THE EFFECTS OF PERFORMANCE FEEDBACK PLUS GRAPHING ON THE TREATMENT INTEGRITY OF A PARENT IMPLEMENTED READING INTERVENTION PROGRAM

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ABSTRACT

Repeated reading is an effective intervention that has been demonstrated to remediate reading problems in children. The parent tutoring literature has shown that this intervention is effective in the home environment as well as the school environment. One primary difference between home-based and school-based interventions is that a consultant is often available to work with teachers, whereas parents are not always offered this resource. However, research has demonstrated that behavioral consultation in the home environment, in which a parent serves the role of the consultee, is an effective method for addressing academic concerns. In order to make sound conclusions regarding the effectiveness of an intervention, whether home-based or school-based, it is imperative that treatment integrity be monitored. The major purpose of this study was to examine if the findings regarding the effectiveness of performance feedback can be systematically extended to behavioral consultation with parents. Five parent-child dyads completed a Repeated Reading intervention in which various forms of performance feedback was provided contingent on low treatment plan implementation levels. Data was analyzed using a non-concurrent multiple baseline design. Results indicated that performance feedback was successful in increasing treatment plan implementation to above 80% for one of the five participants. The addition of a graph illustrating implementation levels (process feedback) into the performance feedback provided was conducted for four of the five participants. Treatment plan implementation levels increased to above 80% for one of the four participants, indicating that a graph of process feedback alone may be insufficient to increase or maintain implementation levels. Additional findings and limitations of the study are discussed.

INTRODUCTION AND REVIEW OF LITERATURE

It has been argued that reading may be the most important skill that children learn in elementary school (Berg & Stegelman, 2003). Reading skills, especially comprehension, are important pre-requisite skills for success in subjects such as social studies, science, and even mathematics. Despite the importance of this fundamental skill, a strikingly large percentage of young children in this country do not have the skills necessary to be proficient in reading. The National Center for Education Statistics (NCES, 2003) reports that less than one third of fourth grade students read proficiently at grade level. This statistic has substantial implications for both the future of the child and society in general. Left untreated, these children may end up receiving special education services through the school system. Vaughn and Fuchs (2003) report that the average cost per student to receive special education services averages $12,000 per child versus $6,500 per child in general education with the majority of this funding coming from taxpayers. Additionally, there are several adverse consequences for students who are poor readers. Poor reading skills diminish the quality of conceptual information gained from text books in subjects such as literature, science, history and math (Berg & Stegelman, 2003). Without interventions, students may suffer throughout their educational careers, as the effects of poor reading will accumulate over time. Deficits in decoding abilities in first grade predict approximately 40% accurate reading comprehension in 9th grade (Honig, 1997). Long term consequences include an increased risk for unemployment as well as incarceration (Fiala & Sheridan, 2003). It is therefore imperative that both parents and educators focus on identifying interventions that will assist in the remediation of this problem.

Research has demonstrated that reading interventions implemented in both the home and school environments have been effective in increasing a child's reading fluency skills (Fiala & Sheridan, 2003; Gortmaker, Daly, McCurdy, Persampieri, & Hargenrader, 2007; Hook & DuPaul, 1999). These interventions include Repeated Readings (Therrien, 2004), Paired Reading (Toomey, 1993), Listening Passage Preview (Daly & Martens, 1994), Phase Drill error correction (O'Shea, Munson, & O'Shea, 1984) and Syllable Segmentation error correction (Daly, Persampieri, McCurdy, & Gortmaker, 2005). Paired Readings involves the adult and child reading together simultaneously and then fades to the adult support only once the child is reading independently. Listening Passage Preview involves the adult reading the passage aloud while the child listens, before the child is required to read the passage independently. In a Phase Drill error correction procedure, the adult will read the words read incorrectly aloud to the child. The child then repeats the word and rereads the entire sentence containing the word three times. Syllable Segmentation error correction is another type of error correction procedure in which an index card is used to cover words the child reads incorrectly more than once. The syllables of the word are uncovered and pronounced one at a time and then blended together to form a word. The details of the Repeated Reading intervention will be discussed in detail in the following sections. While the literature has clearly demonstrated the effectiveness of such interventions, the probability that any one of these interventions will be effective decreases significantly if not implemented consistently.

This principle holds true across environments. Current research has focused on factors that potentially increase treatment integrity, otherwise known as treatment plan implementation, within the school environment (Witt, Noell, LaFleur, and Mortenson, 1997; Noell, Witt, Gilbertson, Ranier, & Freeland, 1997; Noell, Witt, LaFleur, Mortenson, Ranier & Lavelle, 2000). This research has demonstrated that performance feedback along with a

graphing component, delivered during weekly feedback sessions, will increase treatment integrity in teacher-implemented interventions (Noell, Witt, Slider, Connell, Gatti, Williams, Koenig, Resetar & Duhon, 2005). This study will examine if the same holds true for parents as well. The goal of the present study is to examine whether performance feedback, along with a graphing component, will increase treatment integrity of a parent-implemented intervention in the child's home environment.

The following discussion will describe in detail the repeated reading intervention and the general principles of learning that it is based upon. Additionally, literature examining the effectiveness of parent implemented interventions, including the repeated reading intervention will be reviewed. The principles of behavioral consultation, a method through which skills are introduced to parents, will also be examined. Lastly, studies on treatment integrity and performance feedback, two important components of behavioral consultation, will be reviewed.

Repeated Reading Intervention

In general, reading interventions that utilize behavior analytic principles and are based on the Instructional Hierarchy are recommended for increasing a child's reading fluency. These general principles include drill, reinforcement and overcorrection. One evidenced based approach that has been shown to be effective in increasing oral reading fluency and comprehension in children who struggle with reading is the Repeated Reading intervention. The components of the Repeated Reading intervention and the theoretical foundation upon which they are based upon will be discussed.

The Repeated Reading intervention was first introduced by Samuels (1979) in his seminal article titled "The Method of Repeated Readings." This method described by Samuels consists of having a child reread a passage until the child meets a predetermined criterion

level of fluency, with fluency consisting of both speed and accuracy (Samuels, 1979). Progress made by the child should be monitored and graphed accordingly.

Repeated reading has been shown to be effective for a variety of populations. Most early research focused on the ability of the repeated reading technique to increase reading fluency in younger populations (Dowhower, 1987; Herman, 1985; Rashotte & Torgesen, 1985). Further research has shown that repeated reading can also lead to fluency and comprehension gains for struggling readers in middle and high school populations (Herman, 1985; Freeland, Skinner, Jackson, McDaniel & Smith, 2000; Mercer, Campbell, Miller, Mercer, & Lane, 2000; Valleley & Shriver, 2003; Strong, Wehby, Falk, & Lane, 2004; Devault and Joseph, 2004). Finally, the repeated reading method has been shown to increase reading fluency in populations with and without disabilities, including the visually impaired (Rashotte & Torgesen,1985; Sindelar, Monda & O'Shea, 1990; Weinstein & Cooke, 1992; Patillo, Heller, & Smith, 2004). Research on Repeated Readings will be reviewed below.

The theoretical basis for the Repeated Reading intervention lies in Samuels's early work in automaticity (LaBerge & Samuels, 1974). The theory of automaticity states that an individual has a limited amount of cognitive resources. If all attentional resources are used for decoding, as is the case for beginning readers, little cognitive resources are left for comprehension of the text. Becoming fluent in decoding allows for greater allocation of cognitive resources to be devoted to comprehension. Therefore fluency is critical for success in comprehension. Samuels (1979) stated that a reader's speed of response "may be used as an indicator of automaticity" (LaBerge, 1973). By repeatedly reading a passage several times in a row, the reader is able to obtain the practice needed, through opportunities to respond, to become automatic (Samuels, 1979).

Therrien and Kubina (2006) described three essential components of the repeated reading intervention. The first component involves competent tutors reading the passage aloud to struggling readers. The second component involves error correction through immediate feedback by the competent tutor. The third component involves requiring the struggling reader to reread the passage until a predetermined fluency level is met. These components correspond directly to the various stages of the instructional hierarchy (Daly, Lentz & Boyer, 1996).

Repeated Readings and the Instructional Hierarchy

The Instructional Hierarchy was developed by Haring, Lovitt, Eaton & Hanson (1978) as "a heuristic device for generating instructional treatments based on level of skill development,"(Daly et al, 1996, p. 370) and is derived from behavior-analytic principles. The Instructional Hierarchy is based on the theory that an individual learns a skill in a hierarchical fashion. Learning occurs in stages and in order to maximize learning, an individual should ideally pass through all stages in sequential order. A breakdown in learning can occur at any stage in the hierarchy and the intervention or instruction should target that particular area. There are certain procedures or instructional techniques that are best suited for each level.

The four stages, or levels of responding, include accuracy, fluency, generalization and adaptation. First the individual must acquire the skill. Haring et al. (1978) defined *acquisition* as "the period between the first appearance of the desired behavior and the reasonably accurate performance of that behavior" (p. 25). Four strategies that are most useful at this level are modeling, demonstration, prompting and cueing. Once the child has acquired the skill, the next stage is *fluency*. Daly et al. (1996) describe fluency as the ability to "perform the skill rapidly and with proficiency" (p. 375). The level of fluency that is considered sufficient changes based on the skill that is being targeted and the environmental context

(Daly et al., 1996). Two strategies that are useful in increasing fluency are reinforcement and drill.

Once accuracy and fluency have been successfully mastered, the next step in the learning hierarchy is *generalization*. Daly et al. (1996) define generalization as "the process of displaying a recently acquired behavior either in multiple settings, or in the appropriate context in which the individual is expected to demonstrate the behavior" (p. 375). It is important that generalization be programmed, as it does not naturally occur on its own. Stokes and Baer (1977) discuss nine ways in which generalization may be programmed and include the following: Train and Hope, Sequential Modification, Introduce to Natural Maintaining Contingencies, Train Sufficient Exemplars, Train Loosely, Use Indiscriminable Contingencies, Program Common Stimuli, Mediate Generalization, and Train to Generalize. The last step of the learning hierarchy is *adaptation*. In this stage, the individual must be able to change the response that they have mastered in order to meet novel demands in the environment (Daly et al., 1996). Similar in nature to problem solving, the individual must be able to determine what skills are needed and modify their response accordingly (Daly et al., 1996).

Current Research on the Components of Repeated Readings

As previously stated, the components of the Repeated Reading intervention are based on the various stages of the Instructional Hierarchy. Research studies have been conducted on the significance of the various components of the intervention as well as mediating and moderating variables that influence the effectiveness of each component. This research will be reviewed below.

The first component of the repeated reading intervention, in which the tutor reads the passage aloud to the struggling reader (modeling), focuses on the first stage of the

instructional hierarchy – acquisition. The second and third components of the repeated reading intervention, which are providing performance feedback through error correction and requiring the student to reread the passage until a set criterion is met, focuses on building fluency. Lastly, it is important to assess for generalization on unpracticed passages to get an accurate measure of reading gains that have been made throughout the intervention.

The second component of the repeated readings intervention involves error correction through immediate feedback by a competent tutor. Specifically, if the reader mispronounces or omits a work or hesitates for more than three seconds after encountering a word, the correct pronunciation of the word should be provided by the tutor. Begeny, Daly and Valleley (2006) suggested that this component is essential to the reduction of incorrect responses practiced by the reader and important for the development of stimulus control. In order to investigate this hypothesis, Begeny et al. (2006) compared a repeated reading intervention that did not involve a repeated practice error correction component to a phase drill error correction procedure as well as a reward only condition in which students were rewarded for beating their original score. The phase drill error correction procedure required the reader to repeat words read incorrectly three to five times each. The results indicated that while both the repeated reading condition and the phase drill condition were successful in increasing reading fluency, the phase drill error correction procedure resulted in a greater reduction of errors made by the reader. Both the repeated reading procedure and the phase drill error correction procedure resulted in higher fluency gains than the reward condition.

Results of a study by Chafouleas, Martens, Dobson, Weinstein and Gardner (2004) suggest that the effectiveness of performance feedback in increasing reading rate and reducing error rate may be moderated by the child's baseline reading fluency levels. Their study compared three instructional packages – Repeated Readings, Repeated Readings with a

performance feedback component, and Repeated Readings with performance feedback and a contingent reward. Results indicated that Repeated Readings condition alone was most effective for the participant who exhibited the highest fluency levels at baseline while the Repeated Reading plus performance feedback along with the Repeated Reading plus performance feedback and contingent reward was most effective for the participant with the lowest fluency levels at baseline.

The third component described by Therrien and Kubina (2006) involves requiring the struggling reader to reread the passage until a predetermined fluency level is met. While rereading is a necessary component, a study conducted by Ardoin, Mc Call, & Klubnik (2007) indicated that it may not necessary to use the same passage during the intervention in order to produce positive gains in fluency on generalization passages. In the study, two variations of repeated readings were administered to a group of 6 participants. In the first condition students were required to read one passage four times. In the second condition, students read two similar passages twice each. Results indicated that both conditions yielded fluency gains in generalization passages. However, it is important to note that these results directly contradict the results from a study conducted by Dowhower (1987), which found that utilizing a single passage was not as effective in increasing fluency as using a series of passages.

In a review of research on reading interventions, Chard, Vaughn & Tyler (2002) suggest that the outcome of repeated reading interventions is not affected by the amount of text in each passage. Additionally, a study Weinstein and Cooke (1992) provided support for the criterion level to be individualized to each child. Their study used a multiple element design to examine reading fluency gains made by four students with learning disabilities, comparing a fixed rate criterion to a successive gains criterion. In the fixed rate criterion, students were required to continue reading the passage until they achieved a rate of 90 correct

words per minute. In the successive gains criterion, students were required to continue reading until they had made three successive gains in words read correctly per minute. While both methods resulted in gains in oral reading fluency on generalization passages, the successive gains criterion was found to be more efficient as well as more reinforcing to the students.

Research has found the repeated reading intervention to yield positive effect sizes in both fluency and comprehension (Herman, 1985). A meta-analysis conducted by Therrien (2004) examined the essential components of repeated reading as well as the effectiveness of the intervention on increasing fluency and comprehension skills. Group design research studies published after 1997 and before June 2001 were included in the analysis. Therrien's analysis yielded a mean effect size of .64 for fluency and .42 for comprehension.

In summary, each component of the Repeated Reading intervention is based on a specific stage of the Instructional Hierarchy, allowing the intervention to target all levels of learning that are necessary to become a proficient reader. Research on Repeated Reading has demonstrated the following. First, the phase drill error correction component is essential in order to reduce errors made by the reader, although the absence of this intervention will still result in fluency gains (Begeny et al., 2006). Second, the effects of performance feedback is moderated by baseline reading fluency levels (Chafouleas et al., 2004). Third, it is not necessary to use the same passage throughout the intervention in order for Repeated Reading to be effective (Ardoin et al., 2006). Fourth, the length of the text in these passages does not affect the outcome of Repeated Reading (Chard et al., 2002). Fifth, the criterion level should be individualized to each child in order to increase efficiency as well as the reinforcing quality of the intervention. Lastly, several meta-analyses have demonstrated that Repeated Reading is effective in increasing both fluency and comprehension levels in a variety of populations (Herman, 1985; Therrien, 2004).

Parent Tutoring

While research has identified interventions that can remediate reading difficulties in children, it is also encouraging to note that these interventions can be implemented successfully in both the home and school environment. In addition, parent tutoring has shown to be effective for a variety of populations. These populations include children with learning disabilities (Duvall, Deluardri, Elliott, & Hall, 1992; Persampieri, Gortmaker, Daly, Sheridan, & McCurdy, 2006; Gortmaker, Daly, McCurdy, Persampieri, & Hergenrader, 2007), struggling readers (Fiala & Sheridan, 2003; Resetar, Noell, & Pellegrin, 2006) and children with Attention Deficit/Hyperactivity Disorder (Hook & DuPaul, 1999).

A meta-analysis conducted by Erion (2006) examined the effectiveness of parent tutoring. Overall, thirty-seven studies were included in the analysis, with the majority of studies involving reading and elementary grade students. Both single subject and group designs were included in the analysis. The results revealed a medium positive effect size (+0.60) for a variety of parent-implemented academic interventions for reading (including fluency, comprehension, and orthographic reading), math fluency, and spelling, indicating that parents can assist in the remediation of reading problems exhibited by their children.

One important finding in the Erion (2006) study was the potential moderating variables of the effectiveness of parent tutoring. Specifically, this study found that length of treatment, the provision of written instructions, modeling and supervised practice did not moderate treatment outcome. However, duration of treatment sessions did appear to moderate outcome, with longer treatment sessions yielding a greater effect than shorter treatment sessions (Erion, 2006). Also, while most studies reported descriptive data regarding intervention implementation, the author pointed out that few studies provided quantifiable

data and concluded that "future research should include a greater focus on the integrity with which parents implement tutoring and the quantity of tutoring" (p. 100).

Clearly, providing thorough training is important in obtaining positive results for a parent-implemented study. While teachers typically possess knowledge and skills necessary to assist students, parents may not have the knowledge necessary to do so without assistance. Faires, Nichols, and Rickelman (2000) examined the effects of parental involvement in teaching lessons on the reading levels of their first grade children. While all children made "significant gains" by the end of the study, an additional finding regarding parental factors was noted. While it seems intuitive to assume that parents with low literacy levels would be less effective at tutoring their children in reading, the authors found that both literacy levels and socioeconomic status had a little effect on parental involvement in their children's intervention. While the number of families participating in the study was limited, the parents in the high and middle income range did not have more time to devout to providing the intervention and may have even been "more limited" than the families in the lower income range (Faires et al., 2000, p. 210).

Parent Tutoring and Treatment Integrity

A study conducted by Persampieri et al. (2006) measured the effects of a parent implemented reading intervention on the oral reading fluency of three elementary aged students in general education. Positive gains in words read correctly were made by all three students. In order to maintain high treatment integrity, the investigators graphed student outcome data and shared it with the parents weekly. The authors report a "clear and direct correlation between implementation (good or poor) and the actual measured outcome" (p. 53). Although the sharing of this information appeared to contribute to the maintenance of

treatment integrity, this variable was not systematically manipulated and therefore no conclusions can be drawn regarding this relationship.

In summary, research has shown Repeated Reading to be an effective intervention for increasing oral reading fluency in children. Like other academic interventions, Repeated Reading can be effective if it is implemented in the home environment by a parent. This holds true regardless of the parents socio-economic status or literacy level (Faires et al., 2000). Although research ahs shown that longer tutoring sessions yield greater results, more research needs to be done on the quality with which these sessions are conducted. A study by Persampieri et al. (2006) indicated that graphing student outcome data increased implementation levels, however as of yet, this variable has not been experimentally manipulated in parent training studies.

Behavioral Consultation

An effective means through which school psychologists can help provide services to teachers and parents is behavioral consultation (Alpert & Yammer, 1983;Gresham & Kendell, 1987; Medway, 1979, 1982; Medway & Updyke, 1985). Sheridan, Welch and Orne (1996) reported that at least some positive results were evident in 76% of consultation studies reviewed. However, caution should be utilized in interpreting the results of this study. Only 17 of the 46 studies reviewed by Sheridan et al. (1996) were published studies from peer reviewed journals and none of the studies included data derived from permanent products or direct observations for the three main elements of consultation: implementation of consultation procedures, implementation of the intervention, and client behavior change. (Noell, Gresham, & Duhon, 1998). Data collected from direct measurement is important because teacher perception of targeted behavior change and the actual change in the child's behavior are not always correlated (Fuchs & Fuchs, 1989; Noell & Witt, 1996). Additionally,

Gresham and Kendell (1987) caution that meta-analyses demonstrating the effectiveness of behavioral consultation have often included a large number of research studies that lacked experimental control. Few studies included treatment integrity data and therefore no definitive conclusions can be drawn regarding the effects of the treatments implemented within the consultation model.

The origins of behavioral consultation began with the combination of behavioral theory with the consultation practices (Hanson, Himes & Meier, 1990) and can be traced back to Bergan's (1977) seminal book *Behavioral Consultation* (Noell & Witt, 1996). Bergan and Kratochwill (1990) defined behavioral consultation as "the application of behavioral therapy and research in consultation services" (p. 3). While the meaning of consultation may differ among the various literature bases, consultation in the mental health field is often viewed as a triadic relationship involving the consultant, consultee, and client (Reschly, 1976; Bergan & Kratochwill, 1990). Hanson, Himes & Meir (1990) describe consultation as "any activity in which an expert provides specialized assistance to another person" (pg. 2).

Because behavioral consultation has its roots in behavioral theory, there are several tenants that distinguish behavioral consultation from other forms of consultation. The problem is often assumed to be the result of environmental or situational factors and not factors that lie within the consultee or client (Hanson, Himes & Meier, 1990). The problem should also be given an operational definition so that problem analysis can occur (Hanson, Himes, & Meier, 1990). By clearly and objectively defining the problem, data can be collected in order to determine the effectiveness of the intervention.

Defining Characteristics

There are several characteristics of consultation that are considered to be defining features of behavioral consultation (Bergan & Kratochwill, 1990). First, behavioral

consultation is often an attempt to solve an existing problem (Gutkin & Curtis, 1999). This problem may lie with either the consultee, client or both. It is the responsibility of the consultant to determine the nature of the problem and what environmental manipulations can be made in order to remediate the problem. Therefore, problem solving is often regarded as a key component of behavioral consultation (Bergan & Kratochwill, 1990).

Due to the triadic nature of behavioral consultation, the consultation services provided are considered to be indirect. In order to serve the client, the consultant must work through the consultee. Therefore changes in client behavior are often a direct result of changes in consultee behavior. For example, a consultant may first have to change the behavior of the teacher or parent in order to change the behavior of the child. The primary relationship in behavioral consultation is often between the consultant and the consultee while the relationship between the consultee and client is secondary (Hanson, Hines & Meier, 1990). In other words, the consultant rarely works directly with the client. This indirect service delivery model is also considered to be a key characteristic of behavioral consultation (Bergan & Kratochwill, 1990).

The indirect nature of service delivery allows for the consultant to serve more clients than would be possible if the consultant were to work directly with each client. By working directly with the consultee (often the teacher or parent), the consultant is able to provide the consultee with the knowledge and skills necessary to help children other than the client while also delivering services in a more time efficient manner (Bergan & Kratochwill, 1990). The indirect nature of this relationship is the primary distinguishing characteristic between consultation and counseling (Bergan & Kratochwill, 1990).Although the indirect nature of consultation promotes treatment efficiency, Noell & Gresham (1993) argue that treatment effectiveness should take priority over treatment efficiency. If the treatment being

implemented is not effective, then the efficiency of the treatment is irrelevant (Noell & Witt, 1998).

- Bergan and Kratochwill (1990) also state that the collegial relationship between the consultant and consultee is also a defining feature of behavioral consultation. The nature of this relationship implies that the consultant and consultee should involve a mutual respect for each other as professionals with a common goal – to help the client. The relationship between the consultant and consultee can be described as "equal" (Bergan & Kraochwill, 1990) in the sense that relationship is not hierarchical. In other words, the consultant often does not have direct authority over the consultee.

- Although Bergan et al. (1990) stress the importance of collaboration within the consultative relationship, Witt, Gresham and Noell (1996) offered a different conceptualization. The authors state that the role of the consultant is to provide specialized services rather than collaboration. In this relationship, the consultant is given due rather than equal consideration. In other words, collaborative does not equate to coequal.

While the relationship between the consultant and consultee is often considered to be collegiate in nature, research has shown that the consultant is often more directive in nature, with consultants often controlling the process (Erchul, 1987). Collaboration can be operationalized by comparing the number of times the teacher was able to successfully control the converstation versus the number of times the consultant controlled the converstation (Noell & Witt, 1999). Erchul (1987) developed a relational coding system in order to examine the role of control in school based consultation. He found that consultant's scores on both domineeringness and dominance were higher than consultees, and that consultees perceived consultants with high dominance scores as more effective than those with low dominance scores. Also, more directive consultants were viewed more favorably by consultees.

Wickstrom, Jones, LaFleur, & Witt (1998) examined teacher preference for expert versus collaborative behavioral consultants. The results indicated that both teacher satisfaction and treatment plan implementation were unrelated to the consultant's behavior style. Noell and Witt (1999) stress that collaboration may be better conceptualized as a continuous rather than a dichotomous variable. It is conceivable for consultants to be both collaborative and directive, and still be effective.

Stages of Behavioral Consultation

Bergan and Kratochwill (1990) identify four stages in the problem-solving process of behavioral consultation. Overall, these stages are an attempt to clearly define the problem, analyze the variables that may be contributing to the problem and create a solution to remediate the problem (Hanson, Himes & Meier, 1990). These stages include problem identification, problem analysis, plan implementation, and problem evaluation. All stages except the plan implementation phase involve interviews through which information is gathered.

Problem Identification

The primary goal of the problem identification stage is to identify the problem that is the target of the consultation process. While the problem may be a number of things, Bergan and Kratochwill (1990) defined the problem as "the necessity of eliminating the discrepancy between observed behavior and desired or expected behavior." During this stage, it is also important to establish a working relationship. The interview used in the problem identification phase is known as the problem identification interview (PII).

The main goal of the PII is for the consultant to gather preliminary information from the consultee regarding the problem. This information should include an operational definition of the problem at hand, tentative identification of antecedents, consequents and settings, and a

description of the magnitude and frequency of the behavior. Direct observations, behavioral checklists and rating scales are often used during the PII to assist in quantifying the problem.

Procedures that will be used to measure the behavior in order to gather baseline data should also be discussed at this time (Bergan & Kratochwill, 1990). Establishing a baseline is necessary to determine the effectiveness of the intervention. It has been suggested that this is the most important phase of the behavioral consultation process (Alpert & Meyers, 1983). A study conducted by Bergan and Tombari (1975) found that when the consultant was inefficient in this phase or did not have effective problem solving skills, the consultation process was less likely to be successful in remediating the problem (Alpert & Meyers, 1983).

Problem Analysis

Bergan and Kratochwill (1990) state that the goals of the problem analysis phase of consultation are two-fold. The first goal is "to identify variables that may facilitate the achievement of a problem solution" (Bergan & Kratochwill, 1990, p. 38). The second goal is "to develop a plan to solve the problem specified in the problem identification phase of consultation." (Bergan & Kratochwill, 1990, p. 38). The interview used to gather information in the problem analysis phase of consultation in called the problem analysis interview (PAI). During this stage, hypotheses should be formed regarding what factors may be contributing to the problem and, with the consultant's knowledge and the consultee's input, a plan should be created in order to solve the problem. Thus, antecedents and consequences of the behavior should be discussed (Hanson, Himes, & Meier, 1990). It is also during this stage that the consultee and consultant devise a plan for monitoring the progress of the intervention in order to analyze if the intervention is effective.

Plan Implementation

The next phase of behavioral consultation is known as the Plan Implementation phase. During this phase, the intervention that was designed in the problem analysis phase is implemented. Martens et al. (1999) state that the implementation process should include three stages: teaching, monitoring, and performance feedback. It is the consultant's job to periodically check with the consultee in order to determine if the intervention is working to remediate problem and, if not, determine why. There are several reasons why the intervention may be ineffective. One reason could be that the intervention may not be the appropriate intervention in for the target problem. Another reason could be that the consultee is not implementing the intervention as it was originally designed. This constitutes a lack of treatment plan integrity. Thus integrity in treatment plan implementation is crucial in order to determine the effectiveness of an intervention.

Plan Evaluation

The last phase of behavioral consultation is the Problem Evaluation phase. During this stage, the intervention is evaluated to determine if the original goals set during the beginning of consultation were met (Bergan & Kratochwill, 1990). Information is gathered through the Problem Evaluation Interview (PEI). The consultation may either end at this stage if the goals are met or continue if the goals have not been met. The effectiveness of the intervention is often determined by analyzing the trend and level of the data (Bergan and Kratochwill, 1990).

Treatment Integrity

In order for consultation to be effective, it is important that treatment integrity be monitored and reported. Treatment integrity is a necessary but not sufficient component in order for an intervention to be effective. Other factors that may affect the outcome of the consultation process include the personal characteristics of the child, parent and/or teacher as

well as characteristics of the intervention. These characteristics include the frequency, intensity and duration of the intervention as well as if the intervention is targeting the appropriate problem.

Treatment integrity has been defined as the degree to which an independent variable is implemented as intended (Peterson & Wonderlich, 1982; Yeaton & Seachrest, 1981). In order for the independent variable to be measured, it must first be clearly and unambiguously specified (Johnston & Pennypacker, 1980). Lack of knowledge about the implementation of the independent variable is considered to be a serious threat to the internal and external validity of the experiment (Gresham, Gansle & Noell, 1993; Moncher & Prinz, 1991). In other words, one cannot claim that the changes in the dependent variable can be attributed to the manipulation of the independent variable (internal validity) if one does not know how and if the independent variable was manipulated in the first place. Likewise, conclusions cannot be drawn regarding the effects of the manipulation of an independent variable on the resulting changes of the dependent variable in a specific population under study if the independent variable implementation was not accurately measured (external validity).

In addition to being a threat to internal and external validity, lack of treatment integrity is also a treat to construct validity and potentially statistical conclusion validity as well. Specifically, construct validity is compromised because "imprecision in intervention delivery can cause ambiguity in evaluating what the intervention was and why it produced the effect" (Perepletchikova, Treat, & Kazdin, 2007, p. 830). In group designs, statistical conclusion validity may be compromised because unsystematic error is introduced into the data (Perepletchikova et al., 2007).

Despite it's importance, treatment integrity has often been neglected in the literature. For example, although there have been over 1,500 controlled outcome studies that have

examined the efficacy of child therapy (Kazdin, 2000), only "12 controlled studies have evaluated the methods to increase attendance and adherence to child therapy programs."(Nock & Kazdin, 2005, p.872; Nock & Fertriter, 2005). A study by Dane and Schneider (1998) examined studies on various primary and early secondary prevention programs published between 1980 and 1994. The authors found that of the 162 outcome studies included in the review, only 39 studies included information regarding the documentation of fidelity. In addition, only 13 of these 39 studies included this information when analyzing the effects of the prevention program that was being evaluated. Dane and Schnieder (1998) conclude that the internal validity of the remaining studies that did not account for program fidelity was seriously compromised.

Wiese (1992) reviewed 148 research studies on parent training published between 1975 and 1990. These studies were compiled from eighteen journals whose research focuses included behavioral psychology, clinical/counseling psychology, school psychology and special education. Of the 88 group studies reviewed, only 6% included treatment integrity data.

Additionally, Gresham, Gansle & Noell (1993) reviewed all studies involving children that were published in the Journal of Applied Behavior Analysis between 1980 and 1990. They found that of these studies, only 16% measured the implementation of the independent variable. Additionally, two thirds of the studies did not operationally define the independent variable, an important prerequisite requirement for the measurement of implementation. In other words, it is difficult to measure something that isn't clearly defined in the first place.

Another study by Gresham, Gansle, Noell, Cohen, & Rosenblum (1993) reviewed 181 experimental studies published between 1980 and 1990 in seven behavioral journals for treatment integrity data. The authors found that of these studies, only 26 studies (14.4%) reported treatment integrity data and 65 studies (34%) operationally defined the treatment or

independent variable. Additionally, the authors found that the treatment integrity was positively correlated with treatment outcome, further support for the claim that treatment integrity is important for intervention effectiveness.

Recently, Perpletchikova, Treat, and Kazdin (2007) reviewed 147 studies of randomized controlled trials of 202 psychosocial interventions that were published in six influential psychological and psychiatric journals for treatment integrity data. The results were similar to previous reviews in that treatment integrity was addressed in only 3.5% of the interventions. Clearly, the "curious double standard" (Peterson et al., 1982) is evident across all areas of the field.

Treatment Plan Implementation

A concept similar in nature to treatment integrity that is used when discussing consultation research is Treatment Plan Implementation. Noell (2008) defines Treatment Plan Implementation as "the degree to which a treatment plan developed within consultation is implemented as designed" (p. 31). Unlike treatment integrity, which is often correlated with the independent variable, Treatment Plan Implementation is a dependent variable because it is not controlled directly by the experimenter (Noell, 2008). Rather, it is controlled by the consultee. It can be argued that Treatment Plan Implementation is a primary goal in the consultation process (Noell, 2008). While Treatment Plan Implementation alone may not be sufficient for child behavior change, it is often a necessary component (Noell, 2008).

Several research studies have examined the means of assessing and influencing the mulitidimensional construct of treatment integrity. It is logical to assume that if a consultee is not thoroughly trained on how to properly implement an intervention, intervention implementation will suffer. Sterling-Turner, Watson, Wildom, Watkins & Little (2001) examined this hypothesis by comparing the effects of three different training strategies on the

treatment plan implementation of a behavioral intervention. In the study, 64 participants were randomly assigned to either a didactic training condition, a modeling training condition, or a rehearsal/feedback training condition. All training sessions lasted for a total duration of 5 minutes and were conducted by the primary investigator.

The results indicated that the participants in the rehearsal/feedback training condition exhibited the highest levels of treatment integrity, while the participants in the didactic training condition exhibited the lowest levels of treatment integrity. The authors concluded that more direct the training methods will yield higher levels of treatment integrity. These results are consistent with parent training literature that show that didactic training alone is insufficient to promote skill acquisition to a mastery level (Richman, Harrison, & Summers, 1995; Rickert, Sottolano, Riley, Hunt & Pleco, 1988). It is important to note that the majority of these studies involve behavioral rather than academic interventions.

However, there are several limitations to this study. First, all of the participants in the study were college undergraduate students. Unlike teachers in a school setting, the students may have had no previous experience or background knowledge regarding intervention implementation. Also, the experiment was conducted in an analogue setting and not in the applied setting like most research on behavioral interventions. The students also had no input on the intervention plan, a process quite different from typical behavioral consultation conducted with teachers in a school setting.

Performance Feedback

One method that has demonstrated to increase treatment integrity is the delivery of performance feedback (Codding, Feinberg, Dunn & Pace, 2005). Performance feedback can be described as a type of contingency. Arco and Birnbrauer (1990) report that performance feedback is the most common contingency used in staff training for community residences

housing individuals with developmental disabilities and psychiatric disorders. Performance feedback involves the provision of information regarding and individual's behavior, along with the appropriate praise and correction, and is typically delivered on daily, weekly, or monthly intervals (Peterson, 1982; Reid & Shoemaker, 1984; Arco & Birnbrauer, 1990).

There are generally two types of performance feedback described in the literature: – process feedback and outcome feedback. Process feedback involves providing information to an individual such as an employee regarding their own performance, whereas outcome feedback involves the provision of information regarding the client's behavior (Arco & Birnbrauer, 1990). Arco & Birnbrauer (1990) state that when process variables are logically related to the outcome, feedback of either type is sufficient to maintain behavior. However, if the process variables are not related to the outcome then outcome feedback is a necessary component (Arco & Birnbrauer, 1990).

Witt, Noell, LaFleur, and Mortenson (1997) examined the effects of performance feedback on the implementation of an academic intervention. The participants of the study included four elementary school general education teachers. In this study, treatment integrity was calculated as a percentage by dividing the number of correct permanent products by the total number of treatment steps for each day. During the performance feedback phase, consultants met with each teacher daily and provided feedback regarding the student's performance in terms of correct scores and provided the teacher with her treatment integrity score. Corrective feedback was also provided for missed steps as well as suggestions on ways to improve implementation. Results demonstrated that performance feedback was effective in increasing treatment integrity in all four teachers. Additionally, enhanced treatment integrity led to greater academic gains in three of the four students. Maintenance of treatment gains continued to remain high once performance feedback had been withdrawn. The authors noted

that a potential limitation of the study was the daily presence of the consultant. In other words, the consultant may have acted as a discriminative stimulus for teacher behavior.

Martens, Hirallal, and Bradley (1997) extended this research by adding a goal setting component in combination with performance feedback. In this study, the authors consulted with a special education teacher and a classroom aide regarding the problem behavior of two 6-year-old children labeled as emotionally disturbed. The teachers were asked to set a goal regarding their desired performance (number of praise statements issued to the children in a specified time frame). Performance feedback was delivered daily to the teachers regarding their goal achievement. Results indicated that the combination of performance feedback and goal setting led to increases in teacher issued praise statements as well as improvements in student behavior. A potential limitation of the study results, as noted by the authors, is that because the goal setting was combined with the performance feedback, it is unclear is the increase in performance is due to the combination of methods or due to either of the methods in isolation (Martens et al., 1997).

A study conducted by Noell, Witt, Gilbertson, Ranier, and Freeland (1997) extended and systematically replicate the findings of Witt et al. (1997). Specifically, the Witt et al. (1997) study included several components that were atypical of the traditional consultation process including extensive teacher training as well as the provision of all training materials by the consultant. The study by Noell et al. (1997) examined whether performance feedback would be effective in increasing treatment integrity without either of these components. Three elementary school general education teachers participated in the study. Treatment integrity was calculated in the same fashion as in the Witt et al. (1997) study. Teacher training included didactic instruction only, along with the provision of the data collection forms. The performance feedback stage consisted of a daily brief (3-5 minute) meeting with each teacher

in which both outcome and process data from the previous day were presented in graphic form. Corrective feedback was also provided for incorrect data and potential hurdles to implementation were discussed. The results were similar to the Witt et al. (1997) study in that initial levels of treatment integrity were high and followed by a steady downward trend. Performance feedback resulted in an increase in treatment integrity levels indicating that extensive training and the provision of materials are not necessary for performance feedback to work. Also, the authors point out that performance feedback was successful in increasing treatment integrity despite the fact that the consultant held no administrative authority over the consultee.

Jones, Wickstrom and Friman (1997) extended the findings of Noell et al. (1997) and Witt et al. (1997) by comparing treatment implementation levels across three different settings. These settings included a baseline phase, traditional behavioral consultation and behavioral consultation with performance feedback. As in the previous studies, treatment integrity was the primary dependent variable. Three middle school teachers along with three students who exhibited severe behavioral difficulties participated in the study. Like the previous studies, performance feedback increased treatment integrity levels when compared directly to a traditional behavioral consultation model.

Mortenson and Witt (1998) provided a replication of the Witt et al. (1997) study. However, one key purpose of the study was a comparison of feedback schedules. Specifically, Witt et al. (1997) provided daily performance feedback to the teachers in the study. This method may not be practical for a large percentage of school psychologists, especially those working in rural school districts. Mortenson and Witt (1998) examined the effects of performance feedback delivered weekly, rather than daily, on the treatment integrity of academic interventions. Four general education classroom teachers participated in the study.

Results indicated that performance feedback delivered on a weekly schedule increased treatment integrity in intervention implementation, however the effects were not as large as those found in the Witt et al. (1997) study (Mortenson & Witt, 1998).

Noell, Witt, LaFleur, Mortenson, and Ranier, & LeVelle (2000) examined two different strategies for increasing the accuracy of a teacher implemented academic intervention. The intervention involved a peer tutoring intervention for reading comprehension with five elementary school students in general education. Previous studies involving performance feedback (Noell et al., 1997; Witt et al., 1997; Mortenson and Witt, 1998) utilized feedback that included a variety of information, including information on student and teacher behavior, corrective feedback, praise and problem-solving if necessary. The authors examined if whether or not a brief daily meeting, which required less preparatory time for the consultant, would be as effective as the performance feedback package used in previous studies.

The authors found that brief daily meetings with the teacher in which the intervention was discussed increased intervention implementation for two of the five teachers (Noell et al., 2000). It is important to note that in these follow up meetings, no feedback was given to the teacher. The consultant simply asked how the intervention was going and if the teacher had any questions. These follow-up meetings resulted in an increase in treatment implementation for two of the five teachers involved in the study. Results indicated that the most effective technique for increasing treatment implementation substantially above baseline for four of the five teachers was the delivery of performance feedback, which included both process and outcome data presented on a simple graph.

Noell, Duhon, Gatti and Connell (2002) extended the literature on the effects of performance feedback on treatment implementation to behavioral interventions. Four elementary school teachers and eight general education students participated in the study.

Results were consistent with previous studies in that performance feedback resulted in increased treatment implementation. Also, teachers rated consultants highly, indicating that data-based performance feedback is an acceptable method to teachers (Noell et al., 2002).

Noell, Witt, Slider, Connell, Gatti, Williams, Koenig, Resetar, and Duhon (2005) examined the effects of a variety of follow-up procedures designed to increase treatment plan implementation with a group of 45 elementary school teachers. The authors compared brief weekly interviews similar to those used in the Noell et al. (2000) study, weekly interviews combined with an emphasis on the commitment to implement the treatment, and performance feedback. This study was the first randomized clinical field trial that aimed to examine the effects of performance feedback and also included children exhibiting a variety of academic concerns.

The commitment emphasis condition was derived from the social influence literature and presents an antecedent method for influencing treatment integrity (Noell et al., 2005). Specifically, this condition involved a discussion added to the final Problem Analysis Interview that emphasized the commitment that was made to the parent and child and the negative consequences associated with low treatment integrity, in addition to a brain-storming session on possible barriers to implementation along with possible methods to overcome those barriers. Teacher acceptability of the various interventions was also assessed through the administration of the Intervention Rating Profile – 15 (IRP-15; Martens, Witt, Elliott, & Darvaux, 1985).

An ANOVA was conducted on the data. Results indicated a significant main effect for the different conditions, with a large effect size. Specifically, the performance feedback condition yielded the highest levels of treatment integrity followed by the commitment emphasis condition and the brief weekly meeting, respectively.

Additionally, post-hoc analyses revealed that the performance feedback condition yielded greater student behavior change than either of the other two conditions. There were no statistically significant differences in student behavior change between the commitment emphasis group and the weekly follow up meetings group. There were also no differences in teacher acceptability of the interventions administered in the different conditions based on analyses of the IRP-15 scores, indicating that condition type did not affect teacher perceptions regarding the various interventions. In general, teacher acceptability ratings were high for all conditions (Noell et al., 2005).

Gilbertson, Witt, Singletary, and VanDerHeyden (2007) examined the effects of a faded training process as well as a response dependent performance feedback on treatment integrity. Five elementary teachers and five students in general education participated in the intervention. Students were referred for math difficulties and a peer-tutoring intervention was utilized. As in the previous studies, intervention integrity was the primary dependent variable and permanent product data was collected and measured.

The first phase of the study involved teacher training using verbal and written instruction. When integrity scores dropped below 100% for three consecutive sessions, additional training was administered. This training involved a series of prompts that were gradually faded based on the teacher meeting a set criteria (100% for three consecutive sessions) of intervention implementation. When treatment integrity was observed to be below 100%, performance feedback was provided. If the teachers implemented the intervention with 100% accuracy, feedback was not provided. In this study, the performance feedback package was similar to that used in previous studies

(Noell et al., 1997; Witt et al., 1997) and included a graph of student math performance and the percentage of steps implemented correctly by the teacher.

Results of the study indicated that verbal and written instructions alone were not sufficient to maintain intervention implementation (Gilbertson et al., 2007). These results are consistent with previous research (Sterling-Turner et al., 2001). More importantly, findings from the response dependent performance feedback sessions indicated that 3 of the 4 teachers participating in the study did not require daily feedback to maintain a high level of treatment integrity, although the number of sessions that they did require varied among the teachers (0.6, 0.7 and 2.0) sessions per week. Performance feedback increased treatment integrity levels for all teachers (Gilbertson et al., 2007).

DiGennaro, Martens and Klienmann (2007) extended the research on performance feedback to teachers in a special education classroom. The first phase of the study examined the effects of goal setting and student performance feedback on treatment implementation. Teachers were asked to set a goal for their student (50% decrease from baseline) and then received daily written feedback regarding the student's progress towards that goal. No information regarding the accuracy of intervention implementation was provided during this phase. Once treatment implementation levels decreased, the next phase was implemented.

The second phase of the study involved providing daily written performance feedback to the teachers regarding their own performance (percentage of correct intervention steps implemented). A negative reinforcement component was also included in this phase. For each step incorrectly performed, the teacher was required to meet with the consultant and practice the step three times. If the teacher implemented

the intervention with 100% integrity, the teacher was able to avoid the meeting. This contingency was explicitly stated before the phase began so that the teacher was aware of the contingencies in place. Once the teacher implemented the intervention with 100% accuracy for three days, the performance feedback was faded from daily to every other day, to weekly and then to once every two weeks.

Results of the study (DiGennaro et al., 2007) indicated that high treatment integrity resulted in lower levels of problem behavior in three of the four students participating in the study, underscoring the importance of high levels of treatment implementation. The first phase of the study in which student goals were set and student performance data was provided did not lead to higher levels of treatment integrity, suggesting that it is the process feedback component and not the outcome feedback component that leads to increases in treatment implementation levels. This finding does not provide support for previous research stating that feedback of either type will be sufficient to maintain behavior (Arco & Birnbrauer, 1990).

The performance feedback package delivered in the second phase of the study increased treatment implementation levels, however two of the four teachers rated the daily meetings with directed rehearsal as unacceptable on the acceptability rating scales (DiGennero et al., 2007). A potential limitation to the study is that the components were not separately administered and so it is unclear what component of the package was responsible for the increase in behavior (the feedback, avoidance of the meeting, or avoidance of directed rehearsal). The fading component also demonstrated that daily feedback is not necessary to maintain high levels of treatment implementation (DiGenerro et al., 2007).

Together these studies highlight a number of significant findings regarding treatment integrity. First and foremost, performance feedback increases treatment implementation. Secondly, extensive training and the provision of materials is not necessary in order for performance feedback to be effective. Third, weekly meetings in which the accuracy of intervention implementation is shared with the teacher are sufficient and may be faded. Daily meetings may not be necessary for all teachers. Fourth, antecedent methods such as a discussion with the teacher emphasizing commitments associated with the intervention may result in an increase in treatment integrity levels, but not to the extent that performance feedback alone will. Fourth, performance feedback involving a negative reinforcement component may be effective for some teachers, but may be found to be unacceptable to teachers. Lastly, high levels of treatment integrity can lead to improved student outcomes.

The majority of research conducted thus far on methods that lead to improved treatment implementation has focused on teachers in school settings. Given the important role that parents play in their children's academic success, it is important to determine if these findings can be generalized to the home environment as well. As previously stated, little research has focused on the quality with which parent-implemented interventions are conducted in the home environment (Erion, 2006). Specifically, the meta-analysis by Erion (2006) found that out of all studies included in the review, "only one group design study (Powell-Smith et al., 2000) and six single subject design studies provided information on treatment implementation checks (Duval et al., 1992, Hook & DuPaul, 1999, Larsson, 1986; Law & Kratochwill, 1993; McGraw, 1999; Wedel & Fowler, 1985)" (p.97). Two of these single-subject design studies are unpublished doctoral dissertations (Larsson, 1986; McGraw, 1999). Additionally, the authors found that only two of the studies that were reviewed

required taping of the tutoring sessions (Broden, Beasley, & Hall, 1978; Colton, 1998). The majority of parent tutoring studies that included treatment implementation data utilized self-report data only. This is insufficient as it may be open to bias. Permanent product records can be manipulated so they are not a true reflection of what may have truly occurred during the tutoring session. For example, data may be recorded at a later date or the parents may conduct two or more sessions in one day instead of spreading them out over the course of the week. These implementation details need to be identified so that researchers may have a more accurate view of the way in which parents implement interventions in the home environment.

A study published the same year by Resetar, Noell, and Pellegrin (2006) found that parents implemented a reading intervention program on an average of 82%-100%. This information was gathered by using permanent products and a random review of audio-taped sessions. This study will review all sessions in order to get an accurate representation of the true levels at which parents are implementing the intervention. For the parents who are not implementing the intervention at 100%, techniques may be used to increase implementation. Preliminary research has demonstrated that the addition of a graphing component is correlated with an increase in implementation levels (Persampieri et al., 2006). This finding needs to be further examined in order to infer causation.

Purpose and Rationale of Current Study

As stated previously, repeated reading is an effective intervention that has been demonstrated to remediate reading problems in children. The parent tutoring literature has shown that this intervention is effective in the home environment as well as the school environment. One primary difference between home-based and school-based interventions is that a consultant is often available to work with teachers, whereas

parents are not always offered this resource. However, research has demonstrated that behavioral consultation in the home environment, in which a parent serves the role of the consultee, is an effective method for addressing academic concerns.

In order to make sound conclusions regarding the effectiveness of an intervention, whether home-based or school-based, it is imperative that treatment integrity be monitored. Accurate treatment plan implementation is a necessary but not sufficient component of the consultation process. As treatment plan implementation deteriorates, so do the chances of intervention success.

Several studies have examined various methods that have been successful in increasing treatment plan implementation in school settings. These studies have found that performance feedback has consistently improved treatment plan implementation. However, as of yet, this research has not been applied to home-based consultation. The major purpose of this study is to examine if the findings regarding the effectiveness of performance feedback can be systematically extended to behavioral consultation with parents. Specifically, this study will examine if performance feedback will increase treatment plan implementation in a parent-implemented reading intervention.

METHODS

Settings and Participants

This study was conducted in the home environment of the children and parents that participated in the study. Participants included five mothers of children who volunteered for participation in order to potentially increase their child's reading skills. Participants were recruited from elementary schools located in the northeast and southern area of the United States and were selected based on both teacher and self-referral. All parents indicated that they would like to be trained in the reading intervention in order to increase their child's reading skills and all parents were informed that they would be required to meet with the primary investigator one time per week. Both adult and child consent were obtained before beginning the study.

An initial interview was conducted with each parent where information was gathered regarding their child's academic history. The format of this interview followed the format and guidelines of the Problem Identification Interview (Bergan & Kratochwill, 1990). The primary investigator also assessed the child's current reading level using a standardized Curriculum Based Measure (CBM). This measure was utilized to determine the number of words the child reads correctly per minute. A can't do/won't do fluency assessment was also conducted in order to differentiate skill deficits from motivation deficits. This score served as a baseline in order to determine the effectiveness of the reading intervention (See Table 1). Information collected during this interview for each participant is presented below.

Scott was a nine-year-old male enrolled in the third grade at a private Catholic school located in a city on the eastern seaboard. Scott's mother participated in the study. Training was conducted in their home, located in a suburb of the eastern seabord. Scott's mother reported that Scott was currently receiving speech therapy and often times had trouble

recalling academic information. Scott was enrolled in school throughout the entire intervention.

Caroline was a nine-year-old female enrolled in the third grade at a private Catholic school located in a city on the eastern seaboard. Caroline's mother participated in the study. Training was conducted in a common area of Callie's elementary school at the end of the school day. Caroline's mother reported that Caroline was retained in Kindergarten due to her language skills and had been receiving speech services to address her language deficits. Caroline's mother also reported that Caroline often struggled with decoding skills. Caroline was enrolled in school throughout the entire intervention.

Polly was an eight-year-old female enrolled in the second grade at a private Catholic school located in a city on the eastern seaboard. Polly's mother participated in the study. Training was conducted in a common area of Polly's elementary school at the end of the school day. Polly's mother reported that Polly was retained in Kindergarten and that Polly "struggled" with reading since beginning elementary school. Polly was enrolled in school during the initial part of the intervention. However, Polly was on summer vacation at the conclusion of the intervention.

Kate was a six-year-old female enrolled in the second grade at a public elementary school located in rural Central Louisiana. Kate's grandmother, her legal guardian with whom she lived, participated in the study. The training session was conducted in Kate's home. Although Kate's grandmother reported no significant history for previous reading problems with Kate, Kate's grandmother volunteered to participate based on a family history of reading problems and a desire to implement a summer reading program in order to prevent regression in Kate's reading skills. Kate was on summer vacation throughout the duration of the intervention.

Gia was a seven-year-old female enrolled in the first grade at a public elementary school located in rural Central Louisiana. Gia's mother participated in the study. The training session was conducted at a local library. Gia's mother reported that Gia had reading difficulties, primarily due to trouble focusing. Gia was also diagnosed with Attention Deficit/Hyperactivity Disorder. However, Gia's mother reported that she was not requiring Gia to take her medication over the summer and therefore, Gia was not taking stimulant medication during the intervention. Gia was on summer vacation throughout the entirety of the intervention.

Table 1

Pre-Intervention Oral Reading Fluency Scores.

Participant	Curriculum Based Measure	Correct Words per Minute
Scott	Probe 1	82
	Probe 2	80
	Probe 3	49
	Can't Do/Won't Do	83
Caroline	Probe 1	38
	Probe 2	44
	Probe 3	40
	Can't Do/Won't Do	42
Polly	Probe 1	60
	Probe 2	68
	Probe 3	72
	Can't Do/Won't Do	71
Kate	Probe 1	51
	Probe 2	48
	Probe 3	47
	Can't Do/Won't Do	54
Gia	Probe 1	52
	Probe 2	56
	Probe 3	51
	Can't Do/Won't Do	50

Next, a Problem Analysis Interview was held, where parents were provided with information regarding their child's reading level. At this time, training in the repeated reading intervention occurred. Parents were provided with the option of having training occur in a common area of the home or at a public meeting place such as the school or local library at a time that was convenient for them. Two parents were trained at their child's school, two parents were trained in their homes and one parent was trained at a local library. A training manual detailing the specific steps of the intervention and all materials, including all reading probes, a digital audio recorder with typed operational instructions, and a reward box for the children were provided to the parents. The training included a single meeting in which instruction, modeling, role-play and corrective feedback were provided. Parents were given the opportunity to ask questions for clarification if needed. The duration of the training session ranged from 45 to 60 minutes. During this time, parents were asked to specify three days of the week in which they would like to implement the intervention. Several parents indicated at this time that they could not identify specific days of the week due to the variation in schedules from week to week. Ways to overcome barriers to implementation were discussed with the parents at this time.

Dependent Measurement, IOA, and Acceptability

Dependent Measures

Treatment plan implementation was the primary dependent variable of the study. Data were collected using permanent products (reading probes completed as well as a data sheet). All sessions were also audio-recorded with a digital voice recorder equipped with a time and date stamp to validate the days the sessions took place.

Treatment plan implementation was operationalized as the percentage of steps in the repeated readings intervention correctly completed by the parents as well as

correct completion of materials provided during training. A treatment integrity score was calculated based on the information recorded on the permanent product in combination with the information derived from the audio recording of the session. Specifically, an implementation score was calculated for each session based on the correct completion of all information on the data sheet, if the session was recorded, and the correct completion of all steps of the Repeated Reading intervention.

Interobserver Agreement

Interobserver Agreement (IOA) was collected for 30-50% of the observation sessions. A second observer listened to audio recordings of the session and examined permanent product data in order to formulate a treatment implementation score in the same fashion as described above. Percentage agreement for parent implemented intervention steps accurately completed during the session was calculated. Percentage agreement was calculated for each session by dividing the number of agreements by the total number of agreements plus disagreements and multiplying by 100. (See Table 2).

Table 2

Interobserver Agreement for Participants

Participant	Percent of Sessions Analyzed	Mean Percent IOA
Scott	45 (n=6)	98%
Caroline	50 (n=6)	92%
Polly	42 (n=5)	94%
Kate	30 (n=7)	95%
Gia	30 (n=7)	87%

Treatment Acceptability

Each parent completed a modified version of the Intervention Rating Profile (IRP-15; Martens, Witt, Elliot, & Darveaux, 1985) at both the beginning and conclusion of the intervention. The IRP-15 is a Likert scale designed to assess acceptability of the intervention procedure. The questionnaire items were adapted to coincide with the repeated reading intervention. The IRP-15 is a reliable measure, with a Chronbach alpa=.98 (Martens, Witt, Elliott, & Darveaux, 1985).

Experimental Design

A non-concurrent multiple baseline across participants design was used to evaluate the results of the experiment. Phase changes included a baseline phase in which no performance feedback was delivered, a performance feedback alone phase, and a performance feedback plus graphing component phase. Treatment plan implementation levels were assessed for each session in each phase.

Procedures

Baseline

After training had taken place, parents were instructed to implement the repeated reading intervention three times per week. During this phase, the consultant met with the parent for three of the five participants (Scott, Caroline, and Polly) in order to provide support and answer any questions the parents may have regarding the intervention. For two of the participants (Kate and Gia), the consultant contacted the participants by phone due to geographical limitations. Baseline data collection was continued for a minimum of three sessions until a low pattern of responding was observed (below 80% correct implementation) or until a decreasing trend in treatment implementation levels were observed.

Intervention

Following baseline data collection, performance feedback regarding the treatment plan implementation score for each session was presented verbally to the parents at a predetermined location for three of the participants (Scott, Caroline, and Polly) and in a telephone conference with two of the participants (Kate and Gia). This feedback continued for a minimum of three sessions until a stable pattern of responding was observed (below 80% correct implementation) or until a decreasing trend in treatment implementation levels was observed. Once the decreasing trend was observed, a graphing component was added to the performance feedback. Treatment plan implementation scores were graphed to provide a visual for the parents. Although outcome data was collected, only process data was graphed.

At the conclusion of the intervention, a Problem Evaluation Interview was conducted for each child. Curriculum Based Measures were also administered to the children in order to obtain a post-intervention oral reading fluency score (WPM). Parental opinions regarding the effectiveness and practicality of the intervention were assessed at this time.

RESULTS

Data were analyzed using visual inspections across graphs. Results from each participant indicate that, despite identical training, initial implementation levels varied widely among participants. Additionally, the results of feedback on implementation levels varied between participants as well. Implementation levels across sessions for all participants are illustrated in Figure 1. Performance feedback for the Polly, Caroline, and Scott was delivered in person whereas performance feedback for Gia and Kate was delivered via multi-media technology.

Figure 1 reveals that treatment plan implementation levels during Polly's sessions initial started off at a high level (90%), but quickly decreased to below 80% by the second session. The addition of feedback as well as feedback plus graphing had no effect on treatment implementation levels and treatment plan implementation levels remained at a low level (below 80%) throughout the course of the intervention. Additionally, Polly's mother often was inconsistent in attending meetings with the consultant in addition to maintaining consistent communication throughout the intervention and implementation process.

Figure 1 also illustrates that treatment plan implementation levels during the baseline phase for Caroline began at a high level (94%) and did not drop below 80% until the third session of the intervention. The addition of performance feedback increased the treatment plan implementation level to 80%, however this level of implementation was not maintained as a decreasing trend in the data was observed during the performance feedback phase. It should also be noted that although the implementation level was increased to 80%, this was not a significant increase from baseline levels. The addition of a graph detailing implementation levels in addition to

verbal performance feedback immediately increased treatment plan implementation levels to 100%. Implementation remained high for the second session in this phase (83%). Unfortunately, the last two sessions were conducted by another adult in the home other than Caroline's mother and therefore could not be included in the data analysis. Caroline's mother also dropped out of the study immediately following these sessions and therefore a trend in the performance feedback plus graphing phase could not be identified.

A visual inspection of Scott's data indicates that treatment plan implementation levels during baseline also followed a decreasing trend. Although treatment implementation levels started off fairly high (73%-89%), these levels were observed to decrease to a level of 30% over time. However, implementation levels were observed to increase significantly (100%) and remained at a high level (over 80%) for the remainder of the sessions. Scott's mother discontinued the reading sessions after the seventh session in the performance feedback phase due to high problem behaviors by Scott during the reading sessions. These behaviors were observed by the primary investigator when listening to the audio tapes in addition to parental report of their existence. It is important to note that although these behaviors affected the length of the intervention, they did not affect treatment plan implementation levels. Due to the early termination of the intervention in addition to high levels of implementation, a graphing component was not added to performance feedback for Scott.

Baseline implementation levels for Kate began at a fairly high level (93%) but varied greatly over the course of the baseline phase. Once treatment plan implementation levels remained consistently below 80%, feedback was introduced. In

the first session of the feedback phase, treatment plan implementation levels increased to 84%. However, due to an increasing trend in the data during the baseline phase, it is difficult to determine if performance feedback alone accounted for the increase in treatment implementation levels.

Due to the variability within this phase, performance feedback plus a graphing component was added in order to assess if treatment implementation levels would increase or if a more stable pattern of responding could be observed. Despite the addition of this component, treatment plan implementation levels remained low for several sessions then increased for three sessions to above 80%, followed by a decrease in implementation level to 56%. Due to the wide variability in implementation levels across the baseline phase in addition to both performance feedback phases, it is inconclusive as to whether or not the independent variable (performance feedback) had an effect on the dependent variable (implementation levels) and therefore conclusions based on Kate's data cannot be reliably estimated.

Unlike the other participants, Gia's baseline data implementation levels were initially low (44%) and gradually increased across the baseline phase. This increase in implementation levels corresponded directly to parental report of a change in the time of day of when the sessions were being conducted. Specifically, Gia's mother was conducting the sessions immediately after an extra-curricular activity (swim lessons) and reported to the investigator that it was difficult to conduct the intervention due to Gia's fatigue. It should be noted that despite this change in session time, Gia's problem behaviors remained at high levels throughout the intervention sessions and implementation levels began to decrease over time. Problem behaviors exhibited by Gia during reading sessions included tantruming and difficulty focusing throughout the

reading session. The addition of feedback increased implementation levels to above criterion (82%), however this was not a significant increase over baseline levels. A decreasing trend in implementation levels was observed throughout the performance feedback phase. When a graphing component was added to the performance feedback being delivered by the consultant, implementation levels were observed to increase (from 57% to 73%), however, these levels did not reach the criterion level of 80% throughout the final phase of the study. Due to Gia's high levels of problem behavior during sessions, Gia's mother was only able to implement the Repeated Reading intervention with over 80% integrity for 5 of the 23 sessions. In addition to parental report, these behaviors were observed by the consultant when listening to the audiotaped reading sessions.

All of the treatment plan implementation levels reported in the above data were calculated by the primary investigator and the independent observer (for reliability purposes) using audio-recordings of the session that were provided by the parents. For every session, the parents provided the consultant with a data sheet in which session details were recorded in addition to the reading passage in which errors were marked. It should be noted that if treatment integrity levels were calculated based on permanent product data alone, treatment integrity levels would be significantly higher than indicated in the graphed data. This is primarily due to the fact that all but two of the data sheets indicated the incorrect number of error words. One data sheet listed the incorrect session date. Three session sheets listed that the child read the passage twice, when only one reading was recorded on the audio tape. The audio-recordings indicated that all five participants exhibited problem behaviors when required to engage in

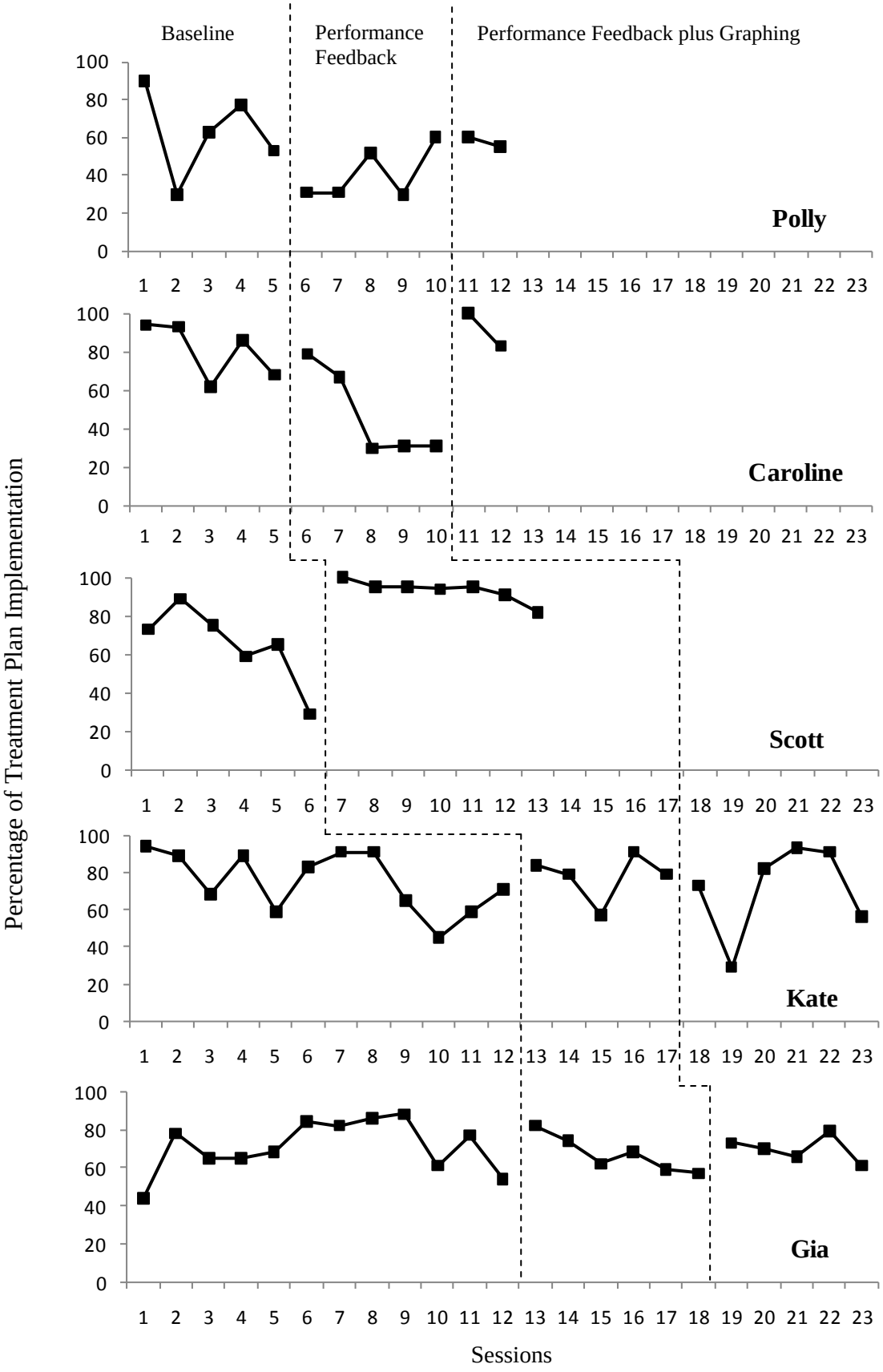

Figure 1. Treatment Plan Implementation levels across baseline and feedback phases.

positive practice (repeating the word three times each and rereading the sentence) and consequently the child's tantrums functioned as a positive punisher for the accurate recording of error words. Therefore, an avoidance contingency was established and consequently led to decreased levels of treatment implementation across all five participants. The correct number of error words were only recorded correctly on two occasions. This occurred during the first session of the performance feedback phase for Scott and during the first session of the performance feedback phase plus graphing for Caroline.

Oral Reading Fluency

Reading probes administered at the conclusion of the intervention assessed participant gains in oral reading fluency. Positive outcomes were observed for all five of the participants.

Treatment Acceptability

Acceptability rating scales were administered pre and post intervention. Overall, pre-measures of acceptability ratings intervention ranged from 5.4 - 5.9 based on a six point Likert scale where 6 is the highest rating. Post-intervention acceptability ratings were also high and ranged from 5.0 – 6.0, indicating that the parents perceived the intervention to be acceptable. Overall, there were no significant differences between the pre and post acceptability ratings for any of the participants. Information collected the Problem Evaluation Interview revealed that all parents who participated in the study felt as if the intervention was effective in increasing their child's reading skills. The parents also reported that they felt the intervention was "practical" however several parents reported frustration with their child's problem behaviors when reading

Table 3

Pre-Intervention versus Post-Intervention Oral Reading Fluency Scores.

Participant	Curriculum Based Measure	Correct WPM		Difference in Median Score
		Pre	*Post*	
Scott	Probe 1	82	88	
	Probe 2	80*	83*	+3
	Probe 3	49	82	
Caroline	Probe 1	38	57	+18
	Probe 2	44	60	
	Probe 3	40*	58*	
Polly	Probe 1	60	67	+3
	Probe 2	68*	71*	
	Probe 3	72	79	
Kate	Probe 1	51	71*	+23
	Probe 2	48*	72	
	Probe 3	47	65	
Gia	Probe 1	52*	55*	+3
	Probe 2	56	66	
	Probe 3	51	48	

Table 4

Mean Parent Treatment Acceptability (IRP-15) Scores

Participant	Pre-Intervention	Post-Intervention
Scott	5.9	5.9
Caroline	5.9	6.0
Polly	5.9	5.9
Kate	5.5	5.4
Gia	5.4	5.0

errors were made. This problem behavior is also evident on the audio-recordings provided to the consultant. As previously reported, several of the children had tantrums during the sessions when made to repeat words three times. As a result, parents reported that they were often hesitant to mark an error in order to avoid problem behavior, which oftentimes had a negative impact on the treatment implementation score for that session.

DISCUSSION

The aim of this study was to examine if the findings regarding the effectiveness of performance feedback in regards to treatment plan implementation can be systematically extended to behavioral consultation with parents. Results indicated that performance feedback resulted in an increase in treatment implementation for one of the five participants in the study. Four participants also received an additional graphing component along with performance feedback which resulted in an increase in implementation levels for one of the four participants who received it.

Results of this study are consistent with previous research conducted in school settings in only 2 of 5 cases and indicate that the positive effects of performance feedback can potentially be generalized to parent implemented academic interventions conducted in the home setting. As with previous studies conducted with teachers, the effects of performance feedback on treatment implementation are not consistent for all participants, indicating that additional assistance in addition to performance feedback may be needed in order to achieve and maintain a high level of implementation with parents and suggests that the effects of performance feedback may be more robust with teachers than with parents. However, this finding was observed with only one participant in each phase respectively and therefore highlights the need for further systematic manipulation of the effects of performance feedback on parent-implemented interventions in future studies.

There are several reasons as to why implementation levels were low across the majority of participants. Arco and Birmbrauer (1990) stated that when process variables are logically related to outcomes, feedback of either type (process or outcome) is sufficient to

maintain behavior. However, if process variables are not related to outcome, then outcome feedback is a necessary component.

In this study it is possible that parents did not perceive all components of the Repeated Reading intervention as related to the outcome of the intervention (an improvement in their child's reading skills.) One possible way to overcome this would be to discuss with parents during the training process how each component of the intervention process (drill, error correction, phonemic segmenting and blending) is related to positive outcomes. Although the parents were briefly exposed to this information during training, it was not discussed at length. Similarly, although each component of the intervention may hypothetically affect outcome, it is not clear how strong the effect of each component is on treatment outcomes. Therefore, by occasionally omitting select components of the repeated reading intervention, the child may display improvements in oral reading fluency despite the corresponding low level of treatment plan implementation.

During this study, all participating parents on several occasions reported to the consultant that they felt as if their child's reading skills were improving despite the corresponding low levels of treatment implementation, lending support to the hypothesis that parental perception of process was unrelated to outcome, as only minimal gains in oral reading fluency levels were observed for three of the five participants. Significant gains in oral reading fluency were evident for both Kate and Caroline. However, only minimal gains in fluency levels were made for the remaining three participants. Curriculum based measurements for Polly, Scott, and Gia indicated a gain of three words per minute from pre- to post-intervention. There are several reasons as to why this may have occurred. First, low levels of treatment plan implementation was observed for the majority of Polly's sessions, indicating that despite consultant feedback, Polly's mother was inconsistently implementing

the intervention, and when the intervention was implemented, she was doing so in an incomplete and incorrect manner. Additionally, both Gia and Scott exhibited high levels of problem behavior during the intervention. Previous research has shown that one of the primary learner characteristics that will influence the success of early literary interventions is problem behavior (Nelson, Benner, and Gonzalez, 2003). Future research is needed in this area.

Treatment acceptability ratings for this study provide support to the theory that intervention acceptability may not be correlated with treatment integrity levels. All mothers rated the intervention as acceptable both before beginning the intervention as well as after completing the intervention. Despite low levels of implementation, acceptability remained high. Also, it is interesting to note that although all mothers rated the intervention process as highly acceptable, attrition rate was high for this study and several participants stopped conducting the intervention prematurely perhaps indicating that the concept of acceptability may not be directly correlated with actual behavior.

One important difference between this study and previous studies examining the effects of performance feedback was the difficult nature of the feedback process for several of the participants. Noell et al. (1997) provided corrective feedback for missed steps as well as suggestions to improve implementation. The same method was employed in the current study. However, in the study conducted by Noell et al. (1997), the consultant was present every day and was in control of delivering the feedback. This did not occur in the current study. In fact, although the consultant was fully available to meet at any time, the parents often missed or cancelled meetings with the consultant leaving the delivery of performance feedback in the control of the parent (consultee) rather than the consultant. This was especially true for both Polly's mother and Caroline's mother. For example, although the consultant was able to meet

with Polly's mother five times over the course of the intervention (twice in baseline, twice in the performance feedback phase and once in the performance feedback plus graphing phase), Polly's mother cancelled three scheduled meetings with the consultant on the day of the meeting and also did not show up for four meetings. The consultant also met with Caroline's mother six times over the course of the intervention (twice in baseline, three times in the performance feedback phase and once during the performance feedback plus graphing phase). Caroline's mother cancelled two meetings and did not show up for two scheduled meetings. This is rarely the case with school consultation due to the nature of the environment in the school setting.

However, it should be pointed out that this was not the case with all participants. The consultant met with Scott's mother five times (twice in baseline and three times in the performance feedback phase). Although Scott's mother dropped out of the study before the conclusion of the intervention, Scott's mother did not miss or cancel any meetings with the consultant. Also, the consultant was able to speak with Kate and Gia's mother on a regular basis (every Friday) and therefore no meetings were missed or canceled. One potential explanation of this could be the nature of employment amongst the mothers. Scott's mother was a stay-at-home mother and did not work outside of the home. In contrast, Caroline's mother worked nights and volunteered at Caroline's school in the afternoons. Polly's mother also worked outside the home in a job that required a variable amount of hours. Therefore, Polly's mother oftentimes missed or canceled meetings due to unexpected work obligations. Employment status of the parent should be controlled in future studies if possible in order to account for the required effort in which parents are required to exhibit in order to attend feedback meetings. As discussed in Noell et al. (2005), competing demands are an important factor to consider when examining a methodology for adult behavior change. While teaching

children is the primary responsibility for teachers, there are a large number of other responsibilities that exist in the everyday world of parents, including employment obligations. It should be noted that although the consultant offered to meet with parents in their home in order to minimize this effort, both Caroline and Polly's mother reported that they preferred to meet with the consultant at either their child's school or at a public meeting place such as a coffee shop.

Several limitations of this study exist. First, experimental control was not obtained. An additional limitation was the discrepancy in feedback methodology for the various participants. Perhaps the most important limitation of the study was the inability to consistently deliver feedback on schedule due to parent's schedule. Although parents were informed that they were required to meet with the primary investigator once per week as a condition of participating in the study, parents oftentimes missed scheduled meetings or delayed implementing the intervention due to personal schedule conflicts (extra-curricular activities, family vacations, etc.). Therefore, although feedback was delivered to the parents, the timeline with which it was carried out was quite dissimilar from that with which feedback is provided in the schools and therefore may explain why the results of this study differ from the findings of the effects of performance feedback in the school setting.

Despite these limitations, it is important that future research focus on examining ways in which the implementation of home-based interventions can be improved. Similar to research conducted in school settings, treatment plan implementation levels may decline in a steady downward trend if performance feedback is not provided. However, this feedback may be difficult to provide to parents due to both time and physical restraints inherent in the parent – consultant relationship. Traditional methods of collecting permanent product data may be misleading, as major discrepancy's existed between the information provided on the

permanent product provided to the consultant by the parent and the information that was gathered from listening to the corresponding audio recording. This further highlights the need for direct observation when possible in order to ensure that treatment plans are being implemented as designed.

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APPENDIX A: PARENT INSTRUCTIONS FOR READING INTERVENTION

1. Remove the numbered passages from the binder and provide one copy to your child.
2. Read the passage independently to your child while he or she follows along.
3. Have your child read the passage aloud independently to you while you follow along.
4. Highlight or mark any errors that are made by the child while he or she is reading.
5. Immediately after your child is finished reading the passage, show the marked passage to your child, point to the highlighted or marked words and read the words aloud to your child.
6. Have your child repeat each incorrectly read word three times.
7. Read the sentence containing the first error word and have your child reread the sentence back to you three times aloud.
8. Have your child reread the passage a second time. Mark any errors.
9. For words read incorrectly a second time, point to each word and sound out the syllables in each word.
10. Have your child blend the syllables together to form the correct word.
11. Complete all three passages in sequential order
12. Record the number of errors made and words read correctly for each passage and the duration of the session onto the data sheet provided.
13. Provide child with reward for completing the session and mark that the reward was provided on the data sheet.

APPENDIX B: TREATMENT PLAN IMPLEMENTATION SCORE

Subject #_____ Session #_____ Total Steps_____ Overall % _____ Reliability Y N

Treatment Plan Implementation Score

Session-based Steps	**Completed**		_____ of 6
1. Recorded correct date	YES	NO	
2. Recorded session beginning time	YES	NO	_____%
3. Recorded session end time	YES	NO	
4. Recorded correct probe number	YES	NO	
5. Provided reinforcer to child	YES	NO	
6. Audiotaped the session	YES	NO	

Probe #_____

1. Read entire passage aloud to child	YES	NO
2. Required child to read the entire passage once	YES	NO

Words missed:	Repeated?		Read sentence?		Words missed:	Repeated?		Read sentence?	
_____	YES	NO	YES	NO	_____	YES	NO	YES	NO
_____	YES	NO	YES	NO	_____	YES	NO	YES	NO
_____	YES	NO	YES	NO	_____	YES	NO	YES	NO
_____	YES	NO	YES	NO	_____	YES	NO	YES	NO
_____	YES	NO	YES	NO	_____	YES	NO	YES	NO
_____	YES	NO	YES	NO	_____	YES	NO	YES	NO

3. Required child to read entire passage twice	YES	NO

Words missed:	Decoded?		Blended (child)?		Words missed:	Decoded?		Blended (child)?	
_____	YES	NO	YES	NO	_____	YES	NO	YES	NO
_____	YES	NO	YES	NO	_____	YES	NO	YES	NO
_____	YES	NO	YES	NO	_____	YES	NO	YES	NO
_____	YES	NO	YES	NO	_____	YES	NO	YES	NO
_____	YES	NO	YES	NO	_____	YES	NO	YES	NO

4. Accurately recorded number of words read correctly (1^{st} reading)	YES	NO
5. Accurately recorded number of errors (1^{st} reading)	YES	NO
6. Accurately recorded number of words read correctly (2^{nd} reading)	YES	NO
7. Accurately recorded number of errors (2^{nd} reading)	YES	NO

Probe Steps Correct (out of 7):_____ /_____% Word-based steps_____/_____%

APPENDIX C: SESSION CHECKLIST FOR PARENTS

Child Name:_____ Parent Name:_____

Date:_____

Begin Tape Recording!

Session Beginning Time:_____ AM/PM

Probe Number	# Words Correct	# Errors	# Words Correct in Second Reading	# Errors Second Reading

Reward Provided? YES NO

Session End Time: _____ AM/PM

APPENDIX D: SOCIAL VALIDITY SCALE

Intervention Rating Profile – (IRP-15)

Please rate the intervention along the following dimensions. Please circle the number which best describes your agreement or disagreement with each statement.

	Strongly Disagree	*Disagree*	*Disagree Slightly*	*Slightly Agree*	*Agree*	*Strongly Agree*
1. This would be an acceptable intervention for a child's reading problem.	1	2	3	4	5	6
2. This intervention should prove effective in changing a child's reading skills.	1	2	3	4	5	6
3. I would suggest this intervention to other parents.	1	2	3	4	5	6
4. The child's reading problem is severe enough to warrant use of this intervention.	1	2	3	4	5	6
5. Most parents would find this intervention suitable for reading problems.	1	2	3	4	5	6
6. I would be willing to use this intervention at home.	1	2	3	4	5	6
7. This intervention would *not* result in negative side-effects for the child.	1	2	3	4	5	6
8. This intervention would be appropriate for a variety of children.	1	2	3	4	5	6
9. This intervention is reasonable for the reading problem described.	1	2	3	4	5	6
10. I liked the procedures used in this intervention.	1	2	3	4	5	6
11. This intervention is a good way to handle this child's reading problem.	1	2	3	4	5	6
12. Overall, this intervention would be beneficial for a child.	1	2	3	4	5	6

APPENDIX E: TRAINING PROTOCOL FOR PARENTS

Date: Parent:

Child:

Objectives for Parent Training Session (Check as completed)

1. **Discuss child's oral reading fluency scores (based on CBM data)**

   "*Children who are in a certain grade should be reading a certain number of words per minute. For example children in grades 1-2 should be reading 40-60 words per minute in material that has been deemed appropriate for their grade. This is known as the instructional level. If your child is reading a smaller number of words per minute, this is an indication that the materials may be too difficult for your child and that your child may need additional practice in reading."*

2. **Introduce Repeated Reading Intervention (discussion of brief history and components)**

   "*Repeated Reading is a reading intervention that research has shown improves children's oral reading fluency, or the number of words they are able to read correctly per minute. Research has shown that several brief repeated reading sessions per week leads to an increase in oral reading fluency skills in children. There are several important parts of the intervention that contribute to making it successful. For example, the child is required to read the passage*

aloud and given feedback on what mistakes they have made. Then the child is allowed to practice reading the words again correctly. You will see how this works as we go through the different steps of the intervention together."

3. **Introduce reading probes (parent and child copies)**

"*This binder contains two copies of each reading passage. One is for you and one is for your child. Please use your copy to mark the words your child reads incorrectly as you follow along."*

4. **Demonstrate proper use of digital audio recorder**

"*Additionally, I'm going to ask that you record each session using this recorder. This is so that I can have a record of each session that you and your child complete. Here's how it works. INSERT DIGITAL AUDIO RECORDER INSTRUCTIONS!"*

5. **Introduce session data collection sheet**

"*In addition to recording each session, I would like for you to write down information from every session on these sheets. On the top of each sheet you will see a place for you to record the date. There is also a space for you to record when the session begins and ends. Here you see a chart for you to record the probe number and the number of words your child read correctly and the number of errors that were made. Additionally, please circle if a reward was provided.*"

6. **Go over written instructions for intervention**

   "*In your binder you will find a detailed list of instructions on how to conduct the intervention. Let's go over those now."*

7. **Model correct implementation for parents**

   "*Ok, now that we've talked about it, let me show you using a reading passage from the binder."*

8. **Role play correct implementation**

   "*Let's practice. I will pretend to be your child."*

9. **Provide corrective feedback**

10. **Answer questions regarding intervention implementation and data collection**

    "*Do you have any questions about how to conduct the intervention or how to collect the data?"*

11. **Discuss potential barriers to implementation and brainstorm solutions**

    "*I understand that oftentimes during the week, life can get busy and you may not have time to conduct the intervention with your child. For example, your child may be involved in after-school activities or you may have to work late. Let's talk about some things that occur during the week that may get in the way of doing the intervention during the week and try to come up with a solution of how to avoid those obstacles*."

12. **Decide on days of the week that intervention will be ran (3 total)**

    "*Lets go ahead and pick three days of the week that would be the easiest for you to conduct the intervention. This way you can plan ahead of time to work the time to complete the intervention into your schedule."*

13. **Agree on data collection time and place**

    "I am going to be meeting with you once per week to collect your data sheets and audio files off of your recorder so I can keep track of your child's progress. Additionally, we can speak at that time about any questions or concerns you may have about the intervention. What would be a good time and place to meet that is convenient for you?"

APPENDIX F: BEHAVIORAL CONSULTATION FORMS

Problem Identification Interview Date:_____

Child Demographical Information

Child Name:_____ Gender: Male Female

Date of Birth:_____ Age:_____

Ethnicity:_____

Parent Demographical Information

Parent Name:_____ Gender: Male Female

Date of Birth:_____ Age:_____

Ethnicity:_____

Education Information:_____

Child Educational History

School:_____ Grade:_____

History of Academic Problems:_____

_____

_____

_____

_____

Has your child ever been retained? YES NO

If Yes, what grade?_____

Is your child currently receiving special education services? YES NO

If Yes, please describe_____

_____

Please list any extracurricular activities that your child is involved in:_____

_____

_____

Child Baseline Data

CBM Assessment

Reading : _____ Assigned Grade level

3 probes: _____ _____ _____ WPM
Mastery Instructional Frustrational

CAN'T DO/WON'T DO ASSESSMENT

_____ WPM for CD/WD **MOTIVATION PROB** **YES** **NO**

	MASTERY	INSTRUCTIONAL	FRUSTRATIONAL
Reading 1-2 (1 min)	61+	40-60	>40
3-6	101+	70-100	>69

Comments:

Problem Analysis Interview Date:_____

Parent Name:_____

Child Name:_____

Child ORF score:_____ Grade:_____

Complete parent training (see Appendix F)

List the three days of the week that you will be more likely to conduct the intervention, along with an alternate day:

1. _____

2. _____

3. _____

4. _____ (alternate)

Performance Feedback/Data collection Information

Place:_____

Day:_____

Time:_____

**This information should be recorded into the binder for parents to take home.*

Problem Evaluation Interview Date:_____

Parent Name:_____

Child Name:_____

1. Administer the IRP-15

2. To what extent to do you believe the intervention's goals were achieved?

3. To what extent do you perceive the Repeated Reading intervention as effective in increasing your child's reading perfomance?

4. To what extent do you perceive the Repeated Reading intervention as practical for you and your child?

5. Would you consider continuing the intervention?

VITA

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