

Impact of the Script in a Supplemental Reading Program on Instructional Opportunities for Student Practice of Specified Skills

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Abstract

Many educators are reluctant to use scripted instruction, reporting that scripts are mechanical in nature and only appropriate for low-level skills. This study sought to investigate the impact of a supplemental program's script on the rate of on-task and off-task instructional opportunities offered by the instructor for students to practice the specific skills targeted in lesson exercises. Using a multiple-baseline across-participants design, four paraeducators delivered daily instruction, first in a nonscripted version of an explicit supplemental program and then in the scripted version of the same program, to 12 first-grade students identified at risk for reading failure. Upon introduction of the script, the rate of on-task instructional opportunities for student practice was substantially higher, and the rate of off-task instructional opportunities diminished. Both paraeducators and student participants preferred the scripted instruction.

Keywords

scripted programs, opportunities to respond, supplemental instruction, paraprofessionals

Increasing attention is being given to providing early intervention for students at risk for reading failure, specifically in the form of supplemental instruction. The increased emphasis on early intervention is due to several legislative efforts including Early Intervening Services (Individuals With Disabilities Education Improvement Act, 2004) and Reading First (U.S. Department of Education, 2008). The combined effects of this legislation gives local education agencies the capacity to provide preventive intervention for students who have not yet been identified as needing special education but need academic supports, particularly in the area of beginning reading.

In such preventive efforts, the expectation is that students receive differentiated instruction according to their level of risk (i.e., use of a tiered model), in which students who are missing skills needed for optimal progress in their grade level core program are given additional, small-group instruction (U.S. Department of Education, 2009). A source of challenge for many schools is that providing differentiated instruction for students requires more personnel to deliver the additional instruction. One solution to this challenge is to use paraeducators to provide supplemental instruction to small groups of students who are identified as having academic difficulties (Giangreco, Edelman, Broer, & Doyle, 2001).

Paraeducators have been shown to be effective in providing supplemental instruction in reading to young children (Lane, Fletcher, Carter, Dejud, & DeLorenzo, 2007; Vadasy, Sanders, & Peyton, 2006; Vadasy, Sanders, & Tutor, 2007). For example, Vadasy et al. (2007) found that when provided with high-quality professional development and a structured program paraeducators successfully implemented supplemental reading instruction that subsequently improved the reading accuracy, reading fluency, and spelling of students at risk for reading failure. Vadasy et al. (2006) found similar results, demonstrating that paraeducators successfully implemented supplemental instruction to improve students' structural analysis skills and oral reading practice.

In the Vadasy et al. (2006, 2007) studies, two key factors resulted in the success of the paraeducators. First, paraeducators were provided with explicit training, feedback, and ongoing coaching. Second, paraeducators were provided

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with highly explicit programs, in which the instructional design was controlled with a script. Providing such intensive support to the paraeducators in these studies may have encouraged the high levels of program fidelity reported (i.e., mean of 3.8 on a 4.0 scale). Fidelity of program implementation is a key factor in successful preventive interventions (Wilkinson, 2006) and may be of concern when using paraeducators, given that many do not have extensive training in specific reading instructional practices (Causton-Theoharis, Giangreco, Doyle, & Vadasy, 2007).

Direct Instruction (DI) programs, created by Engelmann and colleagues, have served as a model for scripted programs for more than 30 years (Hempenstall, 2004). Engelmann and coauthors have published a wide variety of scripted curricula, including early reading programs such as *Reading Mastery* (Engelmann & Bruner, 1995) and *Horizons* (Engelmann, Engelmann, & Seitz-Davis, 1997). There is a great deal of empirical evidence to support the effectiveness of DI reading programs in teaching students who have disabilities or who are at risk for failure (Adams & Engelmann, 1996; Prychodzin-Havis et al., 2005; Schieffer, Marchand-Martella, Martella, & Simonsen, n.d.; Stebbins, St. Pierre, Proper, Anderson, & Cerva, 1997). The success of DI programs has been attributed to tightly controlled instructional design features such as conspicuous strategies, mediated scaffolding, and strategic integration (Coyne, Kame'enui, & Carnine, 2007) embedded within scripted presentations and controlled through the specificity of the program (Watkins & Slocum, 2004).

In a study by Simmons et al. (2007) with kindergarten students at risk for reading failure, both time and program specificity were variables. The researchers reported that both the highly and moderately specified programs emphasized phonological, alphabetic, and spelling instruction but there was a clear contrast in the "specificity of task scaffolding, example selection, teacher language, review cycles, and corrective feedback" (p. 333). Additionally, the highly specified program was scripted whereas the moderately specified program only included some scripted sections. Fidelity of both programs was reported to be similarly high. When time was held constant at 30 min, results demonstrated that the highly specified program was significantly more effective than the moderately specified program was across all measures of reading and spelling except for comparable outcomes in initial sound isolation and phonemic segmentation. In this study, the function of the script was not isolated because specificity varied across several dimensions of the programs.

Watkins and Slocum (2004) explained the role of the script in reaching two critical goals:

(1) to assure that students access instruction that is extremely well designed from the analysis of content

to the specific wording of explanations, and (2) to relieve teachers of the responsibility for designing, field-testing, and refining instruction in every subject that they teach. (p. 42)

For example, DI programs offer clear, concise wording for presenting new concepts and skills. They use a careful progression and sequencing of examples and nonexamples that promote generalization and the integration of concepts and skills. DI programs provide built-in scaffolding by prompting the instructor to provide intensive support for new skills (i.e., modeling, leading, and then testing) and less support for these skills as students become more independent (i.e., testing without initial modeling and/or leading). DI programs maximize student opportunities to respond by prompting choral responding for much of the practice. For many years, researchers have identified the impact of providing students with many opportunities for active student engagement in academic tasks on the improvement of student achievement (Brophy, 1986; Ellis, Worthington, & Larkin, 2002; Greenwood, Delquadri, & Hall, 1984; Swanson & Hoskyn, 2001). Other research has shown that the students with learning difficulties who produce more academic responses per minute during instruction achieve greater academic progress than do students who produce few academic responses (Carnine, 1976; Englert, 1984; Johnson & Layng, 1994; Sterling, Barbetta, Heward, & Heron, 1997). Maximizing academic responses is especially critical when students are practicing new material (Council for Exceptional Children, 1987; Johnson & Layng, 1994). Theoretically, scripted instruction may be successful in part because it provides more opportunities for focused academic responses because the teacher is prompted frequently to ask a question or solicit a response from students (Watkins & Slocum, 2004). Scripted programs can also combine frequent responding with sophisticated instructional design ensuring that students practice highly relevant responses with strategies that optimize their rate of practice.

Although the script is considered a critical aspect of DI programs, it is also a component that has been highly criticized. For example, Kohl (2009) stated, "People who insult and denigrate teachers by forcing scripted curriculum on them are perfectly aware that they are forcing teachers to act against their conscience and students to close down their minds" (¶1). A common perception of scripted instruction is that it stifles creativity and only allows for low-level responses (cf. Bessellieu, Kozloff, & Rice, 2001; Sawyer, 2004). Teachers have also reported that using a script allows less authentic interaction between the teacher and individual students than does other, more student-centered approaches to instruction (DeVries, 2006).

Given the resistance of many to using scripted programs, it is important to determine the extent to which the script is instrumental in ensuring many instructional opportunities for relevant practice. In other words, can an explicit, systematic, and tightly structured program maintain the key features of its instructional design if teachers are shown how to incorporate these features and prompted to use them but not given the written script designating what to say? Although it is logical to assume that the script is instrumental in ensuring that the instructor efficiently delivers the program by presenting the skills as intended, we have not identified any studies that specifically investigated the contribution of the script when the other program features were held constant for both versions of instruction.

To examine the role of the script empirically, we posed research questions investigating differences in instruction resulting from paraeducator presentations of nonscripted and scripted versions of a supplemental reading program used with first-grade students identified at risk for reading failure.

Are there differences in the rate of on-task instructional opportunities for student responses (i.e., directly related to the specific skill being addressed) and off-task instructional opportunities (i.e., tangential to the skill being addressed) the paraeducator provides in the nonscripted and scripted versions of the program?

Is there a difference in percentage of group responses used in the nonscripted and scripted versions of the program?

Is there a difference in paraeducator preference for using the nonscripted or the scripted versions of the program?

Is there a difference in student preference for the non-scripted or scripted presentations of the program?

Method

Participants and Setting

Four female paraeducators, assigned to first-grade general education classrooms, were the primary participants in this study. The paraeducators all held at least a 2-year associate's degree and ranged in age from 28 to 54 years old. Their experience as paraeducators ranged from 6 to 28 years. One of the paraeducators was in her final year of coursework to become a teacher. None of the paraeducators previously had used or had experience with scripted programs and none had prior experience, at this school, with instructing reading.

Although not the target of the study, 12 first-grade students participated in the study. All of the students had been identified "at some risk" for reading failure and in need of "strategic support" as the result of fall benchmark assessments conducted by school personnel using the *Dynamic Indicators of Basic Early Literacy Skills* (DIBELS; Good & Kaminski, 2002). None of the students participating in this study had an identified disability, and all were native English speakers. Of the 12 students, 6 were White females, 5 were White males, and 1 was a Black male. Four of these students qualified for free lunch and one qualified for a reduced-price lunch.

The study was conducted in a public elementary school located in rural North Carolina. All training was conducted in a multipurpose room with no other activity occurring during training sessions. So that paraeducators would not hear each other teaching, they met with their individual groups of three students in separate classrooms while the teachers and students from those classrooms were in the cafeteria for their early lunch period, (i.e., approximately 10:30 a.m.). Students sat in chairs around a semicircular table with the paraprofessional in the center, in close proximity to all students in the group.

Instructional Materials

All supplemental instruction was provided using one of two versions of *Early Reading Tutor* (ERT; Gibbs, Campbell, Helf, & Cooke, 2007). ERT is a brief supplemental tutoring intervention for beginning readers who are not performing at the expected level in their core reading program. ERT was developed to follow the formats and instructional sequence recommended by the authors of *Direct Instruction Reading* (Carnine, Silbert, Kame'enui, & Tarver, 2004). It provides instruction to address phonemic awareness, explicit phonics, passage reading, and fluency skills taught in kindergarten and first grade. Initial lessons include oral blending of sounds in words, letter-sound correspondence, blending written sounds into words, and oral segmenting without pausing. By Lesson 26, students are also reading short passages to build fluency and practicing irregular words in a flashcard game. Skills are gradually added and substituted across lessons so that by Lesson 33 oral blending and onset-rimes have been dropped, the letter-sound correspondence strand and the blending sounds into words strand begin to incorporate phonemes represented by more than one letter (e.g., digraphs and diphthongs). By Lesson 41, students help complete decodable "Short Books" where they fill in blanks to personalize their story, and after 5 lessons they take it home. At this point, the skill strands remain stable but increase in difficulty for the remainder of the program's 110 lessons. In addition to the skill strands, each lesson includes a short review with sample items from the

Lesson 40

Skill 1:
Letter-Sound Correspondences
ing/ing/, v/v/, a/a/, th/th/, /f/ /f/, sh/sh/, r/r/, e/e/, o/o/, i/i/, u/u/, p/p/, k/k/, b/b/, /v/
Presentation Book, page 123

(Quickly touch below each letter, and say:) What sound?
(For sounds that are continuous and can be held, tell the students to keep saying the sound as long as you touch it. Be sure your student has at least three opportunities to tell you the sound each letter stands for. Allow at least five opportunities for new sounds.)

Skill 2:
Blending Sounds into Words
frog, run, jump, thē, grēen, gō, grass, fast, will
thē grēen frog will jump on thē grass.
It will jump fast.
thē frog cannot run.
gō, grēen frog!
jump fast!

Presentation Book, page 124-126

a. (Point to the word frog, and say:) Say the sounds in this word by yourself. Remember, don't stop between sounds.
(Move your finger below the letters in a continuous motion without lifting your finger as the student responds.) /f/rōōg/.
b. (Repeat Step a until firm.)
c. Read this word the fast way by yourself.
(Slash quickly below the word.)
d. (Repeat Steps a-c for the remainder of the words on the page.)
e. Say these words the fast way. What word?
(Slash below each word.)
f. Say the sounds of the words in this sentence by yourself, and don't stop between sounds.
Read this sentence the fast way.
(Slash quickly below each word.)
g. (Repeat the procedure for the remaining sentences.)

Skill 3:
Segmenting-Dictation
at, thē, run, fast

a. Listen. We are going to say the sounds of a word slowly without stopping. I am going to say at very slowly. /ăăv/.
Say the sounds in at with me.
(Hold up one finger for each sound as you say it.) /ăăv/.
Say the sounds in at by yourself.
Remember to hold up one finger for each sound as you say it.
(Hold up one finger for each sound, say:)
What is the first sound you hear in at? /ăă/.
What is the last sound you hear in at? /v/.
c. (Give chalk or a marker to the student, and say:)
I'll say the sounds in at, and you write them. /ăăv/.
Write the first sound you hear in at.
Write the next sound you hear in at.
Write the last sound you hear in at.

Figure 1. Partial example of scripted lesson.

lesson. The teacher checks student mastery of the lesson using these items. If students do not meet the review criterion, they repeat exercises or the whole lesson.

For this study, we used a nonscripted version and a scripted version of ERT. In the teacher's guide for both versions, each skill strand of a lesson included the number and name of the skill being practiced, a list of examples to be used for that skill, and the corresponding page number in the presentation book. The presentation book was designed to be held up by the teacher for the students to view. It included all of the written items to which the students were to respond during each lesson.

See Figure 1 for a partial example of a scripted lesson. These lessons were made available to the paraeducator as the published version of ERT. In the teacher's guide for the scripted (i.e., published) version, there are lettered steps that note what to do (e.g., a. Touch below the letter t), followed by what to say. The spoken words are printed in blue (shown underlined in Figure 1) to allow the teacher to easily locate the actual words to say (e.g., "This is a new sound. This sound is /t/.") Examples, explicit directions, and a script to use for each step are provided for every skill strand in the lesson as well as for the review component. Originally designed for one-on-one tutoring, the script does not specify the use of choral responding; however, it has been implemented with equivalent success with groups of three students (Helf, Cooke, & Flowers, 2009) using choral responding.

Lesson 40

Skill 1: Letter – Sound Correspondences (See Lesson 40 Letter-Sound Correspondences Presentation Sheet; Page 162 of Presentation Book)
V, a, th, f, sh, r, ē, ā, l, p, k, j, u, ing

When introducing Letter-Sound Correspondences, make certain the students read the new sound at least 5 times. When reviewing Letter-Sound Correspondences, make certain the students read the sound at least 3 times. Be sure to have students hold continuous sounds and say stop sounds quickly.

Skill 2: Blending Sounds Into Words (See Lesson 40 Blending Presentation Sheet; Pages 163, 164, & 165 of Presentation Book)
thē grēen frog will jump on the grass.
it will jump fast.
the frog can not run.
gō grēen frog!
jump fast!

Have the students sound out each word and practice saying the word fast. Be sure the students do not stop between the sounds. For sentences, first have students sound out each word then read the sentence the fast way.

Skill 3: Segmenting/Dictation
at, thē, fast

- 1) Model saying the sounds of a word slowly without stopping between the sounds.
*Hold up one finger for each sound in the words you orally segment. For example, in the word /sit/ you will hold up your pointer finger of your right hand for /s/, add the middle finger for /i/, and your ring finger for /t/. As you provide a concrete representation for each sound using your fingers, remember to hold your hand so that students will see the sounds in the left to right order as they occur in words.
- 2) Have the students say the sounds slowly with you and then by themselves (using their fingers as a concrete representation).
- 3) Have the students identify the first, middle, and last sound of the word.
- 4) Have the students write the word on a dry erase board.

Figure 2. Partial example of nonscripted lesson.

See Figure 2 for a partial example of a nonscripted lesson. To create the nonscripted version, the lessons were retyped as written in the published version, with titled strands followed by the complete list of examples to use, but with general directions replacing the script. Another difference is the reference to students in the nonscripted version. Because we planned for group instruction of three students, we referred to students to reduce confusion.

The nonscripted lessons were in a binder along with an Implementation Guide. The Implementation Guide specified when to use group or individual responses (i.e., "Students should first respond as a group to items, then give individual turns . . . each student should have at least one turn to respond individually, but no more than 3 turns.") and prompted the use of signals to control student responses. The Guide also noted that correct student responses should be praised and incorrect responses should be corrected immediately. Written examples of incorrect responses were given and a basic model-lead-test correction procedure was outlined. The correction procedure specified (a) model the task for the students, (b) have the students perform the task with you, (c) have the students perform the task independently, and (d) go back and retest the skill later in the lesson. We included specific rules for behavior and possible rewards for following the rules. We listed teaching suggestions for success (e.g., read and practice the lesson before the children arrive, keep a quick pace, make sure the

students can do all the steps of a skill before moving on). We also gave directions and forms for data management (i.e., student absences, scores on unit mastery tests, and remediation). Finally, we included a guide for the correct pronunciation of phonemes.

Prior to training, we prepared an individual crate for each paraeducator containing all materials needed for the instructional sessions. Each crate held a binder with the Implementation Guide including the nonscripted version of the teacher's guide as well as a presentation book of items for students to view at various points in the lesson. The presentation book was identical to the published version but was in manuscript form. From the published program materials, we included photocopies of fluency passages, Short Books, and flashcard sets of irregular words. In addition, paraprofessionals were given three erasable white boards and dry erase markers for students to use during lessons, colored pencils for marking fluency graphs, and a book of stickers to reward students who participated and displayed appropriate behavior during the instructional session. With the exception of the Implementation Guide, including the nonscripted version of the program, and the unpublished version of the presentation book, all of the materials were used across both versions of the program.

Dependent Variable

The dependent variable measure was the number of instructional opportunities the paraeducator provided for students to respond per session minute. Both on-task and off-task instructional opportunities were tallied by the primary data collector from audio recordings of each session. The full session was recorded and the full lesson was completed each day, but two parts were not included in the data collection (i.e., flashcard game and fluency passages) because the practice formats used for these components resulted in little teacher input; they were not a sensitive measure of paraeducator-controlled instructional opportunities to respond.

An on-task opportunity to respond was coded each time the paraeducator prompted a response from students that was directly related to the skill addressed in that strand of the lesson. For example, if the skill was letter-sound correspondence and the students were asked to give the sound of a letter, it was coded on task. However, if the students were asked to name an object that started with that letter but students were asked the name of the letter, it would be coded as off task because the task did not match the skill designated in the exercise. We also counted as off-task instructional opportunities for student response when the paraprofessional introduced tangential questions, (e.g., "Who likes to eat peanut butter?" asked after students blended the sounds they heard in p-ea-n-u-t). In addition, when the paraeducator did not allow the students to respond

independently, we considered the opportunity off task because imitation alone was not the skill. The paraeducators were given guidelines and demonstration for modeling the correct answer and practicing in unison with the students (leading) only when an item was new or when correcting mistakes. The use of modeling and leading was to be followed with an independent response by the students (test). When reviewing items, the paraeducators were instructed to simply test the item. When the paraeducators asked students to imitate their model of a review item, we counted it as an off-task opportunity; also when paraeducators modeled saying a word slowly (holding only the vowel sound) rather than segmenting and students did the same, we counted it as an off-task opportunity for segmenting.

When there were multiple steps to a task (e.g., saying each sound in a consonant-vowel-consonant word and then saying it as a whole), each step that was an opportunity for teacher feedback was marked as a separate opportunity (e.g., each sound and the whole word would include four potential instructional opportunities). Error corrections were also tallied as instructional opportunities when the paraeducator asked for responses. However, covert responses (e.g., "Sound it out in your head"), rhetorical questions (e.g., "Are you all ready?"), and nonacademic questions or tasks (e.g., "Is your finger pointing to the first word?" "Will you please sit down?") were not tallied as either on-task or off-task instructional opportunities. When students responded in unison, the tally was multiplied by three to account for each student opportunity for response. When students were given individual instructional opportunities, the tally counted as one opportunity.

Interobserver Agreement

A second observer listened to 20% of taped sessions and recorded tally marks for each on-task and off-task opportunity to respond during the session. The primary and secondary observers' numbers of tally marks were compared to determine interobserver agreement using the gross method for each category (i.e., total on-task and total off-task instructional opportunities recorded for the session). The lower session total for on-task was divided by the higher session total for on-task. The same method was used for off-task instructional opportunities. The range of agreement across all sessions was 81.8% to 98.4% for on-task instructional opportunities with a mean of 92.7%. The range of agreement across all sessions was 88.6% to 100% for off-task instructional opportunities with a mean of 97.6%.

Experimental Design

A multiple-baseline, across-participants design (Cooper, Heron, & Heward, 2007) was used to evaluate the effects of

the script on rate of instructional opportunities for students to respond. The primary dependent variable was measured during the nonscripted condition until stability was established. Once stability was established, the paraeducator, who provided the lowest rate of on-task instructional opportunities to respond and highest rate of off-task instructional opportunities to respond received training using the scripted version of ERT. When a change in level, trend, or variability was established in the scripted condition for the first paraeducator, a second paraeducator was provided with training and materials for the scripted condition, and so forth across the remaining paraeducators.

Procedures

Grouping students. Twelve students were identified through the fall benchmark administration of DIBELS (Good & Kaminski, 2002) as in need of strategic instructional support and had parents who signed consent forms allowing them to participate in the study. When all student consent forms were obtained, students were individually administered ERT Mastery Tests embedded after every five lessons of the program. After administering the first Mastery Test, the administrator followed the criteria for either moving to the next Mastery Test or placing the student at the beginning of that five-lesson unit. This continued until all students were placed in the program. At that point, groups of three students were formed based on similar placement in the program and groups were assigned to paraeducators. The groups remained stable throughout the study.

General procedures. Three of the four groups started at Lesson 11 and one group started at Lesson 16. The early lessons in ERT are very short, requiring approximately 5 min of teaching time, if taught efficiently. To make good use of the time allocated for supplemental instruction, we asked the paraeducators to teach two lessons per day up to Lesson 26, at which point they shifted to one lesson per day. From Lesson 26, components that require more time are added (e.g., fluency readings, writing sounds in words) so that lessons require approximately 10 min or more, if taught efficiently, and are more similar in length for the remainder of the program. Data were not collected until all four groups had reached at least Lesson 26.

Throughout the study, students received approximately 90 min of reading instruction in the general education classroom from *Harcourt Trophies* (Beck et al., 2007), their core reading program. In addition to receiving core reading instruction from their general education teacher, students in the study received 10- to 15-min intervention sessions using nonscripted and, later, scripted versions of ERT (2007) from a paraeducator. During both conditions of the study, paraeducators used a tape recorder to record each instructional session and kept a log for each student where they

recorded student attendance, whether the student earned a sticker for good behavior, the student's score on the review test, and in later lessons the student's fluency score. Paraeducators were given the rule to move on to the next lesson if two of the three students successfully met the criterion on the lesson review exercises.

Training for the nonscripted version. The teachers and paraeducators were informed by the principal that the paraeducators would help provide supplemental instruction needed by first-grade students who had tested at risk in reading. He also informed them that a new program was available for supplementary instruction. Previously, they had no additional program support for students who did not qualify for special education services and the paraeducators were not given instructional responsibilities. The first author, an ERT author, led a 3-hr inservice, which immediately preceded the initial nonscripted lessons. Training was conducted with paraeducators and their assigned teachers to ensure that teachers understood what and how the paraeducator would be teaching their students. The combination also allowed for role play with the paraeducators in the teacher role and the teacher in the student role. This training included the following steps: First, we gave the teachers and paraeducators information on how the students were identified as needing strategic instructional support and how the supplemental reading program could help these students. Next, we provided an overview of the program materials and session logistics (e.g., where to hold the session, rules for student behavior, what to record on forms). This was followed by demonstration and practice of letter sounds and the identification of continuous and stop sounds. We presented an overview of the Implementation Guidelines including why and how to use signals for group responses along with guidelines for embedding group responses throughout the lesson. We showed them how to seat the children, position the teacher's guide, and hold the presentation book. Finally, we demonstrated each skill strand, with the first author following the memorized ERT script and the second author serving in the student role. Following each demonstration, the paraeducator practiced teaching that skill as demonstrated to her teacher while the first and second author monitored, offering help and feedback. This continued until all skills had been demonstrated, practiced, and all questions answered.

During the first teaching session, the second author moved from one small group to the next, answering questions and providing feedback to paraeducators. After that, the second author made informal and brief follow-up meetings with individual paraeducators to correct faulty sounds, help them manage materials efficiently, and provide reminders to complete all strands of the lesson. Paraeducators were given an opportunity to ask questions related to teaching procedures but were given no specific feedback on their work other than "Thank you for your hard work!"

She was also available throughout the study to answer general questions posed by the paraeducators (e.g., questions related to how to pronounce sounds, materials, behavior management).

Recordings made during the first few lessons (i.e., before data collection) demonstrated that the paraeducators were having difficulty with some of the basic skills and instructions. We decided to add another inservice session, for just the paraeducators, a week and a half after the lessons started. The third author conducted a 1.5-hr session with additional work on correct pronunciation of sounds and correct implementation of program strands. We also recognized that one of the strands (i.e., Short Books) had not been introduced in the initial inservice, so it was demonstrated and practiced. Each program component was modeled during this session and overall clarifications were made to correct inconsistencies observed during sessions (e.g., number of times each sound was presented, saying the sounds in the word without stopping).

Training for the scripted instruction condition. Training for this condition was presented by the third author to each paraeducator in a one-on-one session. At the session, the paraeducator was told that a published version of ERT was now available for her. The training session included directions for how to use the script (i.e., how to read teacher script and monitor student responses), an explicit model by the trainer of following the script for a strand, and an immediate opportunity for the paraeducator to practice with the script for that strand followed by feedback and error correction (when necessary) from the trainer. This modeling, immediate practice, and feedback continued until all strands had been practiced with the script. The trainer demonstrated a lesson with students for the first paraeducator only. We decided to eliminate this from the remaining training sessions because we were concerned that it would be difficult to account for the impact of the small-group demonstration when no demonstrations were given for the nonscripted version of the program. In each case, the script training preceded that day's ERT lesson so the paraeducator had immediate practice using the scripted format. The second author was in attendance during this first scripted lesson in case there were questions or concerns.

Results

On-Task and Off-Task Instructional Opportunities per Session Minute

The level of the data paths for both on-task and off-task instructional opportunities changed for each paraeducator at the point of introduction to the scripted condition (see Figure 3). With each participant, the number of on-task instructional opportunities per session minute increased and

the number of off-task instructional opportunities per session minute decreased. Introduction of script was followed by an immediate change in level. For Ms. Sharp, on-task instructional opportunities per session minute increased from a mean of 5.65 (range = 0.32–6.0) in the nonscripted condition to a mean of 33.25 (range = 24.65–38.31) in the scripted condition. This was accompanied by a decrease in off-task instructional opportunities per session minute from a mean of 21.1 (range = 12.2–28.3) in the nonscripted condition to a mean of 1.7 (range = 0–3.4) in the scripted condition. For Ms. Betler, on-task instructional opportunities per session minute increased from a mean of 10.15 (range = 5.59–17.9) in the nonscripted condition to a mean of 31.5 (range = 25.27–37.45) in the scripted condition. This was accompanied by a decrease in off-task instructional opportunities per session minute from a mean of 32.75 (range = 17.63–44.89) in the nonscripted condition to a mean of 0.15 (range = 0–1.9) in the scripted condition. For Ms. Avant, on-task instructional opportunities increased from a mean of 13.1 per session minute (range = 8.16–26.07) in the nonscripted condition to a mean of 28.7 (range = 20.31–30.56) in the scripted condition. This was accompanied by a decrease in off-task instructional opportunities per session minute from a mean of 9.55 (range = 8.7–22.92) in the nonscripted condition to a mean of 0.25 (range = 0–1.63) in the scripted condition. For Ms. Panaro, on-task instructional opportunities per session minute increased from a mean of 16.1 (range = 11.6–27.54) in the nonscripted condition to a mean of 33.95 (range = 30.0–37.94) in the scripted condition. This was accompanied by a decrease in off-task instructional opportunities per session minute from a mean of 12.75 (range = 6.9–18.9) in the nonscripted condition to no off-task instructional opportunities in the scripted condition.

Follow-up data for three consecutive lessons were collected 2 weeks after the intervention phase was completed. The small groups were reconfigured after those lessons, so no comparable data were available beyond that point. As is evident in Figure 3, the level of the data path for on-task instructional opportunities remained high, with very few off-task instructional opportunities across paraeducators.

Fidelity of ERT Implementation

We used a fidelity checklist to examine the extent to which paraeducators completed all the exercises in a strand and adhered to the general procedures and directions. The checklist was organized in sections by strand (i.e., Letter–Sound Correspondence, Blending Sounds Into Words, Short Book, Segmenting, and Daily Review). These aligned with the strands used for data collection and did not include fluency passages or the irregular-word flashcard game. With the exception of Daily Review, each strand section

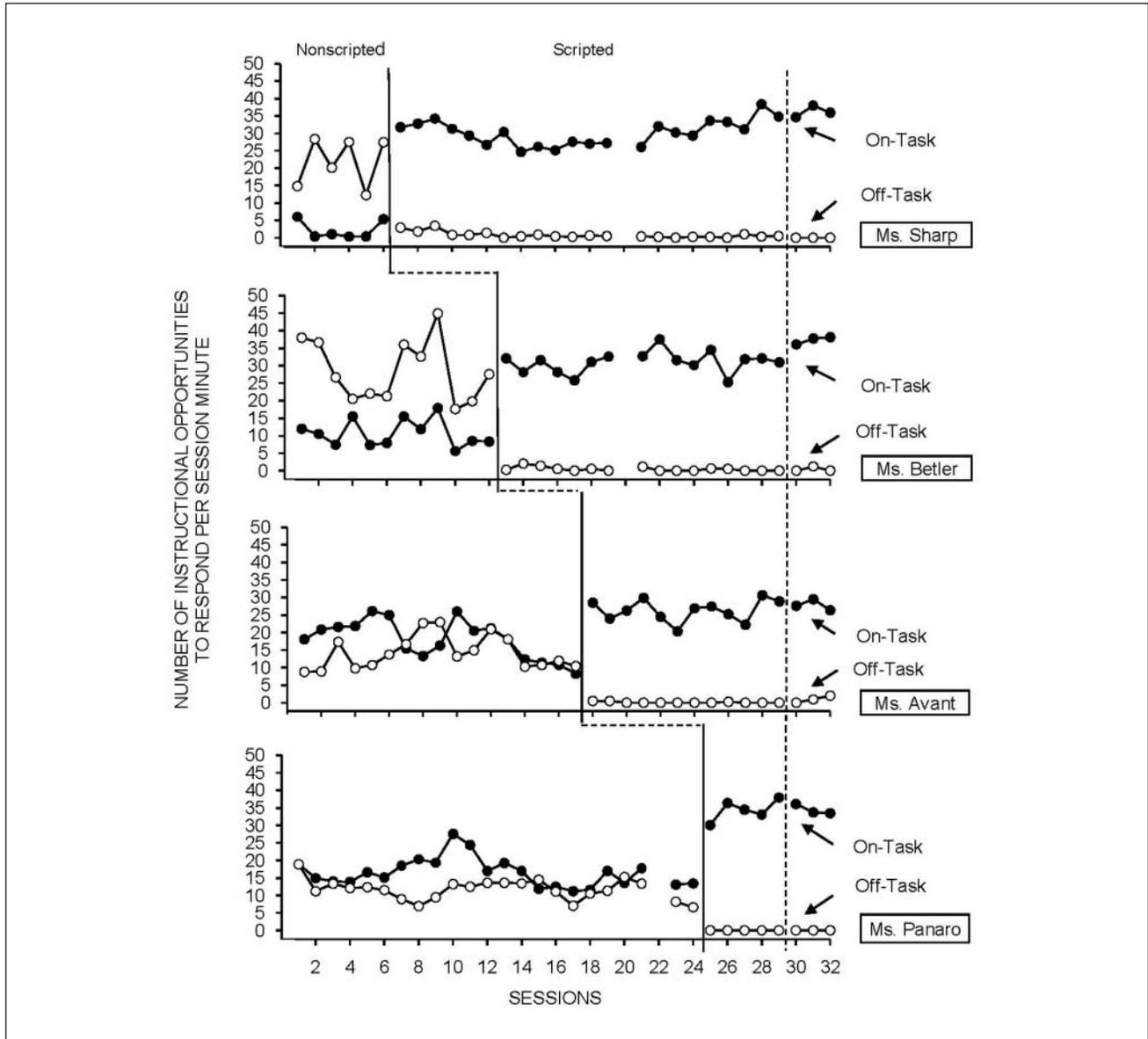


Figure 3. Number of on-task and off-task instructional opportunities per session minute for Ms. Sharp, Ms. Betler, Ms. Avant, and Ms. Panaro.

included the following items: (a) presents all items, (b) prompts group responses then individual turns, (c) provides praise or affirmation at least once, and (d) uses the model-lead-test or model-test correction procedure for errors. In addition, each strand section included one or two items related to the specific presentation guidelines given in the directions for nonscripted version or included in the script for the scripted version (e.g., a fidelity item in the Segmenting section stated, “Models saying sounds of word slowly without stopping between sounds”). The total number of items used to calculate percentage of items checked “yes” varied from 20 to 26, depending on the need for the correction procedures across strands.

The primary data collector checked fidelity for 20% of the taped sessions. Fidelity percentage was calculated by dividing the total number of steps checked “yes” by the total number of items, multiplied by 100. The fidelity percentage ranged across all paraeducators from 22% to 70% with a mean of 49.27% in the nonscripted condition and ranged from 85% to 100% with a mean of 89.18% in the scripted condition.

Lesson Duration

While taking data from the audio recordings, we noted a decrease in time paraeducators spent in reprimanding

students for inappropriate behavior. The combination of a decrease in individual responding, concise and consistent language of the script, and less time spent reprimanding students was accompanied by a quicker movement through the lesson, reducing lesson duration. The decrease in lesson time varied across paraeducators. Ms. Avant and Ms. Sharp decreased from a mean during the nonscripted lessons of 14 min 31 s and 14 min 27 s to a mean of 12 min 23 s and 12 min 18 s, respectively. Although the decrease appears modest (approximately 2 min 8 s) it represents a 15% drop in time needed to teach the same content. The decline was more modest for the two paraeducators who already taught more efficiently. Ms. Betler decreased lesson duration from a mean of 12 min 47 s to 11 min 9 s and Ms. Panaro decreased from 11 min 53 s to a mean of 11 min 9 s in scripted. This more efficient teaching also contributed to a higher rate of on-task instructional opportunities per session minute.

Social Validity

As a means of evaluating student growth in reading while receiving the supplemental instruction, we gathered descriptive data regarding changes in student risk status across the school year. This is not experimental data that can be attributed to the introduction of the nonscripted or scripted versions of the instruction but serves to illustrate student reading growth. DIBELS fall benchmark testing was given a week before the students entered nonscripted instruction, again immediately following the study (i.e., winter benchmark testing), and again near the end of the school year (i.e., spring benchmark testing). Students in the study continued in the scripted version of the program until they completed the program or until the spring benchmark testing. The school collected DIBELS data to track student progress and make instructional decisions, so all benchmark testing was completed by a team of assessors composed of existing school personnel.

On the fall benchmark assessment, all but one of the 12 students scored fewer than the benchmark goal of 35 correct phonemes per minute ($M = 31.25$, range = 15–63) on phoneme segmentation fluency (PSF). Similarly, all 12 students read fewer correct sounds in nonsense words than the benchmark of 24 correct sounds ($M = 14.4$, range = 8–21) for nonsense word fluency (NWF). By the winter benchmark testing, all 12 students reached or surpassed benchmark goals for PSF (35) with a mean of 56.3 (range = 41–71) and NWF (50) with a mean of 55.3 (range = 33–74). In addition, all but one student reached or surpassed the benchmark goal of 20 correct words per minute for oral reading fluency (ORF) ($M = 25.8$, range = 17–35). When the spring benchmark assessment was given, all students maintained or exceeded the unchanged benchmark goals on PSF ($M = 60.2$, range = 40–73) and NWF ($M = 63.4$, range = 48–119), and all but two

students maintained or exceeded the increased benchmark goal of 40 correct words per minute on ORF measures ($M = 53.75$, range = 34–79). After the study ended (i.e., at the winter benchmark), the combined scores across subtests indicated that all students except one achieved overall grade-level benchmark status. On the spring benchmark at the end of the year, all but two of the students who participated in the study maintained overall grade-level benchmark status.

Following data collection, the four paraprofessionals were given a written questionnaire to complete and return anonymously. When asked which version of the program they preferred, all four indicated a preference for the scripted version, citing reasons such as “increased my confidence,” “less chance of leaving out a step,” and “went faster.” When asked which version appeared to be more effective with students, all four paraprofessionals indicated the scripted version seemed more effective, citing reasons such as “they (the students) knew what to expect” and “the children paid (more) attention.” When asked about any differences they noticed in their presentation with the scripted version, three paraeducators noted their “faster pace” with one adding “more confidence” and one adding that she learned “to speak less and allow the students to speak more.” One paraeducator saw no difference in her presentation. Only one negative comment was made by a paraeducator regarding the scripted version. When asked to comment on her choice of the more effective version she indicated that the scripted version was more effective because “the children know what to expect from me . . . but . . . [I] did sometimes miss the personal interacting with the children.”

The second author conducted individual interviews with each of the students. All 12 students had positive responses about the scripted version and reported they learned more using the scripted (blue) book. In addition, all 12 students indicated that they liked their teacher to teach from the blue book more than the white book (nonscripted version). They stated the blue book was faster and they liked everybody responding together. One student said, “We all read together and our teacher is happy.” Another stated, “I don’t have to wait on the others to read, we do it all together.” Immediate error correction was another aspect of scripted instruction the students liked. One stated, “My teacher shows us how to read it the right way when we mess up.”

Discussion

Changes in Rate of Instructional Opportunities to Respond

Results of this study suggest that using a script changed teacher behavior in ways that increased the rate of

instructional opportunities offered to students to directly practice the skills specified in the supplementary program. The measure we used, number of instructional opportunities per session minute, combined both rate of instructional opportunities and correspondence of those instructional opportunities to the prescribed skill. To consider the potential contribution of factors that influenced this measure, we discuss the influence of differences in group responding and rate of off-task instructional opportunities related to outcomes for the two conditions.

The proportion of group responses influenced the rate data because each time the teacher asked for a group response (i.e., prompted choral responding) we multiplied the response by three to account for all students' practicing the skill. Starting with our first training, we provided written guidelines and demonstration for using choral responding with signaling at the beginning of each exercise, followed by some individual responses to confirm independent accuracy. In the written directions for each strand in the nonscripted lessons, the directions refer to having "students" respond, another prompt to direct questions and tasks to the group. The scripted version was published as a one-on-one tutoring program and did not include directions in the script for using group responses, but the one-on-one training in using the script included modeling the use of group responding. When we summarized our data related to the percentage of instructional opportunities that were directed to groups, we found across paraeducators in the nonscripted version a mean of 39.7% (range = 31.1–67.7) of the instructional opportunities were directed to the group, whereas in the scripted version a mean of 92.0% (range = 85.7–95.7) of the instructional opportunities were used for group responses. This increase in proportion of group responding contributed to the higher rate of on-task instructional opportunities in the scripted condition.

A couple of reasons may help explain this difference in use of group responding. During the inservice for the nonscripted version, choral responding represented one of many procedures and skills that were being introduced to the paraeducators. The specific procedures for signaling and embedding choral responding in a model-lead-test format were not familiar to the paraeducators because their assigned teachers did not demonstrate these procedures. Also, without the script, the lessons required complex decisions regarding what to say while following guidelines that were generally described in the teacher's guide. Perhaps the slower pace, inherent when multiple individuals each make a separate response to a task, helped ease the difficulty the paraeducators experienced when attempting to follow the directions and generate wording while remembering correction

procedures and giving feedback, making individual responding less stressful. In contrast, the script relieved the paraeducator from some of the instructional burden, making it easier to consistently use choral responding. Another contributing factor may be that the one-on-one training to use the script was simpler than the non-scripted inservice was and the application of choral responding more direct. The trainer modeled the use of choral responding with precise placement within each scripted skill strand. Although choral responding was not prompted by the script itself, the paraeducators may have accepted the demonstration with choral responding as the specific way to do each task and, therefore, were more consistent in using it.

The change in rate of instructional opportunities for on-task instructional opportunities with the scripted condition is not fully explained by more consistent use of group responses because it was accompanied by a substantial decrease or elimination of off-task instructional opportunities, allowing for a higher rate of on-task opportunities. In the nonscripted inservices, the paraeducators were provided models and practice of specific tasks that matched the skill strand; however, this training appeared insufficient support for teaching the specific skills. There were three types of teaching errors that resulted in their elevated scores for off-task instructional opportunities. First, their lack of precision in using model-lead-test procedures accounted for many off-task instructional opportunities in which the students simply imitated the paraeducator's persistent model and/or lead, never allowing the students to practice the response independently (i.e., omitting the test). In addition, one of the paraeducators misunderstood the task (e.g., segmenting words), modeled it incorrectly, and so what the student was asked to do (e.g., say the word slowly) was not an opportunity to practice the specified skill (therefore, off-task). Finally, paraeducators devised indirect practice of the skill (e.g., "What is the name of this letter?") or included questions tangential to the skill (e.g., "If we were talking about a trip to Disney World today, we would get on a jet. Who has been on a jet before?").

In contrast, all of the scripted questions and prompts were considered on-task; when the script was introduced, the paraeducators consistently followed the script. The script and the directions pointed out when to use a model and when to test directly. The paraeducator did not have to consider if a skill was new or previously introduced. The script illustrated holding each sound in a word (e.g., mmm/aaa/d) helping to prompt correct segmenting so the paraeducators modeled and the students practiced the skill designated in the strand.

Changes in Treatment Fidelity

Fidelity with school interventions is critical (Gable, Hendrickson, & VanAcker, 2001; Gansle & McMahon, 1997; Melde, Esbensen, & Tusinski, 2006; Wilkinson, 2006). Empirical evidence suggests that optimal gains in student achievement may be diminished when teaching procedures are inconsistently used. For example, Furtak et al. (2008) and Kovaleski, Gickling, Morrow, and Swank (1999) found that low or variable levels of fidelity with teaching procedures correlated with lower gains in student achievement. There were clear differences in the paraeducators' implementation fidelity by condition with low, unacceptable fidelity in the nonscripted condition and high levels of fidelity in the scripted condition. We conjecture that differences in training and the instructional challenge between the two conditions may explain this difference.

To reach high levels of fidelity with a program, strong training and follow up are needed (Vaughn, Klingner, & Hughes, 2000). However, the vast majority of professional development studies show that teachers typically receive only one day of training (Garet et al., 2001; Yoon et al., 2007). Our professional development might be considered somewhat stronger than is typical because of several factors. Our initial inservice was conducted with a small group at one grade level in a school rather than a district level, allowing for more engagement and individual attention than a large group would allow. In addition, we listened to audio recordings of the paraeducators' initial lessons and recognized that additional inservice was critical. The paraeducators had difficulty remembering key points from the inservice and were unsure what to do when faced with the lesson directions. They also struggled with modeling letter sounds correctly. Rather than allow incorrect modeling or extreme lack of fidelity to continue, we added a 1-hr booster session. The emphasis in this session was on correcting sound errors and ensuring that the paraeducators did each component of the lesson. Beyond these two small group inservices, we did not do any additional modeling or retrain the paraeducators on specific wording to use; however, the second author was available in the school for any questions or concerns. The demonstration and practice in these two inservices, along with written support from the Implementation Guide and availability of a staff member, were insufficient support for the paraeducators to reach acceptable fidelity without a script.

The training for the scripted version was brief (i.e., 30–45 min) and was conducted individually because of the multiple-baseline design. This one-on-one training in conjunction with the script may have been helpful in producing higher fidelity because professional development literature suggests individual coaching is more effective than group

inservice is (Fuchs, Fuchs, Hamlett, & Ferguson, 1992; Kohler, Crilley, & Shearer, 2001). The one-on-one training allowed for more individualization and specificity than the group inservice did. The paraeducator and trainer used the current lesson for practice. The trainer demonstrated each strand of that lesson followed by immediate imitation by the paraeducator. The amount of practice was controlled by any errors the paraeducator made in imitating the trainer's model, making it more salient to the individual paraeducator than the paired practice was during the inservice training. Although the paraeducators frequently left out the individual turns and occasionally did not remind students of tricky words in their Short Books or give praise, their implementation was consistently high (i.e., above 85%) and logically played a role in the higher on-task instructional opportunities of the scripted condition.

Differences inherent in teaching with and without a script may also have played an important role in fidelity differences. The treatment fidelity checklist included a total of seven items, which related to the specific directions in the nonscripted version or to following the scripted tasks, across the various skill strand sections of the checklist. The remainder of the approximately 25 fidelity items were associated with general procedures repeated in every skill strand section of the fidelity checklist but not included in lesson directions in the nonscripted version, nor were these items within the script of the scripted version. These general procedures (e.g., praised at least once, used model-lead-test or model-test corrections, presented all items) were addressed in the Implementation Guide for the nonscripted version. In the scripted version, every page or two of the teacher's guide included a small graphic with the word "Yes!" as a prompt to praise. When new skills were introduced, a box to the side of the skill strand included directions for correcting errors. These correction procedures were not repeated throughout. However, treatment fidelity was high and included these items when the script was present. It appears that with the one-on-one training with the script and with less responsibility for devising the wording they used for each skill strand paraeducators were better able to incorporate the general procedures with greater consistency.

Teacher and Student Preferences

In contrast to the views of others (e.g., Bessellieu et al., 2001; Kohl, 2009; DeVries, 2006; Sawyer, 2004), the paraeducators preferred the scripted version of ERT. This may reflect their lack of confidence and instructional skills, which made the nonscripted version more difficult to implement. However, they noted other advantages of using the scripted version. They noted greater student attention and a faster pace. Several found the routine of the scripted

language an advantage, noting that “students knew what to expect” and “I didn’t leave out steps.” Another indication of acceptance was that all elected to continue teaching in the scripted ERT following the study.

Students all preferred the blue book, or scripted lessons. The faster pace, tighter routine, and increase in group responding were well received by the students. They had fewer individual turns and fewer instructional opportunities for what we considered off-task talk; however, none of the students expressed any negative comments in response to these changes and three students commented that the scripted version was more fun. One student reported that the teacher was “happier” when using the blue book or scripted version, perhaps alluding to the drop in teacher reprimands. Surprisingly, 9 of the 12 students specifically noted that they liked the scripted lessons more because they got to read or answer together, referring to the increase in choral responding. This is in clear contrast to those who fear that scripted lessons are boring (DeVries, 2006).

Limitations of the Study and Suggestions for Future Research

Because this study was conducted with paraeducators, the findings may not be indicative of differences in the way teachers would respond to the nonscripted and scripted versions of the ERT program. With more experience and training in teaching reading, the teachers may have found it easier to put together all of the instructional procedures without a script. However, the second author regularly visited the first-grade classrooms, and her informal observations suggest that some of what we coded as off-task or a fidelity problem was an imitation of what the paraeducators viewed as they watched teachers instructing reading (e.g., asking divergent questions that were not directly related to the focus of the skill; consistently modeling skills before asking students to respond; using primarily individual volunteers to respond to questions posed to the group; corrections that did not require a correct student response). Future research is needed to determine if these findings are replicated with other paraprofessionals and with teachers.

A second limitation is that without experimental control our student achievement data cannot be attributed to the small-group ERT instruction. Although we cannot show a causal relationship between the use of ERT and changes in risk level, our descriptive data suggest that the students in this study changed the trajectory of their risk level after 31 sessions of the study, preceded by 10 to 14 double lessons prior to data collection. This trajectory continued so that by the spring DIBELS benchmark testing only two students failed to meet benchmark goals on

one subtest, oral reading fluency. These data include differing numbers of lessons in the nonscripted and scripted versions, given the multiple-baseline design. Whereas students improved their risk level status, we have no way of verifying that it was because of the supplemental instruction they received or that greater progress was made in one condition versus the other. Future studies might use designs (e.g., group comparison designs) that would allow for this comparison between conditions.

A third limitation of this study is the difference in professional development between the nonscripted and scripted versions. Whereas our intention was to examine the impact of the script on instruction, the type of professional development may have played an important role. Because we did not reach high levels of fidelity with the nonscripted condition, we don’t know how much more or what type of professional development might work. At least four studies have demonstrated that teachers acquire new instructional procedures with higher accuracy when they receive individual follow-up coaching after the initial inservice (Kohler et al., 2001; Kohler, Ezell, & Paluselli, 1999; Kretlow, Wood, & Cooke, 2009; Maheady, Harper, Mallette, & Karnes, 2004; Morgan, Menlove, Salzburg, & Hudson, 1994). Results of these studies suggest a combination of inservice and follow-up coaching might have been more successful in helping the paraeducators reach higher fidelity with the nonscripted version. It is notable that a brief one-on-one coaching and a script resulted in consistent use of the prescribed behaviors. For example, although choral responding was demonstrated and practiced in the group inservice, it was not used consistently until it was demonstrated and practiced within the script, for possible reasons given above.

A limitation of this study is that the multiple-baseline design of this study precluded the use of group inservice for the scripted version, so we cannot separate the influence of the type of training (i.e., small-group inservice versus individual modeling and practice) on the outcomes. In addition, no individual follow-up was given in the nonscripted condition. Instead, to see how instruction would be interpreted, we focused on comparing typical inservice and lack of script with brief individual modeling and practice and a script. For example, during the nonscripted inservice, paraeducators were given verbal and written guidelines to teach efficiently (i.e., beforehand “practice the lesson . . . make sure your materials are organized and ready . . . keep a quick pace, moving quickly from one skill to the next”). In neither condition did we specifically point out what would be considered off-task because the focus of the study was to examine these differences as an outcome of the level of specificity in instructional materials. In future research, either a reversal to a nonscripted condition or use of a group

design in which the same type and level of training is given to each treatment group would better isolate the contribution of the script.

Implications for Practice

As paraeducators are increasingly serving in instructional roles to provide differentiated instruction, it is important to consider the program features that support them in delivering effective and efficient instruction. Results of our study suggest that a scripted version of a program may hold many advantages. Paraprofessionals were able to provide high rates of practice to small groups of students, and when supported with a script the practice was directly relevant to the skills identified in the program. A script might also help paraprofessionals incorporate unscripted expectations and be efficient with the instructional time available. Although some react negatively to the constraints of scripted instruction, this may not be the reaction of paraeducators who find the script gives them confidence and improves their fidelity.

The professional development required to help paraeducators implement supplemental reading programs with high fidelity may be much greater than that assumed by school districts introducing new programs. With 4 hrs of small-group inservice, our paraeducators still lacked critical skills needed to implement the brief supplemental program well. It appears that the script and one-on-one coaching was an extremely efficient way to increase the teaching behaviors we addressed in inservice.

Scripted programs are by definition highly specified, and if they include critical instructional design features they are more likely to positively affect young students at risk for reading failure (Simmons et al., 2007). Whereas one might be able to teach paraprofessionals to take unscripted programs and apply all of the instructional design features incorporated in a script, it appears to be an enormous challenge and questionable use of professional development time when there are excellent scripted programs available.

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