CHAPTER 5

Can Silent Reading in the Summer Reduce Socioeconomic Differences in Reading Achievement?

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In the years following entry into school, children of low socioeconomic status (SES) lose ground in reading relative to their high-SES peers. This widening achievement gap may be largely the result of different rates of learning during the summer months (e.g., Alexander, Entwisle, & Olson, 2001; Cooper, Nye, Charlton, Lindsay, & Greathouse, 1996; Heyns, 1978). Even small differences in summer learning can accumulate across years, resulting in a substantially greater achievement gap at the end of elementary school than was present at the beginning (Alexander, Entwisle, & Olson, 2004; see also Borman & Dowling, 2006; Lai, McNaughton, Amituanai-Toloa, Turner, & Hsiao, 2009). This leads us to the question, Can socioeconomic differences in reading achievement be reduced by programs that encourage silent reading in the summer months?

As Heyns (1978) suggested more than 30 years ago, increasing low-SES students' access to books and encouraging them to read in the summer might go a long way toward reducing seasonal differences in learning and achievement gaps. Although this powerful idea may be one whose time has finally come, it needs to be more fully developed and tested in a methodologically rigorous way. We need to know, for example, whether mere access to books is sufficient, and specifically how to encourage children to read during their summer vacation. We need experimental studies to establish the effectiveness of any interventions that are developed before they are widely implemented with children.

We have been pursuing the question of how to enhance silent summer reading while addressing socioeconomic differences in reading achievement for the past seven or eight years. In the process, we developed what we call a scaffolded summer reading program and conducted two randomized experiments to test its effectiveness (Kim, 2006; Kim & White, 2008). In the next three sections, to provide a backdrop, we review research on socioeconomic differences in reading

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achievement and summer learning and some possible explanations of those differences. Then, in the heart of the chapter, we explain our thinking as we approached the task of developing the summer reading program, present the logic model underlying it, describe the experiments, give the details of the program, present findings, and describe related research and similar programs that are being implemented by others. We conclude with a set of recommendations for researchers and policymakers.

Socioeconomic Differences in Reading Achievement

Data from the nationally representative Early Childhood Longitudinal Study, Kindergarten Class of 1998–1999 (ECLS-K) show that low-SES children begin kindergarten with average reading scores that fall 0.58 standard deviation (*SD*) units below those of high-SES children, and that the gap between low-SES and high-SES students increases to 0.65 *SD* by the end of first grade and to 0.79 *SD* by the end of third grade (LoGerfo, Nichols, & Reardon, 2006, see Tables 3.9 and C1). Aikens and Barbarin (2008) analyzed ECLS-K reading growth trajectories from kindergarten through third grade by SES quintile, five categories based on father's (or male guardian's) education and occupation, mother's (or female guardian's) education and occupation, and household income. The difference between students in the highest and lowest SES quintiles increased from 11.3 points at kindergarten entry, or about 6 months of learning, to 27.2 points at the end of third grade, or about 16 months of learning. These studies demonstrate, in practical terms, that the SES gap in reading achievement is already large when children begin school, and it grows distressingly larger by the end of third grade.

Whether the SES gap in reading achievement continues to widen after third grade is not yet clear. Researchers are just beginning to examine the ECLS-K fifth- and eighth-grade data, and as of this writing, no studies have focused on the issue of whether SES differences increase beyond third grade. We do know that SES is associated with large differences in reading achievement in the upper elementary grades and beyond. For instance, results from the 2007 National Assessment of Educational Progress reading assessment show a gap of 0.83 *SD* at fourth grade and a gap of 0.73 *SD* at eighth grade between students who are eligible for free or reduced-cost lunch and those who are not (Lee, Grigg, & Donahue, 2007). The smaller gap at eighth grade may reflect underreporting of free-lunch eligibility at higher grade levels or a cohort effect. It seems implausible that socioeconomic differences in reading achievement decrease after third grade because vocabulary, knowledge, and comprehension demands increase (e.g., Becker, 1977; Chall, 1983), and low-SES students have smaller vocabularies and more limited knowledge (e.g., Chall, Jacobs, & Baldwin, 1990; Hart & Risley, 1995; White, Graves, & Slater, 1990). In addition, there is considerable evidence that low-SES students make less progress in reading than high-SES students in the summers following third through eighth grade, so an increasing achievement gap would be expected if there are no compensatory learning differences during the school year.

The Role of Summer Learning in the Development of SES Differences in Reading

In this section, we address two questions: (1) Do summer learning differences contribute to the SES achievement gap that is growing larger, almost certainly during the early years of schooling and probably in the later elementary and early middle school years as well? (2) If so, do school year or summer learning differences make a larger contribution to the growing gap?

Do Summer Learning Differences Contribute to the SES Achievement Gap?

Cooper et al.'s (1996) meta-analysis examined the effects of summer vacation on the reading achievement of first- through eighth-grade students (i.e., the summers following first through eighth grade). Combining grades, there was a significant effect of SES on summer learning. Middle-SES students made a nonsignificant gain (+0.06 *SD* in grade-level equivalents) while low-SES students showed a significant loss (–0.21 *SD*), based on 37 independent samples. The difference between grade-level equivalent scores in the fall and spring was +0.16 for middle-SES students and –0.19 for low-SES students, which is a difference of about three months of schoolyear learning.

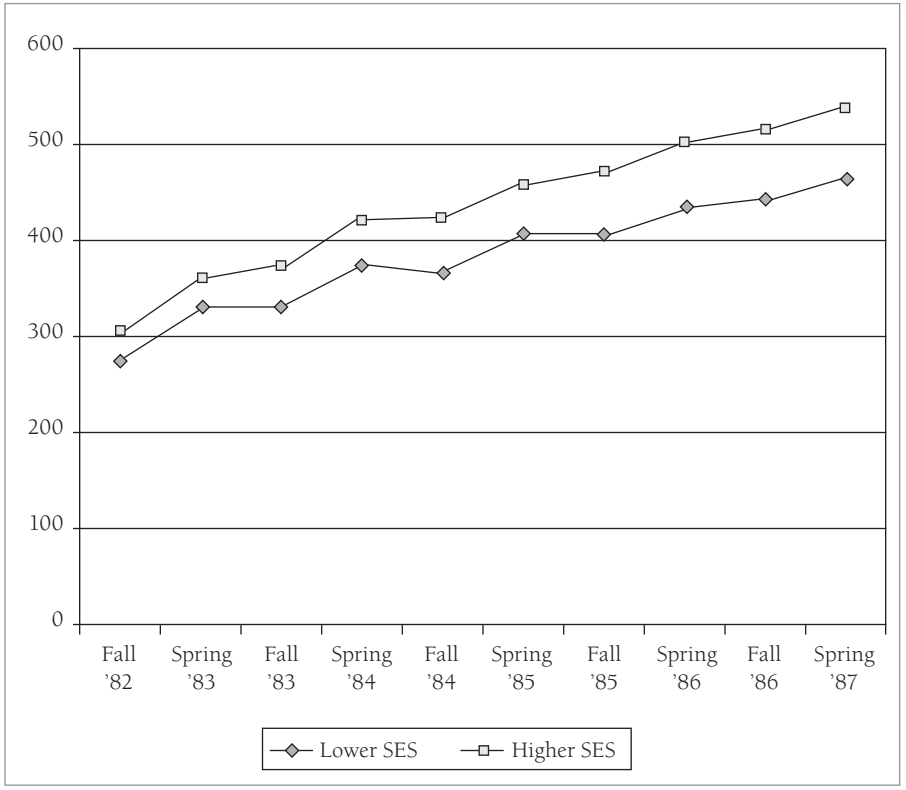
The classic study of summer learning by Heyns (1978) was among the studies reviewed by Cooper et al. (1996). Heyns studied a stratified sample of public schools in Atlanta, Georgia, USA, that included several thousand sixth- and seventh-grade students who were tested, during the early 1970s, in the fall and spring of the school year and again in the following fall. The dependent variable in her analyses was the word knowledge subtest of the Metropolitan Achievement Test, a measure of reading vocabulary that was highly correlated with reading comprehension. Heyns (1978) found that (a) students of every income level learned at a slower rate during the summer than during the school year, (b) there were marked socioeconomic differences in learning, and (c) the socioeconomic differences were especially prominent during the summer months. High-SES sixth- and seventh-grade students with family incomes of at least $15,000 improved their reading skills in the summer, while low-SES students with family incomes of less than $9,000 either showed summer loss (sixth graders) or made no gain (seventh graders).

Another important study included in Cooper et al.'s (1996) meta-analysis was the Beginning School Study (BSS), a longitudinal study that followed students from first through fifth grade (e.g., Alexander et al., 2001, 2004; Entwisle, Alexander, & Olson, 1997). In the BSS, a standardized test of reading comprehension, the California Achievement Test (CAT-V), was given in the fall and spring of each year. Family SES was measured as a composite, including mother's and father's education and occupation and receipt of reduced-cost meals, and the composite was used to form three SES groups—high, medium, and low. The results of growth curve

analyses by Alexander et al. (2001) show that during each school year, there were similar gains in reading for low-SES and high-SES students. There was, however, significant SES differentiation in the summer. Low-SES students showed small losses or very modest gains in the summer, whereas high-SES students gained. Figure 5.1 plots fall and spring CAT-V Reading Comprehension scores for the two SES groups. Between the spring and fall data points, the growth trajectories are clearly different, and the cumulative impact of summer loss or differentiation is apparent from the widening gap.

Kim (2004) followed a sample of ethnically diverse students who took reading tests in the spring of fifth grade and the fall of sixth grade in 18 schools in a suburban mid-Atlantic school district. He found that, holding constant spring scores and other background characteristics, low-SES students had significantly lower fall reading scores than high-SES students. Phillips and Chin (2004) analyzed

Figure 5.1. The Trajectory of CAT-V Reading



From Schools, Achievement, and Inequality: A Seasonal Perspective, by K.L. Alexander, D.R. Entwisle, & L.S. Olson, 2004, in *Summer learning: Research, policies, and programs*, pp. 25–51, edited by G.D. Borman & M. Boulay, Mahwah, NJ: Erlbaum. Reprinted with permission.

data for a subsample of students who were tested in the fall of second grade as well as spring of first grade as part of the congressionally mandated Prospects study conducted in the early 1990s in the United States. Students from families with incomes of less than $15,000 per year showed a small loss in reading vocabulary during the summer following first grade, and students from high-SES families showed a small gain.

Because the research of Heyns (1978) and others has suggested that there were seasonal differences in learning, the ECLS-K study tested participating students in the fall of their first-grade year in a random sample of 30% of the original ECLS-K schools. This subsample of about 4,000 students has allowed at least six sets of investigators to examine learning rates in the summer following kindergarten (Benson & Borman, 2007; Burkam, Ready, Lee, & LoGerfo, 2004; Cheadle, 2008; Downey, von Hippel, & Broh, 2004; LoGerfo et al., 2006; McCoach, O'Connell, Reis, & Levitt, 2006). These studies found no summer gains in reading for all students. However, there were significant differences in summer reading gains by SES group. High-SES students made reading gains while low-SES students lost ground in the summer. For example, in Burkam et al.'s (2004) study, students in the highest SES quintile gained 0.07 *SD*, whereas students in the lowest SES quintile lost 0.09 *SD* when compared with the middle-SES group.

In summary, Cooper et al.'s (1996) meta-analysis, Heyns's (1978) study, Alexander et al.'s (2001) study, Kim's (2004) study, and analyses of data from the ECLS-K (e.g., Burkam et al., 2004) and Prospects study (Phillips & Chin, 2004) are consistent in showing that there is significant SES differentiation in the summer months following kindergarten through eighth grade, such that low-SES students fall behind their high-SES peers in reading.

Do School Year or Summer Learning Differences Make a Larger Contribution to the Reading Gap?

In their analyses of ECLS-K data, Benson and Borman (2007), Cheadle (2008), Downey et al. (2004), LoGerfo et al. (2006, see Table 5.3), and McCoach et al. (2006) all found that high-SES students learned more than low-SES students during the school year as well as during the summer. They also found that there were larger socioeconomic differences in reading growth rates during the summer than during the school year. For example, in Benson and Borman's (2007) study, the gap between the highest and lowest SES quintiles increased by about 0.5 points per month in the summer between kindergarten and first grade and about 0.2 points per month in both kindergarten and first grade. They point out that the school year is longer than the summer (9.4 months vs. 2.6 months in their calculation), so the summer made a smaller contribution to SES differences overall, about 1.4 points compared with 1.9 points, or about 42% of the annual increase in the achievement gap.

In contrast to Benson and Borman (2007), Alexander et al. (2001) found that the summer months make the largest contribution to SES differences. In their

growth curve analyses that included a summer adjustment term, the effect of SES was not significant and trivial in a negative direction. Thus, they stated that "the BSS conclusion is that *practically the entire gap increase across socioeconomic lines* [italics in the original] traces to summer learning differentials" (Alexander et al., 2001, p. 174; see also Entwisle et al., 1997, p. 38).

On the issue of school year versus summer learning differences, Heyns (1978) took a position that falls somewhere between Alexander et al. (2001) and Benson and Borman (2007). Unlike Alexander et al. (2001), she did find SES differentiation in the school year as well as the summer. The degree of differentiation varied with both grade level and ethnic group. The difference in gains, in grade-level equivalents, between students in the highest versus lowest income categories ranged from 0.04 to 0.35 in the school year and from 0.22 to 0.70 in the summer. Summer learning differences accounted for 39 to 95% of the annual increase in the SES gap. When Heyns (1978) looked at the increasing gap between U.S. norms and the total Atlanta sample comprised of students who were in general economically disadvantaged, she concluded that the summer differential "is responsible for perhaps 80% of the gap" (p. 68).

In sum, the answer to the question of whether school year or summer learning differences make the largest contribution to the SES gap in reading is that it depends on the sample. Based on the available evidence, summer learning differences account for as little as 40% to as much as 100% of the annual increase in the gap. In urban disadvantaged settings like those studied by Alexander et al. (2001) and Heyns (1978), it is apt to be closer to 100% than to 40%. What is clear in any event is that the *rate* of differentiation is greater during the summer months. For this reason, it makes sense to develop reading interventions for low-SES students that are designed to be implemented in the summer.

Why Do Low-SES Students Make Less Progress in Reading in the Summer Months?

We suggest, first, that spring-to-fall growth in reading achievement is affected by the amount of summer reading that students do. Second, the amount of reading that they do in the summer is influenced by (a) access to books and other reading materials in the home environment and outside of the home, and (b) family support for reading and literacy-related activities. Finally, access and family support are influenced by SES. In other words, the effect of SES on summer reading growth is mediated, at least in part, by access, support, and reading activity. So low-SES students make less progress in reading in the summer months than high-SES students because, among other factors, they have less access to books and less family support for reading and consequently read less. There is good evidence in the literature for the linkages between SES, access, and support, between access and amount of reading, and between amount of summer reading and fall reading achievement.

SES, Book Access, and Family Support

According to the "faucet theory" proposed by Entwisle et al. (1997), all children gain when they are in school because the resources needed for learning are available to them. But when school is not in session, the resource faucet is turned off, and inequalities in resources exert their effects, causing children from low-SES families to stop gaining or lose ground while children from high-SES families improve or at least maintain their skills. The faucet theory points to access to books and other reading materials as an important factor in attempting to explain why the summer months produce differential growth in reading.

Research has shown that there is a strong relationship between SES and access to books and other reading materials. In Bradley, Corwyn, McAdoo, and Coll's (2001) analysis of data from the National Longitudinal Survey of Youth (NLSY), children from low-SES families were far less likely than children from high-SES families to have 10 or more books. These SES differences also extend to the availability and quantity of books in stores, childcare centers, and local elementary school and public libraries (e.g., Neuman & Celano, 2001).

Family support for reading and literacy can be operationally defined in many different ways. One of the most straightforward and widely used measures, the frequency with which a parent reads to the child, is strongly associated with SES. Bradley et al. (2001) found that high-SES mothers were more likely than low-SES mothers to read to their children three or more times per week, with this difference being most pronounced in early childhood. Burkam et al. (2004) found that, compared with the middle-SES groups, low-SES parents were significantly less likely to read a book to their child in the summer between kindergarten and first grade, while high-SES parents were more likely to read a book to their child. A similar pattern was evident for taking the child to a library or bookstore.

An ethnographic study of fourth-grade students' summer activities by Chin and Phillips (2004) provides insight on the ways in which family support for literacy differs as a function of SES and how SES differences could contribute to summer learning differences. They found that the parents of low-SES children often went out of their way to obtain books and educational materials for their children to use in the summer. These parents, however, were less skilled at organizing and facilitating literacy-related activities and making them appealing for their children, and they were less knowledgeable about their children's capabilities than middle-SES parents. For example, a middle-SES mother organized a book club for her daughter and her friends and their mothers, whereas a low-SES mother purchased $45 worth of Harry Potter books for her daughter but did not realize that they were too difficult for her to comprehend.

Access and Amount of Summer Reading

Heyns (1978) found that the number of books sixth- and seventh-grade students read during the summer was related to both frequency of use of a public library and the distance from the student's home to the library. Kim (2004) surveyed

students in the summer following fifth grade and found a significant relationship between access to books and number of books read. Access was measured on a 12-point scale that was based on students' responses (ranging from *strongly agree* to *strongly disagree*) to three statements: (1) "It's easy for me to find books to read at home during summer vacation," (2) "It's easy for me to find books to read at the public library during summer vacation," and (3) "It's easy for me to buy books to read during summer vacation." The number of books read was assessed by asking students to list as many as five titles they read and verifying each title in an electronic catalog of books for children and young adults. Only verified titles counted as a book read. Studies by Morrow (1992) and McQuillan and Au (2001) also indicate a relationship between access to books and amount of reading, although these studies focused on reading during the school year.

Summer Reading and Fall Reading Achievement

The crucial link is between summer reading and fall reading achievement, and it is well supported by research. In Heyns's (1978) landmark study, hours spent reading and books read were significantly related to fall reading achievement with spring reading achievement, family income, parental education, and household size controlled. Thus, the effect of reading was independent of SES, suggesting that "increasing access to books and encouraging reading may well have substantial impact on achievement" (Heyns, 1978, p. 172). Entwisle et al. (1997) also found that the number of books read in the summer predicted summer learning independent of SES.

Several studies have replicated Heyns's (1978) findings in recent years. Like Heyns (1978), all of these investigators controlled for spring scores and SES and they included a variety of additional covariates as controls (e.g., demographic characteristics, parents' expectations, teacher ratings, students' attitude toward reading). Phillips and Chin (2004) found that students who read more than 30 minutes per day in the summer had higher reading comprehension scores in the fall. Burkam et al. (2004) found a significant relationship between fall reading and a composite of seven literacy-related summer activities that included frequency of the student reading a book on his or her own and number of visits to a library or bookstore. Finally, Kim (2004) found a significant relationship between books read in the summer and fall reading comprehension scores. That study incorporated two significant improvements in methodology: Rising sixth-grade students were asked directly about their reading activities during the summer, and the book reading measure was validated against a list of actual titles. The other studies including Heyns (1978) relied on parents' retrospective reports of their children's summer reading that were collected after school began in the fall.

Other Variables

Other variables that could influence fall reading achievement include summer school attendance and summer activities not involving reading, such as taking a

trip or visiting a museum. Some studies have found that attending summer school does not affect fall achievement whereas summer reading does (Burkam et al., 2004; Phillips & Chin, 2004). With regard to summer activities other than reading, both Heyns (1978) and Entwisle et al. (1997) found that taking a trip was related to summer gains. However, Heyns's results suggested that "the single summer activity that is most strongly and consistently related to summer learning is reading" (p. 161). This conclusion is supported by the findings of Burkam et al. (2004), who found no effect for summer trips, and Phillips and Chin (2004), who found only a weak effect of going to museums on summer learning ($p < 0.10$, weaker than reading).

Can Summer Silent Reading Programs Reduce the SES Reading Achievement Gap?

The explanation of why low-SES students make less progress in reading during the summer and the supporting evidence reviewed were, for us, a good start toward developing a summer intervention. It suggested that to improve the reading achievement of low-SES students, we needed to increase both their access to books and the volume of their summer reading. In addition, it suggested that it may be helpful to guide or structure the students' reading activities in some way, much as the middle-SES parents did in Chin and Phillips's (2004) ethnographic study. This, however, was only the first step in developing an effective program of silent summer reading.

Development of the Summer Reading Program

Development of our summer reading program began with this question: Were there any experimental studies of well-designed voluntary reading interventions that were successful in encouraging more reading and improving reading achievement among elementary school students? The National Reading Panel (NRP; National Institute of Child Health and Human Development [NICHD], 2000) had reviewed 14 experimental and quasi-experimental studies of sustained silent reading (SSR) and similar instructional approaches that typically involve asking students to select their own reading material, little monitoring, and no discussion or written follow-up assignment. The NRP's controversial conclusion was that there was little evidence that "encouraging reading has a beneficial effect on reading achievement" (p. 3-28). However, the panel members suggested that the dearth of experimental evidence "does not mean that procedures that encourage students to read more could not be made to work—future studies should explore this possibility" (p. 3-28). Thus, the NRP left open the possibility that voluntary reading could be made more effective and encouraged researchers to pursue the question of how.

Book Matching. One of the studies reviewed by the NRP was thought provoking. Carver and Leibert (1995) found that elementary school students who spent 15–30 hours reading library books in a school-based summer reading program did not gain in reading level, vocabulary, or reading rate. They interpreted this result as being due to the fact that the students read books that were too easy for them. Although most students were reading at the fifth-grade level, they chose to read books at the third- and fourth-grade levels. Other researchers had stressed the importance of text difficulty in silent or free reading (e.g., Byrnes, 2000; Stahl, 2004), and we knew that controlling the difficulty of text improves both oral reading fluency and reading comprehension (e.g., Shany & Biemiller, 1995). We concluded that the quality of the match between students' skill levels and the texts they are reading was a potentially important ingredient in an effective silent summer reading program. At the time, we were unaware of the work of Reutzel, Jones, Fawson, and Smith (2008) who were developing an instructional technique for teachers to use during the school year called scaffolded silent reading (ScSR). One of the key features of ScSR is teacher assignment of texts that are at students' independent reading levels.

We also believed that students should have an opportunity to read books that tap into their personal interests, because this enhances their motivation to read independently (Guthrie & Humenick, 2004). Thus, we concurred with Morrow's (2003) suggestion that providing high-interest books that match students' reading preferences as well as their reading levels is essential for encouraging voluntary reading outside school, and we adopted students' interests and preferences as a second potentially important element. We knew these principles had been applied previously in practical settings. For example, in a summer reading program described by Borduin and Cooper (1997), teachers assessed students' text reading levels and administered an interest survey to guide their selection of books.

Teacher and Parent Support. Kim (2004) found that students read more books over the summer when they fulfilled a teacher request to write about a book they had read. This suggested that teachers might encourage summer reading—an important but hardly novel idea. Chin and Phillips (2004) made a similar suggestion, based on their finding of a modest relationship ($p < 0.10$) between summer gains in reading comprehension and the frequency with which teachers had assigned reading-related projects in the spring (e.g., writing a report or making an oral presentation). Also, there were scattered reports in the literature of summer reading programs that incorporated teacher support. For instance, Baron (1999) described a Connecticut school in which teachers aimed to reduce the summer dip by mailing books to students and asking them to respond to the books on a postcard to be mailed to the teacher.

Kim (2004) also found that students read more books in the summer when their parents signed a form verifying that they had read at least one book from among a list of recommended titles. This indicated that parents as well as teachers might be enlisted to support summer reading, at minimum by monitoring it to

provide a kind of accountability. At about the same time, Stahl (2004) pointed to monitoring as an important and often neglected component of SSR in classrooms.

Book Matching and Teacher and Parent Support. Kim (2007) studied the effects of a voluntary summer reading intervention for first- through fifth-grade students that incorporated book matching and teacher and parent support. In the late spring, the students took the reading portion of the Stanford Achievement Test (SAT) as a pretest and also completed a 20-item survey of their reading preferences. Then they were randomly assigned to a treatment condition in which they received 10 books during the summer vacation (i.e., last week of June to first week of September) or a control condition in which they received 10 books after readministration of the SAT reading test as a posttest in the fall. A fall reading survey administered after the posttest included questions about book ownership and summer reading activity.

The following procedures were used to accomplish book matching and provide teacher and parent support in Kim's (2007) experiment. A two-step computer algorithm identified books that matched (a) each student's reading preferences based on the reading survey and (b) each student's independent reading level based on a range of 50 Lexiles above to 100 Lexiles below students' scores on the SAT in the spring. Teachers supported the students' summer reading by conducting a lesson near the end of the school year where they explained that students in the program would receive 10 books during the summer or in the fall. Each book would be accompanied with a postcard with several questions to be answered before returning it: (a) Did you finish reading your new book? (b) Did you like reading this book? (c) Was this book easy to read? In addition, parents would receive a letter requesting that they remind their children to read the books.

In Kim's (2007) experiment, students in the treatment group reported reading significantly more books in the summer than did students in the control group, about three more books on average. Also, only 3% of the low-SES students in the treatment group reported owning 0–10 books (the lowest category on the survey), whereas 32% of the students in the control group did so. Further, the books were well matched to the students' interests and reading levels, and teachers and parents encouraged and supported the students' reading, although the level of support might be described as minimal. However, despite book matching and some teacher and parent support, and despite the observed impact of the treatment on summer reading and book ownership, there was no difference in reading achievement between the treatment group and the control group. It was clear that something more was needed.

Book Matching and Teacher and Parent Scaffolding. Kim (2007) suggested that to strengthen the efficacy of summer reading programs, teachers could scaffold silent reading activities by instructing students how to use strategies to monitor their comprehension of text (Pressley, 2002; Rosenshine & Meister, 1994). For example, during lessons conducted at the end of the school year, teachers could

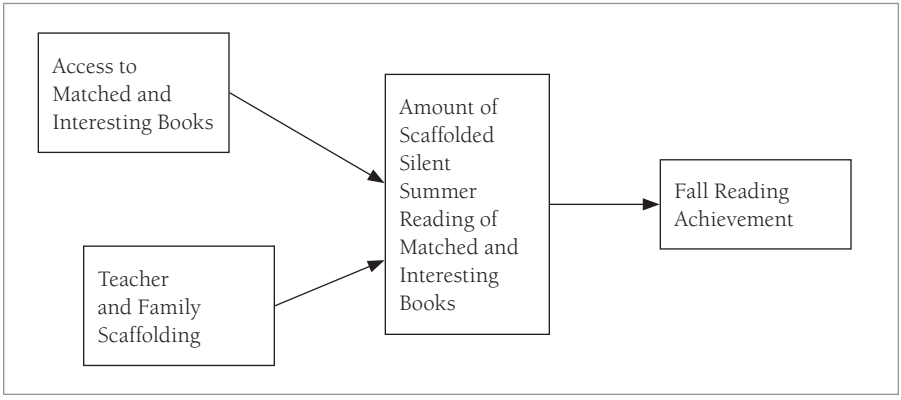
instruct students to use multiple strategies to improve their reading comprehension in the summer. If students were reminded to apply comprehension strategies in silent reading and they did so, this might also increase the degree to which they are actively engaged in reading and motivated to understand what they are reading, particularly if they know they will be explaining what they read to a parent.

Although the NRP (NICHD, 2000) found no convincing evidence of positive effects for voluntary reading, it did find that the use of multiple comprehension strategies produced significant gains on reading assessments. The NRP also found that guided oral reading of text improved reading comprehension. Our awareness of this second evidence-based instructional strategy led to the final development in our thinking about an effective summer reading program: Teachers could scaffold fluent oral reading in end-of-the-year lessons, and parents could scaffold summer reading by providing an opportunity for their children to practice oral reading of a text they had previously read silently. Thus, prior research suggested that students might benefit from summer reading if they were explicitly taught to use comprehension strategies during silent reading of text and instructed to practice oral reading with a family member.

Logic Model for Our Studies of Scaffolded Silent Summer Reading. Putting the pieces together, Figure 5.2 displays the logic model that underlies our studies of scaffolded silent summer reading. In essence, fall reading achievement is influenced by the amount of scaffolded silent summer reading of matched and interesting books that students do.

To provide scaffolding for students' summer reading, we ask teachers to implement several lessons at the end of the school year. In these lessons, the teacher instructs students to use comprehension strategies that they can apply at home during the summer when they are reading independently and silently. The teacher also provides oral reading fluency practice, encourages students to read aloud to

Figure 5.2. Logic Model for Studies of Scaffolded Silent Summer Reading



their parents over the summer, and shows them a simple procedure for doing so. We also ask parents to listen as their child tells them about a book he or she had read during the summer, listen as a short passage from a book is read out loud by the child, and provide feedback on the degree to which the child reads smoothly and with expression. Similarly, in Reutzel et al.'s (2008) ScSR procedure for classroom use, students read silently on their own, and they read aloud to the teacher.

The Experiments and the Program

In the first of our two experiments (Kim, 2006), fourth-grade students received lessons from their teacher at the end of the school year. In these lessons, the teacher modeled fluent oral reading and comprehension strategies for silent reading. The students practiced fluent oral reading in a paired-reading format and practiced using five reading comprehension strategies while reading silently on their own. In the summer, the treatment group received matched books and parent scaffolding that consisted of listening as the student talked about a book, listening as a 100-word passage from the book was read aloud and then reread, providing general feedback, and signing a postcard to be mailed to the researchers with an optional comment about the summer reading experience. The control group received no books and no parent scaffolding in the summer but did receive books in the fall after posttesting to satisfy ethical requirements.

Positive effects on reading achievement were observed in the Kim (2006) experiment, but considering the controversy over the benefits of silent reading, we believed that replication with a different sample of schools and additional grade levels was important. In addition, it is possible that the same results would have been obtained if students simply received the matched books without any support from their teachers or parents, or if students received only oral reading practice without comprehension strategies instruction. Therefore, we conducted a second experiment (Kim & White, 2008) with four groups of students in third through fifth grades:

1. Matched books only (Books Only)
2. Matched books and oral reading (Books With Oral Reading Scaffolding)
3. Matched books, oral reading, and comprehension strategies instruction (Books With Oral Reading and Comprehension Scaffolding)
4. Control group receiving books in the fall after posttesting and no teacher or parent scaffolding (Control)

Participants. Both experiments were conducted in a large, suburban school district in the mid-Atlantic region of the United States. In the first experiment, the participants were 34 teachers and 486 students who were completing fourth grade in one of 10 elementary schools. Non-Caucasian ethnic minorities (e.g., African American, Hispanic, Asian) were predominant (67%), and 39% of the students were receiving free or reduced-cost lunch. In the second experiment, the participants

were 24 teachers and 400 students who were completing third, fourth, or fifth grade in one of two elementary schools. The students' characteristics were similar: 69% non-Caucasian and 38% receiving free or reduced-cost lunch. Students with special education needs who could not be tested under standard conditions were excluded from the experiments. About 8% of the students tested were classified as learning disabled.

Prior research informed our decision to target the intervention to students in the third through fifth grades. Most voluntary reading interventions have focused on students who are old enough to have mastered basic decoding skills and are capable of improving their reading through reading (Byrnes, 2000; Share, 1999). For example, 12 of the 14 studies on voluntary reading reviewed by the NRP involved students in third grade or higher. Although Kim (2007) found no significant effects for summer reading, treatment–control differences were larger in the third and fifth grades than in the first and second grades.

Treatment and Control Groups. In the first experiment, all students—including those in the control group—received the three end-of-year lessons. (We assumed—and this assumption was later borne out by the data—that there would be minimal lesson effects for the control group because the students received no books in the summer and, thus, no opportunity to practice what they were taught in the lessons.) Within each of the participating teachers' classes, students were randomly assigned to either the treatment group or the control group. The treatment group received matched books and parent scaffolding of oral reading in the summer. The control group received books in the fall after the posttests were administered and no parent scaffolding. In the second experiment, both teachers and students were randomly assigned to one of the four groups—Books Only, Books With Oral Reading Scaffolding, Books With Oral Reading and Comprehension Scaffolding, and Control. The Control group received no end-of-year lessons from their teacher, no books in the summer, and no parent scaffolding.

Measures. To determine the reading preferences we used to match books with students, teachers administered a survey that asked students how much they enjoyed reading books from one of 25 categories. The categories were initially developed from the Adventuring with Books list for pre-K to grade 6 students published by the National Council of Teachers of English (McClure & Kristo, 2002), validated using other published surveys of students' reading preferences (e.g., Galda, Ash, & Cullinan, 2000; Ivey & Broaddus, 2001), and reviewed and refined by four elementary teachers. To find out whether the intervention increased reading activity at home or access to books at home during the summer, teachers administered a survey in September in which students were asked to rate how often they had engaged in each of five reading activities and how many books there were in their homes.

To measure growth in the students' reading achievement over the summer, teachers administered the appropriate level of the vocabulary and reading

comprehension tests from the Iowa Tests of Basic Skills (ITBS) in the second week of June and the second week of September. Different forms of the test were used in June and September. The vocabulary and reading comprehension test scores were combined to get a total reading score that was used in analyzing gains from pretest to posttest. The ITBS is highly reliable (KR-20 coefficients above 0.93 and equivalent form estimates of 0.86 or higher), and the levels are vertically equated to yield a continuous measure of reading achievement.

The Program. The program was implemented in four stages: teacher training, end-of-year lessons, book matching, and parent/family member support for summer reading. In early June, teachers attended a two-hour training session conducted by an experienced elementary language arts teacher. This teacher trainer had developed the lessons to meet our specifications and field tested them in a fourth-grade class prior to training. During training, she modeled a series of three lessons using an engaging, well-illustrated children's storybook, *The Wreck of the Zephyr* by Chris Van Allsburg.

The end-of-year lessons were carried out over the course of several days by the participating classroom teachers, following training. Each lesson was fully scripted and required no more than 45 minutes of class time. Lesson 1 focused on comprehension strategies. The teacher began by explaining to the students that they would be receiving books and postcards over the summer, and they would need to know what to do when they received them. She asked for the students' help in generating a list of five strategies that good readers use to help them understand what they are reading: reread, predict, ask questions, make connections, and summarize. These were strategies the teachers had already introduced and taught, so it was not difficult to elicit them. The teacher then read *The Wreck of the Zephyr* aloud, stopping at appropriate points to model one of the strategies. As each strategy was modeled, the students were asked to identify it, and the teacher rephrased their responses so they exactly matched the phrases they would see on the postcard. Next, the teacher demonstrated on an overhead transparency how to complete the questions on a postcard like the one the students would be receiving with their books. In the last part of the lesson, students selected a book, attached sticky notes where they used a comprehension strategy, shared their examples of strategy use with the class, and practiced answering the questions on the postcard. The fourth question asked them to place a check mark by each comprehension strategy they used.

In Lesson 2, the focus was fluency practice. Following a review of comprehension strategies, the teacher stated, "Another thing that good readers do is read smoothly and with good expression when they are reading aloud." She asked the students how they knew if someone was a good reader when they read aloud, accepted their answers, and said, "Yes, when someone reads aloud with good expression and at just the right speed without mistakes, we call that fluent reading." She wrote *fluent reading* on the board and beneath it, *smooth*, *good expression*, and *correct*. Then she explained that she would read a 100-word passage from *The Wreck of the Zephyr* several times, and the students would rate her reading. The first reading

was poor, with lots of pauses and miscues; the second reading was better, with shorter pauses and no miscues but flat and expressionless; and the third reading was her best reading—smooth, full of expression, and errorless. Next, the teacher used an overhead transparency of the postcard to demonstrate how the students would be answering an additional question that was not discussed the day before: a three-part question that asked whether they read more smoothly, knew more words, and read with more expression. Finally, the teacher pointed out that postcard asked for a family member's signature and optional comment.

Lesson 2 continued with students pairing up, counting 100 words from a passage in a book, and practicing reading with their partners. One student read the passage aloud while the other gave feedback using the postcard rating categories, then the roles were reversed for a second reading. After paired reading, the students "mailed" their postcards by returning them to the teacher. They were given a homework assignment to independently read a book for 15 minutes, read aloud a 100-word passage to a family member twice, complete the questions on the postcard, and obtain a family member's signature.

Lesson 3 provided additional teacher modeling and practice with a nonfiction book. The teacher elicited and modeled comprehension strategies as before, modeled completion of the postcard questions, and modeled counting out 100 words and reading aloud with improvement shown. The students then practiced on their own (for silent reading and comprehension strategies) and with a partner (for oral reading and fluency practice).

In the first experiment, all students received all three end-of-year lessons exactly as described earlier. In the second experiment, only the students in the Books With Oral Reading and Comprehension Scaffolding group received all three lessons. Students in the Books With Oral Reading Scaffolding group received two lessons that did not include comprehension strategies; and students in the Books Only group received a single lesson that included neither oral reading nor comprehension strategies instruction. For students in the Control group, the teacher prepared an alternative reading activity to use in place of the lessons.

In both experiments, matched books were selected for each student by a computer algorithm that merged data from two files. One file contained a text difficulty (Lexile) level and preference categories for each of 240 available book titles. The second file contained each student's Lexile range from the June ITBS and reading preference ratings for the categories on the June survey. The algorithm generated a list of the eight books that represented the best matches for each student, those with high preference ratings within the student's Lexile range. For students in the treatment groups, one matched book was mailed each week for eight successive weeks from early July until the end of August. Students in the control group received all eight of their matched books at once in September after the posttests.

Along with each book that was mailed, there was a postcard for the student and a letter for the parent or other family member (translated into Spanish, Urdu, Arabic, or Vietnamese for parents who spoke one of these languages). The letter asked the parent to encourage their children to read and requested return of the

postcard. Except for students in the Books Only group of the second experiment, the parent letter suggested that "It will help your child if he or she reads out loud to you, or to an older brother or sister" and requested that "After you listen to your child reading out loud a second time, tell him or her how they improved." The postcard was modified as needed to implement the Books Only and Books With Oral Reading Scaffolding treatment conditions in the second experiment (e.g., the postcard had no questions asking the student about his or her use of comprehension strategies).

Findings

First Experiment

Table 5.1 displays the posttest mean total reading scores on the ITBS for all students in the treatment and control groups. The posttest scores were adjusted for pretest scores by means of an ANCOVA. Overall reading achievement was higher for the treatment group (M = 207.9) than the control group (M = 205.9). The difference of 2.0 points was just 0.01 short of the conventional 0.05 level of statistical significance at $p < 0.06$ but it represented 1.3 additional months of school learning, so it is clearly significant in practical terms. We calculated additional months of school learning by dividing the difference between the treatment and control group means by 1.56, because students gain 14 points from the spring of fourth grade to the spring of fifth grade according to the test publisher's norm sample, or 1.56 points per month during a nine-month school year. Research (e.g., Cooper et al., 1996) suggests that achievement scores do not increase during the summer, so we divided 14 by 9, not 12.

Table 5.1. ITBS Results of the First Experiment

Participants	*N* (Total for Both Groups)	*SD* (Combining Groups)	Treatment Group Mean (ITBS Total Reading)[a]	Control Group Mean (ITBS Total Reading)[a]	Additional Months of Learning[b]
All students (including "other" ethnicity)	486	24.1	207.9	205.9	+1.3
Caucasian	160	24.3	221.8	219.2	+1.6
African American	93	19.6	201.5	196.3	+3.3
Hispanic	125	18.6	197.2	193.9	+2.1
Asian	85	22.0	203.1	207.2	–2.6
Low SES	183	20.3	199.8	198.5	+0.8

[a]Adjusted for pretest scores. [b]See text for explanation.

Table 5.1 also displays the ITBS results for low-SES students and each ethnic group regardless of income. African American and Hispanic students derived the greatest benefit from the summer reading program, showing treatment effects that were about twice as large as the overall effect. For African American students, the difference between treatment and control conditions (5.2 points) represents 3.3 additional months of learning. For Hispanic students, the treatment–control difference is the equivalent of 2.1 additional months of learning. For Asian students, the control group performed better than the treatment group. This anomalous result may be related to the fact that the control group included a much higher proportion of females than males. It is possible that these Asian females were avid readers before the experiment began. Thus, the results for Asian students may reflect selection effects—that is, the overrepresentation of Asian females in the control group—rather than differences due to the effects of the intervention.

Other data collected in the first experiment indicated that many of the students did read their books with a parent or family member. Slightly more than half of the students in the treatment group in each of the ethnic groups returned a postcard indicating that they read at least one book, and all but a few of the returned postcards had been signed by a parent or family member. Also, on two survey items measuring oral reading with a family member, the treatment group had significantly higher scores than the control group.

Second Experiment

As in the first experiment, there was evidence that the intervention had an impact on the students' summer reading activity. On a scale that combined results from five items, there was a significant difference favoring the Books With Oral Reading and Comprehension Scaffolding group over the Control group. About half of the students in each treatment group returned at least one postcard indicating they had read at least one book, and about 25% returned four or more postcards indicating they had read at least four of the eight books.

As expected, students in the Books Only group ($M = 203.6$) performed similarly to those in the Control group on ITBS total reading ($M = 203.1$). Thus, as in the Kim (2007) experiment, simply providing matched books did not have a significant positive effect on reading achievement. The lack of positive effects for books only did not seem to result from the students having not read the books. The percentage of students who reported reading part or all of at least one book was actually higher for the Books Only group (55%) than for the Books With Oral Reading and Comprehension Scaffolding group (49%), as was the percentage of students who reported reading four or more of the eight books, 34% and 23%, respectively.

Students in the full-treatment group, Books With Oral Reading and Comprehension Scaffolding ($M = 207.0$) significantly outperformed students in the Control group on the ITBS ($M = 203.1$, $p < 0.03$). The difference in posttest scores of 3.9 points represents a learning advantage of 2.5 months.

Table 5.2. ITBS Results of the Second Experiment

Participants	*N* (Total for Both Groups)	*SD* (Combining Groups)	Treatment Group Mean (ITBS Total Reading)[a,b]	Control Group Mean (ITBS Total Reading)[a,b]	Additional Months of Learning[c]
All students (including "other" ethnicity)	207	28.3	207.0	203.1	+2.5
Caucasian	72	25.4	221.6	222.4	–0.5
African American	50	26.2	201.0	198.4	+1.7
Hispanic	61	24.3	196.0	188.1	+5.1
Low SES	77	22.6	195.6	189.3	+4.0

[a]Books with oral reading and comprehension scaffolding only; other treatment groups, books only, and books with oral reading scaffolding are excluded to make Tables 5.1 and 5.2 comparable. [b]Adjusted for pretest scores. [c]See text for explanation.

Students in the Books With Oral Reading Scaffolding group (M = 204.8) performed better than those in the Control group (M = 203.1) on the ITBS, and this difference was larger for students who were below the median on the fluency pretest (M = 204.8 vs. 200.7), but differences were not statistically significant. Thus, the second experiment did not provide clear evidence on whether oral reading scaffolding alone produces better reading outcomes.

Table 5.2 presents the main ITBS results for low-SES, African American, Caucasian, and Hispanic students, comparing the Control group with the full-treatment group, Books With Oral Reading and Comprehension Scaffolding. These data are directly comparable to the data in Table 5.1. The largest positive effects, ranging from 1.7 to 5.1 additional months of learning, were observed for African American, Hispanic, and low-SES students. Low-SES students gained an average of 4.0 months. Notably, this is enough to offset 100% of the summer loss shown by low-SES students in Cooper et al.'s (1996) meta-analysis of studies of the effect of summer vacation on achievement, 0.34 grade-level equivalents or about 3 months.

Related Research and Similar Programs Implemented by Others

In our studies, the intervention lasted for a single summer only, and we found that it was sufficiently effective to offset the amount of summer loss that is typically seen in low-SES students. In subsequent summers, however, the low-SES students who benefited from the program are likely to have slipped behind their high-SES peers. Thus, to make a significant dent in the SES achievement gap, it may be necessary

to implement a multiyear program of silent summer reading. In the only study of the impact of increasing access to books over consecutive summers on students' reading achievement that we are aware of, Allington and McGill-Franzen (2008) randomly assigned primary school students in 17 high-poverty schools to a treatment group or a control group. Treatment-group students received 12 self-selected paperback books for three consecutive summers. Students were encouraged to keep a book log each summer. After the third summer, the treatment group scored 0.14 *SD*s higher than the control group on the Florida Comprehensive Assessment Test, and the effect size was somewhat larger for the lowest SES students (0.21 *SD*).

Since the conclusion of our two experiments, numerous school districts have implemented similar programs of silent summer reading. For example, in 2008, Communities in Schools (a dropout prevention organization) and MetaMetrics, Inc. (a North Carolina-based testing firm) partnered with local school administrators and teachers in Durham, North Carolina, USA, to implement a silent summer reading program based on our earlier experimental studies. The study involved third- and fourth-grade students from two schools who were below reading level as measured by the North Carolina end-of-grade assessments in reading. These students were administered a pretest and posttest comprehension measure developed by MetaMetrics (Vitiello, 2008). Students' Lexile levels ranged from 120L to 990L (Lexiles), which corresponded to the mean reading level of students in first to sixth grades.

Book fairs were held to select matched and interesting books for students to read during the summer. Since the book fairs were held after the school year ended, dinner was provided for parents and their children to increase participation. Approximately 230 books that accommodated the wide range of reading levels were purchased from Barnes & Noble and Scholastic. The books were organized into one of six Lexile levels ranging from (1) below 300L, (2) 300–400L, (3) 401–500L, (4) 501–600L, (5) 601–700L, and (6) above 700 Lexiles. Books were color coded to correspond to the appropriate Lexile zone. Staff and volunteers used Lexile scores from the pretest reading measure to direct students to one of the six Lexile zones, and students were allowed to choose eight books within their zone that interested them. The students were informed that their chosen books would be mailed to them in July and August, and they were also encouraged to return a postcard after reading each book.

Staff from MetaMetrics examined whether pretest to posttest reading Lexile gains were related to the number of books students reported reading as measured by their postcard return rate. The results revealed a moderate relationship between reading growth in Lexiles and the number of books students reported reading during the summer. Students who read more than half of their books (5 to 8 books) had an average gain of more than 80 Lexiles, whereas students who read less than half of their books (0 to 4 books) lost ground during the summer. For example, students who read only 0 to 1 book underwent a decline of approximately 50 Lexiles, on average. Because there was no comparison group and stu-

dents were not randomly assigned to receive different numbers of books, no firm causal conclusions can be drawn.

Despite the limitations of correlational evidence, the Durham program provides an example of adapting a silent reading program to fit within the resource constraints of a local school district. It is important to note that the Durham program did match books to readers, but the strategy for doing so—a leveled book fair—was different from the strategy we had employed in our two experiments. Equally important, there was also an effort to evaluate the efficacy of the program.

Conclusions About Summer Reading and Recommendations for Researchers and Policymakers

In future years, we suspect that policymakers and practitioners will become more interested in adopting scaffolded silent summer reading programs. Given the budget deficits at all levels of government, school districts are unlikely to have the resources to implement costly summer school programs. At the same time, federal and state accountability mandates will continue to hold schools responsible for reducing achievement gaps, especially those based on socioeconomic status. Both budget constraints and accountability demands are likely to fuel the debate about the most cost-effective approaches to reduce achievement gaps and implement silent summer reading programs. We conclude this chapter by offering several recommendations for researchers and policymakers pursuing these goals.

First, researchers and policymakers should continue to examine the question of whether increasing the quantity and quality of silent summer reading activities improves reading achievement for low-SES students. As noted in the first part of this chapter, sociological research suggests that students must have access to books at home to enjoy gains in reading comprehension during the summer months. The Allington and McGill-Franzen (2008) study is exemplary in its use of a longitudinal design to test the impact of increasing access to books across multiple summers. Findings from this experimental study suggest that a longer intervention spanning multiple summers may enhance the efficacy of silent reading programs. In future work, researchers should continue to pursue the question of whether a multiyear silent summer reading program can generate long-term, cumulative, and practically significant effects on reading achievement.

Our research has suggested that *qualitative* differences in students' silent reading activities also matter. The quality of students' silent reading experiences, as measured by the match between readers and texts, may be as important as *quantitative* differences in students' access to books and opportunities to read. We are certainly not alone in pointing to the match between text and reader (e.g., Hiebert & Sailors, 2009). In the Allington and McGill-Franzen (2008) study, students were allowed to self-select books without regard to their difficulty. From our perspective, their positive results are somewhat surprising. But the point we wish

to emphasize is that, to date, there has been no study of a silent summer reading program that increased access to matched books for multiple summers.

Second, researchers and policymakers should articulate a clear logic model for their silent summer reading program. Our logic model (Rossi, Lipsey, & Freeman, 2004) describes the critical program components through which a silent summer reading program may improve reading achievement. Based on our review of research, we proposed that increasing students' access to matched books and teacher and family scaffolding are needed to increase silent reading activities in the summer and to improve reading achievement. An important goal of our two experimental studies was to test the logic model outlined in Figure 5.2. Results from our two studies indicated that both program components—access to matched books and teacher and family scaffolding—were needed to improve students' reading comprehension.

A logic model can also predict the conditions under which an intervention may *not* improve student outcomes. Kim and Guryan (2010) allowed 400 low-SES Hispanic students who had just completed fourth grade to self-select 10 books for summer reading at an end-of-year book fair. Most students did not choose 10 books that were matched to their reading level. Specifically, 67% of the students selected 10 books with a mean readability level above their independent reading level. In addition, many parents and children did not attend the family literacy events that were offered in an attempt to increase parent support or scaffolding for summer reading. Consistent with the logic model in Figure 5.2, students who received 10 books and whose parents were invited to the family literacy events scored no higher on the Gates–MacGinitie Reading Test administered in the fall than students who received no books in the summer.

Third, policymakers should insist on evaluation of any silent summer reading programs that are implemented to determine if they are effective, particularly in reducing socioeconomic disparities in reading achievement. Evaluation is critical, because there is no guarantee that positive results from a silent reading intervention in one district will be easily replicated in a district with different groups of students. Local adaptations of silent reading programs will inevitably lead to variations in program design, and these variations (e.g., the strategy for matching books to readers, the duration of the intervention, and the English proficiency of the students in the program) are likely to affect the results. The Durham program is noteworthy, because there was not only an intervention to address the problem of summer reading loss but also a plan to collect data on students' summer reading activity and progress in reading comprehension. We encourage other school districts to intervene to address the problem of summer loss and to simultaneously evaluate their efforts by measuring students' reading skills and the amount of summer reading.

QUESTIONS FOR PROFESSIONAL DEVELOPMENT

1. What are some reasons why low-SES students fall behind in reading during summer vacation?
2. How could the results of the two experiments inform the design of a scaffolded silent reading program in your school?
3. How could you determine whether the core components of the logic model are being implemented with high fidelity?
4. How could you evaluate your silent reading program to determine if it is working well or is in need of additional modifications?

NOTE

Some of the material in this chapter has been adapted from White and Kim (2008).

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