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Exploring the Importance of Reading Programs for Kindergartners With Disabilities in Mainstream Classrooms

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ABSTRACT: *This study's purpose was to explore the effectiveness and feasibility of phonological awareness (PA) training with and without a beginning decoding component for kindergartners with disabilities in mainstream classrooms. Nineteen general educators, who taught at least one student with a disability, were assigned randomly within their schools to three groups: control, PA training, or PA training with beginning decoding instruction. Teachers in the two treatment groups conducted the treatments for about 20 weeks. Pre- and posttreatment data were collected on 25 children with disabilities. Statistical analyses indicated that the group of students with special needs participating in PA training with beginning decoding instruction did better than the other two groups. However, many children, including many of those in the most effective treatment, did not improve their reading skills.*

We begin with three closely related and widely accepted facts. First, reading is a foundational skill in all children's academic careers; whether they become strong or weak readers has considerable bearing on their success in school and beyond (Snow, Burns, & Griffin, 1998). Second, reading readiness, once a heresy in the early childhood community, is now perceived by many as a vital part of a child's kindergarten experience (Snow et al.). Third, an indispensable ingredient in reading-readiness programs is phonological awareness

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(PA), or the capacity to blend, segment, rhyme, or in other ways manipulate the sounds of spoken words (e.g., Adams, 1990).

The high regard that academics, policymakers, educators, and parents have for PA (see Kantrowitz & Underwood, 1999) is based on more than 2 decades of correlational and experimental research. Correlational studies indicate that kindergartners with relatively strong PA read better in subsequent grades than classmates who show relatively weak PA in kindergarten (e.g., Juel, Griffith, & Gough, 1986), and that the strength of this connection endures after controlling for intelligence, vocabulary, letter knowledge, memory, and social class (e.g., Share, Jorm, MacLean, & Matthews, 1984).

More impressive is the experimental work. Typically referred to as the "training studies," this group of 60 or more investigations collectively has demonstrated that PA can be trained (e.g., Rosner, 1974); the training can produce a positive, albeit small, effect on reading development (e.g., Lundberg, Frost, & Petersen, 1988); and its influence on reading can be enhanced when integrated with letter-sound or beginning-reading instruction (e.g., Hatcher, Hulme, & Ellis, 1994).

Despite the importance of the training studies, they are limited in at least two notable respects. First, researchers—not teachers—have typically conducted the training with small groups of children outside of classrooms (cf. O'Connor, Notari-Syverson, & Vadasy, 1996; Troia, 1999). The related question is: Can teachers implement the training with their intact classes as effectively? Second, as with teachers, students with disabilities rarely have been included in the training studies (cf. O'Connor, 2000). They have been either overlooked because of researcher disinterest or deliberately excluded because of the researcher's desire for relatively homogeneous samples (e.g., Vellutino & Scanlon, 1987). This raises the question: Are treatments shown to be effective for children without disabilities also effective for children with special needs?

What makes these questions particularly important is IDEA '97, which, in the spirit of recent court cases (e.g., *Oberti v. Board of Education of Clementon School District*, 1993), clearly and emphatically puts forth the belief that the general classroom should be the presumptive placement for students with disabilities (cf. Huefner, 1994). Many expect IDEA '97 to increase the number of students with special needs participating in mainstream instruction, which, in turn, underscores the importance of validating educational programs, and perhaps especially early reading programs, that promote learning among students with and without disabilities and that are feasible for general educators to implement.

To assess these and other issues, we conducted a year-long, large-scale investigation of the effectiveness of two beginning-reading programs for a broad range of kindergartners. The first reading program provided PA training, and we refer to it hereafter as the "PA program." The second program combined PA with Peer-Assisted Learning Strategies for Kindergartners (PALS; Fuchs et al., 2000), a beginning decoding program. The PA program is teacher-led; PALS is peer-mediated. In PA and PA + PALS conditions, teachers were responsible for training their students and supervising the treatments. Both treatment groups were compared to a control group.

Findings from this study of more than 400 children in mainstream classrooms indicated that the PA + PALS group was superior to the other two groups on measures of letter-sound correspondence, reading, and spelling; PA + PALS and PA groups outperformed controls on measures of segmenting and blending. In the article in which we reported these data (Fuchs et al., 2001), we did not present results separately for the 25 children with disabilities in our sample. Hence, we report on these children now for the first time to determine whether PA training combined with beginning decoding instruction and practice is a more effective approach for special-needs populations than PA training alone. In other words, do

findings obtained on young children without disabilities also pertain to kindergartners with disabilities?

METHOD

Study Participants

Teachers. For the larger study, we recruited 33 kindergarten teachers in 8 schools in a big-city school district. The teachers were then assigned to study groups by means of stratified randomization. Specifically, in each school, teachers were assigned randomly to the three study groups so that, across the schools, there were 11 teachers per group. Nineteen of these 33 teachers taught one or more students with disabilities. Of the 19 teachers, 5, 5, and 9 were PA + PALS, PA, and control teachers, respectively. One student and his teacher in the PA + PALS group were eliminated from this study for reasons given below, reducing the PA + PALS teachers from 5 to 4. One-way analyses of variance (ANOVAs: PA + PALS versus PA versus control) indicated no significant differences among study groups on the 18 teachers' class size or years of teaching experience. Chi square analyses showed no reliable relations between study groups and teachers' age, gender, highest degree earned, or race (see Table 1 for descriptive and inferential statistics).

Students. Twenty-five children were identified as "special needs" on the basis of a current individualized education program (IEP); 9, 6, and 10 were in the PA + PALS, PA, and control groups, respectively. They were also rated as low achievers (LA), average achievers (AA), or high achievers (HA) by their performance on the Rapid Letter Naming (RLN) test, a timed measure of alphabet naming that research indicates is a respectable predictor of future reading performance (e.g., Torgesen, Wagner, & Rashotte, 1997). Table 2 shows that, minus the one student with special needs eliminated for reasons given below, 7 of 8 PA + PALS students, 5 of 6 PA students, and 5 of 10 controls were assigned LA status. Table 2 also indicates that 100%, 83%, and 100% of the students in PA + PALS, PA, and control groups, respectively, were certified as disabled because of speech or language impairments. And there were no statistically significant differences between groups on student demographic and school-related variables.

Treatments

Reading/Language Arts Context. On the basis of one-to-one interviews with all participating teachers, their completion of a questionnaire, and a 20-week presence in classes of the teachers in the two treatment groups, we concluded that multiformity, not uniformity, characterized what and how they taught. Virtually all 18 teachers made use of whole-language activities. However, their focus and emphasis varied (e.g., journal writing versus shared reading), as did the quality of their teaching. Two-thirds of the teachers used the district's formally adopted text, *Harcourt-Brace Treasury of Literature: First Street Collection for Kindergarten* (Farr & Strickland, 1995). Less than two thirds, but still a majority, said they made frequent use of First Street's "Big Books." About half of the teachers reported using *High Hat* (Goldman & Lynch, 1986) animal stories and picture cards emphasizing letter-sound correspondence and blends. There were no clear-cut differences in teachers' reading/language arts programs between schools or between the three study groups. The one exception to this statement is that a majority of control teachers taught alphabet letter naming, whereas most treatment teachers did not. There were no statistically significant differences between the three study groups in the number of hours per week teachers reported devoting to language arts, $F(2, 32) = .00$, or to reading, $F(2, 32) = .81$. For language arts, the mean number of hours per week reported by the PA + PALS, PA, and control teachers, respectively, were 11.46, 11.55, and 11.55; for reading, 7.00 hours, 5.55 hours, and 7.64 hours, respectively.

PA Program. We chose 15 activities from more than 80 lessons in O'Connor, Notari-Syverson, and Vadasy's (1998) Ladders-To-Literacy workbook. These 15 activities were chosen (with O'Connor's guidance) to help teachers promote PA among their students and to differentiate the PA program from the beginning decoding PALS component. Of the 15 activities, 10 were designed to stimulate word and syllable awareness, rhyming, first-sound isolation, onset-rime-level blending, and segmenting sounds. Six of the 10

TABLE 1
Demographic Data on Classroom Teachers by Study Group

Variable	PA+PALS (n=4)				PA (n=5)				Control (n=9)					
	M	(SD)	n	(%)	M	(SD)	n	(%)	M	(SD)	n	(%)	F^a (df)	X^2 (df)
Age (years)														
21-30			1	(25)			0	0			1	(11)		4.58 (6)
31-40			1	(25)			1	(20)			1	(11)		
41-50			2	(50)			3	(60)			7	(78)		
51+			0	0			1	(20)			0	0		
Class Size (No. of pupils)	19.00	(2.45)			18.80	(1.30)			19.67	(2.29)			.32 (2,15)	
Female teachers			4	(100)			5	(100)			9	(100)		
Highest degree														.25 (2)
BS./BA.			1	(25)			2	(40)			3	(33)		
M.Ed./M.S.			3	(75)			3	(60)			6	(67)		
Ed.S./Ph.D.			0	0			0	0			0	0		
Race														3.89 (4)
African American			0	0			1	(20)			1	(11)		
Caucasian			4	(100)			3	(60)			8	(89)		
Other			0	0			1	(20)			0	0		
Total Years of Teaching	17.00	(10.68)			14.80	(11.03)			14.89	(8.87)			.07 (2,15)	

Note: Because of rounding, percentages may not add up to 100.

TABLE 2
Demographic Data on Special Education Students by Study Group

	PA+PALS (n=8)				PA (n=6)				Control (n=10)					
Variable	M	(SD)	n	(%)	M	(SD)	n	(%)	M	(SD)	n	(%)	*F* (df)	χ^2 (df)
Absences[a]	2.25	(2.49)			3.00	(2.00)			2.00	(2.40)			.34 (2,21)	
Achievement Level[b]														5.40 (4)
LA			7	(87)			5	(83)			5	(50)		
AA			0	0			0	0			5	(50)		
HA			1	(13)			1	(17)			2	(20)		
Chronological age	5.96	(0.70)			5.93	(0.31)			5.76	(0.46)			.34 (2,20)	
ESL[c]			0	0			1	(17)			1	(10)		1.31 (2)
IEP Classification														.23 (2)
Behavior			0	0			0	0			1	(10)		
Language/Speech			8	(100)			5	(83)			8	(80)		
Math			0	0			1	(17)			0	0		
Medical			0	0			0	0			1	(10)		
K-Report Card[d]	56.00	(2.14)			52.60	(11.26)			55.88	(7.20)			1.10 (2,18)	
Race														5.34 (4)
African American			1	(13)			0	0			4	(40)		
Caucasian			7	(87)			5	(83)			5	(50)		
Other			0	0			1	(17)			1	(10)		
Retained			1	(13)			1	(17)			2	(20)		.18 (2)
Sex														
Female			5	(56)			1	(17)			5	(50)		.75 (2)
Title I			7	(87)			3	(50)			4	(40)		4.35 (2)

Note: Because of rounding, percentages may not add up to 100.
[a]Number of absences in fourth 6-week period of the school year. [b]Achievement level was based on KLN performance and teacher corroboration. [c]Number of children in an English as a Second Language program. [d]Kindergarten report card score during the first 6-week period of the school year. Scores ranged from 0 to 40.

activities were chosen to promote the blending or segmenting of sounds in consonant-vowel-consonant words; only one activity required manipulations of printed letters. Teachers conducted the 10 activities three or more times during 2 nonconsecutive weeks. The remaining five PA activities were journal writing, "letter sound of the week," "morning message," nursery rhymes and poems, and shared storybook reading. Only journal writing and "morning message" presented students with printed letters. Each of these five activities was conducted at least once per week for the entire implementation period. All 15 PA activities were teacher-led, directed to the whole class, and required 5 to 15 minutes each day of implementation. The maximum time teachers devoted to the PA program each week was 45 minutes (15 minutes x 3 days), or 10% of their reading/language arts program. Teachers conducted the PA program for 20 weeks.

PA + PALS. The PALS component of the more complex PA + PALS treatment required children to work in dyads with same-age peers. Using the RLN Test, we paired the highest-scoring student in each class with the lowest-scoring student; the second highest-scoring student with the next-to-last scoring student; and so on. Each student in each pair took a turn as Reader (tutee) and Coach (tutor). Pairs remained together for 4 to 6 weeks at which point the teacher named new pairs. Before each PALS lesson, for about 5 minutes, the teachers modeled new letter sounds and sight words. They conducted PALS three times per week for 16 weeks. Sessions lasted about 20 minutes beyond the brief teacher-led instruction. This represented 10% to 15% of teachers' reading/language arts time. The combined PA + PALS treatment, then, accounted for a maximum of 20% to 25% of teachers' reading/language arts program. This was more than double the time of the PA treatment. Nevertheless, as already documented, the total amount of reading/language arts time for students in the two treatment groups was virtually identical.

In Kindergarten PALS, What Sound? is the first of two activities. Its purpose is to help students learn the correct sounds of all 26 letters. In this activity, the Coach points to a printed letter and asks, "What sound?" The Reader responds, after which the Coach provides praise for an appropriate answer or a standard correction for an incorrect attempt. The Coach's correction is as follows: "Stop. You missed that sound. That sound is [letter sound]." The Coach asks again, "What sound?" Then, "Good. Read that line [of letters] again." There are 51 What Sound? lessons printed on separate 9" x 11" sheets. On each are four lines of upper- and lower-case letters, with six letters per line. Interspersed among the letters are prominent black stars. When the pair gets to a star, the Coach tells the Reader, "Good job!" Several lowest-functioning students with disabilities required more guidance and support than this procedure provided. Coaches of these children were instructed to model correct answers by saying, "This sound is [letter sound]. What sound?" Following a correct response, the Coach would say, "Good," and continue to the next letter sound.

Prior to the study, control teachers were told they were members of a control group, and we discussed with them (and with the teachers in the PA and PA + PALS treatments) why such a group was important in evaluating the effectiveness of the PA and PALS programs.

The second PALS activity is What Word? It requires children to read aloud sight words, decodable words, and simple sentences. Reading orally permits a child's partner and teacher to monitor word identification skill and to present corrective feedback when errors are made. The sight words are: I, the, is, was, on, and has. On the same lesson sheet containing the What Sound? activity, the Coach points to both newly presented and previously learned sight words and asks, "What word?" The correction procedure for this activity is similar to the one followed in What Sound? For several students with disabilities, this procedure was modified so that the Coach modeled the correct answer by saying, "This word is [word is pronounced]. What word?"

Also on the same lesson sheet are decodable words (i.e., words that can be sounded out using letter sounds practiced in earlier lessons), repre-

senting as many as five word families: at, an, ap, ad, and am. Each letter of every decodable word is placed in a "sound box" (Elkonin, 1973). The Coach says, "Read the word slowly." The Reader says the letter sounds slowly while touching the individual sound boxes. Then the Coach asks, "What word?" For a small group of students with special needs, these activities were modeled by the Coach in a manner similar to procedures already described. Simple sentences, still on the same lesson sheet, are composed of the sight words and decodable words learned in previous What Word? lessons. When the Reader misreads a sentence, the Coach applies a correction procedure similar to those used in previously described PALS activities. The Coach read the sentences to several students with disabilities who then read them back, pointing to each word as they read.

Control. Prior to the study, control teachers were told they were members of a control group, and we discussed with them (and with the teachers in the PA and PA + PALS treatments) why such a group was important in evaluating the effectiveness of the PA and PALS programs. We asked control teachers to continue their reading/language arts instruction and not to conduct PA or PALS lessons for the study's duration. We promised that following completion of the study, we would give them copies of PA and PALS manuals.

Staff and Classroom-Based Assistance

Four project staff administered pre- and posttreatment tests, collected demographic data on students and teachers, and determined how frequently, and with what degree of fidelity, PA and PA + PALS teachers implemented treatment activities. In PA + PALS classes, staff helped teachers train their students in PALS. Staff visited each PA and PA + PALS classroom twice each week for the first 2 months of treatment. Afterwards, visits were reduced to once a week. A visit usually lasted about 40 minutes.

Measures

PA Fidelity. To determine how often PA activities were used, monthly calendars were distributed to the teachers. The calendars offered a reasonable implementation sequence and timeline. Teachers recorded the activities they implemented and when they did them.

To explore the quality of PA implementation, staff assigned teachers a weekly global rating (from Week 6 to Week 20 inclusive), ranging from 1 (poor) to 3 (excellent). The ratings were designed to reflect: (a) lesson clarity; (b) how well the teacher's presentation jibed with the intent of the lesson; and (c) the degree to which the students generally, and the LA and special education students particularly, were engaged. Before these ratings were conducted, staff simultaneously coded videotapes of three teachers conducting the same activity with varying levels of fidelity. Complete (100%) agreement was obtained among all staff on these tapes before the treatment fidelity ratings commenced in classrooms.

PALS Fidelity. On two occasions (in Week 9 and Week 16), staff used checklists to evaluate the accuracy with which the 11 teachers and their students in the larger study used PALS. In the larger study, the 25 students with disabilities were not observed during fidelity checks because PALS procedures had been modified for several of them, sometimes in idiosyncratic ways. Thus, in this paper, we discuss only teachers' fidelity of PALS implementation.

The PALS checklist for the first occasion was developed for the What Sound? activity. It consists of 12 teacher behaviors that address how they begin and end the activity and monitor the lesson. The second PALS checklist evaluates implementation of both What Sound? and What Word? activities. It comprises 13 teacher behaviors. A behavior is scored as "demonstrated," "not demonstrated," or "not applicable." Scores are derived by dividing the number of behaviors demonstrated by the number of behaviors demonstrated and not demonstrated; then, multi-

On Word Attack, PA + PALS students' progress was reliably greater than that of PA and control students whose gains were comparable to each other.

plying by 100. For both the first and second fidelity checks, two staff members simultaneously observed teachers in four classes to determine inter-rater agreement. Inter-rater agreement was 100% on both occasions.

RLN. As discussed, RLN was used to identify student participants as LA, AA, and HA. Another reason for its use was that, unlike the other measures, its content was independent of the treatments. That is, letter naming was neither part of the PA program nor part of PALS activities. Hence, it was expected that children participating in these experimental treatments would not improve substantially on the RLN task over controls. If they did not show relative improvement on this measure, nonspecific factors like student motivation, teacher expectations, or experimenter bias could be dismissed as alternative explanations for obtained effects.

RLN assesses the number of letter names a student identifies in 1 min If the student completes the test in less time, the score is prorated. The RLN was administered at pre- and posttreatment.

Rapid Letter Sound (RLS). Based on a measure developed by Levy and Lysunchuk (1997), the RLS test assesses the number of letter sounds a student identifies in 1 min If a student completes the test prior to 1 min, the score is prorated. The RLS test was administered at pre- and posttreatment.

Segmentation. This timed, 1-min measure closely resembles the Yopp-Singer Test (cf. Yopp, 1988) to assess children's ability to deconstruct words into component sounds. It consists of 3 three-phoneme (e.g., "dog") practice words and 22 two- or three-phoneme words. The student's score is the number of correct phonemes expressed in 1 min. The Segmentation test was given before and following treatment.

Word Attack Subtest of the Woodcock Reading Mastery Test, Revised, Form G (Woodcock, 1987; Word Attack). This measure evaluates students' ability to pronounce pseudowords (or words with low frequency of occurrence). The Word Attack subtest contains 45 nonsense words, progressing in presentation from easiest to most difficult. Students earn 1 point for each correctly pronounced word. This subtest was given at pretreatment and posttreatment.

Word Identification Subtest of the Woodcock Reading Mastery Test, Revised, Form G (Woodcock, 1987; Word ID). The Word ID subtest is a frequently used measure of real-word reading ability. It requires children to read single words out of context. It consists of 100 words. Students earn 1 point for each correctly pronounced word. The subtest was administered both before and after treatment implementation.

Blending. We created a test consisting of 22 three-sound words (e.g., "soap," "mom," "food"). On four practice items preceding the test proper, the examiner says, "I'm going to say some sounds. If you put the sounds together, they make a word." Then, "/C//a//t/. What word is that?" The number of words identified correctly in 1 min is the student's Blending score. This test was administered only at post-treatment.

Spelling Subtest of the Wechsler Individual Achievement Test (Spelling). The Spelling subtest consists of 50 words. To obtain a sufficient sample of spelling behavior, we always administered the first 12 test items. Otherwise, the test was administered in standard fashion: For each item, the examiner said the word; then said the word in a sentence; then repeated the word. Students had 10 seconds to write the word. Scoring was conducted in accordance with the developmental scoring rubric created by Tangel and Blachman (1992), resulting in a total Spelling-Developmental score ranging from 0 to 270. See Fuchs et al. (2001) for more information on how we derived developmental spelling scores and for more complete descriptions of all our measures.

PROCEDURE

Training. Teachers attended a full-day workshop during which we discussed PA in terms of blending sounds into words, segmenting words into sounds, and rhyming words to hear similarities of sound. We also discussed the connections between sounds and printed letters and between letters and words, and we described the 15 PA activities teachers would be asked to implement. We explained that some PA activities are relatively easy like "Guess My Word," in which word sounds are stretched in exaggerated fashion (mmaasskk); several PA activities are more challenging like "I'm Thinking of," requiring awareness of onset-rhyme (m-ask); and a few activities,

like segmenting words at the phonemic level (m-a-s-k), are more difficult still. We demonstrated how, irrespective of difficulty, all PA activities can be presented with varying degrees of teacher support, permitting teachers to use each with virtually all students in the class. Finally, every teacher was given a PA program manual, and staff and teachers carefully reviewed its content.

PA + PALS teachers attended an additional half-day workshop to prepare them to train their students in PALS. Teachers' logistical concerns were addressed; a proposed timeline for PALS implementation was discussed; and teachers were given detailed examples of typical lessons. To promote familiarity with these lessons, teachers formed dyads and role-played each activity as both Coach and Reader. Finally, teachers were given a comprehensive manual with scripted PALS lessons and acetate overheads to facilitate student training. We encouraged teachers to put the scripts in their own words.

Testing and Scoring. All tests were administered to students on a one-to-one basis and testing was accomplished in two sessions. The RLN test was administered first at pretreatment. Other measures were given in random order across children and pre- and posttreatment testings. During the second testing session, following completion of the treatments, the blending test was always administered before the spelling test. Because staff tested children in classrooms in which they provided ongoing assistance, they were familiar to the children. Because evidence suggests examiner unfamiliarity may depress the performance of young students from low-income families (e.g., Fuchs & Fuchs, 1986) and children with disabilities (e.g., Fuchs, Fuchs, Power, & Dailey, 1985), staff tried to make themselves familiar to control children by spending between 1 and 5 hours in their classes a couple of weeks before posttreatment testing. All measures were scored by the test administrator and rescored by a second staff member.

RESULTS

Fidelity of PA and PALS Implementation

Information on PA implementation came from two sources: the calendars on which teachers recorded their use of the activities and our direct observations of their lessons. The calendars indicated teachers typically spent between 5 and 15 minutes on each lesson, and most teachers conducted them with the frequency and in the sequence we had recommended. Our 3-point quality ratings of PA lessons, averaged across the teachers who served students with disabilities and across the 20 weeks, was 2.27 (SD = .36) and 2.27 (SD = .29), for PA teachers and PA + PALS teachers, respectively.

The accuracy of teachers' implementation of PALS was evaluated twice. At Time 1 (Week 9 of treatment), their use of What Sound? was observed; at Time 2 (Week 16), their use of What Sound? and What Word? was evaluated. The average accuracy at Time 1 was 81.50% (SD = 7.05); at Time 2, 72.25% (SD = 12.37).

Reading Performance

A preliminary analysis of the pretreatment performance of the 25 students with disabilities indicated the PA + PALS group was superior to one or both of the other two groups on a majority of our measures. Inspection of the individual performances of children in the PA + PALS group indicated that one student performed dramatically better than the others in his group (and markedly better than the children with disabilities in the other two study groups). On RLN, his pretreatment score was 64; the next-highest score in the group was 20. On RLS, his score was 24; the next-highest score was 10; on Segmentation, his score was 14; the next-best score was 1. And so on. Moreover, among our sample of 25 students with special needs, this child registered comparatively strong growth on a majority of measures (see Figure 1). To make the group comparisons fairer, and a more conservative test of whether PA + PALS was a most effective treatment, we eliminated this student from further statistical analyses, reducing our sample to 24.

Without this PA + PALS child, we again conducted 1-factor (group) ANOVAs on the RLN, RLS, Segmentation, Word ID, and Word Attack pretreatment scores. This time, there were no statistically significant effects (respective Fs(2, 21) = .21, .85, .43, .24, and .00). We then conducted 1-way ANOVAs, using study group as the factor, on pre- to posttreatment growth for RLN,

Our idiographic data dictate caution and modesty in describing the effectiveness of PA + PALS for young children with disabilities.

RLS, Segmentation, Word ID, and Word Attack and on posttest-only performance for Blending (Timed and Untimed) and Spelling (Standard and Developmental). Respective *Fs(2, 21)* were: 1.65, *ns*; 3.12, $p = .06$; 2.01, *ns*; 1.35, *ns*; 3.59, $p < .05$; .82, *ns*; .45, *ns*; .58, *ns*; and .49, *ns*. Fisher LSD post hoc procedures indicated: on the RLS, the growth of PA + PALS student reliably exceeded that of PA students, but no other difference was statistically significant. On Word Attack, PA + PALS students' progress was reliably greater than that of PA and control students, whose gains were comparable to each other. See Table 3 for the three groups' means and standard deviations on all measures; see Figure 1 for individual students' growth scores on RLS, Segmentation, Word ID, and Word Attack. (A fifth pre-to-post-treatment measure, RLN, is not part of the figure because letter naming was not part of PA or PALS programs.)

We also computed effect sizes (ESs), partly because of the comparatively small number of children in the study and the resulting loss of power in our statistical analyses. For growth scores, we calculated ESs with the following formula: difference between the growth divided by the quantity: pooled standard deviation of the growth/the square root of 2(1-rxy) (Glass, McGaw, & Smith, 1981). For posttest-only scores, we calculated ES as the difference between the means divided by the pooled standard deviation (Hedges & Olkin, 1985). As shown in Table 4, we obtained positive ESs (.08 to .69) for the PA + PALS group versus controls on all measures but RLN (controls > PA + PALS; ES = -.42). ESs were larger (.19 to 2.76) for the PA + PALS versus PA comparison on all measures (including RLN). And the control versus PA comparison favored controls (ESs = .40 to 1.62) on 6 of 8 measures (see Table 4).

DISCUSSION

This study explored the effectiveness of two beginning reading programs for children with disabilities in mainstream kindergartens. Findings are discussed from nomothetic and idiographic perspectives. *Nomothetic* (from the Greek "nomos," or "law") refers to the scientific pursuit of universal laws. A nomothetic orientation, therefore, is based on averaged group data. *Idiographic* (from the Greek "idios," meaning "one's own") refers to the study of individual cases; in this paper, the performance of particular children with special needs.

Nomothetic View

Group data indicated students with disabilities in the PA + PALS treatment outperformed their counterparts in both PA and control groups on Word Attack; PA + PALS children made greater gains than PA children on RLS. The ESs on all outcome measures, except RLN, indicated small-to-moderate differences favoring the PA + PALS group over controls and larger differences favoring the PA + PALS children over the PA children.

The apparent superiority of the PA + PALS group is consistent with findings from a large corpus of previous research from which students with disabilities typically have been excluded (cf. O'Connor, 2000). This prior research indicates that beginning reading programs combining PA training and decoding instruction produce more desirable reading outcomes than PA training alone (e.g., Hatcher et al., 1994). The current study extends the prior work by (a) demonstrating similar results for students with disabilities and (b) showing that teachers (rather than researchers) can implement beginning-reading programs when such programs are organized in a manner that facilitates their use. Our results indicate that peer-mediation is one facilitating strategy.

Bolstering confidence in the effectiveness of the PA + PALS treatment is that 5 of 10 children (50%) in the control group were average- or high-achievers, whereas only 1 of 8 children (13%) in the PA + PALS group was similarly designated. That is, the averaged stronger showing by the PA + PALS group seems all the more impressive because it had fewer generally higher-performing

TABLE 3
Reading Performance of Special Education Students by Study Group

Measures/Trials	*PA + PALS* (n = *8)*		*PA* (n = *6)*		*Control* (n = *10)*	
	M	(SD)	M	(SD)	M	(SD)
Pre-/Posttreatment						
RLN						
Pre	6.63	(7.91)	6.33	(9.40)	14.50	(12.69)
Post	21.25	(10.24)	15.67	(11.36)	32.80	(12.07)
Growth	14.62	(9.16)	9.33	(6.89)	18.30	(11.05)
RLS						
Pre	1.63	(3.46)	1.17	(1.83)	2.20	(4.24)
Post	16.50	(10.80)	1.83	(2.14)	12.60	(18.02)
Growth	14.87	(8.10)	0.67	(0.82)	10.40	(14.33)
Segmenting						
Pre	0.38	(0.52)	1.33	(1.51)	1.10	(1.85)
Post	5.38	(5.71)	1.33	(1.97)	4.10	(5.67)
Growth	5.00	(5.55)	0.00	(2.45)	3.00	(4.57)
Word Attack						
Pre	0.00	(0.00)	0.00	(0.00)	0.00	(0.00)
Post	2.88	(4.29)	0.00	(0.00)	0.00	(0.00)
Growth	2.88	(4.29)	0.00	(0.00)	0.00	(0.00)
Word ID						
Pre	0.00	(0.00)	0.00	(0.00)	0.20	(0.42)
Post	2.88	(5.44)	0.33	(0.52)	0.90	(1.29)
Growth	2.88	(5.44)	0.33	(0.52)	0.70	(1.42)
Posttreatment Only						
Blending-Timed	3.75	(6.39)	2.67	(4.84)	0.90	(2.85)
Blending-Untimed	5.00	(8.82)	3.50	(6.80)	1.80	(5.69)
Spelling-Developmental	18.63	(19.56)	10.83	(6.21)	17.30	(15.28)
Spelling-Standard	5.50	(1.77)	4.33	(2.16)	5.20	(2.20)

students. Moreover, we eliminated the single high-achieving student in the PA + PALS group from all statistical analyses and ES comparisons because, although his growth was generally very strong, he contributed importantly to statistically significant pretreatment differences favoring his group. Thus, both this child's elimination and the makeup of the control group would appear to cast this study as a relatively stringent test of the importance of the PA + PALS treatment.

In addition, several study characteristics seem to support a causal claim for the PA + PALS treatment. We randomly assigned teachers within schools to the three study groups. The PA and PALS treatments ran for long durations. Classroom observations documented that the PA and PA + PALS teachers implemented the treatments with fidelity. And PA + PALS students tended to do well on outcome measures that reflected the nature and aims of the treatment, whereas they did less well than controls on the one measure, RLN, that corresponded to an activity (letter naming) that figured prominently only in control classes.

PA students did less well than PA + PALS students and controls. Whereas their weaker showing in comparison to the PA + PALS group was anticipated, their worse-than-controls performance was not. We offer two reasons for this outcome. First, as mentioned, a considerably greater proportion of PA children than control students was LA. Second, informal observations indicated that the teacher-led PA lessons did not typically engage many students with disabilities and teachers infrequently followed up to ensure student understanding.

Idiographic View

The idiographic data in Figure 1, we believe, provide a more complex perspective on the effectiveness of the PA + PALS treatment. The figure shows that a handful of students with disabilities in the PA + PALS group made very strong pre-to-posttreatment growth on RLS, Segmenting, Word ID, and Word Attack. However, about an equal number of children with special needs showed little or no growth on these measures (with the exception of RLS on which a large majority of students registered impressive improvement). On Word Attack, for example, 4 of 9 students' progress outstripped the mean gain of average achievers in the same group; but the remaining 5 students demonstrated no gain whatsoever (see Figure 1). This finding is consonant with results from a growing number of studies in which "best practices" were applied to help at-risk students and students with special needs in mainstream kindergartens (e.g., O'Connor, 2000). More comprehensive and costly reading programs like Success For All (cf. Pogrow, 2000) and intensive and individualized interventions developed exclusively for children with reading disabilities or at-risk children (cf. Torgesen, 2000) also produce a sizable number of children for whom the interventions were of little benefit.

IDEA '97 is directing special and general educators to adopt an idiographic perspective in a traditionally nomothetic context.

Our idiographic data dictate caution and modesty in describing the effectiveness of PA + PALS for young children with disabilities. So, too, do several methodological features of our study. First, although we collected data on the fidelity with which teachers implemented PA or PA + PALS, we did not obtain fidelity information on the use of PALS by students with special needs As a result, we cannot say with certainty that PALS contributed to the comparative, overall achievement of the PA + PALS group. Second, the relatively small number of study participants, and the fact that 21 of 24 of them were certified as speech- or language-impaired, limits the generalizability of our findings. Third, whereas teachers directed the PA activities, PALS was peer-mediated. A more rigorous comparison of PA training versus PA training in combination with beginning decoding activities would exert stronger control over the teacher-directed versus peer-mediated aspect of the treatments.

Nonresponders and Special Education

Our nomothetic and idiographic data offer different perspectives, which lead to different conclu-

TABLE 4
Effect Sizes for Special Education Students by Study Group

Measures/Trials	*PA + PALS vs. PA*	*PA + PALS vs. Control*	*PA vs. Control*
Pre-/Posttreatment (growth score)			
RLN	0.75	-0.42	-1.18
RLS	2.76	0.69	-1.62
Segmenting	0.75	0.40	-0.79
Word Attack	[a]	[a]	[a]
Word ID	[a]	0.39	-0.21
Posttreatment Only			
Blending-Timed	0.19	0.60	0.48
Blending-Untimed	0.19	0.44	0.28
Spelling-Developmental	0.50	0.08	-0.51
Spelling-Standard	0.60	0.15	-0.40

[a]ES cannot be computed because the mean and standard deviation of at least one of the variables were zero.

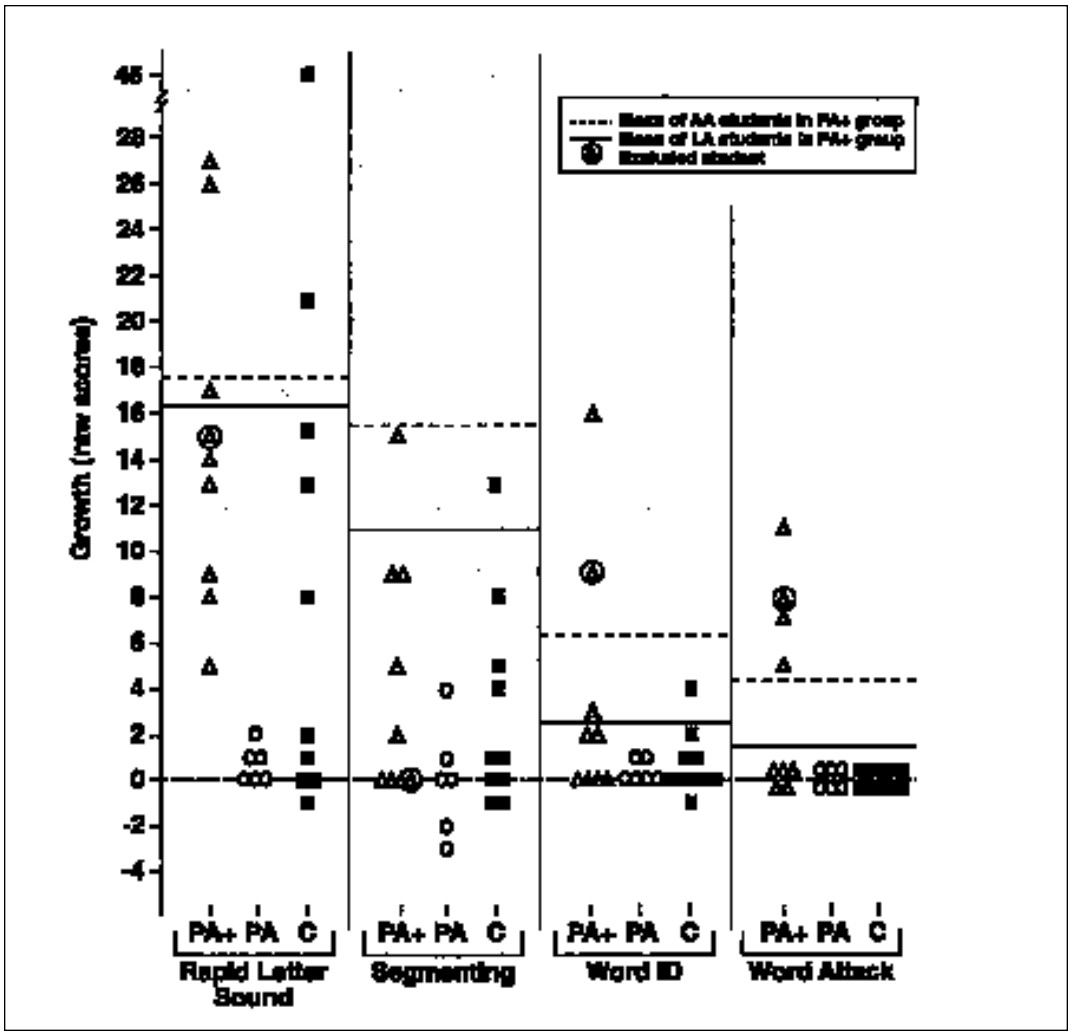
sions about the effectiveness of the PA + PALS treatment. It would be a mistake, however, to view the two as contradictory and canceling each other out. Taken together, these data indicate PA + PALS strengthened the early reading skills of a sizable proportion of children with disabilities in mainstream kindergartens without teachers making major modifications in the procedures or seeking the assistance of specialists. Moreover, the treatment required only 20% to 25% of teachers' overall reading/language arts time. PA + PALS would seem to hold promise as an effective and practical inclusive practice. And yet, too many children with disabilities did not seem to profit from the treatment, bringing us to the issue of "nonresponders."

Historically, general education has been unkind to nonresponders with and without disabilities. Teachers of mainstream classes typically have directed their instruction to "average" students, giving short shrift to below- and above-average students (e.g., Fuchs, Fuchs, & Bishop, 1992; McIntosh, Vaughn, Schumm, Haager, & Lee, 1993). Many of these teachers have harbored the complementary view that, however regrettable, some children inevitably fail, at which point they become somebody else's responsibility. In short, one could say that many general educators have had a nomothetic mindset.

In contrast, special educators—from Jean Itard to Ogden Lindsley—have held the distinctly more idiographic view that all children count. IDEA '97 strengthens this perspective by boldly redefining special education accountability in terms of measurable student outcomes and recognizing the mainstream classroom as the presumptive placement for every child with a disability, telling all educators, in effect, that general class-

FIGURE 1

Individual Students' Pre-to-Posttreatment Growth on Phonological Awareness and Beginning Reading Measures Organized by Their PA + PALS (PA+), PA, or Control (C) Affiliations.



Note: Each student's growth is compared to the mean growth of low-achieving (LA) and average-achieving (AA) nondisabled students in the PA+ group.

rooms can and must accommodate the learning needs of a greater diversity of children. In other words, IDEA '97 is directing special and general educators to adopt an idiographic perspective in a traditionally nomothetic context.

IMPLICATIONS FOR PRACTICE

Findings from this study, together with others' research, indicate that mainstream classrooms can indeed become more inclusive of a greater range of students, including many children with special needs, when teachers use best practices with fidelity. The proposition that teachers should use best practices with fidelity no doubt sounds to many as desirable as it seems commonsensical. In fact, it is an infrequent occurrence because it requires four kinds of teacher support, which are usually lacking. First, districts must help teachers distinguish best practices from the hundreds of activities and programs described in catalogues,

brochures, and magazine advertisements. Second, administrators need to literally put best-practice materials into the hands of teachers. Third, there must be appropriate professional development and on-site technical assistance as teachers begin implementing best practices. Fourth, districts should help teachers collect both fidelity-of-treatment information and effectiveness data. No best practice has been validated on all schools, teachers, and students. Best practices are nothing more, or less, than best-guess solutions to instructional problems and, as such, they all require local validation.

Moreover, teachers' appropriate use of best practices does not guarantee that all children will benefit. Our study and others' work demonstrate that, at present, teachers and researchers do not know how to make mainstream instruction sufficiently clear, compelling, differentiated, iterative, data-driven, and supportive so that all children will learn. If special educators hold the view that nonresponders count as much as responders, then they must rededicate themselves to building a service delivery system that is responsive to all. Whether this means discovering more synergistic alignments between generalists and specialists in mainstream classrooms or developing more powerful individualized programs conducted by experts outside of the classroom is a question requiring more research. And if schools must rely on expert instruction outside the general classroom to effect successful outcomes for all students, then teachers and researchers must become significantly more savvy at integrating what professionals do across different settings than they have been in the past.

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