chambliss & Calfee, 1998; Duke, 2000a). Children from economically-disadvantaged homes face even more challenges in comprehending exposition (e.g., Darling-Hammond, 1995; Duke, 2000b)   It is important to understand the factors that are associated with the academic success of low-income children.

In order to study this problem, I used the 2005 fourth-grade NAEP reading dataset for which I have obtained a restricted-use license. I examined the hierarchical nature of these data through the use of HLM software. The two-level model included both child-level and school-level data. Research questions addressed the research problem at the child level, at the school level, and as the child nested within the school.

This study added to the research literature because it extended beyond the question of how well students understand exposition to examine factors economically-disadvantaged children face both out-of-school and in-school that can potentially influence their comprehension of these texts.

CHAPTER II: REVIEW OF LITERATURE

Introduction

Research has already shown that children from impoverished backgrounds face challenges in succeeding in school. While some studies have examined how in-school and out-of-school reading experiences are individually associated with reading achievement, few have looked at how these factors collectively influence reading achievement, particularly children's comprehension of exposition. In this chapter, I review the theoretical and empirical evidence that supports each construct in my study: (1) the relationship between poverty and reading achievement (2) out-of-school reading experiences associated with income, general reading achievement, and the comprehension of exposition, and (3) in-school reading experiences related to income, general reading achievement, and the comprehension of exposition. In addition to reviewing the above literature, I also examine other reading researchers' secondary analyses of NAEP data.

Although this is a comprehensive review of research regarding the relationships between (1) income, (2) out-of-school reading experiences, (3) in-school reading experiences, and (4) expository text comprehension, it is by no means exhaustive. Each of these four components has an extensive literature base, and reviewing every study in each of these fields is neither feasible nor productive for the purposes of this study. Therefore, studies were chosen for this review based on the following specific criteria: (1) studies focused on elementary or middle school students, (2) studies were often cited in the field (3) studies were peer reviewed articles, chapters, or books, and (4) studies were directly related to the phenomena of interest.

The Relationship between Poverty and Reading Achievement

Although studies have often linked poverty with low reading achievement, being economically-disadvantaged is not necessarily the reason for reading failure. Although, as a whole, low-income students trail their wealthier classmates on most measures of academic achievement, some low-income children perform at advanced levels (Snow, Barnes, Chandler, Goodman, & Hemphill, 1991; Wyner, Bridgeland, & Diiulio, 2007). One of the difficulties in unpacking what it is about poverty that correlates with low reading achievement is that:

> social class is a package variable, a summary label for an intricate complex of related variables including parental education, occupational status, income, housing conditions, time allocation, attitudes towards school and schooling, experiences with school, expectations for future educational and occupational success, nature of the family's social network, and the style of parent-child interaction. (Snow et al., 1991, p. 5)

In other words, because social class is such a complex phenomenon, it can be difficult to sort out which of these variables are influencing achievement. Some studies have attempted to disentangle the factors of poverty that contribute to reading achievement and have done so by looking only at the differences between low-income non-achievers and low-income achievers in reading (e.g., Chall, Jacobs, & Baldwin, 1990; Durkin, 1982; Snow et al., 1991). And although in this study, I wanted to better understand what out-of-school reading and in-school reading factors contributed to children's comprehension of exposition, I also wanted to explore how out-of-school and in-school reading factors aided or hindered low-income children's success.

The research in expository text comprehension has mainly focused on students'
abilities to recognize text structure, navigate texts using text features, and connect ideas
to their own background knowledge. Many studies in expository text comprehension
focus on specific instructional strategies, but few explore the relationship between
strategic reading of exposition and low-income children's comprehension. Although
Chall and her colleagues (1990) argued that low-income children may have unique needs
when reading exposition, few research studies have focused on how low-income children
might be helped to understand these texts. This study aimed to determine what specific
factors might be associated with the achievement expository text achievement of fourth
graders, particularly those experiences that were particularly influential for low-income
children. In the following sections, I review the literature related to how children's out-
of-school and in-school reading experiences play a role in both overall reading
comprehension and expository text comprehension. Examining these elements in relation
to one another may hint as to why some children excel in comprehending exposition
while others struggle. This information would be useful in planning intervention studies
that aimed at helping students to comprehend exposition.

<center>Out-of-School Influences on Reading Achievement</center>

It is a popular notion that out-of-school reading experiences are important for
reading achievement (e.g., Bloom, 1976; Snow, et al., 1991). However, researchers have
found it difficult to pinpoint exactly *what* experiences are vital to reading achievement
and to determine *how* important these experiences are for young readers. It would be
presumptuous to assume that this study could disentangle the multifaceted, complex
nature of children's out-of-school reading experiences. Yet the more studies that look at

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the complexity of these experiences, the more information that will be available to better understand relationships between what happens out-of-school and in-school and how these influence expository text comprehension. In the following section, I explore three aspects of out-of-school reading experiences: (a) the out-of-school reading experiences of low-income children, (b) the associations between out-of-school reading experiences and general reading comprehension, and (c) the associations between out-of-school reading experiences and expository text comprehension. This review examines research from several fields, including education, educational psychology, sociology, linguistics, and policy.

Low-Income Children's Out-of-School Reading Experiences

In our world, there are broad assumptions about the values, lifestyles, and resources of people living in poverty (Lareau, 2000) and how these factors influence school success for children coming from these homes. Pierre Bourdieu (1977a; 1977b), a French sociologist, theorized that a person's economic standing has an impact on the types of "cultural capital" he or she is exposed to in his or her home or community. Coined by Bourdieu and Passeron in 1973, cultural capital is a term that has come to describe the resources that someone is exposed to that may or may not provide some sort of social benefit (e.g., knowledge and skill). In theory, people then use this knowledge and these skills for gaining higher positions in society (economic advancement) (Bourdieu, 1977a).

Funds of Knowledge

Research has supported the notion that cultural capital is an important factor in economically-disadvantaged children's attainment of reading skills. In their *Funds of*

Knowledge Project, Moll and his colleagues theorized that the knowledge that family and community members have is a valuable resource for children from those households and communities (Moll, Amanti, Neff, & Gonzales, 1992). Although they avoided the term "culture" in their work because they believed it presumes that all members of a community or culture have the same knowledge and attributes, their work builds on Bourdieu's (1977a) idea that people have knowledge that can be used for economic advancement. In their research, Moll and his colleagues studied the home and classroom environments of low-income, Mexican-Americans with the goal of improving classroom instruction using knowledge that was readily available in the community (Moll, et al., 1992). Their work uses the term "funds of knowledge" as the "historically accumulated and culturally developed bodies of knowledge and skills essential for household or individual functioning and well-being" and might include household knowledge such as crop planting, automotive repair, budgeting, and bible studies (Moll, et al., 1992, p. 134).

Moll and his colleagues argued that this knowledge is rarely incorporated into classroom practices, even though they saw it as having the potential to benefit children's overall academic achievement. Instead, the dominant culture in America is emphasized in school, leaving out the experiences of students from Latino groups (and theoretically others). Indeed, González and Moll (2002) found that adolescents were able to bridge the gap between out-of-school and in-school experiences by having both teachers and students participate in the collection of information related to the communities' funds of knowledge.

Moje, Ciechanowski, Kramer, Ellis, Carrillo, and Collazo (2004) expanded on this notion of funds of knowledge by exploring how Latino/a adolescents were able to

incorporate funds of knowledge from their families, communities, peers, and popular

culture into a science unit about water and air quality. Moje and her colleagues found

that students rarely volunteered information unless explicitly asked to by the teacher or

interviewer. Yet, when these students did share information, it usually related quite well

to the content of air and water quality and helped bridge the gap between academic

knowledge and personal knowledge. Without connecting the content to their own

knowledge and experiences, these students had a difficult time relating to the "local"

examples the text provided. Interestingly, these students often connected to their funds of

knowledge when out-of-school or with peers, but they did not willingly and publicly offer

these ideas when reading in school.

Materials in the Home

The lack of access to appropriate reading material at home is a likely factor in the

academic failure of low-income children. Although the average middle-class child

engages in over 1,000 hours of read alouds with family members before entering school,

low-income children are thought to have on average only 25 hours of this type of

interaction (Adams, 1990). This disparity may be in part related to Feitelson and

Goldstein's (1986) finding that 60% of kindergarten children in low-performing schools

had no books of their own at home. Given that academic achievement has been linked to

the number of books found in a home (Sheldon & Carillo, 1952), this finding may be

particularly important.

In an analysis of resources available in four Philadelphia neighborhoods, Neuman

and Celano (2001) found that shops in low-income neighborhoods had a limited selection

of children's books for sale (as few as 1 book title for every 300 neighborhood kids - and

even those titles were coloring books), while shops in middle-class neighborhoods had up to 13 book titles available per child. According to these findings, even if low-income parents wanted to buy interesting and diverse texts for their children to read, they would have to leave the neighborhood to purchase them. When Neuman and Celano (2001) examined the school and public libraries in middle-class and low-income neighborhoods, they discovered similar inequities. School libraries in low-income neighborhoods were in disastrous shape, with no trained librarians, less accessibility, and a lack of quality materials. Although in theory public libraries would be comparable between the middle-class and low-income neighborhoods given that they were all funded by the city of Philadelphia, Neuman and Celano (2001) found that this was not the case. In low-income neighborhoods, libraries closed earlier and had fewer books than they did in middle-class neighborhoods. According to these findings, even if low-income parents wanted to buy or borrow books for their children, they would have difficulty doing so locally. This disparity in book access may contribute to the difference in reading achievement between low-income and middle-class children.

Neuman (1999) argued that "the physical placement of books in close proximity to children" is vital for literacy learning (p. 306). Many educators cite the importance of community libraries for getting books into the hands of children. However, libraries located in areas with the most children in need may have a poor selection of appropriate and current books as a result of low funding (American Library Association (ALA), 2007). In a case study of a low-income, white, urban Appalachian family, Purcell-Gates (1995) found that some low-income families may be overwhelmed with just the idea of getting to the library or the process by which they would check out books. For example,

the family she studied avoided contact with the library until Purcell-Gates herself took them to visit it and showed the transportation and check-out processes involved. Although this family may have wanted to use the library as a resource for reading material, they were unable to figure out some of the basic processes involved in doing so.

Discussions with Family and Friends

The type of talk that caregivers and children engage in has been documented to contribute significantly to vocabulary growth and academic achievement (Hart & Risley, 1995). Hart and Risley (1995) followed 42 families from various socioeconomic groups for 2 ½ years, observing family interactions with children from infancy and following up again in third grade. They found that socioeconomic status was a strong predictor of how much talk occurred between parents and their children. Even before children were able to talk, parents in high-income families made 482 utterances per hour to their babies and parents in middle-income families made 321 utterances per hour to their babies, while babies in low-income families only had 283 utterances per hour directed at them. In other words, at a very young age there is a significant difference in the amount of "discussions" in which young children from low-income families are included.

The differences in family talk were not only a matter of time spent talking with children, it was also an issue of the quality of the interaction. Hart and Risley found that parents from high-income families used a richer vocabulary, introduced their children to several types of discourse, and had more positive interactions. In a study of parental involvement, Lareau (1989) found that low-income parents engaged in the similar types of education-related discussions as middle-income parents did (e.g., talk about homework, read aloud, teach words), but they did so less frequently.

Finally, the types of interactions that children had with their parents before age three were a very strong predictor of academic achievement in third grade (Hart & Risley, 1995). The importance of the amount and quality of parent-child interactions remained essential to academic achievement, while the overall importance of family income weakened. This relationship is important because it may mean that with information and training about how to talk with their children, low-income parents may be able to make up for some of the variability that socioeconomic status explains in academic achievement.

Parents' Beliefs about Schooling

Parents' attitudes and expectations for school appear to be linked to both socioeconomic status and reading achievement (Eccles & Harold, 1996; Hoover-Dempsey, Bassler, & Brissie, 1987; Lareau, 1989). Eccles and Harold (1996) found that parents from low-income families tended to be less involved in their children's schooling than other parents. Much of parents' involvement (or lack thereof) was dependent on their impressions of their own intellectual abilities. In other words, parents who thought that they did not have the skills to help their children with schoolwork were not very involved.

In her study of parent and school relationships, Lareau (1989) found that it was not that low-income parents did not believe that schooling was important; instead, these parents engaged in school-related practices in different ways than middle-class parents did. Earlier work claimed that low-income parents were less involved in their children's schooling because they did not value the educational system (Strodbeck, 1958).

Often parents of low-income children do not believe that they have either the privilege or duty to initiate contact with teachers or challenge school practices (Lareau, 1996). They will often pay attention to what is happening with their child at school, and may see themselves as being involved (by being available if the school initiates contact), but will not intervene with the 'professionals' that work in the school. This finding is important because teachers sometimes blame students' low achievement on their parents' lack of involvement in the school (Eccles & Harold, 1996). However, if expectations for parent involvement are not clearly vocalized by teachers, parents may not even be aware that their participation is not seen as adequate.

Out-of-School Experiences Associated with General Reading Achievement

A general consensus exists in the education field that children's out-of-school reading experiences are linked to their subsequent academic achievement (Hart & Risley, 1995; Snow et al., 1991). Many studies have focused particularly on the importance of early home literacy experiences and how they might influence school success (e.g., Lareau, 1989; Snow, et al., 1991). Much of the research regarding children's out-of-school reading experiences is done with preschool and early elementary-aged children. As much as possible, I have tried to use research that focuses on children in second through fourth grade. However, some sections (particularly those on parent-child shared readings) rely heavily on research with younger children. In the next section, I review how the following out-of-school reading experiences are associated with children's general reading achievement: (1) the materials available to children outside of school, (2) the discussions of reading children have with family and friends, and (3) the reading together of books by parents and children.

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Materials in the Home

Earlier in this chapter, I cited the importance of materials in the home for low-income children. However, having access to interesting reading materials outside of school is important for the vocabulary development and comprehension skills of all children. In addition, access to materials outside of school is associated with students' later reading achievement (Bus, 2003). In their study of 155 fifth graders, Anderson, Wilson, and Fielding (1988) found that there were statistically significant differences in the amount that children were reading outside of school (e.g., reading books, magazines, newspapers, or mail). More disturbing, their study showed that most children were reading very little or not at all outside of the school context. Therefore, the authors questioned whether access to books would even motivate these children to read or if change was needed in children's attitudes about reading before they would do so independently.

Researchers have found differences between the types and number of books that parents of different socioeconomic backgrounds buy for their children. A study by Neuman, Celano, Greco, and Shue (2001) found that wealthier, educated parents bought more books for their toddlers than economically-disadvantaged, less-educated parents. Although this finding is not surprising in itself, when the same parents were studied to see their book-buying habits for their school-aged children, these authors discovered that the parents did not buy as many books as they had for the children when they were younger.

Discussing Reading with Family and Friends

Parental involvement in their children's schooling may be an important predictor of academic success (Grolnick & Ryan, 1989; Hong & Ho, 2005). Children whose parents talk to them about school may feel a greater sense of responsibility to achieve (Fan & Chen, 2001), support in their academic endeavors, and motivation to do well (Grolnick & Ryan, 1989). A study by Teale (1986) showed that most of preschool children's literacy experiences at home centered around daily activities, and not on structured academic activities such as reading together. He concluded that although children may not be participating in many formal literacy events at home, they are still getting experiences that will prepare them for school-based tasks.

Parents are not the only ones to influence children's reading achievement. Children may be particularly motivated to read books that their friends have also read (Moss & McDonald, 2004). Studies of library circulation records of sixth graders show that books are often shared among groups of friends and that reading peer-approved books may be important for children's sense of group membership (Moss & McDonald, 2004). When friendship groups share favorite books, children's motivation to read may blossom. Likewise, if children are talking about the books they read with their friends, they are likely to develop a better understanding of what they read. As Ketch (2005) claimed:

> Conversation helps individuals make sense of their world. It helps to build empathy, understanding, respect for different opinions, and ownership of the learning process. It helps [children] sort out their ideas of the world and

understand how they fit into it. Used as a connection to cognitive strategies,

conversation fosters comprehension acquisition. (p. 8)

In other words, when children talk to each other or their parents, they are likely gaining

literacy skills that are crucial to their development as readers.

Parent –Child Shared Readings

Early shared book readings between parents and children may be the most

important out-of-school factor related to reading achievement (Neuman, 1999;

Scarborough & Dobrich, 1994). With these shared reading experiences, children gain

understanding of concepts about print (Justice & Ezell, 2002), book language (Pappas,

1991), and the rhyme and rhythm of language (Adams, 1990), as well as develop their

vocabularies (Teale & Sulzby, 1986). Shared book reading has also proved to be an

important motivator for children and a potential catalyst for children's desire to read on

their own (Baker, Mackler, Sonnenshein, & Serpell, 2001; Teale & Sulzby, 1986).

Through these shared book experiences, parents mediate the gap between the story and

the relation to children's own lives (Snow et al., 1991). However it is important to note

that the benefits of parent-child shared readings rise from the *quality* of parent-child

reading experiences, not just the *quantity* of these interactions (DeJong & Bus, 2002;

Reese & Cox, 1999).

Some educators recommend that children should frequently read aloud to their

caregivers. However, Toomey (1993) found that it was not enough for children to just

read aloud to parents. In an analysis of 40 quasi-experiments, Toomey compared the

academic achievement of students who read aloud to parents (most often from books

brought home from school) to students who read with parents coaching them. Toomey

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concluded that coaching appeared to be quite important, especially for low-income children whose parents were often reluctant to praise them or give them clues that might help them figure out a word. Instead, parents of low-income children would often correct the child's answer before the child was given a chance to try to decode it, an act that squelched academic growth. Toomey particularly praised the effectiveness and easiness of the paired reading model. In this model, parents and children read aloud together at the child's pace, stopping to correct miscues. When the child gives a predetermined signal, the child reads independently and is praised for his decision to do so while the parent corrects miscues. The findings from a weighted average of five studies with a weighted pre-post time gap of 2.6 months illustrated that students participating in shared reading experiences gained an average of 11.4 months in reading comprehension and 7.3 months in decoding accuracy. These findings are encouraging for those looking to impact children's reading achievement through shared reading experiences.

Out-of-School Experiences Associated with Expository Text Comprehension

The types of experiences with language and texts that students have at home are important for developing their capabilities to read exposition. In this study, exposition refers to text that is structured using various patterns such as description, process, classification, main idea and details, cause and effect, comparison and contrast, and persuasion (Frey & Fisher, 2007). In addition to structural differences between narrative and expository texts, expository texts uniquely use timeless verbs and generic nouns (Duke & Bennet-Armistead, 2003; Pappas, 1993) and have the purpose to inform, explain, or argue (Chambliss & Calfee, 1998). Exposition is often likened to textbook writing, yet this form of text appears in many other types of text writing, including

newspapers, trade books, magazines, and Internet resources. For comprehension, it helps if readers recognize the global, or top, structure of exposition in order to organize information (Chambliss & Murphy, 2002; Jetton, 1994). Two strategies aid in this process: (1) using text cues to identify overall structure (Meyer & Freedle, 1984) and (2) macroprocessing ideas from the text (Kintsch, 2004).

One way readers comprehend exposition is to use individual text clues, or micropropositions, to determine the meaning of the text (Weaver & Kintsch, 1990). These small units of textual meaning can be looked at together to determine the main idea of the text. In other words, in order to understand a part of a text, a reader must understand the parts that were previously introduced (Halliday & Hansan, 1976). Micropropositions also have to do with the coherence of text and the way that information is woven together in a way that builds on ideas and makes sense (Meyer & Rice, 1984; Weaver & Kintsch, 1990).

Macroprocessing is the ability to sum ideas across different sentences to determine the top structure of the text (Kintsch & van Dijk, 1978). According to Weaver and Kintsch (1990), "Macropropositions are propositions that contain only top-level "gist" information" (p. 233). To macroprocess text, readers look for similarities between sentences in order to figure out the main idea. Although some adult readers are quite capable of using the macrostructure of the text to help the comprehend exposition, Williams (1984) determined that fourth graders did not yet have this ability. In her study, fourth graders had to decide whether a sentence would make sense with the rest of the sentences in the text. Although the children struggled with this task, when the main idea

was clearly disclosed, the children were more successful at determining whether the sentence belonged.

Exposition is often quite difficult for children to read because they have less experience when "learning to read" with this type of text (Chambliss & Calfee, 1998; Langer, 1986). Chall and her colleagues (1990) acknowledged that low-income children appeared to have a "fourth-grade slump" when they do not adjust to the challenging demands of reading expository texts in the later elementary grades. In order to fully comprehend exposition, children also need academic vocabulary and adequate background knowledge (McKeown, Beck, Sinatra, & Loxterman, 1992; Recht & Leslie, 1988; Stahl, Jacobsen, Davis & Davis, 1989; Taft & Leslie, 1985). Without this information, children may be unable to make the necessary links and associations between information.

Materials in the Home

The presence of diverse and engaging reading materials in the home may be one of the most relevant factors for children's expository text comprehension. A middle-class home is likely to provide access to a wide variety of expository materials, including: (1) expository trade books, (2) newspapers, (3) magazines, and (4) Internet resources. Exposure to these texts is important for developing knowledge about the structures, features, and purposes of exposition.

Expository trade books. Although more children's nonfiction texts are published each year than any other type of book, relatively few of these texts make it into children's homes in comparison to fiction texts (Moss, 2003). In addition, those nonfiction books present in elementary-aged children's homes often have a narrative structure. Even

though these texts may prepare children to read for informational purposes, narrative-informational books are unlikely to prepare them for the structures and features that are unique to exposition (Kletzien & Dreher, 2004).

Expository trade books may be particularly motivating for children given that those available today are often visually engaging and highly interesting (Szymusiak & Sibberson, 2001). This format of nonfiction text may aid comprehension and vocabulary development as well. Often these books contain illustrations or photographs that support the text, features that are likely to aid students' comprehension (Harvey, 1998). Likewise, trade books may be more reader-friendly than textbooks for youngsters because these texts usually focus on a specific and somewhat narrow topic and technical vocabulary may have contextual or illustrative support. These texts may also be particularly well-suited for read alouds, allowing children to gain a sense of the rhythm and structure of exposition (Chambers, 1995).

Newspapers. In many homes, newspapers are a daily source of informational reading. The majority of text in a newspaper is expository with a readability score as low as a fourth-grade reading level, making this information accessible to older-elementary students (Bodle, 1996). Newspapers have a high occurrence of low-frequency vocabulary which exposes readers to a wide variety of new words during readings (Nippold, Duthie, & Larsen, 2005). Likewise, when caregivers read newspapers, they are modeling good reading practices and sharing their enjoyment of reading for information.

The research on children's newspaper reading habits (and therefore their subsequent academic achievement) is limited. Newspaper circulation is down country-wide, and young readers are particularly absent from subscription records (Project for

Excellence in Journalism, 2004). In a survey of 100 sixth graders and 100 ninth graders, Nippold, Duthie, and Larsen (2005) found that very few children reported that they enjoyed reading the newspaper (16%). The findings from this study support the findings of other researchers. In a study of 11-16 year olds, Pardun and Scott (2004) established that although 62.4% of children in their study reported receiving the newspaper at home, few of them read it regularly. When children did read the paper, they normally focused on the comics (71.1%), sports (56.6%), and entertainment (41.5%) sections, ignoring other sections of the paper. Given these results, although newspapers in the home may provide children with access to nonfiction texts, it is unlikely that many children are reading these resources. When children do read newspapers, the vast majority of reading experiences are with the comics, a portion of the paper that is not exposition. Although the presence of a newspaper in the home appears to be related to children's overall achievement (Walberg & Tsai, 1985), children's access to newspapers is unlikely to be associated specifically with expository reading comprehension. Instead, more information is needed about the relationship between the sections of the newspaper children read and their comprehension of exposition.

Magazines. Worthy, Moorman, and Turner (1999) suggested that allowing children to read magazines may positively influence their acquisition of basic reading skills, leading to more confident readers that will, in turn, explore other reading materials. Magazines may be particularly motivating for children given their structure, format, and content (Nippold, Duthie, & Larsen, 2005).

In examining interview and survey data from over 8,000 10-, 12-, and 14-year olds, Hall and Coles (1999) reported that magazines played a large role in children's

reading diets and that children today appear to read far more magazines than children did in the 1970's. A fourth of the children who returned the surveys reported reading five or more periodicals regularly. However, when the magazines were analyzed for a predominant text structure, Hall and Coles found that the magazines girls read were often narrative in nature while boys' magazines were loaded with expository structures. From this finding, it may be reasonable to assume that young boys and girls have differing experiences with informational texts. Because girls' experiences with magazines are overwhelmingly with narrative structures, and boys gain more experience with exposition, it is not unreasonable to predict that these experiences could have an impact on their preferences for narrative and expository structures in informational texts.

Internet resources. As far back as 2004, three-quarters of all Americans had access to the Internet from their home (Greenspan, 2004). Having home Internet access is related to reading achievement; even once socioeconomic status has been taken into account (Atwell & Battle, 1999). When children have access to computers and the Internet at home, they may have more exposure to exposition than their peers without these resources. Although there is no reason that Internet text could not be representative of any genre, Kamil and Lane (1998) found in a random search of children's websites that 95% of Internet texts were expository. The abundance of exposition on the Internet may pose a problem for elementary-aged readers. Although we know that the ability to read exposition is not dependent on intellectual maturity (Pappas 1991, 1993), many students still struggle with reading exposition because they were not often exposed to these texts while learning to read. In addition, Kamil and Lane (1998) also reported that elementary students read information off a computer screen 15-20% less efficiently,

affecting both the time it took to read the text and the comprehension of the information. In part, this finding may be a reflection of the difficulty of Internet text in comparison to print text.

Up to 90% of the time students spend on the Internet is for researching information for school assignments (Livingstone & Bober, 2004). These tasks may involve students' searching, selecting, synthesizing, and analyzing texts – processes which some scholars argue require higher cognitive demand than most traditional print reading activities (Henry, 2006). Yet few students have had direct instruction showing them how to engage in this type of research. Therefore, students may resort to copy and pasting Internet text directly into their assignments (Stevens & Bean, 2003).

Discussion with Parents and Peers

Because expository texts may be particularly difficult for elementary-aged children to understand (Chambliss & Calfee, 1998), opportunities to discuss schoolwork or books with caregivers and peers outside of school may be central to children's comprehension of these texts. In late elementary school, teachers often assign their students to read, comprehend, and respond to textbooks for homework. These texts can be challenging for children who may not have the background knowledge, understanding of expository text structure, or comprehension strategies to understand this information. Therefore, having caregivers and knowledgeable peers who can scaffold this material may be associated with children's achievement on measures of expository text comprehension.

Library Visits

Regardless of the increase in Internet technology available, America's children are visiting both public and school libraries at a much higher rate than they were in 1994 (American Library Association (ALA), 2007). A report from the ALA (2007) cited a 44% increase in the number of children's books checked out of libraries in 2004, compared to the circulation of children's books in 1994. Public libraries also provide Internet access for children who might not otherwise have access (ALA, 2007). With 99% of American libraries now having Internet access, children can visit libraries to do research for school projects and communicate with others, amongst other online activities. With the Internet being a valuable source of expository text reading, as discussed earlier in this review, libraries provide opportunities for children of all social classes and abilities to access exposition.

Classroom Experiences Associated with Reading Achievement

Because children from low-income homes are less likely to engage in school-like tasks and discussions at home, school may be particularly important for them (Coleman, et al., 1966). A wide variety of classroom factors appear to be associated with reading achievement; but because of the complexity of classroom instruction, researchers have found it difficult to determine which practices are most strongly correlated with students' reading success (Snow et al., 1991). In this section, I review research regarding the following in-school reading experiences: (1) the in-school reading experiences of low-income children, (2) the associations between classroom reading experiences and general reading comprehension, and (3) the contributions of classroom reading experiences to

students' expository text comprehension. This review draws from research in sociology, educational psychology, linguistics, English, and education.

Low-Income Children's In-School Reading Experiences

Although one purpose of desegregation in the 1960's was to provide equal educational opportunities for minority children, 50 years later American schools have yet to meet this goal. Some studies suggest that schools are more racially segregated now than they were before desegregation (Kozol, 2004), and more often than not, with racial segregation, comes socioeconomic segregation (Orfield, 2001). In other words, low-income children (particularly low-income, minority children) are concentrated in schools with other low-income children.

Unfortunately for low-income children in these low-income schools, educational resources and opportunities are not the same as the ones to which their peers in wealthier schools have access. Students in low-income schools often have "fewer and lower-quality books, materials, computers, labs, and other accoutrements of education, as well as less-qualified and less-experienced teachers, fewer counselors, and social service providers working under greater stress with larger loads" (Darling-Hammond, 1995, p. 610). Darling-Hammond attributed much of this inequity to the way funds are distributed for education in the United States. Because a large source of educational funding is local property tax revenue, low-income areas are collecting significantly fewer funds for their neighborhood schools. Kozol (2004), an advocate for underprivileged youth and schools, calculated the stark per-student-spending differences between suburban schools and their neighboring city schools to be upwards of ten to fifteen thousand dollars a year. Because students' poverty levels and race are so closely linked to the availability of school

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resources, experts have had difficulty identifying specific school effects on student

achievement (MacPhail-Wilcox & King, 1986).

Low-Income Students in Low-Income Schools

Coleman and his colleagues' (1966) seminal study of over 600,000 children in

over 4000 schools has had major influence regarding initiatives for low-income children

and schooling. The report, entitled *Equality of Educational Opportunity*, examined the

impact that schools have on students, particularly those coming from low-income

families. Contrary to more recent studies, although the researchers expected to find a

relationship between school funding and academic achievement, they found that per-

pupil expenditure accounted for very little of the variability in students' achievement.

Instead, the report uncovered a problem that was likely more deep-rooted than Coleman

and his colleagues initially expected.

While establishing that school funding and curricula were not particularly

important to student achievement, they found that the socioeconomic composition of

schools' student populations (*not* their racial composition) and students' individual home

background were the main contributors to differences in students' academic achievement.

In other words, when low-income students were in schools with other low-income

students they were often not experiencing rich vocabulary usage or academic goal setting.

Instead, low-income students in low-income schools were surrounded by disruptive

behavior and watched as their peers dropped out.

In response to the finding of this study, Coleman and his colleagues lobbied for

mixed-income schooling, claiming that while low-income students would benefit greatly

from a middle-class education, middle-class students would likely remain unaffected.

They attributed this one-way relationship to the fact that children from deficient backgrounds benefit from exposure to knowledgeable peers and teachers, while middle-income students rely less on schooling to gain new knowledge because they learn much of what they need to know at home. More simply, they argued that schooling is just more important for low-income children than for their wealthier peers.

Teachers in Low-Income Schools

Studies have consistently shown a gap in the quality of education that minorities and low-income children receive in comparison to White, middle-to-upper class American children. Teachers in low-income schools tend to be uncertified, less-qualified, and less-experienced than teachers in wealthier areas (Darling-Hammond, 1995). This phenomenon appears to exist because schools in low-income areas are less likely to have the resources to draw in good teachers; therefore, these schools may offer emergency certification programs to allow untrained teachers to work in classrooms.

Acknowledging the differences in teacher quality between low-income and wealthy schools is important because of the apparent link between teacher effectiveness and student achievement (Anderson, Greene, & Loewen, 1988; Pressley et al., 1998). When teachers are uncertified or inexperienced they are less likely to have a repertoire of research-based strategies for effective reading instruction (Veenman, 1984). Without knowledge about effective instruction and diverse student needs, these teachers may not have the abilities to identify and remediate reading problems of struggling readers.

Access to Resources

Access to various instructional resources such as textbooks, trade books, and technology can vary greatly between schools. Students in predominantly low-income,

minority, or non-native English speaking schools often have far less access to instructional resources than their middle-class peers (Darling-Hammond, 1995). In a study of the California public schools, Oakes and Saunders (2002) found evidence supporting poor resource dispersion between students in at-risk schools and their counterparts. They claimed that low-income children may not have access to books outside of school, therefore textbooks and other take-home materials are essential for their literacy development. Yet over a third of California's public school students were in schools where there were not enough textbooks to bring home to study for texts and complete required homework.

Textbooks may be particularly important for low-income children who have inexperienced and unprepared teachers. Teachers with little experience may depend on the teachers' manual to help plan lessons (Ball & Feiman-Nemster, 1988). In an observational study of six student teachers over a two-year period, Ball and Feiman-Nemster (1988) found that despite extensive training in their preservice programs, beginning teachers had difficulty understanding the value of planning their own lessons beyond the ideas suggested by the teachers' guides. Although these teachers can use the teachers' guides for support, they are not necessarily able to evaluate the suggested activities for accuracy, relevancy, or difficulty for their students. This finding is important given the general low quality and unconnected ideas suggested in teachers' guides (Duffy, Roehler, & Putnam, 1986; Durkin, 1981).

Low-Income, High Achievers

It is important to note that not all low-income students struggle in schools (Snow et al., 2000); in fact, some of these children perform in the top-quarter of test scores from

national assessments (Wyner, Bridgeland, & Diiulio, 2007). However, low-income students show successful performance on these assessments at a much lower rate than other students. In first grade, 28% of those children scoring in the top quarter of all test scores come from low-income families; but by fifth grade, only 56% of those children are still high performing. Researchers attribute the decreases in low-income students' performances to the many obstacles they must overcome in schools. For example, because they are high achieving in the primary grades, many of these students do not get the instructional attention they need to continue building their reading skills. Likewise, many of these students attend schools with other low-income children and inadequate teachers – problems often cited as the reason for the failure of low-income students.

Classroom Experiences Associated with General Reading Achievement

In the age of federally-mandated, high-stakes assessments such as NCLB, school administrators and policymakers are paying particular attention to the role of students' classroom experiences in their overall reading achievement. Pressley and his colleagues (1998) studied the attributes of 10 fourth- and fifth-grade classrooms and classroom teachers that have been nominated as being effective practitioners. They found that although there were similarities across classrooms, teachers employed different instructional strategies, management tools, and materials. Teachers in Pressley et al.'s study commonly connected reading to real texts, gave children opportunities to read, integrated reading in the content areas, provided skills instruction, understood the importance of comprehension strategies, grouped students, and assigned book-related projects. However, these teachers differed in that they used various types of reading materials (e.g., basals vs. trade books), provided differing amounts of support for skill

and strategy learning, and took different roles in class discussions. In sum, there is no one set classroom context that promotes reading achievement; instead, effective teachers appear to use strategies and materials in ways that make sense for the needs of their students.

Guthrie's Concept-Oriented Reading Instruction (CORI) model is an example of a classroom context that fosters literacy learning. In CORI, teachers engage students in learning, reading, and writing about content by sparking their curiosity and involving them in the creation of learning goals and questions (Guthrie, 1996). CORI teachers center instruction on broad conceptual themes (e.g., ecosystems) and include shared experiences to motivate students to ask their own questions about the content (e.g., taking a nature walk in a local field). Once students have developed questions about the topic that they want to answer, teachers teach students strategies as they are needed, such as searching for information, synthesizing information across texts, and making inferences about what they read. CORI classrooms have a wealth of interesting reading materials, both fiction and nonfiction, that are available for students as they search for answers to their questions. Students participating in CORI instruction have shown gains in strategy use, conceptual understanding, and reading motivation (Guthrie, Anderson, Alao, & Rinehart, 1999; Guthrie, Wigfield, & VonSecker, 2000) - aspects of learning that are likely to contribute to overall reading achievement. In fact, according to a recent meta-analysis of CORI studies, CORI has proven to significantly impact multiple text comprehension (effect size = .93), expository text comprehension (effect size = .73), and narrative text comprehension (effect size = .65)[4] (Guthrie, McRae, & Klauda, 2007). Although CORI is just one example of quality classroom experiences that may influence

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[4] Reported effect sizes use M1-M2 with the SD of control as the denominator.

students' overall reading achievement, in this section I examine the following aspects of CORI instruction, highlighting the role that these components played in CORI's success: (1) classroom reading materials, (2) choice, (3) collaboration and grouping practices, (4) strategy use, and (5) teacher beliefs.

Classroom Reading Materials

For many students, school may be the only place where they get to interact with interesting, appropriate, and varied texts. Students' access to texts has been linked to overall student achievement (Chall et al., 1990). However, American classrooms may differ quite a bit in the types of texts that are available depending on individual teachers and their schools' poverty levels (Duke, 2000a). Three aspects of classroom materials may be particularly important to examine in terms of their relationships to general reading achievement: (1) classroom libraries, (2) textbooks, and (3) commercial reading programs.

Classroom libraries. Although there is a clear link between school libraries and student achievement (ALA, 2007; Chambliss & McKillop, 2000), classroom libraries may be even more important for student achievement (Applebee, Langer, & Mullis, 1988). Because of their close proximity to students during the day, classroom libraries may be a source of motivation for children to read voluntarily (Krashen 1997/1998). Researchers tout the importance of encouraging independent reading, as reading voluntarily helps children develop larger vocabularies, more fluent reading, and better comprehension and decoding skills (Fractor, Woodruff, Martinez & Teale 1993). The use of classroom libraries to motivate students to read becomes even more important

when we look at the statistics about American adult "aliteracy" (the act of knowing how to read, but choosing not to).

Children in classrooms with classroom libraries read significantly more than their peers in classrooms without those resources (Bissett, 1969). Fractor et al. (1993) reported that students in over 88% of the 183 classrooms they surveyed had access to trade books and about 44% had access to a classroom library. However, scholars have noted that just having access to resources is not enough to jumpstart students' reading motivation and achievement (Morrow & Weinstein, 1982). Instead, classroom libraries must be inviting and clearly organized so that students can access materials easily. Researchers found that fewer than 4% of kindergarten through fifth-grade classroom libraries were excellent, and very few libraries were even rated acceptable (Fractor, et al., 1993). Likewise, teachers may need training in how to utilize books in their classrooms; simply flooding classrooms with books has not appeared to be an effective way to raise student achievement (McGill-Franzen & Allington, 1999).

Textbooks. Oakes and Saunders (2002) claimed that "it is universally acknowledged that textbooks…are the primary tools that schools use to provide students with access to knowledge and skills they are expected to learn" (p. 4). Others have cited apparent link between textbooks and students' academic achievement (Fuller & Heyneman, 1989; Fuller & Clarke, 1994; Levin & Lockheed, 1993; Wang, Haertel, & Walberg, 1993). Chambliss and Calfee (1998) even marketed (some) American textbooks as being visually engaging and "the envy of many other countries" (p. 5). However, textbooks can cause unique problems for students.

Students faced with learning from the textbooks available in classrooms may encounter a variety of challenges. One issue is that textbooks are often designed to be comprehensive, which often results in a lack of depth in content coverage. Students' background knowledge may not be taken into consideration; therefore, students may be unprepared to comprehend information in these texts. A second concern is that textbooks can be poorly written, often without a clear top structure that students need to understand what they read (Chambliss & Calfee, 1998; Moss, 1991; Walpole, 1998/1999). If students are unable to discern the relationships between the ideas in the text (usually signaled in the texts themselves), they will have difficulty understanding and remembering what they read. Chambliss and Calfee (1998) also cited the importance of the relationships between the themes, elements, and linkages in textbooks and how these components influence the comprehensibility of the text, the curriculum, and the types of instruction that will occur with the text. Third, textbooks are often written for above-average readers, leaving below-grade-level and average students struggling to make sense of the content of these texts (Tyree, Firore, & Cook, 1994).

Laspina (2002) cited the importance of making textbooks "interesting" for students because if texts are uninteresting, students will be unlikely to read what they are assigned. Although few educators would argue for making textbooks less engaging, studies have reported that important considerations exist for how interesting texts are constructed (Chambliss & Calfee, 1998). Chambliss and Calfee provided the example of visually engaging texts that have pictures, illustrations, and sidebars that are loosely related to the text content but can impede text comprehension. Other researchers have claimed that interesting details in texts can hinder students' comprehension, a

phenomenon coined the *seductive details effect* (Garner, Gillingham, &White, 1989; Garner, Alexander, Kulikowich, & Brown, 1991; Wade & Adams, 1990; Wade, Schraw, Buxton, & Hayes, 1993). One theory suggests that these seductive details interfere with readers' abilities to use the top structure of the text to organize the important information and take up valuable space in the readers' working memory (Garner et al., 1989).

Commercial reading programs. With approximately 80% of America children in schools using commercial reading programs (Baumann, Hoffman, Moon, & Duffy-Hester, 1998), publishers of these texts may have a particularly influential role in deciding which materials will be used in elementary students' reading instruction. For the purpose of this review, the term "anthology" refers to the popular form of commercial reading programs where pieces of previously published literature are bound together in one textbook. This meaning is different than for "basal reader," a term that describes commercial reading textbooks including texts specifically written for instructional purposes.

In their study of teachers' uses of anthologies, Baumann et al. (1998) found that only 2% of teachers used anthologies exclusively, while the majority of teachers (83%) used a combination of anthologies and trade books for instruction. In examining the most popular anthologies, Hoffman and his colleagues (1994) found that they contained fewer words, yet more new vocabulary, than anthologies from the 1980's. Also, these new anthologies were often accompanied by leveled texts, created to support the diverse reading needs of individual students (Hoffman, 2001). Although most major textbook companies claim to be aligned with standards and include research-based practices, their efforts are not necessarily enough to support the needs of diverse student populations

(Tyree, Firore, & Cook, 1994; Villano, 2005). Stotsky (1993/1994) argued that oftentimes texts were included because they had multicultural characters or themes, not because they were excellent pieces of writing. Sometimes, quality pieces were excluded because they portrayed various groups in less-than-favorable ways. Likewise, suggested activities in the teacher manuals are unlikely to be differentiated to meet individual students' needs or to encourage the use of multiple strategies (Johnston, Allington, Guice, & Brooks, 1998). Therefore, while commercial-based reading programs may be helpful in supporting the skill and strategy teaching of inexperienced and/or inept teachers, these programs may limit the instructional practices of quality teachers (Chall, 1987; Roser, Hoffman, Carr, 2003).

Another difficulty with anthologies is that the included texts are chosen because they are appropriate for a certain grade level, though an anthology can have a wide disparity in texts that meet this criterion (Fawson & Reutzel, 2000). General consensus for effective reading instruction supports the notion of providing students with texts that are at their instructional level and providing challenges as they master texts at each level (Vygotsky, 1978). However, the organization of anthologies may not provide opportunities for students to develop independence at various levels. Anthologies may not have enough texts at a specific level to use for diagnostically-responsive teaching and they are unlikely to supply access to texts at levels above or below those expected for the grade (Fawson & Reutzel, 2000). Therefore, both struggling readers and advanced readers are likely to suffer if teachers do not attempt to match texts to readers, and instead, read the anthologies from cover to cover.

Choice of Own Reading Materials

When children have a sense of autonomy in making decisions about their learning, increased motivation and improved reading achievement are likely (Guthrie, Wigfield, & Perencevich, 2004). In a study of her first-grade classroom, Duthie (1996) noticed her students' interest piqued when they chose their own reading materials and that "choice validation [was] empowering" to her students (p. 126). However, students often do not have effective selection strategies for choosing books on their own (Hiebert, Mevar, Person, 1990).

When students select books for their own reading in the classroom, they employ a variety of strategies, but often without much success. When students are choosing books, they frequently look to peers and adults for suggestions and choose books from popular, well-recognized series (Mohr, 2006). Students also look at book covers, scan the content of the text, and read the summary on the backs of books to help them make choices. Although all of these strategies might be somewhat effective, most students do not systematically choose books that are at their instructional reading level, are relevant to their needs or lives, and are of interest to them. Without a repertoire of book selection strategies, students may become frustrated and make poor reading selections, leading to an overall decreased motivation to read (Mohr, 2006).

Collaboration and Grouping Practices

Collaboration and grouping practices are commonly recognized as important instructional techniques that enhance student learning (Cohen, 1994; Slavin, 1989) and, according to one study, 79% of elementary teachers use cooperative learning in their

classrooms (Puma, Jones, Rock, & Fernandez, 1993). In addition to being an integral

part of student achievement, these techniques have been noted to provide opportunities

for socialization, interaction with culturally and linguistically diverse peers, and conflict

resolution (e.g., Cohen, 1994; Slavin & Cooper, 1999; Stevahn, Johnson, Johnson, Green,

& Laginski, 1997).

     Collaboration. In the field of education, several terms are used to describe peer

interaction including collaborative learning, cooperative learning, and peer learning

(O'Donnell, 2006). Peer learning is commonly used as a broader term for describing

various forms of peer interaction (e.g., tutoring, collaborative learning, pair grouping),

and collaborative and cooperative learning refer to teacher-initiated peer exercises.

Collaborative learning experiences are based on social and cognitive theories proposing

that when students work together to achieve similar goals, they will be able to attain more

than each student could on his or her own (Johnson & Johnson, 1991). Conversely, when

students are pitted against one another in competitive tasks, it is unlikely that they will all

be successful in attaining their goals (O'Donnell, 2006).

     Many theories of collaboration are based on Vygotskian views of peer learning

(Vygotsky, 1978). According to this view, students benefit from working with a "more

knowledgeable other" who can lead groups to better understand what has been read.

Some educators have concerns about whether the achievement of students who are

knowledgeable will be stunted if they work with their less knowledgeable peers.

However, researchers examining this issue have found that high-achieving students were

not affected working with less-able students (Lou et al., 1996).

Slavin (1989, 1996) and McMaster and Fuchs (2002) have examined the roles of individual accountability and collaborative group goals in the effectiveness of cooperative learning. Slavin (1996) reported that when comparing 52 cooperative learning studies, the median effect size was +0.32, but the 25 studies that did not have components of individual accountability and collaborative group goals had an insignificant median effect size of +0.07[5]. McMaster and Fuchs (2002) found comparable results regarding the use of these components with mean effect sizes of +0.30 for studies including individual accountability and group goals and a mean effect size of +0.09 for studies that did not have these elements[6].

Teachers may have different levels of involvement in cooperative learning activities. Their responsibilities may include acting as a community builder, a task developer, a model, a coordinator, and/or an evaluator (O'Donnell, 2006). According to Cohen (1994), teachers are also responsible for choosing tasks that should be group tasks, not tasks that students would sufficiently complete without the aid of group members.

Grouping practices. The way students are grouped for instruction can have a significant impact on achievement (Bergoff & Egawa, 1991). However, there is contention among educators about the "best" ways to group students (Oakes, 1986). Grouping in elementary school classrooms often consists of homogeneous ability grouping, mixed-ability grouping, gender grouping, friendship grouping, and interest grouping (Gillies, 2007). Although each of these grouping practices has merits and downsides, they may all have a place in the classroom for various purposes.

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[5] Effect sizes were calculated by subtracting experimental mean from the control mean and then dividing by the standard deviation of the weighted average of both.
[6] Effect sizes were calculated by subtracting experimental mean from the control mean and then dividing by the standard deviation of the weighted average of both.

In reading instruction, homogeneous ability grouping is when students are put in groups with other students that possess the same reading abilities (Bergoff & Egawa, 1991). This theory of grouping may stem partially from Vygotsky's (1978) Zone of Proximal Development, which posits that students make optimal progress when their instructors scaffold instruction for them within their instructional level. Therefore, when students are grouped with other students at the same instructional level, they are all theoretically receiving instruction with materials that are most likely to help them progress. However, critics of homogeneous grouping have cited flaws with this approach. Students who are grouped homogeneously are often quite aware of their groupings and know that they are placed in groups that are above or below the instructional levels of their classmates (Caldwell & Ford, 2002). When placed in the low-achieving groups, students' self esteem may suffer because they see their performance in relation to that of their classmates (Berghoff & Egawa, 1991). When placed in homogeneous ability groups, students are rarely moved between groups, even if their progress suggests that a move would be beneficial (Caldwell & Ford, 2002). Therefore, students (particularly low-income children and English language learners) may become stuck in groups that no longer appropriately challenge them. Despite these objectives, studies have reported that homogeneous grouping may be particularly important for average-ability students (Lou, Abrami, Spence, Poulsen, Chambers, & d'Apollonia, 1996).

In contrast to homogeneous ability groupings, teachers may place students in mixed ability groupings. In mixed ability groupings, students of varying reading proficiencies are assigned to a group (Gillies, 2007). Mixed ability grouping appear to be

particularly important for low-ability students and does not hinder the achievement of high-ability students (Lou et al., 1996). In contrast to the findings of Lou et al. (1996), Webb, Nemer, Chizhik, and Surgrue (1998) found that average ability students did excel when put in mixed ability groups, particularly as a function of explaining material to other group members.

When grouping students, ability does not necessarily need to be the deciding factor for group composition. Student groups may be designated by gender, friendship, and/or interests (Gillies, 2007). Researchers have found that students may be more comfortable in same-sex groups (Strough, Swenson, & Cheng, 2001) and that students often ask same-sex peers for help on academic tasks (Nelson-LeGall & DeCooke, 1987). When students are grouped in unbalanced, mixed gendered groups, male students are often more successful than females (Webb, 1991). When a group has more males than females, the male students tend to ignore the female students, and when there are more females than males, the female students exert too much effort in making the male student comfortable, not completing the task as effectively. Friendship groupings may explain some of the successes of same-sex groupings. When friends are grouped together, they are more motivated and may be held more accountable for group participation (Abrami, Chambers, Poulsen, DeSimone, & Howden, 1995). However, friends may be less effective at judging the abilities of their other group members (Strough et al., 2001), and they may choose group members based on popularity, intelligence, or athletic ability in result excluding other students (Cohen, 1994). Students can also be grouped by interests, a method that encourages the groups to form based on the purpose in meeting a particular goal, rather than for the opportunity of working with friends (Gillies, 2007). Each of the

grouping methods mentioned in the section have benefits and flaws, no single method

seeming to fit all collaboration needs. Therefore, teachers may choose to use a variety of

these grouping practices in their classrooms to meet the learning needs of all students.

Strategy Instruction

One of the most important factors in reading achievement is students' abilities to

employ a variety of comprehension strategies (NICHD, 2002). For students to develop

effective strategy use, teachers may need to introduce strategies as opportunities arise for

explicit instruction. However, the National Reading Panel (NICHD, 2002) reported that

this may be difficult for teachers who are often unprepared for explicit strategy

instruction. In order for teachers to provide quality strategy instruction, they need to

understand how to use strategies themselves (Keene & Zimmerman, 1997).

Although comprehension is an essential aspect of reading (Durkin, 1993),

comprehension instruction has only become an area of interest for educational

researchers in the past 35 years (NICHD, 2002). It was not until the 1970's that

researchers started to focus on the importance of the interactions between readers and

texts and how these exchanges were central to the act of reading (Anderson & Pearson,

1984; Kinsch & van Dijk, 1978; Rosenblatt, 1978). Harvey and Goudvis (2000) argued

that there were seven strategies that were imperative to students' comprehension of text,

including: (1) making connections, (2) asking questions, (3) visualizing, (4) making

inferences, (5) discerning important ideas, (6) synthesizing information, and (7)

clarifying. However, students do not necessarily know to use these strategies when they

read unless they are taught to do so.

Unfortunately for students, strategy instruction is evident in far too few classrooms (Durkin, 1978/1979; Pressley, 2002; Pressley, Wharton-McDonald, Mistretta-Hampston, & Echevarria, 1998). Durkin (1978/1979) advocated for strategy instruction after observing the nonexistence of comprehension strategies in the classrooms she studied. Twenty years later, Pressley and his colleagues (1998) found little evidence of effective strategy lessons in their observations of 10 fourth- and fifth-grade teachers. Although some teachers did mention various strategies with a few going so far as to model the use of a strategy, teachers did not encourage students to use strategies on their own to help aid comprehension. In addition, teachers did not promote the use of multiple strategies simultaneously while reading.

Experts have shown that students not only need to be able to employ various reading strategies when they are needed, but they need to use them in conjunction with other strategies (NICHD, 2000). Students need multiple comprehension strategies in their "mental toolbox" in order to be purposeful and active readers (Pressley & Afflerbach, 1995). Duffy (1993) has argued the difficulties with teaching strategies, particularly when the goal is for students to use multiple strategies simultaneously and in an undefined order. Therefore, teachers may be restricted by traditional views of teaching, and might need to improvise in order to help students effectively integrate strategies.

Teacher Beliefs

Teachers' personal beliefs about students and schools can have significant ramifications for students (Bussis, Chittenden, & Amarel, 1976). Stanovich (1986) used a biblical reference from the book of Matthew ("the rich get richer, the poor get poorer")

to describe the cycle of achievement and learning of students. Teachers view high-performing students as being able to handle more challenging material, so these students regularly receive instruction that enables them to grow as learners. On the other hand, teachers do not see low-achieving students as being capable of academic challenges, so these students receive poorer instruction and may begin to think of themselves as inept and powerless. The perceptions that teachers hold about students' academic abilities are correlated with students' future achievement. For instance, teachers' beliefs about students' preschool intelligence predicts students' achievement in high school (Cole, Gondoli, & Peeke, 1998). Likewise, teachers are less effective in working with students that they deem to be learning disabled than with their high-achieving peers (Jordan, Lindsay, & Stanovich, 1997).

Other Factors Associated with General Reading Achievement

Chall, Jacobs, and Baldwin (1990) studied low-income students' lag in achievement during the later elementary grades. They found that various aspects of classroom instruction were positively correlated with students' overall achievement. One of the strongest relationships was between access to challenging text and vocabulary development. Students who read difficult materials learned more vocabulary, a finding that supports Vygotsky's (1978) idea of the *zone of proximal development*. In other words, challenging texts enabled students to work beyond the level they could independently and, with teachers' guidance, these students had access to greater vocabulary. Likewise, if students understood the meaning of various new words, they would also likely better comprehend what they read.

Chall and her colleagues also found that the structure of the classroom was important for students' reading achievement. Students in classrooms that provided opportunities to practice strategies and skills appeared to have gains in vocabulary and comprehension. However, comprehension did not appear to be associated with the use of commercial reading programs and their accompanying materials. Instead, these materials improved students' decoding skills without contributing to overall comprehension.

Autonomy, or the act of having control over one's self learning, also plays a role in students' comprehension (Weinert & Helmke, 1995). When students are able to make some decisions in their learning processes, it is very motivating for them (Au, 1998). However, teachers should not necessarily allow students to make entirely free decisions, autonomy can be supported by providing opportunities to make contained choices (Deci & Ryan, 1994). CORI studies have not found a direct link between teachers that support autonomy and reading achievement, though autonomy has revealed a link with motivation to read, a variable that is highly related to achievement itself (Guthrie, McRae, & Klauda, 2007).

Classroom Experiences Associated with Expository Text Comprehension

Teachers appear to have an important role in cultivating students' abilities to understand expository texts. Studies have shown that when science and reading instruction are interwoven and quality and diverse texts are used to teach important reading strategies, students' abilities to read, write, and synthesize material from exposition increases (Guthrie, Anderson, Alao, & Rinehart, 1999). Among other factors, studies have touted individual importance of students' access to quality expository texts, cross-curricular reading instruction, strategy instruction, teachers' experiences with

exposition, and student collaboration for overall comprehension of expository texts. In

the following section, I review research in each of the aforementioned areas, focusing my

review on studies involving students in grades three through seven. I am interested not in

the literature regarding how students learn to read, but in the studies that explore what

students who already know how to read do with exposition when they encounter it.

Available Expository Materials

For nearly two decades, researchers have reported that students in first- through

sixth-grade have minimal exposure to expository texts in their classrooms (Duke, 2000;

Fisher & Hiebert, 1990; Hoffman, Roser, & Battle, 1993; Pressley, Rankin, & Yokoi,

1996). Classroom libraries are often composed of relatively few informational texts, and

even fewer of those are expository in structure (Duke, 2000). Dreher (2000) suggested

that classroom libraries should contain equal proportions of fiction and nonfiction, with a

substantial quantity of the nonfiction texts being exposition. Arguably, this distribution

of texts would equally prepare students for the demands of reading both fiction and

nonfiction texts.

Many of students' experiences with exposition in school involve the use of

textbooks for learning. However, students may be unprepared to learn from these texts,

having limited experiences with both the structure of exposition and explicit instruction

in relevant comprehension strategies (Pressley, et al., 1998; Williams, 2005).

Researchers have argued that the current practice of teaching students to read with

narratives does not prepare them for the demands of exposition (Chambliss & Calfee,

1998). Narrative texts most often follow a typical story structure, with elements like

characters, setting, plot, and solutions that students can identify at a very early age

(Langer, 1986). Yet exposition is less predictable in structure, with multiple structures such as cause and effect, descriptions, comparison, sequence, classification, and persuasion (Kletzien & Dreher, 2004; Meyer & Freedle, 1984). Young students are quite proficient in remembering elements of stories they read, partially as a result of familiarity with narrative structure. On the other hand, even some adult readers struggle with comprehending exposition, particularly when they encounter poorly-written texts that make it difficult for them to adequately organize, retain, and recall information (Kintsch & Yarbrough, 1982).

Cross-Curricular Reading

One way that teachers can infuse exposition into their classroom is through cross-curricular reading. In cross-curricular reading, students read in different subject matters, often with the purpose of gaining information from the text and "[integrating]…communication processes (reading, writing, talking, listening, and viewing)" (Vacca & Vacca, 2005, p. 7). Vacca and Vacca (2005) stressed that cross-curricular reading should extend beyond teachers simply assigning students to read textbooks for homework or studying purposes. Instead, effective cross-curricular reading involves both the learning of content and the teaching of various strategies that aid in content learning (Moss, 2005).

The NCLB legislation has made it particularly essential to integrate content area and literacy instruction in elementary classrooms. As schools struggle to have all students reading and writing at a proficient level on state exams, subjects such as science, social studies, and the arts often become a secondary concern. However, without instruction in these areas, students may not gain the technical vocabulary and background

knowledge they need to comprehend the more difficult texts they will encounter.

Likewise, it is not uncommon for more that half of all content on standardized tests to be

based on expository passages (Calkins, Montgomery, Santman, & Falk, 1998; Ruetschlin,

Dreher, & Finger, 2005). Therefore, cross-curricular reading can also be used to assist in

meeting federal assessment benchmarks.

Strategy Instruction

Strategy instruction may be particularly important for elementary students who

are expected to read exposition to learn about new topics and ideas. Students frequently

struggle when expectations change from "learning to read" to "reading to learn" around

fourth grade, oftentimes because they have not developed the skills and strategies needed

to effectively do so (Chall et al., 1990). Strategy instruction is practically nonexistent in

most elementary classrooms, and general instruction on how to read for the purpose of

gaining information is often neglected (Fisher & Hiebert, 1990).

In order to successfully comprehend exposition, students need strategies

specifically related to the structure of these texts. When reading exposition, good readers

use multiple strategies simultaneously including: using text features, making connections,

searching for and locating information in exposition, and integrating information from

several sources. However, one of the most important strategies for understanding

exposition is also one that is often neglected in instruction – identification of text

structure (e.g., main idea/details; cause/effect). Yet explicit instruction regarding text

structure has been shown to provide promising benefits for youngsters (Snow, 2001).

Exposition is quite different in structure than narrative text, but is just as important for

comprehension. When students read either type of text, they use the structure of the text

to help them form mental representations of the linkages between ideas (Chambliss & Calfee, 1998). Recognizing these links enables students to understand how information is connected and helps them coherently recall information. When students are not clear about the structure of the text, they may not be able to mentally organize information from a text in a way that makes sense for comprehension.

Teachers' Experiences with Exposition

Researchers have postulated that many elementary teachers have negative associations with reading expository texts (Donovan & Smolkin, 2002). Similar to their students, many teachers had limited exposure to exposition when learning to read. Many adults struggle to read exposition themselves, particularly if the texts are poorly organized (Kintsch & Yarbrough, 1982). As a result, these teachers may feel less prepared to teach, model, or even read exposition with their students (Donovan & Smolkin, 2002). Therefore, teachers may choose to read aloud narrative forms of informational texts with as much frequency as traditional expository texts (Donovan & Smolkin, 2001). Donovan and Smolkin (2001) also reported that teachers chose to read aloud mixed texts, particularly the Cole's *Magic School Bus* series, in all elementary grade levels. However, Donovan and Smolkin (2001) were curious how these teachers would negotiate the mix in narrative and expository elements present in these books. Therefore, in a follow-up study, Smolkin and Donovan (2004) examined teachers' read alouds of the *The Magic School Bus Inside the Earth* (Cole, 1987). This book contains a story about Ms. Frizzle and her class and the adventure they take when their school bus flies inside the Earth. The story is supported by research reports, speech bubbles, diagrams, and labels that contain factual information about the layers of the Earth.

Smolkin and Donovan (2004) observed 12 first-, second-, and third-grade teachers as they read aloud this text and then compared those results to the amount of science-related comments and questions that ensued. They found that there was no consistent pattern that teachers used to read the text in this book, and some teachers read more of the factual text than others. Despite the inconsistent reading, particularly of factual information, most of the teachers' comments and questions were related to science content. Smolkin and Donovan (2004) found teachers who read labels to their students also provided significantly more science-related comments and questions (p=.008). This finding is important for teachers and researchers alike because teachers use many non-expository informational texts as part of their content area instruction. If teachers do not adequately read and discuss the factual ideas in these texts, they are unlikely to contribute to students' content learning.

In addition to the difficulty teachers have with exposition themselves, some teachers believe that exposition is too difficult for elementary students to read (Pappas, 1991; Duke & Kays, 1998) and is less interesting than fictional narratives (Horowitz & Freeman, 1995). Socially, children often believe that exposition is more appropriate for boys than girls (Chapman, Filipenko, McTavish, & Shapiro, 2004). Regardless whether this results in more exposure for boys, an analysis using the publicly-available NAEP Data Explorer revealed that, in 2005, fourth-grade boys still performed below the levels of their female counterparts on measures of expository comprehension.

Collaboration

The National Reading Panel (NICHD, 2000) distinguished collaboration as an important mediator in reading comprehension. However, merely forming peer groups is

not enough to facilitate comprehension of exposition. Instead, the attributes of cooperative learning discussed in relation to general achievement should be taken into consideration when forming groups for expository text learning.

Certain student groupings appear to be particularly effective when working with exposition. For example, the jigsaw method (Aronson, 1978; Slavin, 1986) assigns each student in a heterogeneous group to become an expert in one interest area related to their topic. These students then meet with members from other groups who share the same area of interest to clarify and expand on what they have learned. Finally, students return to their initial groups and are responsible for both teaching the students what they have learned and learning about the areas of interest of their group members. Although Jigsaw appears to be a promising method, Shaaban (2006) found that, when compared to a control group, Jigsaw improved students' motivation and reading attitudes but did not appear to improve comprehension. Ghaith and El-Malak (2004) found similar results regarding overall reading comprehension and literal reading comprehension, but found that Jigsaw participants appeared to have better higher-order comprehension skills than non-participants.

Guthrie and McCann (1996) proposed the use of Idea Circles, a collaborative grouping method that requires group members to search for, locate, and combine information across multiple expository sources. In this method, three to six students focus on a particular concept, working together to build deep, conceptual understandings. By design, Idea Circles scaffold the process needed to execute the difficult strategies of searching for and synthesizing information by having students work in groups to accomplish the task.

Jigsaw and Idea Circles are only two of many ways that teachers can group students for expository text learning. However, these two methods appear to be particularly promising and manageable for elementary school teachers to enact, as well as realistic for elementary-aged children to actively participate as a part of the group. Other collaborative grouping that I mentioned previously in relation to general achievement would likely benefit expository text comprehension as well.

Other Factors Associated with Expository Text Comprehension

Although there is limited research available on the influence of book reports, projects, and presentations on reading comprehension (and expository text comprehension in particular), I believe that these activities can encourage students to think more deeply about a text. Many, Fry, Lewis, and Mitchell (1996) found that students greatly benefited from teachers' guidance during report writing. These authors observed students tackling the task of writing a report on World War II in three different ways when the teacher did not guide them: (1) collecting facts and copying them, (2) rephrasing information from multiple sources without integration, (3) integrating information across multiple sources while noting where they needed more information. When the teacher guided the student in the planning and production of the report, the students were all able to integrate information across sources and recognize where more information was needed.

Atwell (1998) contended that book reviews were an appropriate extension of book reports because they more realistically resemble the type of writing about texts that children might encounter outside of school. She recognized book reviews as a way for students to practice writing persuasively and provided extensive modeling of review

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writing before having students engage in it independently. McKenna, Labbo, and

Reinking (2003) argued that when students were able to publish book reviews online,

they had greater literacy gains than when they wrote traditional reports. Students

participating in online book reviews also were more motivated, worked better socially,

and took more care with their work. As can be seen through these examples, book

reports (and likely presentations and projects) have the potential to enhance students'

achievement if guided in a way that encourages students to engage in higher-order

thinking processes.

<center>NAEP Studies in Reading</center>

Beyond those studies NCES and their related organizations conduct with NAEP

data, very few secondary analyses have been published related to the reading data. Given

that such a wealth of information is collected every two years, NAEP is underutilized by

reading researchers. One reason that reading researchers might neglect NAEP is that in

order to use the database, a researcher must obtain a restricted data license, be

knowledgeable about large-scale data sets, and have a good understanding of the

complicated statistics needed to conduct an analysis. Depending on researchers'

interests, they may also choose to explore other national data sets that provide

information about students' prior achievement and other important factors that are not

available in the NAEP database.

Using the NAEP data tool available for public use on the NAEP website, Klecker

(2006) examined the reading achievement gap between boys and girls in fourth, eighth,

and twelfth grades. Her concern was that NCLB does not require schools to focus

attention on the greatly-documented gender gap. Klecker used NAEP data from 1992,

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1994, 1998, 2000, 2002, and 2003 to build a case for directing more attention to the achievement gap between boys and girls. By running ANOVA analyses through the NAEP data tool (alpha = .01), Klecker found that there was a distinct and consistent gender gap in all grades in all years with available data. Gender gaps in reading achievement were significantly larger in eighth and twelfth grades in comparison to fourth grade, though all grades had a gender gap. Effect sizes (Cohen's d) ranged from .27 to .43, showing small to moderate effects in gender on reading achievement.

Klecker's study used NAEP data at its most basic level to understand gender effects on reading achievement. Although her findings are important to the general knowledge of the reading field, her study did not contribute any new information about reasons why achievement might vary between boys and girls. Klecker's study also only analyzed these data from the individual level; ignoring the role that school clustering might have on students' achievement.

In another, more sophisticated study, Guthrie, Shaefer, and Huang (2001) examined the roles of balanced reading instruction and opportunities to read in students' levels of engaged reading and their overall reading comprehension. Using the 1994 NAEP Trial State data, Guthrie and his colleagues investigated the reading engagement and achievement of Maryland fourth graders. In order to build their constructs of engagement, balanced reading instruction, and opportunities to read, these authors ran factor analyses of relevant variables. Once reliable factors were developed, Guthrie and his colleagues constructed HLMs that would aid in accounting for the variance in achievement and engagement at both the teacher and school levels.

Guthrie and his colleagues found that engaged reading was a significant predictor of reading comprehension at the school level (effect size = .20). Likewise, when engaged reading was taken into account, the presence of balance reading instruction in a classroom indicated better reading comprehension (effect size = .13). Furthermore, the authors found that in schools where children had opportunities to read the students were more engaged readers (effect size = .20). Guthrie et al.'s study provided findings that greatly contribute to the field of reading education. Reading researchers have rarely taken the opportunity to use NAEP's vast database to explore important issues in the field. Guthrie et al. (2001) capitalized on NAEP's availability and used this source to uncover important relationships between variables related to engaged reading and reading comprehension. Although causal inferences cannot be drawn from these NAEP analyses, they can provide pertinent information related to better understanding these literacy phenomena.

Summary

In this chapter, I have provided background information relevant to understanding how out-of-school and in-school reading experiences are associated with expository text comprehension (in particular, for low-income children). I began with an overview of factors related to elementary students' expository text comprehension. Then, I reviewed research related to the relationship between poverty and reading achievement. Next, I summarized major studies related to children's out-of-school reading and the subsequent links to income, overall reading achievement, and expository text comprehension. After that I reviewed major studies focused on in-school reading and the relationship to income, overall reading achievement, and expository text comprehension. Finally, I

summarized findings from secondary analyses of NAEP data that have been published

related to reading (outside of those conducted by NCES employees). The information

presented in this chapter was important in developing the methodological approach that

was taken for the study (Chapter III), and reporting and interpreting the results (Chapters

IV and V).

CHAPTER III: METHODOLOGY

Introduction

The purpose of this study was to explore how in-school and out-of-school reading experiences contributed to students' abilities to comprehend exposition. Specifically, this study investigated how the out-of-school and in-school reading opportunities available to fourth graders impacted their subsequent performance on the expository reading comprehension items on the 2005 National Assessment of Educational Progress. In addition, this study examined how these particular reading experiences were associated with the achievement of low-income students. The data that I used for this study were collected in 2005 as part of a federally-mandated program designed to monitor the progress of fourth and eighth graders in America's schools.

This study presented three research questions: (a) Are students in some schools better able to comprehend expository text than students in other schools? (b) What individual reading experiences are associated with students' comprehension of expository text? and (c) What characteristics of schools are associated with students' comprehension of expository text?

Chapter III describes the research methodology that I used as part of this investigation. This chapter provides details concerning the (a) NAEP assessment, (b) research design, (c) data collection, (d) instrumentation, and (e) data analysis.

The National Assessment of Educational Progress (NAEP)

Overview

The National Assessment of Educational Progress (NAEP) is a federally-mandated assessment that is "the nation's only ongoing survey of students' educational

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progress" (USDE et al., 2007, p. 1). It is designed to collect information about what fourth-, eighth-, and twelfth-grade students know and what they can do with this knowledge. As part of the assessment, information is gathered about teacher and students' backgrounds, home environments, instructional practices, and classroom and school contexts. Many subjects are assessed as part of NAEP, including: reading, mathematics, writing, U.S. history, civics, science, geography, and the arts. Reading and mathematics are administered every two years, and the other subjects follow a more complex schedule of testing (USDE et al., 2007).

Collaborating Groups

In order to carry out the NAEP assessment, several organizations collaborate, including the National Assessment Governing Board (NAGB), The National Center for Educational Statistics (NCES), Westat, Pearson Educational Measurement, and the Educational Testing Service (ETS) (USDE et al., 2007).

Congress created the National Assessment Governing Board (NAGB) in 1988 to supervise the development, administration, and reporting of NAEP. NAGB's responsibilities include creating the conceptual and methodological frameworks for NAEP, selecting objectives and test specifics, developing comparison standards (e.g., for states, regions, etc.), and identifying potential sources of bias in the tests (NCES, 2007c).

Another organization, the National Center for Educational Statistics (NCES), is in charge of administering, analyzing, and reporting data "on the condition of education in the United States" (USDE, 2007, p. ii). NCES is also responsible for explaining to the public the meaning of the reported results.

The Educational Testing Service (ETS) is responsible for the creation of the NAEP research design and testing instruments as well as for carrying out all analyses and reporting their findings. Westat's role is to manage all sampling and field-related tasks. Finally, Pearson Educational Measurement handles the printing, scoring, and distribution of all testing materials (USDE et al., 2007).

<div align="center">*Design of the Assessment*</div>

Sampling Design

The following information on NAEP's sampling design is summarized from presentation notes distributed as part of the 2006 NAEP Database Training Seminar (Sedlacek, 2006). NAEP had a very complex sampling design for the 2005 data that allowed for the assessment to collect information that is representative of the population (e.g., fourth graders, Hispanic fourth graders). The sample was selected in two stages. First, the sample focused on subpopulations that are critical to the study. In past years, populations such as charter school students and native Alaskan students were oversampled in order for NAEP researchers to collect enough information on these students to perform a reliable analysis. In other words, individual children in certain populations had higher probability of being selected for participation than students belonging to other populations (e.g., Caucasians; females). During years (like 2005) when the state assessments were also given, samples were selected to represent the populations of public school students in each state. These state samples were combined with the national sample (which includes private school students) to form the complete database.

Samples were selected using both stratification and clustering strategies. Stratification refers to the selection of participants that will represent all subpopulations of United States students. In the NAEP sample, both explicit and implicit stratification methods were used. Explicit stratification involved assigning schools to "mutually exclusive and exhaustive" strata. For example, since the state assessments were given in 2005, the explicit strata for that year were the states. Other specific explicit strata exist for the private school population, including schools that were (a) Roman Catholic, (b) Lutheran, (c) conservative Christian, (d) private with known affiliations (e.g., Montessori), and (e) private with unknown affiliations (Sedlacek, 2006, p.11-16). In addition to these explicit strata, implicit strata were also used to select the schools for the sample. Implicit strata include the local Census division (9 categories), the setting in terms of urbanization (8 categories), and the percent of minority students (3 categories). Schools were ordered hierarchically within these strata, alternating between ascending and descending order. Schools were then sampled from within these hierarchically-organized implicit strata.

The NAEP sampling design also included clustering because students were chosen within schools. It is assumed that students within a school are more alike than students from different schools. Schools were chosen based on the strata discussed above. The theory behind this selection method was that schools selected based on these strata would house the subpopulations targeted by the NAEP assessment. For the NAEP reading test, students within a school were randomly selected for the assessment based on their membership in a particular grade level (e.g., fourth grade). Therefore, if a school had four fourth-grade classrooms, students from all four classrooms would have likely

been selected for participation. However, not every student in fourth grade would have been chosen to participate.

Within the selected sample from each school, NAEP used a matrix sampling design. With the matrix sampling design, each student took only a portion of the question on the full assessment for one subject area. Multiple subject areas and various selections of test questions were given in the same testing session. Students were not sitting near other students with the same test questions (NCES, 2007a).

Setting

Approximately 100 schools were selected per state for participation in the 2005 NAEP assessment (NCES, 2007a). These included both public schools and private schools (e.g., religious-affiliated schools, Montessori, unaffiliated schools). In states with cities participating in the Trial Urban District Assessment (TUDA), a concurrent study examining the achievement in large urban districts, more schools may have been sampled.

Participation in NAEP was voluntary for schools, but it was required for all states and districts receiving Title I funding as outlined in the No Child Left Behind (NCLB) legislation (United States Department of Education, 2002).

Participants

Fourth graders

The student sample for the 2005 assessment is representative of the population of fourth-grade students in each of the U.S. states and the District of Columbia (as a result of their TUDA participation). However, states with cities also participating in the TUDA may consequentially have had an oversampling of urban, minority students. I used

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weighting procedures, discussed later in this chapter, to make certain that the sample proportionally matched the characteristics of the general population of American fourth graders.

Participation in NAEP was voluntary for students. Approximately 2500 students in each state took the reading assessment. Around 30 students from each of the schools were selected randomly to participate in the reading study (NCES, 2007a). The probability of student selection varied depending on the subgroups that the child belonged to (e.g., race, gender, socioeconomic status).

Both English language learners and students with disabilities were included in the NAEP assessment. The test allowed for accommodations such as extended test time, one-on-one or small group administrations, large-print booklets, and/or scribes or computer technology. For the 2005 assessment, all students were included, unless with the accommodations they were unable to (a) meaningfully participate in the assessment as a result of cognitive impairment, (b) demonstrate they had more than two years of academic English, or (c) show their reading abilities as a result of having English as a second language (NCES, 2007b).

Students who participated in the reading NAEP test took a small portion of the assessment questions, and also answered a questionnaire with background questions about themselves, their families, their preferences, and their out-of-school and in-school experiences.

Classroom Teachers

Classroom teachers were selected for participation in NAEP if they had one or more students taking the assessment. Their participation was limited to filling out a

questionnaire about themselves and their classroom practices (NCES, 2007f). These data were not used as part of the present study of fourth graders' expository text comprehension because using teacher data would have resulted in nesting issues with students in the same classrooms. Using student reports of classroom practices enabled me to model more variability.

Principals

Principals were selected for NAEP participation if they had students participating in the assessment. Their participation was limited to completing a questionnaire regarding school demographics and school-wide practices and philosophies.

Special Education and Second Language Teachers

Teachers of limited-English proficient (LEP) and disabled students were recruited to participate in NAEP by filling out a questionnaire about each of the special education or LEP students selected to participate in the study. These teachers did not always complete these questionnaires, sometimes other educators who were familiar with the student filled out the form. This questionnaire contained questions about the students' backgrounds, participation in special school programs (e.g., resource room, language classroom), and the rationale behind the students' label as having a disability or being LEP (NCES, 2007e).

Theoretical Underpinnings of the Reading Assessment

NAEP's design for the 2005 reading assessment originated from the reading framework created by NAGB. The conceptual ideas behind this framework were based educators' and researchers' understandings about reading and included the expert opinions of thousands of people nationwide.

The framework was designed to incorporate four aspects of reading with three

contexts for reading. The four aspects of reading according to the NAEP framework

were (a) forming a general understanding, (b) developing interpretation, (c) making

reader/text connections, and (d) examining content and structure (USDE et al., 2007).

These four aspects were assessed within what the NAEP framework identifies as the

three contexts for reading. These contexts described the reader's purpose for reading and

included: (a) reading for literary experience, (b) reading for information, and (c) reading

to perform a task. However, reading to perform a task was not included at the fourth-

grade level as a context for reading. One problem with this categorization of reading

contexts was that the passages designed to represent each context more closely resembled

the structure of the text than the intended purpose for reading (See Appendix B for

sample passages and questions). As mentioned in Chapter I of this dissertation, this

classification poses a dilemma because texts such as biographies are narrative, and they

were assessed as reading for literary experience. The problem is that biographies are

often read from an efferent standpoint, one that the reader uses to gain information, not

necessarily from a literary standpoint (Rosenblatt, 1978). However, a valid

counterargument would be that young children may not recognize biographies as factual,

therefore reading these texts as if they are like any other story. In the 2009 assessment,

this concern will be resolved by focusing the framework on three structures of texts

(expository, literary informational/poetry, and fiction) instead of on the contexts for

reading (United States Department of Education, 2007). However, since this

reclassification was not a part of the 2005 data and the test passages were not available

for review, I used the descriptions that NAEP provided for the categories of "reading for

literary experience" and "reading for information" to represent narrative and expository texts respectfully (NCES, 2007d).

Instrumentation

NAEP used various instruments to assess what students know and how they use this knowledge. In this section, I explain how NAEP measured (a) students' background information, (b) students' comprehension of exposition, (c) the quality of students' out-of-school reading experiences, (d) school characteristics, and (e) the quality of students' classroom literacy environments.

NAEP used a variety of questionnaires and cognitive tests to collect information about participants. These instruments collected much more data than NCES or related agencies would ever analyze. Although NCES encourages outside researchers to conduct studies with these data, many researchers are unfamiliar with the sophisticated statistics needed to effectively do so.

Measure of Students' Background Information

As part of the NAEP assessment, students completed a questionnaire that enabled NAEP to collect information about variables such as race and ethnicity, gender, eligibility for free and reduced meals (FARMS), as well as other information about students' language and special education backgrounds (USDE et al., 2007).

In this study, gender, race, and school type were control variables. The purpose of including these variables in this analysis was to determine whether income, out-of-school reading and in-school reading were significantly related to achievement after accounting for differences in gender, race, and school type. If these differences were not considered in the analysis, it would be difficult to understand how much of the variance

in student achievement could be attributed to the variables of interest (e.g., income, out-of-school reading, and in-school reading) and how much was related to these other factors. Unfortunately, with the structure of NAEP, there is no way to control for students' prior achievement. Although prior achievement is known to be related to future achievement, controlling for prior achievement in this study may be less important than for other studies. This study is focused on factors related to fourth-grade comprehension of exposition and other studies have found that most students have very few experiences with exposition in the primary grades (Chall, et al., 1990). Therefore, compared to an assessment of narrative text comprehension, students would have likely had far less exposure.

In this study, FARMS eligibility was used as a proxy for student poverty and examined in relationship to students' out-of-school and in-school reading experiences. In the past, some researchers have criticized the use FARMS as an income proxy because this service can be refused by parents and may not be available in some non-public schools. However, in the 2005 database, NAEP reported whether students were eligible to receive FARMS, not whether they were actually receiving these services.

Other researchers have used proxies for students' family income, including parental education and the presence of educational materials in the home (e.g., Guthrie, Shaefer, & Huang, 2001; Lee, Croninger, & Smith, 1997). However, NAEP no longer collects information for fourth graders' parent education because many students were unable to provide reliable information. In addition, since reading materials available outside of school were initially included in the analysis, including these variables in the poverty measures would have confounded the results.

I argue that my decision to use FARMS as a proxy for students' family income was a warranted, although not optimal, choice. In *The Nation's Report Card*, NCES's report of general findings from NAEP, FARMS is routinely used in isolation to report differences in achievement for children from various socioeconomic backgrounds (NCES, 2007g). Again, it is also important to note that NAEP collects information on whether or not students are *eligible* for FARMS and not whether they are actually taking advantage of the services offered by the Department of Agriculture. My hypothesis is that when FARMS eligibility is used as a proxy for family income, more middle-class families get labeled as FARMS eligible because of unreported income than are low-income families labeled as not eligible for FARMS. If anything, this scenario would result in underestimating the influence of poverty on reading achievement, and my findings would be conservative estimates of actual influences of family income on achievement.

Measures of Students' Out-of-School Reading Experiences

In addition to answering questions about their demographics, students responded to questionnaire items that addressed their reading attitudes and activities outside of school. For example, students reported the availability of computers in the home (B017101), the number and types of reading materials available in the home (B017001, B000905, B013801, B017201), the amount of discussion about books and other academic topics (B017451 and R831101), their attitudes towards reading, (R830601 and R830701), and the types of reading they engage in (R831701 and R831601). For descriptive information about these items and for the complete questions, see Chapter IV. Factor

analysis (described below and again in Chapter IV) was used to develop a composite of these items to use in HLM analyses.

Measures of Students' In-School Reading Experiences

On the questionnaire, students provided additional information about their classroom reading experiences. Although teacher questionnaires also supplied some information regarding classroom practices, researchers have argued that student reports are often better indicators of actual classroom practice (Mullens & Gaylor, 1999). Questions addressed how often students read books and magazines for reading, science, social studies or history (R832301, R832401, and R832501), how often students talked about books as a class or in small groups (R831801 and R831901), how often students had choice in what they read (R832901), and how often students did book reports, presentations, projects, or journal writing about books they read (R832101, R832201, R832301, or R832001). Factor analysis was used to uncover constructs underlying these variables and to create factors to use in the HLM analyses (see below and Chapter IV for results).

Measures of Students' Comprehension of Expository Texts

Students' comprehension of expository texts was measured by their responses to cognitive items. The reading assessment consisted of 100-170 items per grade, but each individual student only saw 20-25 questions. About half of the test was multiple choice, while the rest of the test consisted of both short and extended constructed response questions. The short constructed responses required answers that were a sentence to a paragraph in length, while the extended constructed responses called for students to write more than a paragraph.

A sample of several retired questions and two passages are included as Appendix

B. However, these passages also illustrate the limitations of addressing expository

comprehension with the fourth-grade NAEP reading assessment. Neither of the two

retired passages are what I would consider traditional exposition, and both contain

aspects of narrative texts. NAEP classified these texts by what they considered the

purpose for which students would read these texts (e.g., literary experience or

information), yet it may be presumptuous to assume the stance with which students will

approach a text. For example, the passage entitled, "Dr. Shannon Lucid: Space Pioneer"

began:

> When Shannon Lucid was growing up in Bethany, Oklahoma, during the 1950s,
>
> she dreamed of exploring outer space. She loved pioneer stories about America's
>
> West, and felt she had been born too late. But then she read about rocket inventor
>
> Robert Goddard. She realized that she had not been born too late to be a space
>
> explorer!

Without knowing that Shannon Lucid was a real person, students might have approached

this text with an aesthetic stance (Rosenblatt, 1978). Although NAEP was clearly

attempting to measure students' efferent reading, it may be inappropriate or inaccurate to

assume what stance they will take (especially when the texts are not traditional

exposition). For the most part, the questions NAEP posed for students to answer after

reading the passages reflect NAEP's intention of measuring students' abilities to read for

information. For example, one question about the Shannon Lucid passage described

above asked, "According to the passage, what was the purpose of the space station *Mir*

program?" However, this question is posed *after* students have read the text. Therefore,

although NAEP may have intended students to read the passage with an efferent stance,

given the beginning, narrative-like structure of the text, students may have already

approached it from a more aesthetic standpoint. Regardless of these concerns, I do

believe that the texts NAEP categorized as "reading for information" more closely

resemble exposition than narrative text. Although some may contain a mixture of

expository and narrative elements, the structures and content of these texts are not

traditionally story-like either.

Cognitive test items were grouped into blocks to account for contextual and order

effects. Different blocks were included in the test booklets and each block of items was

presented to a similar number of students. NAEP ensured that students from various

subsamples equally received the same test booklets. These test booklets also contained a

balanced incomplete blocks (BIB) design which means that each block of items appeared

in a test booklet with each of the other blocks once. The blocks also occurred in each

position (order) in the booklet once (USDE et al., 2007).

Measures of School Characteristics

Principals in participating schools completed a questionnaire reporting

information about school demographics and contexts. The information from these

questionnaires is available to researchers for understanding the characteristics of

participating schools.

Research Design

This study used a multilevel model design (See Figure 1). There are two levels to

this model, the student level and the school level. In the figure, the arrows describe the

relationships between student- and school-level variables and expository text

comprehension. Arrow A represents the level-1 within-group questions focused on the

relationships between students' individual out-of-school and in-school reading

experiences and their expository text comprehension. The control variables of gender,

race, and FARMS eligibility for the level-1 models are included here.

Figure 1. *Multilevel model examining the influence of out-of-school and in-school reading experiences on fourth graders' comprehension of exposition* [a]

School Composition:
- ***Proportion FARMS***
- ***Proportion Minority***
- ***School type***
- ***Average Out-of-School Reading***
- ***Average Materials***
- ***Average RRA***
- ***Average Discussion***

Student Characteristics:
- **FARMS eligibility**
- **Minority status**
- ***Gender***
- **Out-of-School Reading**
- **Materials Across the Curriculum**
- **Reading-Related Activities**
- **Discussion of Reading**
- FARMS – Out-of-School Reading Interaction
- FARMS – Materials Interaction
- FARMS – RRA
- Interaction
- FARMS – Discussion Interaction

A and B: Base Model/Expository Text Achievement

C: FARMS differential (for out-of-school reading, materials, extension, and discussion)

Fourth-Grade Expository Text Achievement

B

C

A

[a] **Bold** variables are group-mean centered. ***Bold and italicized*** variables are grand-mean centered. Plain font variables are uncentered.

Arrow B represents the between-group questions, or the questions that address how school-wide out-of-school and in-school reading practices are associated with the

achievement of students in those schools. As with Arrow A, Arrow B also includes

control variables for the aforementioned relationship such as race, FARMS eligibility,

and school type.

Arrow C marks the interactions between school level variables (e.g., out-of-

school reading, materials, reading-related activities, and discussions) and students'

FARMS eligibility. However, as previously discussed, this question was not answered in

the final analysis. Because NAEP uses background information such as income, gender,

and race to determine the plausible values for unanswered items, these background items

become confounded with achievement. In particular, students in similar schools with

similar background attributes are more likely to receive similar plausible values,

influencing the variability of student responses.

Data Analysis

In the following section, I explain specific statistical concerns for the use of the

NAEP database, introduce the theory behind hierarchical linear modeling, and present the

data analysis for each of my research questions.

Statistical Considerations for NAEP Researchers

Several statistical considerations should be made as a result of the sampling

procedures used in NAEP's research design. Although the sampling procedures were

carefully constructed and theoretically-sound, researchers must account for various

aspects in the design or they risk misinterpreting the data. Statistical considerations for

the use of the NAEP data set included weighting, plausible values, estimation of standard

values, and missing data.

Weighting

In the data companion that accompanied the data files, NAEP reported that the "performance of statistically analyses without weights can be misleading" (USDE et al., 2007, p. 35). Therefore, NAEP provided weights (or adjusted weights for manipulated data sets) for researchers to use when analyzing these data to account for the unequal probability of students being selected for participation. Because of the complex sampling design that NAEP used, unweighted analyses are not representative of the general student population of interest.

Adjusted to represent the final sample used in this study, the student weight was used in all SPSS student-level analyses. Similarly, an adjusted school weight was used for all school-level analyses in SPSS. In HLM, I used only the adjusted school weight because components of the student-level weight were accounted for in the school weight. However, to validate my decision, I did run analyses with both the school weight and the student weight and found that there was no noticeable differences in the outputs.

Plausible Values

Since each student only took a small portion of the complete NAEP assessment, researchers must estimate students' performances on the parameters of interest. In NAEP, this estimation is done with plausible values. Plausible values are potential scores for students on questions they did not answer, based on their answers to other questions and compared to the answers of students from similar backgrounds. Routinely, five plausible values are estimated for each parameter for each student. In the NAEP database, one of the parameters for which there are plausible values available is for "reading for information." While many basic software programs are not equipped to run

analyses using plausible values, HLM 6 (Scientific Software International, 2004) can handle the complexity of these analyses.

Estimation of Standard Errors

When conducting analyses, researchers using the NAEP database should account for the misestimation of standard errors that can occur if standard formulas are used. Standard error refers to a measure of variability that shows how closely a statistic represents a population, and it is used to determine statistical significance. Because of the stratified, clustered sample, the researcher must take into account that these observations are not independent of one another; otherwise, the statistical significance of the study will likely be overestimated. Researchers using the plausible values function in HLM are not required to take any further precautions because HLM accounts for these issues in standard errors in the analysis.

Missing Values

The data missing on most variables was fairly insignificant. No data was missing for race, school type, gender, or any of the plausible values for student expository text comprehension. Approximately one percent of the school data (194 schools) were missing for the out-of-school reading and in-school reading factors. Most missing data was a result of FARMS information not being collected at 675 schools. However, an analysis of the missing data for out-of-school reading, in-school reading, and FARMS eligibility showed no significant differences from the original sample in terms of achievement, race, school type, and gender.

Factor Analysis

Factor analysis is a data reduction technique that allows researchers to understand the relationships that exist between variables that are expected to measure a construct (Pett, Lackey, & Sullivan, 2003). DeVellis (2003) reasoned that "factor analysis begins with the premise that one big category containing all of the items is all that is needed" (p. 108). Factor extraction examines included variables' covariances and yields measures (factors) of underlying constructs that account for how variables relate to one another. A factor analysis can yield one or more meaningful factors that reflect latent, or not directly measurable, constructs present in the data. Once a factor is extracted, it is checked to make sure it adequately explains the relationships between the items. If it does not capture the covariation of items particularly well, it runs through the factors again, extracting a second component. This cycle continues until there is relatively little unaccounted-for covariance between items.

In this study, factor analysis was necessary to determine how well variables related to the constructs of out-of-school reading experiences and in-school reading experiences.[7] In this study, the term 'factor' referred to a composite of related variables created from items that students have already answered. Once factors have been extracted, it is usually necessary to rotate the factor to make the results meaningful. DeVellis (2003) explained:

Factor rotation increases interpretability by identifying clusters of variables that can be characterized predominantly in terms of a single latent variable, that is,

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[7] Technically, I used Principal Components Analysis (PCA) in this study, but it is common in our field to use the term factor analysis even if conducting a PCA (Pallant, 2005).

items that are similar in that they all have a strong association with (and thus are largely determined by) only one and the same factor. (p. 116)

Two types of rotation are used in factor analysis, orthogonal and oblique rotations. In orthogonal rotation, the factors that are yielded from the analysis are thought to be independent from one another. In oblique rotation, factors may be correlated with each other and variables may load strongly on more than one factor (Pett, Lackey, & Sullivan, 2003). In the interpretation of the results of the factor analyses for this study, orthogonal rotation was used because results from the orthogonal rotations and the oblique rotations did not differ substantially and the correlation of the obliquely rotated factors was negligible. Therefore, the simplicity of the orthogonal factors seemed to outweigh any benefits of allowing the factors to correlate.

Hierarchical Linear Modeling

Hierarchical linear modeling (HLM) allows researchers to think about educational data in a way that accounts for the nested structure often found in educational datasets where, for example, students are nested within groups such as classes or schools. Many research methods force researchers to choose to examine either the individual (e.g., student) or the group (e.g., school), but do not allow for the explanation of variance both within and between groups. Such either-or-approaches to determining the unit of analysis can not only result in misestimation of standard errors and therefore inaccurate results, but also fail to take advantage of all the information available to the researcher. HLM allows both within-group and between-group information for students and schools to be examined, accurately estimates results, and takes full advantage of all the data the researcher has on hand (Bryk & Raudenbush, 1992).

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Statistical Importance of Using HLM with Nested Data

In HLM, the basic assumptions of traditional linear models may no longer hold, such as: (a) linearity, (b) normality, (c) homoscedasticity, and (d) independence. Bryk and Raudenbush (1992) have asserted that it is optimal to maintain the assumptions of linearity and normality. However, in nested designs, students in the same class or school are likely to share characteristics, defying the assumption of independence. Similarly, homoscedasticity of the sample should not be assumed because it is not likely that the characteristics for each individual will be associated with expository achievement in the same way in a complex sample like NAEP. It can be assumed that the intercept for each individual would differ, but in a sample with many covarying variables, slopes are likely to differ as well (Bryk & Raudenbush, 1992). As an example, FARMS eligibility may not relate to all students' achievement in the same way because other variables may affect the results (e.g., quality of instruction, access to literacy resources). It is quite plausible that other school-level variables impact the relationship between FARMS eligibility and achievement, and hierarchical linear modeling can model these differential relationships (Bryk & Raudenbush, 1992).

The Model

The statistics involved in looking at models hierarchically are quite complex. The combined model for the final analysis involves the combination of the within school model (level 1) and the between-school model (level 2). Although models are built at each level, final results are always reported from the combined model. For ease of interpretation, in the next few sections variables in bold print are group-mean centered, variables in bold italics are grand-mean centered, and variables left in plain font are

uncentered. These centering decisions were important because they affected the way that I interpreted the coefficients in the output. Separate models were built for both out-of-school reading experiences and in-school reading experiences because when these factors were combined into one model, a substantial number of schools were lost from the analysis.

Within school model. The within school model compares students within schools. A simple equation for this model for each student and school would be:

$$y_{ij} = \beta_{0j} + \beta_{1j}(X_{ij}) + r_{ij}$$

where y_{ij} represents student achievement on measures of comprehension of exposition, β_{0j} is the average achievement of a student in a particular school, β_{1j} is the average effect of a student level variable (e.g., out-of-school reading experiences, FARMS, race), and r_{ij} is the unexplained within school variance.

The specific equation for the out-of-school reading within-school model used in this study was:

$$y_{ij} = \beta_{0j} + \beta_{1j}(\textbf{OOS}) + \beta_{2j}(\textbf{DUMRACE}) + \beta_{3j}(\textbf{DUMFARMS}) + \beta_{4j}(\textbf{\textit{DUMGENDER}}) +$$
$$\beta_{5j}(\text{FARMSOOS}) + r_{ij}$$

where y_{ij} represents student achievement on measures of comprehension of exposition, β_{0j} is the average expository text comprehension of a student in a particular school, β_{1j} is the average effect of out-of-school reading experiences, β_{2j} is the average effect of race, β_{3j} is the average effect of FARMS eligibility, β_{4j} is the average effect of gender, β_{5j} is the average effect of an interaction between FARMS and out-of-school reading experiences, and r_{ij} is the unexplained within school variance.

The specific within-school model for the in-school reading experiences used in this study was:

$$y_{ij} = \beta_{0j} + \beta_{1j}(\textbf{DUMRACE}) + \beta_{2j}(\textbf{DUMFARMS}) + \beta_{3j}(\textit{\textbf{DUMGENDER}}) +$$

$$\beta_{4j}(\textbf{MATERIAL}) + \beta_{5j}(\textbf{RRA}) + \beta_{6j}(\textbf{DISCUSS}) + \beta_{7j}(FARMMATERIAL) +$$

$$\beta_{8j}(FARMRRA) + \beta_{9j}(FARMDISCUSS) + r_{ij}$$

where y_{ij} represents student achievement on measures of comprehension of exposition, β_{0j} is the average expository text comprehension of a student in a particular school, β_{1j} is the average effect of race, β_{2j} is the average effect of FARMS eligibility, β_{3j} is the average effect of gender, β_{4j} is the average effect of cross-curricular reading, β_{5j} is the average effect of reading-related activities, β_{6j} is the average effect of whole-class and small-group discussion, β_{7j} is the average effect of an interaction between FARMS and cross-curricular reading, β_{8j} is the average effect of an interaction between FARMS and reading-related activities, β_{9j} is the average effect of an interaction between FARMS and discussion activities, and r_{ij} is the unexplained within school variance.

For both the out-of-school and in-school model, I made a decision to include only interactions between FARMS eligibility and the out-of-school and in-school reading factors because this study was primarily examining how FARMS eligibility was associated with students' out-of-school and in-school reading experiences. However, it should be noted that it was also possible to conduct either an interaction between race and these factors or a three-way interaction between FARMS eligibility, race, and these reading factors.

Between school model. The between school model, or level 2 model, compares schools to other schools. A simple set of equations for the between school model would be:

$$\beta_{0j} = \gamma_{00} + \gamma_{01}(W_{1j}) + u_{0j}$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11}(W_{1j}) + u_{1j}$$

where β_{0j} represents the intercept, γ_{00} is the mean achievement across schools, γ_{01} is the average effect of a school level variable (e.g., proportion of FARMS-eligible students, average reported frequency of cross-curricular reading), β_{1j} is a modeled slope (e.g., the FARMS gap), γ_{10} is the mean slope across schools, and γ_{11} is the average effect of a school-level variable (e.g., proportion of FARMS eligibility) on the slope. In this equation, u_{0j} and u_{1j} are the unexplained variance in β_{0j} and β_{1j} between schools.

Originally in this study, I planned to model β_{1j} as the FARMS achievement gap. However, I decided not to examine this slope because I was unable to model the associations between proportion of FARMS-eligible students, out-of-school reading experiences, and in-school reading experiences. More specifically, the effect of FARMS on achievement did not vary between schools, likely as a result of how plausible values are calculated in NAEP.

The specific out-of-school reading between-school model used in this study was:

$$\beta_{0j} = \gamma_{00} + \gamma_{01}(\textbf{\textit{Proportion Minority}}) + \gamma_{02}(\textbf{\textit{Proportion FARMS}}) + \gamma_{03}(\textbf{\textit{DUMPRIVATE}}) +$$
$$\gamma_{04}(\textbf{\textit{AVEOOS}}) + u_{0j}$$

where β_{0j} represented the intercept, γ_{00} is the mean expository text comprehension in public schools, γ_{01} is the average effect of the proportion of minority students in a school, γ_{02} is the average effect of the proportion of FARMS-eligible students in a school, γ_{03} is

the average effect of being a private school, γ_{04} is the average effect of the average

frequency of out-of-school reading practices reported in a school, and u_{0j} the unexplained

between-school variance.

The specific in-school reading level two model was:

$\beta_{0j} = \gamma_{00} + \gamma_{01}(\textit{\textbf{Proportion Minority}}) + \gamma_{02}(\textit{\textbf{Proportion FARMS}}) + \gamma_{03}(\textit{\textbf{AVEMATERIAL}})$

$\quad + \gamma_{04}(\textit{\textbf{AVERRA}}) + \gamma_{05}(\textit{\textbf{AVEDISCUSS}}) + \gamma_{06}(\textit{\textbf{DUMPRIVA}}) + u_{0j}$

where β_{0j} represented the intercept, γ_{00} is the mean expository text comprehension in

public schools, γ_{01} is the average effect of the proportion of minority students in a school,

γ_{02} is the average effect of the proportion of FARMS-eligible students in a school, γ_{03} is

the average effect of the average frequency of cross-curricular reading reported in a

school, γ_{04} is the average effect of the average frequency of reading-related activities

reported in a school, γ_{05} is the average effect of the average frequency of whole-class and

small-group discussion reported in a school, γ_{06} is the average effect of being a private

school, and u_{0j} the unexplained between-school variance.

Combined model. The combined model merges the level 1 and level 2 models into

one equation with simple substitution. A simple combined model would be:

$$y_{ij} = \gamma_{00} + \gamma_{01}(W_{1j}) + \gamma_{10}(X_{ij}) + \gamma_{11}(W_{1j}X_{ij}) + u_{0j} + u_{1j}(X_{ij}) + r_{ij}$$

My dissertation results are reported from the following specific, combined models. For

the out-of-school reading results, the model was:

$y_{ij} = \gamma_{00} + \gamma_{10}(\textbf{OOS}) + \gamma_{20}(\textbf{DUMRACE}) + \gamma_{30}(\textbf{DUMFARMS}) +$

$\quad \gamma_{40}(\textit{\textbf{DUMGENDER}}) + \gamma_{50}(\text{FARMSOOS}) + \gamma_{01}(\textit{\textbf{Proportion Minority}}) +$

$\quad \gamma_{02}(\textit{\textbf{Proportion FARMS}}) + \gamma_{03}(\textit{\textbf{DUMPRIVATE}}) + \gamma_{04}(\textbf{AVE}\textit{\textbf{OOS}}) + u_{0j} + r_{ij}$

For the in-school results, the combined model was:

$y_{ij} = \gamma_{00} + \gamma_{10}(\textbf{DUMRACE}) + \gamma_{20}(\textbf{DUMFARMS}) + \gamma_{30}(\textbf{\textit{DUMGENDER}}) +$

$\gamma_{40}(\textbf{MATERIAL}) + \gamma_{50}(\textbf{RRA}) + \gamma_{60}(\textbf{DISCUSS}) + \gamma_{70}(\text{FARMMATERIAL}) +$

$\gamma_{80}(\text{FARMRRA}) + \gamma_{90}(\text{FARMDISCUSS}) + \gamma_{01}(\textbf{\textit{Proportion Minority}}) +$

$\gamma_{02}(\textbf{\textit{Proportion FARMS}}) + \gamma_{03}(\textbf{\textit{AVEMATERIAL}}) + \gamma_{04}(\textbf{\textit{AVERRA}}) +$

$\gamma_{05}(\textbf{\textit{AVEDISCUSS}}) + \gamma_{06}(\textbf{\textit{DUMPRIVA}}) + u_{0j} + r_{ij}$

Analytic Procedures

I used the statistical software programs SPSS (SPSS, Inc., 2007) and Hierarchical

Linear Modeling (HLM) 6 (SSI, 2004) to run these analyses. The following table details

the measures and analyses I used to answer my research questions (See Table 1):

Table 1. *Table of Analysis Procedures*

Question	Measure	Analysis
1. Are students in some schools better able to comprehend expository text than students in other schools?	(a) *Reading for Information* subsection of the NAEP reading test	HLM Unconditional Model
2. What individual reading experiences are associated with students' comprehension of expository text?	(a) NAEP student questionnaire (b) *Reading for Information* subsection of the NAEP reading test	Level-1 HLM analysis portion of the complete model (with controls)
3. What characteristics of schools are associated with students' comprehension of expository text?	(a) NAEP student questionnaire (b) NAEP school database (b) *Reading for Information* subsection of the NAEP reading test	Level-2 HLM analysis portion of the complete model (with controls)

This study also included sub-questions for two of the three questions listed above. Question 1, "Are students in some schools better able to comprehend expository text than students in other schools?" did not include any sub-questions. Question 2, "What individual reading experiences are associated with students' comprehension of expository text?" included the following three research questions: (a) Do students' out-of-school

reading experiences predict their comprehension of expository text when controlling for students' gender, FARMS eligibility, and race? (b) Do students' in-school reading experiences predict their comprehension of expository text when controlling for gender, FARMS eligibility, and race? and (c) Do these reading experiences predict students' comprehension of expository texts equally well for FARMS and non-FARMS students, when controlling for gender and race?

Question 3, "What characteristics of schools are associated with students' comprehension of expository text?" included two sub-questions: (a) "Do schools where students have more out-of-school reading experiences have higher levels of average expository text comprehension by their students when controlling for average school FARMS eligibility, race, and school type?" and (b) "Do schools where students have more in-school reading experiences have higher levels of average expository text comprehension by their students when controlling for average FARMS eligibility, race, and school type?" Originally I planned to include a third question, "Do these schools' characteristics predict average levels of students' comprehension of expository texts equally well for high-FARMS and low-FARMS schools when controlling for average school race and school type?" Unfortunately, I was unable to model this question in HLM because the associations between FARMS-eligibility and achievement did not vary between schools, likely as a result of the way plausible values were calculated.

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

As with any study, this research project had limitations. Three major limitations that influenced the methods aspects of this study were (a) the measurement tools, (b) the collection procedures, and (c) choices in analysis procedures.

Because I did not have the opportunity to create the measurement instruments, I needed to find items that closely related to the constructs that interest me. First, whereas I was initially interested in how out-of-school and in-school reading experiences impacted students' nonfiction reading, there is no measure of nonfiction reading in this assessment. Instead, biographies and other narrative nonfiction are grouped in with "literature," making it possible to look at students' comprehension of exposition, but not nonfiction in general. However, in 2009 the test will be revised so that nonfiction can be examined as a dependent variable. This change sets the stage for future research evaluating whether out-of-school and in-school environments influence the comprehension of nonfiction differently than they impact children's understandings of exposition.

As previously mentioned, the structure of some of the passages used to assess "Reading for Information" also posed a bit of a problem. Although many of the questions students were expected to answer directed students towards recalling or inferring factual information from the texts, these questions were posed after students had already read the passages. Yet, the passages themselves were not all traditional models of exposition, some containing mixtures of both narrative and expository elements. This is somewhat problematic in that students may not have approached the passages with the stance that NAEP intended.

Similarly, the background questions asked on the student and teacher questionnaires are somewhat different than I would have asked, but they appear to provide similar information (e.g., what type of reading is done at home, what books are used for social studies instruction). However, I had to be cautious that I used these

variables in ways that did not misinterpret the participants' responses. I used the available literature (See Chapter II) to guide me in creating reliable constructs of out-of-school and in-school reading experiences.

Since I was not a part of the collection of the NAEP data, I had to rely on NCES regarding their adherence to the collection and recording protocols. Given the fact that this assessment has been administered for thirty-eight years, arguably NCES and its counterparts are adept at following administration procedures. Nevertheless, I had to rely on others for the collection and imputation of the data I used in this study.

The reliability in my factor analysis was limited because there was a narrow selection of variables related to reading on the student questionnaire. Because students were expected to answer all questionnaire items, the number of questions was limited, with little redundancy between items. It would have been optimal to have more questions with more overlap; however, I argue that the questions that were available captured quite a bit of the constructs of out-of-school and in-school reading experiences (as defined in the literature review).

Finally, my decision to use HLM to answer my research questions surely influenced my findings. The use of multilevel modeling with this dataset is both supported and encouraged by NCES. In using these analytic procedures, I hope that I was able to account for more variance that would have been possible through traditional analyses of variance/covariance and linear regression. Although there was some missing data in this study, a missing data analysis found that the final sample of students used in these analyses was not significantly different than the original survey sample. It should also be noted that this study was a cross-sectional study of American fourth graders, not a

longitudinal study. Therefore, it is not possible to understand how changes in policy, curriculum, or reading experiences were associated with expository text comprehension.

Summary

My study examined associations between out-of-school and in-school reading experiences and fourth graders' abilities to comprehend exposition. I used data collected as part of the 2005 NAEP reading assessment to explore this phenomenon.

NAEP is a large, complex dataset that is collected as part of a federal mandate to monitor the academic progress of American children. The 2005 reading assessment gathered information for more than 177,000 fourth graders nationwide.

Although NAEP is a high-quality database, there are several statistical considerations that researchers must take when analyzing these data. Procedures for weighting, estimating error, calculating degrees of freedom, using plausible values, and handling missing data must all be considered. Likewise, researchers need to understand the structure of the data and the sampling design in order to accurately explore these data.

This study used hierarchical linear modeling in order to explore the relationships between achievement and out-of-school and in-school reading experiences. The models incorporated factors for out-of-school and in-school reading experiences, plausible values for expository text comprehension, a variable representing FARMS eligibility, interaction terms for FARMS and out-of-school and in-school reading, and controls for gender, race, and school type.

CHAPTER IV: RESULTS

Introduction

The purpose of this study was to examine the associations between fourth-grade

children's out-of-school reading experiences, in-school reading experiences, and their

FARMS eligibility, and their abilities to comprehend exposition as indicated by the 2005

NAEP Reading data. This chapter explains the findings from the analyses used to answer

the following three research questions: (a) Are students in some schools better able to

comprehend expository text than students in other schools? (b) What individual reading

experiences are associated with students' comprehension of expository text? (c) What

characteristics of schools are associated with students' comprehension of expository text?

As described in Chapter III, I preceded the hierarchical linear modeling used to analyze

these questions with descriptive analyses of variables of interest and factor analyses to

better understand how the variables measured the broad constructs of out-of-school and

in-school reading experiences. Therefore, I present both the descriptive findings and the

factor analyses results before addressing the results of my three research questions.

When applicable, I provide tables to support my findings. Throughout the description of

the results, I report significance levels at $p < .001$, .01, and .05. However, for the

calculations I conducted using the NAEP Data Explorer, I was only able report

significance levels at $p < .05$ because of limitations with the software.

Children's Expository Text Comprehension

Students' average expository text comprehension ($M = 216$; $SD = 38$) is

statistically significantly lower than both their overall comprehension ($M = 219$; $SD =$

36) and their narrative text comprehension ($M = 222$; $SD = 37$) according to public-use

information available through NAEP's Data Explorer. Table 2 illustrates comprehension

scores of all students on measures of overall comprehension, narrative comprehension,

and expository text comprehension.

Table 2: *Fourth graders' reading comprehension scale scores* [ab]

	Mean	SD
Overall Comprehension	219	36
Narrative Comprehension	222	37
Expository Comprehension	216	38

[a] Analyses are weighted
[b] Note that the mean scores are statistically significantly different from each other at
p<.05.

More interesting are the differences in expository text comprehension between

fourth-grade students of various backgrounds (See Table 3). On a scale of 500, the

average American fourth grader who took the NAEP Reading test scored 216. Female

students (M = 217; SD = 37) performed statistically significantly better than males (M =

214; SD = 38) on measures of expository comprehension, though it was really only a

difference of about a tenth of a standard deviation. However, the differences are much

greater for children coming with low-income or minority backgrounds. Children who

were eligible for Free and Reduced Meals (FARMS) (M = 199; SD = 36) scored .80 of a

standard deviation below children who were not eligible for FARMS (M = 227; SD =

34). This exhibits a considerable disadvantage for low-income children in terms of their

abilities to comprehend exposition, yet is not very surprising given what the literature

already shows about the academic success of low-income children. Similarly, Blacks (M

= 196; SD = 35), Hispanics (M = 198; SD = 37), and American Indians (M = 199; SD =

40) all scored approximately three-quarters of a standard deviation below Whites (M = 226; SD = 34) and Asians/Pacific Islanders (M = 225; SD = 38). Again, this finding is supported in the literature that shows that Blacks and Hispanics regularly struggle to perform at the same levels as Whites and Asians on common measures of academic achievement.

Table 3: *Fourth graders' average expository reading comprehension scale score*[a]

	Mean	SD
All Students	216	38
By Gender		
Male Students	214	38
Female Students	217*	37
By FARMS eligibility		
Eligible	199	36
Not Eligible	227**	34
By Race		
White Students	226	34
Black Students	196***	35
Hispanic Students	198***	37
Asian American/		
Pacific Islander	225	38
American Indian	199***	40

[a] Analyses are weighted
* Score is statistically significantly different than for males at p<.05
** Score is statistically significantly different than for FARMS-eligible students at p<.05
*** Score is statistically significantly different than for White students at p<.05

Children's Reported Out-of-School Reading Experiences

Description of Student Responses

As part of the NAEP Reading Assessment, fourth graders completed a questionnaire containing questions about their attitudes and beliefs about reading and their out-of-school reading experiences. I initially examined 11 of these questions in more detail because of their potential relationship with expository text comprehension.

The following section provides the specific questionnaire items and a description of students' responses to these items (See Table 4).

Table 4: *Descriptive data for student responses regarding out-of-school reading experiences* [a]

	Item #	Mean	SD
Books in Home	B013801	2.95	.973
Magazines in Home	B000905	1.25	.433
Newspaper in Home	B017001	1.49	.500
Encyclopedia in Home	B017201	1.20	.404
Computer in Home	B017101	1.14	.351
Reading is a Favorite Activity	R830601	2.09	.775
Learn when Reading	R830601	2.32	.629
Read on Internet	R831701	2.32	1.21
Read to Learn about Real Things	R831601	2.65	1.16
Talk with Family about Studies	B017451	3.48	1.52
Talk with Friends about Books	R831101	2.48	1.14

[a] Note: Analysis run with ADJUSTEDWEIGHT.

One set of questions asked children to report the reading materials that were available to them at home. To get a sense of how many books were in children's homes, one question posed, "How many books are there in your home?" Students were given four response options: (a) few (0-10), (b) enough to fill one shelf (11-25), (c) enough to fill one bookcase (26-100), (d) enough to fill several bookcases (more than 100). Of all students in this study, 10% reported having 10 or fewer books in their home, 20% stated

they had 11 to 25 books in their home, and 35% responded that they had 26 to 100 books, and the remaining 35% reported having over 100 books in their home.   On average (M = 2.95; SD = .973), children responded that there were slightly fewer than 26 books in his/her home. Four other questions asked children to respond (a) Yes or (b) No to whether or not they had magazines, newspapers, encyclopedias, or computers in their homes. One question was "Does your family get a newspaper at least four times a week?" Approximately 51% of children reported receiving the newspaper at home at least 4 times a week. Another question was "Does your family get any magazines regularly?" About 75% of children responded that their family did regularly get magazines to read. A third question was "Is there an encyclopedia in your home? It could be a set of books or it could be on the computer." Approximately 80% of children reported having access to an encyclopedia in their home. The fourth question asked children "Is there a computer in your home that you use?" Eighty-five percent of children reported that they had access to a computer in their home.

On the questionnaire, children were also asked to respond to two questions about how often they talk to family and friends about school and books. One question was "How often do you talk about things you have studied in school with someone in your family?" Children were given five response options: (a) never or hardly ever, (b) once every few weeks, (c) about once a week, (d) two or three times a week, and (e) every day. Eighteen percent of children reported never or hardly ever talked about school with their families, 13% talked every few weeks, 11% talked once a week, 20% talked 2 to 3 times a week, and 38% talked every day. On average (M = 3.48; SD = 1.52), children reported that they talked to their families about school one to three times a week. Another

question was "How often do you talk with your friends or family about something you have read?" and allowed for the following four responses: (a) never or hardly ever, (b) once or twice a month, (c) once or twice a week, and (d) almost every day. Responses for this question were split fairly evenly across the answers, with 28% never or hardly ever talking about what they read, 19% talking once or twice or twice a month, 29% talking one or two times a week, and 24% talking about what they read every day. On average ($M = 2.48$; $SD = 1.14$), children reported that they talked with friends and family about what they read somewhere between a few times a month to once a week.

Other questions prompted children to respond about their personal reading habits and their beliefs about reading. One item stated "Reading is one of my favorite activities." Children responded that this statement was (a) not like me, (b) a little like me, or (c) a lot like me. Twenty-six percent of children said this statement did not describe them, while 39% reported that it described them a little, and 35% said it described someone that was a lot like them. On average ($M = 2.09$; $SD = .775$), children reported that this statement described someone that was a little like them. Given the same three response choices as the previous question, children were asked to respond to the statement "When I read books, I learn a lot." Children responded that this statement was not like them (9%), a little like them (50%), and a lot like them (41%). On average ($M = 2.32$, $SD = .629$), children said this statement was somewhere between being a little like them and a lot like them. Another question asked children "How often do you read to learn about real things (such as facts about dinosaurs or other countries) for fun outside of school?" Children were given four response choices: (a) never or hardly ever, (b) a few times a year, (c) once or twice a month, and (d) at least once a week. Twenty-three

percent of students reported never or hardly ever reading to learn outside of school, 21%

read to learn a few times a year, 23% read once or twice a month, and 33% read at least

once a week. On average (M = 2.65, SD = 1.16), children reported reading to learn about

new things less than once a month. With same response options as the previous question,

children were also asked "How often do you read stories or articles that you find on the

Internet for fun outside of school?" Children provided varied responses to this question,

with 37% of children never or hardly ever reading on the Internet, 18% of children

reading on the Internet a few times a year, 20% reading on the Internet once or twice a

month, and 25% reading at least once a week. The average child (M = 2.32; SD = 1.21)

reported reading on the Internet a little more than a few times a year.

All of these items are theoretically related to out-of-school reading experiences

that may be associated with expository text comprehension. As described in Chapter II,

students' out-of-school reading experiences are related to their achievement. In

particular, available reading materials (Neuman, 1999), conversations with parents and

friends (Hart & Risley, 1996), motivation to read (Guthrie, 1996), and practice reading

(Snow et al., 1991) may be associated with academic achievement. I used the descriptive

information that I have presented above to inform choices I made during my factor

analysis for out-of school reading items. In the next section I describe the decisions I

made when forming my out-of-school reading factor.

Out-of-School Factor Analysis

The following section explains the results of the factor analysis for out-of-school

reading experiences, including: (1) factor structure and rotation, (2) explained variance,

(3) factor scores, and (4) internal consistency.

Factor Structure and Rotation

Factor analysis was used to determine one factor for out-of-school reading experiences. For the out-of-school factor, 11 items were initially part of the analysis; these items were number of books in the home, presence of a newspaper at home, presence of magazines at home, presence of a computer at home, discussions with family about studies, discussion with friends about books, reading to learn new things, reading is a favorite activity, learn a lot when reading books, and reading stories on the Internet for fun. Five items were dropped from the initial analyses as a result of poor loadings, including: the number of books in the home, the presence of a newspaper at home, the presence of magazines at home, the presence of an encyclopedia at home, and the presence of a computer at home. The fact that these items did not seem to relate as clearly with the other items is not particularly surprising. These items may be more closely linked to students' family income than their out-of-school reading experiences. Likewise, all but one of these variables were dummy-coded or binary variables, so the variance in students' responses to these questions was truncated. Because a single, clear factor was derived from the factor analysis, a rotated solution was not necessary. Findings from this analysis are only representative of this study – another study might produce a different composite of variables in the factor (Gorsuch, 1983). However, this factor can be used as a basis for other studies looking at out-of-school reading experiences. In the future, a more stable factor can be derived from looking at multiple factor analyses over multiple studies.

Explained Variance

The proportion of variance accounted for by the single out-of-school reading factor is 38.75%. As previously mentioned, eigenvalues represent how much variance in a set of variables is explained by a factor. The eigenvalue for this factor was 2.325. According to the Kaiser-Guttman rule (Nunnally & Bernstein, 1994), this eigenvalue implies that this factor explains more than its expected portion of variance between items.

Factor Scores

Factor scores are estimates of students' performance as if the factor had been observed directly in the study (Tabachnick & Fidell, 2007). During factor analysis, factor scores are created and used to create a composite variable in SPSS. I describe the items that make up the factors' composition based on their loadings on the factor. Then, I describe how I determined the name for this factor.

The factor for out-of-school reading engagement is composed of six items with relatively similar loadings. Earlier I mentioned that 11 items were originally part of the initial factor analysis. However, five of these items had considerably lower loadings in comparison to the other six (e.g., below 2.50), and upon removing them from the analysis, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy of the factor increased to .767. As cited in Tabachnick and Fiddel (2007):

> Comrey and Lee (1992) suggest that loadings in excess of .71 (50% overlapping variance) are considered excellent, .63 (40% overlapping variance) very good, .55 (30% overlapping variance) good, .45 (20% overlapping variance) fair, and .32% (10% overlapping variance) poor. (p. 649)

The out-of-school reading engagement factor is composed of six related items mentioned in the previous section (See Table 5). The loadings for these items are as follows: (1) talk with friends about what you read (.683), (2) learn a lot when reading books (.668), (3) reading is a favorite activity (.629), (4) read to learn about real things (.608), (5) talk about studies at home (.594), and (6) read on the Internet for fun (.542). For the most part, these items loaded in the good to very good range. Tabachnick and Fidell (2007) also noted that there is no set rule for choosing a cut-off on factor loading, but that oftentimes it is recommended that researchers look for a gap in the loadings. A significant gap occurred between these six items and the five materials in the home items, resulting in my choice to go with the six items listed above.

Table 5: *Factor loadings for out-of-school factor* [a]

Variables comprising the out-of-school reading factor	Loadings
Talk with friends about what you read	.683
Learn a lot when reading books	.668
Reading is a favorite activity	.629
Read to learn about real things	.608
Talk about studies at home	.594
Read stories on the Internet for fun	.542

[a] Note: Analysis used the adjusted student base weight

I found it interesting, but not surprising, that the out-of-school reading items grouped into one factor. I decided to call this factor "Out-of-School Reading Engagement" because that name captured the essence of the relationship between these items. Each of the variables in the factor described aspects of reading engagement related to expository text comprehension that students engaged in out-of-school (Guthrie, 2004). These variables tapped into the cognitive, motivational, and social aspects of

reading engagement, including students' motivation to read in general and to read exposition, their familiarity with the purposes of exposition, and the frequency of their talk with others about reading.

Internal Consistency Reliability

Cronbach's coefficient alpha (α) is most often used to measure the internal consistency of items (Cronbach, 1951; Pett, Lackey, & Sullivan, 2003). According to DeVellis (2003), internal consistency reliability is the "homogeneity of the items within a scale" found through examining the intercorrelation of items (p. 27). Values of Cronbach's alpha range from zero to one and values closer to one represent higher internal consistency reliability (Pett, Lackey, & Sullivan, 2003). Although Nunnally (1978) recommends an acceptable Cronbach alpha of more than .70 for research tools, this level may be difficult to attain when there are fewer than 10 items in the factor analysis. Cronbach's alpha is influenced by the number of items in the analysis, so with the inclusion of more items, Cronbach's alpha increases. The Cronbach's alpha for the out-of-school reading factor is .651. Although this shows slightly lower reliability than I would optimally desire, this value is likely a result of having relatively few variables in the out-of-school reading factor analysis. However, this low reliability does not bring my findings into question. Instead, this low alpha may imply that I am underestimating the relationships between the constructs of interest.

Children's Reported In-School Experiences

Description of Student Responses

As part of the 2005 NAEP Reading Assessment, students were asked to report on their experiences with a variety of in-school reading experiences. As discussed in

Chapter III, I examined 10 of these items in more detail because of their theoretical

relationship to the types of reading experiences students have in school. The following

section reports my findings from descriptive analyses of these items, including the

specific questions and the children's responses (See Table 6).

Table 6: *Descriptive data for student responses regarding in-school reading experiences*[a]

	Item #	Mean	SD
Reading for Reading	R832401	2.75	1.18
Reading for Science	R832501	2.24	1.15
Reading for Social Studies/ History	R832601	2.32	1.17
Choose Books to Read	R832901	3.09	1.08
Discuss as Whole Class	R831801	2.95	1.13
Discuss in Small Groups	R831901	2.66	1.15
Write Book Reports	R832101	2.76	.35
Make Presentations	R832201	2.20	1.22
Do Projects	R832301	2.40	1.16
Write in Journals	R832001	2.52	1.50

[a] Note: Analysis run with ADJUSTEDWEIGHT

A set of three questions addressed the frequency with which students were

reading for reading, science, and social studies. All three questions gave four options for

answering: (a) never or hardly ever, (b) a few times a year, (c) once or twice a month, and

(d) at least once a week. The first question was "How often do you read paperbacks,

softcover books, or magazines for reading?" Students' responses to this question

spanned across all four choices, with approximately 20% of children answering each of

answers (a), (b), and (c), and 38% of children answering (d) at least once a week. On

average (M = 2.75; SD = 1.18), students reported reading for reading class a little less

frequently than once a month. The second question was "How often do you read

paperbacks, softcover books, puzzle books, or magazines for science?" Students'

responses for this question were a bit different than they had answered for their reading

activities in reading class in that 37% responded that they (a) never or hardly ever read

for science and approximately 20% responded for each of the (b), (c), and (d) choices.

On average (M = 2.24; SD = 1.15), students reported reading in science class a little more

than a few times a year. Student responses to the third question about school reading

activities, "How often do you read paperbacks, softcover books, or magazines for social

studies or history?" were similar to their responses about science reading. Thirty-five

percent of students reported (a) never or hardly ever reading in social studies or history,

while approximately 21% of students responded to each of the (b), (c), and (d) choices.

On average (M = 2.32; SD = 1.17), students responded that the read for social studies or

history slightly more than a few times a year. A fourth, seemingly-related question asked

students "When you have reading assignments in school, how often does your teacher

give you time to read books you have chosen yourself?" The response options for this

question were the following: (a) never or hardly ever, (b) once or twice a month, (c) once

or twice a week, and (d) almost every day. Approximately 13% reported that their

teachers never gave them the opportunity to read their own books, 16% stated that their

teachers let them read their own books once or twice a month, 20% replied that they read

their own books once or twice a week, and 51% of students reported reading their own

books daily. On average (M = 3.09; SD = 1.08), students responded that they were given the opportunity to choose their own books to read approximately once or twice a week.

Other questions were aimed at uncovering the types of classroom talk about reading that occurred in students' classrooms. For each of these questions, students were given four response choices: (a) never or hardly ever, (b) a few times a year, (c) once or twice a month, and (d) at least once a week. The first question related to classroom talk was "For school this year, how often do you have a class discussion about something the class has read?" Sixteen percent of students responded that they never or hardly ever had class discussions, 16% reported that the had class discussions a few times a year, 23% responded that they had discussions once or twice a month, and 44% of students reported having class discussions at least once a week. On average (M = 2.95; SD 1.13), students reported that their class discussed what they were reading approximately monthly. The second question regarding classroom talk was "For school this year, how often do you work in pairs or small groups to talk about something you have read?" Students' responses were varied, with 21% reporting that they never or hardly ever worked in groups, 17% reporting they worked in groups a few times a year, 25% reporting that they worked in groups once or twice a month, and 29% reporting they worked in groups at least once a week. On average (M = 2.66; SD = 1.15), students reported participating in small group discussions about what they read less than once a month.

Other questions had students report the frequency that they engaged in written or oral activities related to their reading. For the questions regarding book reports, presentations, and school projects, students were given five options for responses: (a) never, (b) once, (c) 2 or 3 times, (d) 4 or 5 times, and (e) 6 or more times. The first

question was "So far this year, how many times have you written a book report. Twenty-three percent of students responded that they had not written a book report this year, 20% reported that they had written one, 29% responded that they had written 2 or 3, 12% reported that they had written 4 or 5, and 16% claimed they had written 6 or more book reports. On average (M = 2.76; SD = 1.15,), students reported writing less than 2 book reports so far that year. The second question was "So far this year, how many times have you made a presentation to the class about something you have read?" Students' responses were varied, with 39% of students who never made presentations, 24% of students made one presentation, 23% made 2 or 3 presentations, 8% made 4 or 5 presentations, and 7% made 6 or more presentations. On average (M = 2.20; SD = 1.22), students reported making a little more than one presentation in fourth grade about something they have read. The third question was "So far this year, how many times have you done a school project about something that you have read?" Approximately 26% of students reported that they had never done a project this year. Almost 30% of student indicated that they had done a project once, about 29% reported that they did two or three projects, approximately 9% responded that they had done three to five projects, and 6.6% of students reported that they did six or more book-related projects that year. On average (M = 2.40; SD = 1.16), students indicated that they did one or two text-related projects a year. A fourth question, "For school this year, how often do you write in a journal about something you have read for class?" provided four different response options: (a) never or hardly ever, (b) a few times a year, (c) once or twice a month, and (d) at least once a week. Approximately 37% of students responded that they never or hardly ever wrote in journals, 15% reported that they wrote in journals a few times a year,

19% responded that they wrote in journals once or twice a month, and the remaining 29% of students reported writing in journals at least once a week. On average (M = 2.52; SD = 1.50), students reported writing in journals about what they read less than once a month.

The descriptive data for each of the items above were taken into account when conducting the factor analysis for items related to in-school reading experiences. Each of the above items was included in initial factor analyses, but some were dropped when they were found to have low internal consistency with the other items.

<div align="center">In-School Factor Analysis Results</div>

The following section explains the results of the factor analysis for in-school reading experiences, including: (1) factor structure and rotation, (2) explained variance, (3) factor scores, and (4) internal consistency.

Factor Structure and Rotation

Factor analysis was used to determine three distinctly independent factors for in-school reading experiences. For the in-school reading factor, 10 items were part of the initial analysis, including: reading books for reading, reading books for science, reading books for social studies/history, choice of own books for reading, whole class discussion, grouping for instruction, doing projects about books read, doing book reports about books read, doing presentations about books read, and writing in journals about books read. After initial analyses, choice of own books for reading and writing in journals about books read were dropped from the analysis because they had very low loadings. It is likely that the variance was truncated as a result of the poor psychometric designs of these two questions. When the remaining items were run, three strong and distinctly

different factors emerged which I have named Cross-Curricular Materials, Discussion, and Reading-Related Activities. Orthogonal rotation was used in solving this factor because when the orthogonal rotation was compared to the oblique rotation, there were indiscernible differences in the amount of variance explained and the strength of the factor loadings. As with the out-of school reading factor, the in-school reading factors are specific to this study and would require comparison with other studies in order to make more sense of how these factors are representative of this phenomenon (Gorsuch, 1983).

The Cross-Curricular Materials factor describes the types of book and magazine reading that occurs in reading, science, and social studies/history. The mean for each of the factors' three items are book and magazine reading in reading (M = 2.75; SD = 1.18), in science (M = 2.24; SD = 1.15), and social studies/history (M = 2.32; SD = 1.17). The difference in the amount of reading students' report during formal reading instruction, as compared to reading during content area instruction (science and social studies/history) may be a result of schools adapting classroom instruction to mirror the demands of federal legislation such as No Child Left Behind. It is likely that many students are engaging in reading instruction fairly frequently, yet, they read outside the context of the reading block only a few times a year. The Cross-Curricular Materials factor emerged as the strongest both conceptually and statistically. Regardless of the rotation method chosen, these factors were extracted in the same order with similar loadings. This factor also carried the highest amount of variance explained (28.01%), meaning that the use of books and magazines in reading, science, and social studies/history was responsible for 28.01% of the variance in relation to in-school reading experiences.   However, the

phrasing of each of these questions was nearly identical, therefore that should also be considered as a plausible reason for the grouping of these variables.

The second factor to emerge from the analysis was Reading-Related Activities. This factor described activities such as book reports, projects, and presentations that may enable or require students to think about what they read beyond the literal level. The mean score for book reports was 2.76 (SD = 1.35), for projects was 2.40 (SD = 1.16), and for presentations was 2.20 (SD = 1.22), with an overall factor mean of -.0165 (SD = .384). This factor was the second strongest, explaining an additional 15.53% of the variance beyond that explained by the Cross-Curricular Materials factor. Although these variables clearly were conceptually-related, another reason for this grouping was that the wording of these questions was similar and the same response options were available for each question.

The third, and weakest, factor to emerge from the analysis was the Discussion factor and included both classroom discussions about books the class has read and students' work in groups about what they have read. Classroom discussions about books read had a mean of 2.95 (SD = 1.13) whereas students' work in groups about things read had a mean of 2.66 (SD = 1.15). This results in an overall mean for the factor of -.007 (SD = .429). The discussion factor explained an additional 12.69% of the variance beyond the Cross-Curricular Materials factor and the Reading-Related Activities factor. In addition to the theoretical connection between these items, the fact that the wording of these questions was quite similar and the response options were identical should be considered as a possible reason for why these variables may have grouped together for this factor.

Explained Variance

The total variance explained from the three in-school reading factors was 57.03%. Individually, Cross-Curricular Materials explained 28.81%, Reading-Related Activities explained 15.53%, and Discussion explained 12.69%.

Factor Scores

Factor scores were calculated by SPSS and saved for each of the three in-school reading factors. In this section, I review the items associated with each factor and their corresponding loadings. I also describe how I decided on the names for the three factors. The discussion of the in-school reading factors is based on an analysis that was rotated orthogonally using Varimax (See Table 7).

Table 7: *Factor analysis of in-school reading variables* [ab]

Variables comprising the in-school factors	Factor 1 loadings	Factor 2 loadings	Factor 3 loadings
Read books or magazines for science	.789		
Read books or magazines for social studies/history	.778		
Read books or magazines for reading	.618		
Make a presentation about something read		.741	
Write a book report		.715	
Do a school project about something read		.715	
Class discussion about something read			.786
Work in small groups to talk about something read			.738

[a] Rotated using Varimax rotation
[b] Weighted using student base weight

The first factor was made up of the following three items and their corresponding loadings: (1) read books or magazines for science (.789), (2) read books or magazines for social studies or history (.778), and (3) read books or magazines for reading (.618). According to Comrey and Lee (1992), both reading in science and in social studies had excellent loadings, and reading in reading class had a good loading. I decided to call this factor "Materials for Cross-Curricular Reading" because each of the three items addressed reading materials other than textbooks in different areas of the curriculum. Because much of the science, social studies, and history reading is likely to be exposition,

students who report frequently reading in these areas may be more prepared to read exposition.

The second factor to emerge from the analysis was made up of three items and the following loadings: (1) make a presentation about something read (.741), (2) write a book report (.715), and (3) do a project (.715). All three of these items loaded at Comrey and Lee's (1992) excellent level. I named this factor "Reading-Related Activities" because if these activities were effectively designed and implemented by teachers they might have engaged students in critical thinking about texts. The higher-order thinking skills potentially associated with these activities might better prepare students to face the demands of exposition.

The third factor consisted of two items and their corresponding loadings: (1) class discussion about reading (.786) and (2) work in groups to talk about something read (.739). Both factors loaded at levels which Comrey and Lee (1992) designate as excellent. I called this factor "Discussion about Reading" because both items described the frequency with which students talked with teachers and peers about texts they have read.

Internal Consistency Reliability

As previously mentioned, Cronbach's alpha (α) is traditionally used to assess the reliability of whether these different variables are measuring the same construct. Overall, for the in-school factors Cronbach's alpha was .641. Again, while this is slightly below the traditionally acceptable level, this alpha may be a result of having fewer than 10 items in the analysis. More items would likely bump Cronbach's alpha higher. The alphas for the individual in-school factors were as follows: Materials for Reading (α = .593),

Reading-Related Activities (α = .570), and Discussion (α = .396). These low reliability

coefficients do not bring my findings into question. If anything, these coefficients

suggest that I might be underestimating the associations between the constructs of interest

in my study.

<div align="center">Variance in Expository Text Comprehension between Schools</div>

The purpose of the first research question, "Are students in some schools better

able to comprehend expository text than students in other schools?" was to justify the use

of hierarchical linear modeling (HLM) in this study. The first step when doing any HLM

is to run a fully unconditional model, an analysis which is comparable to a one-way

ANOVA with random effects (Bryk & Raudenbush, 1992). This model determines the

variance in expository text achievement within schools (σ^2) and between schools (τ_{00})

without taking any other variables into account. The fully unconditional model for this

study was the following:

$$\text{EXPOSITORY COMPREHENSION} = \gamma_{00} + u_{0j} + r_{ij}$$

where γ_{00} is equal to the grand mean of expository achievement in the population, u_{0j} is

the random effect of school j, and r_{ij} is the error associated with individual i.

I calculated the *intraclass correlation* which is the proportion of variance that

occurs between schools. The equation for this calculation is as follows:

$$\textit{Intraclass correlation} = \tau_{00}/(\tau_{00} + \sigma^2)$$

where τ_{00} is equal to the between school variance and σ^2 is equal to the within school

variance. For this study, τ_{00} was 330.55 and σ^2 was 1079.94 which resulted in an

interclass correlation of 0.234 (See Table 8). Therefore, 23.4% of the variance in

expository text achievement occurred between schools. Because so much variance would

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have been left unexplained in a basic regression model, this interclass correlation means

that the use of HLM was warranted in this analysis.

Table 8: *Results from one-way ANOVA model* [a]

Fixed Effect	Coefficient	se
Average Expository Text Comprehension γ_{00} (τ)	214.58	.317

Random Effect	Variance component	df	Chi-Square	p
Average Expository Text Comprehension u_{0j}	330.55	8615	55992.28	.000
Level-1 effect r_{ij} (σ^2)	1079.94			

[a] Note: Analysis done with adjusted school weight, SCHOOLWEIGHT.

Individual Experiences Associated with Expository Text Comprehension

The purpose of the second research question, "What individual reading

experiences are associated with students' comprehension of expository text?" was to

better understand what out-of-school and in-school reading experiences were associated

with students' expository text comprehension. This next section reports the findings of

three sub-questions: (a) Do students' out-of-school reading experiences predict their

comprehension of expository text when controlling for students' gender, FARMS

eligibility, and race? (b) Do students' in-school reading experiences predict their

comprehension of expository text when controlling for gender, FARMS eligibility, and

race? and (c) Do these reading experiences predict students' comprehension of expository

texts equally well for FARMS and non-FARMS students, when controlling for gender

and race?

Out-of-School Reading Experiences Associated with Expository Text Comprehension

I wanted to know, "Do students' out-of-school reading experiences predict their comprehension of expository text when controlling for students' gender, FARMS eligibility, and race?" To answer this question, I examined the within-school results from the full model for out-of-school reading engagement (See Table 9). This within-school model accounted for 10.2% of the group variance (σ^2) beyond that explained in the unconditional model. In this study, a SD increase in the frequency students' engaged in out-of-school reading activities (e.g., discussions with family and friends about books, reading to learn, reading on the Internet, etc.) resulted in a 6.29 point positive association with their overall expository text comprehension score, regardless of their race, gender, or FARMS eligibility.

Table 9: *Results for the within-school model (out-of-school reading)* [ab]

Fixed Effect	Coefficient	se	t-ratio
Overall Mean 4th grade expository text achievement γ_{00}	214.57	.22	973.37***
Mean out-of-school (OOS) reading - achievement slope γ_{10} 6.29		.18	35.23***
Mean minority - achievement slope γ_{20}	-13.30	.45	-29.72***
Mean FARMS-eligible - achievement slope γ_{30}	-13.10	.45	-28.84***
Mean female – achievement slope γ_{40}	2.11	.26	8.24***
Mean FARMS*OOS reading – achievement slope γ_{50}	-2.70	.24	11.13***

Random Effect	Variance component	df	Chi-Square
4th grade expository text achievement Level-1 effect r_{ij}	109.22	8611	25029.61***

[a] Note: Analysis done with adjusted school weight, SCHOOLWEIGHT.
[b] *, **, and *** significant at .05, .01, and .001 levels, respectively, using two-tailed t-tests.

In both the out-of-school within-school model (See Table 9) and the in-school within-school model (See Table 10), I controlled for race, FARMS eligibility, and gender. The coefficients for these variables were similar across models, so for the sake of clarity I will interpret them from the out-of-school model. Although these coefficients might vary slightly in the in-school model, the interpretations here also apply for that model. Students' race was statistically significantly associated with expository text achievement. On average, Black, Hispanic, Native American, or Native Alaskan students scored 13.30 points below their White and Asian peers. Students' FARMS eligibility was also statistically significantly associated with their expository text comprehension. On average, FARMS eligibility was associated with an expository text score that was 13.10 points below those ineligible for FARMS. Finally, gender was also statistically significantly associated with expository text comprehension. On average, female students scored 2.11 more points than male students.

In-School Reading Experiences Associated with Expository Text Comprehension

Next, I wanted to know "Do students' in-school reading experiences predict their comprehension of expository text when controlling for gender, FARMS eligibility, and race?" I answered this question by examining the within-school results from the complete HLM model for in-school reading experiences (See Table 10). This study examined three facets of in-school reading: (1) materials used in reading, science, social studies, and history, (2) reading-related activities such as book reports, projects, and presentations, and (3) discussions about readings as a class or in small groups. This within-school model accounted for 11.1% of the group variance (σ^2) beyond that explained in the unconditional model.

Table 10: *Results for the within-school model (in-school reading)*

Fixed Effect	Coefficient	se	t-ratio
Overall Mean 4th grade expository text achievement γ_{00}	214.86	.22	984.55***
Mean minority - achievement slope γ_{10}	-12.83	.45	-28.54***
Mean FARMS-eligible - achievement slope γ_{20}	-12.86	.46	-28.02***
Mean female – achievement slope γ_{30}	3.37	.26	12.97***
Mean materials for reading - achievement slope γ_{40}	1.10	.18	6.05***
Mean reading-related activities - achievement slope γ_{50}	-3.67	.20	-18.05***
Mean discussion of readings - achievement slope γ_{60}	3.29	.18	18.43***
Mean FARMS*Materials – achievement slope γ_{70}	-0.25	.23	-1.13
Mean FARMS*Discussion – achievement slope γ_{80}	0.58	.26	2.23*
Mean FARMS*RRA – achievement slope γ_{90}	-1.82	.25	-7.29***

Random Effect	Variance component	df	Chi-Square
4th grade expository text achievement Level-1 effect r_{ij}	108.00	8609	24011.50***

[a] Note: Analysis done with adjusted school weight, SCHOOLWEIGHT.
[b] *,**, and *** significant at .05, .01, and .001 levels using two-tailed t-tests.

For every SD increase in the frequency in which students reported reading soft cover books and magazines frequently during reading, science, social studies, and history, students gain approximately a point on their expository comprehension score (p < .001). For every SD increase in the frequency in which students reported doing book reports, making presentations, and doing projects related to books, students' scores on measures of expository comprehension declined by 3.67 points (p < .001). Finally, a SD in the frequency in which students reported talking about what they read as a class and in

small groups, was positively associated with 3.29 points on their expository text comprehension score (p < .001).

The Importance of Out-of-School and In-School Reading for FARMS-Eligible Students

Some out-of-school and in-school experiences are associated with FARMS-eligible students' achievement in ways that are different than non-FARMS-eligible students.

Although there is a positive association between out-of-school reading engagement and achievement for all students, the association varied with students' FARMS status. The coefficient for FARMS-eligible students was 2.11 points lower than the coefficient for non-FARMS-eligible students (p < .001). As for in-school reading experiences, some factors appeared to be more highly associated with FARMS-eligible students' expository text achievement than others. Using materials across the curriculum provided no statistically different associations for FARMS-eligible students than for non-FARMS-eligible students. The strength of the negative association between reading-related activities (e.g., book reports, presentations, and projects) and expository text comprehension varied with students' FARMS status. The coefficient for FARMS-eligible students was 1.82 points lower than the coefficient for non-FARMS-eligible students. The strength of the positive association between student participation in whole-class or small-group discussions and achievement also varied according to students' FARMS status. The coefficient for FARMS-eligible students was .58 points higher than the coefficient for non-FARMS-eligible students.

School Characteristics Associated with Expository Text Comprehension

The purpose of the third research question, "What characteristics of schools are associated with students' comprehension of expository text?" was to explore the relationship between schools' average out-of-school and in-school reading and their average expository text comprehension. This section reports the findings for two sub-questions: (a) Do schools where students have more out-of-school reading experiences have higher levels of average expository text comprehension by their students when controlling for average school FARMS eligibility, race, and school type? (b) Do schools where students have more in-school reading experiences have higher levels of average expository text comprehension by their students when controlling for average FARMS eligibility, race, and school type? As explained in Chapter III, the original research project proposed a third research question, "Do these schools' characteristics predict average levels of students' comprehension of expository texts equally well for high-FARMS and low-FARMS schools when controlling for average school race and school type?" However, I was not able to answer this question in my analysis because there was not much variability in how FARMS status was associated with students' out-of-school and in-school reading experiences in across schools. One reason for this low variability is the way that NAEP calculates the plausible values for students by comparing their performance to students of similar backgrounds. This method can result in truncated variance in students' achievement.

School-Wide Out-of-School Reading's Relation to

Average School Expository Text Comprehension

With the question, "Do schools where students have more out-of-school reading experiences have higher levels of average expository text comprehension by their students when controlling for average school FARMS eligibility, race, and school type?" I wanted to know whether the out-of-school reading practices of students in a school were associated with the school's performance on measures of expository text comprehension. This between-school model accounted for 66.8% of the group variance (τ_{00}) beyond that explained in the within-school model. In this study, a SD increase in the school average of students reported frequency of out-of-school reading engagement is associated with an 8.59 point association with their comprehension of exposition (See Table 11). In other words, students in schools with other kids who engage in various out-of-school reading activities have a statistically significant positive association with achievement above and beyond that of just engaging in out-of-school reading on their own.

Table 11: *Results for the between-school model (out-of-school reading)* [ab]

Intercept γ_{00}	
4th grade expository text achievement γ_{00}	214.56***
Proportion Minority γ_{01}	-6.16***
Proportion FARMS eligible γ_{02}	-10.01***
Private school γ_{03}	2.61*
Mean out-of-school reading γ_{04}	8.59***
Out-of-school reading γ_{10}	6.29***
Minority γ_{20}	-13.30***
FARMS eligible γ_{30}	-13.10***
Female γ_{40}	2.11***
FARMS*OOS reading γ_{50}	-2.70***

[a] Note: Analysis done with adjusted school weight, SCHOOLWEIGHT.
[b] *,**, and *** significant at .05, .01, and .001 levels, respectively, using two-tailed t-tests.

As in the within-school models, controls were used in this study to account for some of the variability in students' expository text comprehension between schools. In examining differences between schools, I controlled for school type, FARMS eligibility, and race. The coefficients for the controls were similar for both the out-of-school (See Table 11) and the in-school (See Table 12) models. For the purposes of reporting the results, I report on the controls from the out-of-school model, while acknowledging there might be slight, but insignificant differences, in the coefficients in the in-school model. In this study, attending a private school was associated with an additional 2.61 points on measures of expository text achievement ($p<.05$). Also, the proportion of minorities in the school and the proportion of FARMS-eligible students in the school both statistically significantly contributed to students' comprehension of exposition. A SD increase in the proportion of FARMS-eligible students in a school was associated with a 10.01 point deficit in students' expository comprehension scores. Similarly, a SD increase in the proportion of minority students in a school was associated with a 6.16 point deficit in students' expository comprehension scores.

School-Wide In-School Reading's Relation to Average

Expository Text Comprehension

I also wanted to know, "Do schools where students have more in-school reading experiences have higher levels of average expository text comprehension by their students when controlling for average FARMS eligibility, race, and school type?" To answer this question, I examined the full between-school model (See Table 12). As previously stated, three aspects of in-school reading experiences were explored: (1) Materials used in reading, science, social studies, and history, (2) Reading-related

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activities such as book reports, projects, and presentations, and (3) Discussions about

readings as a class or in small groups. This between-school model accounted for 66.6%

of the group variance (τ_{00}) beyond that explained in the unconditional model.

Table 12: *Results for the between-school model (in-school reading)* [a][b]

Intercept γ_{00}	
4th grade expository text achievement γ_{00}	214.86***
Proportion minority γ_{01}	-5.67***
Proportion FARMS eligible γ_{02}	-9.69***
Mean materials for reading γ_{03}	3.46***
Mean reading-related activities γ_{04}	-0.84**
Mean discussion of readings γ_{05}	5.49***
Private school γ_{06}	3.20**
Minority γ_{10}	-12.83***
FARMS eligible γ_{20}	-12.86***
Female γ_{30}	3.37***
Materials for Reading γ_{40}	1.10***
Reading-related activities γ_{50}	-3.67***
Discussion of Readings γ_{60}	3.29***
FARMS*Materials Interaction γ_{70}	-.025
FARMS*Discussion Interaction γ_{80}	0.58*
FARMS*RRA Interaction γ_{90}	-1.82***

[a] Note: Analysis used adjusted school weight, SCHOOLWEIGHT.
[b] *,**, and *** significant at .05, .01, and .001 levels, respectively, using two-tailed t-tests.

A SD increase in the school average of students' reported frequency reading of soft cover books and magazines in reading, science, social studies, and history is positively associated with 3.46 points on measures of expository text comprehension (p < .001). The school average of students' reported frequency of reading-related activities such as reports, presentations was associated with a -.84 point decline in expository text comprehension (p < .01). Finally, a SD increase in the school average of students' reported frequency of whole class and small group discussions had a 5.49 point positive association with their expository text comprehension score (p < .001). There were statistically significant contextual effects for students who were in schools where students report reading across the curriculum and discussing books as a whole class or in small groups meaning that the coefficient associated with being in a school where students report these activities resulted in a stronger than expected association with achievement

scores (based on how these variables were related to student achievement at the individual level). More specifically, being in a school with students' who reported reading across the curriculum was associated with a contextual effect of 2.36 points, and being in a school with students' who reported discussing books was associated with a contextual effect of 2.20 points.

Summary

This chapter presented results from a study that examined out-of-school and in-school reading experiences that were associated with fourth graders' expository text comprehension on the 2005 NAEP reading assessment. This study also examined the association between children's eligibility for FARMS and their comprehension of exposition. In this chapter, I reviewed findings from the descriptive analyses of variables of interest, factor analyses, and the HLMs.

In the factor analyses, one factor emerged from the analysis of variables related to out-of-school reading experiences. This factor, entitled "Out-of-School Reading Engagement," was a composite of six items: (1) discussions with family about studies, (2) discussion with family and friends about things read, (3) reading on the Internet for fun, (4) reading as a favorite activity, (5) reading to learn about real things, and (6) learn a lot when reading. For the factor analysis of items related to in-school reading experiences, three factors emerged. The first factor, entitled "Materials for Reading," included three variables related to reading across the curriculum: (1) read soft-covered books or magazines for reading, (2) read soft covered books or magazines during science, and (3) read soft-covered books for social studies or history. The second factor, entitled "Reading-Related Activities" included three variables that could be related to helping

students expand their understandings of the text: (1) writing book reports, (2) making presentations about books read, and (3) doing projects about books read. The third factor that emerged was entitled "Discussions," and included two variables: (1) talking about books as a class and (2) talking about books in small groups. All of the above-described factors were used in the HLM analyses.

In this chapter, I summarized the results from my HLM analyses. Table 13 provides a general review of the findings for each of my research questions.

Table 13: *Table of HLM results*

Question	Findings
1. Are students in some schools better able to comprehend expository text than students in other schools?	Students in some schools are better able to comprehend exposition than students in other schools.
2. What individual reading experiences are associated with students' comprehension of expository text?	(a) Out-of-school reading was associated with higher expository text comprehension. FARMS students' out-of-school reading was associated with expository text comprehension, but not as much as for other students. (b) Discussion about books and cross-curricular reading were positively associated with expository text comprehension. FARMS students who engaged in discussion and cross-curricular reading did not perform any differently than fourth graders overall. (c) On average, fourth graders' participation in reading-related activities was associated with lower expository text achievement. These activities were associated with even lower expository text achievement for FARMS students.
3. What characteristics of schools are associated with students' comprehension of expository text?	(a) On average, students in schools with other students who reported engaging in out of school reading activities had higher expository text comprehension. (b) On average, students in schools with other students who reported engaging in cross-curricular reading and discussions had higher expository text achievement. (c) On average, being in schools with other students who reported doing reading-related activities was not associated with expository text comprehension.

In the next chapter I explain possible explanations for the above-listed results and suggest

possible research implications for these findings.

CHAPTER V: DISCUSSION

Introduction

Chapter V is organized into four sections. First, I provide a summary of the study's rationale, purpose, research questions, and methodology. Next, I present a summary and discussion of the results. Third, I address the limitations of the study. And finally, I conclude this chapter with implications for future educational research based on the study.

Three research questions guided this study: (a) Are students in some schools better able to comprehend expository text than students in other schools? (b) What individual reading experiences are associated with students' comprehension of expository text? and (c) What characteristics of schools are associated with students' comprehension of expository text?

Summary of Study

As a result of federal education mandates that have been enacted in the last decade, schools are under increasing pressure to close the achievement gap between disadvantaged students and their peers (USDE, 2002). Despite these initiatives, low-income and minority students' reading achievement has barely improved since the No Child Left Behind (NCLB) initiative was put into place in 2001 (Chudowsky, Chudowsky, & Kober, 2007). Recently a study found that although Reading First (a policy designed to contribute to the closing of the achievement gap for students in grades one through three) was linked to increased time in students' exposure to phonological awareness, phonemic awareness, fluency, vocabulary, and comprehension instruction, this initiative was not associated with reading achievement (Gamse, Bloom, Kemple, &

Jacob, 2008). One hypothesis for why children (particularly low-income children) continue to lag in performance is that these children are unprepared to read the expository texts that are a central part of learning in late elementary, middle, and high school (Chall, Jacobs, & Baldwin, 1990). Although many children have little experience reading these texts, either in or out of school, low-income children may have had even less exposure to these texts, and subsequently, less background knowledge on relevant concepts and strategies needed to comprehend these texts.

Children from low-income homes often lack support and resources both in and out of school. Low-income children often have less access to reading materials and lower quality interactions with family and friends (Hart & Risley, 2002; Heath, 1983; Lareau, 1989; Neuman, 1999; Snow, et al., 1991; Sonnenschein & Schmidt, 2000). General research has also shown that low-income children are often in schools with other low-income children, a combination that frequently results in even more distressing academic situations for these children (Darling-Hammond, 1995; Leventhal & Brooks-Gunn, 2000). For instance, low-income schools are likely to have inadequate teachers, materials, and general resources – all factors that impact student achievement (Darling-Hammond, 1995; Kozol, 1991).

The purpose of this study was to understand the relationships between students' out-of-school and in-school reading experiences and their expository text comprehension and to examine how the relationships between these factors might differ for low-income students. This study was a secondary analysis of data from the 2005 fourth-grade, National Assessment of Educational Progress (NAEP) reading assessment. Data were collected and compiled by the National Center for Educational Statistics (NCES) and its

associates. In this secondary analysis, four main statistical techniques were used. First, I

obtained general descriptive information through SPSS on variables of interest. Then, I

conducted basic analyses of expository text comprehension differences (t-tests) with the

NAEP Data Explorer to ensure that I used proper weighting procedures. Next, I used the

factor analysis function in SPSS to develop reliable out-of-school and in-school reading

factors with variables of interest. Finally, I developed two-level hierarchical linear

models to examine the impact of income, out-of-school reading experiences, and in-

school reading experiences on fourth graders' comprehension of exposition.

<div align="center">Summary of Results and Discussion</div>

In the following section, I summarize the results first presented in Chapter IV and

discuss, in more detail, the meanings of these findings. First, I review the results for

factors that were associated with expository text comprehension. Then, I describe and

discuss the findings regarding the achievement and experience differences of FARMS

students.

<div align="center">*Indicators of Expository Text Comprehension*</div>

On the 2005 NAEP reading assessment, students generally struggled to

comprehend exposition in comparison to narrative texts. Differences in expository

comprehension were also significant for students of various socioeconomic backgrounds,

races, and genders. In this study, I explored factors that might be related to these gaps in

achievement.   I found that both out-of-school and in-school reading experiences were

associated with students' expository text comprehension. In the following paragraphs, I

review my findings and then hypothesize plausible explanations for these results based on

the available relevant literature.

Out-of-School Reading Engagement

In this particular study, a SD increase in the frequency of out-of-school reading engagement was positively associated with 6.29 points in expository text achievement. The correlation between out-of-school reading engagement and expository text achievement is not particularly surprising given the available research in this field. In this section I provide possible explanations for this significant positive association with achievement based on other studies related to the variables that make up the factor composite: (a) reading motivation, (b) reading frequency, and (c) discussions with family and friends about reading.

Children who enjoy reading and who are motivated to read from multiple genres of texts may be more prepared to handle the cognitive demands of reading exposition. Expository texts require readers to interact with texts in a way that is different than the way in which most children read narrative texts. Rosenblatt (1978) noted that exposition is often meant to be read *efferently*. In other words, readers read exposition with the main purpose of gaining information rather than *aesthetically*, or reading for enjoyment. Although most often a reader's purpose falls somewhere between aesthetic and efferent stances, his or her purpose when reading exposition is usually more on the efferent side of the continuum. Readers who have experiences reading exposition may be better able to differentiate between narrative and expository texts (and the purposes of these texts). Even the research focused on young children's differentiation between narrative and expository texts has supported the notion that with exposure, children are able to recognize the different purposes of these texts (Duke & Kays, 1998).

When children frequently read exposition, they are likely to gain knowledge of the structures, features, and the purposes for reading exposition. In Duke and Kay's (1998) study, children who were exposed to exposition were able to recognize that expository texts have particular structural and linguistic features. Pappas (1991) also found that the ability to read exposition was not developmental, and that even kindergarteners could pretend read exposition after exposure to this genre. Pappas' research is aligned with that of other researchers who have argued that although younger children have the abilities to comprehend exposition, it can be more difficult than narrative for children to understand, with its varying text structures and technical vocabulary (Chambliss & Calfee, 1998; Langer, 1986). Others have disagreed, saying that students are not necessarily ready to read exposition until they are older, skilled readers.

Another reasonable explanation for the association between students' out-of-school reading and expository text comprehension is that when children talk (and potentially summarize) what they read with their family and friends they may develop a better understanding of what they have read. More knowledgeable caregivers can scaffold unfamiliar vocabulary and concepts, bridge students' background knowledge with the text, and provide models of good reading habits. In addition, when children talk to their peers about what they read it can create both a sense of community and enhance their understanding of the text. Peers can introduce ideas and insight about the text that children may never have come up with themselves. Also, children often read books recommended by peers (often particular series) because it can be a way to become socially accepted (Fleener, Morrison, Linek, & Rasinski, 1997; Moss & McDonald, 2004;

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Timion, 1992). The sharing of books with peers can lead to more active and frequent reading.

Being in a school with other children who reported frequently engaging in out-of-school activities also appeared to be related to children's expository text comprehension. Every SD increase in a school's average reported frequency of engaging in out-of-school reading engagement was associated with an 8.59 point positive association with achievement. Students in schools where other kids experienced out-of-school reading engagement may have been surrounded by students who were motivated to read, had a lot of practice reading, and were more prepared to talk about what they have read. Therefore, even if students do not have particularly frequent out-of-school reading engagement themselves, the motivation and practice of their peers may carry over to their own school practices. For example, studies have shown that oftentimes students' self selection of reading materials is based on peer recommendations (Fleener, Morrison, Linek, & Rasinski, 1997; Moss & McDonald, 2004; Timion, 1992). If students do not read often at home, but have peers who read often and make recommendations, students may have a better time selecting books that are of interest to them. Although these books may not be read by these students outside of school, they may read them during independent reading times at school. Students might take the opportunity to read peer recommended books during school because they are interested in the content, expected to read by teachers, or motivated to engage in socially-accepted activities. In schools where students do not value reading activities outside of school, students may be less likely to be in school with peers who would find it socially acceptable or important to read in school.

In-School Reading Experiences

The experiences that children have with reading in schools are important for their understanding of exposition, because schools often provide opportunities for students to read from different genres, respond to texts in multiple ways, and to discuss texts they have read. In this section I review how individual and school-wide engagement in these activities was associated with expository text comprehension.

Reading across the curriculum. Reading softcover books and magazines in science, social studies, history, and reading is positively related students' expository comprehension. A SD increase in students' frequency of reading softcover books and magazines across the curriculum was positively associated with 1.10 points in expository text achievement. This relationship is not surprising given that softcover books and magazines are likely to be more accessible expository texts for fourth graders than the typical textbook. Expository trade books are often visually engaging, focused on a specific topic, and written at a level that students can understand (Moss, 2004). Textbooks, on the other hand, often give general information about multiple topics, not delving deeply into any particular subject (Chambliss & Calfee, 1998). Likewise, textbooks are often written by experts in various fields (i.e., geology, American history), while the majority of trade books are written by authors who write for children (Moss, 2004).

In addition to potentially substituting for or supplementing textbook instruction, reading softcover books and magazines across the curriculum is likely to expose children to expository texts. In these experiences, children gain familiarity with exposition's structures, purposes, and features. In instruction with these texts, teachers may be

engaging students in activities and strategy instruction that have been shown to enhance student comprehension, such as pulling information from multiple texts, answering questions, making inferences, making connections, and writing about what they have learned (Harvey & Goudvis, 2000; NICHD, 2002; Pressley & Afflerbach, 1995). All of these strategies are measured by NAEP, and in order to get a high score on the assessment, students are required to use these strategies with expository texts (NCES, 2007g).

Likewise, the school-wide reported frequency of reading across the curriculum was also statistically significant. A SD increase in the school average of students' reported frequency of reading softcover books and magazines in science, social studies, history, and reading was associated with a 3.29 point positive association with expository text achievement. As mentioned in Chapter IV, there is a contextual effect associated with being in a school where students reported reading across the curriculum. This means that being in a school where students report these activities was associated with a higher than expected association with achievement, based on how reading across the curriculum was related to student achievement at the individual level. There are many plausible explanations for this increase. First, teachers in schools where students reported reading frequently across the curriculum may know that reading is not an isolated subject and that reading instruction can be integrated across the content areas throughout the school day. When students read during science, social studies, history, and reading they likely have had experience with different genres of text during classroom instruction. As previously mentioned, students who have practice reading exposition may be better prepared to handle these texts. Schools where children report reading across the

curriculum may also have a school culture that values "reading to learn" and sparks

curiosity. Given the fact that students cite an equal affinity for narrative and expository

texts (Chapman, et al., 2004), students in schools with positive learning cultures might be

more inclined to read expository texts.

Activities related to reading. It would be reasonable to think that activities that

engaged students in thinking about what they read would be related to higher

achievement. However, this study found that a SD increase in students' frequency of

engaging in reading-related activities such as writing book reports, making presentations,

and doing projects was associated with a 3.67 point drop in expository text achievement.

Although these results differed from my original hypothesis, I was not surprised.

In designing this study, I initially contended that writing book reports, making

presentations, and doing projects could result in students further their thinking about

texts. However, in order for these activities to extend thinking, I acknowledge that

teachers need to be applying these activities carefully as part of their instruction (Atwell,

1998). Students likely need clear directions as to how to complete these activities,

support when doing these activities, and clear purposes as to why they are doing these

activities (Many, Fry, Lewis, & Mitchell, 1996). It is possible that teachers assign these

activities as busywork or because they are unaware of other ways of how students can

respond to texts. Instead, they assign book reports, presentations, and projects that may

be inauthentic and may not challenge students within their zone of proximal development

(Vygotsky, 1978). If students are engaging in these activities during class time, they may

not be interacting with the teacher. Yet research has shown that students benefit from

quality interactions with their teachers (Coleman et al., 1966). Likewise, teachers may be

"wasting" valuable instructional time if they assign these activities with little direction. Students may have benefited from response activities that would have encouraged thinking about texts but were less time intensive than reports, presentations, and projects.

Interestingly, the school-wide reporting of reading-related activities was not particularly associated with students' expository text comprehension. It is possible that the students who reported frequently doing book reports, presentations, and projects do not enjoy doing those activities because they are unsuccessful at them, therefore the students who reported high frequencies may have also had lower achievement. However, I do not think this is necessarily the case because the insignificant p-value still was associated with a coefficient going in a negative direction.

Discussing books as a class or small group. Research supports the notion that when students have an opportunity to talk about what they read, it may lead to better understanding of these texts (Johnson & Johnson, 1991). In this study, a SD increase in students' frequency of engaging in discussion with teachers and classmates was positively associated with 3.29 points in expository text achievement. As mentioned in Chapter IV, there was a contextual effect associated with being in a school where students report frequently engaging in discussion. In other words, being in a school where this type of discussion was occurring was associated with higher than expected associations with achievement (based on how discussions were related to student achievement at the individual level). Students who talk with each other are likely sharing ideas that they might not have developed independently. They use each others' insight to scaffold their own understandings of the texts. In other words, students might use other students' ideas to build, clarify, or enrich their own ideas.

When participating in class or small group discussions students might be forced to juggle several contradicting ideas at the same time. Several students may offer alternative explanations or different answers that require discussion participants to evaluate how accurate or relevant they are to the discussion. Likewise, when participating in a discussion, students may be encouraged to connect ideas to their own knowledge, a skill that can promote comprehension and retention (Anderson & Pearson, 1984). At its most basic level, discussions hold students accountable for completing assigned readings because in order to be an active participant in a discussion, students must have read the text being discussed.

Being in a school where other students cite frequent discussion of books was associated with children's expository text achievement. In this study, a SD increase in the school average of students' reported frequency of talking about what they read, as a whole class or in small groups, was positively associated with 5.49 points in expository text achievement. It is possible that schools where students reported high frequency of discussion have a more positive and motivating school environment. Guthrie's (1996) CORI classrooms would be a prime example of how discussion can contribute to a motivating social context for students. In CORI classrooms, students explore questions of interest to them, have shared learning experiences, talk with one another, and build strategies for answering and communicating the answers to their own questions. Instead of a lecture format in which the teacher is telling students what is acceptable or important to think, students talk with one another and engage in their own thinking about the concept of interest. Although the teacher is introducing strategies as the students need

them, students have a role in determining their own learning needs and the direction they take in their learning. This, in turn, can be quite motivating for students.

<center>Differences in Expository Text Comprehension for</center>

<center>FARMS-Eligible and FARMS-Non-Eligible Students</center>

According to 2005 Nation's Report Card, FARMS-eligible students scored approximately 28 points below their peers on the 2005 NAEP reading assessment (NCES, 2005g). And, when controlling for race, gender, reading experiences, and school type, FARMS eligibility was associated with approximately a 13 point deficit in students' expository text comprehension. FARMS-eligible students may lack relevant experiences, instruction, and background knowledge needed to comprehend exposition. Although FARMS-eligible students reported the frequency in which they participated in various in-school and out-of-school activities, data was not gathered regarding the quality of these experiences. The following sections review the findings about FARMS-eligible students' out-of-school and in-school reading experiences and the associations these activities have with expository text comprehension.

Out-of-School Reading Engagement

Although there is a positive association between out-of-school reading engagement and achievement for all students, the association varied with students' FARMS status. The coefficient for FARMS-eligible students was 2.11 points lower than the coefficient for non-FARMS-eligible students ($p < .001$). Even though low-income children reported that they engaged in out-of-school reading, the NAEP questionnaire assessed how often they participated in various activities and gathered no information regarding the quality of these experiences. Prior research supports the notion that low-

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income children have out-of-school experiences that are of lower quality that their peers (Hart & Risley, 1996; Neuman, 1999). Although low-income children may have reported frequently discussing books with their families and friends, Hart and Risley (1996) illustrated in their study of family talk that low-income children had a much lower quality of discussion with their families than middle-class children did. When low-income family members engaged children in discussion, they had a high proportion of prohibitions and less variety in the vocabulary that was used in discussion. Given that children gain vocabulary incidentally through conversations, reading, and other language sources, this finding may partially explain why out-of-school reading activities were not as highly associated with expository text achievement as it was for wealthier children.

As was with family discussions, the quality of what children are reading for information is unclear. For example, a child in a middle-class home might have several highly engaging expository texts to read. However, some low-income children may not have quality resources available (Neuman, 1999) and may be reading older, out-of-date books, instructional manuals, or other sources for information. In sum, it appears as though the (possibly) low quality of the out-of-school reading experiences of low-income children may be related to why participating in these activities did not give them as strong of a positive association with achievement as it did for fourth graders' overall.

In-School Reading Experiences

When FARMS-eligible students reported frequently reading softcover books and magazines in science, social studies, history, and reading, their expository text comprehension did not different significantly from the non-FARMS eligible students who engaged in the same activities. By reading across the curriculum, students may be

gaining experience with new vocabulary, familiarizing themselves with expository text structure, and exploring different purposes for reading. FARMS students who are privileged to reading across the curriculum may have teachers that understand the importance of reading outside of reading class, thus providing their students with more opportunities to explore other genres.

The strength of the negative association between reading-related activities (e.g., book reports, presentations, and projects) and expository text comprehension varied with students' FARMS status. The coefficient for FARMS-eligible students was 1.82 points lower than the coefficient for non-FARMS-eligible students. As previously mentioned, I had hypothesized that book reports, presentations, and projects could be used by teachers to deepen their students' thinking about texts. However, I understand that it takes a skilled teacher to execute these activities in a way that actually promotes student thinking beyond the literal level. Research shows that low-income children are more likely to have inexperienced and low-quality teachers (Darling-Hammond, 1995). These teachers would be less likely to understand how to effectively use these strategies in ways that guide students beyond literal understanding (Veenman, 1984). Instead, these activities may substitute for more demanding instruction and may end up wasting valuable classroom time. For instance, instead of interacting with their teachers, students may spend considerable time publishing their work and creating book jackets and illustrations. Researchers in the past have argued the importance of school for underprivileged children (Coleman et al, 1966), and activities such as these may take away from the interactions with teachers that make school so important for these children for reasons aforementioned.

Another explanation might be that low-income children have fewer (or lower-quality) experiences that would prepare them to successfully engage in book reports, presentations, and projects. Students need skills in summarizing, organizing, and writing to be able to effectively complete these activities. If they do not have these skills, students may become so overwhelmed or preoccupied with the process that they are unable to attend to the complex thinking that could be required in these tasks. Finally, if these activities are assigned in school to be completed at home, students may lack the materials (e.g., glue, crayons, paper, poster board) to even participate in the assignment.

The strength of the positive association between students' participation in whole-class or small-group discussions and achievement also varied according to students' FARMS status. The coefficient for FARMS-eligible students was .58 points higher than the coefficient for non-FARMS-eligible students. Although not all low achievers are low-income, and not all low-income children struggle to achieve, there is evidence to support that low-income children often perform substantially lower than their peers on measures of achievement (NCES, 2007g). Research on cooperative learning shows that children who are not achieving benefit from talking with children who are achieving (Lou et al., 1996). In this particular study, maybe low-income children who are traditionally low achievers are having material scaffolded for them based on their discussions with children who are having more success academically (Vygotsky, 1978). This relationship makes sense in light of the findings I have regarding the relationship between whole class and small group discussions and the expository achievement of low-income children. Although I was not surprised to find that discussions were particularly important for low-income children, I actually thought that this association would be greater. In theory, the

rather small positive associations between achievement and discussions for FARMS-eligible children could be related to the fact that many low-income children go to schools with other low-income children (Kozol, 2004). These schools may have relatively few high achievers to scaffold understandings for those children who are struggling. Therefore, students in these contexts might not have as many rich opportunities to engage in quality discussions with their peers, thus not aiding in their acquisition of comprehension skills.

<div align="center">Limitations of the Study</div>

As with any study, this study has its limitations. In particular, this study has limitations with its method, its analysis, and its overall generalizability. In this section, I acknowledge each of these limitations and provide specific examples of how the findings were restricted as a result.

<div align="center">*Limitations in Methodology*</div>

In my opinion, the biggest limitations of this study are in four areas of the methodology: (1) data collection, (2) measures of prior achievement, (3) questionnaire items, and (4) the expository comprehension assessment. Most of these issues are a result of this study being a secondary analysis of previously collected data. Although these limitations could have been a major threat to the validity and reliability of this study, I argue that I was able to address these concerns in my study without sacrificing the study's rigor.

Data Collection

This study used data that were collected as part of the 2005 National Assessment of Educational Progress (NAEP). Data have been collected since 1969 as part of a

federally-mandated initiative to track the academic progress of American students.

Schools and students are selected for participation through a carefully-designed,

stratified, clustered sampling procedure. Although I trust that these data were gathered,

recorded, and initially manipulated in an acceptable manner, I report the data collection

as a potential limitation anyway. Though an unlikely possibility, student sampling may

have been unknowingly biased. Likewise, data may have been mistakenly entered

incorrectly into the computer, affecting the results of my secondary analysis. Finally, the

weights and other variables needed for analysis may have been inaccurately constructed,

though this is very doubtful. Since all of these possibilities are plausible I believed they

should be addressed. However, given the longstanding nature of NAEP and the experts

that work on this assessment, all of the above described scenarios are unlikely.

Measures of Prior Achievement

A major limitation of using NAEP data is that there is no measure of students'

prior achievement which is a consistent predictor of future achievement. However, since

NAEP does not collect this information, I must accept this as a limitation of the study.

With that said, measures of prior achievement for this study may be less important than

for other studies of reading comprehension because this study examined fourth graders'

comprehension of exposition. Reading researchers have argued that students have very

few, if any, experiences with exposition before entering fourth grade (Chall, et al., 1990).

Therefore, it might be expected that students would have less variability in their scores

before this point.

Yet it is possible that prior general reading assessments might correlate with

expository text comprehension. Chall and her colleagues (1990) found that low-income

children's achievement in early elementary school were unrelated to the fourth-grade performance. Often called the "fourth-grade slump," children who had performed reasonably well in the past struggled when faced with expository texts. These findings made me think that while it is important for me to note that prior knowledge was not accounted for in this study, it is not a flaw that invalidates the study.

Questionnaire Items

My largest concern in conducting this study was that my constructs could not be fully developed through the background questions asked of students as part of the NAEP assessment. However, the majority of questions I would have asked if conducting this study myself were asked on these questionnaires, so I felt comfortable proceeding with the analysis. Here, I discuss how the available items influenced my proxies for income, out-of-school reading, and in-school reading and note questions that I would have asked if given the chance.

Proxy for income. Past research has used various proxies for students' family income, including, but not limited to, parental education, free and reduced meal eligibility (FARMS), and educational resources in the home (e.g., Guthrie, Shaefer, & Huang, 2001; Lee, Croninger, & Smith, 1997). Concerns exist when using any of these variables as proxies for income, though researchers cite concern with FARMS most often. In this study, FARMS eligibility was used as the sole indicator of family income for reasons beyond my control. First, NAEP has ceased collecting information from fourth graders regarding their parents' education levels. They had found that fourth graders had difficulty accurately reporting this information (NCES, 2008a). Therefore, while parental education information is still available for NAEP's studies of eighth- and twelfth-grade

students, it is no longer available for fourth graders.   Second, educational materials in the home (e.g., books, magazines, newspapers, computers) were used as part of my analyses. Therefore, they could not be used as a proxy for income because this would have confounded my results. Likewise, in initial correlation analyses, educational materials were not particularly correlated with FARMS. This may be because most children in this study reported that they had various educational materials at home.

My decision to use FARMS as a proxy for income came after much consideration of alternative choices. Although FARMS is sometimes considered a weaker measure of family income than other variables (e.g. parental education, educational resources), NAEP statisticians consider their FARMS variable strong enough to use as the sole measure of family income in their *Nation's Report Card* results (NCES, 2007g). NAEP also measures FARMS in a way that may be more reliable than other studies. Instead of asking whether or not students receive FARMS, NAEP uses school files to determine FARMS eligibility. In other words, instead of measuring whether students are taking advantage of FARMS services, NAEP measures whether the students' family-reported income would make them eligible for FARMS services. As previously suggested in Chapter I, it is possible that this method is overestimating FARMS eligibility, particularly for those families who have unreported income. Therefore, if anything, the differences I found between FARMS-eligible and non-FARMS-eligible students may be underestimated because some middle class children who would be expected to outperform low-income children would be lumped into the analysis as FARMS eligible.

Proxies for out-of-school reading. I also had some concerns about the measures of out-of-school reading, though most of the components of out-of-school reading that I

believed were important were asked in the NAEP questionnaire. Two important aspects of out-of-school reading experiences were not asked by NAEP. First, students did not report how often they visited a public library. Public libraries can be an important source of reading materials, particularly for those families that cannot afford to buy books and magazines (ALA, 2007). Public libraries also often offer free access to computers and the Internet, and low-income children may take advantage of these services (ALA, 2007). Second, in 2005 NAEP did not ask whether or not children and parents engaged in shared reading experiences. Although these experiences are important for children's literacy development (Neuman, 1999; Scarborough & Dobrich, 1994), shared reading might be an infrequent activity for older children.

Proxies for in-school reading. I also had some concerns about how well the NAEP student questionnaire reflected the types of in-school reading that would likely contribute to expository text comprehension. Although the teacher questionnaire had a wider range of pedagogical questions than the student questionnaire, teachers' reports of their instructional practices are often less accurate than students' reports of these practices (Mullens & Gaylor, 1999). The student questionnaire provided information regarding grouping practices, discussions, response activities, materials, and choice of reading materials. However, students were not asked about strategy instruction or the frequency in which they read exposition in school, and these are two instructional practices that would have likely contributed to expository text comprehension. Although it is disappointing that information is not available on these topics, research has shown that few children have access to explicit strategy instruction or exposition in school

(Durkin, 1978/1979; Pressley, 2002; Pressley, Wharton-McDonald, Mistretta-Hampston, & Echevarria, 1998).

Expository Comprehension Assessment

As previously mentioned in Chapters I and III, the fourth-grade NAEP reading assessment is split into two comprehension sections: (1) reading for literacy experience and (2) reading for information. However, not all nonfiction texts are included in reading for information. Instead, biographies are grouped in with reading for literary experience (NCES, 2007d). Therefore, the comprehension sections of the NAEP more closely represent the structure of the texts (e.g., narrative and exposition) as opposed to the purposes for reading (e.g., for literary experience and for information). Although this classification is not technically a limitation of this study, it is a consideration that must be accounted for when interpreting these results.

When examining the retired passages and response items from the 2003 and 2005 fourth-grade NAEP reading assessments, another problem is evident. Some passages NAEP used as part of the assessment are not representative of traditional exposition. Instead, the passages contain elements of both narrative and expository texts. In Chapter III I provided an example of how the passage on Shannon Lucid varied from traditional exposition. Here in the discussion, I will give a second example using the passage "Watch Out for Wombats" (See Appendix B). This passage begins:

> AS WE RODE ALONG THE HIGHWAY sixty miles northeast of Adelaide,
> Australia, a diamond-shaped sign suddenly loomed ahead. *Watch Out for*
> *Wombats*, it warned. We peered into the sparse scrub along the roadside and
> searched for the brown furry animals. In the distance we spotted a mob of red

kangaroos bouncing out of sight, and near the road a crowlike bird called a

currawong was perched, but nowhere did we see any wombats.

From this introduction, it is unclear to the reader whether the content of this passage will

be narrative or expository, factual or fiction. In its original form, this article was likely

accompanied by photographs and other text features that would signal to the reader that

this might be an informational text. However, out of context the structure and content is

uncertain, thus students may approach this text with either an aesthetic or efferent stance.

Yet, when examining the questions that follow the passage, it is clear that NAEP intended

to measure students' abilities to read for information. For example, one item directed

students to "Use the information in this passage to describe marsupials." In order to

answer this item, students needed to gather information from the article and infer how

this information described marsupials.

Limitations in Analysis

This study is limited by the techniques I chose to analyze the data. My use of

both factor analysis and hierarchical linear modeling (HLM) impacted the findings of this

study.

Factor Analysis

I used factor analysis to create composites of variables that represented out-of-

school and in-school reading experiences. Although factor analysis examines the

relationships between variables of interest, it might detect similarities that are not directly

of interest, such as grouping together items with similar question wording or response

choices. For example, it is possible that the items "writing in journals" and "reading

books of your own for reading" had low loadings in the factor analysis because they were

worded differently than the other items. Likewise, with a limited number of background items to choose from on the student questionnaire, only 10 to 11 variables were loaded into each factor analysis. The factor analyses would likely have been even more reliable if more variables were available for consideration.

Hierarchical Linear Modeling (HLM)

The choice to use HLM certainly influenced this study, even though it was a technique NAEP recommended. Because HLM will not accept any missing data at Level-2 (in this case, school), 858 schools were lost from the final analysis. Although this was less than 10% of the overall data, it was still likely to impact the results in some way. In an analysis of missing data, most of these schools were lost because no FARMS information was collected for their students, and the remaining schools were lost because students in these schools did not complete some or all items on the student questionnaires. However, a missing data analysis found that the sample used for the final analysis was not significantly different from the original sample.

Originally I was interested in modeling the FARMS slope at Level-2. In other words, I wanted to see how out-of-school and in-school reading experiences predicted the achievement of students in schools with a high-FARMS population compared to students in low-FARMS schools. However, there was little variability in FARMS slope between schools, likely as a result of the way that NAEP calculated plausible values using information from students' with comparable backgrounds. Therefore, I decided to drop this question from the study and focus on my other outcomes.

Limitations in Generalizability

Results from this study are not necessarily generalizable to the population of American fourth graders. As mentioned before, data were lost because HLM could not accommodate for missing data at Level-2. Although when all data is used, the 2005 NAEP reading sample represents the population of American fourth graders, this study was based on a sample that may have been slightly different than the overall population of fourth graders in this country.

Although these findings are not generalizable to all American fourth graders, they do provide important areas for further consideration. By no means would I suggest that policy decisions be made based on these results. However, results from this study might be taken into account when considering out-of-school and in-school reading and initiatives and when designing future studies (particularly those focused on low-income children).

Implications for Future Educational Research

Under the NCLB initiative, educators are accountable for "closing the achievement gap between high- and low-performing children, especially the achievement gaps between minority and nonminority students, and between disadvantaged children and their more advantaged peers" (USDE, 2002, n. p.). In order to make headway in closing these gaps, educators likely need a better understanding of the factors that contribute to differences in achievement. Biyearly, the *Nation's Report Card* documents the gap in achievement between children who are eligible for FARMS and those who are not eligible (NCES, 2007g). However, these reports have not addressed potential reasons behind these differences in achievement. This study explored the relationships between

low-income fourth graders' out-of-school and in-school reading experiences and their comprehension of exposition. This study is one of the first of its kind since the initiation of NCLB and may enhance discussion and research on factors that might contribute to the achievement gap between low-income children and their wealthier peers.

In Chapter IV, I reviewed findings from the NAEP Data Explorer that reported a 28 point gap in achievement (three-fourths of a standard deviation) between students eligible for FARMS and those who were not (See Table 3 in Chapter IV). Although my study suggested factors that might have contributed to the closing or the widening of this achievement gap, it is important to recognize my study only explained a small portion of this large divide. Because this study was a secondary analysis of NAEP data, I feel uncomfortable suggesting implications for educational practice. However, I view secondary analyses of large datasets like NAEP as an informative practice and as a way to rationalize what research is needed in the field of reading. Therefore, in this section I recommend directions for future educational research.

One of the most important implications of this study is that it aids researchers in identifying practices that may be associated with low-income children's achievement, thus giving future researchers a focus for intervention studies. Given that it is difficult to capture the complexity of educational practice in experimental designs, quasi-experimental intervention studies are an acceptable alternative and may also qualify as the scientifically-based research desired by educational policymakers (Shadish, Cook, & Campbell, 2002). As previously mentioned, this study was only a starting point for understanding the complex relationships between out-of-school and in-school reading experiences, income, and expository text comprehension. The next step might be for

researchers to look at the factors that appeared to contribute to expository text comprehension and set up intervention studies to understand why these associations exist. Likewise, case studies would likely give some context to these relationships, and support claims that researchers make with quantitative-designed studies. Carefully-designed qualitative research would allow researchers to extend their understandings of the complex phenomena of income, out-of-school and in-school reading, and expository text comprehension.

In terms of out-of-school reading, it might be helpful to disentangle the individual components of the factor (e.g., motivation, frequency of reading, what genres reading, talking about reading) to see if they are all equally important contributors to expository text comprehension. Although quite a bit of research has been conducted in relation to children's out-of-school reading experiences, the majority of these studies have been done with young children and/or general reading habits. Many of the out-of-school reading experiences of fourth graders are unique from the experiences of young children - with less emphasis on shared reading, and more focus on selecting and acquiring materials, reading those materials, and sharing thoughts about those materials. Few (if any) studies of out-of-school reading have attended to how these activities particularly influence expository text achievement. Although general reading achievement and expository text achievement are closely-related outcomes, they do have different attributes. Reading narrative texts does not necessarily prepare students to read exposition, though it likely helps more than not reading at all. Instead, we need to understand what activities contribute to students' comprehension of exposition, given the important role that exposition will play in students' academic endeavors.

In addition to studying out-of-school practices, more research is needed to understand classroom practices that contribute to expository text achievement. Although large studies of classroom practice are often done using surveys, surveys often leave researchers trying to make sense of actual classroom practice because teachers will often report doing practices because they believe they should be doing them, rather than because they are actually occurring. Promising research on classroom practice is sure to come out of the High-Quality Teaching Study, based at the University of Maryland, College Park. In this carefully designed, mixed methods study, researchers observed approximately 70 fourth- and fifth-grade teachers in high-performing, low-income schools over 4 years, collecting time-sampled data of lessons, interviews, field notes, transcripts of lessons, teacher log data, and Maryland State Assessment performance data for students. The investigators involved with this study have begun to analyze these data and publish their findings, but there is still a large amount of data left to explore. In particular, they collected valuable information regarding teachers' practices that are associated with expository text comprehension. Once published, this information might legitimize or extend what was uncovered as part of my NAEP study and inform what types of intervention research is needed.

In my study, I found that reading across the curriculum and having class and small group discussions about what children have read may be important for expository text comprehension, while doing book reports, presentations, and projects might do more harm than good. It would be important to explore these factors in more depth to understand what it is about these factors that cause them to be associated with student expository text comprehension. It would be important to better understand what aspects

of class and small group discussion help low-income children achieve. Likewise, it is imperative to explore what aspects of book reports, presentations, and projects are so damaging for low-income children. Researchers might explore how and why teachers assign these tasks and whether or not these activities can be positively associated if done in certain ways.

I also argue that research regarding children's out-of-school and in-school experiences is essential for beginning to close the achievement gap between low-income children and their wealthier peers. Children from low-income families may have fewer or lower-quality reading experiences both in and out of school than their peers, but it is unclear as to what can be done to eliminate these differences. However, we know that these differences contribute a good amount to the achievement gap. Therefore, better understanding what it is about low-income children's out-of-school and in-school reading experiences that contribute to low expository comprehension will likely help begin to close the achievement gap for low-income children.

Another important contribution of this study is that it brings attention to some of the difficulties in measuring both "reading for information" and expository text comprehension. Many texts written for young children that are meant to be informational or expository are written in a way that makes it difficult to discern the structure and the content. For example, it might not be initially apparent to students that the passage about Shannon Lucid is factual after they read the story-like beginning. Without other features such as photographs and charts to signal the possibility of informational reading, students may approach these texts with a stance that differs from the stance the questions appear to call for. It should be noted that these observations are only based on the two retired

passages available from the 2003 and 2005 fourth-grade NAEP assessments. In order to understand the extent to which these mixed texts represent the NAEP "reading for information" measure, the test developers or administrators would need to examine the passages and questions more closely. Although it is a logical decision on NCES's part to restrict the public's access to the passages and questions, I would propose a review of the passages and questions by experts in text structure or other related reading fields to ensure the validity of NAEP's outcomes.

Summary

In this study, I found that out-of-school reading, reading across the curriculum, and discussing reading were all significantly and positively related to fourth graders' expository text comprehension, while both poverty and reading-related activities such as book reports, presentations, and projects were negatively related to their comprehension. In addition, I found that being in schools where other students engage in out-of-school reading and discuss books was highly and positively associated with students' expository text comprehension, while being in schools with other low-income students resulted in a large, negative association. Although out-of-school reading was important for low-income students, it did not have as strong of an association with achievement as it did for other students. Discussions had a higher association with achievement for low-income students than for other students. Finally, reading-related activities were negatively associated with achievement for low-income children.

I provided a detailed explanation of the drawbacks in using the NAEP database for this study. I cited limitations in the study's methodology, analysis, and generalizability. I also recommended that future research combine quasi-experimental

intervention studies and qualitative case studies to better understand the relationships

between out-of-school and in-school reading, income, and expository text

comprehension. Research needs to examine what are the qualities of these various

factors that contribute to expository text comprehension. I mentioned a promising study

that is likely to contribute to the research knowledge in this area. Finally, I argued the

importance of understanding how these factors might help close the achievement gap.

Appendix A
Institutional Review Board Exemption Letter

UNIVERSITY OF
MARYLAND

INSTITUTIONAL REVIEW BOARD

Notice: Review of Request for Determination Non-Human Subject or Non-Research IRB Form

Date: September 27, 2006

To: Dr. Mariam Jean Dreher
                Heather A. Ruetschlin
                Department of Curriculum and Instruction

From: Roslyn Edson, M.S., CIP
                IRB Manager
                University of Maryland, College Park

Re: *Request for Non-Human Subject or Non-Research IRB Form*
                #06-NHS-00012
                Project Title: *Fourth grader's comprehension while reading to be*
                informed: The effects of classroom instruction in science and/or social
                studies

The *Request for Determination of Non-Human Subject or Non-Research Form* for the above-cited project was reviewed. According to the form, your project is designed to develop or contribute to generalizable knowledge. However, your research only involves analysis of existing data and the National Assessment of Educational Progress database withholds identifiable information from the researchers. Since your research does not involve human subjects as defined in the Federal regulations, it was determined that your research does not require review and approval by the Institutional Review Board. Please contact the IRB Office at 301-405-0678 if you have any IRB-related questions or concerns.

Appendix B

Sample "Reading for Information" Items from Previous NAEP Assessments

Article entitled, *Dr. Shannon Lucid: Space Pioneer,* by Vicki Oransky Wittenstein was not

Included in final draft because of copyright concerns. The full passage can be accessed at

http://nces.ed.gov/nationsreportcard/itmrls. Questions for this passage are listed below.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2005 Reading Assessment.

Sample Questions:

1. What are two things about Shannon Lucid that could be learned from reading this passage?

2.   According to the passage, what was the purpose of the space station *Mir* program?

    A)   To learn how the body reacts to long-term travel in space
    B)   To observe how people from different cultures live together
    C)   To see what the seasons look like from outer space
    D)   To take pictures of the Earth and of water currents

3. During her time on *Mir*, what did Shannon Lucid do to stay fit?

A) She studied the effects of weightlessness.
B) She read pioneer stories.
C) She exercised on a treadmill.
D) She experimented with growing wheat.

4. Why does the author tell what Shannon Lucid read about when she was growing up? Use information from the passage to explain your answer.

5. What did Shannon Lucid miss while in space?

A)   Eating her favorite snacks

B)   Riding a stationary bicycle
C)   Talking to her family
D)   Feeling the sun and the wind

6. Think about the kind of person Shannon Lucid needed to be in order to become a space pioneer. Choose a real person you know or have read about, or a character you have seen in a movie or television show. Explain how that person or character is like Shannon Lucid.

7. What surprised people when Shannon Lucid returned to Earth?

   A)   She wanted to eat gooey desserts and go skating.
   B)   She still wanted to exercise on a treadmill.
   C)   She walked off the space shuttle on her own.
   D)   She still felt she had been born too late.

8. Why did Shannon Lucid think it was remarkable that she and the Russian cosmonauts became friends?

   A)   They lived in a very small space station.
   B)   Their countries had once been enemies.
   C)   The time they spent on *Mir* was not very long.
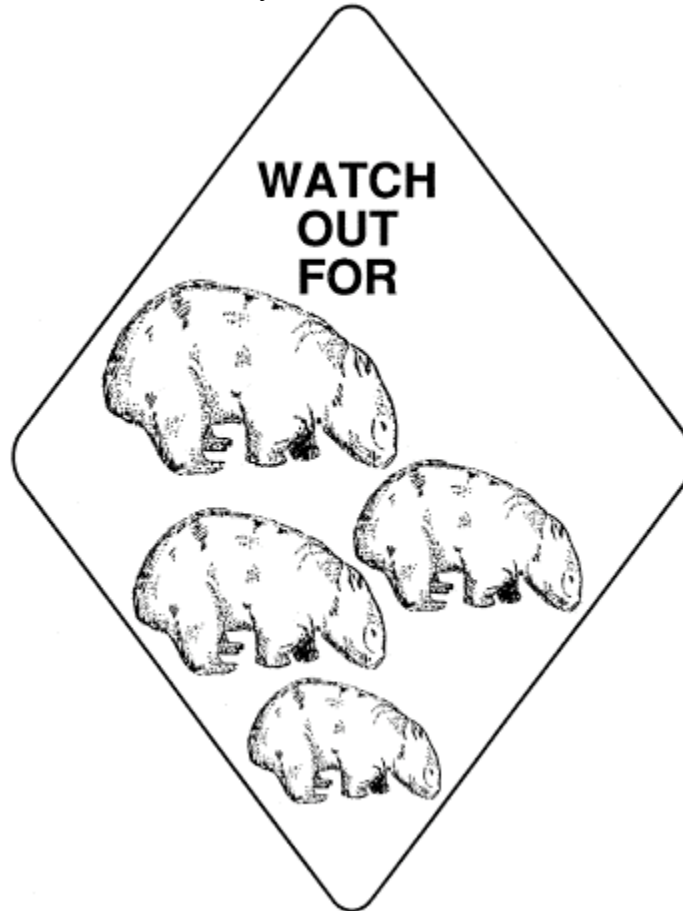   D)   There was not enough food for all of them.

9. Choose one thing Shannon Lucid did that helped her become an astronaut. Explain why it helped her.

10. What is one lesson that could be learned from reading this passage? Use information from the passage to support your answer.

WATCH OUT FOR WOMBATS!

by Caroline Arnold

AS WE RODE ALONG THE HIGHWAY sixty miles northeast of Adelaide, Australia, a diamond-shaped sign suddenly loomed ahead. *Watch Out for Wombats*, it warned. We peered into the sparse scrub along the roadside and searched for the brown furry animals. In the distance we spotted a mob of red kangaroos bouncing out of sight, and near the road a crowlike bird called a currawong was perched, but nowhere did we see any wombats. However, we later found out that this was not surprising because we were traveling during midday, and wombats are active mostly at night. It wasn't until we visited the animal reserve that we finally saw our first wombat and learned more about this funny-looking creature.

We found that there are two types of wombats in Australia: the hairy-nosed wombat, which lives in Queensland and South Australia, and the coarse-haired wombat, which lives along the southeast coast. Both have soft brown fur, short ears, and thick-set bodies.

They are said to resemble North American badgers. The hairy-nosed wombat is smaller and has pointier ears compared to its coarse-haired cousin; otherwise they are very much alike.

In many ways the wombat is similar to another Australian native, the koala. Like koalas, wombats have strong forelimbs and powerful claws. But instead of using its claws to cling to high tree branches as the koala does, the wombat digs large underground burrows. These burrows are usually nine to fifteen feet across, but they can be enormous — sometimes as long as ninety feet. One end of the burrow is used as a sleeping area — there the wombat builds a nest made of bark.

The wombat is a vegetarian, so it also uses its mighty claws to tear up grasses and roots for its food. A mother wombat will pull out single stems of grass and lay them on the ground so her young wombat can eat the tender bases. The wombat's teeth, which grow throughout its life, are sharp and ideal for cutting and tearing.

When a mother wombat gives birth, she never has to worry about finding a baby-sitter — she simply carries her baby along with her. Like most mammals in Australia, wombats are marsupials. A baby wombat is born at a very early stage of development and lives in its mother's pouch until it is old enough to survive on its own.
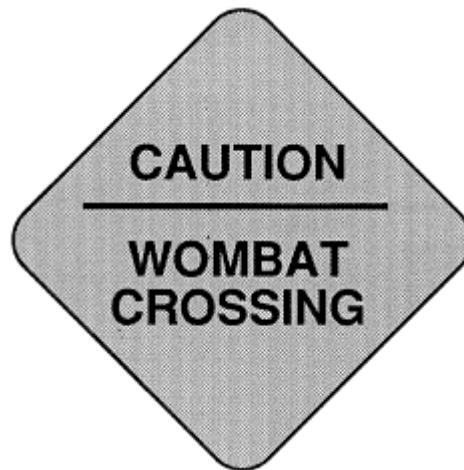
Wombats have only one baby at a time, usually during the Australian winter months, May to July. A baby wombat is called a joey. At birth the tiny joey — barely an inch long — uses its forelimbs to pull itself along its mother's underside to get into her pouch, where it will be kept warm, protected, and fed.

Marsupials, like all mammals, are nourished by their mothers' milk. The nipples that supply the milk are inside the pouch. Once inside, the wombat joey finds a nipple and grabs it. The nipple then swells up in the baby's mouth, providing a firm hold and a steady supply of food. The joey stays in its mother's pouch for the next four months and grows rapidly.

Most marsupials have pouches which open upward when the animal is standing. However, both koalas and wombats have pouches which face downwards. A strong muscle keeps the pouch tightly closed and prevents the young wombat or koala from falling out. An advantage of the downward-opening pouch for wombats is that dirt is less likely to get inside when the wombat is burrowing.

The wombat is a shy and gentle animal. But even if you lived in Australia and were willing to keep watch during the nighttime hours, it would be difficult to get to know one. As more and more people move into territories in which wombats live, they destroy the wombat's burrows and food supplies. In some areas where the wombat was once plentiful, it is now almost extinct. Animal reserves have been set up recently to protect the wombat. Perhaps with a little help these friendly creatures will again prosper and multiply. The next time we drive through Australia, we really may have to *Watch Out for Wombats*!

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1. This article mostly describes how

   A) the wombat's special body parts help it to grow and live
   B) highway signs help to save the wombat
   C) the wombat is like the koala and the North American badger
   D) wombats feed and raise their young

2. Where do wombats live?

   A) North America
   B) Greenland
   C) Australia
   D) Africa

3. Describe one way in which wombats and koalas are similar and one way in which they are different.

   Similar _____

   _____

   Different _____

   _____

4. Use the information in this passage to describe marsupials.

5. Where do wombats usually live?

    A) Along highways
    B) Inside tree trunks
    C) On high tree branches
    D) In underground burrows

6. Choose an animal, other than a koala, that you know about and compare it to the wombat.

    _____

    _____

    _____

    _____

    _____

7. Why are wombats not often seen by people?

    A) Wombats look too much like koalas.
    B) Wombats usually are active at night.
    C) There are not enough wombat-crossing signs.
    D) Wombats are difficult to see in trees.

8. Describe the sleeping area of wombats.

    _____

    _____

    _____

    _____

    _____

9. To get food, the wombat uses its

    A) Nose

B) Ears
C) Claws
D) Pouch

10. What would a wombat probably do if it met a person?

   A) Try to attack the person.
   B) Run away from the person.
   C) Growl at the person.
   D) Beg for food from the person.

11. Why has Australia set up animal reserves to protect the wombat?

   _____

   _____

   _____

   _____

   _____

Appendix C

Descriptions of Variables

Description of Variables

Variable Code	Number of Valid Responses	Variable Description	Manipulation
Child Level Variables			
RRPS21	166936	Dependent variable: Plausible value #1 for student achievement on informational text comprehension subscale; Range from 0 to 373.6 with a mean of 215.51 and an SD of 37.68.	Direct from dataset
RRPS22	166936	Dependent variable: Plausible value #2 for student achievement on informational text comprehension subscale; Range from 0 to 354.46 with a mean of 215.71 and an SD of 37.70.	Direct from dataset
RRPS23	166936	Dependent variable: Plausible value #3 for student achievement on informational text comprehension subscale; Range from 0 to 356.2 with a mean of 215.5 and an SD of 37.78.	Direct from dataset
RRPS24	166938	Dependent variable: Plausible value #4 for student achievement on informational text comprehension subscale; Range from 0 to 361.46 with a mean of 215.45 and an SD of 37.60.	Direct from dataset

RRPS25	166936	Dependent variable: Plausible value #5 for student achievement on informational text comprehension subscale; Range from 0 to 364.34 with a mean of 215.48 and an SD of 37.75.	Direct from dataset
ADJUSTED WEIGHT	177497	Unadjusted, unpostratified student weight; Range from .09 to 11.95 with a mean of 1.73 and a SD of 1.11.	Computed from ORIGWT by dividing ORIGWT by mean of new dataset

OOS_FAC	161762	Data are standardized factor scores obtained from a principal components factor analysis of out-of-school reading variables. The factor scores include how often children talk to their family about their studies (B017451), how often children talk to their friends about what they read (R831101), how often children read to learn new things outside of school (R831601), how often children read stories or articles on the Internet outside of school (R831701), the identification of reading as a way to learn new things (R830601), and the identification of reading as a favorite activity outside of school (R830701). The Eigenvalue for this factor is 2.325 and the percentage of variance explained is 38.75%. Alpha is .65.	Factor Analysis
DUMRACE	177497	Dummy coded, dichotomous variable for student race; Range 0-1; 0=Caucasian or Asian; 1= Black or Hispanic; mean 0.381.	Transformed from variable SRACE
DUMFARMS	163243	Dummy coded, dichotomous variable for Free and Reduced Meals (FARMS); Range 0-1; 0=student not eligible for FARMS;1= FARMS eligible student; mean is 0.466.	Transformed from variable SLUNCH01
DUMGENDE	177497	Dummy coded, dichotomous variable for student gender; Range 0-1; 0=male; 1= female; mean is 0.490.	Transformed from variable DSEX

MATERIAL	151736	Data are standardized factor scores obtained from a principal components factor analysis of in-school reading variables. This factor was the strongest to emerge. The factor scores include how often students read books or magazines for reading class (R832301), how often students read books or magazines for science class (R832401), and how often students read books or magazines for social studies/history class (R832501). The Eigenvalue for this factor is 2.305 and the percentage of variance explained is 28.81%. Alpha is .593.	Factor Analysis
RRA	151736	Data are standardized factor scores obtained from a principal components factor analysis of in-school reading variables. This factor was the second strongest to emerge. The factor scores include how often students write a book report (R832101), make a presentation about something they read (R832201), or do a school project about something they read (R832301). The Eigenvalue for this factor is 1.242 and the percentage of variance explained above and beyond the MATERIALS factor is 15.53%. Alpha is .570.	Factor Analysis

DISCUSS	151736	Data are standardized factor scores obtained from a principal components factor analysis of in-school reading variables. This factor was the weakest to emerge. The factor scores include how often students participated in a class discussion about something they read (R831801) and how often students worked in groups to discuss something they read (R831901). The Eigenvalue for this factor is 1.015 and the percentage of variance explained above and beyond MATERIALS and RRA is 12.69%. Alpha is .396.	Factor Analysis
DUMPRIV1	3845836	Dummy coded, dichotomous variable for type of school student attends; Range 0 to 1; 0=Public, 1=Private; mean is .094 with SD of .292.	Transformed from variable SCHTYPE
FARMSOOS	153577	Interaction term for the relationship between out-of-school reading engagement and FARMS eligibility; Range -2.41 to 1.90; mean is .004 with a SD of .654.	Computed by multiplying DUMFARMS by OOS_FAC
MATERIALFARM	148788	Interaction term for the relationship between materials for reading and FARMS eligibility; Range -2.19 to 2.32; mean is .006 with a SD of .645.	Computed by multiplying DUMFARMS by MATERIAL

RRAFARMS	148788	Interaction term for the relationship between reading-related activities and FARMS eligibility; Range -2.87 to 2.01; mean is .026 with a SD of .669.	Computed by multiplying DUMFARMS by RRA
DISCUSSFARM	148788	Interaction term for the relationship between discussion of readings and FARMS eligibility; Range -1.90 to 3.28; mean is -.019 with a SD of .641.	Computed by multiplying DUMFARMS by DISCUSS

School Level Variables

SCHOOL WEIGHT	8620	Reading school base weight; Range .16 to 14.25 with a mean of 2.00 and a SD of 1.72.	Adjusted from SRSRSWT by dividing SRSRSWT by mean of new dataset.
AVEMATERIAL	8620	School average of students' experiences using materials in multiple subject areas; Range is -1.98 to 2.17 with a mean of -0.012 and a SD of 0.371.	Aggregated from child-level factor MATERIAL
AVEDISCUSS	8620	School average of students' experiences discussing what they read as a whole class or in groups; Range is -2.21 to 1.79 with a mean of -.009 and a SD of 0.424.	Aggregated from child-level factor DISCUSS
AVERRA	8620	School average of students' reported frequency of reading-related activities such as projects, reports, and presentations; Range is -1.89 to 2.89 with a mean of 0 and a SD of 0.501.	Aggregated from child-level factor RRA

ZFARMS	8620	Restandardized proportion of students who are eligible for FARMS; Range -1.41 to 1.61; mean is 0 with a SD of 1.	Aggregated from child level variable DUMFARMS, restandardized
ZMINORITY	8620	Restandardized Proportion of students who are black or Hispanic; Range -1.00 to 1.79; mean is 0 with a SD of 1.	Aggregated from child level variable DUMRACE, restandardized
PROPORTION FEMALE	8620	Proportion of students who are female; Range 0-1; 0= all male; 1= all female; mean is .493 with a SD of 0.162.	Aggregated from child level variable DUMGENDE
DUMPRIVATE	8620	Dummy coded, dichotomous variable; Range 0-1; 0=Public; 1=Private; mean is .118 with a SD of 0.322.	Transformed from variable PUBPRIV
AVEOOS	8620	School average of out-of-school reading engagement. Range is from -2.41 to 1.90 with a mean of -.007 and a SD of .380.	Aggregated from child level factor OOS_FAC

Note: Number of valid responses is based on weighted analyses.

Appendix D

Correlation Tables for Out-of-School and In-School Factors

Table 14: *Correlations between out-of-school factor and related variables*

	Expository Comprehension[b]	Gender	FARMS	Race
Gender	.054**	...	...	...
FARMS	-.404**	.003**	...	...
Race	-.386**	.006**	.470**	...
Out-of-School Reading	.148**	.171**	.008**	.035**

[a] Correlations were computed with the NAEP student weights
[b] Expository comprehension is represented by the average of five plausible values.
[c] Significant at .01 (**)

Table 15: *Correlations between in-school reading factors and related variables*

	Expository Comprehension[b]	School Type	Gender	FARMS	Race	Materials for Reading	Reading-related on Reading
Gender	.054**	...	...	...	...	...	...
School Type	.144**	.007**	...	...	...	...	...
FARMS	-.404**	-.099**	.003**	...	...	...	...
Race	-.386**	-.113**	.006**	.470**	...	...	...
Materials for Reading	.031**	-.012**	.028**	.012**	.025**	...	...
Reading-related Activities	-.145**	.036**	.010**	.064**	.085**	.000	...
Discussion about Reading	.135**	-.038**	.074**	-.050**	-.030**	.000	.000

[a] Correlations were computed with the NAEP student weights
[b] Expository comprehension is represented by the average of five plausible values.
[c] Significant at .01 (**)

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