Using BEA and Parent-Tutors to Boost Achievement for K-PALS Nonresponders

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Melissa Coolong Chaffin

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Matthew K. Burns, Ph.D.

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Abstract

The purpose of this study was to use brief experimental analysis procedures (BEA) to select promising early reading interventions for kindergartners (2 boys aged 6 years 6-8 months) who were nonresponsive to Kindergarten Peer Assisted Learning Strategies (K-PALS), an evidence-based reading program, delivered in their classroom during the school year and to train their parents to implement those interventions at home during the summer. Results were promising and showed an effective intervention was selected for each participant. Interventions were then implemented at home using customized K-PALS lessons in a multiple baseline across subskill design. The intervention led to gains in letter sound and word recognition for both participants on both taught and untaught stimulus materials.

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Introduction

Statement of the problem

Few would question the fact that reading is a foundational skill critical to success in school and later in life. Yet many students cannot read or cannot read well. In the 2007-08 school year, 5.2% of the student population was receiving special education services for a learning disability, with 80% of those students receiving services in for reading (National Center for Educational Statistics [NCES], 2010). In 2009, the National Assessment of Educational Progress (NAEP) found that 33% of fourth graders failed to perform at basic levels in reading proficiency (NCES, 2010). Furthermore, the U.S. Department of Education estimates that as many as 30 million adults in the country have no more than the most basic literacy skills and are functionally illiterate (NCES, 2010).

Government studies have found that long term outcomes for people with lower levels of educational attainment are clearly negative. Young adults with a bachelor's degree earned 96% more than their peers who did not graduate from high school, 53% more than their peers with high school diplomas, and 28% more than their peers with an associate's degree (NCES, 2010). In terms of health, people with less education reported they are less healthy, which is a relationship that is independent of family income, age or poverty status (NCES, 2010). While the contributing factors to lower levels of educational attainment are many, inability to read is clearly one barrier at work.

While the deleterious effects of poor reading achievement are many, so are the opportunities for intervention. Much research has been done in recent years to identify and develop effective reading instructional practices, curricular materials, and remedial

interventions. In an era of increased accountability, there are also increased resources available to help teachers teach their student to read. For example, the U.S. Department of Education Institute on Educational Sciences resource "What Works Clearinghouse" identifies 28 core or supplemental reading programs that have scientifically-based evidence for positive or potentially positive effects. Effective interventions range from computer-based early reading programs such as DaisyQuest (Barker & Torgesen, 1995), to intensive remedial programs such as Reading Recovery (Baenen, Bernhole, Dulaney, & Banks, 1997) and Corrective Reading (Torgesen et al., 2006), to peer tutoring programs such as Kindergarten Peer Assisted Learning Strategies (K-PALS, Fuchs et al., 2001).

Summer months can be a time for further loss of skills for students who are already struggling academically, especially when compared to their peers (Schater, 2003). The "summer slide" contributes to disadvantaged students falling further behind their more advantaged peers (Alexander, Entwisle, & Olson, 2001). Researchers studying this phenomenon have called for an expansion of high quality summer programming as well as outreach to parents to help support out-of-school learning during the summer months (Alexander et al., 2001). Parents who enrich the home environment with language increase their child's chances for school success (Hart & Risley, 1995). Parents who have high expectations for their children's performance, attribute success to effort instead of ability, take an active role in their child's education, provide a home structure that supports learning, and have positive emotional interactions with their children positively impact achievement (Christenson, Rounds, & Gorney, 1992).

In addition, research in the last several years has identified strategies for identifying effective interventions for students demonstrating low reading achievement. For example, highly individualized interventions have been created through the use of brief experimental analysis (BEA) procedures which involve the experimental investigation of the effects of different interventions on individual student performance (Daly, Witt, Martens, & Dool, 1997). These procedures have the potential to be highly effective because they are custom-matched to individual student needs.

Purpose of the Study and Research Questions

For students who have not shown adequate progress despite participating in an evidence-based curriculum such as K-PALS, more intensive services are needed. By combining effective instruction strategies identified through individual BEAs, evidence-based K-PALS activities, and the power of parents as reading tutors at home, students' achievement may be enhanced. The purpose of this study is to see how parents can use a combination of K-PALS activities and individually identified instructional strategies at home with their children over the summer to improve reading achievement. To this end, the following questions will be addressed:

1. How well does BEA identify an effective intervention for each participant?
2. To what extent does the best intervention identified by the BEA and implemented by parent tutors improve skills over time and across stimuli?

Assumptions

Several assumptions were made during the course of this project. First, it was assumed that students were not getting instruction outside of the intervention developed as part of this study and thus, any gains observed were due to the intervention. Second, it was assumed that gains in letter sounds and words were made due to instruction received for those particular sounds and words, that is, there were not carry over effects whereby teaching one sound or word led to the recognition of another untaught sound or word. Last, it was assumed that typical literacy activities parents engage in such as reading to their children, did not significantly impact skill gains.

CHAPTER TWO

Literature Review

Objectives of Chapter

This chapter will present a review of the literature pertaining to the ecological perspectives of learning difficulties, detailing the progression from a student-centered approach to an ecological and experimental one, and will discuss the role of parents as tutors to remediate early reading skills deficits.

First, Ecological Systems Theory (Bronfenbrenner, 1977; 1986; 1992) will be applied to the understanding of learning difficulties. Within this discussion, the Response to Intervention (RTI) model of prevention and intervention will be presented as an example of an ecologically valid approach. Next, as part of the RTI model, the use of Brief Experimental Analysis (BEA) for selecting effective interventions for students with early reading skills deficits will be presented. Kindergarten Peer Assisted Learning Strategies (K-PALS) will be described as an example of an effective early reading skills intervention (Fuchs et al., 2001). Finally, roles for parents will be explored, including a specific review of the role parents can play in reading skills instruction for their children.

Learning Difficulties: A Student-Centered Perspective

As early as the late nineteenth century, physicians began describing learning disabilities in their patients (Shaywitz, 2003). However, the concept of a learning disability (LD) was not institutionalized in the U.S. education system until regulations for implementing the Individuals with Disabilities Education Act were developed by the Department of Education in 1977. These regulations stated that a student would qualify for special education services under the Specific Learning Disability category when the

student demonstrated a severe discrepancy between IQ and achievement, as measured by individually administered standardized tests, despite adequate instruction. Individual state definitions vary, but the majority of states incorporate this discrepancy requirement (Salvia, Ysseldyke, & Bolt, 2006).

Criticisms of this traditional discrepancy model for identifying students with LD began almost immediately after its inception (e.g., Algozzine & Ysseldyke, 1983). Today the shortcomings of the discrepancy model are well documented including failure to discriminate poor readers with and without IQ-achievement discrepancies on reading-related cognitive tasks (Fletcher et al., 1994), severity of LD not being related to degree of discrepancy between IQ and achievement (Stanovich & Siegel, 1994), a lack of treatment validity (Aaron, 1997), and failure to inform intervention (Elliott & Fuchs, 1997; Fletcher et al., 1994). Moreover, the discrepancy model necessitates a "wait to fail" approach, as time must pass before a student's achievement is low enough to meet the discrepancy requirement, and low achievement is often due to inadequate instruction despite requirements in the federal definition to rule this out (Fuchs, Mock, Morgan, & Young, 2003). In addition, LD services are unfairly withheld from low-performing students who fail to demonstrate the necessary discrepancy (Fuchs et al., 2003).

The skyrocketing rates of LD identification and the cost of LD services have compounded problems with how LD has been defined. For example, between 1976-77 and 2007-08, the number of students receiving special education services under the LD category rose from 1.8% to 5.2% of the total student population, and from 21.5% to 39% of the special education population (NCES, 2010). In addition, the cost to educate a student receiving special education services is almost twice that of a general education

student ($12,000 per year compared to $6500 per year) (Vaughn & Fuchs, 2003). Not surprisingly, many professional organizations, school personnel and government officials have called for change (Fuchs et al., 2003).

Learning Difficulties: A Systems-Based Perspective

The traditional approach to LD identification focuses attention on within-child deficits to diagnose disabilities, rather than focusing on the interaction between student characteristics and instructional variables with the environment. Bronfenbrenner (1979; 1986; 1992) proposed an ecological paradigm for understanding human development in context, stating "development is a joint function of person and the environment" (1992, p. 189). He expanded the bounds of what was typically considered the "environment," through the capitulation of Ecological Systems Theory (EST). EST identifies multiple nested systems in which human development occurs: the *microsystem*, or immediate setting such as the home or classroom; the *mesosystem*, or set of microsystems and the interrelations between them such as between home and school; the *exosystem*, or linkages and processes that occur between contexts that child is not directly a part of, but influence the child such as the parents' work or social circle; the *macrosystem*, or overarching pattern of ideology and organization such as culture, society, government, and public policy; and *chronosystem* or interactions between developing individual and changing environments across time (1986; 1992). EST has informed the understanding of all aspects of human development, including the understanding of learning difficulties. Expanding on this work, Sheridan and Gutkin (2000) called for school psychologists to take a systems perspective when attempting to understand learning difficulties:

> When children experience difficulty learning to read, for example, this "dysfunction" is best understood as the product of multilayered, proximal, distal, and interactive systems. Among these systems are the individual children themselves, educational contexts, prevailing social environments, societal influences, and the interactions among and across all of these systems (p. 486).

RTI is one such systems approach and will now be presented in detail.

Response to Intervention

Response to intervention (RTI) is emerging as a solution to the problems inherent in the traditional discrepancy model that is also consistent with EST and Sheridan and Gutkin's (2000) recommendations. By focusing on the systems within which an individual is experiencing learning difficulties, one can potentially improve outcomes not only for that individual struggling student, but for all students.

RTI is a system of prevention and intervention through which academic services are allocated in varying levels of intensity according to student needs, which are defined through regular data collection. Students receive increasing levels of support when they fail to respond adequately to the research-based interventions being employed at a given level. This too is a discrepancy approach; but instead of looking at an IQ-achievement discrepancy, the important consideration here is the discrepancy between performance before and after a validated intervention implemented with integrity.

Many proponents of RTI advocate using a multi-tiered approach in which evidence based practices are in place for students at the universal, targeted, and intensive levels (Burns & Coolong-Chaffin, 2006; Tilly 2003; Ysseldyke et al., 2006). In this model, services are delivered at three different levels or tiers, based on student needs.

Service delivery is depicted as a triangle whose base provides "universal" services (Tier 1) that fit the needs of most students. Moving up to the next level of the triangle, services are provided to students who are at risk and who need more "targeted" interventions and supports (Tier 2). Finally, at the tip of the triangle is a small group of students who need truly "intensive" interventions (Tier 3). The following is a description of an RTI model and major components in it.

Tier 1: Universal Services. The first step in many RTI models is ensuring generally effective curricula and instructional practices are in place for all students. After a comprehensive review of the literature, the National Reading Panel (2000) made several recommendations for effective reading instruction. These recommendations include: explicitly teaching students phonemic awareness, or the ability to focus on and manipulate the sounds in spoken words; phonics instruction, which includes teaching students to use letter-sound correspondences to read and spell; fluency, or the ability to "read orally with speed, accuracy and proper expression" through guided oral reading; vocabulary; and comprehension, in which the reader interacts with the text to actively construct meaning.

Kindergarten Peer Assisted Learning Strategies. One program that incorporates many of these elements is Kindergarten Peer Assisted Learning Strategies (K-PALS). K-PALS is an evidence-based program that provides students with teacher-led instruction followed by practice with a partner in phonemic awareness, decoding, and fluency activities (Fuchs et al. 2001). K-PALS is implemented four times per week for 20-30 minutes per session. Higher achieving students are paired with lower achieving students to complete lessons in a structured manner. K-PALS has been shown to be effective in

increasing the reading performance of many types of students including high-, average-, and low-performing readers (Fuchs et al., 2001; McMaster, Coolong-Chaffin, Han, & Fuchs, in preparation), students with disabilities (Fuchs et al. 2001**;** Rafdal, McMaster, McConnell, Fuchs, & Fuchs, 2011), English language learners (McMaster, Kung, Han, & Cao, 2008), and students from a range of socioeconomic backgrounds (Fuchs et al., 2001).

K-PALS is not intended to be a stand-alone curriculum, rather it should be used in concert with other reading curricula in order to provide complete instruction. Because K-PALS allows students to practice skills at their level with a higher achieving peer, teachers are able to customize instruction to meet the needs of diverse learners (e.g., special education students, English language learners, etc.) (Fuchs et al., 2001).

Screening and Monitoring Progress. An important component of any successful curricular program is to monitor student progress to determine whether adequate progress is being made (Algozzine & Ysseldyke, 1992). For those students who have not made adequate progress despite generally effective classroom instruction and supports for learning, more intensive services are needed (Algozzine & Ysseldyke, 1992). The frequency of progress monitoring is determined by the intensity of student need, with all students being monitored 3-4 times per year, students needing targeted services being monitored perhaps twice monthly, and students needing intense services being monitored weekly (Shinn, 2008). Two distinct types of progress monitoring are used for different purposes, namely general outcome measures (GOM) and mastery monitoring (MM).

General outcome measures. GOMs are assessments that sample from the entire curriculum. All assessments are equally difficult. In this way, student progress can be

monitored over time, as one would expect performance to increase as the student is exposed to more material. One commonly used GOM is Curriculum Based Measurement (CBM). CBM utilizes brief, standardized assessments of basic skills which have established reliability and validity (Deno, 1985; Shinn, 1989, 2008). These measures are sensitive enough to measure small changes in performance and thus can be used to make instructional decisions such as determining intervention effectiveness and deciding when interventions need to be changed (Shinn, 2008). CBM of Reading (CBM-R) involve having students read aloud from grade-level material for one minute. Words read correct per minute (WRCM) and errors are recorded. This information can be compared to established local or national norms, or benchmarks which are empirically related to future performance on other measures such as state-wide tests.

Subskill Mastery Monitoring. While GOMs like CBM measure performance by sampling from the entire curriculum (i.e., both taught and as yet untaught material), in order to measure growth across time, subskill mastery monitoring measures performance only on skills that have been taught, in order to determine what level of mastery has been achieved. This type of approach is useful in determining the absolute effectiveness of the instruction and is helpful for making instructional decisions since teachers can decide whether or not subskills merit more instruction before moving on to other material.

Tier Two: Targeted Services. For students who have not made adequate progress despite the presence of generally effective classroom instruction, more intense services are needed. There are two main approaches described in the literature for providing targeted services: a standard treatment protocol (Fuchs et al., 2003) and a problem solving approach (Good & Kaminski, 1996). The standard treatment protocol

approach involves providing students with interventions which are known to be effective in a prescribed manner (Fuchs et al., 2003). For example, students reading below grade level are assigned to a corrective curriculum taught in a small group setting. The problem solving approach is a more dynamic process in which interventions are selected based on the results of a trial and error process, thus matching the intervention to student need (Good & Kaminski, 1996). However, many have advocated for a standardized approach to tier 2 intervention in order to best and most efficiently address the needs of most students (Burns, Deno, & Jimerson, 2007).

Tier 3: Intensive Services. The third tier is comprised of services reserved for the approximately 5% of students who have not responded to less intensive interventions. This could be small group instruction or one-on-one support. Tier 3 services could include general or special education support (Tilly, 2008). Some have advocated for an experimental approach to be used in determining which intervention to select for an individual student (Olson, Daly, Andersen, Turner, & LeClair, 2007). One experimental approach, brief experimental analysis (BEA), will be discussed in depth.

Brief Experimental Analysis. Reserved for those students with the most intense needs, BEA is one type of single-case experimental design. Put simply, "Single-case experimental designs are used to demonstrate experimental control within a single participant" (p. 12, Kennedy, 2005). Experimental conditions are tightly controlled with one independent variable being introduced at a time to test its effect on the dependent variable. Experimental control is demonstrated when a change in level or trend is seen in the dependent variable after the introduction of the independent variable via visual analysis of the graphed performance.

Brief Experimental Analysis is one type of single case design in which each treatment or intervention is tested rapidly in succession in order to determine its effectiveness relative to baseline or other interventions (Kennedy, 2005). This technique is useful for selecting an effective intervention when time is limited.

Daly and colleagues (1997) pioneered the use of brief experimental analysis for choosing and evaluating academic interventions based on a functional explanation of the deficits. Each intervention is designed to test one of the following hypotheses: 1. The child does not want to do the task; 2. The child has not had enough practice to do the task; 3. The child has not had enough help to do the task; 4. The child has not had to do it that way before; 5. The task is too difficult. By manipulating each independent variable successively (i.e., incentive, practice, modeling, rehearsal and feedback, and task difficulty, respectively), while measuring the same dependent variable (e.g., oral reading fluency), and then replicating the results, the most successful intervention can be chosen for each student. The hypotheses are arranged in ascending order from least intrusive to most intrusive, and when tested in that succession, allow the interventionist to determine the most simple, effective intervention for the student.

The interventions tested stem from different learning theories in general or theories about learning to read specifically. A common intervention related to the first hypothesis above, *the child does not want to do the task*, is to offer an incentive for increased performance. The theory guiding this intervention is positive reinforcement, which is demonstrated when a behavior is followed by a consequence that increases the likelihood that the behavior will occur in the future (Alberto & Troutman, 2003). In this case, fluent reading is increased when a reinforcer is provided contingent on fluent

reading. Another theory influencing this type of intervention is the skills versus performance deficit hypothesis testing approach (Lentz, 1988). The idea here is to determine whether the student fails to perform a skill because they can't (i.e., the skill is not within their repertoire), or they won't (i.e., they are not motivated to perform the task). Very different interventions should be developed to address each different hypothesis.

The next hypothesis, *the child has not had enough practice to do the task,* is often addressed by using a repeated reading intervention in which the child reads the same material over and over until a desired level of fluency is reached (Samuels, 1979). This intervention developed from the LaBerge-Samuels (1974) automaticity theory, which holds that as a student practices reading, the process becomes more automatic and thus more fluent. Attentional resources can then be applied to understanding the text.

Interventions flowing from the next hypothesis, *the child has not had enough help to do the task,* can be informed by the instructional hierarchy theory of learning. Haring and colleagues' theory describes the process of learning new skills, which occurs predictably in stages (i.e., acquisition, fluency, generalization, adaptation, 1978). The first stage in the instructional hierarchy is the *acquisition* stage in which a student is not yet accurate or fluent in performing the skill. Interventions that address the acquisition stage include both modeling the skill for the student beforehand and giving feedback after the student has read the material. Modeling is based on the theory that demonstrating a behavior leads to imitation and eventually to performing the behavior independently (Alberto & Troutman, 2003). Feedback is an essential component learning trials, which

consist of an antecedent, an active student response, and a consequence (Rosenshine & Berliner, 1978).

Interventions that address the fourth hypothesis, *the child has not had to do the task that way before,* address problems with the instructional materials themselves. The key issue is that the instructional materials may not require the student to demonstrate the target skill, but rather another skill may satisfy the requirements of the task. For example, if a student has learned to identify written words by looking at the corresponding picture in the book instead of the letters in the word itself, and thus is not able to read the word without the picture, there is a problem with the instructional materials. Interventions that address this hypothesis ensure that the materials enable the student to practice actual skill use.

Finally, the hypothesis, *the task is too hard,* requires educators ensure that the student is being instructed with the appropriate level of material. Informed by Gickling and Armstrong's (1978) theory regarding instructional level, testing this hypothesis requires identifying a student's appropriate instructional level to ensure tasks are neither too difficult nor too hard. The instructional level has been defined by 93-97% known material. Material that contains above 97% known content is described as the independent level, and below 93% known content is the frustrational level (Gickling and Armstrong). Research has shown that when students are given material in their instructional level, they demonstrate higher levels of on-task behavior, task completion, and comprehension (Gickling & Armstrong, 1978; Shapiro, 1992; Shapiro & Ager, 1992; Treptow, Burns, & McComas, 2007).

Over the last several years, researchers have used the BEA techniques to select effective reading fluency interventions using connected text for students. Interventions have focused on antecedent variables such as modeling (Eckert, Ardoin, Daly, & Martens, 2002), task difficulty (Jones & Wickstrom, 2002), extra practice (Eckert et al., 2002), and choice of type of instruction (Daly, Garbacz, Olson, Persampieri, & Ni, 2006). Other studies have examined the effects of consequence interventions such as incentive for increased performance (e.g., Daly, Persampieri, McCurdy, & Gortmaker, 2005), as well as combinations of antecedent and consequence based interventions (Daly et al., 2005; Jones & Wickstrom, 2002; Pettursdottir et al., 2009).

Recently, Petursdottir and colleagues (2009) applied these techniques to early reading skills including letter sound fluency and decoding and found differentiated results for students using antecedent interventions such as modeling and consequence-based interventions such as goal setting and incentive for increased performance over baseline.

Using brief experimental analysis techniques within an RTI framework allows practitioners to determine not only whether or not a student has adequately responded to an intervention for special education placement decisions (i.e., where to teach), but also answers the more practical questions of how to teach and what to teach (Reschly, Christenson, Coolong-Chaffin, & Gutkin, 2007).

Problem Solving Teams

Another important component of the RTI process is the multidisciplinary problem-solving team (PST) (Burns & Ysseldyke, 2005). PSTs commonly use a problem solving approach based on the Kratchowill and Bergan (1990) model of behavioral consultation to conduct a systematic analysis of the problem and factors contributing to it

in order to develop effective interventions (Burns, Wiley, & Viglietta, 2008). The Behavioral Consultation Model is comprised of four main steps, including *problem identification* in which problems are operationally defined and a system for data collection is established; *problem analysis* in which data are examined in order to determine potential cause, triggers, and reinforcers of the target behavior; *intervention implementation* in which an appropriate intervention is designed and relevant staff are trained in its use; and finally *program evaluation,* in which data are examined to determine whether the intervention needs to be discontinued, modified or continued.

PSTs facilitate the RTI process for schools by coordinating efforts at each level of the system. For example, PST activities in Tier I include reviewing systematic screening data and recommending quality core instruction, as well as identifying students needed additional services. Activities in Tier 2 include selecting appropriate interventions for students not making adequate progress, reviewing the effectiveness of those interventions, and identifying students in need of more intensive support. Tier 3 activities include more intensive problem solving, identifying interventions for students with the greatest need, monitoring progress, and referring students who still have not made adequate gains for special education consideration. Activities could also include identifying students whose skill deficits have been remediated and could receive adequate instructional support from a less intensive level of service (Burns et al., 2008).

PSTs have been shown to be effective at both the systems and student level. Through a recent meta-analysis, Burns and Symington (2002) found strong effects on outcomes including reductions in special education referrals, placements, grade retention, and

academic and behavioral difficulties as well as increased student time on task, task completion, and reading skills.

Support for RTI

An RTI approach addresses many of the problems plaguing traditional conceptualizations of LD. First, RTI has the potential to more quickly provide individual assistance to more students in need (Vaughn & Fuchs, 2003; Fuchs et al., 2003). Second, by providing complete, intensive instruction to students who are struggling, students who are truly disabled can be separated from those who had simply not received effective instruction (Fuchs et al., 2003). This distinction between disabled and nondisabled students could result in a reduction in the number of students identified as LD, thus reducing the costs (Fuchs et al., 2003). Third, RTI represents an approach with treatment validity, that is, the value of the assessment process is determined by the extent to which the information gathered informs instruction (Fuchs & Fuchs, 1998). Finally, using RTI assessment methods significantly differentiated the reading skills of struggling readers identified as LD and not identified as LD (Burns & Senesac, 2005).

RTI has been endorsed by many professional organizations including the Division for Learning Disabilities of the Council for Exceptional Children, the National Association of School Psychologists, the National Center for Learning Disabilities, the National Research Council, and the President's Commission on Excellence in Special Education to name a few (Fuchs et al., 2003). Furthermore, RTI was codified into law, when the Individuals with Disabilities Education Improvement Act (IDEIA) stated that, "local educational agencies shall not be required to take into account whether a child has a severe discrepancy between achievement and intellectual ability… a local educational

agency (LEA) may use a process that determines if the child responds to scientific, research-based intervention as a part of the evaluation procedures…" [614(b)(6)(B), IDEA 2004)]. This change in federal guidelines endorsing a response to intervention (RTI) approach represents a sea change in how instruction is delivered, its effects are measured and evaluated, and how resources are allocated.

Critiques of RTI

Despite its growing support, some scholars argue that RTI is not yet proven empirically (e.g., Fuchs et al., 2003, Kavale, Holdnack, & Mostert, 2005). Reynolds and Shaywitz (2009) cited concerns that RTI does not have the empirical support necessary to justify widespread adoption. These authors point to issues such as logistical problems of implementation including treatment integrity and teacher training, variations in definitions of "response", and the concern that the RTI process does not yield useful information about which interventions would be helpful for a particular student. At root of their concerns seems to be the idea that RTI does not accurately identify students who are truly "learning disabled", rather students are identified based on factors specific to their learning environments. The authors argue that an RTI approach could be useful as a system for prevention, but it should not be used to diagnosis learning disabilities or determine who has access to special education services.

Ecology and RTI

As discussed previously, Ecological Systems Theory "conceptualizes human behavior as a function of the ongoing interactions between the characteristics of individuals and the multiple environments in which they function" (p. 489, Sheridan & Gutkin, 2000). Thus, RTI is fundamentally an ecological process. The goal of assessment

in an RTI model is not simply to determine whether or not a student qualifies for special education services, rather the assessment process helps practitioners pinpoint what in the environment brings out the best in the student (Reschly et al., 2007). Assessment is not a finite step on the road to eligibility, rather it is an ongoing process through which the most appropriate intervention for the student's specific problem is identified, implemented, and its effectiveness evaluated (Burns & Coolong-Chaffin, 2006).

RTI involves a functional rather than a structural explanation for performance deficits (Christ, Burns, & Ysseldyke, 2005). In contrast to focusing on within-child deficits as an explanation for learning problems (i.e., the structural approach), the functional approach focuses on external, alterable variables affecting the child's performance such as time allotted for instruction, level of difficulty of material, and teacher feedback (Daly et al., 1997). Because the explanatory variables for performance deficits are alterable, they can be manipulated to test various hypotheses about why the problem is occurring. Once a plausible functional explanation is determined, appropriate interventions can be selected based on that function.

The functional approach described above focus on manipulating factors in the student's immediate instructional environment in order to affect academic performance (i.e., antecedents and consequences of specific academic behaviors), but this, in and of itself, is not enough to be a truly ecological approach. Ysseldyke and Christenson's *Functional Assessment of Academic Behavior* (*FAAB,* 2002), is an example of an even broader perspective on understanding skills deficits. As an assessment tool, The *Functional Assessment of Academic Behavior* (*FAAB),* focuses on developing

interventions for students based on available resources in the school and home environments and coordinates those resources to develop the most effective plan.

Drawing on the work of Bronfenbrenner (1979; 1986), Ysseldyke and Christenson (2002) defined the instructional environment as the school, classrooms, and home contexts in which students learn, as well as the interface of these contexts. Beyond classroom variables, The *FAAB* gathers information across home and school in order to develop comprehensive interventions based on what's known from the literature about effective interventions. Twenty-three alterable variables related to academic performance are subsumed under three categories: instructional support for learning, home support for learning, and home-school support for learning (Ysseldyke & Christenson). Nine steps in the assessment and intervention process similar to other models of problem solving and consultation are described including identifying and clarifying the reason for referral, gathering parent and teacher perspectives on the student's instructional needs, collecting data on the student's instructional environment, selecting interventions based on priorities and needs, identifying complimentary home supports for learning, implementing the intervention, evaluating the intervention's effectiveness, revising the plan, and documenting and reporting results (Ysseldyke & Christenson).

The *FAAB* provides the philosophical framework as well as specific assessment tools for gathering information including reproducible parent, teacher, and student interview and classroom observation forms. Once information is gathered, interventions that address the mismatch between student characteristics and the total instructional environment can be developed. The *FAAB* takes into account the important influence of home support for learning, whereas many other assessment tools do not.

Despite the limitations listed previously of the various LD diagnostic models (i.e., child centered deficit, relative achievement discrepancy, RTI), RTI has the most potential to be ecologically valid (Dean, Burns, Grialou, & Varro, 2006). Based on the work of Bronfenbrenner (1986), an assessment could be considered ecological when the environmental context of evaluation represents real-life situations in which the child learns, the assessment stimuli are representative of real classroom activities, and the student behavior and required responses are natural and representative of the construct being assessed (Dean et al., 2006). However, to be truly ecological, the approach must take into account the multiple contexts in which children live and learn, including the home and community environments (Dean et al., 2006).

RTI in Practice

A review of four commonly cited RTI models (Minneapolis Public Schools' Problem Solving Model [Marston, Muyskens, Lau, & Canter, 2003], Iowa's Heartland Area Educational Agency [Tilly, 2003], Pennsylvania's Instructional Support Teams [Kovaleski, Tucker, & Duffy, 1995], and Ohio's Intervention Based Assessment [Telzrow, McNamara, & Hollinger, 2000] found that all four resulted in increased student achievement and reductions in special education eligibility evaluations (Marston, 2003; Kovaleski, Tucker, & Duffy, 1995; Telzrow et al., 2000; Tilly, 2003). Moreover, a recent meta-analytic review of the literature examining the outcomes of existing RTI models showed positive effects on both systemic and student outcome measures, with stronger effects for field-based models than those developed with support of researchers especially for systemic variables (Burns, Appleton, & Stehouwer, 2005).

However, none of the four existing models fully integrated parents in the process (Burns & Ysseldyke, 2005), despite the large body of research showing the effectiveness of parent involvement in education and the current level of policy support for involving parents in their children's education (Fan & Chen, 2001). Moreover, involving parents in the RTI process is important in order to be consistent with ecological theory (Sheridan & Gutkin, 2000). Thus, researchers are beginning to call for expanded roles for parents in the RTI process (Burns et al., 2005; Burns & Ysseldyke, 2005; Reschly et al., 2007; Christenson, 2010).

RTI and Families

As discussed above, to be ecological in nature, it is not enough simply to focus on interactions between the student and learning environments at school. To maximize the effectiveness of our interventions, it makes sense to capitalize on opportunities to learn in the multiple environments in which students function. In addition to the school contexts, the context of the home as well as the relationship between school and home are critical for student development (Christenson 2003).

Many terms have been used in the literature to describe the contributions of the family to students' learning including: parent involvement, home-school collaboration, and family-school partnerships; however the goal remains the same despite the term used, specifically: "the goal of promoting strong bonds between families and educators is to enhance learning for all students" (p .917, Esler, Godber, & Christenson, 2008). Distinctions between the terms do exist, and these distinctions will be explored subsequently, along with theoretical, empirical, and policy support for each construct.

I use the term “parent” and “family” interchangeably to represent all caregivers who fulfill the parenting role, whether they are parents, grandparents, foster parents, other relatives, etc.

Parent Involvement. Parent involvement has been defined as parents’ dedication of resources to engage in activities at home and school, provide a stimulating home environment, and understand the child’s progress in learning (Grolnik, Benjet, Kurowski, & Apostleria, 1997). There are six types of parent involvement in education that have helped shape research in the field including parenting, communicating with the school, volunteering, learning at home, participating in decision making at the school, and collaborating with community (Epstein,1995). All of these factors, with the exception of the last, *collaborating with the community,* were empirically validated as distinct factors within a multidimensional conceptualization of parent involvement. With input from experts in the field as well as parents, teachers, and school administrators, Fantuzzo and colleagues (2000) developed and validated the *Family Involvement Questionnaire (FIQ)* in a sample of urban early childhood families (preschool through grade 1). *The FIQ* measures three distinct components of parent involvement: school-based involvement, home-based involvement, and home-school conferencing. School-based involvement, which comprises Epstein’s *volunteering* and *participating in decision-making* categories, includes activities such as participating in school-based functions such as conferences, field trips, social activities, and fundraising efforts. Home-based involvement is comprised of Epstein’s *parenting* and *learning at home* categories and includes activities such as providing learning materials and activities at home, maintaining clear rules, and talking positively about learning. Finally, home-school conferencing is consistent with

Epstein's *communicating* category. This factor reflects the complex nature of interactions and relationship between teachers, parents, and students, and is analogous to others' conceptualizations of home-school collaboration. (Fantuzzo, Tighe, & Childs).

Research has explored the relationship between the parent involvement constructs as measured on the FIQ and a related measure, the Parent Involvement in Children's Education Scale (PICES; Fantuzzo, Tighe, McWayne, Davis, & Childs, 2002) and indicators of student performance in several areas. Specifically, home-based family involvement has been shown to be related to student motivation to learn, attention and persistence to tasks, receptive vocabulary, and lower levels of classroom behavior problems (Fantuzzo, McWayne, Perry & Childs, 2004) as well as parent reported self-control, responsibility, and cooperative behavior in the home setting and higher levels of teacher reported reading and math achievement, intellectual functioning, and overall classroom behavior (McWayne, Hampton, Fantuzzo, Cohen, & Sekino, 2004). Low levels of school-based family involvement were related to higher levels of parent reported externalizing, internalizing, and hyperactive behaviors at home (McWayne et al., 2004).

There is strong empirical evidence to support actively involving parents in the education process (Christenson & Carlson, 2005; Christenson et al., 1992). Family factors correlated with positive academic outcomes for students were high expectations for performance, attributing performance to effort as opposed to ability, home structure and support for learning, positive emotional interactions between parents and children, authoritarian parenting style, and parent involvement in education at home and school (Christenson et al., 1992).

Two of these aforementioned factors (i.e., high, realistic expectations and parents' use of effort attributions), may be directly affected by the shift from a within-child, medical model of learning disabilities. Traditionally, the message parents presumably receive throughout their interaction with the special education evaluation and service process, is that something is "wrong" with their child, and this "disability" is causing his or her learning problems (Burns, 2000). Contrast this with the message parents may receive in an RTI model, where the focus is on alterable, environmental variables, as the reason for learning difficulties. The message may be, we as educators need to work with you to determine how to best help your child learn. No longer are educators seeking to diagnose a problem within the child, rather they are trying to identify what factors in the environment occasion the best learning outcomes for the child. This is a fundamentally different message for parents and students to receive.

Methodological quality and treatment effectiveness of studies in the area of parent involvement interventions vary greatly (Fishel & Ramirez, 2005). However, the most promising findings have been found in studies that involved parent home tutoring of specific academic skills. For example, several studies involving at home tutoring by parents have shown increased academic gains for students in areas including math computation (Heller & Fantuzzo, 1993), word recognition (Vinoguard-Bausell, Bausell, Proctor, & Chandler, 1986), oral reading fluency (Gortmaker, Daly, McCurdy, Persampieri, & Hergenrader, 2007; Hook & DuPaul, 1999; Murad & Topping, 2000), and reading comprehension (Murad & Topping, 2000). Students targeted for intervention have included special populations such as students with Attention Deficit/Hyperactivity Disorder (Hook & DuPaul, 1999), students receiving special education services for

cognitive and learning disabilities (Vinoguard-Bausell et al., 1986), as well as students displaying low achievement (Heller & Fantuzzo, 1993; Powell-Smith, Shinn, Stoner, & Good, 2000; Murad & Topping, 2000).

To date, some research had been done that combines use of a brief experimental analysis and parent tutoring in reading (Gortmaker et al., 2007; Persampieri, Gortmaker, Daly, Sheridan, & McCurdy, 2006; Valleley, Evans, & Allen, 2002). For example, Persampieri and colleagues (2006) examined the effects of a treatment package (i.e., repeated readings, error correction and incentive for improved performance) on reading fluency across three different reading probes in a multiple baseline format. The tutoring occurred at home and was delivered by parents. Results indicated that reading performance increased as a result of the intervention and was maintained over time. Gortmaker and colleagues (2007) identified customized reading interventions which contained combinations of instructional and reward elements. The effects of these interventions were investigated on high content and low content overlap reading passages. Once promising interventions were identified, parents replicated experimental effects and then implemented the interventions at home during the summer. Gains in oral reading fluency were seen for all participants across time and stimulus materials. Parents were able to implement the interventions with integrity and reported high levels of satisfaction.

Home-School Collaboration. Home-school collaboration is closely related to, but distinct from, the concept of parent involvement. The difference lies in the conceptualization of the relationship. Parent involvement often implies a one-way flow of information between schools and parents, whereas home-school collaboration

emphasizes a bidirectional exchange, with shared involvement, goals, and power (Christenson, 1995). Thus, home-school collaboration can be conceptualized as parents and schools working together as equals to achieve academic and social outcomes for children (Cox, 2005). It is another category of intervention with proven effectiveness. Specifically, interventions involving a two-way exchange of information across home and school and those involving regular communication about student progress, were effective at increasing academic performance and social behavior at school (Cox, 2005).

Another example of research examining the effects of home-school collaboration is the investigation of how parents of children referred to an Ohio Intervention Based Assessment (IBA) team for problem solving reacted to the IBA process, and how those reactions related to student goal attainment (McNamara, Telzrow, & DeLamatre, 2000). Results indicated that parents generally wanted to be involved in the process, they felt that adequate opportunities existed for them to participate, and they did in fact participate. In addition, parents who reported greater involvement in developing the intervention plan for their child also reported that they felt the plan adequately addressed their child's unique needs, were more satisfied with their child's progress in school, and reported higher ratings of their child's feelings of success in school. Finally, parent reported support for the intervention plan at home predicted goal attainment (McNamara et al., 2000).

Family-School Partnerships: An Integration. The concept of family-school partnerships encompasses the types of activities described previously termed, "parent involvement" and "home school collaboration", but moves beyond these ideas, recognizing the partnership as more than something to strive for, but as an absolutely

essential component of education (Christenson, 2003, 2010). Recalling EST, the child functions both within the discrete *microsystems* of home and school, but is also affected by the *mesosystemic* influences of the transactional relationship between the home and school environment (Christenson, 2003, 2010). The mesosystem has often been forgotten by those trying simply to "involve" parents.

Christenson and Sheridan (2001) describe several key features of family school partnerships including: a *student-focused philosophy* where educators and parents work together to enhance development academically, socially, emotionally and behaviorally; *shared responsibility*, where all parties are seen as essential, not simply desired, and a range of options exists for participation; a *constructive relationship* whereby parties work together in meaningful ways toward shared goals, and finally, a *preventative, solution-oriented* focus where conditions are created to promote student success.

One example of the benefits of family-school partnerships can be found in the literature describing Conjoint Behavioral Consultation (CBC), an evidence-based consultation model used to solve academic or behavioral issues (Sheridan & Kratchowill, 2008). This model of indirect service delivery brings together school personnel and family members and, if appropriate, other advocates, to work through a comprehensive problem solving process to identify student needs and develop effective interventions taking advantage of the perspectives, knowledge, and expertise of multiple important adults in the student's life. The CBC model has been effectively utilized to enhance a myriad of student outcomes including cooperative peer interactions (Colton & Sheridan, 1998), academic skills (Galloway & Sheridan, 1994; Sheridan, Eagle, Cowan, &

Mickelson, 2001; Sheridan, Eagle, & Doll), and externalizing and internalizing behaviors (Kratochwill, Elliott, Loitz, Sladeszek, & Carlson, 2003).

Public Policy Support for Family-School Partnerships. Because of empirical support, the importance of parent involvement in education is widely recognized, as illustrated in the laws that govern education. For example, National Education Goals 1 (School Readiness) and 8 (Parent Participation) specifically target parent involvement (Goals 2000: Educate America Act, Public Law 103-227). Additionally, the No Child Left Behind Act of 2001 (U.S. Department of Education, 2002) requires that school districts receiving Title I funds implement procedures, programs, and activities to involve parents of participating children. Finally, IDEA 2004 mandates that parents are part of the special education process including: providing informed consent to conduct initial evaluations and begin special education services upon finding the child eligible; contributing information to the evaluation; and participating in the development of the Individual Education Plan, detailing students' special education needs, goals, and services.

Other groups such as the national Parent Teacher Association have advocated for the expanded idea of family-school partnerships, as evidenced in their National Standards for Family-School Partnerships. The new standards include: welcoming all families into the school community, communicating effectively in both directions, collaborating to promote student success, sharing equal power in decision making, and collaborating with other community partners (Parent Teacher Association, 2011).

Barriers to Partnerships. It is important to recognize that the work of creating and maintaining effective partnerships is challenging. Several barriers have been

identified at the level of the family, the school, and the relationship between the systems (Christenson & Sheridan, 2001). Families may experience structural barriers such as poverty, lack of education, time constraints, and transportation issues. Psychological barriers may include feelings of inadequacy related to parenting, lack of knowledge about schooling, linguistic and cultural differences, perceived lack of responsiveness or support from the school. Schools also experience structural barriers such as lack of time and training for engaging in partnership activities or lack of funds to support these activities. Psychological barriers include ambiguity about the importance of the partnership, stereotypes about families, and a narrow concept of the roles families can play. Finally, barriers may exist at the level of the family-school relationship. Structural barriers such as lack of time for meaningful discussion, communicating only during crises, and lack of knowledge and skills needed for collaboration. Psychological barriers include resistance to partnership, blaming and labeling attitude, misunderstanding the other's point of view, and a failure to view differences as strengths (Christenson & Sheridan, 2001).

Integrating Family-School Partnerships within RTI. The history of learning disabilities assessment is lengthy and fraught with conflict (Aaron, 1997; Elliott & Fuchs, 1997; Fletcher et al., 1998; Stanovich & Siegel, 1994;). RTI is a promising alterative that addresses many of the issues raised by the discrepancy model (Burns & Senesac, 2005; Fuchs et al., 2003; Fuchs & Fuchs, 1998; Vaughn & Fuchs, 2003). However, what the model is lacking in its current iteration, is a full realization of the role parents can play in the assessment and intervention process. In her Distinguished Lecture to the National Association of School Psychologists annual convention, Christenson (2010) called for an integration of three important systems change initiatives within education: RTI, the use of

evidence-based interventions and practices, and family-school partnerships. She discussed moving beyond asking questions about why schools and families must forge partnerships, to ask questions such as *what works*, *how*, and *for whom*. The integration of these three initiatives has the potential to improve outcomes above and beyond what each process could do on its own. In addition, Reschly and colleagues (2007) called for an expanded role of parents in a fully realized systems-ecological RTI model, one in which parents are seen as essential partners in the assessment and intervention process. More research will be needed to evaluate the process and products of such a model, but the possibilities are exciting.

Family-School partnership activities in the first tier could include communicating a value for education, engaging in an ongoing dialog with the school about expectations and the child's performance, setting up a time and place for completing homework, monitoring homework completion and accuracy, and sharing educational activities during leisure time with the child (e.g., reading together and talking about reading, trips to the library, museums, zoos, etc.).

The second tier might include more intensive activities such as a weekly home-school note to communicate issues and needs across home and school, specific academic skill practice, and working with school staff to select targeted interventions based on knowledge about what would fit the child's needs best.

The third tier might include engaging in structured problem-solving activities such as CBC to identify needs and develop effective interventions to be implemented at school and home, communicating via a daily home-school note, phone calls, or email, delivering individualized academic instruction at home, and working together to identify

resources outside of school that might benefit the child and family such as counseling. One way to deliver intensive individualized academic interventions at home is to use BEAs to identify promising interventions and train parents to implement these interventions at home. This is the focus of the current study and will now be described in detail.

Purpose of the Study and Research Questions

For students who have not shown adequate progress despite participating in an evidence-based curriculum such as K-PALS, more intensive services are needed. By combining effective instruction strategies identified through individual BEAs, evidence-based K-PALS activities, with the power of parents as reading tutors at home, students' achievement may be enhanced. The purpose of this study is to see how two parents of students who were nonresponsive to K-PALS instruction (i.e., despite participating in evidence-based instruction implemented with fidelity they remained below grade level standards in reading) can use a combination of K-PALS activities and individually identified instructional strategies at home with their children over the summer to improve reading achievement. To this end, the following questions will be addressed:

1. How well does BEA identify an effective intervention for each participant?
2. To what extent does the best intervention identified by the BEA and implemented by parent tutors improve skills over time and across stimuli?

CHAPTER THREE

Method

Participants and Setting

Participants were selected from those already participating in a district-wide study of Kindergarten Peer-Assisted Learning Strategies (K-PALS) in a large suburb in the Midwest. Participants were from one school in the district where implementation integrity of K-PALS was high according to fidelity observations conducted as part of that study and whose teachers were interested in facilitating participation. The school had an enrollment of 405 students in grades K-5, with 42% of the students at the school being eligible for free or reduced price lunches.

Students from four kindergarten classrooms were invited to participate based on low scores on reading screeners that were administered as part of the larger study (see below) and/or teacher nomination due to concerns about poor performance. These students were considered nonresponsive to K-PALS instruction, as they did not respond adequately to generally effective reading instruction. This process yielded 15 potential participants. Consent forms were sent home by the students' teachers and forms were returned for six students. The author followed up via phone call with parents who returned the form. Five of the six participants' families were reached and data collection was scheduled. One family did not return multiple phone calls from the author and classroom teacher and thus further attempts were not made to include them in the study. Of these five remaining families, one parent reported they were in the process of moving to another town about an hour away and were no longer interested in participating. Initial progress monitoring data were collected for four students using curriculum-based

measures administered two-three times per week until a stable baseline was reached. Of these students, one parent and child missed a data collection appointment and did not return phone calls to reschedule. Another family did not return phone calls to schedule additional data collection sessions once school ended. Thus, two students and their families remained in the study.

Michael was a Caucasian boy who was 6 years 6 months at the beginning of the study. His kindergarten teacher was concerned about his lack of progress in reading and attention to tasks. His mother reported that she was concerned about his attention and his slow progress in reading over the year.

Gabe was a Caucasian boy who was 6 years 8 months old at the beginning of the study. His kindergarten teacher was concerned about his progress in reading and attention to tasks. His mother reported that he had received special education services for speech and language in early childhood for articulation difficulties, but had been dismissed for service prior to kindergarten because he was made gains. He still had some reported trouble producing speech sounds /l/ and /r/ substituting /y/ and /w/ respectively. His mother was also concerned about his reading skills and ability to sit still and attend to tasks.

Baseline data collection began for both students prior to the end of the school year. Sessions were conducted at a small table outside of the classroom, at a time when hallway noise was minimized. After school was out for the summer break, sessions were conducted at a table in a quiet setting free from distractions. Due to parent preference, Michael's sessions occurred in the local library in a small conference room with a table and several chairs. Sessions were held at 6:00 pm, after Michael's mother completed her

work day. Due to the library's hours and the parent's schedule (i.e., the parent was not available one week on the only day the library was open past 5:00 pm), one session was help at a table in a local fast food restaurant. Sessions for Gabe were conducted in his family's home, at the kitchen table. Sessions occurred both in the morning, afternoon, and early evening, depending on the week and the family's schedule.

Measures

Screening. Data from two measures collected in the context a larger study of K-PALS were used to identify students to invite for participation. Rapid letter naming (RLN) probes consist of a random arrangement of all uppercase and lowercase letters of the alphabet (Fuchs et al., 2001). Students name as many letters as possible for 1 minute, yielding a correct names per minute score (CNM). RLN is an effective predictor of later reading achievement (Good, Gruba, & Kaminski, 2005;Torgesen et al., 1997), and has been used by other researchers to identify students who may need additional interventions (McMaster, Fuchs, Fuchs, & Compton, 2005). Published standards indicate that students producing 29 or fewer correct letter names in 1 minute at the end of kindergarten are at risk for reading difficulties (Good & Kaminski, 2002). Reliability estimates for RLN are in the .90 range (Kaminski & Good, 1996).

Rapid letter sound (RLS) probes consist of the 26 lowercase letters of the alphabet (Fuchs et al., 2001). Students name as many letter sounds as possible for 1 minute yielding a correct sounds per minute (CSM) score. For the purpose of this measure, short vowel sounds and hard consonant sounds are scored as correct. Students who produced 36 or fewer letter sounds in 1 minute at the end of kindergarten have been shown to be at

risk for later reading difficulties (Howe, Scierka, Gibbons, & Silberglitt, 2003). Scores are highly reliable and predicts later reading competence (Fuchs & Fuchs, 2004a).

Students who scored below established targets (i.e., ≤29 on RLN; ≤36 on RLS) on one or both measures were invited to participate. In addition, teachers were asked to nominate other students who may benefit from participating but who may not have been identified by the testing because of not consenting to participate in the larger study.

Monitoring Progress. Progress was monitored before and during the intervention using two different curriculum based measures. Letter sound fluency progress monitoring probes (LSF-PM) consist of the 26 lowercase letters of the alphabet plus 12 additional letter combinations that are taught in the K-PALS curriculum (i.e., /qu/, /sh/, /ch/, /th/, /ck/, /ee/, /ea/, /er/, /ir/, /ar/, /oa/, /igh/). Students name as many letter sounds as possible for 1 minute yielding a sounds read correct per minute (SRCM) score. For the purpose of this measure, short vowel sounds and hard consonant sounds are scored as correct.

CBM K-PALS word identification fluency probes (WIF) were developed for use in previous K-PALS studies (Fuchs et al., 2001; Pettursdottir et al., 2009). Each probe consists of 23 words randomly selected from the K-PALS curriculum (total= 138 words) and includes both high frequency sight words and decodable words. A total of 22 alternate forms were created in which two columns of 11 and 12 words respectively are presented. Students were instructed to read as many words as possible in 1 minute, yielding a words read correct per minute (WRCM). WIF reliably predicts later reading performance and is related to other established measures of early reading skills (Fuchs & Fuchs, 2004).

Brief Experimental Analysis. Using baseline data from each participant, individualized probes were developed for use in brief experimental analyses (BEAs). The first type of probe, BEA-Letter Sound Fluency (BEA-LSF) combines a random order of two known and two unknown sounds. Known sounds were defined as those the participant identified correctly two times in succession on probes during baseline. Unknown sounds were defined as sounds incorrectly identified two times in succession on probes during baseline. Each probe utilized different unknown sounds to ensure equal difficulty and to protect against practice effects. These letters were arranged in eight rows with seven sounds in each row. Participants were given 1 minute to name as many sounds as possible. If the participant completed the reading before one minute elapsed, a prorated score was calculated by dividing the number of sounds read by the number of seconds elapsed and multiplying that number by 60 to yield a sounds-read-correctly-per minute (SRCM) score.

The second type of probe used was the BEA-Word Identification Fluency (BEA-WIF), which was developed from a list of known and unknown words from baseline. Known words are defined as words the participant read correctly in two consecutive sessions. Unknown words are defined as words read incorrectly in two consecutive sessions. Each probe consists of a random order of two known and two unknown words. Each probe utilized different unknown sounds to ensure equal difficulty and to protect against practice effects. These words were arranged in five rows with five words in each row. Participants were given one minute to read as many words as possible. If the participant completed the reading before one minute elapsed, a prorated score was calculated by dividing the number of words read by the number of seconds elapsed and

multiplying that number by 60 to yield a words-read-correctly-per-minute (WRCM) score.

A unique probe was used for each experimental condition, thus controlling for practice effects, with the final reading of that probe serving as the dependent measure for that condition. Because of concerns with attention and perseverance for each participant, baseline performance was not assessed for each condition immediately prior to intervention unless the intervention required a baseline. Performance on the equal-difficulty probes was thus compared across conditions, thereby reducing assessment time. A combined score for the BEA-LSF and BEA-WIF probes was used for comparison, sounds and words read correct per minute (SWRCM).

Procedure

Brief Experimental Analysis. One brief experimental analysis (BEA) was conducted with each participant to identify effective reading interventions/strategies. BEAs involve systematically alternating interventions and testing their effects on reading measures in order to identify an effective intervention for that particular student. BEAs require approximately 1-3 hours to complete (Jones & Wickstrom, 2002) and may be completed in several sessions depending on student performance, motivation, and fatigue.

A brief A-B-A-B design was used to compare the effects of several different interventions on participants' ability to correctly name letter sounds and read words. A different probe was used for each condition, with the final reading of that probe serving as the dependent measure for that condition. Each participant was exposed to every condition one time, and conditions were presented in a random order across participants. Once the most effective intervention was identified, a mini-reversal was attempted in

which the most effective intervention was compared to the second most effective intervention. A functional relationship is demonstrated when clear differentiation between the two phases is seen through visual inspection.

BEAs included the following conditions in a random order for each participant: incentive for correct sound and/or word production, repeated reading of sounds/words, repeated reading plus error correction, listening preview, and model-lead-test procedures. All of these interventions have been used successfully to increase oral reading fluency in students with learning difficulties (Burns & Wagner, 2008). During each condition, the participant read as many sounds or words as possible in 1 minute on BEA-LSF and BEA-WIF probes. Each participant's BEA took approximately one hour to complete.

The incentive condition (INC) involved the participant reading as many sounds or words correctly in 1 minute to establish a baseline. Then the participant was offered a choice of a prize (i.e., small piece of candy or sparkly pencil) if he was able to read correctly to an established criterion (i.e., 20% higher than baseline). This criterion has been used by other researchers to increase performance (Petursdottir et al., 2009). SRCM and WRCM on the second reading served as the dependent variable.

The repeated reading condition (RR) involved the participant reading as many sounds and words as he can in 1 minute for a total of three times, starting over at the beginning after each 1-minute reading. Data on the last reading served as the dependent variable. For repeated reading plus error correction (RR + EC), the same procedures described above were conducted. After each reading, errors are corrected using the following procedure "This says /c/ /a/ /t/ 'cat'. Say it with me, /c/ /a/ /t/ 'cat'. Now you say it." This was repeated three times for each error.

The listening preview (LP) involved the examiner reading all the sounds or words on the probe one time through as a model. Next, the student was instructed to read the sounds or words independently for one minute and the score was recorded.

In the model-lead-test condition (MLT), the researcher first said the correct sounds and word while pointing to the stimulus materials, then the participant said the correct sounds and words with the researcher, and finally the participant read the sounds and words independently. This process was repeated through one line beyond where the student read during baseline. Finally, the student read from the same probe independently for one minute and the SRCM or WRCM is recorded.

Parent Training. Once the most effective intervention was identified for each participant, each participant's parent(s) was trained to implement the intervention. Training occurred in the local library for Michael and the participants' home for Gabe. Michael's mother was trained and completed the intervention. Gabe's mother and father were trained and both completed the intervention. Training involved a description of the intervention accompanied by written, step-by-step instructions of the procedures. Following demonstration, the tutors were guided through the steps of the intervention by the author. Once the tutors were able to complete the intervention steps with 100% accuracy independently, the first set of lessons was distributed and the intervention sessions began.

Extended Analysis. Once the tutor was trained in the appropriate intervention, she or he continued this intervention two times per week, for 15-20 minutes per session, for 6 weeks and a total of 12 sessions for Michael and 7 weeks and a total of 14 sessions for Gabe. This extended analysis measured intervention effects across skills in a multiple

baseline design, whereby one set of sounds and words was introduced at a time. Intervention sessions targeted specific sounds and words identified as unknown with a mix of known sounds and words in baseline assessment. Data were collected weekly by the author after the intervention was implemented two times.

Mulitple baseline designs are useful for behaviors such as reading that are not likely reversible once the intervention is withdrawn. Instead of removing an intervention and seeing if the behavior returns to baseline, as in some other types of single subject designs, multiple baseline designs establish one or more concurrent baselines and introduce the intervention sequentially across them. In this way, it is possible to determine whether the intervention has the intended effect if the behavior of interest changes only when the intervention is applied to it, and the behaviors to which the intervention has not yet been applied do not. Replications of intervention effect can occur across participants, settings, behaviors, or subskills (Kennedy, 2005).

These lessons targeted a mixture of known and unknown sounds and words as identified in baseline. Each lesson targeted two unknown sounds and two unknown words, which were interspersed with two known sounds and two known words. For example, if a student knew the sounds /a/ and /m/ and the words “cat” and “is” but did not know /s/ and /t/ or “Tim” and “mat”, then the sounds activity would be comprised of a random mixture of /a/, /m/, /t/, /s/ sounds and the words and sound boxes activity would be a mix of “cat”, “is”, “Tim”, and “mat”. The tutors lead the participants through the lessons which were comprised of sounds, sound boxes, and word reading K-PALS activities (described below) for 15-20 minutes.

The lesson activities were based on K-PALS lessons (Fuchs et al., 2001) because the instructional format was used for instruction during the school year. The first activity is practicing letter sounds. The materials consisted of a number of sounds arranged in rows on a sheet of paper. The tutor pointed to each sound and prompted the reader to read the sounds by saying, "What sound?" After the reader read each sound, the tutor moved on to the next sound and so on. If the reader did not know a sound, or made a mistake, the tutor used a standard error correction procedure, "Stop. That sound is __. What sound? The reader then repeated the sound. Let's read that line (of sounds) again."

The next activity was a word reading activity. Similar to the sounds activity described above, the tutor and reader read a mixture of decodable and common sight words from the same lesson sheet. The tutor used the prompt "What word?" before each word and the same correction procedure as above, substituting the word for the sound in the dialog (Fuchs et al., 2001).

The third activity is called sound boxes and involved separating words into their component sounds with each sound in its own box. Tutors prompted readers to "Read it slowly", and the readers read each sound individually while pointing to it. Next the tutors prompted readers to "Sing it and read it", and readers sang the sounds in order to blend them together, then read the word normally. Standard error correct was used when a reader made a mistake or did not know the word. For example, if the word were "mat", the tutor would say, "Stop. That word is mmmaaattt. What word?" Once the reader responded correctly he or she was told to read that line again (Fuchs et al., 2001).

Targeted intervention effects. Targeted effects of the interventions were measured using three LSF-PM and three WIF probes one time per week. From these

measures, two scores were obtained. From the LSF-PM probes, an overall SRCM score was calculated. This served as a general outcome measure of performance (see progress monitoring section above for a complete description of the LSF-PM measure). In addition, aletter sound accuracy score (LSA) was obtained by calculating the percent of sounds read correctly for each set of sounds targeted in the lessons. Similarly, from the WIF probes two scores were obtained. First, from the WIF probes, an overall WRCM score was calculated looking at performance across taught and untaught words (see progress monitoring section above for a complete description of the WIF measure). Second, a word identification accuracy score (WIA) was calculated which represents percentage of targeted words read correctly. All assessments were audio recorded in order for interobserver agreement to be calculated.

Interobserver Agreement and Treatment Fidelity

All BEA and progress monitoring assessments were audio recorded so that interobserver agreement could be calculated. An educational specialist student in school psychology experienced in administering CBMs conducted the interobserver agreement for the outcome assessments. Interobserver agreement was calculated for 25% of the assessments using agreements divided by agreements plus disagreements, multiplied by 100. The mean interobserver agreement was 95% (range: 82% to 100%).

Treatment fidelity for the BEA interventions was assessed by coding 100% of the recorded intervention sessions. The number of steps correctly completed in each session was divided by the total number of steps outlined in the intervention protocol. An advanced doctoral student in special education with 3 years of teaching experience and

expertise in BEA served as the independent observer for the BEA treatment fidelity. The BEAs were conducted with 100% fidelity.

Treatment fidelity for the parent-implemented interventions was assessed by coding 25% of the recorded intervention sessions. The number of steps correctly completed in each session was divided by the total number of steps outlined in the intervention protocol. Michael's mother completed an average of 49% of the intervention steps correctly. Michael displayed high levels of uncooperative behavior including verbal protests, playing with objects, and purposefully saying words and sounds not in the lesson. This seemed to lead to his mother not completing all parts of the lesson and thus resulting in lower levels of treatment integrity. The parts that were completed were done accurately. Gabe's parents followed an average of 97% of the intervention steps.

Consumer Satisfaction. At the end of the study, parents were asked to complete a brief survey that assessed their thoughts and feelings about the intervention. This tool was adapted from the Intervention Rating Profile (IRP) developed by Witt and Martens (1983) for use is gauging the acceptability of interventions in school settings. The adapted measure was comprised of 8 items assessing aspect of the intervention's acceptability and perceptions of effectiveness. Items were structured in the typical Likert format on a scale of 1 to 6, with 1 being *Strongly Disagree* and 6 being *Strongly Agree*. Additionally, parents were asked to respond to three open format items regarding what they liked most and least and ways the intervention could have been improved. Finally, parents were asked for any additional comments.

CHAPTER FOUR

Results

This study addressed the following research questions: (1) How well does BEA identify an effective intervention for each participant? and (2) To what extent does the best intervention identified by the BEA and implemented by parent tutors improve skills over time and across stimuli?

How well does BEA identify an effective intervention for each participant?

Results of each participant's BEA are presented in Figures 1 and 2, with each graph showing a combined score for correct sounds and words per minute (SWRCM).

Michael. Results of Michael's BEA are presented in Figure 1. During the initial testing of each intervention, the most promising interventions were RR + EC (74 SWRCM) followed by MLT (41 SWRCM). While LP showed a level of performance equal to MLT, when looking at scores prorated for time, MLT produced higher actual scores (34 SWRCM v. 32 SWRCM, respectively). Thus, MLT was selected for comparison to RR + EC. These two conditions were repeated in random order, and RR + EC again showed higher level of performance relative to MLT (43 SWRCM v. 31 SWRCM, respectively). Therefore, RR + EC was selected as a promising intervention to implement during the extended analysis.

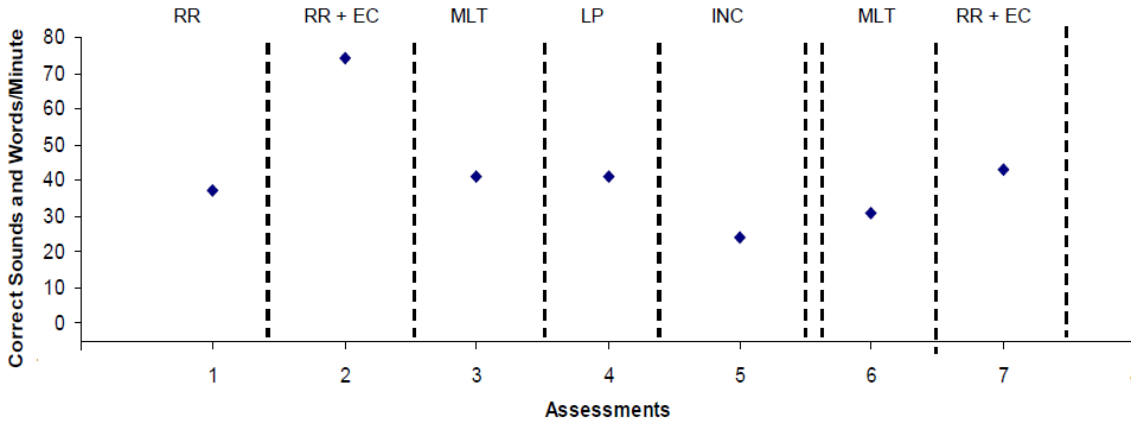

Figure 1: Michael's correct sounds and words per minute on the combination of BEA-LSF and BEA-WIF measures across different BEA conditions. RR = Repeated Reading; RR + EC = Repeated Reading plus Error Correction; MLT = Model Lead Test; LP = Listening Preview;
INC = Incentive.

Gabe. Results of Gabe's BEA are presented in Figure 2. During initial testing of each intervention, the most promising interventions were LP (81 SWRCM) followed by RR + EC (75 SWRCM). These two interventions were then implemented in a random order and again, LP (92 SWRCM) produced a higher level of performance than RR + EC (44 SWRCM), and it was thus chosen for implementation during the extended analysis. Interestingly, Gabe's performance showed a steady increase in level across the first five conditions tested. However, when the two highest conditions were implemented again in an attempt to demonstrate a replication, the rising level of performance did not continue and LP was higher than RR + EC even though it was presented second. Thus it was determined that LP was the most promising intervention.

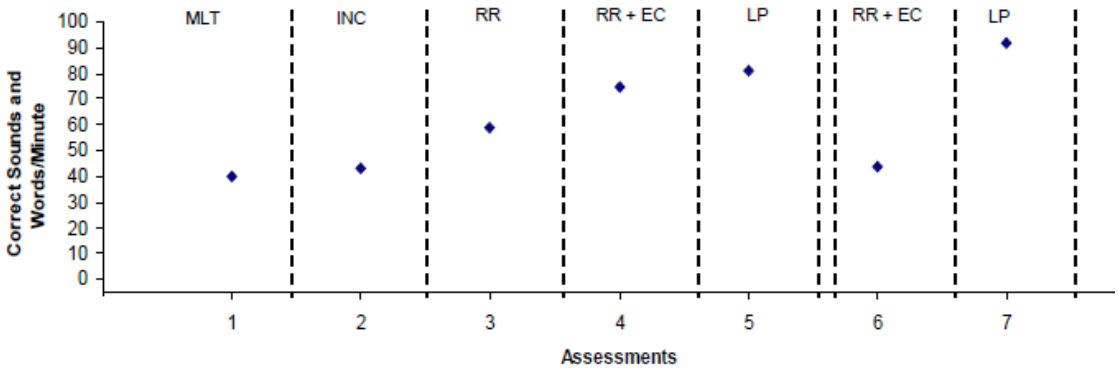

Figure 2. Gabe's correct sounds and words per minute on the combination of BEA-LSF and BEA-WIF measures across different BEA conditions. RR = Repeated Reading; RR + EC = Repeated Reading plus Error Correction; MLT = Model Lead Test; LP = Listening Preview; INC = Incentive.

To what extent does the best intervention identified by the BEA and implemented by parent tutors improve skills over time?

The extended analysis measured BEA-identified intervention effects across subskills in a multiple baseline design, whereby one set of sounds and words was introduced at a time to determine whether intervention effects were demonstrated across subskills.

Michael. Figures 3 and 4 depict the effects of the BEA-identified intervention (i.e., RR + EC) on letter sound accuracy and word identification accuracy respectively for Michael. Stimulus sets vary from 2-4 sounds and words per set. On the letter sound accuracy measures, clear intervention effects are demonstrated across subskills. The first four panels show immediate intervention effects on performance level and trend for subskill sets 1-4, while the final panel shows a clear, if delayed, effect for subskill set 5. Percent of Nonoverlapping Data (PND) values were computed to estimate an effect size

for the intervention using procedures described by Scruggs and colleagues (1987). First, the most extreme data point in each baseline phase was identified. Because the goal of the intervention was to increase performance, the highest data point was used. A line was drawn on the graph through that data point. The percentage of data points in the intervention phase falling at or above the line was calculated by dividing the number of data points at or above the line by the total number of data points. Standards suggested by Scruggs and Mastropieri (1998) suggest PND of 80% or higher represent a large effect. PND for letter sound accuracy for each subskill set is as follows: set 1: 100%; set 2: 100%; set 3: 100%; set 4: 75%; set 5: 66% for a mean PND of 91%.

On measures of word recognition accuracy, the results also demonstrate clear intervention effects, with an immediate effect on level demonstrated for subskill sets 2, and 3, and delayed effects for sets 1, 4 and 5. PND for word identification accuracy for each subskill set is as follows: set 1: 83%; set 2: 100%; set 3: 100%; set 4: 66%; set 5: 50%, for a mean PND of 80%.

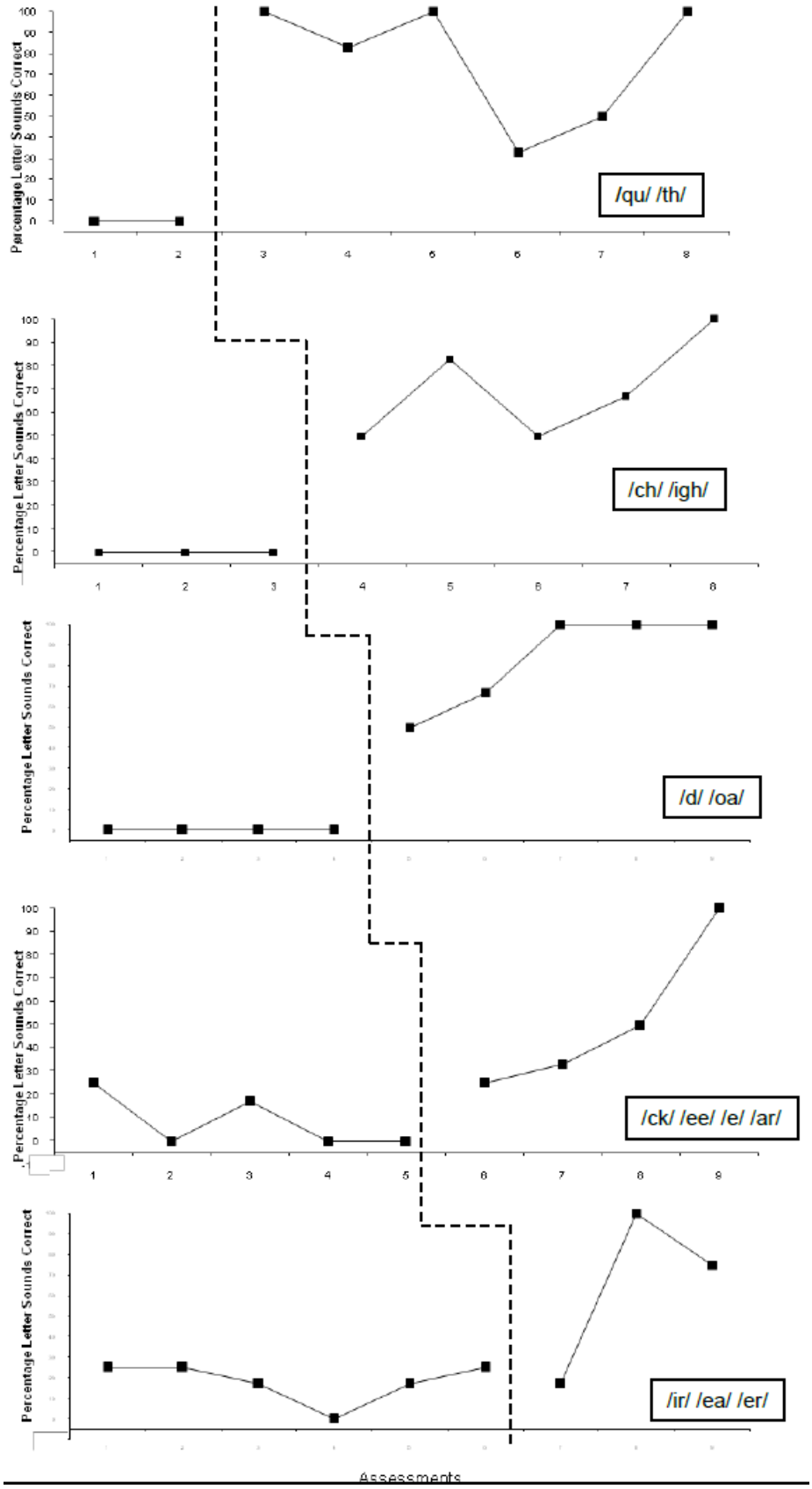
Percentage Letter Sounds Correct
/qu/ /th/
/ch/ /igh/
/d/ /oa/
/ck/ /ee/ /e/ /ar/
/ir/ /ea/ /er/
Assessments

Figure 3: Michael's percentage of sounds correct across different skill sets.

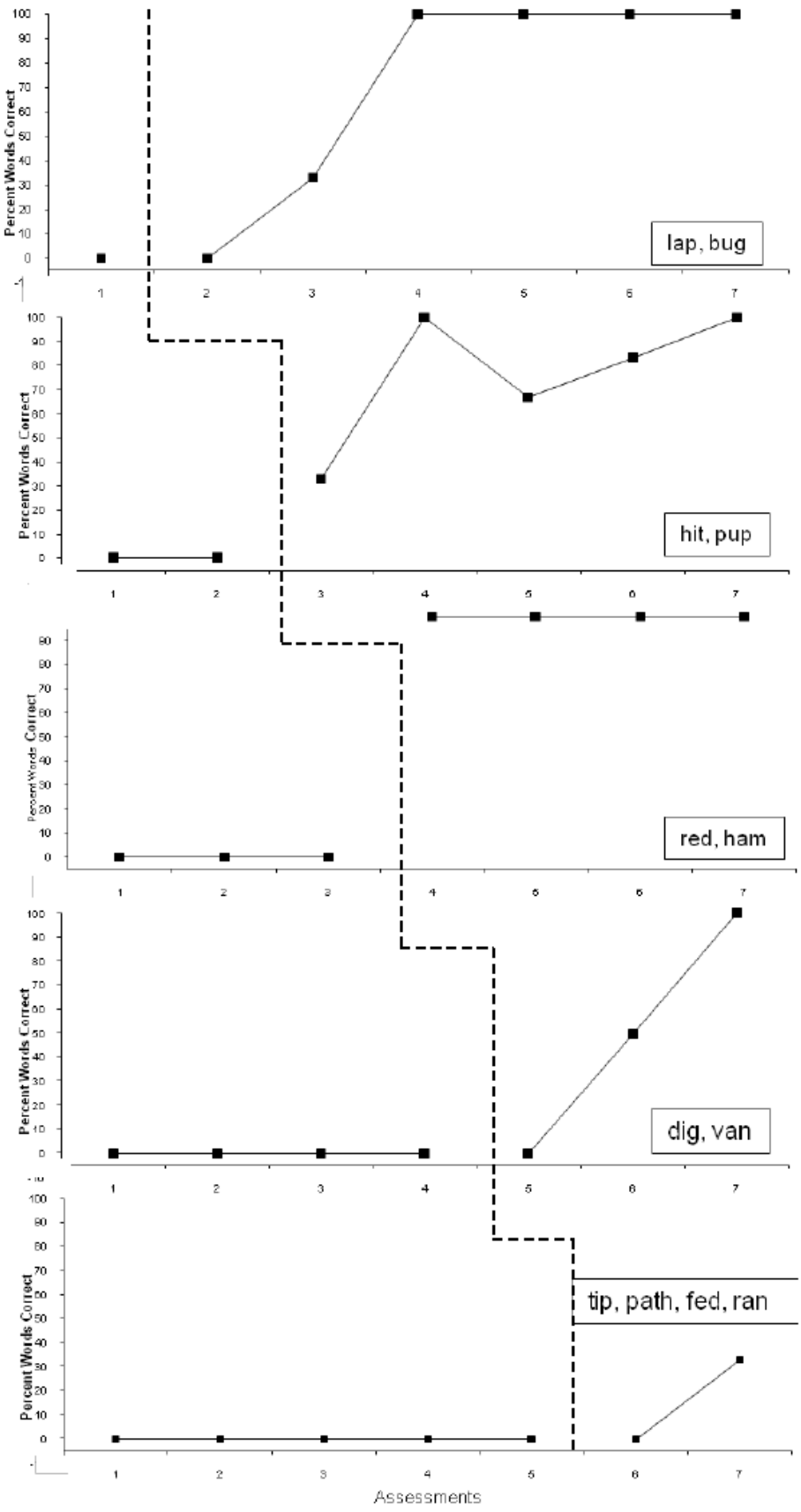
Percent Words Correct
lap, bug
hit, pup
red, ham
dig, van
tip, path, fed, ran
Assessments

Figure 4: Michael's percentage of words correct across different skill sets.

Gabe. Figures 5 and 6 depict the effects of Gabe's BEA-identified intervention (i.e., LP) on letter sound accuracy and word identification accuracy respectively. Stimulus sets vary from 2-4 sounds and words per set. On the letter sound accuracy measures, intervention effects are seen on subskill sets 1-3, with a clear change in performance level indicated in each instance. For the fourth subskill set, the baseline trend was toward increasing performance, and this was maintained after the intervention was implemented. PND for letter sound accuracy for each subskill set is as follows: set 1: 100%; set 2: 75%; set 3: 66%; set 4: 0% for a mean PND of 71%. For measures of word identification accuracy, intervention effects were less clear. For subskill sets 1-4, a rising trend in baseline performance was evident prior to introduction of the intervention. Clear change in level of performance is seen for subskill set 5 after introduction of the intervention. PND for word identification accuracy for each subskill set is as follows: set 1: 100%; set 2: 0%; set 3: 0%; set 4: 50%; set 5: 100% for a mean PND of 47%.

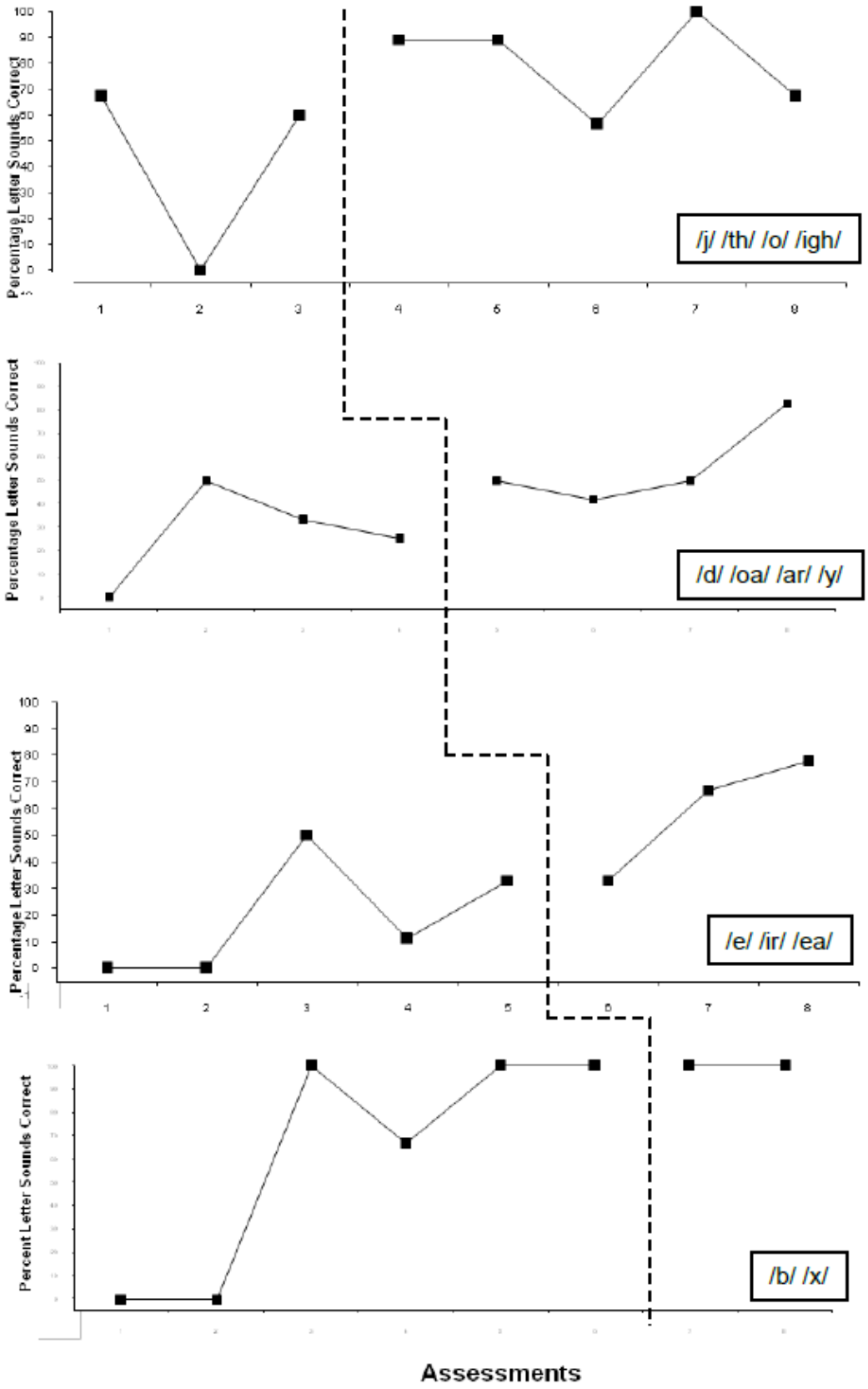
Percentage Letter Sounds Correct
/j/ /th/ /o/ /igh/
Percentage Letter Sounds Correct
/d/ /oa/ /ar/ /y/
Percentage Letter Sounds Correct
/e/ /ir/ /ea/
Percent Letter Sounds Correct
/b/ /x/
Assessments

Figure 5. Gabe's percentage of sounds correct across different skill sets.

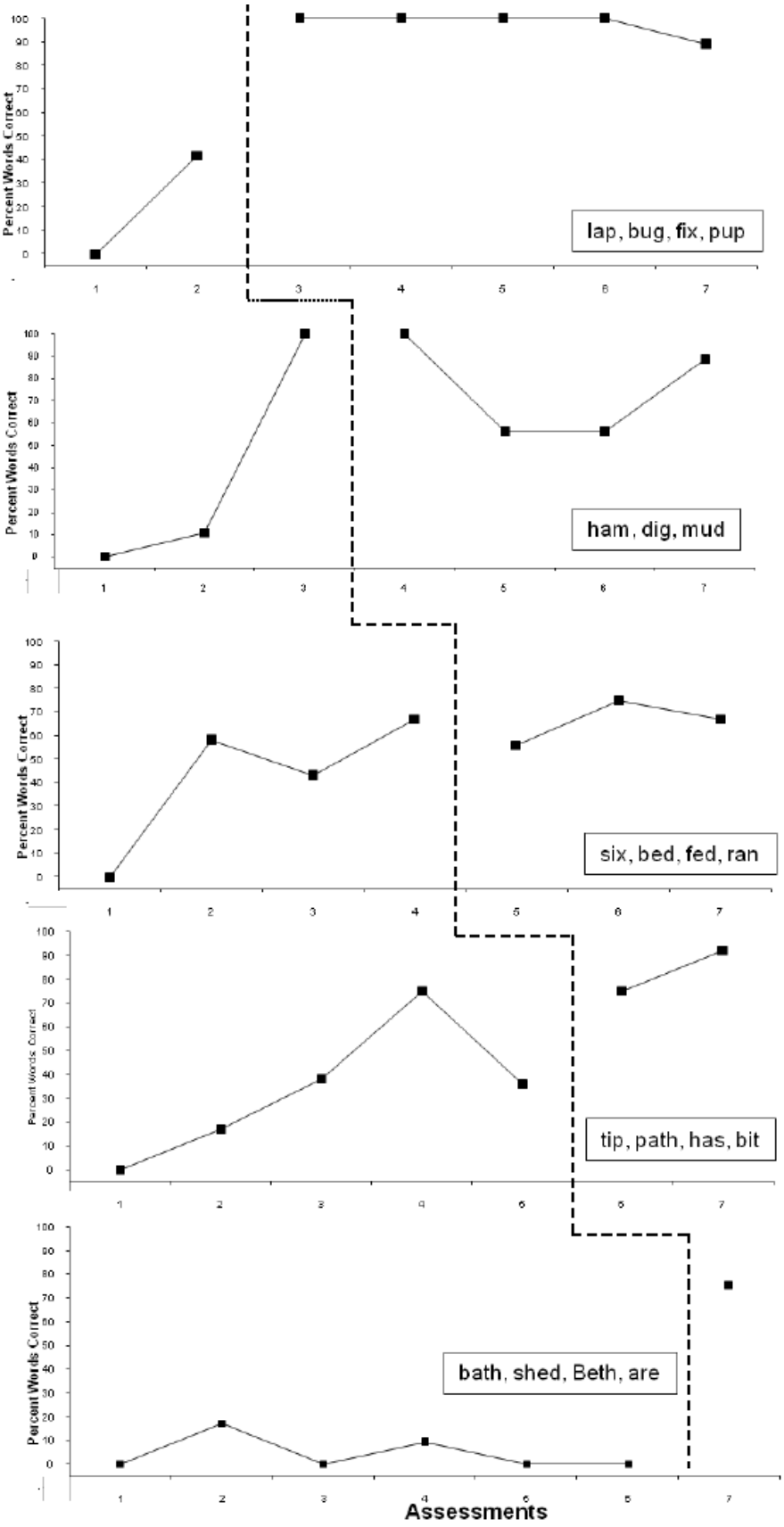
Percent Words Correct
lap, bug, fix, pup
ham, dig, mud
six, bed, fed, ran
tip, path, has, bit
bath, shed, Beth, are
Assessments

Figure 6: Gabe's percentage of words correct across different skill sets.

To what extent does the best intervention identified by the BEA and implemented by parent tutors improve skills across stimuli?

Data were collected to demonstrate the generalized effects of the BEA-identified interventions across sounds and words not targeted in the intervention through ongoing progress monitoring on LSF-PM and WIF probes.

Michael. Figures 7 and 8 show Michael's performance on general outcome measurement letter sound probes and word recognition probes, respectively, before and after the BEA-identified intervention was implemented an average of 2 times per week at home by his mother. During baseline, Michael showed minimal growth on letter sound fluency, with an average performance of 20.8 SRCM (range: 17-26), remaining below the target level for peers on all measures (i.e., 36 SRCM). Slope during the baseline phase was 1.57 indicating growth at a rate of 1.57 SRCM per assessment period. During the intervention phase, both his rate of growth and overall level of performance improved, showing a steeper positive slope (i.e., 5.5) and higher mean performance of 24.9 SRCM (range: 9-43). PND for letter sound fluency was 43%. Michael also showed improvement over baseline on measures of word recognition. During baseline, his performance followed a flat trend (i.e., slope .016), averaging 3.6 WRCM (range: 2-6). During the intervention phase, his performance showed a positive trend (slope 1.5 WRCM) and higher level of performance, averaging 9.4 CWM (range: 6-16). PND for word identification fluency was 80%.

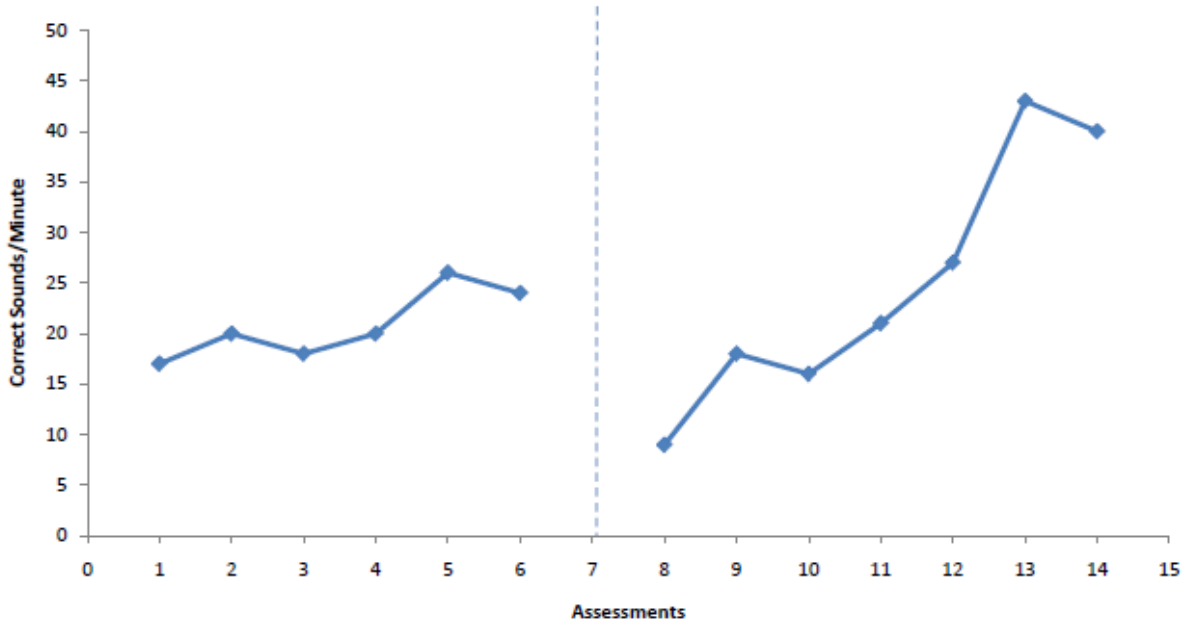

Figure 7: Michael's performance on LSF-PM during baseline and BEA-identified intervention.

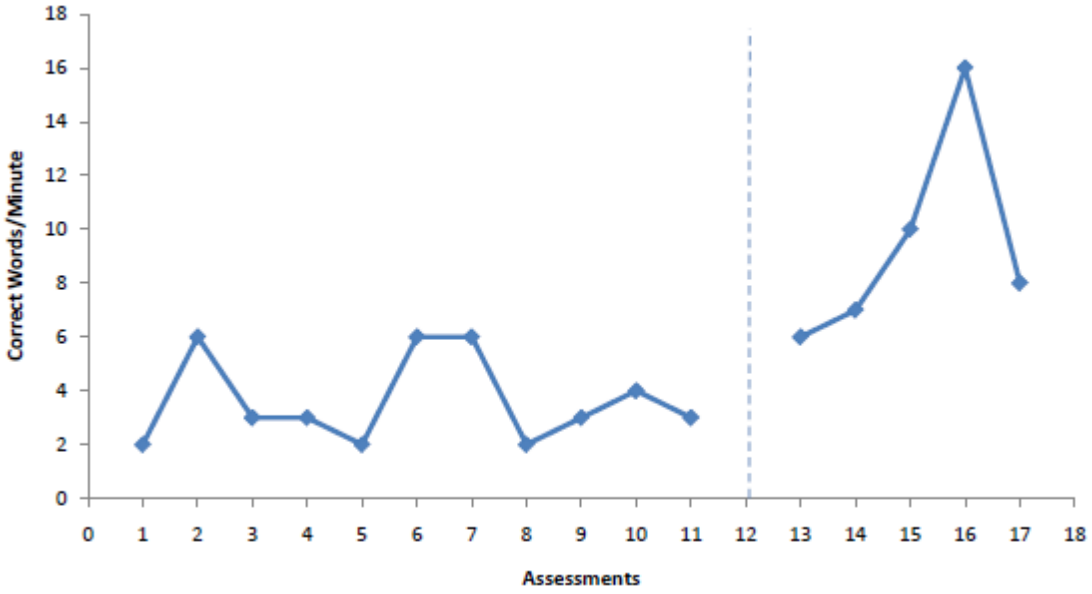

Figure 8: Michael's performance on WIF during baseline and BEA-identified intervention.

Gabe. Figures 9 and 10 show Gabe's performance on general outcome measurement letter sound probes and word recognition probes, respectively, before and after the BEA-identified intervention was implemented an average of 2 times per week at home by his mother. During baseline, Gabe showed some growth (i.e., slope of 1.57) and great variability of performance on measures of letter sound fluency, with an average of 22.2 SRCM (range: 8-38), remaining below the target level for peers on all but one measurement occasion. During the intervention phase, Gabe's performance showed a stronger upward trend (i.e., slope of 2.142) and reduced variability, with an average performance of 32.3 SRCM (range 23-47). PND for letter identification fluency was 14%. On measures of word recognition fluency, Gabe showed a slightly negative trend (i.e., slope of -.003) in performance during baseline, with a mean level of performance of 8.4 WRCM (range: 4-15). During the intervention phase, Gabe showed a positive trend in performance (i.e., slope of 1.464), with a higher mean level of performance of 16.7 WRCM (range: 13-21). PND for word identification fluency was 67%.

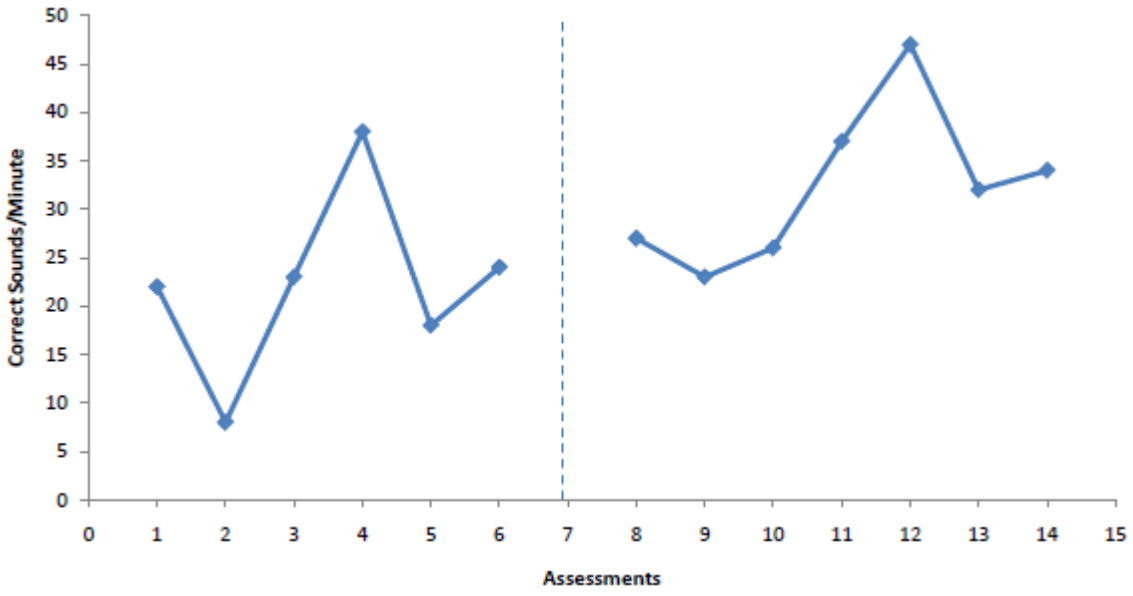

Figure 9: Gabe's performance on LSF-PM during baseline and BEA-identified intervention.

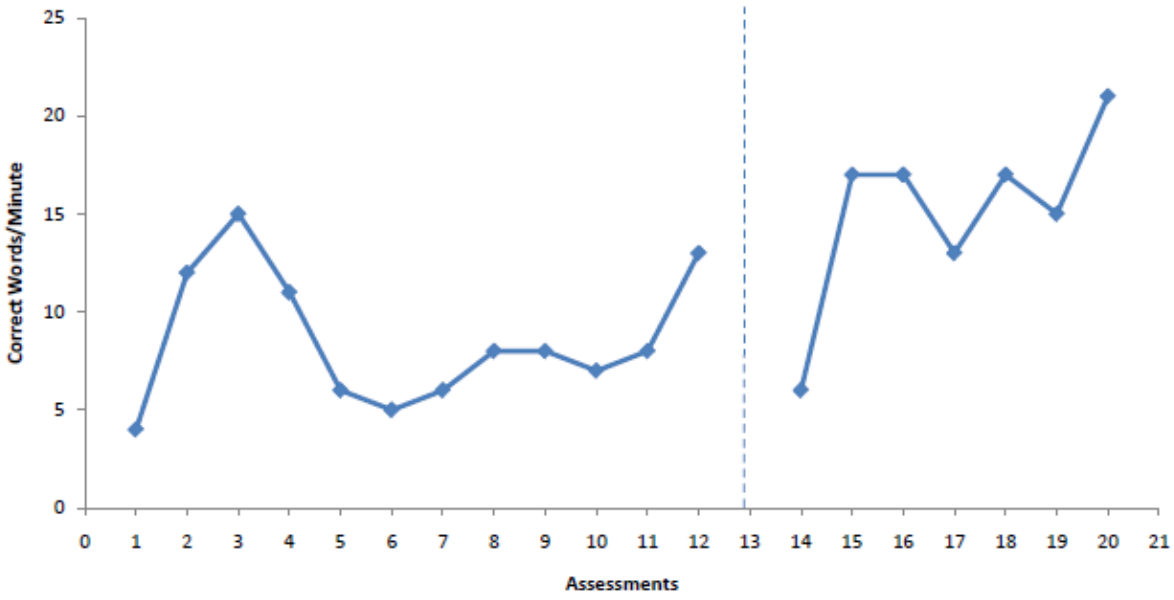

Figure 10: Gabe's performance on WIF during baseline and BEA-identified intervention.

Consumer Satisfaction. Both students' mothers completed the adapted IRP in the fall after the intervention was over. Overall, parents reported high levels of satisfaction, with a mean rating of 5.75 for one parent and 4.5 for the other across all items. Comments about what parents liked best about the intervention were, "It made me make time to work with (my son) on his reading" and "It helped (our son) become a more confident reader and helped his self esteem greatly. We all enjoyed it and learned how we can help (our son)." In regards to what parents liked least, one comment was made, "hard for us to schedule but well worth it!". No suggestions were made on improving the program. One additional comment was made in the open-ended section, "Went well, very happy with (my son's) reading at this time".

CHAPTER FIVE

Discussion

This study addressed the following research questions: (1) How well does BEA identify an effective intervention for each participant? and (2) To what extent does the best intervention identified by the BEA and implemented by parent tutors improve skills over time and across stimuli? Additionally, parent satisfaction with the intervention was assessed.

How well does BEA identify an effective intervention for each participant? Results from each participant's BEA identified a promising intervention for each participant. For Michael, RR + EC was the most promising intervention, indicating a need for both additional practice and instruction in the form of error correction. For Gabe, LP was the most promising intervention, indicating a need for instruction in the form of modeling. These results extend the work of Pettursdottir and colleagues (2009) who were able to use BEA techniques to identify promising interventions for letter sound fluency and word identification fluency in pre-readers by comparing a limited number of interventions to baseline conditions. Interventions were selected based on teacher reports of what might work for each student and resulted in testing one intervention compared to baseline for three participants and two interventions compared to baseline for the other participant. The current study compared a variety of interventions to one another in order to select the most promising intervention for each student, taking into account multiple hypotheses for skill and/or performance deficits for each participant. This approach adds to the literature because it tested a wide range of interventions for each participant (i.e., RR, RR + EC, MLT, LP, INC), thus providing a

greater opportunity for selecting the best intervention match to the needs of each participant. Further, it provided evidence of the effectiveness of types of interventions not previously investigated in the literature in the area of early reading skills (i.e., RR + EC, MLT, and LP).

As stated previously, only one study to date has been published examining the use of BEA with early reading skills such as letter sound fluency and word identification fluency. More is known about the use of these procedures with reading connected text. More research is needed to extend this knowledge including developing less time intensive measurement tools which are still sensitive to intervention effects, identifying additional interventions to tests and replicating results with more participants from different backgrounds and communities.

To what extent does the best intervention identified by the BEA and implemented by parent tutors improve skills over time and across stimuli? Extended analysis shows clear intervention effects for Michael in both letter sound accuracy and word identification accuracy, with changes in level and trend evident. PND also shows a strong magnitude of effect, with three of the five subskill sets above the 80% level for letter sound accuracy (range 66-100%) and a mean PND of 91%. For word identification accuracy, PND also showed large intervention effects with four of the five subskill sets above 80% (range 50-100%) with a mean of 80%. These findings are interesting given the fact that the intervention was implemented at 49% accuracy. The issue at hand here appears to be one of dosage; while fewer than half of the intervention steps were completed, those that were completed were done so accurately. This begs the question that if Michael's mother had been able to implement the full amount of the intervention

during each session, could his performance have increased even more? In retrospect, it would have been interesting to see if Michael's mother were given more support in managing her son's behavior during intervention sessions at home (e.g., assistance in developing a positive behavior plan for compliance), would she have been more successful at implementing the intervention as intended.

Results appear to be more mixed for Gabe. For letter sound accuracy, a clear change in level and trend is apparent for subskill sets 1-3, with a rising baseline continuing into the intervention phase for subskill set 4. It is not known why performance was increasing on untaught sounds, but it may be hypothesized that practicing other sounds somehow impacted performance on the untaught sounds. PND for letter sound fluency was also mixed, with two of the four subskill sets above 80% (range 0-100%), for a mean of 71% . For word identification accuracy, results are less clear. Rising performance levels in baseline were present in subskill sets 1-4, with a clear change in level of performance for subskill set 5. PND for word identification accuracy was variable, with two of the five subskill sets above 80% (range 0-100%), for a mean of 47%. The reasons for the mixed results is not known, but it is reasonable to suspect that as letter sound accuracy skills increased, word identification accuracy also increased. Another factor noted in Gabe's performance is high levels of variability in performance, suggesting motivational factors may also be at work. In the future, it might be helpful to test the effects of a skill-building intervention that is enhanced with a motivational component for him. Other researchers have found increased performance gains when an incentive is added (e.g., Eckert, Ardoin, Daly & Martens, 2002; Daly, Persampieri, McCurdy & Gortmaker, 2005).

The effects of the interventions were also measured by looking at performance on General Outcome Measures of letter sound fluency and word identification fluency during baseline and treatment phases. In the area of letter sound fluency, both students showed higher mean levels of performance and greater slope during intervention when compared to baseline. For Gabe, PND was 14%. For Michael, PND was 43%. Neither of these values would be considered indicative of strong intervention effects.

In the area of word identification fluency, both students also showed higher mean level of performance and steeper slope during intervention than baseline conditions. Stronger intervention effects were seen for word identification fluency with PND of 80% for Michael and 67% for Gabe.

Limitations and Directions for Future Research

Several limitations to the current study warrant consideration and highlight the need for more research in this area. These limitations can be grouped into two main categories: sample limitations, and methodological limitations. The first sample limitation is the fact that the participants were solely Caucasian boys who had just finished kindergarten and who were not receiving special education services in a middle class Midwestern suburb. It is not known whether the procedures and interventions tested here would also apply to other populations. More research is needed to extend these results to other student populations such as students of color, low income students, and students from other parts of the country as well as to different reading programs.

Second, parents who participated in this study may reflect higher than average levels of motivation and commitment to improving their children's reading skills as well as higher levels of academic skills themselves. Participation required a significant

amount of effort and skill on the parents' part. They conducted the intervention in their homes at least 2 times per week and also met with the author weekly for data collection. They agreed to audiotape their intervention sessions. They recorded information about the frequency of their intervention sessions and kept track of study materials. They also needed to follow highly scripted interventions with integrity. This represents no small achievement given the many challenges facing families today. Considering how many families were invited to participate (n = 15), how many of those families returned consent forms (n = 6) and how many participants actually participated through project completion (n = 2), suggests the extent of the commitment required.

Despite this level of parental commitment, one parent still struggled with implementing the intervention due to her son's noncompliant behavior. It comes as no surprise that treatment integrity has been found to influence outcomes, with higher levels of integrity being linked to increases in performance (Persampieri, Gortmaker, Daly, Sheridan & McCurdy, 2006). More research needs to be done to determine ways to support parents' use of academic interventions at home. This study did not seek to understand the characteristics of families who were invited to participate and who chose not to do so. More information about these families would have informed our understanding of the characteristics of families that are needed to yield positive outcomes. In addition, more research is needed to identify barriers to participation in the home and school as well as ways to overcome those barriers. It is not enough to ask the question, "Does this intervention work?", researchers need to ask: What works? For whom? And under what circumstances? (Christenson, 2010).

Christenson and Sheridan (2001) identify essential process variables needed to optimize family-school relationships including *approach (*e.g., shared goals for student learning, belief that parent involvement is essential, recognition of the contributions of both home and school to learning, opportunities for involvement that meet the needs of different families); *attitudes* (e.g., attempts to understand multiple perspectives, a non-blaming attitude, a strengths focus); *atmosphere* (e.g., a welcoming, respectful, inclusive and support environment, a variety of communication strategies, trust, meaningful and flexible options for participation), and *actions* (e.g., creating mutually supportive roles, providing supports, resources, and opportunities to develop the partnership) . These variables could guide future research for maximizing parent participation in intensive, individualized interventions such as this.

The next category of limitations reflects methodological issues that should be addressed by future research. First among these is that these interventions targeted a limited number of subskills. Given a pool of 38 possible sound and sound blends, the number of unknown stimulus sets varied for each participant. In order to create enough stimulus materials to conduct the BEAs and then develop instructional materials, some sounds that were at higher than zero levels at baseline were used. This was not a problem for words, as enough unknown words from the K-PALS were identified for each participant so that only sounds at zero percent accuracy in baseline were used.

Some would argue that experimental control was not actually demonstrated for Michael, since comparisons should not be made in nonadjacent conditions. One more replication of treatment effects ideally should have been demonstrated in order to be confident that effects on performance were due to the intervention and not some other

extraneous factor (Kennedy, 2005). To demonstrate experimental control, an additional comparison between MLT and RR + EC should have been conducted. Due to the creation of unique, equal difficulty, probes for each condition, and the availability of stimuli that were unknown, testing of further conditions was not possible in this study. That being said, the extended analysis did demonstrate the effectiveness of the intervention across targeted and untaught subskills. The question remains, however, if another intervention had been used, would gains have been even greater?

Related to the first methodological issue is the complexity of developing customized dependent measures and instructional materials for each participant. The time and effort this took would not be feasible in schools. This is not an issue when looking at oral reading fluency of connected text where standard materials are readily available (e.g., CBM probes). More research could help develop standard tools and materials for intervention that are linked to early reading skills.

Lastly, it could be argued that experimental control was not clearly demonstrated in the extended analysis. Since sounds were being taught both at the individual level as well as part of the word reading intervention, it is not clear which intervention led to the increases in sound and word identification- the sound intervention or the word intervention. More research is needed to determine which type of intervention is most useful for different students under different circumstances.

Implications for Practice

In an era when RTI systems are becoming more widespread, more technologies are needed to aid problem solving at the intensive levels, where efforts are by definition, highly individualized. BEA procedures have demonstrated utility for doing just that:

selecting effective interventions for students who have failed to respond to both universal and targeted interventions that are known to work. Results from this study extend the application of BEA procedures to early readers. More research is needed to replicate these results across students in general as well as with students from different cultural backgrounds and with different subskills.

However, despite a growing body of evidence supporting the use of BEA in identifying effective interventions for struggling learners, school psychologists report little familiarity with and use of the procedures (Chafouleas, Riley-Tillman, & Eckert, 2003). More training is needed so that BEA can be utilized more widely.

Summer is a time when many students show a decline in academic skills (Schacter, 2003). This decline is even more pronounced for students who are already struggling academically (Alexander et al., 2001). Utilizing parents as tutors in the summer is one proven way to help these students practice skills, hopefully contributing to skills maintenance. This type of approach maximizes learning opportunities by extending instruction beyond the school year and beyond the walls of the school (Christenson & Sheridan, 2001), and for nonresponders, this just might be the key to success.

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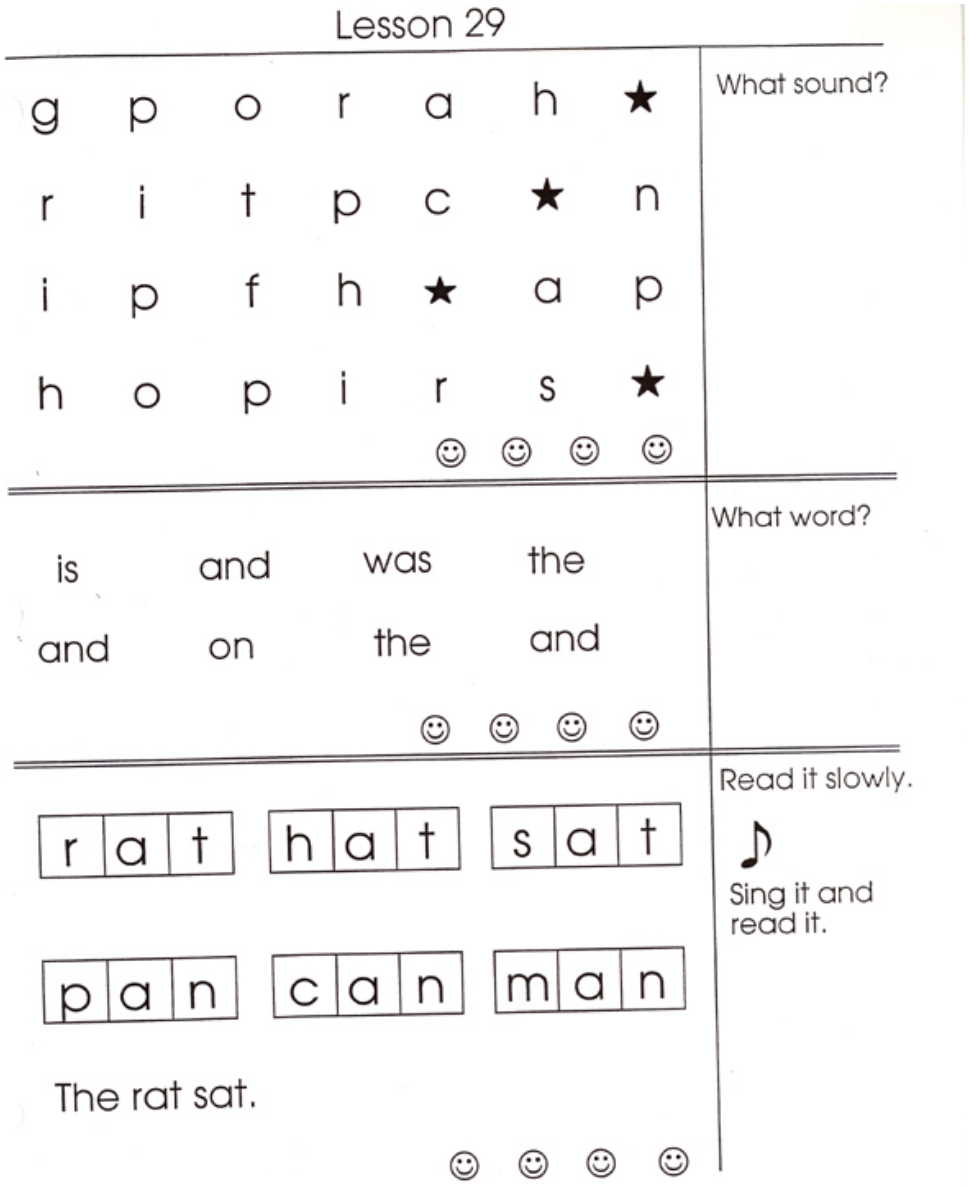
Appendix A: Example of K-PALS Lesson



Lesson 29

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Read it slowly.

♪

Sing it and read it.

Appendix B: Letter Inviting Families to Participate in Project

Dear Families,

You and your child are invited to participate in a research study to look at ways to increase reading achievement over the summer. You were selected to participate because you gave consent for your child to participate in a study of Peer-Assisted Learning Strategies in your child's classroom this year and we are interested in finding ways to help students continue to learn using these same materials over the summer.

If you agree to participate in this study, here is what will happen:

First, we would monitor your child's progress in reading skills (e.g., saying letter sounds and names, reading simple words) during the school year. This would take about 10 minutes two times per week for up to three months. These assessments would take place in the hallway outside your child's classroom. We would audio record these sessions using a tape recorder so that we can listen to them later.

For the purposes of this study, we want to identify children for whom regular reading instruction is not beneficial so that we can provide them with additional assistance over the summer. If your child is not making adequate progress according to our measures, we would move on to the next step described below. If his or her progress is adequate, we would stop working with them.

Next, we would try some different reading strategies to select which strategy is most effective for your child. Strategies include offering your child a small token as a reward for doing the activities, providing your child extra help to do the activities, giving your child extra practice, and trying a range of activities with different difficulty levels. This would involve working with your child for a total of 1-3 hours. We would break this time up into short sessions so your child won't get tired or bored. These sessions would also be recorded using a tape recorder so that we can listen to them later and would take place in a quiet place in your child's school.

Once we select the strategy that works best for your child, we would teach a parent or guardian to use the strategy at home. We would ask that the strategies be used in 20 minute sessions at least 3 times per week for 8-12 weeks over the summer. These sessions would also be recorded using a tape recorder so that we could listen to them later.

Finally, your child's reading progress will be monitored two times a week by the researcher so that we can see if the strategies are working.

If at any time you decide that you do not wish to participate in the study, you may withdraw from the study. There would be no penalty for your withdrawal.

The attached consent form describes the study. If you decide to participate, please sign the consent form and return it to your child's teacher.

Please feel free to contact me at any time with questions that you may have.

To students, I will say:
"Your class is participating in a program called PALS. In PALS, you've been working with a partner on different reading activities. These reading activities are designed to help you become a better reader. Right now, you and I are going to do some reading activities. These activities will help me to see how you're doing in reading. It's important that you try your best, but don't worry if you have difficulty with any of the activities. How well you do on these activities will not affect your grade in class. It will only be used to help us figure out how to help you be the best reader you can be".

"If you don't want to do this, tell me. It's okay. Just let me know and we can go back to the classroom. Or if you have any questions at any time, just ask. To make sure you understand, can you tell me what you'll do if you don't want to do the activities? And what will you do if you ever have questions?"

Appendix C: Project Consent Form

CONSENT FORM
Identifying Effective Instruction for Beginning Readers

Date

Dear Parent or Guardian of _____

Recently, you provided consent for your child to participate in a study of Peer-Assisted-Learning-Strategies (PALS). The purpose of this letter is to invite your child to be involved in some additional research, in which we will be tracking students' reading progress over time and provide additional instruction to children for whom their regular classroom instruction does not appear beneficial.

Your child was selected as a possible participant because his or her class is participating in the Kindergarten PALS study. We are selecting a small number of children in the PALS study who are reading at a variety of skill levels to participate in this study. Please read this form and ask any questions you may have before agreeing to your child participating in the study.

This study is being conducted by: Melissa Chaffin, a doctoral student in Educational Psychology at the University of Minnesota.

Background Information
The purpose of this study is to assess student's beginning reading performance on a regular basis and identify those students for whom current instruction is not beneficial. For these students, an assessment will be used to identify effective, individualized reading instruction. This reading instruction will be provided to the student by a parent or guardian in the student's home. We will continue to monitor students' progress while they receive additional instruction.

Procedures:
I would like to request your permission for having your child participate in this study, which involves:

a) Assessment of beginning reading achievement (such as ability to name letters, say letter sounds, and read simple words) on a weekly basis for two to six months. This assessment will take up to ten minutes per week.
b) Audio taping of responses on the weekly assessments of beginning reading skills.
c) Identification of effective additional reading instruction (only for 1-3 students in each class). This assessment can take up to three hours, and will be spread over one or more days, depending on the student's motivation or performance.

d) Additional reading instruction during the summer provided by a parent or guardian for 20 min per day, three to four times per week, for up to 10 weeks (only for 1-3 students in each class).
e) Quality assessment of the additional reading instruction through audio taping of the sessions. The focus of the recordings is on the instructor and they will not reveal identifying information about students.

Risks and Benefits of being in the Study

Participation in the study involves no risk for your child. Assessments durations will be kept to a minimum and scheduled so that your child will not miss important class activities. The same applies to additional reading instruction. Participation in each assessment and additional reading instruction session is voluntary and your child has the right to opt out of it if he/she chooses. Whether or not your child participates will have no adverse effects on his/her school activities or relationship with teachers or other school staff.

The benefits to participation are that your child's reading performance is assessed on a regular basis, which sometimes leads to improvements in reading achievement. If your child makes little progress on these assessments, he/she might be offered additional reading instruction, specifically tailored to your child's needs. This daily reading instruction will supplement the current reading instruction and is likely to improve your child's beginning reading skills. However, because only 1 to 3 of the participating students in each class will receive this additional instruction as part of this research study, it cannot be guaranteed that your child will receive it.

Compensation:
No monetary compensation is offered for participation in the study, but your child will receive lots of praise and occasionally small incentives for participation, such as stickers and points.

Confidentiality:
The records and audio tapes of the study will be kept private. In any sort of report I might publish, I will not include any information that will make it possible to identify your child. Research records and audiotapes will be stored securely and only researchers will have access to them.

Voluntary nature of the study:
Your decision whether or not to consent to have your child participate will not affect your child's current or future relations to teachers at your child's school or with the University of Minnesota. If you decide to allow your child to participate, he/she will be free not to participate or withdraw at any time without affecting those relationships.

Contacts or Questions:

The study is being conducted by Melissa Chaffin, Doctoral student, under the guidance of Dr. Matt Burns, professor at the University of Minnesota.

If you have any questions, please feel free to contact Melissa, 952-412-5728, cool0044@umn.edu or Matt Burns, 612-624-7324, burns258@umn.edu

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher(s), **you are encouraged** to contact the Research Subjects' Advocate Line, D528 Mayo, 420 Delaware St. Southeast, Minneapolis, Minnesota 55455; (612) 625-1650.

Please keep one copy of this form for your records.
If you consent to your child's participation in this study, please sign the form below and return it to your child's teacher. *Thank you for your consideration of this project!*

Sincerely,

Melissa Chaffin
Department of Educational Psychology
University of Minnesota

Statement of Consent

I have read the above information. I have received answers to any questions I had.

____ Yes, I consent to allow my child, _____, to participate in the study.

____ No, I do not consent to allow my child to participate in the study.

Signature of parent or guardian: _____Date: _____

Signature of Investigator: _____Date: _____

Appendix D: BEA Administration Protocols

ADMINISTRATION OF SUBSKILL MEASURES
Guidelines for baseline and assessment after each condition

BEA LSF - LETTER SOUND FLUENCY SUBSKILL MEASURE

Examiner: ***I'm going to show you some letters. You'll tell me what SOUND the letters make. You may know the sounds for some letters. For other letters, you may not know the sounds, and that's OK. What's most important is that you try your best.***

Go as quickly and carefully as you can. If you finish before the timer rings, start again at the top. Remember to tell me the sounds the letters make.
(Point to the first letter) ***Ready? Please begin*** (Start the timer for 1 min now.)

Short vowel, rather than long vowel sounds, are correct. Hard consonant sounds are correct.

If the student answers correctly, they should immediately move on to the next letter.
If the student answers incorrectly, make a slash through that letter on the score sheet.
If a student does not respond after 3 sec, prompt him/her to ***try the next one***.

After **1 min** put a "⌋⌋" after the last letter the student attempted. If the student completes the test in less than 60 seconds, prompt him/her to start again from the beginning.

BEA DEC – DECODING/LETTER SOUND FLUENCY SUBSKILL MEASURE

Examiner: ***Now you're going to read some words. You may not know how to read the words, and that's OK. If you come to a word you don't know, try to sound it out. Look at each word and try your best.***

Place a copy of the student sheet in front of the student and say:
You will have 1 minute to read the words. Point to each letter and tell me the sound or read the whole word. Read the words as quickly and carefully as you can. It's OK if you don't know all of the words. Ready? Please, begin. (Start the timer for 1 min now.)

Follow along on the examiner copy and underline each correct letter sound, either in isolation or read as a whole word. Put a slash (/) over each letter sound read incorrectly.

If a student does not respond after 3 seconds, do not give them the correct response, but prompt to continue.

If the child asks for help on a word, point the next letter on the list and/or say: ***Please do the best you can by yourself.***

After **1 min** put a "⌋⌋" after the last letter the student attempted. If the student completes the test in less than 60 sec, prompt him/her to start again from the beginning.

During administration of both measures, it is **OK to praise for good behavior**, especially for students having a difficult time with the task. For example, "I really like how carefully you are looking at these sounds." "I really like how you are working hard and trying your best."

BASELINE

Administer:
a) BEA LSF - letter sound fluency subskill measure
b) BEA WIF - decoding fluency subskill measure

These measures are also administered after each condition to assess the effects of the intervention on student responding.

BEA 1. INCENTIVE FOR INCREASED PERFORMANCE

Letter-sound correspondence
Examiner: ***Now we are going to do the same task, but a little differently. I'm going to count how many sounds you get correct during one minute. If you get more than X*** (20% above baseline) ***correct, you can choose a prize from this box*** (present student with reward box).

If you don't get that many correct, don't worry OK? You will still get a sticker and maybe you'll get a prize later. OK? What's most important is that you try your best.

Go as quickly and carefully as you can. Remember to tell me the sounds the letters make.
(Point to the first letter) ***Ready? Please begin*** (Start the timer for 1 min now.)

If the student answers correctly mark it as correct on the recording sheet.
If the student answers incorrectly, make a slash through that letter on the recording sheet.
If a student does not respond after 3 seconds, prompt to ***try the next one***.

ASSESSMENT

Administer:
a) BEA LSF subskill measure
b) BEA WIF subskill measure

In each of the following conditions, the letter sound activity will be administered for 5 minutes and the decoding activity for 5 minutes to control for the effects of intervention duration.

BEA 2. MODELING (model-lead-test)

Letter-sound correspondence

Place a copy of a new letter sound task in front of the student and say: ***Now we are going to do a task together. I will tell you the sound a letter makes, we will say it together, and then you will say the sound by yourself. OK? Let's try the first line. Point to the letters as we read them.***

1. Provide the following prompts for each letter in the first row:
   This letter makes the sound […].
   Let's say it together […].
   What sound?

2. After first row say:
   Now, I'll say the sound, we'll say it together, and then you'll say it. Ready?

3. Acknowledge approx. **every third correct response** through a brief verbal praise, e.g. *Good*.

Decoding words

After completing the letter sound task, place a copy of the Word Identification Fluency probe in front of the student: ***Now we are going to read some words together. I will show you how to read a word, then we will read it together, and then you will read the word by yourself. OK? Let's try the first line. Point to the letters as we sound out the words.***

Provide the following prompts for each word in the first row:

1. Model segmenting.
   I'll read it slowly: *(sound out each letter slowly and connect it to the next letter, e.g., mmmaaattt).*
   Let's read it slowly together*. (e.g., mmmaaattt)*
   Now you read it slowly.

2. Model blending:
   Now, I'll read it fast: *(same word fast, e.g. mat)*
   Let's read it fast together *(e.g., mat)*
   Now you read it fast.

3. Acknowledge approx. every third correct sound, segmenting, and blending through brief verbal praise, e.g. *Correct*.

Fade the prompts after the first row:

Now, I'll read the word slowly, we'll read it slowly together, and then you'll read it slowly.
Then, we'll do the same thing fast.
OK? First I'll show you, then we do it together, and then just you. First slow, then fast. Ready?
(Model each step as before without the verbal prompts in between.)

Acknowledge **approx. every third** correct sound, segmenting, and blending through brief verbal praise, e.g. *Correct*.

BEA 3. REPEATED READING

Place a copy of a new task in front of the student and say: ***Now you are going to do some reading on your own. Start here, and read to the end of the page. Point to the letters as you read them. Do the best you can.***

After the student finishes reading the page the first time, say: ***Great reading. Now you are going to read it again. Start here, and read to the end of the page. Point to the letters as you read them. Do the best you can.***

After the second read through, say: ***Great reading. Now you are going to read one more time. Start here, and read to the end of the page. Point to the letters as you read them. Do the best you can.***

Record the number of correct sounds and words produced in one minute during the last read.

BEA 4. REPEATED READING + ERROR CORRECTION

Using the same probe as for Repeated Reading, highlight errors made on the student copy. Say to the student: ***Now we are going to practice some of the sounds and words you missed. This says "sound or word", say it with me, now you say it three times.***

After all errors are corrected, have the student read through one more time and record the number of correct sounds and words produced in one minute.

BEA 5. LISTEN SOUND/WORD PREVIEW

Place a copy of a new task in front of the student and say: ***Now I am going to read the sounds and words while you follow along. Use your finger to point while I read.***

Read through the sounds and words at a pace of about one sound per second. Read through all sounds/words one time, then say: ***Now it is your turn to read the sounds and words. Start here and read across the page until I tell you to stop.***

Time the student for one minute and record the number of correct sounds and words produced in one minute.

Appendix E: Example of Customized BEA-LSF Measure

a	qu	m	th	m	qu	6
th	a	qu	m	th	a	12
qu	a	th	m	a	qu	18
a	qu	m	th	qu	m	24
a	m	qu	th	m	a	30
th	qu	qu	th	a	m	36
a	th	m	th			40

Appendix F: Example of Customized BEA-WIF Measure

I	cat
pup	cap
not	ten
cat	not
ten	I
pup	cap
I	not
ten	pup
cat	cap

Appendix G: Example of LSF-PM Measure

d	i	ee	t	s	th
b	ar	c	oa	f	n
a	m	qu	ir	ck	g
o	r	sh	h	p	l
ch	u	j	ea	e	w
er	q	igh	z	k	v
y	x				

Appendix H: Example of WIF Measure

hat	lap
I	rap
Jim	shed
pup	tin
six	had
they	path
ship	Beth
tip	is
fish	ham
bug	into
mat	lap

Appendix I: Example of Customized LSF Measure

th	ee	d	qu	ea	ir
ir	q	e	er	ch	q
ch	ea	oa	oa	ee	ar
igh	ch	oa	d	qu	d
ck	q	igh	ck	ea	th
e	qu	e	ir	ck	er
ar	er	ar	ee	igh	th

Appendix J: Example of Customized WIF Measure

him	hit
tip	ham
six	van
are	at
fish	Tim
dig	lap
pup	Beth
tug	has
path	bug
bed	ship
rip	pin
red	was

Appendix K: Parent Directions for Intervention: Listening Preview

Listening Preview

K-PALS lessons are made up of three main parts: Sounds, Words, and Sound Boxes.

You are going to use this format along with the strategy we selected to help your child become a better reader this summer! Please tape record all sessions. This is just so I can understand how things are going so I can help make any changes if we need to.

Sounds

In the Sounds section, the coach (you) prompts the reader (your child), to read each sound by saying, "What sound?" and pointing to each sound in turn.

1. Read each sound for your child at a pace of one sound per second as a preview.

2. After you read the sounds through one time, Gabe reads the sounds by himself. After he is done, he crosses off one smiley face.

3. Repeat steps 1 and 2 for a total of 3 times (First you read the sounds, then Gabe reads, then you read, then Gabe reads, and you read, then Gabe reads one last time).

4. Remember to praise him for working hard!

Words

In the Words section, the coach prompts the reader to read each word by saying, "What word?" and pointing to each word in turn.

You are going to follow the same procedures as in the Sounds section.

1. Read each word for your child at a pace of one word per second as a preview.

2. After you read the words through one time, Gabe reads the words by himself. After he is done, he crosses off one smiley face.

3. Repeat steps 1 and 2 for a total of 3 times (First you read the words, then Gabe reads, then you read, then Gabe reads, and you read, then Gabe reads one last time).

4. Remember to praise him for working hard!

Sound Boxes

In the Sound Boxes section, the coach (you) prompts the reader (your child), to read each word by saying, "Read it slowly". The reader reads each sound in the word. Then the coach prompts the reader to "Sing it and read it", and the child sings the sounds in the word (this helps them blend the sounds together), then reads the word the normal way.

You are going to follow the same procedures as in the Sounds and Words sections.

1. Read each sound for your child the slow way (e.g., mmmaaattt for "mat")

2. Then sing it to help him hear the sounds blending together.

3. Then read it the fast way, "mat".

4. After you read the words through one time (slow, sing, fast), Gabe reads the words by himself (slow, sing, fast). After he is done, he crosses off one smiley face.

5. Repeat steps 1-4 for a total of 3 times (First you read the words, then Gabe reads, then you read, then Gabe reads, and you read, then Gabe reads one last time).

6. Remember to praise him for working hard!

Wrap Up

Once your session is done, put a sticker on the day you worked together on the calendar. Write down how many minutes you spent on the activity that day. This will help me understand the results.

Make sure to celebrate! This is hard work, so be sure to praise Gabe and yourself for a job well done.

Don't be frustrated if things don't go as smoothly as you'd like at first. Feeling comfortable with the procedures will take time for you both.

We will work together to make sure he is making good progress by continuing to meet one time per week to review how things are going, discuss any needed changes, and do short reading assessments. When he's ready for the next set of lessons, I will give them to you at this time as well.

Thanks so much for working with me! I know we can help Gabe improve his reading this summer so he is ready to hit the ground running in first grade.

If you ever have any questions or concerns, please don't hesitate to call me any time. 952-412-5728.

Appendix L: Parent Directions for Intervention: RR + EC

Repeated Reading Plus Error Correction

K-PALS lessons are made up of three main parts: Sounds, Words, and Sound Boxes.

You are going to use this format along with the strategy we selected to help your child become a better reader this summer! Please tape record all sessions. This is just so I can understand how things are going so I can help make any changes if we need to.

Sounds

In the Sounds section, the coach (you) prompts the reader (your child), to read each sound by saying, "What sound?" and pointing to each sound in turn.

5. Go through the entire Sounds section one time, having your child read each sound. Don't give any help or make any corrections the first time through. After reading the sounds through one time, the reader crosses off one smiley face.

2. As he reads, circle any errors he made on your copy. Don't say anything while doing this, we want him to concentrate on what he's doing.

3. Next you are going to correct any errors. For each error, say "This sound is (say sound)", say it with me, (say sound together), now you say it 3 times". Be sure to give praise about every third response.

4. Repeat for all errors.

5. Next, have him start at the beginning and read all sounds again as in step 1. Again, cross off a smiley face.

6. Repeat steps 2-4.

7. Finally, have him read through one time on his own. Record how many sounds he said correctly on your paper. Remember to mark another smiley face and praise him for how hard he worked!

Words

In the Words section, the coach prompts the reader to read each word by saying, "What word?" and pointing to each word in turn.

You are going to follow the same procedures as in the Sounds section.

1. Go through the entire Words section one time, having your child read each word. Don't give any help or make any corrections the first time through. After reading the sounds through one time, the reader crosses off one smiley face.

2. As he reads, circle any errors he made on your copy. Don't say anything while doing this, we want him to concentrate on what he's doing.

3. Next you are going to correct any errors. For each error, say "This word is (say word)", say it with me, (say word together), now you say it 3 times" Be sure to give praise about every third response.

4. Repeat for all errors.

5. Next, have him start at the beginning and read all words again as in step 1. Again, cross off one smiley face.

6. Repeat steps 2-4.

7. Finally, have him read through one time on his own. Record how many words he read correctly on your paper. Remember to mark another smiley face and praise him for how hard he worked!

Sound Boxes

In the Sound Boxes section, the coach (you) prompts the reader (your child), to read each word by saying, “Read it slowly”. The reader reads each sound in the word. Then the coach prompts the reader to “Sing it and read it”, and the child sings the sounds in the word (this helps them blend the sounds together), then reads the word the normal way.

You are going to follow the same procedures as in the Sounds section.

1. Go through the entire Sound Boxes section one time, having your child read each word. Don’t give any help or make any corrections the first time through. Mark off one smiley face.

2. As he reads, circle any errors he made on your copy. Don’t say anything while doing this, we want him to concentrate on what he’s doing.

3. Next you are going to correct any errors. For each error, say “This word is (say word the slow way, then the fast way)”, say it with me, (say word together the slow way, then the fast way), now you say it 3 times the fast way.” Be sure to give praise about every third response.

4. Repeat for all errors.

5. Next, have him start at the beginning and read all words again as in step 1. Again, mark off one smiley face.

6. Repeat steps 2-4.

7. Finally, have him read through one time on his own. Record how many words he read correctly on your paper. Remember to mark the last smiley face and celebrate his hard work!

Wrap Up

Once your session is done, put a sticker on the day you worked together on the calendar. Write down how many minutes you spent on the activity that day. This will help me understand the results.

Make sure to celebrate! This is hard work, so be sure to praise Michael and yourself for a job well done.

Don't be frustrated if things don't go as smoothly as you'd like at first. Feeling comfortable with the procedures will take time for you both.

We will work together to make sure he is making good progress by continuing to meet one time per week to review how things are going, discuss any needed changes, and do short reading assessments. When he's ready for the next set of lessons, I will give them to you at this time as well.

Thanks so much for working with me! I know we can help Michael improve his reading this summer so he is ready to hit the ground running in first grade.

If you ever have any questions or concerns, please don't hesitate to call me any time. 952-412-5728.

Appendix M: Example of Customized KPALS Lesson

Lesson 1

a qu m th m qu th a qu m th m qu a th m a qu a th	What sound? ☺ ☺ ☺
I cat lap bug lap cat bug I bug I lap cat	What word? ☺ ☺ ☺
c a t l a p b u g I	Read it slowly. ♪ Sing it and read it.

Appendix N: Parent Acceptability Survey

Dear (Parents' names),

As you recall, you worked with your child last summer using an intervention called Listening Preview and K-PALS lessons where you read each sound and word, and then your child read each sound and word (see attached Listen Preview directions).

I would like to get some feedback from you about how useful this program was for you and your child. Your honest answers will help me understand the results and possibly improve this program for future participants.

Please take some time to answer the following questions and return this survey to me using the enclosed envelope.

1. This is an acceptable intervention to help improve my child's reading.

1	2	3	4	5	6
Strongly Disagree					Strongly Agree

2. The intervention should be effective in improving my child's reading ability.

1	2	3	4	5	6
Strongly Disagree					Strongly Agree

3. My child's reading difficulties were severe enough to justify the use of this intervention.

1	2	3	4	5	6
Strongly Disagree					Strongly Agree

4. I would be willing to use this intervention with my child again.

1	2	3	4	5	6
Strongly Disagree					Strongly Agree

5. This intervention did not have negative side effects for my child.

1	2	3	4	5	6
Strongly Disagree					Strongly Agree

6. I liked this intervention.

1	2	3	4	5	6
Strongly Disagree					Strongly Agree

7. This intervention was a good way to handle my child's reading difficulties.

1	2	3	4	5	6
Strongly Disagree					Strongly Agree

8. Overall, this intervention helped my child.

1	2	3	4	5	6
Strongly Disagree					Strongly Agree

What did you like best about the intervention?

What did you like least about the intervention?

How could this intervention be improved?

Other comments?

Appendix O: Implementation Integrity Checklists

Listening Preview Implementation Integrity

Each step is done three times per lesson. Mark a plus for each time in the lesson step is observed.

1. Parent reads sounds at a rate of 1 per second

2. Child reads sounds (total 3 times), crosses out smiley face (give one point if child reads, may not be able to tell if smiley is crossed out)

3. Parent reads words at a rate of 1 word per second

4. Child reads words, crosses out smiley face (give one point if child reads, may not be able to tell if smiley is crossed out)

5. Parent reads slowly

6. Parents sings it

7. Parent reads it

8. Child reads slowly

9. Child sings it

10. Child reads it

11. Praise is given at some point during lesson

Repeated Reading plus Error Correction Implementation Integrity

1. Child reads each sound through one time (done 3 times total)

2. Parent corrects errors using “this sound is x, say it with me, say it three times” for all errors (done 3 times total)

3. Praise

4. Read through one final time.

5. Child reads each word through one time (done 3 times total)

6. Parent corrects errors using “this word is X, say it with me, say it three times” for all errors (done 3 times total)

7. Praise

8. Read through one final time.

9. Child reads each word (slowly, sing it, read it) through one time (done 3 times total)

10. Parent corrects errors using “this word is x (slow way, fast way), say it with me, say it three times” for all errors (done 3 times total)

11. Praise

12. Read through one final time.