

ARTICLES

Tutor-Assisted Intensive Learning Strategies in Kindergarten: How Much Is Enough?

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The purpose of this research was to investigate the effectiveness of a tutoring intervention provided by community tutors to kindergarten students at risk for reading difficulties. The 73 students were randomly assigned to 1 of 3 conditions: (a) tutoring 4 days a week, (b) tutoring 2 days a week, or (c) a control condition that provided small-group storybook reading 2 days a week. Children were administered reading and phonemic awareness pre- and posttreatment tests. Analyses revealed that students in the 4-day condition outperformed students in either the 2-day or control conditions on 3 reading measures. Effect sizes were .79, .90, and .83 on word identification, passage comprehension, and basic reading skills, respectively. Challenges and implications for managing community tutoring programs are discussed.

More than 2 million children require special services to remediate reading difficulties (USDOE, 2001). Most reading difficulties are associated with core deficits in phonological processing that affect reading acquisition, particularly *phonological awareness*, or the awareness of and ability to manipulate speech sounds, and the encoding of phonological information in memory (e.g., Adams, 1990; Snow, Burns, & Griffin, 1998). Reading difficulties also stem from poor vocabulary and limited background knowledge, particularly among children from economically disadvantaged families (Hart & Risley, 2003). What begins with weaknesses in one or more of these areas develops into word reading difficulties (Stanovich, 1986; Wolf & Bowers, 1999).

Word reading difficulties negatively affect children's comprehension of text (Stanovich, 1986). In addition, reading difficulties influence children's attitudes toward

reading and the amount of practice they receive (Allington, 1994), which in turn decreases their exposure to books and information (Cunningham & Stanovich, 1998). Thus, without intervention, the gap between good and poor readers widens over the elementary school years (Stanovich, 1986). The persistence of reading disabilities throughout school and into adulthood is well documented (Juel, 1988; Torgesen, 1998).

SCIENTIFICALLY BASED READING RESEARCH AND TUTORING

Over the past 20 years, much has been learned about how to prevent reading difficulties through explicit and systematic instruction. This knowledge base, commonly referred to as *scientifically based reading research* (SBRR), derives from converging findings from three influential reviews of reading research (Adams, 1990; National Reading Panel [NRP], 2000; Snow et al., 1998). These reviews consistently identified five related components that should be at the core of reading instruction: (a) phonological awareness, (b) phonics, (c) fluency, (d) vocabulary, and (e) comprehension. These components are most effective when taught explicitly and systematically.

In light of research findings about SBRR and in recognition of the importance of preventing reading difficulties early in children's school careers, the No Child Left Behind legislation (2001) set a national goal that all children read by Grade 3. The importance of prevention and access to research-based reading instruction also featured prominently in the 1997 amendments to the Individuals with Disabilities Education Act. Under both legislative mandates, classroom teachers are expected to provide children with classroom instruction that is scientifically based, identify any children who do not make adequate progress, and provide these children with immediate and intensive scientifically based intervention. Thus, early literacy intervention to prevent reading difficulties figures prominently in the No Child Left Behind legislation, which requires low-performing schools to provide struggling beginning readers with supplementary tutoring.

The positive effects of one-to-one tutoring on reading skills have been documented through literature reviews (Shanahan, 1998) and meta-analyses (Cohen, Kulik, & Kulik, 1982; Elbaum, Vaughn, Hughes, & Moody, 2000; Mathes & Fuchs, 1994; Wasik & Slavin, 1993). In the most recent of these meta-analyses, Elbaum et al. (2000) examined the effects of 29 studies. Compared with control students, reading outcomes for tutored students had an overall mean weighted effect size of 0.41. Elbaum and colleagues reported that 6 of the 29 studies they reviewed used community volunteers as tutors; their mean weighted effect size was 0.59, but the range was from -0.25 to 0.98. Higher effect sizes were reported for programs that described tutors' training.

Given that many schools lack the resources and few classroom teachers have the time to provide tutoring to their students, there has been increasing interest in tutoring models that use community members (Juel, 1994, 1996; Morrow & Woo, 2001). Wasik (1998) reviewed 17 studies to explore the efficacy of using volunteers as tutors. The studies used a heterogeneous mix of volunteer tutors, including: retired senior citizens, college students, suburban mothers, and members from the community. Some received stipends, and some did not; the majority of tutors were not experienced teachers. Consequently, Wasik empha-

sized that successful programs provided the following supports for this type of tutor: training to scaffold children's learning (i.e., to model, provide feedback, respond to errors, and maximize student engagement); ongoing guidance and supervision, and materials for tutoring that were structured, explicit, and systematic. However, Wasik pointed out four methodological issues that complicated her interpretation of "success": (a) researchers rarely used experimental designs, (b) none of the studies provided evidence of fidelity of treatment implementation, (c) there was large variation in intensity of instruction (number of sessions/week and number of weeks), and (d) there was a lack of consistency or coordination between tutoring interventions and classroom reading instruction.

Since Wasik's (1998) review, a few additional studies using experimental designs have been published that validate the effectiveness of tutoring programs for first- and second-grade struggling readers. However, they provided differing amounts of tutoring. Some provided tutoring 2 days a week, including *Start Making a Reader Today* (Baker, Gersten, & Keating, 2000) and *Book Buddies* (Invernizzi, Rosemary, Juel, & Richards, 1997), as well as another program—*Sound Partners*—provided 4 days per week (Jenkins, Vadasy, Firebaugh, & Proffitt, 2000; Vadasy, Jenkins, Antil, Wayne, & O'Connor, 1997a, 1997b; Vadasy, Jenkins, & Pool, 2000; Vadasy, Sanders, Peyton, & Jenkins, 2002). The *Start Making a Reader Today* program was unique in that it provided only minimal training for tutors and yet still was effective. Thus, the current research base still provides little guidance about how much tutoring children need, which in turn affects how many children programs can serve.

In addition, despite the growing literature documenting the efficacy of tutoring, and given the importance of preventing reading difficulties through early literacy intervention, it is surprising that only one evaluation of a tutoring program involved kindergarten tutees (Morrow & Woo, 2001). This program served children 3 days per week in kindergarten through third grade. The authors reported that, on average, tutored children outperformed untutored children on reading and writing measures, but they did not provide disaggregated mean differences for kindergartners.

STUDY'S PURPOSE

The purpose of this article is to investigate the effectiveness of a year-long tutoring intervention provided by community tutors to kindergarten students at risk for reading difficulties. This study addressed two primary research questions. First, does Tutor Assisted Intensive Learning Strategies (TAILS) improve reading performance above and beyond standard classroom practice? Second, are there differential effects of TAILS delivered two versus four times per week?

The intervention, TAILS, builds carefully on extensive prior research using Peer-Assisted Learning Strategies for Kindergarten (K-PALS; Fuchs et al., 2000). Research has shown that K-PALS improved phonological awareness, beginning reading, and spelling outcomes for kindergarten students with and without disabilities in Title 1 and non-Title 1 schools (Fuchs et al., 2001, 2002). Furthermore, K-PALS was recommended as an evidence-based practice by the NRP (2000). However, a small number of children did not benefit from K-PALS; most of these children were identified as having

reading disabilities by third grade (Al Otaiba & Fuchs, 2002). Similarly, Fuchs, Fuchs, Mathes, and Simmons (1997) reported that 20% of older students (second through sixth graders) with reading disabilities did not benefit from PALS. Thus, TAILS grew out of concern expressed by Fuchs et al. (1997) that “students with severe LD may require intensive, individualized instruction” (p. 200) than may be provided through peer mediation. In addition, whereas K-PALS focused only on phonological awareness and phonics, TAILS also includes three additional components of evidence-based reading instruction: (a) fluency, (b) vocabulary, and (c) comprehension.

METHOD

Schools, Settings, and Students

The study was conducted in a midsize southern urban school district. Four principals of low-performing schools in high-poverty neighborhoods agreed to participate, as did all 12 kindergarten teachers. These schools had high proportions of African American students, and the majority of students received free breakfast and lunch. All classes offered full-day kindergarten programs. Principals agreed to provide a quiet area for tutoring and to protect tutoring time outside of the required 90-min literacy block. The setting for tutoring in three schools was an unused classroom; in the remaining school, children were tutored in the lunchroom after lunches had been served for the whole school.

In October, after the first report card period, the school district screened all 243 kindergartners in the four selected schools using two subtests of the Dynamic Indicators of Early Literacy Skills (Good & Kaminski, 2002; Kaminski & Good 1996): (a) Letter Naming Fluency and (b) Initial Sounds Fluency. Children who named less than two letters or identified fewer than three correct first sounds of words were considered at risk for future reading difficulties and in need of immediate intervention (Good, Simmons, & Smith, 1998). Of the screened kindergartners, 105 met the at-risk criteria, and their parents were contacted to secure consent. One family declined to participate, and three did not return letters of consent. Because of limited resources of the project, tutoring was delivered to only 76 of the 101 remaining students who had the lowest pretreatment scores on letter naming and initial sounds. Within the first 2 weeks of the tutoring program, 4 students moved out of the district, so the next 4 children from the eligible pool were substituted. During the course of the study, 2 children moved out of the district, and another was lost because of chronic absenteeism, leaving a total of 73 students. Ninety-six percent of the students were African American, and 81% received free and reduced lunch. Only 1 Hispanic child had English as a second language; another child was from India but spoke fluent English. A summary of participating student demographics is presented in Table 1.

Study Design and Procedure

Design. We used an experimental design with random assignment of students within each classroom to one of three conditions: (a) TAILS 4 days a week, (b) TAILS 2 days a week, and (c) control. To do this, we rank-ordered students on their scores on one

TABLE 1
Student Characteristics by Treatment Condition

<i>Variables</i>	<i>Condition</i>		
	<i>Control</i> (<i>n</i> = 24)	<i>Two Days</i> (<i>n</i> = 25)	<i>Four Days</i> (<i>n</i> = 24)
Gender			
Male	13	16	14
Female	11	9	10
Ethnicity			
Caucasian	0	1	0
African American	23	23	24
Hispanic	0	1	0
Other	1	0	0
Age			
<i>M</i>	5.72	5.48	5.61
<i>SD</i>	0.44	0.44	0.39
Retained	3	2	1
IEP (special education)	8	8	5
Free reduced lunch	15	24	20

Note. IEP = individualized education program.

of the screening measures: the Letter Naming Fluency subtest of the Dynamic Indicators of Early Literacy Skills (Good & Kaminski, 2002). Letter naming was used because it is considered a good predictor of future reading ability as it correlates highly with reading measures (Adams, 1990). Because this was a three-group experiment, we matched triads of students on letter-naming scores and then randomly assigned them to one of three conditions (using a table of Latin squares of order of three (i.e., [1,2,3], [2,3,1], [3,1,2], etc.; Shadish, Cook, & Campbell, 2002). This randomization process increases the likelihood that children in each condition would have similar pretest means on letter naming and other reading variables (Shadish et al., 2002). With one exception, each tutor was assigned equal numbers of children in the 4-day and the 2-day conditions to control for tutor effects; a single tutor read to children in the control condition twice a week.

Classroom reading instruction. In three schools the kindergarten core reading program was Open Court (2002). The fourth school used SRA Reading Mastery (1995). Because tutoring was a supplement to classroom reading instruction, research staff observed each teacher's provision of reading instruction three times during the year to ensure that the core program was being delivered, classroom instruction was consistent with tutoring, and tutoring was a supplement and not a substitute for classroom instruction.

Tutoring intervention. Each TAILS session (in both the 4- and 2-day conditions) lasted approximately 30 min and included five activities designed to address the five components of instruction supported by SBRR: (a) phonemic awareness, (b) phonics, (c)

fluency, (d) vocabulary, and (e) comprehension (NRP, 2000; Snow et al., 1998). First, tutors guided children through a 5-min phonological awareness activity, referred to in student terms as *sound play*, that was presented in a game-like format. There were several versions of these sound play activities that were introduced sequentially: Children were shown pictures with a common initial sound and were then asked to select another picture that started with the same first sound. Next, students learned to identify a picture that rhymes with the target picture or to identify a picture with the same final sound as the target picture. They also practiced blending and segmenting phonemes in words. These activities were borrowed from K-PALS (Fuchs et al., 2001) because they were easy to administer.

The 5-min word building activity was aimed to make phonological awareness training more explicit to young children by using manipulatives to represent increasingly smaller bits of speech, ranging from syllables, to onsets and rimes, and finally to phonemes (Adams, Foorman, Lundberg, & Beeler, 1998; Blachman, Ball, Black, & Tangel, 1998). Tutors modeled how to “build” a word with tiles by saying “I can build *pancake*.” Watch me. Here’s /pan/ and here’s /cake/. Your turn to build *pancake*. Tutors then led students through repeated practice. Word building activities also used letter tiles to build words from letters and to manipulate letters to make new words. Following the same model–lead–test format, tutors used only letters that had been previously taught; thus, this activity warmed up the children for the decoding activity.

The 10-min decoding activity, also borrowed from K-PALS, is based on principles of direct instruction (i.e., Carnine, Silbert, & Kame’enui, 1998), has a clear scope and sequence, follows a model–lead–test format, and includes cumulative review and practice. In the first few lessons, children learned to read letter sounds (e.g., *a*, *m*, *t*). In subsequent lessons, they continued to practice familiar sounds, learned new sounds (e.g., /s/), and learned to blend sounds into words such as *cat* or *mat*. They also learned to read sight words and, eventually, to read simple sentences composed of familiar sight words and decodable words.

Brief speed games were created to build fluency and automaticity. There were three formats that mirrored the decoding activities: (a) letter sounds, (b) sight words, and (c) decodable words. For letter sounds, tutors asked children to read the sounds as quickly as they could and timed the children to see how many they could read in 1 minute. Then, children had two chances to beat their first time, and if they did, they got to color in a motivational graph that depicted their growth.

The remaining 10 to 15 min were dedicated to vocabulary and comprehension activities based on effective shared book, or dialogic, reading practices (Bus, van IJzendoorn, & Pellegrini, 1995; Lonigan & Whitehurst, 1998). A range of books was provided, including alphabet books, rhyming stories, folk tales, multicultural fiction, and informational texts as well as some simple decodable readers. Kindergartners read only the simple decodable books; the remaining books were read aloud by the tutors. Tutors were taught an acronym to help students get on the PATH to reading by setting a *purpose*, *activating* interest, *thinking* aloud, and *helping* or scaffolding. Tutors were also trained to select key vocabulary words and to explain these words in child-friendly definitions (Beck, McKeown, & Kucan, 2002). To help kindergarten students become more active participants in making meaning from texts, tutors also questioned children using a range

of questions from literal (e.g., “Who is in the story?”) to more inferential and decontextualized (e.g., “What would *you* do if ...?”). Thus, TAILS incorporated all five components of SBRR, which were presented in fun and developmentally appropriate activities.

Control condition. Students in this condition were read to twice a week for roughly 20 min in a small-group format by a tutor. Tutors did not explicitly instruct students in any of the five components; however, they read from the same books that were used during TAILS.

Tutor recruitment, training, and supervision. More than 100 potential community tutors responded to an advertisement in a local newspaper offering them a small stipend for tutoring. Four steps were taken to screen them. First, respondents were interviewed by telephone to determine their availability and interest in working with young children. Second, the project coordinator conducted face-to-face interviews. Third, we met to review the pool of candidates and eliminated those who could not correctly pronounce letter sounds or segment words phonemically. Finally, tutors were required to pass the district background check. Twelve tutors were selected, including 1 contact control tutor. Over the study period, 3 tutors left the project for health or personal reasons. As a result, an additional tutor and 20 substitutes went through the screening process. Tutors ranged in age from 30 to 65; 2 were African American and 10 were Caucasian; only 1 of the 12 tutors was male. Four tutors had prior tutoring or teaching experience, but only 2 were certified teachers. One tutor, the eldest in the group, reported that she had worked on literacy activities with her son, who she said was dyslexic. The remaining 7 had no prior tutoring experience.

Tutors were trained during three sessions for a total of 13 hr. The first two sessions occurred prior to intervention. Tutors were provided with logistical and practical background information and specific training on how to tutor using the TAILS intervention. After the 1st week of tutoring was completed, a third training session was held to further refine skills and answer questions that arose during actual application of the curriculum. Tutors were supervised and received ongoing feedback and support as needed.

Measures

TAILS fidelity. During the 1st month of the project, each tutor was observed and provided with feedback and guidance as needed. Then, in December and March, she gathered fidelity-of-treatment information for each tutor using a checklist. The checklist concerned the following behaviors observed across each of the five TAILS activities: Did the tutor (a) express the objectives, or the purpose of the activity; (b) review the previous activity or link to previous activity, activate interest, and give specific praise; (c) help the tutee to master the lesson; (d) use only letter tiles that had been previously introduced; and (e) encourage the student to color in the speed game motivational graph? Behavior was scored as “demonstrated,” “not demonstrated,” or “not applicable.” In addition, the checklist addressed whether the tutor spent the recommended time on each lesson activity. Treatment fidelity was calculated as $\text{agreements} / (\text{agreements} + \text{disagreements})$, using

the overall agreement method (Sulzer-Azaroff & Mayer, 1991). In December, the mean fidelity score was 97%; scores ranged from 84% to 100%. In March, the mean fidelity score was 98%; scores ranged from 95% to 100%.

Phonological processing. Two subtests of the Comprehensive Test of Phonological Processing (CTOPP; Wagner, Torgesen, & Rashotte, 1999) were selected as reliable (test–retest reliability $>.80$) measures of phonological processing. In the Sound Matching subtest, children are shown pictures and asked to identify other words with similar initial or final sounds. In the Blending Words subtest, children listen to an audiocassette on which a speaker pronounces syllables and then asks children to pronounce the word the syllables make.

Reading achievement. We used three subtests of the Woodcock Reading Mastery Test—Revised (WRMT–R; Woodcock, 1987) to assess reading achievement: the Word Attack, Word Identification, and Passage Comprehension subtests of the WRMT–R, Form G (Woodcock, 1987). These subtests evaluate the ability to decode nonsense words, read real words, and read brief passages to identify a missing word. Test–retest reliabilities were above .90. Age-based standard scores were used.

Receptive language. We used the Peabody Picture Vocabulary Test (PPVT–III; Dunn & Dunn, 1997) to measure receptive vocabulary. Children were shown four pictures and asked to point to the one described by the examiner. The split–half reliability for kindergarten children ranges from .77 to .99; test–retest reliability ranges from .67 to .82. Age-based standard scores were used.

RESULTS

To investigate the effects of the two experimental tutoring conditions, we analyzed the pretest–posttest means from the three randomized groups with a series of 3×2 analyses of variance with planned comparisons using the multivariate approach of estimating separate error terms for each comparison (Maxwell & Delaney, 2004). First, we analyzed the pretest means by treatment group to investigate any potential differences at baseline for seven dependent variables: PPVT–III, two measures of phonological awareness from the CTOPP, and four measures from the WRMT–R. Second, we constructed interaction contrasts that tested whether change from pretest to posttest differed among the three groups on these dependent measures. We also computed effect sizes for the significant interaction contrast, using Cohen’s d (Olejnik & Algina, 2000). The pretest and posttest means and standard deviations, as well as effect sizes, are reported in Table 2.

The statistical analyses uncovered no differences among the groups at pretest on any of the dependent variables. The interaction contrasts revealed significant differences in change from pretest to posttest on four of the seven dependent measures. Specifically, the group that received tutoring 4 days a week had larger gains than the control group on WRMT–R Word Identification, $t(70) = 2.24$, $p < .027$; WRMT–R Passage Comprehension, $t(70) = 2.30$, $p < .024$; and the WRMT–R Basic Reading Schools Cluster, $t(70) =$

TABLE 2
Pre- and Posttest Means of Age-Based Standard Scores by Condition

Measure	Wave	Condition						Group Diff.	Effect Size (d)
		1. Control		2. Two Days		3. Four Days			
		M	SD	M	SD	M	SD		
PPVT–III	Pre	75.83	10.72	79.28	16.52	82.33	11.63	2 > 1	0.68
	Post	79.21	13.47	84.20	14.16	84.29	13.03		
CTOPP Blending Sounds	Pre	7.38	1.86	7.32	1.35	7.67	1.69		
	Post	7.79	2.13	9.04	2.37	9.08	2.22		
CTOPP Sound Matching	Pre	7.17	1.86	8.08	1.29	7.75	1.75		
	Post	7.58	1.64	8.68	1.89	8.17	1.63		
WRMT–R Word Identification	Pre	85.79	9.90	84.56	7.48	85.29	7.50	3 > 1	0.79
	Post	92.46	14.27	95.52	10.71	100.50	11.51		
WRMT–R Word Attack	Pre	93.25	5.76	94.00	0.00	94.54	2.11		
	Post	95.88	9.75	97.76	8.59	101.17	12.23		
WRMT–R Passage Comprehension	Pre	97.63	14.54	98.40	15.66	94.50	13.14		
	Post	86.58	11.26	90.88	11.49	94.75	11.12		
WRMT–R Basic Skills	Pre	87.42	8.84	86.04 ^a	6.48	87.17	6.95	3 > 1	0.83
	Post	93.25	12.91	96.40	10.39	101.42	11.76		

Note. Treatment Group 1, $n = 24$; Treatment Group 2, $n = 25$; Treatment Group 3, $n = 24$. Diff. = difference; PPVT-III = Peabody Picture Vocabulary Test—Third Edition, Form A; CTOPP = Comprehensive Test of Phonological Processing; WRMT-R = Woodcock Reading Mastery Test—Revised.

^a $n = 24$.

2.31, $p < .024$. Also, the group that received tutoring twice a week was found to have changed more than the control group on the CTOPP Blending Sounds subtest, $t(70) = 2.25$, $p < .027$. No other statistical comparisons achieved statistical significance.

DISCUSSION

The results of this study indicate that kindergarten students in the 4-day condition made significantly greater improvement on reading skills than students in the 2-day condition or students in the standard school comparison group. Statistically significant differences favored students in the 4-day condition on WRMT-R (Woodcock, 1987) Word Identification, Passage Comprehension, and basic skills, with effect sizes of 0.79, 0.90, and 0.83, respectively. In contrast, students in the 2-day condition were statistically different from the standard school comparison only on the CTOPP (Wagner et al., 1999) blending measure ($d = .68$). Thus, our findings provide evidence to inform the debate about the intensity of instruction in the literature by demonstrating that these at-risk kindergartners benefitted most from the more intense condition.

The overall pattern of posttest results favored the 2-day condition over the control condition but yielded no statistically significant differences. This lack of statistically significant differences between the 2-day tutored students and control students is likely be-

cause control students received small-group book reading twice a week. This was to help control for Hawthorne effects and because we agreed with school leadership about ethical concerns associated with withholding support for any of their most needy students.

To our knowledge, this is one of the first studies to demonstrate positive effects of tutoring provided by community tutors to low-achieving kindergartners. In addition to having scored in the lowest 30th percentile (Good, Simmons, & Smith, 1998) on either letter naming or initial sound fluency, these students had numerous risk factors for future reading difficulties: Nearly 30% had individualized education programs with goals for speech and language, 97% were African American, and 80% received free lunch. There are several reasons we are confident that the “dosage” of TAILS was causally related to reliable and important differences in students’ reading achievement.

The first reason is that we received support from participating principals and teachers to conduct a randomized control study in their schools. Second, research staff observed that all children received core reading instruction (either Open Court or SRA Reading Mastery) that was consistent with SBRR; thus, the only difference was the amount of supplemental tutoring they received. Third, each tutor trained an equal number of students for 2 and 4 days a week. Fourth, tutors were highly accurate in their implementation of TAILS; fidelity exceeded 97% for the duration of the study.

How Does the Effectiveness of TAILS Compare With Other Volunteer and Community Tutoring Programs?

The overall mean effect size for tutoring reported in several large meta-analyses is 0.40 (e.g., Cohen et al., 1982; Elbaum et al., 2000). Elbaum et al. reported that the average effect size for volunteers was 0.26; however, in the studies that described the tutors’ training, the effect size grew to 0.59. A few additional empirical studies have been published that also allow effect size comparisons. Effect sizes ranged on word identification from 0.42 (Baker et al., 2000) to 1.24 (Invernizzi et al., 1997); on word attack from 0.32 (Vadasy et al., 1997a) to 1.24 (Vadasy et al., 2000), and on comprehension from 0.10 (Vadasy et al., 2002) to 0.32 (Baker et al., 2000). There clearly are differences among investigations in terms of student samples (age, socioeconomic status, ethnicity), tutors used (amount of training and supervision), intensity of tutoring (number of minutes/week and number of weeks), and measures used that complicate comparisons of effect sizes. However, effect sizes associated with 4-day TAILS appear within the range of effects reported in other comparable tutoring programs that have been conducted with slightly older children. The high degree of fidelity with which TAILS was implemented by tutors may account for these positive effects. For example, Vadasy et al. (1997a) reported higher effects for high-fidelity community tutors (0.85) in contrast to low-fidelity tutors (0.06).

To What Can We Attribute the Success of TAILS?

We followed suggestions from prior research on early literacy instruction to design TAILS. We ensured that TAILS was consistent with classroom reading instruction. The TAILS tutoring manuals and materials were specifically designed for nonteacher tutor

use, and tutors were trained to use the materials. We borrowed phonological and decoding materials from K-PALS (Fuchs et al., 1997), which have a clear scope and sequence. The amount of time spent on critical aspects of instruction (letter-sound instruction, word study, types of books that allow a balance of controlled decodable vocabulary, and rich listening comprehension) was carefully controlled. During our observations of tutoring, students were engaged, and they responded frequently. They were also supported and encouraged by tutors who provided scaffolding, modeling, and responsiveness to students' errors. Tutors forged a close bond with the students with whom they worked. Although the project coordinator was not a reading expert, as has often been recommended (e.g., Wasik, 1998), she had excellent organizational skills, and Stephanie Al Otaiba provided tutors with assistance when needed.

What Are Some Limitations and Lessons Learned?

This study has several limitations. Despite the inclusion of vocabulary instruction within the 10- to 15-min shared book reading, we found no statistically significant growth in receptive vocabulary standard scores on the PPVT-III (Dunn & Dunn, 1997). On average, at the end of the study, children remained more than one standard deviation below average. One possible explanation is that the vocabulary instruction, couched in shared book reading, was not explicit enough to increase the breadth or depth of children's vocabulary. Another explanation is related to our choice of vocabulary measure. At least one other study of dialogic reading reported no statistically significant growth on the PPVT-R but did find significant growth on two measures of expressive language (Lonigan, Anthony, Bloomfield, Dyer, & Samwel, 1999). Thus, in future research on TAILS we will incorporate a measure of expressive language that might be more sensitive to growth.

Furthermore, not every child benefitted from tutoring. Although this is not surprising, others have reported that when children did not benefit from tutoring, they were more likely to be referred for special education (Vadasy et al., 2000). Our kindergarten students included a relatively large percentage of children with disabilities who may have been more likely to be nonresponders (Al Otaiba & Fuchs, 2002). An additional limitation was that we were unable to hire a reading specialist who could tailor tutoring lessons on the basis of individual children's progress. Other programs, such as Howard Street (Morris, Tyner, & Perney, 2000) and Book Buddies (Invernizzi et al., 1997), use ongoing assessment to modify lessons for individual needs. Finally, we did not have the resources to incorporate family involvement.

The study's findings—that kindergartners need 4 days of tutoring a week rather than 2—have some important implications for managing tutoring programs. We offer some guidance based on lessons learned. First, it is important to have some funding to hire tutors and provide the infrastructure to support them. We agree with Jenkins et al. (2000) that attracting committed tutors is an essential component of success. Like them, we paid our tutors \$10 per hour; without that stipend, it would have been difficult to attract and retain tutors who would commit to working 5 days a week.

Second, it is critical for programs to have positive rapport with school leadership and the classroom teachers. Doing so allows frank discussion and flexible negotiation to plan

ahead and then to resolve issues and challenges along the way. For example, we did not anticipate what a challenge it would be for schools to protect the time for tutoring beyond the 90-min literacy block and to devote a designated quiet area for tutoring. In one school tutoring was conducted after hours in the lunchroom. Not only was the area cavernous and loud but it also doubled as the practice area for any school performances. The same school was the only school that required children to take naps, and because tutoring at that site followed nap time, on some days a couple of deep sleepers had to be woken up to participate. Fortunately, given our prior work in Title I schools, we had anticipated that children's attendance might be an issue. Consequently, we designated Friday as make-up day. This strategy also allowed absent tutors and tutees to make up time.

CONCLUSION

This study provides strong support for the efficacy of early supplementary intensive intervention provided by community tutors when delivered 4 days per week. It also informs the conversation about how to allocate resources for at-risk children. This dialogue is particularly important in low-performing high-poverty schools, which serve many children who enter school without readiness skills.

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