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# THE EFFECTIVENESS OF ONE-TO-ONE TUTORING BY COMMUNITY TUTORS FOR AT-RISK BEGINNING READERS

*Patricia F. Vadasy, Joseph R. Jenkins, Lawrence R. Antil,  
Susan K. Wayne, and Rollanda E. O'Connor*

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**Abstract.** One-to-one instruction, while highly desirable for children with the lowest reading skills, is not often available. It could be provided by nonprofessional tutors in the community, however. One aim of this study was to determine whether a one-to-one phonologically based tutoring program that incorporates many features of successful early reading programs and that is delivered by nonprofessional tutors is effective with first-grade students at risk for reading failure. Forty at-risk first graders who did not differ on reading skill prior to the intervention were randomly assigned to one of two groups. The treatment group received 30 minutes of individual instruction from community tutors four days a week for up to 23 weeks. The control group received only the regular reading instruction in their classrooms. The treatment group outperformed the control group on all reading, decoding, spelling and segmenting, and writing measures, with effect sizes averaging .21, .35, .37, and .19, respectively. Differences were significant on only one nonword reading and one spelling measure; however, a second aim was to determine the effects of the tutors' ability to implement the lessons scripted for them. Tutors who implemented the program with a high degree of fidelity achieved significant effect sizes in each early reading skill area assessed. Results support the potential of nonprofessional tutors to supplement early reading instruction, and prevent learning disabilities in at-risk children.

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When it comes to reading, early success is critical and early failures have grave and cascading effects (Bradley, 1987; Jorm, Share, Maclean, & Matthews, 1984; Stanovich, 1986). Children who are poor readers in first and second grade are unlikely to catch up with their peers (Clay, 1979; Juel, 1988; Lundberg, 1984). Fortunately, the research on beginning reading offers clear directions for how to reduce reading failure. Several decades of research have demonstrated that children's phonological awareness (i.e., the understanding that spoken language consists of smaller units of sound) predicts their success in learning to read and spell (Ball & Blachman, 1991; Stanovich, 1986; Wagner & Torgesen, 1987), even when controlling for intelligence and socioeconomic status

(Blachman & James, 1986; Bradley & Bryant, 1985; Felton & Wood, 1989).

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Findings from many studies indicate that training can develop phonological awareness and recoding skills, with positive effects on learning to read and spell (Ball & Blachman, 1988; Bradley & Bryant, 1983, 1985; Lundberg, Frost, & Petersen, 1988).

This article reports results on the efficacy of a one-to-one reading tutorial (Vadasy, Wayne, O'Connor, Jenkins, & Pool, 1996) for low-achieving first-grade students that incorporates many of the treatment components that have been shown to promote phonological awareness.

Many children acquire phonological awareness and early reading skills in their preschool and home environments and in whole-class instruction. Those children who do not acquire phonological awareness and beginning reading through these avenues were the focus of this study. These first graders require intensive assistance to get a foothold on reading (Juel, 1988). The method we chose to help them secure this foothold was one-to-one tutoring, which has traditionally prevailed as the strongest option for students who need help in learning to read (Cohen, Kulik, & Kulik, 1982).

Individual tutoring has been used in Chapter 1 (e.g., Reading Recovery) and special education programs, in particular with first graders for whom reading skills are a major focus of instruction. In most school settings, however, the cost of individual tutoring means that it is not an option for those students most needing assistance. This is most often the case in classrooms in large urban school districts.

The 1994 NAEP (National Assessment of Educational Progress) results indicate that reading skills of 40% of fourth-grade students were below basic level (i.e., unable to make connections between the text and their own experience and to make simple inferences), and reading skills of 70% of black students and 67% of Hispanic students were below basic level (Williams, Reese, Campbell, Mazzeo, & Phillips, 1995).

In 1995 only about 15% of students in U.S. public schools were served in Chapter 1 programs, with another 4% served in learning disabilities programs, and it is unlikely that spending for these programs will increase (Odden, 1994). Findings of SES differences in phonological sensitivity favoring children from high-SES families lend additional support for preschool,

kindergarten, and first-grade programs to develop low-SES children's sensitivity to the sounds in spoken language (Bowey, 1995).

In the nation and the school community today, there is a widely held belief that involving volunteers can improve educational outcomes (Riley, 1996), and in particular that tutors can play a major role in ensuring that all children develop strong early reading skills (i.e., President Clinton's American Reading Challenge). The major focus of volunteers in public elementary schools is tutoring students who need additional instructional assistance. Urban schools in particular must often devise creative means to enhance their fixed budgetary and personnel resources. Beginning reading skills are a logical focus for extra volunteer assistance.

When we set out to test what would be needed for volunteers and other nonprofessionals to successfully tutor first graders in early reading skills, we had in mind the large pool of school volunteers, estimated in 1987 as one million individuals, who each gives an average of 4 hours a week in public schools (Michael, 1990). Many schools are already set up to provide additional one-to-one instruction to students lacking critical early reading skills by drawing upon community and volunteer involvement. In 1987, volunteers were found in 75% of elementary schools, with an average of 24 volunteers per school (Michael, 1990). Schools often have access to a corps of parents, community members, retired individuals, and high school students who could be recruited or hired to assist in the classroom. Yet, most schools are not organized to put unskilled tutors on the front line in phonological-skills instruction. What would schools need in order to use these tutors to provide effective instruction to first graders in phonological and early reading skills?

In an attempt to answer this question, we designed a one-to-one supplemental reading program and tested it in four urban schools serving large numbers of low-income minority students. Evidence that volunteers and tutors without formal teacher training are capable of delivering beginning reading instruction is found in Wasik and Slavin's (1993) review of one-to-one instruction for beginning readers, although the magnitude of effects in these studies varied considerably (effect sizes ranging from +.20 to +.75).

We recognized the need to compensate for tutors' lack of expert knowledge by attending very carefully to the content and structure of the reading lessons (Blachman, 1994). Tutors must be able to deliver the instruction correctly without extensive training. They need simple strategies for eliciting student responses, and must be able to determine if responses are correct or incorrect. They also need guidelines for making decisions about pacing and content coverage. To address these concerns and increase uniformity of treatment, we designed highly structured lessons with explicit scripts for tutors to follow in teaching each skill.

In summary, we designed an experiment to address the question: Do first-grade students who are at risk for reading failure benefit from supplemental phonologically based reading lessons delivered by nonprofessional community tutors? Our results (including both child and tutor performance) led us to ask a second question: Are child outcomes dependent on the tutors using the program as designed? Through the latter question we hoped to separate the effects of the supplemental lessons from their delivery by more and less skilled tutors.

## METHOD

### Participants

Forty first-grade children from a large urban school district in the United States participated in this study. The four elementary schools in the study were located in a central city area, were within one or two miles of each other, and served similar student populations. Forty-five percent of students in the four schools were eligible for free or reduced lunch, and we estimate this rate was higher in the group of students we served.

In October, all first graders ( $N = 229$ ) in the four schools were screened on five measures of early reading skills. All students who were identified as limited-English proficient were excluded from further testing. Children scoring lowest on the screening measures ( $N = 88$ ) were then pretested on three measures of reading, spelling, and phonological segmentation. Those students scoring lowest on the screening and pretest measures were stratified and randomly assigned to intervention ( $n = 20$ ) and control ( $n = 20$ ) groups. Subjects in the final sample were drawn from 13 first-grade classrooms. The mean age

of students at the autumn pretesting was 79.2 months for the intervention group and 77.8 months for the control group, a nonstatistically significant difference. Ninety-five percent of students were of minority background. The *Peabody Picture Vocabulary Test-Revised* (PPVT-R) standard score for the final sample was 83 ( $SD = 16$ ).

## PROCEDURES

### Screening and Pretest Measures

The following five short screening measures were administered as part of the grade-one testing.

**Word identification.** Students are asked to read 10 high-frequency decodable and sight words (e.g., be, well, dog, cry, people) presented in large lower-case print.

**Nonword identification.** Students name seven single-syllable synthetic words constructed to conform to rules of English orthography (e.g., ib, tig, af). Words consist of two or three phonemes. Items are presented in large, lower-case print.

**Sound repetition.** Students listen to 12 items consisting of two to four phonemes. Items are presented with a one-second delay between phonemes; after a two-second delay students are asked to repeat the sounds.

**Rapid letter naming.** Students are presented with a card displaying all letters of the alphabet in random order in large upper-case type. Students name as many letters as they can during one minute. Letter sounds are accepted as correct responses.

**Onset rime segmentation.** After modeling a correct response to example items, the tester orally presents 10 one-syllable words to the student, asking the student to "tell me the two parts of the word" (e.g., soap, van, food).

The 88 students scoring lowest on the screening measures were pretested on the following three additional measures:

*Wide Range Achievement Test-Revised* (WRAT-R) *Reading and Spelling Subtests* (Jastak & Wilkinson, 1984). The WRAT-R is an individually administered norm-referenced achievement test of basic skills. Level 1 of the reading test consists of three prereading and one formal reading section. The prereading tests require subjects to name two letters in a previously written or printed name, identify 10 letters by form, and name 13 letters of the alphabet. At the for-

mal reading level, subjects are required to pronounce words of increasing difficulty until 10 consecutive errors are made. The WRAT-R spelling subtest consists of three parts: copying 18 marks resembling letters, printing or writing the student's name, and printing or writing 45 words to dictation.

*Peabody Picture Vocabulary Test-Revised (PPVT-R)* (Dunn & Dunn, 1981). The PPVT-R is an individually administered, norm-referenced test of receptive vocabulary. Children select from four simple black-and-white illustrations arranged in multiple-choice format the picture that best illustrates the meaning of the stimulus word presented orally by the tester.

**Syllable deletion.** A version of the *Rosner Test of Auditory Analysis* (Rosner, 1979), modified by Berninger and colleagues (1987), was used for students to segment multisyllable words by deleting one syllable. Five items require deletion of the initial syllable, and five items require deletion of the last syllable.

#### **Posttest Measures**

The WRAT-R reading and spelling subtests were readministered at posttest. In addition, the following measures were given:

**Woodcock-Johnson Psychoeducational Battery-Revised (WJ-R) Word Attack subtest** (Woodcock & Johnson, 1989, 1990). The child is asked to pronounce pseudowords that sample letter-sound relationships in reading programs.

**Bryant Pseudoword** (Bryant, 1975). The student reads from a list of 50 pseudowords until the student misses five consecutive items.

**Pseudoword List.** A list of 45 nonwords based on a measure by Olson, Forsberg, Wise, and Rack (1994) was used to complement the previous two word-attack measures. This list includes only one-syllable items with few word friends (to decrease the chance of reading from analogy), and items with many consonant clusters, which are not featured until the last half of the Bryant list.

**Dolch word recognition test** (Dolch, 1939). The student reads from a list of 220 short, frequently used words arranged in groups according to basal reading levels until the student misses 10 consecutive items.

**Analytical Reading Inventory** (Woods & Moe, 1977). This is a criterion-referenced, individually administered test of oral passage read-

ing. Both primer and first-grade passages were administered. Testers record oral reading fluency (time and accuracy).

**Yopp-Singer segmentation task** (Yopp, 1988). The tester has a list of 22 words and asks the student to segment the sounds of each word separately in order. Corrective feedback is provided. Testing continues until the student misses 10 consecutive items.

**Curriculum-based spelling list.** Students spell 10 words taken from the storybooks used in the lessons.

**Writing sample.** Students write for five minutes in response to a prompt ("It was a dark and stormy night"). The writing is scored on the basis of number of words written and number of words correctly spelled. We administered this assessment to students in their classrooms.

#### **Lesson Content**

A set of 100 30-minute lessons were developed. The instruction in this program is distinguished from many other phonological training programs by the variety of skills taught. While many training programs have concentrated on phoneme identity (Bradley & Bryant, 1983; Byrne & Fielding-Barnsley, 1991, 1993), or blending and/or segmenting in combination with phoneme identity (Ball & Blachman, 1991; Lundberg et al., 1988), we deliberately included as many tasks that are reported in the literature to contribute to early reading acquisition as could be effectively taught by tutors. Each lesson included 6-8 activities. Some activities, like rhyming, were phased out once students mastered the target skills. Other activities, like writing, were initiated only after most letter sounds had been introduced, and continued throughout the lessons.

We designed a format for each activity that was as simple as possible so that tutors could implement it easily and students would recognize individual formats and learn what was expected of them (Johnston, Allington, & Afflerbach, 1985). Ease of use was also important because tutors do not have time to prepare materials or rehearse lessons. Our goal was to efficiently orient tutors to their instruction, leaving the maximum time for interaction and student engagement.

**Letter sounds and beginning sound instruction.** Letter recognition is one of the strongest predictors of beginning reading

achievement (Bond & Dykstra, 1967; Chall, 1967), and the speed and fluency with which children are able to name letters strongly correlate with beginning reading achievement (Biemiller, 1977-78; Blachman, 1984). The amount of letter-sound instruction predicts first graders' reading and spelling achievement (Foorman, Francis, Novy, & Liberman, 1991). Instruction in letter identities enables children to form connections with their pronunciations in lexical memory, contributing to sight-word recognition (Ehri, Deffner, & Wilce, 1984; Ehri & Wilce, 1987).

Every few lessons a new letter sound was introduced, with the pace of presentation gradually increasing. Students were given practice in identifying new sounds and reviewing previously introduced and difficult sounds and the associated letters.

**Rhyming.** Longitudinal studies support the relation of rhyming skills to later reading (Bradley & Bryant, 1983, 1985; Ellis & Large, 1987; Lundberg, Olofsson, & Wall, 1980). Rhyming also seems to influence children's use of analogy, which in turn influences their ability to read new words (Goswami, 1986). Tutors presented rhyming tasks by modeling two rhyme pairs and then asking the student to supply words (or nonwords) that rhymed with a group of index words. Once students were able to provide rhymes consistently, this activity was phased out.

**Auditory blending.** This skill is useful in learning to sound out unknown words (Carnine, Silbert, & Kameenui, 1990). The tutor pronounced a word, stretching out the phonemes (for continuous sounds) or stopping between phonemes (for stop consonants), and then asked the student to say the word fast.

**Segmenting.** A critical early phonological skill is the recognition of the syllable onset and rime of words (Bowey & Francis, 1991; Goswami & Bryant, 1992; Treiman, 1991). Both the standard Reading Recovery and Iversen and Turnner's (1993) modified Reading Recovery group utilize Elkonin (1973) sound boxes to teach children to isolate onset and rime portions of words (e.g., s - and; m - et).

Tutors used a two-part box to model segmenting the onset from the rime for sample words. Then they gave students new words to segment orally and asked them to point to each box as

they segmented. Students began by segmenting words into onset rimes, and gradually progressed to segmenting words into four phonemes using a four-part box.

**Spelling and analogy use.** A number of researchers who provided training and practice in spelling and sound categorization have reported facilitating reading effects (Bradley & Bryant, 1983, 1985; Ehri & Wilce, 1987; Iversen & Turnner, 1993; O'Connor & Jenkins, 1995; Uhry & Shepherd, 1993). It also appears that children who can categorize words on the basis of their orthographic features may be at an advantage in reading words that cannot be deciphered using letter-sound relationships (Goswami & Bryant, 1990). Tutors used a magnetic letter board to practice spelling and to create a series of words from a phonogram or word family (e.g., at, ent). Tutors initially used letter tiles to demonstrate the transformation of one word into another by changing one letter. Later they used the tiles to demonstrate blends and letter pairs and directed students to spell words using the tiles.

**Story reading.** The most powerful early reading interventions feature training in phonological skills in combination with opportunities to apply these skills to reading (Ball & Blachman, 1991; Bradley & Bryant, 1985). This is particularly important for students who come to school lacking previous exposure to print-language connections, which totals over a thousand hours for many middle-class, high-readiness children (Adams, 1990). On the other hand, children lacking this experience and those at risk for reading disability require very explicit intervention to acquire print-language connections (Blachman, 1994).

Over the course of the program, a gradually increasing proportion of time was devoted to story reading. After trying out many storybooks, we chose the *Bob Books* series (Maslen, 1994) as the main text source. These short books have a highly controlled vocabulary of regular words, with few sight words in the early books. The tutor and student read one of the Bob books after most of the sounds used in the books have been introduced and practiced in the lessons. Our goal in each lesson was to select a storybook that provided students with direct practice in the skills to which they have most recently been introduced. Tutors read each book to the student

first, with the student following along. The student then read each book at least twice during the lesson, fingerpointing to each word.

**Writing.** Even with very young writers, there is evidence (Clarke, 1988; Ehri, 1989; Liberman, Rubin, Duques, & Carlisle, 1985; Treiman, 1985) that the use of invented spelling contributes to phonemic awareness and understanding of the alphabetic principle. Clarke (1988) found that invented spelling benefited low-achieving children in particular, and offered practice in matching the sound sequences of words with letters. Beginning after the first 20 lessons, students wrote for a few minutes each day in a notebook. Students were allowed to choose their own subject for their writing, and tutors were provided with prompts to help students who needed ideas. Tutors were trained to encourage the students to write words they could not spell by telling students to “write it how it sounds,” and encouraging invented spelling. Tutors then helped correct words that students spelled incorrectly by writing them below the students’ writing and having students reread their compositions. Tutor corrections focused on words that students should have been able to decode (i.e., letter sounds or blends had already been introduced).

### **Tutor Recruitment and Training**

Tutors were recruited via ads placed in the school newsletters and by contacts with counselors at local high schools. Of the original group recruited in October, four tutors were parents, one tutor was a grandparent, one tutor was a community-college student, and four tutors were high school students. Tutors were paid a nominal hourly wage for training and tutoring. Tutor turnover during the year was 30%.

Tutors were trained as a group two weeks before they began tutoring. Six hours of training was provided at that time, which included an introduction to the goals and methods of the tutoring lessons; a presentation and practice role-playing on each lesson component; general information on tutoring; suggestions for behavior management and safety; and record-keeping tasks. Three hours of followup training was provided after tutoring began. These sessions often highlighted proper instructional delivery with modeling of desired tutoring techniques. The high school tutors in particular often needed to be reminded to be punctual and to deliver the full 30 minutes of instruction.

In November, after students had been assigned to treatment and control groups, the students selected for the intervention were assigned to a tutor. Pairs were matched primarily on the basis of tutor transportation and child care needs. Each tutor worked with two students. At two of the four schools, two tutors served four students, and at the other two schools three tutors served six students.

The 30-minute tutoring sessions began immediately after school. The group of students who were second in line for tutoring had access to drawing materials, books, and computers while they waited in another part of the room in which the first students were being tutored. By spring, it became too difficult for the tutors to monitor the waiting group, so a fifth-grade student was hired to supervise and play basketball with the waiting students.

The tutoring program took place at the same time each day at four different schools. This simultaneous implementation permitted our staff to visit and observe each tutor at least once a week. During these visits we observed whether tutors were following the lesson formats and provided feedback and advice. This included modeling correct vowel sounds and blending and segmenting procedures, suggesting changes in lesson pace for individual students, prescribing behavior management strategies, and helping tutors encourage students’ writing efforts.

### **Implementation Assessment**

Tutoring began in November and ended in May, for a maximum of 23 weeks, or 53 hours of instruction. Tutors were asked to keep logs on lesson progress; however, the logs were not completed consistently and failed to provide the assessment of implementation we needed (because we could observe tutors only once per week). Therefore, at the end of the program, we assessed tutor fidelity based upon behaviors we expected to observe in tutors who were implementing the program with a high degree of fidelity.

First, we expected tutors to remain with the program for the entire school year so that students would not experience the negative effects of tutor turnover, which included gaps in tutoring sessions and student readjustment to a new instructor. Second, tutors would arrive on time, provide a full 30 minutes of instruction, and have few absences. Third, tutors would attend all

**Table 1**  
**Means and Standard Deviations for Screening and Pretest Measures**

Measures	Treatment		Control	
	M	SD	M	SD
Sound repetition	9.15	2.13	8.00	3.39
Letter naming	24.15	12.77	23.35	12.57
Nonwords	.15*	0.67	.00*	0.00
Real words	.55*	0.83	.25*	0.44
Modified Rosner segmentation	5.50	3.30	6.15	2.93
PPVT-R Standard	82.80	15.03	83.65	17.38
WRAT-R Reading, Standard	81.60	9.29	83.20	10.06
WRAT-R Spelling, Standard	74.00	11.03	73.60	10.60

Note. N = 20 treatment, 20 control.

\* $p < .05$ , two-tailed.

training sessions and meetings during the year. Fourth, tutors would implement the components of the lessons according to the instructions in the lessons.

Only three of the 10 tutors were rated by the primary observer as high on all four of these criteria. Three of the remaining seven tutor positions were filled two or three times during the year. The most outstanding difference between the two groups of tutors we identified with these criteria was that all of the high-implementation tutors were parents, and most remaining tutors were high school students (although the three turnover positions were filled at some point by adults). These four criteria provided our basis for comparing students in the intervention on the basis of fidelity of treatment implementation.

## RESULTS

A multivariate analysis of variance comparing the two groups at pretest indicated no significant differences between groups, either overall ( $F = .94$ ;  $df = 9/30$ ;  $p = .51$ , Wilks' lambda), or on individual pretest measures (Table 1), except on the pseudoword and word reading measures (on which measures most students scored 0), where differences favored the treatment group.

A composite variable was created averaging the Z scores of all screening and pretest measures. This composite was used as a covariate in a multivariate analysis of covariance comparing treatment and control posttests in which the F-

value was not significant ( $F = 1.72$ ;  $df = 17/21$ ;  $p = .12$ ) (Table 2). However, treatment posttest means exceeded those for the control group, and effect sizes averaged .21 for reading measures, .35 for decoding measures, .37 for spelling and segmentation measures, and .19 for writing measures. Tutored students significantly surpassed control students on two measures: pseudoword reading (E.S.=.55) and a curriculum-based spelling measure (E.S.=.56). Tutored students outperformed untutored students on all other posttests (E.S. = .15 to .43), though these differences were not statistically reliable.

These findings are similar to those reported in our evaluation of the first year of this program (Vadasy, Jenkins, Antil, Wayne, & O'Connor, 1997). Because aspects of our program were similar to the modified Reading Recovery instruction provided in Iversen and Tumner's (1993) study, it is of interest to compare posttest means of the two first-grade study samples on a common measure, the *Dolch Word Recognition Test*.

Iversen and Tumner's Modified Reading Recovery group included explicit instruction in letter-phoneme patterns (word families) using a magnetic letter board, as well as standard Reading Recovery features (use of Elkonin sound boxes, reading and rereading books). Iversen and Tumner's Reading Recovery and Modified Reading Recovery groups received a mean of 57 and 42 30-40 minute lessons, respectively. At

**Table 2**  
**Tests of Significant Differences Between Adjusted Posttest Means for Treatment and Control Groups**

	Treatment Group		Control Group		t	E.S.
	M	SD	M	SD		
<b>Reading Measures</b>						
WRAT-R Reading (Raw)	46.08	8.62	43.37	8.91	1.39	0.31
Dolch Word List	131.93	52.31	123.57	57.10	0.90	0.15
Analytical Reading Inventory - 1st-grade level	33.16	22.62	29.55	23.79	0.64	0.16
<b>Decoding Measures</b>						
<i>Woodcock-Johnson Word</i>						
Attack (Raw)	8.58	5.22	7.42	5.51	1.12	0.22
Bryant Pseudoword*	19.47	11.86	13.29	10.74	2.22	0.55
Pseudoword List	12.75	12.31	9.65	8.80	1.15	0.29
<b>Segmenting and Spelling Measures</b>						
WRAT-R Spelling (Raw)	29.32	3.89	28.38	3.29	1.32	0.26
Yopp-Singer Segmentation	16.75	3.67	14.65	6.03	1.96	0.43
Lesson Word List*	7.87	2.54	6.28	3.15	2.38	0.56
Words correctly spelled on writing measure	17.01	11.06	14.94	8.75	0.90	0.21
<b>Writing Measures</b>						
Words Written	24.12	14.02	21.83	10.18	0.86	0.19

\* $p < .05$ .

Note. E.S. = Effect size. Treatment group  $N = 20$ . Control group  $N = 20$ .

**Table 3**  
**Means and Standard Deviations for Screening and Pretest Measures**

	High Implementation ( $N = 6$ )		Low Implementation ( $N = 14$ )	
	M	SD	M	SD
Sound repetition	8.17*	3.31	9.57*	1.34
Letter naming	24.67	12.53	23.93	13.34
Nonwords	0	0	0.21	0.8
Real words	0.50	1.22	0.57	0.65
Modified Rosner Segmentation	6.17	2.86	5.21	3.53
PPVT-R, Standard	86.33	15.92	81.29	14.97
WRAT-R Reading, Standard	81.00	5.44	81.86	10.71
WRAT-R Spelling, Standard	73.33	8.85	74.29	12.14

\* $p < .05$ , two-tailed.

**Table 4**  
**Tests of Significant Differences Between Adjusted Posttest Means for Treatment (High vs. Low Implementation) and Control Groups**

	Group 1 High- Implementation Treatment N = 6 students		Group 2 Low- Implementation Treatment N = 14 students		Group 3 Controls  N = 20 students		t	E.S.
	M	SD	M	SD	M	SD		
<b>Reading Measures</b>								
WRAT-R Reading (Raw)*	51.42	8.25	44.15	7.97	43.59	8.91	2.11	0.89
Dolch Word List*	171.70	41.58	117.17	47.86	124.92	57.10	2.32	0.98
Analytic Reading Inventory- 1st-grade level*	55.51	22.22	23.97	15.18	29.67	23.80	3.05	1.40
<b>Decoding Measures</b>								
<i>Woodcock-Johnson Word</i>								
Attack (Raw)	11.29	5.43	7.65	4.85	7.56	5.51	1.67	0.70
Bryant Pseudoword*	24.60	8.04	17.81	12.77	13.64	10.74	1.95	0.80
Pseudoword List*	21.44	13.32	9.29	10.17	9.78	8.80	2.69	1.20
<b>Segmenting and Spelling Measures</b>								
WRAT-R Spelling (Raw)	31.22	3.39	28.68	3.91	28.49	3.29	1.83	0.76
Yopp-Singer Segmentation	17.48	8.04	16.74	12.77	14.86	10.74	0.89	0.15
Lesson Word List	9.05	0.52	7.54	2.90	6.39	3.15	1.94	0.78
Words spelled correctly on writing measure*	24.12	10.78	14.22	10.04	15.07	8.74	2.26	1.00
<b>Writing Measures</b>								
Words written	27.80	10.11	23.07	15.45	21.30	10.18	0.99	0.47

\* Group 1 means differed significantly from the combined means of Groups 2 and 3 ( $p < .05$ ).

the end of the year, Dolch word-recognition means were 143 and 154 for Iversen and Turner's Reading Recovery and Modified Reading Recovery groups, respectively, whereas our Dolch word-recognition means were 117 and 172 for our low- and high-implementation groups, respectively.

#### **Comparison of the High- and Low-Implementation Tutors**

Our interest in implementation of the tutoring program led us to examine posttest results more closely. In our regular visits and observations of the program we noted variations in how well tutors implemented our lessons. Using the four criteria described earlier, we classified treatment students as to whether they received high ( $n = 6$ ) or low ( $n = 14$ ) implementation. A compari-

son of these two groups at pretest disclosed only one difference (sound repetition) favoring the low-implementation group (Table 3).

Next we computed multivariate analyses of covariance (controlling for screening and pretest measures) comparing the posttest performance of three groups: high- and low-implementation and control. These showed significant effects on reading ( $F = 6.05$ ;  $df = 3/34$ ;  $p = .002$ ), spelling and segmentation ( $F = 5.67$ ;  $df = 4/33$ ;  $p = .001$ ), and decoding ( $F = 3.82$ ;  $df = 3/34$ ;  $p = .018$ ). An analysis of covariance on the single writing measure for these three groups using the same covariate was not significant ( $F = .52$ ;  $df = 2/36$ ; ns). Effect sizes for the high-implementation group were .89, .98, and 1.40 on three reading measures (WRAT-R reading,

Dolch, and Analytical Reading Inventory, respectively); .70, .80, and 1.20 on three non-word reading measures (*Woodcock-Johnson Word Attack*, *Bryant*, Pseudoword List); and .76, .15, .78, and 1.0 on spelling and segmentation measures (*WRAT-R* spelling, *Yopp-Singer*, Lesson Word List, and correctly spelled words on writing measure).

Next, we contrasted the high-implementation group to the average of the low-implementation and control groups, reasoning that neither of the two latter groups received the intervention as it was designed to be used. The mean performance of the low-implementation and control groups were similar. Helmert contrasts revealed significantly higher scores for the high-implementation group than the combination of low-implementation and control groups on three reading, two decoding, and one spelling measure ( $p < .05$ ) (Table 4). Ceiling effects prevented treatment comparisons on one segmentation measure and the curriculum-based spelling measure.

## DISCUSSION

One aim of this study was to assess the effects of a set of supplemental tutoring lessons for children who are at high risk for experiencing reading failure. A second aim was to examine the program's implementation under conditions found in typical urban schools (e.g., community tutors with minimal training and supervision). Perhaps the most noteworthy finding in this study is that one-to-one supplemental tutoring in letter sounds, blending, segmenting, spelling, story reading, and writing did not by itself guarantee a strong overall achievement boost. Although the tutored students received more focused and individual instruction than is typically available, their reading skills did not improve as much as we had hoped. In an effort to understand these results, we decomposed our intervention into three elements: lesson content, tutors' pedagogical skills, and program logistics. In this intervention we hoped to estimate the potential of volunteers and other nonprofessional tutors to assist the large numbers of first graders at risk for reading failure.

### Lesson Content

Our lessons were designed with three foci. First, we strove to increase children's sensitivity to the phonological structure of spoken words

through rhyming, sound identity, segmentation, and blending activities. Second, we attempted to induce knowledge of word elements and word-reading strategies through a variety of activities involving letter-sound correspondences, letter combinations, phonograms, word reading, and spelling. Third, we tried to help children understand the communicative function of literacy through story reading and writing activities. Nevertheless, overall program effects were modest.

We considered the possibility that although our lesson content reflected current research knowledge on beginning reading, it may nonetheless have lacked structural or organizational elements important for achieving reading improvement beyond a level achieved through ordinary classroom instruction. To test this hypothesis, we tried to separate lesson content effects from the quality of the lessons' implementation by comparing child outcomes associated with well- vs. less-well implemented lessons and control conditions. This comparison disclosed that children whose tutors implemented the lessons as designed demonstrated significantly higher reading and spelling achievement. This finding buoyed our confidence in the lesson contents, but raised concerns about the teaching skills required to deliver the lessons.

### Pedagogical Knowledge

It is easy to underestimate the degree of pedagogical knowledge required to teach effectively in a program of this nature. The knowledge base needed to teach reading is complex, and it is not surprising that many nonprofessional tutors are missing important aspects of this knowledge. Even a seemingly straightforward program like ours requires degrees of (a) content knowledge (e.g., knowing that *ea* usually sounds like /ee/; the sound /a/ in rabbit is the same as the /a/ sound in pat; (b) pedagogical knowledge (e.g., knowing to prompt students when they are having difficulty; to distribute instructional time within a lesson according to student need); and (c) pedagogical content knowledge (e.g., knowing to prompt misread words using phonic elements, as with the word *steam*: "remember the sound *ea* makes," or "*spent*: what word family does *spent* belong to?"). See Shulman (1986, 1987) for distinctions between these types of knowledge.

We classified three of our tutors as exhibiting the teaching skills necessary for our lessons and

as implementing the lessons as directed, but several others had only rudimentary teaching skills. To our dismay, we observed a number of unsatisfactory teaching episodes. Some tutors used inappropriate prompting or encouraged guessing rather than strategy application (e.g., when a student could not rhyme with *bear*, the tutor says "I'll give you a hint—you're sitting on something that rhymes."). Some tutors made poor decisions on using instructional time; they did not teach to criterion and spent a disproportionate amount of time on tasks that children had already mastered (e.g., continuing to teach rhyming skills when the student had already mastered them, "because the student really likes rhyming and doesn't want to skip it."). Some tutors were occasionally harsh and short-tempered, bringing parenting styles to teaching that supervisors were unable to change (e.g., "You're not trying." "You know that word."). Several tutors had difficulty keeping children engaged (e.g., introduced material at such a slow pace, or with so many interruptions that the student became distracted). Moreover, the behavior of some tutors (e.g., spotty attendance and punctuality) suggested a lack of commitment to this enterprise. Program supervisors' attempts to offer tutors specific feedback and to model desired teaching approaches sometimes yielded improvement, but could not fill in the knowledge and skills deficits.

Finally, each of the three high-implementation tutors formed a close relationship with their students, as did several of the remaining tutors. The power of this tutoring relationship and the social context of instruction should not be underestimated in discussions of the sources of program effects (Juel, 1994, 1996).

Our impressions of tutors' tendencies to make poor pedagogical judgments led us to write extremely detailed instructions for tutors to read and follow. This strategy proved to be impractical, however. Most of our tutors did not have time to pre-read and prepare their lesson delivery, and could not pay attention to lengthy written instructions, while at the same time keeping their student engaged.

In addition to the challenge of designing effective and useable lessons and finding tutors who could deliver them, we also encountered a number of logistics problems.

**Logistics.** The tutoring program was offered after school at four different elementary schools.

Students who were bussed to these schools and who could not arrange alternate transportation home were not able to participate. The resources and facilities available to the program at each school differed, as did the level of principal support—an important factor in overall program implementation at each site. It was difficult in each school to find suitable space for the program. In two schools we shared classroom space with other after-school activities, and in one school we lost our space several times. In many schools the 45-minute period immediately after school dismissal is chaotic and noisy, and tutors and students worked amidst these distractions. Because the program was offered immediately after school, the children were often tired and hungry. We fed all of the children snacks (juice and cookies) before tutoring began, and without close supervision this was often messy and time consuming. Snacks were often taken by other children in the school, as were some of our tutoring supplies, not surprising since we could not find a secure place to store them. Finding safe and unused space in which tutors could store the snacks and supplies (each tutor had a backpack-sized bag containing the lesson binder, books, and magnetic letter board) was surprisingly difficult. Working with high school tutors often meant teaching them basic work skills (e.g., how to keep a time sheet, notify a supervisor, and arrange for a substitute if they were to be absent). When a high school tutor dropped out of the program, as all of them did, it meant that children missed tutoring until we found a replacement tutor.

## CONCLUSIONS

We gained several insights from two years of working with community tutors and students who enter first grade with low levels of phonological sensitivity and early reading skills. First, the success of a tutoring program like ours depends as much or more on the selection, training, and supervision of tutors as it does on the design of lesson contents. Selection of tutors who are motivated to make a significant difference in the lives of young students, and who can be trained to deliver instruction dependably and with care is critical. In addition, a successful tutoring program requires regular monitoring of tutors and students. Our weakest tutors needed supervision to oversee their attendance and to

discourage deviation from the lesson formats. Our strongest tutors needed occasional visits to reinforce their efforts, and to offer them assistance and reinforcement with especially difficult-to-teach students. All tutors needed some followup training to reinforce instructional strategies we introduced in the later lessons. Although schools often assign community volunteers to work with students, they rarely provide training and supervision.

The time of day tutoring is offered is another important consideration. We originally felt strongly that tutoring should be added to the school day to supplement classroom instruction, but we found that adding a half hour to the end of the day taxed many first graders, and was often a headache to administer. In the field test subsequent to that reported in this article, we offered the program during the school day. Students were taken out of their classrooms (not during reading), and our concerns about the stigma of being singled out for assistance were unfounded; students looked forward to their tutoring sessions, and other students in the class were eager to work with the tutors.

Second, the instructional formats used in a supplemental program must be carefully designed if nonprofessional tutors are to use them correctly and easily. It is a mistake to assume that community tutors will know how to use appropriate prompting and corrections, for example. We attempted to meet this problem by writing detailed instructions, but we found that long instructions interfered with lesson flow and confused tutors. Not until we had observed the types and frequency of mistakes and omissions that tutors made were we able to revise lessons with more effective instructions, cues, and correction procedures. After working with several iterations of the lessons, we found that tutors were most consistent and effective working with lessons that were streamlined and had predictable formats that include easy-to-follow steps to introduce and teach each skill.

Third, we found that at-risk students require explicit training in sound blending. The tutors in this study had particular difficulty teaching this skill to proficiency. Because it is so critical, we have added a lesson component with explicit instructions for teaching and practicing blending letter sounds. This required additional tutor training on sound blending before tutors en-

countered the blending lessons.

Schools are not accustomed to using parents and volunteers in structured and highly focused ways that complement or supplement basic skills instruction. Most handbooks written for teachers on how to use volunteers provide little more than lists or outlines of instructional topics. Our experience confirms that tutors can be a more valuable part of a school's instructional resources. At the same time, findings also point out the difficulty of raising student performance, despite over 50 hours of supplemental instruction. Effective tutoring requires that equal care be given to planning the instructional contents, program logistics, and tutor training and supervision.

These findings warrant further research on the content of instruction for children with reading disabilities (e.g., Vandervelden & Siegel, this issue), as well as ways to structure this content so that it can be delivered economically to the many students who enter first grade with poorly developed phonological skills.

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## NOTES

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