

## Introduction

### *Cost of Reading Failure*

Reading ability provides the foundation for all school-based learning (Lyon, 2001). Therefore, when students experience serious reading problems, the academic consequences are grim. The delayed development of reading skills affects vocabulary growth (Cunningham & Stanovich, 1998) and interferes with opportunities to develop comprehension strategies (Brown, Palincsar, & Purcell, 1986). Beginning in grade four, a large portion of school content is delivered via the printed word (Jacobs, 2002). Poor readers are cut off from some or all of this content, and it becomes difficult for them to complete assignments, perform well on tests, or to participate in other academic activities. Thus, reading failure often leads to school failure. Poor reading skills are correlated with school suspension (Arcia, 2006), dropping out of school (Daniel et al., 2006), and low levels of post-secondary educational attainment (Kutner, et al., 2007).

The consequences of reading failure extend beyond the academic realm. A strong correlation exists between reading failure and incarceration (Beebe & Muller, 1993; Christle & Yell, 2008; Rogers-Adkinson, Melloy, Stuart, Fletcher & Rinaldi, 2008). Also, on the National Adult Literacy Survey of 1992, the unemployed were substantially overrepresented in the lowest two levels on each literacy scale. In the same survey, those with lower literacy levels generally earned lower incomes (Sum, 1999). Reading failure has also been correlated with suicidal ideation in youth (Daniel et al., 2006), feelings of shame in adults (Parikh, Parker, Nurss, Baker, & Williams, 1996), and a range of adverse health outcomes (Berkman, et al., 2004). Thus, it is apparent that “failure to learn to read places children’s futures and lives at risk for highly deleterious outcomes” (Lyon 2001.)

### *Direct Instruction*

Given the high cost of reading failure, it is critical to address the needs of struggling readers. Research shows that this can be done through Direct Instruction (Adams & Engelmann, 1996). Direct Instruction is a highly structured model for teaching. During Direct Instruction, teachers follow a script that maximizes clarity of communication. This script presents concepts and skills in a strategic sequence of small steps. Teachers continuously assess students' mastery of the content, and they use techniques to ensure that students are motivated and actively engaged with the instruction. Lesson pace is brisk, errors are corrected immediately, and review is built into the curriculum (Watkins & Slocum, 2004).

Research has shown that Direct Instruction can improve the skills of a wide variety of students (Adams & Engelmann, 1996; Watkins & Slocum, 2004). These include students in special education (White, 1988; Forness, 2001) as well as students in general education (Engelmann & Carnine, 1989; Tarver & Jung, 1995). The effectiveness of Direct Instruction is strongly supported by empirical data, as noted by a number of independent reviews (American Federation of Teachers, 1998; Borman, Hewes, Overman, & Brown, 2002; Herman et al., 1999).

### *Corrective Reading*

*Corrective Reading: Decoding* (Engelmann et al., 1999) is a Direct Instruction curriculum that teaches decoding skills. It targets students who have received reading instruction in the past, but who continue to have trouble with reading – that is, remedial readers. Specifically, it is designed for students in grades 3 through 12 who add or omit words when reading, who read synonyms for printed words, who do not read at an adequate rate, who confuse words with similar spellings, and who tend to make word-guessing mistakes (Engelmann, Hanner, & Johnson, 1999).

A number of research studies have documented the effectiveness of this curriculum in helping students with decoding problems. In their literature review, Przychodzin-Havis et al. (2005) cite 28 published studies that examine the effectiveness of *Corrective Reading*. Twenty-seven of these 28 studies found positive results for *Corrective Reading*.

#### *Intervention Fidelity*

While *Corrective Reading*'s effectiveness has been well documented, this effectiveness could be compromised in cases where the program is not implemented with fidelity. Intervention fidelity is the degree to which a treatment is implemented as planned (Noell, 2008), and its importance is widely recognized. Many studies have suggested a correlation between high intervention fidelity and desirable student outcomes (Carlson & Francis 2002; DiGennaro, Martens, & McIntyre, 2005; Greenwood, Terry, Arreaga-Mayer, & Finney, 1992; Noell et al., 2005; Sterling-Turner, Watson, & Moore, 2002; Witt, Noell, LaFleur, & Mortensen, 1997). Furthermore, in studies where levels of fidelity are manipulated, conditions with low intervention fidelity have been functionally related to poorer student outcomes (Noell, Gresham, & Gansle, 2002; Vollmer, Roane, Ringdahl, & Marcus, 1999; Wilder, Atwell, & Wine, 2006).

These research findings underscore the general importance of intervention fidelity. In specific cases where Direct Instruction is being used, the importance of intervention fidelity becomes even more apparent. A critical feature of Direct Instruction programs is that each component is interrelated, and each exists to maximize the programs' instructional efficiency and power (Watkins & Slocum, 2004). Therefore, it would appear to be vital that all parts of the programs be implemented with fidelity.

#### *Responsiveness to Intervention*

Furthermore, in school settings where the Responsiveness to Intervention (RTI) model is in place, intervention fidelity is critical. RTI provides a means for identifying and helping students who are struggling, and a system for the timely identification of students for possible placement in special education (D. Fuchs, Mock, Morgan, & Young, 2003; Vaughn & L. Fuchs, 2003). RTI is implemented differently in different schools, but the general approach can be described as follows: all students receive “generally effective” instruction from their classroom teachers. Students’ progress is monitored, and those who do not respond receive more intensive help. Again, their progress is monitored. Students who still do not respond may be referred for a special education evaluation (D. Fuchs et al., 2003). The underlying idea is that special education should only be considered after the student has received high-quality and reasonably intensive instruction in general education.

In schools where this model is implemented, it is critical to ensure high levels of intervention fidelity. This is because a student’s lack of responsiveness to intervention cannot be judged in absolute terms; it can only be judged in the context of the student’s learning environment (Fuchs & Fuchs, 1998). If a student responds poorly to a poorly-delivered intervention, teachers cannot make an informed decision about what the student needs. Therefore, it is critical to ensure adequate levels of intervention fidelity before making judgments about a learner’s responsiveness to intervention (Noell & Gansle, 2006; VanDer Heyden et al., 2005).

#### *Promoting High-Fidelity Intervention*

*Didactic training.* In school settings, didactic training is a common method for promoting intervention fidelity. Didactic training for teachers takes place outside the classroom. The training is usually a combination of lecture and demonstration, with little or no time for practice.

Despite its prevalence, however, a number of literature reviews suggest that didactic training alone is not an effective way to promote intervention fidelity (Joyce & Showers, 2002; Noell, 2008; Rose & Church, 1998; Scheeler, 2008). According to these reviews, people who participate in didactic training may acquire new skills, but they are unlikely to generalize all of these skills into applied settings. However, as noted by Slider et al. (2006), research on teacher training has demonstrated heterogeneity in training effects both within and across studies. So, although many studies have suggested that didactic training is not an effective way to promote intervention fidelity, other researchers have demonstrated exceptions to this general finding (Lerman, Tetreault, Hovanetz, Strobel, and Garro, 2008; Moore & Fisher, 2007; Slider, Noell, & Williams, 2006). These researchers provided didactic training that resulted in the generalization of new skills to applied settings.

*Performance feedback.* Even if initial training promotes a high level of intervention fidelity, this level may not stay high for very long. Many studies show that intervention fidelity tends to deteriorate over time. Researchers have identified performance feedback as an effective means for countering this deterioration (Hagermoser-Sanetti, Luiselli, & Handler, 2007; Mortenson & Witt, 1998; Noell, Duhon, Gatti, & Connell, 2002; Noell, Witt, Gilbertson, Ranier, & Freeland 1997; Witt, Noell, LaFleur, & Mortensen, 1997). In each of the studies listed above, teachers received initial training and began implementing interventions with a high degree of fidelity. However, this level of fidelity soon declined. When performance feedback was given to the teachers, their intervention fidelity improved in most cases.

Performance feedback involves monitoring a specific behavior and providing feedback to the individual regarding that behavior (Noell et al., 2005). Hagermoser-Sanetti and colleagues (2007) found that performance feedback was most effective when it included both graphic and

spoken elements. When studied as a staff training method to promote intervention fidelity, performance feedback has been shown to be more effective than didactic training (Gilbertson et al., 2007; Moore, Edwards, Sterling-Turner, Riley, DuBard, et al., 2002; Sterling-Turner, Watson, & Moore, 2002; Stormont, Smith, & Lewis, 2007), consultation only (Noell et al., 2005; Reinke, Lewis-Palmer, & Martin, 2007), weekly follow up interviews (Noell et al., 2005), and commitment emphasis training (Noell et al., 2005).

### *Fluency Training*

Although performance feedback is the most commonly studied tool for promoting and sustaining intervention fidelity in applied settings (Noell, 2008; Rose & Church, 1998), it is not always feasible. Given the level of resources in typical public schools, it may not be possible to provide daily or weekly data collection and performance feedback for all teachers and paraprofessionals. Therefore, it would be worthwhile to explore additional means of promoting intervention fidelity.

Fluency training shows promise as a tool for promoting intervention fidelity, even though it is not commonly discussed in this context. Fluency training aims to increase the rate of accurate performance; the end goal is to reach a level of speed and accuracy that is useful in applied settings (Binder, 1996). Preliminary research suggests that when learners achieve certain frequencies of accurate performance, they maintain what they have learned (Bucklin, Dickinson, & Brethower, 2000; Ivarie, 1986); remain on task for longer periods (Binder, Haughton, & Van Eyk, 1990); and integrate component response classes into composite response classes (Bucklin, Dickinson, & Brethower, 2000; Evans & Evans, 1985; Johnson & Layng, 1992). All of these outcomes can contribute to intervention fidelity. Therefore, it would be worthwhile to examine the effects of fluency training on intervention fidelity in an applied setting.

### *Direct Instruction Teaching Skills*

Given an appropriate combination of training and feedback, teachers can develop the skills necessary to implement *Corrective Reading: Decoding* with fidelity. When the program is implemented with fidelity, paraprofessionals will use a brisk presentation rate, a high praise rate, and effective error corrections.

*Presentation rate.* When *Corrective Reading* is implemented with fidelity, students are given a high rate of opportunities to respond actively to academic requests. Research findings support this brisk instructional pace. Carnine (1976), Darch and Gersten (1985), and Sunderland, Alder, and Gunter (2003) noted that when opportunities for active student responding were increased, students' correct responses and on-task behavior also increased.

*Praise rate.* "Contingent teacher praise, with its ease of implementation and limited time demands, is not only feasible for classroom application, but also serves as a powerful instructional variable for promoting reading achievement of children evidencing behavioral and/or learning disorders" (Gable & Shores, 1980, p. 106). Teacher praise contingent on student performance has been shown to increase students' correct responding (Darch & Gersten, 1985; Gable & Shores, 1980) and on-task behavior (Darch & Gersten, 1985; Ferguson & Houghton, 1992; Madsen, Becker & Thomas, 1968; Sutherland, Wehby, & Copeland, 2000).

*Error corrections.* Providing systematic error corrections is related to improved student outcomes in reading (Carlson & Francis, 2002) and other academic areas (Brophy & Good, 1986; Rosenshine & Stevens, 1986). Error corrections that require active student responding are more effective than those that don't (Barbetta, Heron, & Heward, 1993; Barbetta & Heward, 1993; Drevno et al., 1994). The *Corrective Reading: Decoding* program calls for error corrections that involve active student responding.

### *Purpose Statement*

Given the high cost of reading failure, it is critical to address the needs of struggling readers. Research shows that *Corrective Reading: Decoding*, a Direct Instruction program, can improve the reading skills of students at risk for reading failure. However, while *Corrective Reading*'s effectiveness has been well documented, this effectiveness could be compromised in cases where the program is not implemented with fidelity. Furthermore, when *Corrective Reading: Decoding* is used in a Response to Intervention framework, low levels of treatment fidelity could prevent school personnel from correctly identifying the students for whom intensive intervention is truly warranted. Therefore, in an effort to promote the accurate identification of students at risk for reading failure, it will be worthwhile to examine methods for ensuring and maintaining high levels of treatment fidelity in the use of the *Corrective Reading: Decoding* program.

In schools, didactic training is a common method for promoting intervention fidelity. Despite its prevalence, however, a number of literature reviews suggest that didactic training alone is not an effective way to promote intervention fidelity. Training seems to be more effective when coupled with daily or weekly performance feedback in applied settings. However, given the level of resources in typical public schools, this amount of performance feedback for all teachers and paraprofessionals may not be feasible. Therefore, there is a need to explore additional means of promoting intervention fidelity, such as fluency training. Several preliminary studies have suggested that when learners perform skills with a certain level of fluency, they maintain what they have learned, remain on task for longer periods, and integrate component response classes into composite response classes. All of these outcomes can contribute to

intervention fidelity. Therefore, the current study examines the effects of fluency training on intervention fidelity in an applied setting.

### *Research questions*

1. To what extent does fluency-based training in presentation rate, praise rate, and error corrections affect paraprofessionals' use of these skills in a classroom setting using the *Corrective Reading: Decoding* program with students at risk for reading failure?
2. If fluency practice does not result in the demonstration of adequate skills in presenting the reading intervention, to what extent does the addition of graphic and verbal performance feedback based on classroom performance result in acquisition of these skills?

## Methods

### *Participants*

#### *Paraprofessionals*

Five paraprofessionals who provide supplemental reading instruction to small groups (3-6 students) of at-risk students will be recruited to participate in the study. In order to be included in the study, these paraprofessionals must be providing daily instruction from the *Corrective Reading: Decoding* program. Prior to participating in the study, these paraprofessionals will have received didactic training and follow-up coaching from the school district (described below). Selected participants will demonstrate a need for additional training, as evidenced by low implementation of the reading curriculum in two of the following areas:

1. correct presentation rate (six or fewer items per minute)
2. praise rate (three or fewer praise statements per minute)

3. percent accuracy on error corrections (65% or less correct steps of correction procedure); and/or

After paraprofessionals agree to participate in the study, we will gather information about their educational background, their length of experience as a paraprofessional, and the amount of training, supervision, and feedback they have received in teaching *Corrective Reading: Decoding*. Appendix A contains the questionnaire we will use to gather this information.

#### *Trainer*

Breda O’Keeffe will provide fluency training and in-class coaching (see descriptions below). This trainer has six years of experience teaching Direct Instruction reading curricula to a wide variety of students. She has also taught a university class on Direct Instruction reading and has supervised university practicum students, paraprofessionals, and certified teachers in learning to implement Direct Instruction reading curricula. The trainer has a master’s degree in special education and has completed all requirements except a dissertation for a doctoral degree in special education.

#### *Reading Facilitators*

The paraprofessionals in this study will be supervised by reading facilitators. These reading facilitators are certified teachers who have received additional training at the national Direct Instruction conference. Each facilitator supervises 20-50 paraprofessionals at one or two schools in the district. The facilitators provide didactic training to all paraprofessionals at the beginning of the year, and they follow up with individualized in-class observations and coaching approximately once a month. They are also responsible for the assessment, placement, and progress monitoring of students receiving supplemental reading instruction. These reading

facilitators meet one time per week as a team with the district's two reading coordinators to discuss these responsibilities.

### *Setting*

#### *Teaching*

Paraprofessionals and students will be observed in their classrooms during group instruction. In school 1, the classroom contains eight tables, and there are five to seven chairs around each table. Each table is separated by temporary walls that are about seven feet high. Eight groups participate in reading instruction at the same time.

In school 2, the classroom contains five tables with five to seven chairs around each. The tables are separated by bookshelves that are around three and a half feet tall. Five groups participate in reading instruction at the same time.

#### *Fluency Training*

In school 1, fluency training will take place in the school's media center. Participants will sit at one of four tables, with three to five people at each table. In school 2, fluency training will be held in the same classroom where reading intervention occurs. Participants will sit at one of three tables with five to seven people at each table.

### *Materials*

#### *Reading Instruction Program*

The paraprofessionals in the study will implement level B1 or B2 of the *Corrective Reading: Decoding* program (Engelmann et al., 1999). Levels B1 and B2 each include 65 scripted lessons, and each lesson can be completed in 45 to 50 minutes. Lessons begin with a word-attack section in which students read isolated words and letter sounds. Next, students practice reading connected text. They answer comprehension questions orally, and they also re-

read passages to build fluency. Finally, they complete workbook exercises related to the words and passages they have just read. As students move through the lesson, the teacher follows a script designed to maximize clarity of communication. The script calls for the teacher to model new responses, to signal for group unison responses, to correct errors, and to provide praise for appropriate behavior.

### *Dependent Variables*

Dependent variables will be measured during the word attack section of each lesson. Dependent variables will include three aspects of paraprofessionals' behavior: presentation rate, praise rate, and the percentage of error correction steps presented correctly.

#### *Presentation Rate*

The first dependent variable will be presentation rate, defined as the rate at which paraprofessionals correctly call for group student responses. A presentation for group responding will be considered correct if the paraprofessional uses a clearly audible and consistent cue, pause, and signal, as well as appropriate wording of the instruction or direction. (This means that she does not vary from the script in a way that changes what the students should do, does not omit an instruction for the students that may cause an error, and does not include spurious prompts.) When asking the students to spell a word, the signal for the first letter of the word will be evaluated and scored, but if the paraprofessional signals for each subsequent letter in the word, these will not be scored. Time spent on individual turns, discussions of vocabulary words, or other conversations will not be included in the rate measure. The number of correct presentations will be counted as events during an observation period and described as a rate of presentations per minute. The target presentation rate for classroom teaching will be fifteen or more responses

per minute, based on expert opinion (personal communication between B. O’Keefe and C. Watkins & Kurt Engelmann, January, 2009).

### *Praise Rate*

Praise statements will be defined as positive statements made by the paraprofessional and directed to one or more students contingent upon an appropriate social, behavioral, or academic response. Praise will be counted if it is general (“You did it!” or simply “Yes”) or specific (“Wow! You read those words just right!” or “Yes, the word is...”) Praise statements will be counted as events during an observation period and described as the rate of praise per minute. The target criterion for praise rate will be four or more praise statements per minute (personal communication between B. O’Keefe & C. Schneider, January, 2009).

### *Error Corrections*

An error correction will be considered correct when the paraprofessional does all of the following:

1. stops before presenting another item (stop);
2. says the correct answer (model);
3. asks the students to respond to the missing item (test);
4. provides at least one opportunity for responses on other items (distracters); and
5. asks the students to respond to the missed item again (retest).

An academic error will be counted when one, some, or all students answer with a response that is different than the one called for in the teacher presentation book, or when they do not respond to the question within 2 seconds of the teacher signal. Sometimes, when students provide the correct answer, they may answer before or after the signal, or they may drag out their responses. These errors are considered signal errors (Lignugaris/Kraft & Marchand-Martella,

1993), and while they are important to address, they will not be counted as errors in this study. (They will, however, be discussed as part of the fluency training, and participants will be told how to recognize and address them.)

Accurate error corrections will be measured as the percent of the five steps described above that were completed accurately for each student error. These values will be averaged across opportunities for error corrections. The target criterion for percent accuracy on error corrections will be 95% of error correction steps completed accurately (adapted from Lignugaris/Kraft & Marchand-Martella, 1993).

#### *Reliability of Dependent Measures*

At least 30% of observations across each phase (baseline, all interventions, and maintenance) in both the training and classroom settings will be independently coded by a second observer.

For the measure based on percent of steps completed correctly (error corrections), inter-observer agreement will be calculated as the number of exact agreements on each step, divided by the total number of steps (agreements plus disagreements), multiplied by 100%.

For the other two measures (presentation rate and praise rate), agreement will be determined for each 10-second interval. The interval will be scored as 1 (complete agreement), 0 (complete nonagreement), or as a decimal (partial agreement.) For example, if one observer records 4 events in the 10-second interval, and the second observer records 3 events, the smaller number of events will be divided by the larger to yield a decimal of 0.75. This score will be added to the scores for all of the other intervals. Then, this sum will be divided by the total number of intervals and multiplied by 100%.

For all of the measures described above, agreement of 85% or higher will be deemed acceptable. If agreement falls below this level during the study, definitions of the behaviors will be evaluated and/or observers will be provided with additional training in the observation system.

### *Measurement Procedures*

During fluency training, the dependent variables for paraprofessional' instructional skills will be measured daily during the final practice.

During the rest of the study, paraprofessionals' lessons will be videotaped daily. We will watch the videos to obtain data about the dependent measures.

### *Independent Variables*

#### *Pre-baseline Training.*

*District didactic training.* All new paraprofessionals received didactic training at the beginning of the school year. This training lasted for about 1.5 hours, and it included 20 minutes of practice. During the training, a reading coordinator gave the rationale, modeled, and provided guided practice in letter sounds, signals for group responses, and error correction formats. Later, each paraprofessional attended two additional sessions on two different programs that they were likely to teach (e.g. *Early Reading Intervention, Reading Mastery, Corrective Reading, or Reading for All Learners*). The training on each program lasted for 1.5 hours, so there was a total of 3 hours of additional training. During this training, literacy coordinators introduced components of the program and described placement test procedures for that program. Thus, the total training time was 4.5 hours, with a maximum of 3 hours directly relevant to *Corrective Reading* and no more than 20 minutes of practice.

*District follow-up coaching.* About one time per month, reading facilitators provided

follow-up coaching to paraprofessionals. Reading facilitators use a variety of coaching styles and strategies. The district is concerned about whether or not the initial training and coaching are sufficient to ensure adequate implementation fidelity by the paraprofessionals.

We will ask each paraprofessional who participated in the study to report on how frequently he or she received coaching prior to the study. No district training will be provided during the study.

#### *Independent Variables for Paraprofessionals*

*Fluency training.* Fluency training will be provided to paraprofessionals by Breda O’Keeffe. The complete training course will be delivered three times: once at school 1 and twice at school 2. Ten to 15 paraprofessionals will participate in each session. These participants will include nearly all of the paraprofessionals employed at each school. During the training, data will be collected only about those paraprofessionals who meet the criteria for inclusion and who agree to participate in the study.

Training sessions will last for one hour and will be conducted daily for five days. Classroom observations will be conducted concurrently with this training, and the training will be adjusted based on needs identified during classroom observations.

During the training, the trainer will introduce skills in a sequential manner. She will provide the rationale for the skill to be taught, model the skill, provide opportunities to practice in role-playing situations, and provide positive and corrective verbal feedback. (See Appendix B for an outline of training topics and activities.)

After the paraprofessionals correctly perform each skill, the trainer will provide opportunities to practice the skill to a target rate of fluency. (See table 1 for fluency goals.) This target rate of fluency will be above the rate that will be required in the classroom. Practice at the

increased rate will be designed to increase the likelihood that the skills will generalize to the teaching classroom. The target presentation rate (including practice with about 40% error responses) in the training session will be 15 presentations per minute. The target praise rate for training will be 6 praise statements per minute (see Table 1).

Table 1. *Teaching Behavior Target Rates for Classroom and Training Settings.*

<b>Teaching behavior</b>	<b>Classroom Target Rate</b>	<b>Training Target Rate</b>
Presentation rate	15 or more per minute	20 or more per minute
Praise Rate	4 or more per minute	6 or more per minute
Error corrections	95% accurate steps	95% accurate steps with target presentation rate

During the training for correct presentations, the trainer will give a rationale for group responses. She will describe and model the three parts of a correct presentation: the cue, pause, and signal. The paraprofessionals will then practice this skill for accuracy with a simplified script (i.e. they will simply ask, “What word?”, then pause, and then signal). This practice will be conducted in small groups, with other paraprofessionals acting as the students. During this initial practice, the paraprofessionals will be asked not to make errors. The trainer will circulate through the room and provide positive and corrective feedback to the participants. After this accuracy practice, the paraprofessionals will practice for increased fluency. The target rate will be 20 presentations per minute.

After the fluency rate is met, paraprofessionals will receive training on praise rate. First, the trainer will give a rationale for praising students. She will then describe the features of effective praise. Because effective praise is varied, the trainer will lead the paraprofessionals in an activity where they will generate a different praise statement for each of the most common

letters of the alphabet. Afterward, the paraprofessionals will write wrote these praise statements on index cards and use these cards to practice saying the praise statements fluently. Later, they will incorporate these praise statements into their practice sessions with the simple script, as described above. The object will be to maintain a fluent rate of 20 presentations per minute while adding in praise.

Next, the trainer will describe and model what to do when students make signal errors (i.e. when they did not respond on signal). The paraprofessionals will practice correcting signal errors while following the simple script, again with the target fluency of 20 presentations per minute, and again while adding in praise.

Next, training will be provided on monitoring students. The trainer will explain why and how to monitor students, and paraprofessionals will practice monitoring students while praising and correcting signal errors. This means that they will deliver the script while looking up at their “students” often to observe their behavior.

Following the training on monitoring, training will be provided on how to correct academic errors. The trainer will describe and model the steps for correcting academic errors. Paraprofessionals will practice correcting errors accurately while the trainer gives feedback. After accuracy has been achieved, the paraprofessionals will practice for fluency, working to maintain a correct presentation rate of 20 per minute while still correcting errors on 40% of words.

During the training on positive/negative comments ratio, the trainer will introduce a behavior management technique called “praise around.” Praise around involves (a) ignoring students’ minor off-task behavior, (b) praising other students for doing the behavior that the other student is not doing, and (c) when the student who misbehaved changes his behavior,

praising that student immediately. The trainer will model this technique and explain that it helps to maintain a high percentage of positive comments from the teacher. Paraprofessionals will then practice using this strategy while presenting the script to other paraprofessionals. These paraprofessionals will role-play misbehaving students, and the object will be to maintain the fluent level of 20 presentations per minute while using the praise around technique.

As the training progresses, paraprofessionals will practice making correct presentations at this fluent rate while new skills were added one at a time, as described above. On the last day of training, paraprofessionals will be given a more complex script than they have used before, one that requires them to ask “What sound?” and then “What word?” They will use this script to make correct presentations at a fluent rate, while concurrently praising students, correcting content errors, and monitoring students.

Each session will end with a 2 minute training probe for the paraprofessionals who participate in the study. These probes will provide a measure of paraprofessionals’ skills in the training setting. During the probes, the study participants will be given script from the word attack section of a *Corrective Reading:Decoding* lesson that they taught recently. Several other paraprofessionals will act as students, and the first paraprofessional will be instructed to teach the material as they would in a classroom setting. They will be asked to use a “teaching pace” (as opposed to the accelerated “fluency pace” that will be practiced during the training). Graphic and verbal performance feedback will be provided at the end of the 2 minute probe. Graphic feedback will consist of a graph with the paraprofessionals’ rates of praise and presentation, the percent correct of error corrections, the positive to negative feedback percentage, and a line that marks the target rate. Verbal feedback will include positive statements about improvements.

*Performance feedback.* Following the fifth fluency training session, if a paraprofessional fails to meet the criteria for presentation or praise rate on three out of four consecutive days, and if there is no increasing trend in the data, performance feedback will be given (Di Gennaro et al., 2007; DiGennaro et al., 2005; Gilbertson et al., 2007; Noell et al., 2000; Rose & Church, 1998; Hagermoser-Sanetti et al., 2007; Witt et al., 1997). During the performance feedback phase, the trainer will meet with the paraprofessionals daily after class for approximately five minutes. During these meetings, the trainer will provide graphic and verbal feedback to the paraprofessional about that day's performance. These meetings will continue until the paraprofessional meets the target criteria in the classroom for three consecutive days. Graphic feedback will consist of a series of graphs that represent each behavior, with a line indicating the target criterion for that skill. Verbal feedback will include descriptions of the graphs, positive comments for components that were implemented well, information about components that did not meet criterion, and suggestions for improvement. The trainer will offer to answer any questions from the paraprofessional. (See Appendix C for the performance feedback protocol.) She will also give a short written summary of the feedback to the paraprofessional to keep. (See Appendix D for the performance feedback observation recommendations form.)

### *Training Fidelity*

*Fluency training.* During fluency training, we will use checklists of targeted components to assess implementation fidelity of the training procedures (see Appendix E). Each checklist will list the topics and activities that are planned for an individual training session. For at least 30% of training sessions, an observer will complete one of these checklists. The number of components completed accurately will be divided by the total number of components and multiplied by 100% for the measure of implementation fidelity.

*Performance feedback.* We will use checklists of targeted items to assess implementation fidelity of performance feedback (see Appendix F). Each checklist will list the items that are to be discussed in the performance feedback section. It will also include a place for the observer to indicate whether the item was covered or not. An observer will complete the checklist for at least 30% of the performance feedback sessions. Afterwards, implementation fidelity will be calculated by dividing the number of items covered by the total number of items and multiplying that number by 100% for the measure of implementation fidelity.

### *Experimental Design*

This study will use a multiple baseline design across participants (Harvey, May, & Kennedy, 2004; Watson & Workman, 1981). Decisions about phase changes will be made based on the two main dependent variables: presentation rate and praise rate.

### *Phases*

As described below, the study will involve four different phases: baseline, fluency training, maintenance, and performance feedback.

*Baseline.* During the baseline condition, paraprofessionals will be video recorded in the classroom, and data will be collected about the three dependent variables. This data collection will continue until a stable or downward trend in baseline data is observed for presentation rate and/or praise rate.

*Fluency training.* At this point, fluency training will be introduced to a group of paraprofessionals, one or two of whom will be participants in the study. Fluency training will continue for five days, and during this time, fluency probes will be conducted. In addition, data collection will continue in the classroom.

*Maintenance.* Following the training, the maintenance phase will begin. This phase will continue until a paraprofessional fails to meet the criteria for presentation or praise rate on three out of four consecutive days and there is no increasing trend in these data. After these conditions are met, the performance feedback phase will begin as soon as possible for that paraprofessional, but not on the day before a weekend break.

*Performance feedback.* During the performance feedback phase, the trainer will provide daily performance feedback based on classroom observations. This feedback will continue until there are at least three consecutive data points at or above criterion for both presentation and praise rate. When this is the case, the paraprofessional will go back into the maintenance phase, and daily monitoring of the dependent variables will continue.

#### *Social Validity*

*Acceptability of training.* A questionnaire (See Appendix G) will be given to paraprofessionals after the fluency training. Their ratings will be averaged, and the mean rating and range will be reported. Items will be analyzed to determine the perceived acceptability of different parts of the intervention to the paraprofessionals.

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## Appendix A

*Paraprofessional Demographic Questionnaire*

## Paraprofessional Demographic Questionnaire

Please answer the following questions. The information will be anonymous and summarized as group data.

1. Age: \_\_\_\_\_
2. Educational background (please check the highest level completed):
  - a. \_\_\_\_ 8<sup>th</sup> Grade
  - b. \_\_\_\_ High School
  - c. \_\_\_\_ Some college (no degree)
  - d. \_\_\_\_ Associate's degree
  - e. \_\_\_\_ Bachelor's degree  
 What was your major?: \_\_\_\_\_
  - f. \_\_\_\_ Some graduate school (no degree)
  - g. \_\_\_\_ Master's degree  
 What was your degree in?: \_\_\_\_\_
3. Do you have a teaching credential? Y            N
  - a. If yes, what state is the credential from? \_\_\_\_\_
  - b. In what teaching area is the teaching credential (e.g., elementary education, special education, etc.)? \_\_\_\_\_
4. Number of years teaching or paraprofessional experience: \_\_\_\_\_
5. Number of years teaching with a Direct Instruction program: \_\_\_\_\_
6. Number of years teaching with *Corrective Reading: Decoding*: \_\_\_\_\_
7. Initial training in Direct Instruction (please check all that apply):
  - a. \_\_\_\_ I participated in the training that the district provided at the beginning of the school year for the large group of paraprofessionals. Year: \_\_\_\_\_
    - i. I went to the following sessions (please check all that apply):
      1. \_\_\_\_ General training on Direct Instruction (morning session)
      2. \_\_\_\_ Corrective Reading
      3. \_\_\_\_ Reading for all Learners

4. \_\_\_ Reading Mastery
  5. \_\_\_ Early Reading Intervention
- b. \_\_\_ I received my initial training on an individualized or small group basis with a literacy coordinator in the district (do not mark this if you attended the training at the beginning of the year).
  - c. \_\_\_ I received training in Direct Instruction from an Association for Direct Instruction conference, such as the one in Eugene, Oregon, or a regional ADI conference.
  - d. \_\_\_ I received training in Direct Instruction through a teacher preparation program at a College or University.
    - i. College or University name: \_\_\_\_\_
8. Follow-up coaching in Direct Instruction (please check all that apply):
- a. \_\_\_ A literacy coordinator or other district employee has observed me teaching at least one of my groups and has provided feedback based on this observation.
    - i. If you checked this item, please include the following information:
      1. Number of times this has been done this school year: \_\_\_\_\_
      2. Average amount of time the coach observed each time: \_\_\_\_\_
      3. Average amount of time the coach provided feedback on the session each time: \_\_\_\_\_
      4. Did the coach stop you during any session and show you how to perform a particular skill? Y N
      5. Did the coach show you how to perform a particular skill after any session? Y N
  - b. \_\_\_ I have participated in small group training with other paraprofessionals conducted by a literacy coordinator that was not related to any particular observation of my skills.
    - i. If you checked this item, please include the following:
      1. Number of times this has been done this school year: \_\_\_\_\_
      2. Average amount of time these sessions took: \_\_\_\_\_
      3. Average number of paraprofessionals who participated: \_\_\_\_\_
  - c. \_\_\_ Other, please describe: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

## Appendix B

*Outline of Fluency Training Sessions***DAY 1**

- 5 minutes      Introductions, Rationale for Study
- 30 minutes     Focus, cue, pause, signal
- Rationale for group responses
- Description of the steps
- Modeling of the steps
- Accuracy practice
- Fluency practice
- Graph results
- 25 minutes     Basic behavior management / praise
- Keep them engaged
- Use your attention
- Features of effective praise (specific, varied, sincere, etc.)
- Alphabet of praise words
- Fluency practice with praise words
- 2 minutes      Training probe
- 2 minute timing with *Corrective Reading* script (10% errors)
- Graph results

**DAY 2**

- 5 minutes      Practice praise word fluency
- Teach script with praise
- 40 minutes     Signal error corrections
- Definition of signal errors
- Rationale for correcting signal errors
- Procedure for correcting signal errors
- Strategies for reducing signal errors
- Model of how to correct signal errors
- Accuracy practice with signal error corrections

- 10 minutes    Monitoring students  
                   Rationale for monitoring students  
                   Explanation of how to monitor students  
                   Fluency practice with praise and monitoring
- 2 minutes     Training probe  
                   2 minute timing with *Corrective Reading* script (10% errors)  
                   Graph results

### **DAY 3**

- 5 minutes     Accuracy practice (review) with praise words and signal error corrections
- 30 minutes    Content error corrections  
                   Two types of errors  
                   Steps of content error corrections  
                   Model of content error corrections  
                   Accuracy practice with content error corrections  
                   Fluency practice with content error corrections
- 2 minutes     Training probe  
                   2 minute timing with *Corrective Reading* script (10% errors)  
                   Graph results

### **DAY 4**

- 15 minutes    Review content error corrections and practice
- 30 minutes    Praise around  
                   List of praise around steps  
                   Practice with identifying incompatible behaviors  
                   Model of praise around  
                   Accuracy practice with praise around  
                   Fluency practice with praise around
- 2 minutes     Training probe  
                   2 minute timing with *Corrective Reading* script (10% errors)  
                   Graph results

### **DAY 5**

- 10 minutes    Review praise around and practice

10 minutes	Varied think time Rationale for varied think time Review of basic signal illustration Model of varied think time Accuracy practice with varied think time
30 minutes	Pulling it all together Accuracy practice with “what sound, what word” Accuracy practice correcting content, signal errors, praising, and monitoring with “what sound, what word” Fluency practice with all skills on “what sound, what word” script
2 minutes	Training probe 2 minute timing with <i>Corrective Reading</i> script (10% errors) Graph results

## Appendix C

*Performance Feedback Protocol*

## Materials needed:

Tx Fidelity forms

Graphs: Pos/Neg Ratio

Presentation Rate

Praise Rate

Error Corrections

1. Review graph \_\_\_\_\_
  - a. Point out latest data point (tell what the value is for that point).
  - b. Point out the overall level and/or trend for the current phase.
  - c. Point out the criterion level for this skill.
  - d. Positive for what has been done with fidelity
  - e. Corrective for what needs to be done differently
  - f. Recommendations for how to do it differently
  - g. Any questions?
  
2. Review graph \_\_\_\_\_
  - a. Point out latest data point (tell what the value is for that point).
  - b. Point out the overall level and/or trend for the current phase.
  - c. Point out the criterion level for this skill.
  - d. Positive for what has been done with fidelity
  - e. Corrective for what needs to be done differently
  - f. Recommendations for how to do it differently
  - g. Any questions?
  
3. Review graph \_\_\_\_\_
  - a. Point out latest data point (tell what the value is for that point).
  - b. Point out the overall level and/or trend for the current phase.
  - c. Point out the criterion level for this skill.

- d. Positive for what has been done with fidelity
  - e. Corrective for what needs to be done differently
  - f. Recommendations for how to do it differently
  - g. Any questions?
4. Review graph \_\_\_\_\_
- a. Point out latest data point (tell what the value is for that point).
  - b. Point out the overall level and/or trend for the current phase.
  - c. Point out the criterion level for this skill.
  - d. Positive for what has been done with fidelity
  - e. Corrective for what needs to be done differently
  - f. Recommendations for how to do it differently
  - g. Any questions?
5. Written summary: Recommendation from each graph.

## Appendix D

*Performance Feedback Observation Recommendations Form*

Date: \_\_\_\_\_

Name: \_\_\_\_\_

Presentation Rate:

Praise Rate:

Error Corrections:

Positive to Negative ratio:

Other:

## Appendix E

*Sample Treatment Fidelity Form for a Fluency Training Session*

School 2 Training #2, Day 1

\_\_\_\_\_ Introductions, Rationale for Study (5 min.; Actual: \_\_\_\_\_ min.)

Focus, Cue, Pause, Signal (30 min.; Actual \_\_\_\_\_ min.)

\_\_\_\_\_ Rationale for group responses

\_\_\_\_\_ Description of the steps

\_\_\_\_\_ Modeling of the steps

\_\_\_\_\_ Accuracy practice

\_\_\_\_\_ Fluency practice

\_\_\_\_\_ Graph results

Basic Behavior Management / Praise (25 min., Actual: \_\_\_\_\_ min.)

\_\_\_\_\_ Keep them engaged

\_\_\_\_\_ Use your attention

\_\_\_\_\_ Features of effective praise (specific, varied, sincere, etc.)

\_\_\_\_\_ Alphabet of praise words

\_\_\_\_\_ Fluency practice with praise words?

Training Probe

\_\_\_\_\_ 2 minute timing with Decoding script

\_\_\_\_\_ 10% errors

\_\_\_\_\_ Graph results

## Appendix F

*Treatment Fidelity Form for Performance Feedback Sessions*

Date: \_\_\_\_\_ Teacher: \_\_\_\_\_ Person giving feedback: \_\_\_\_\_

IOA: Y N Total time for feedback: \_\_\_\_\_

1. Review graph \_\_\_\_\_
  - a. Y N n/a Point out latest data point (tell what the value is for that point).
  - b. Y N n/a Point out the overall level and/or trend for the current phase.
  - c. Y N n/a Point out the criterion level for this skill.
  - d. Y N n/a Positive for what has been done with fidelity
  - e. Y N n/a Corrective for what needs to be done differently
  - f. Y N n/a Recommendations for how to do it differently
  - g. Y N n/a Any questions?
  
2. Review graph \_\_\_\_\_
  - a. Y N n/a Point out latest data point (tell what the value is for that point).
  - b. Y N n/a Point out the overall level and/or trend for the current phase.
  - c. Y N n/a Point out the criterion level for this skill.
  - d. Y N n/a Positive for what has been done with fidelity
  - e. Y N n/a Corrective for what needs to be done differently
  - f. Y N n/a Recommendations for how to do it differently
  - g. Y N n/a Any questions?
  
3. Review graph \_\_\_\_\_
  - a. Y N n/a Point out latest data point (tell what the value is for that point).
  - b. Y N n/a Point out the overall level and/or trend for the current phase.
  - c. Y N n/a Point out the criterion level for this skill.
  - d. Y N n/a Positive for what has been done with fidelity
  - e. Y N n/a Corrective for what needs to be done differently
  - f. Y N n/a Recommendations for how to do it differently
  - g. Y N n/a Any questions?

4. Review graph \_\_\_\_\_
  - a. Y N n/a Point out latest data point (tell what the value is for that point).
  - b. Y N n/a Point out the overall level and/or trend for the current phase.
  - c. Y N n/a Point out the criterion level for this skill.
  - d. Y N n/a Positive for what has been done with fidelity
  - e. Y N n/a Corrective for what needs to be done differently
  - f. Y N n/a Recommendations for how to do it differently
  - g. Y N n/a Any questions?
  
5. Written summary: Recommendation from each graph.
  - a. Y N n/a Graph 1
  - b. Y N n/a Graph 2
  - c. Y N n/a Graph 3
  - d. Y N n/a Graph 4

## Appendix G

*Questionnaire for Paraprofessionals Regarding Training*

Date: \_\_\_\_\_

*Instructions:* Please circle the answer that most closely represents your level of agreement with each statement about the observations and training you received.

1. I felt that the training I received helped me improve my classroom teaching.  
a. Strongly agree. b. Agree. c. Neutral. d. Disagree. e. Strongly disagree.
2. I enjoyed participating in the training.  
a. Strongly agree. b. Agree. c. Neutral. d. Disagree. e. Strongly disagree.
3. I feel that the training I received helps my students read better.  
a. Strongly agree. b. Agree. c. Neutral. d. Disagree. e. Strongly disagree.
4. I feel that the training I received helps my students behave better during class.  
a. Strongly agree. b. Agree. c. Neutral. d. Disagree. e. Strongly disagree.
5. I feel that the training helped me present items faster and more effectively in class.  
a. Strongly agree. b. Agree. c. Neutral. d. Disagree. e. Strongly disagree.
6. I feel that the training helped me praise more during class.  
a. Strongly agree. b. Agree. c. Neutral. d. Disagree. e. Strongly disagree.
7. I feel that the training helped me provide more positive than negative statements to my students.  
a. Strongly agree. b. Agree. c. Neutral. d. Disagree. e. Strongly disagree.
8. I feel that the training helped me provide more accurate error corrections to students in class.  
a. Strongly agree. b. Agree. c. Neutral. d. Disagree. e. Strongly disagree.
9. I thought that practicing the teaching components at a fast rate during training helped me apply them to my teaching in the classroom..  
a. Strongly agree. b. Agree. c. Neutral. d. Disagree. e. Strongly disagree.
10. I would recommend this training to other people.  
a. Strongly agree. b. Agree. c. Neutral. d. Disagree. e. Strongly disagree.

11. This training had little effect on my teaching in the classroom.
  - a. Strongly agree.
  - b. Agree.
  - c. Neutral.
  - d. Disagree.
  - e. Strongly disagree.
  
12. Overall, I found this training to be worthwhile and helpful to me.
  - a. Strongly agree.
  - b. Agree.
  - c. Neutral.
  - d. Disagree.
  - e. Strongly disagree.
  
13. Comments: