THE EFFECTS OF LITERACY PARENT TRAINING VIA TELECOMMUNICATION FOR

PARENTS OF CHILDREN WITH READING DIFFICULTIES

by

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THE EFFECTS OF LITERACY PARENT TRAINING VIA TELECOMMUNICATION FOR

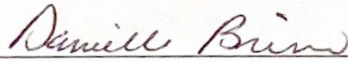PARENTS OF CHILDREN WITH READING DIFFICULTIES
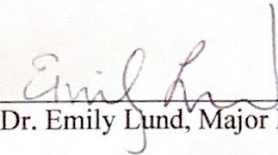
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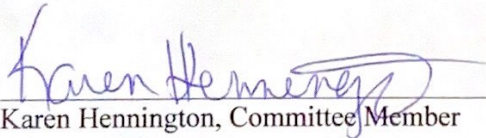Miguel Garcia-Salas

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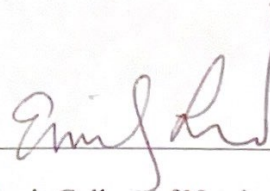
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## ABSTRACT

This study aimed to determine the functional relation between the parent training program implemented through telepractice and parents' use of reading feedback strategies. A single-case, multiple baseline across behavior design was employed to measure the effects of a parent training program provided via telepractice on parent use of three reading miscue feedback strategies. Hoover and Gough's (1990) Simple View of Reading and Dunst and Trivette's (2009) adult learning model guided an intervention that was provided via telecommunication, instructing parents on reading miscue strategies to help their children with reading difficulties. There was a functional relation between intervention and parental use of the target strategies with one demonstration and two replications for each of the miscue feedback strategies across the two participants. Results indicate that both parents were able to increase use of two of the target strategies each following instruction and decrease the number of errors ignored and terminal feedback provided.

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**Literature Review**

**Introduction**

The COVID-19 global pandemic has quickly accelerated the use of telepractice as a delivery model for speech-language services. The American Speech-Language-Hearing Association's (ASHA) stance on telepractice predates the current pandemic and ASHA had long held telepractice as "an appropriate model of service delivery for the profession of speech-language pathology" (2005). Additionally, the need for telepractice lies far beyond a global pandemic, as it has the ability to "overcome such barriers as patient distance to treatment locations, patient transportation difficulties, disruption of patient or family member work schedules, and limited availability of specialists and/or subspecialists in geographic regions" (ASHA, 2020). However, systematic research into the efficacy of treatment programs remains limited to certain diagnoses of speech-language pathology such as autism spectrum disorder, stuttering, and voice disorders (Vismara, McCormick, Young, Nadhan and Monlux, 2013; Masima, Birkmire-Peters, Syms, Holtel, Burgess and Peters, 2003; Wilson, Onslow and Lincoln, 2004). Studies involving the use of telepractice to instruct struggling readers remain minimal (Hetherton, 2013). Parental involvement in reading is one of the greatest predictors of future reading success and the effect grows when parents give precise and corrective feedback (van Bergen, van Zuijen, Bishop, & de Jong, 2016). The purpose of this study is to evaluate the effects of a telepractice parent training program on miscue analysis for children with reading difficulties.

**The Simple View of Reading**

The Simple View of Reading (SVR) positions that the ability to read fluently and comprehensively is the result of two major factors, word recognition and language comprehension (Hoover & Gough, 1990). First, the process of identifying a printed word and reading it efficiently is known as word recognition or decoding. Decoding, by definition, goes beyond the ability to sound out words based on traditional phonics rules. Decoding is the ability to efficiently and accurately read both new and familiar words in connected text (Hoover & Gough, 1990). The second component of fluent reading is language comprehension. Language comprehension is the ability to derive meaning from spoken words when they are in connected speech or other forms of discourse. To derive an appropriate meaning, an individual needs skills in receptive vocabulary, knowledge of grammatical structure, and discourse comprehension (Catts, Adlof, & Weismer, 2006).

Furthermore, the SVR clarifies that decoding and language comprehension skills are both independent skills and are both critical for reading comprehension success. Hoover and Gough (1990) found that reading comprehension assessments were not enough to identify if a student's weakness was in decoding or language comprehension. However, they did find that when children decode efficiently, their reading comprehension scores were equal to their language comprehension abilities (Hoover & Gough, 1990). Their findings highlight the importance of decoding instruction and imply that interventions based on comprehension will only benefit individuals with language comprehension difficulties.

**Meta-Linguistic Skills that Affect Reading**

Two of the most common ways children decode written words is through phonological awareness and morphological awareness. Phonological awareness is the ability to identify and

manipulate sounds in oral language. Skill in phonological awareness allows for an individual to segment words into individual sounds and blend individual sounds in words. Phonological awareness has widely been acknowledged as one of the strongest predictors of future reading success (Lonigan & Whitehurst, 1998; Bus & van IJzendoorn, 1999, Storch & Whitehurst, 2002). Consequently, explicit training into the segmentation and blending sounds of words is extremely effective in improving reading fluency ability (Weiner, 1994).

Another manner in which readers decode written text is through morphological awareness. While the ability to blend and manipulate individual sounds has been more thoroughly explored, lesser research has been done on the relationship between morphology and reading. Morphology is the study of the smallest units of meaning in language, namely affixes and root words. When a reader can identify that the suffix "-ed" indicates past tense or that the prefix "pre-" means before, an individual is able to segment a longer word into more comprehensible parts with a clearer meaning. Several research studies have found that morphological awareness helps readers decode and read more fluently (Wolter, Wood, & D'zatko, 2009; Bryant, Nunes, & Barros, 2014). Morphological awareness can aid in reading by relying on the recognition of the meaning of root words and affixes rather than by relying on a reader's ability to identify and blend individual sounds.

**Language-based Reading Disorders**

Two language disorders affect the two skills, word recognition and language comprehension, that lead to fluent reading. The disorders are dyslexia and specific language impairment (SLI). Dyslexia and SLI affect a sizeable population of school-aged students and necessitate more parental involvement than what has typically been the intervention norm (Law,

Boyle, Harris, Harkness, & Nye, 1998). Children with dyslexia have trouble with word recognition and children with SLI have trouble with language comprehension.

Specific language impairment is difficulty with language that is not caused by an intellectual, emotional, sensory, or neurological deficit (Ervin, 2001). A key language problem observed in SLI includes problems with morpho-syntax, namely the acquisition of tense marking (Catts, Adlof, Hogan, & Weismer, 2005). Although SLI is not a reading disability by definition, a great number of children with SLI also have reading disabilities mainly due to issues interpreting meaning from written vocabulary and grammar (Ervin, 2001). Dyslexia, another learning disability in which intelligence is not diminished, impairs reading due to deficits associated with phonological awareness (Bruck, 1992). A phonological awareness deficit makes it difficult to apply the rules that govern the sound structure of words while reading (Gillon, 2002).

Furthermore, although oral language difficulties, otherwise known as semantics, syntax, and discourse, are typically ascribed to SLI and not dyslexia, it is possible for a child to present with difficulties in both word recognition and language comprehension. In fact, those with dyslexia have been shown to be at a higher risk for oral language deficits as well (Catts, et. al., 2005). One study that investigated 527 school-age children, found that 15-20% of children identified with dyslexia additionally met the criteria for SLI (Catts, et. al., 2005). It is common for interventions to target one of the two weaknesses. However, due to the comorbidity of the language disorders, it is important to devise interventions that include elements of both decoding and language comprehension.

It is also important to consider the strong hereditary nature of both of SLI and dyslexia. Although SLI and dyslexia have a prevalence in school-aged children of 5-8% and 5-10%

respectively, the hereditary nature of both disorders has varied based on the criteria used to

assess the disorders (Newbury, Fisher, & Monaco, 2010; Pennington & Bishop, 2009). The

heritability of dyslexia has ranged from around 40-60% (Raskind, Peter, Richards, Eckert, &

Berninger, 2013; Fisher & DeFries, 2002). Additionally, SLI has a heritability of anywhere from

24-42% (Bishop & Emendson, 1986; Barry, Yasin, & Bishop, 2007). The strong genetic nature

of these disorders suggests that family-based interventions should also account for the chance

that a parent has their own reading difficulties. Interventionists must not assume that parents of

children with SLI or dyslexia can provide the most effective feedback given the chance they

might have their own weaknesses in phonological and morphological awareness.

**How Parents Affect Reading**

Parental involvement in their child's reading is a powerful indicator of future literacy

success. The amount of time parents spend reading with their child is more correlated to future

reading success than are the factors of socio-economic class, family size, and parental education

(Flouri & Buchanan, 2004). Extensive research has established the importance of home reading

to future literacy skills in children (van Bergen, van Zuijen, Bishop, & de Jong, 2016). One

meta-analysis of 14 interventions that measured 1,174 families found that parent involvement

has a large effect (0.68 with 95% confidence interval) on a child's reading acquisition,

corresponding to a gain of 10 points on a standardized test (Sénéchal, 2006). Additionally, the

amount of time spent reading to children, the number of books in the household, and the amount

of time parents read themselves, have all been shown to be positively correlated with

advancements in children's word-reading accuracy and fluency (van Bergen, et al., 2016).

Although it is clear that parents affect their child's literacy, parental involvement can

come in a variety of ways, each with differing levels of efficiency. Simply reading to children is

one of the most studied methods in which a parent can become involved in a child's literacy. One meta-analysis of 17 studies found a positive association between joint book reading and the child's emergent literacy achievement (Bus, van IJzendoorn, & Pellegrini, 1995). Furthermore, when parents teach specific literacy skills during these interactions, literacy achievement improves. Sénéchal (2008) reviewed seven studies where parents taught specific early decoding skills, such as letter-sound correspondence and letter-sound blending and reported that this level of intervention produced improved results, with an average effect size of 1.15; corresponding with a 17-point increase on a standardized measure for intervention when compared to a control group. One specific type of parent-implemented reading intervention called dialogic reading appears to improve children's language skills (Valdez-Menchaca, & Whitehurst, 1992; Whitehurst, Falco, Lonigan, Fischel, DeBaryshe, Valdez-Menchaca, & Caulfied, 1988). Dialogic reading allows the children to become participants in telling the story by eliciting comments and answers in a variety of ways. Multiple studies have provided proof that parent are able to effectively use these strategies. (Whitehurst, et. al., 1988; Arnold, Epstein, Angell, Smith, & Fischel, 1994). Although the focus of these studies was to foster more expressive language, they also proved that parents could learn to identify misreadings, otherwise known as miscues, and correct them in different ways (Hargrave & Senechal, 2000). Parental feedback regarding their child's miscues appears to lead to greater reading progress when compared to other passive forms of joint reading interaction (van Bergen, et al., 2016).

Approaches to miscue feedback can generally be characterized into two general categories, code-oriented cues and holistic cues (Brown, 2003). The primary difference between the two approaches is an emphasis on graphonemic feedback (Kouri, 2016). A code-oriented approach gives feedback on errors related to the relationship between letters and sounds, the

differences between long/short vowels, and/or the blending of sounds. In code-oriented approaches, parents can assist their child in the identification of certain troublesome sound patterns and help blend errored sounds together. A holistic-cue approach promotes context and meaning-based feedback that does not account for graphonemic feedback (Krashen, 2002). In holistic-cue approaches, a child draws on semantic, pragmatic and even pictorial cues to help a child predict a word or line of text without a focus on individual sounds (Kouri, 2016). A parent could provide feedback by asking questions such as, "Does that make sense in this story?" or "Are we talking about ___?" A holistic approach also emphasizes using texts that the student prefers, using whole pieces of literature instead of instruction on segmented texts, and integrating language experiences into instruction, instead of using isolated skill training (Jeynes & Littell, 2000).

Very few studies have directly compared the two strategies. One comparison evaluated the effects of a decoding-based strategy as opposed to a holistic approach called communication reading strategy (CRS) in children with language learning disabilities (Crowe, 2003). The decoding-based approach used word-attack strategies and word-analysis plans that were provided while the child read the story. The CRS approach used frequent questioning, vocabulary discussion, text summarizing, as well as some sound-symbol discussion that was provided before and after the child read the story. Crowe (2003) found that the CRS group performed significantly better on post-tests of reading comprehension than did the decoding-based group. It is important to note, however, that sound-symbol instruction is considered a graphonemic strategy and thus the CRS program had elements of both holistic cues as well as graphonemic cues (Crowe, 2003). This complicates a direct comparison but implies that a combination of the two approaches can be effective. Kouri, Selle and Riley (2006) more directly compared the two

feedback cues in children with SLI. Their findings contrasted Crowe's (2003) in that they found that the group that received graphonemic feedback performed significantly better on post-test comprehension assessment as well as better in the correction of misread words. These studies highlight the need for further analysis for guided reading instruction and possibly imply the need for instruction that combines the two approaches.

**Parent Training**

One established model for adult learning was developed by Dunst and Trivette (2009) and found that adult learner outcomes were directly correlated with adults being able to analyze and judge the effectiveness of their own learning. In this model, known as the Participatory Adult Learning Strategy (PALS) approach, adults are encouraged to provide their ideas throughout the learning process and to collaborate with the teacher in order to develop specific ways to implement their new knowledge in their daily life. Kaiser and Roberts (2013) developed a specific parent training model around the PALS approach. Their method titled Teach-Model-Coach-Review, although specifically designed for use within the Early Childhood Intervention population, focuses on the needs and abilities of the entire family, not just the needs of the child with language difficulties. The Teach-Model-Coach-Review approach empowers parents to participate in intervention, educates parents on how they directly affect their children's behaviors, and provides effective strategies to support their children. To do so systematically, the Teach-Model-Coach-Review program outlines a process in which the instructor works with the parent to ensure they understand the taught strategy, models the use of the family-specific strategy, coaches the family while they demonstrate the strategy with their child, and lastly, provides feedback to the parents regarding their use of the strategy.

Although parent training has been identified as an evidence-based practice, its consistent implementation remains more difficult due to a variety of factors. Transportation difficulties, parental motivation, and scheduling issues limit the potential impact of traditional parent-training programs. Parent training interventions must not only account for the child's schedule, but also the parent's. While this remains an obstacle today, the rise of telepractice reduces difficulties that are brought upon by transportation time/costs and geographic accessibility problems.

**Parent Coaching via Telepractice**

Telepractice has been an underused and unfamiliar delivery model for speech-language pathologists (Allen & Mayo, 2020). Although the global COVID-19 pandemic has underlined an importance for the use of telepractice, its potential is far more expansive due to its ability to connect under-reached and rural individuals with high-quality intervention. Telepractice has the potential to reach underserved communities and link culturally and linguistically diverse populations with skilled clinicians who have the knowledge to provide appropriate care (ASHA, 2005). Furthermore, telepractice cuts down on travel time to and from speech-therapy clinics, allows for more flexibility in scheduling, and can allow for better interprofessional care due to increased scheduling flexibility.

The majority of empirical studies into the efficacy of parent training programs regarding communication skills provided via telepractice have primarily focused on individuals with autism spectrum disorder (ASD), specifically to improve social communication skills. In one study, Vismara, McCormick, Young, Nadhan, and Monlux (2013) found that parents who previously did not have experience with a telehealth delivery model were able to successfully increase their child's verbal utterances and joint attention after engaging in online training. Similar results were found in studies conducted by Nefdt, Koegel, Singer, and Gerber (2010) and

Wainer and Ingersoll (2014) wherein parent training programs for children with ASD were created. The researchers found that parents were satisfied with the quality of instruction that could be provided online and that functional verbal utterances also increased as a result of the training. One study that also looked at increasing communication opportunities of a variety of children aged birth to three years old who were not diagnosed with ASD, but had complex communication needs, was conducted by Douglas, Nordquist, Kammes, and Gerde (2017). They found that communication opportunities increased, responses to a child's communicative attempts increased, and communicative attempts increased as well. While these findings are promising and successful in their own right, limited research has investigated literacy outcomes for telepractice intervention models. Due to the time and financial costs associated with traditional parent-training approaches, telepractice offers a bridge to reach many families who would otherwise not engage in speech-language services.

**Chapter II**

**Purpose**

The overall purpose of this study was to evaluate the effects of a telepractice parent training program on miscue analysis for children with reading difficulties. Understanding how parents of children with SLI and dyslexia react to parent training via telepractice on miscue analysis and feedback will set a foundation for future telepractice literacy interventions. Using a single-subject design, the researcher used telepractice to teach two parents to respond to their child's reading errors with a phonological strategy, a morphological strategy, and a meaning-based cue strategy. The researcher sought to answer the following research question:

**Research Question**

Is there a functional relation between the parent training program implemented through telepractice and parents' use of reading feedback strategies?

**Chapter III**

**Method**

**Participants**

Two parent-child dyads (two mothers and two sons) participated in this study. The participants were identified by speech-language pathologists from the Miller Speech and Hearing Clinic at Texas Christian University. The dyads were eligible to participate if the children had a diagnosis of dyslexia and/or developmental language disorder (also known as SLI). The two dyads came from two-parent, upper-middle class families. The boys were both seven years old and in the summer between first and second grade at the start of intervention.

Both mothers were given an assessment battery derived from Fidler, Plante, and Vance (2011) that was designed to help identify adults with a possible history of language impairment. Measures of verbal comprehension, nonverbal intelligence, phonological processing, and sight word efficiency were collected from both mothers via telepractice. Nonverbal intelligence was assessed via the Kaufman Brief Intelligence Test-Second Edition (KBIT-2), Matrices subtest (Kaufman, 2004). Phonological processing was assessed via the Comprehensive Test of Phonological Processing-Second Edition CTOPP-2), Phoneme Isolation subtest (Wagner, Torgesen, Rashotte, & Pearson, 2013). Word reading was assessed via the Test of Word Reading Efficiency-Second Edition (TOWRE-2; Torgesen, Wagner, & Rashotte, 2012). Verbal comprehension was assessed via the Modified Token Test (MTT; Morice and McNicol, 1985). Word meaning was assessed via the Clinical Evaluation of Language Fundamentals-Fourth Edition (CELF-4), Word Definition subtest (WD; Wiig, Semel, & Secord, 2013). Spelling was assessed using a 15-word spelling test created by Fidler, Plante and Vance (2011). All six tests were administered and analyzed for a comprehensive view of the parent's language abilities. Out

of the 6 test batterys, Fidler, Plante and Vance (2011) found that the spelling test, the Modified

Token Test, and the CELF-4 Word Definition subtest scores could be combined to best identify

adults as having "language-impaired status." Their "groups combined" formula using the MTT,

the CELF-4 WD subtest, and the spelling test had a sensitivity of 75% and a specificity of 81%

(Fidler, et. al., 2011).

**Parent-Child Dyad 1**

The mother in the first parent-child dyad was in her thirties and had received a bachelor's

degree. She was highly motivated to help her child read but reported that she felt specialists

(speech-language pathologists and reading tutors) were better able to assist her child's reading

than she was. The mother stated that her child had dyslexia and attention deficit disorder (ADD).

Per parent report, no additional family history of dyslexia or language impairment was noted.

Moreover, the mother reported that the child does not enjoy reading and gets frequently

frustrated when corrected. As a result, the mother reported that she tends to ignore errors during

shared reading and when she does intervene, she corrects him by providing the correct word. The

child was reported to read each weekday and get additional reading instruction during the school

year.

During assessment, this mother scored around average on the measure of non-verbal

intelligence, scoring in the 55th percentile of similarly-aged adults on the KBIT-2 Matrices

subtest. The CTOPP-2 Phoneme Isolation and Segmenting Nonword subtests were used to test

phonological awareness skills. Although this test is not standardized for this mother's age, when

compared to the scores of 24-year-olds, her score on the Phoneme Isolation and Segmenting

Nonword subtests correlated to the 50th and 25th percentile respectively. The TOWRE-2

assessment of word reading ability is similarly not standardized for this mother's age. However,

when compared to the 24-year-olds for which the test is standardized, her score can be characterized as approximately average. Comparing this mother's scores to 24-year-olds is acceptable because we can expect phonological processing and word reading ability to remain stable once an individual reaches adulthood.

As suggested by Fidler, Plante and Vance (2011), we obtained scores from the Modified Token Test, the CELF-4 Word Definitions using norms for age 21, and the 15-word spelling test. Those scores were entered into the "groups combined" formula provided by Fidler, et. al., (2011) and yielded a positive final value, indicating that the mother in parent-child dyad 1 could be classified as having language-impaired status. Thus, our testing results indicate that this mother may be experiencing her own language vulnerabilities, even though she had not been previously identified as having SLI.

**Parent-Child Dyad 2**

The mother in the second parent child-dyad was in her thirties and had obtained a master's degree. She also self-reported that she has a dyslexia diagnosis. The mother was motivated to help her child read so that "his reading skills would eventually match his high cognitive and mathematical reasoning abilities." The mother reported that she wishes to assist her child's reading more but does not always have the time to do so. The child in parent-child dyad 2 was reported to have dyslexia and ADD. Additionally, per parent report, dyslexia runs in the family. Both the child's father and mother have dyslexia. The child's father has ADD as well. The mother reported that she reads with her child daily but feels as if she does not have the tools necessary to provide appropriate reading instruction. The mother reported that she most frequently assists her child by reading a paragraph and then having her child read it after her.

The mother in parent-child dyad 2 scored above average on a measure of non-verbal intelligence, scoring in the 63rd percentile of all adults aged between 25-40 years old on the KBIT-2 Matrices subtest. The CTOPP-2 Phoneme Isolation and Segmenting Nonword subtests were again given to test phonological awareness ability. When compared to the scores of 24-year-olds, her score correlated to the 25th and 9th percentile respectively. Given the TOWRE-2 assessment of word reading ability, her score was slightly below the average performance of 24-year-olds for which the test was standardized.

The results of the spelling test, the Modified Token Test, and the CELF-4 Word Definition subtest were combined using the Fidler, et.al, (2011) formula for adult language impairment identification. It yielded a positive final value, indicating that this mother could be classified as language-impaired. Although this mother was diagnosed with dyslexia as a child, she had no previous language impairment diagnosis. The results of this assessment further highlights the prevalence of the comorbidity between language impairment and dyslexia found by Catts, et. al. (2005).

**Setting**

The study was conducted over telepractice using Zoom Video Communications. The PI conducted sessions at his home in Fort Worth, Texas and both participants logged on from their homes in the Dallas-Fort Worth metroplex. Both dyads completed the sessions on desktops from the parents' home office. The PI asked parents to remove other potential distractions from the room before the sessions began. Each dyad met with the investigator individually twice a week for approximately 20 minutes during baseline sessions and 45 minutes during intervention sessions. Approximately 75% of sessions were supervised by an ASHA-accredited speech-

language pathologist. Each session was planned around the parent's work schedule and accommodations were made if necessary.

**Materials**

The researcher and participants used computers with internet, webcam, and microphone capabilities to meet with each other. Each session was recorded via Zoom and uploaded to a secure university server for coding. The books used for baseline and intervention sessions were Fountas & Pinnell Leveled Books. Fountas & Pinnell books are leveled using the F&P Text Level Gradient, a tool that evaluates the following components of a given story: genre/form, text structure, content, sentence complexity, vocabulary, illustrations, and print features. These elements are evaluated and ranked from A-Z+. The books selected for this research study were rated from Level F through Level M, correlating to first and second grade-level stories. One of thirty books was randomly selected each session, unless the child had not finished a book during the previous session. The child was given the option to change books at any time.

**Experimental Design**

This study used a single-case, multiple baseline across behavior design that relied on visual analysis of the data to determine the relation between the independent variable (parent training through telepractice) and the dependent variable (parent use of the feedback strategies). Each of the parent-child dyads completed five sessions of baseline data collection. After these five baseline sessions, each of the dyads entered the intervention stage and were randomly assigned to one of the study's three intervention strategies. The three target reading strategies were derived from Johnson (2019) and include: 1) sounding-out and blending the word, 2) dividing a misread word into morphemes and blending the parts together, and 3) using a

meaning-based comment or question. Each of the three strategies was taught for five sessions, resulting in a total of 15 intervention sessions.

**Response Coding**

Each time a child made a reading error during the probe assessments of both the baseline and intervention phases, the parent's response to that error was coded by the examiner. Parent responses were coded into one of nine categories. Three of the categories were the intervention's target strategies: Segmenting and Blending, Dividing a Word, and Using a Meaning-Based Cue. A response was coded as Segmenting and Blending if the parent: 1) stopped the child after an error occurred, 2) directed a child's attention to the misread word, 3) slowly produced each sound in the word, 4) blended the sounds together, and 5) made the child repeat steps 3 and 4 independently. The second strategy, Dividing a Word, was coded if the parent: 1) stopped the child after an error occurred, 2) directed a child's attention to the misread word, 3) divided the word into smaller parts, 4) covered up part of the word and read each part individually, and 5) made the child split the word up and say each part of word independently. The final strategy, Using a Meaning Based Cue, was coded if the parent: 1) stopped the child after an error occurred, 2) directed a child's attention to the misread word, 3) asked the child a question regarding the context of the misread word in the story, and 4) encouraged the child to reread the word so that it makes sense in the context of the story. All steps of each strategy must have been completed in order for the trial to be coded as such. Examples of each strategy are provided in Appendix A.

Six other parental miscue feedback behaviors were coded. These additional behaviors were derived from Johnson (2019). A parent was coded as using a "phonemic cue" when the parent responded to an error by providing the child with the first sound or a clue to the first

sound of a troublesome word. The parents were coded as using "request segmentation" when they responded to a misreading by saying "sound it out." A parent was coded as "suggesting" when they offered a different solution to help a child read more fluently, such as "Can you read slower?" or "Sit still and read." The participants were coded as using "terminal feedback" when they replied to an error by providing the child with the correct word. Each parent was coded as "requesting repetition" when responding to an error by having the child simply "try again." The final parental behavior coded was "ignoring." This was coded when a parent did not stop the child after a reading error occurred. Examples of these behaviors are provided in Appendix A.

**Baseline Procedure**

During baseline sessions, parents were instructed to have their child read to them as they normally would. Each child read to his mother for 15 minutes without any instruction or interference from the investigator. After each session, the shared reading interaction was analyzed and the parent's response to each reading error was coded into one of the nine categories listed above and found in Appendix A.

**Intervention Procedure**

After five baseline sessions, the dyads began intervention. A reading strategy was randomly assigned to each dyad and was taught using the Teach-Model-Coach-Review model of parent training. Each strategy was taught for five sessions with the first dyad moving from strategy 1-3-2 and the second dyad moving from 2-1-3. The sessions began with ten minutes of a shared reading activity in which the investigator provided no instruction or feedback. Parental responses to her child's errors were coded during this time. Following the shared reading interaction, the investigator began the Teach-Model-Coach-Review intervention plan. The

Teach-Model-Coach-Review lasted from 30-40 minutes and was conducted twice weekly. The investigator followed the same intervention procedures for both dyads.

After the shared reading activity, the researcher began the "Teach" component of the Teach-Model-Coach-Review. The "Teach" component focused on a specific reading strategy. During this part of the session, the researcher defined the strategy, the reasoning for its implementation, and the steps for completing it effectively. The researcher provided a handout of each strategy for parental use during this stage as well. The handouts are provided in Appendix B. The "Teach" component lasted approximately five to ten minutes, depending on the parent's familiarity with the strategy. After its conclusion, the researcher began the "Model" phase. Here, the researcher demonstrated how to use the target strategy while he read with the child. During this stage, the investigator kept his attention on the child while periodically narrating strategy use to the parent. The "Model" component lasted approximately ten minutes. After the model stage, the "Coach" component commenced. During this stage, the researcher offered feedback and praise to the parent as they demonstrated the target strategy with their child. After approximately 5-10 minutes, the "Review" stage began. In this final component, the investigator provided an overview of the strategy and allowed the parent to ask any questions regarding the strategy and its implementation.

Because each strategy was taught for five sessions, the investigator focused on different elements of each strategy during the "Teach" component of intervention. The researcher created a general outline but progressed according to the parent's comfort and ability to use the strategy. The first day of a strategy began with a general overview and a focus on the rationale behind each strategy's selection. In the second and third sessions, the aim of this portion of intervention progressed to specific components or obstacles to the strategy's completion. For example, during

the "Dividing a Word" strategy, the second session focused on breaking up compound words and the third session focused on dividing words at their prefix or suffix. The fourth session of each strategy focused on different ways to provide more or less support when appropriate. The lead investigator created and provided parents with simple hierarchies to demonstrate how some approaches to feedback provide differing levels of support compared to others. For example, simply telling a child to "try again" or "sound it out" is less supportive than pointing/saying each sound in isolation, blending the sounds together, and then having the child repeat the steps after you. Additionally, examples of fading support within each strategy were provided when appropriate. A list of these hierarchies is provided in Appendix C. Finally, in session five, the investigator reviewed each component of the strategy and emphasized appropriate areas. Outlines for each strategy's "Teach" component is provided in Appendix D.

**Interobserver Agreement Procedures**

Two undergraduate students majoring in Communication Science and Disorders at Texas Christian University were trained by the principal investigator to code probe assessments. The two trained observers collected data on each probe session and placed information into separate score sheets. The two observers then compared results and settled any discrepancies. All disagreements were reviewed and discussed until an ultimate agreement was established, such that final agreement was 100%. Both observers were blind to the research study's procedures and hypothesis to prevent potential scoring biases.

**Procedural Fidelity Data Collection**

The research study supervisor, an ASHA certified speech-language pathologist, observed sessions to ensure fidelity of probe administration. To assess procedural fidelity of intervention, the lead investigator trained an undergraduate communication sciences and disorders student at

Texas Christian University. The observer tracked multiple steps for each stage of the Teach-Model-Coach-Review. The "Teach" checklist included whether the clinician a) introduced the study procedures, b) described the day's target strategy, c) described how the strategy is used, d) described why the strategy is effective, and e) checked if the parent understood the strategy. The "Model" checklist included whether the clinician a) modeled the use of the strategy in 80% of opportunities, b) conducted the "Model" phase before the "Coach" component of the session, and c) modeled the strategy for at least five minutes. The "Coach" checklist included whether the clinician a) provided feedback at least three times, b) conducted before the "Review" component of the session, and c) coached for at least five minutes. Finally, the "Review" checklist included whether the clinician a) summarized how the parent used/did not use the strategy during shared reading, b) invited questions or comments about the use of the strategy, and c) conducted a session that lasted at least 25 minutes. The number of steps adhered to was divided by the number of total steps to calculate a procedural fidelity value.

**Data Analysis Plan**

Data was collected and graphed during probe assessments at the beginning of each session to represent parent performance throughout the duration of the study. A line graph was created for each of the target feedback strategies (Sounding Out and Blending, Dividing a Word, and Using a Meaning-Based Cue) for both parents. Change in feedback strategy use was determined via visual analysis. If a causal relation was detected during visual analysis, the magnitude of change was analyzed (Kratochwill et. al., 2013). A causal relation will be established if the use of reading feedback strategies differs between the baseline and intervention phase. A greater percentage of reading feedback strategies following implementation of intervention would indicate a positive correlation between dependent and independent variables.

A stable or decreased use of reading feedback strategies would not support the effectiveness of the intervention within the context of the present study. Data was inserted into Microsoft Excel and line graphs were created for each participant. Data was analyzed visually using Parsonson and Bear's (1978) four steps and six variables. The six variables of analysis include trend, level, variability, overlap, immediacy of the effect, and consistency of data patterns. Trend refers to the rate of increase or decrease during intervention, level refers to the phase (i.e., "baseline" vs. "intervention" phases), and variability refers to the variation in data points during intervention (i.e., "fluctuating" or "steady). Overlap refers to identifying the intersection of data points between baseline and intervention phases. Immediacy of effect refers to the level, trend, and variability of the last three data points in the baseline and the first three points of the intervention phase. Finally, consistency of data patterns refers to identification of data points that are similar in the baseline phase when compared to the intervention phase.

**Chapter IV**

**Results**

This study investigated the relation between a parent literacy training program implemented over telepractice and parent use of three reading miscue strategies. The parent-child dyads engaged in a baseline phase and an intervention phase. In the baseline condition, children read to their parents as they normally otherwise would. During the intervention phase, the dyads participated in twice weekly parent training sessions after completing the probe task. During intervention sessions, parents were taught three reading miscue feedback strategies (i.e., sounding out and blending, dividing a word, and using a meaning-based comment or question.)

**Procedural Fidelity**

The clinician's ability to administer intervention was paramount as any inconsistency in implementation could affect the ability of the parents to provide miscue feedback effectively. A trained undergraduate student assessed the fidelity of all intervention sessions. Using the number of steps/total number of possible steps x 100%, a value was determined for each session. The values for each of the 15 intervention sessions were then averaged together to assess fidelity for each participant. An example of a fidelity checklist is attached in Appendix E. For parent-child dyad 1, procedural fidelity was 84.21% and for parent-child dyad 2, fidelity was 88.8%. Out of the thirteen steps evaluated for each session, one was missed consistently due to variations made during the study's implementation. The investigator found that providing routine comments and critiques during the "Coach" component of intervention frequently distracted the child. Each comment from the investigator routinely sidetracked and/or demotivated the child to continue reading with his mother. Therefore, positive reinforcement and constructive criticism was then delayed until the "Review" component of the Teach-Model-Coach-Review. If this step was

removed from the procedural fidelity checklist, fidelity would have increased to 91.64% and 96% respectively.

**Baseline Performance**

During baseline assessment, the parent in the first dyad (participant 1) demonstrated intermittent use of all three of the intervention's target miscue feedback strategies. During baseline shared reading interactions, participant 1 used the "Sounding out and Blending" strategy in response to 5.35% (range = 0-8.11%) of her child's reading errors. She used the "Dividing a Word" strategy in response to 14.47% (range = 3.33-28%) of her child's miscues. Furthermore, she used the "Meaning Based Cue" strategy in response to 3.81% (range = 2.7-5%) of her child's reading errors. Participant 1 demonstrated a stable baseline with the "Sounding Out and Blending" and "Using a Meaning Based Cue" strategies. Additionally, while "Dividing a Word" appears to be less stable, if the first session of data collection (28%) is removed and considered an outlier, "Dividing a Word" appears as a much more stable baseline.

Additionally, non-intervention strategies were measured during baseline. Participant 1 ignored 7.2% (range = 2.63%-10.71%) of errors, requested he "sound out the word" in 7.11% (range = 0-14.08%) of errors, gave the child the first sound in 17.68% (range = 10.71-25.49%) of errors, requested repetition on 18.54% (range = 12.31-21.43%) of errors, and gave terminal feedback on 27.99% (range = 21.05-41.54%) of errors.

The mother in parent child-dyad 2 (participant 2) only demonstrated one of the intervention strategies a single time during baseline sessions. She did not use "Sounding out and Blending" or a "Meaning Based Cue." In one baseline session, she used the "Dividing a Word" strategy for one of the child's 18 errors. As for her additional behaviors, Participant 2 did not routinely ignore errors, she only ignored 1.56% (range = 0-4.35%) of the child's miscues. The

majority of her child's reading miscues were followed by two behaviors. She requested repetition

from her child in 15.26% (range = 0-28.57%) of all errors and responded to 80.97% (range =

69.57-96.55%) of her child's errors by giving terminal feedback.

**Participant 1**

Initially, participant 1 was instructed in the phonologically-based graphonemic cue,

"Sounding out and Blending" (see Appendix B). Before intervention, this mother was using the

strategy for 5.35% (range = 0-7.84%) of her child's reading errors. During the five sessions of

instruction in "Sounding out and Blending," the mother increased her use of the strategy from an

average of 5.35% during baseline to an average of 18.86% (range = 11.11-29.41%). As shown in

Figure 1, her use of the strategy increased each session. Using visual analysis, a causal relation

was found between the intervention and her use of the "Sounding Out and Blending" strategy.

The performance of participant 1 yielded 100% non-overlapping data between the baseline and

intervention conditions during the targeting of "Sounding Out and Blending" (Scruggs &

Mastropieri, 2001). As she increased her "Sounding Out and Blending" strategy use, she also

greatly reduced the number of errors ignored; only overlooking two errors during five sessions,

compared to the twenty errors ignored during baseline. Interestingly, two other additional

behaviors quickly varied from baseline sessions. Participant 1 more frequently requested that her

child try again during intervention. During baseline, she requested repetition in regards to

18.54% of errors. However, during the initial five sessions of "Sounding out and Blending," she

requested that her son try again after 45.18% of his reading errors. This increase stands in

contrast to the decrease of terminal feedback provided. The percentage of terminal feedback

dropped from 27.99% during baseline to 9.46% (range = 0-20%) during the first five sessions of

intervention.

The second strategy introduced a holistic-based feedback strategy, "Using a Meaning-Based Comment or Question" (see Appendix B). "Using a Meaning-Based Comment or Question" did not improve as much as the first "Sounding out and Blending" strategy. At baseline, participant 1 was providing the holistic based strategy in response to 3.81% of errors and during the five sessions of intervention that slightly increased to 6.32% (range = 3.33-16.67%). As Figure 1 shows, the greatest improvement came after four sessions of "Using a Meaning-Based Comment or Question" instruction and continued throughout the remaining six sessions of intervention. Participant 1 demonstrated a small functional relation between instruction in "Using a Meaning-Based Comment or Question" and parental use of the strategy. During instruction on the second strategy, participant 1 maintained use of the first strategy, "Sounding out and Blending" at a similar rate. The percentage of errors in which "Sounding out and Blending" was used slightly decreased from 18.86% during its five sessions to 17.65% (range = 10.34-22.73%) during instruction of the meaning-based cue strategy. During this phase of intervention, participant 1 completely stopped ignoring errors. Of the 138 reading miscues, she did not ignore any, reducing the disregarding of errors from 7.72% at baseline. The number of times she requested her son "try again" stayed high when compared to the first five sessions. Participant 1 requested repetition in 40.32% of errors, down from 45.18% during instruction of the first strategy. The use of terminal feedback was also approximately the same, this mother gave her child the correct word in 10.02% of his reading miscues.

The final strategy introduced was the morphological-based graphonemic strategy, "Dividing a Word" (see Appendix B). Due to external life events on the part of the parent-child dyad, only four sessions of the final strategy were provided. "Dividing a Word" became the only of the three strategies that decreased from baseline to intervention, using the strategy in response

to 12.30% of her child's errors, down from 14.47% at baseline. Participant 1 did not demonstrate a functional relation between the use of "Dividing a Word" miscue feedback strategy implementation and the introduction of parent training on the topic. Although "Dividing a Word" was not increasingly used, participant 1 maintained use of "Sounding out and Blending." She used it in response to 20.59% of errors. Participant 1 also demonstrated more use of "Using a Meaning-Based Comment or Question," demonstrating it after 9.68% of her child's errors. While use of terminal feedback stayed consistent at 9.68%, participant 1 reduced use of repetition requests down to 28.5% from 45.18% during the first strategy.

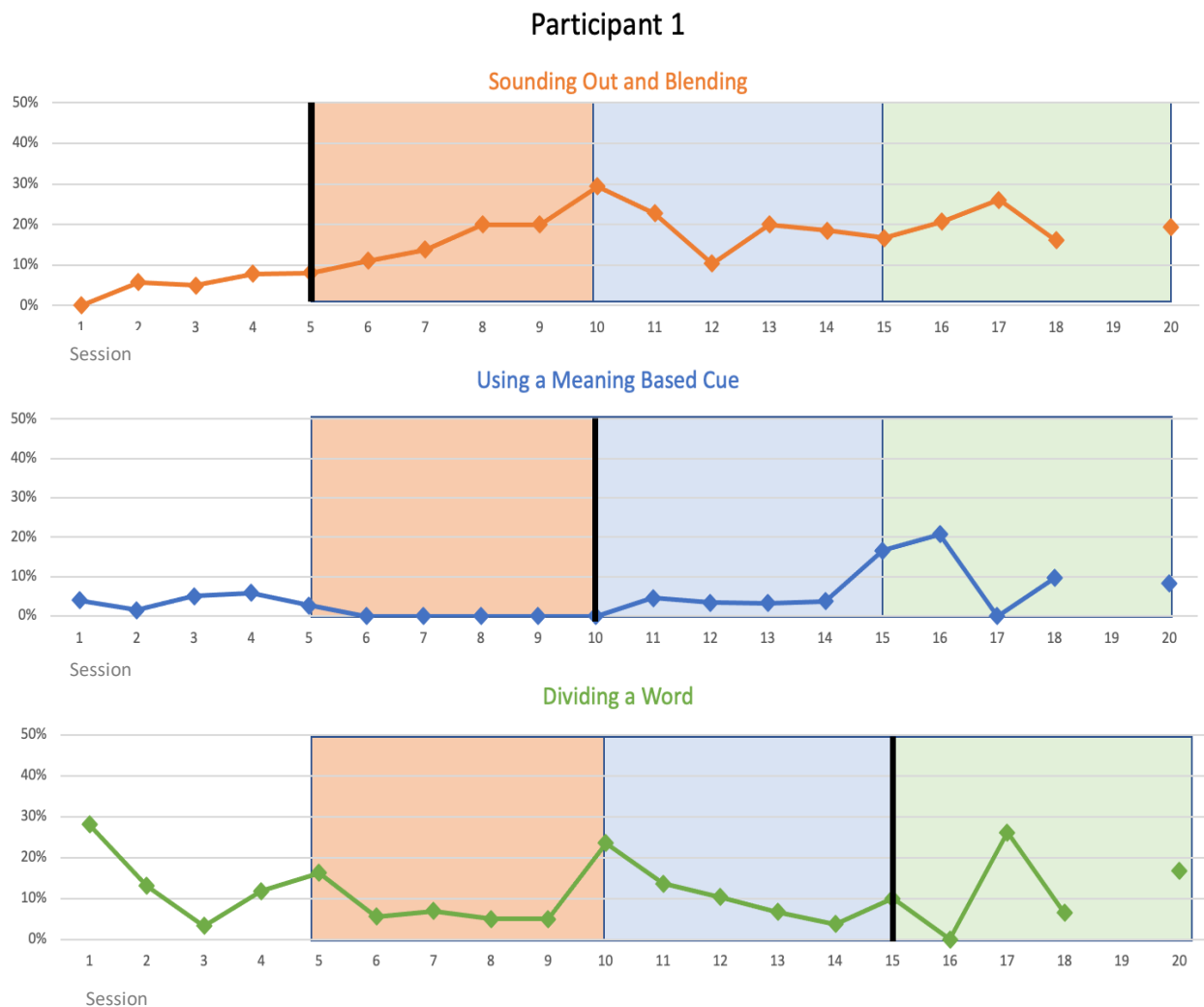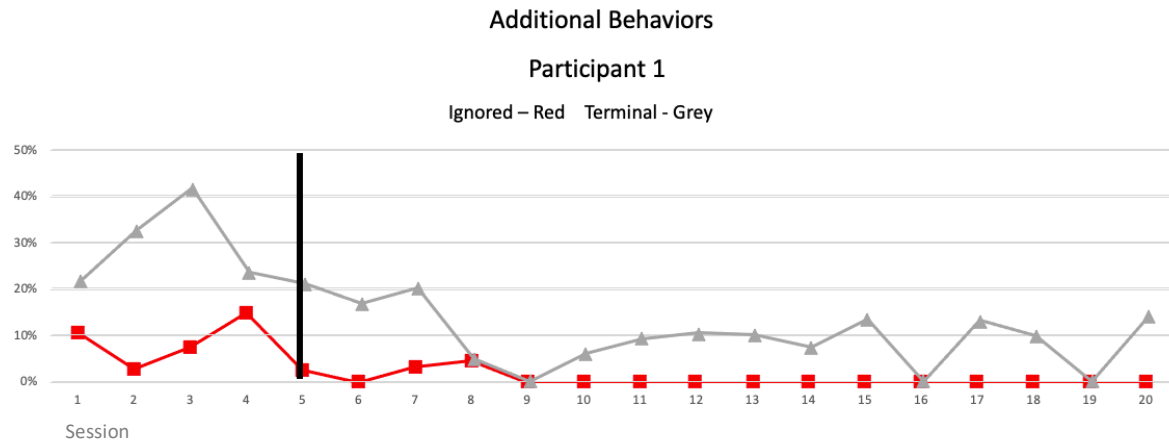*Figure 1.* Participant 1 Performance by Session and Target Strategy

*Figure 2.* Participant 1 Additional Behaviors



**Participant 2**

The mother in parent-child dyad 2 (participant 2) entered intervention after five baseline sessions and was first introduced to the graphonemic cue strategy "Dividing a Word" (see Appendix B). During baseline, she used the strategy in .01% of his reading errors (1 out of 108 errors). During the five "Dividing a Word" intervention sessions, Figure 2 shows that she increased usage to 38.8% (range = 10-50%). Participant 1 demonstrated a functional relation between use of "Dividing a Word" and the implementation of instruction on the strategy. The performance of participant 2 yielded 100% non-overlapping data between the baseline and intervention conditions and demonstrated a strong immediacy of effect (Scruggs & Mastropieri, 2001). As she used the "Dividing a Word" strategy, she, like participant 1, increased requests for her son to "try again." At baseline she was requesting repetition after 15.26% of her child's errors and after introduction of the first strategy, that percentage increased to 27.13%. However, perhaps the most interesting result of this stage of intervention was the dramatic decrease of terminal feedback provided. As Figure 2 shows, during baseline participant 2 was providing the correct word in response to a misreading nearly 80% of the time. However, when she was instructed in "Dividing a Word," that percentage decreased to 30.18%.

During the second set of five intervention sessions, the phonologically-based "Sounding out and Blending" strategy was introduced (see Appendix B). Participant 2 had substantial difficulty using this strategy. This struggle was evident as shown in Figure 2, only using it in response to 4% (range = 0-20%) of her child's errors, as well as verbally stating that it was difficult for her. Instead of using this strategy, she continued to use the "Dividing a Word" strategy. She used the "Dividing a Word" strategy after 31.2% of errors. The number of times participant 2 requested repetition continued to increase, from 15.26% at baseline to 27.16% during the first five sessions, to 37.62% during the second set of strategy instruction. However, Figure 2 shows that while repetition requests increased, terminal feedback continued to decrease down to 17.33%, all the way from 79.97% at baseline.

The third strategy introduced was the holistic miscue feedback strategy "Using a Meaning-Based Comment or Question" (see Appendix B). Participant 2 was able to use this strategy following 20% (range = 0-50%) of her child's errors after not using it all prior to its instruction. Using visual analysis, a causal relation was found between the intervention and her use of the "Using a Meaning-Based Comment or Question" strategy. Participant 2 did not use the "Dividing a Word" strategy during these final five sessions. Instead, she continued to increase repetition requesting, up to 40.71% as well as also slightly increasing the amount of terminal feedback provided (27.86%). Additionally, participant 2 increased the number of times she ignored her son's reading errors, overlooking 12.86% of reading miscues.

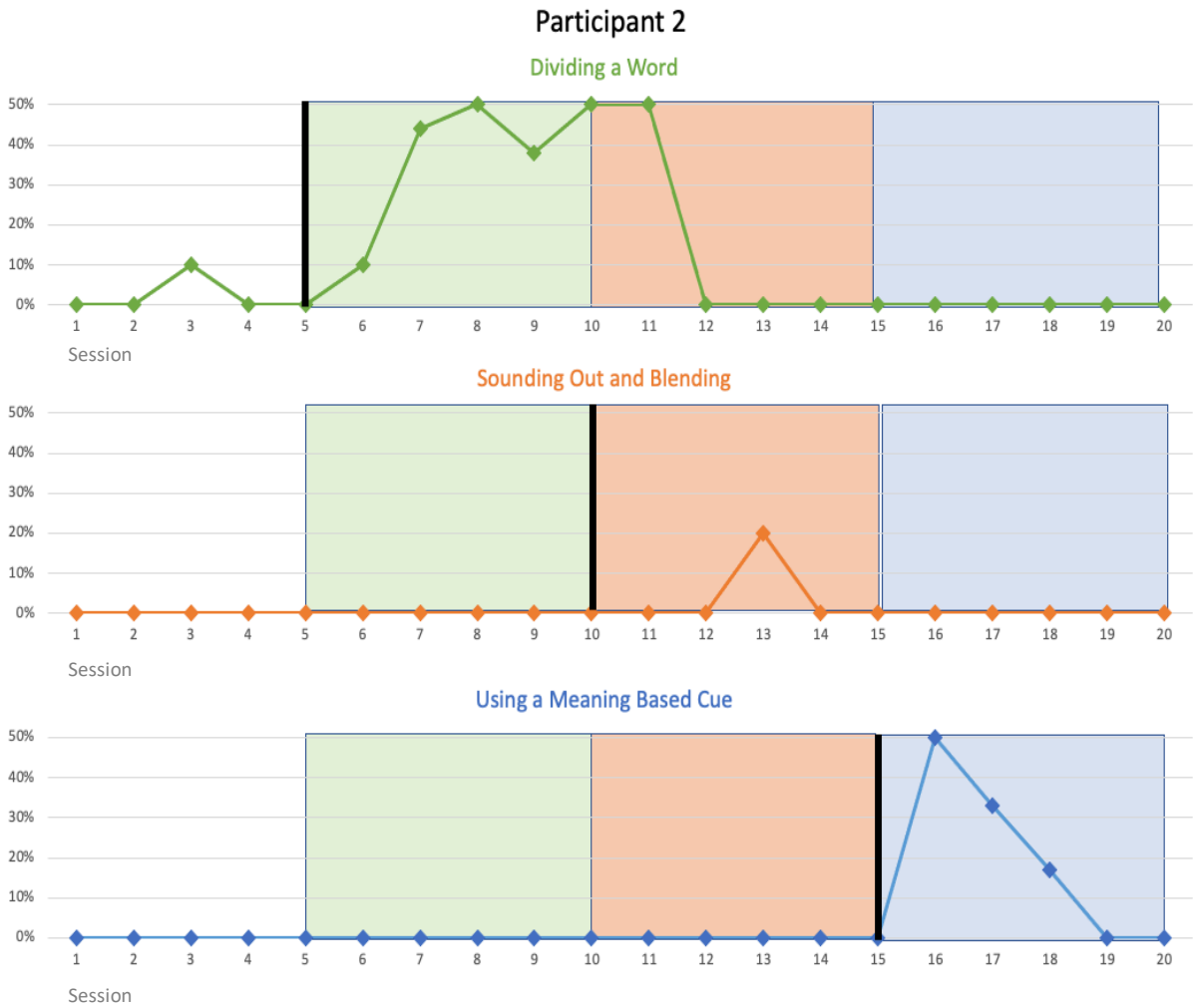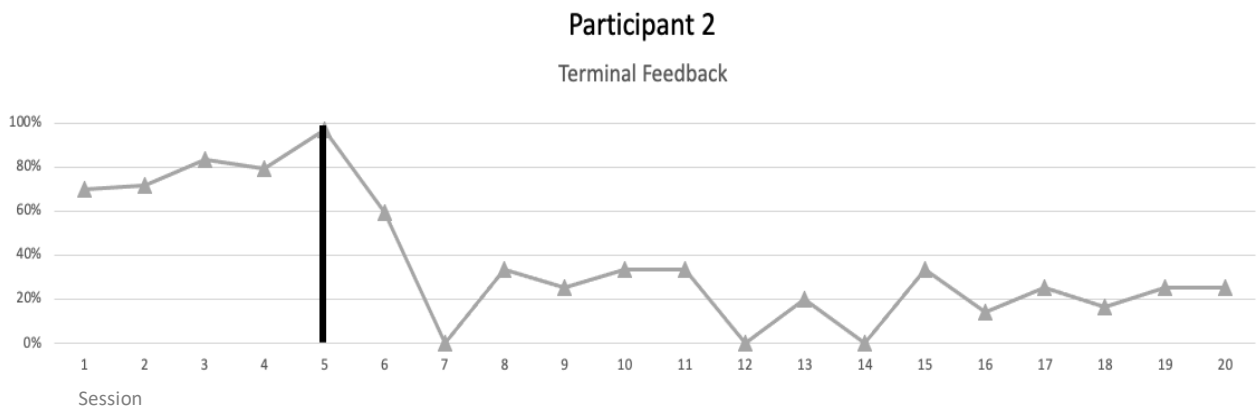*Figure 3.* Participant 2 Performance by Session and Target Strategy



*Figure 4.* Participant 2 Additional Behaviors

**Chapter V**

**Discussion**

This study investigated the existence of a functional relation between a literacy parent training provided via telecommunication and the use of reading miscue feedback strategies. The study evaluated changes in parental use of three target strategies, along with other miscue feedback behaviors, including terminal feedback, ignoring errors, requesting repetition, and phonemic cues. Although some studies have shown that parents can improve their child's reading when they give specific miscue feedback (Kouri, 2016; van Bergen, et al., 2016) and other studies have shown that parents can affect their children's behavior through parent training programs delivered via telecommunication (Douglas, et at., 2017; Vismara, et al., Monlux, 2013), no studies have evaluated the effects of a parent training reading miscue feedback program delivered via telecommunication. Furthermore, studies that explicitly examine the effects of parent trainings on parents with a history of language and literacy difficulties are nonexistent. This study is unique because it specifically tracked parental use of reading miscue feedback strategies in parents with language difficulties after brief language education was provided via telecommunication.

For parent-child dyad 1, there was a functional relation between the parent training via telepractice and the use of the "Sounding Out and Blending" and "Using a Meaning Based Comment or Question" strategies. In other words, the Teach-Model-Coach-Review parent training model provided via telepractice was sufficient to make immediate changes in how this parent responded to her child's reading errors. For parent-child dyad 2, there was a functional relation between intervention and parental use of the "Dividing a Word" and "Using a Meaning Based Comment or Question" strategies. According to the standards of single-case design

(Kratochwill, Hitchcock, Horner, Levin, Odom, Rindskopf, & Shadish, 2013) these results yield

a demonstration and at least two replications of an effect across participants and behaviors.

**Parent Training Via Telecommunication**

The use of telepractice allows for increased access and scheduling flexibility to ensure

individuals are receiving skilled care and support (ASHA, 2005). This study shows that

telepractice can be an effective delivery model to provide parent training for literacy outcomes.

First, both parents had demanding careers that commanded long and often changing hours.

Telepractice allowed the parents to feel comfortable scheduling sessions later in the evening and

also permitted the parents to schedule without having to worry about transportation or additional

childcare. The number of intervention sessions per-week would have had to be reduced if parent

training was provided in the traditional, in-person manner.

Second, this study demonstrated that the Teach-Model-Coach-Review, although created

for use in the Early Childhood Intervention population, can be used to educate parents of older

children on optimal reading miscue feedback strategies. Both parents were able to improve their

use of two of the three reading feedback strategies. Furthermore, this study shows that the

effectiveness of the TMCR for reading instruction can be extended to parents who also have their

own language difficulties. Using Fidler, Plante, and Vance's (2011) adult language impairment

battery, both parents were identified as having "language impaired status." The "Teach"

component of the TMCR contained brief explicit instruction into the rationale and procedures

necessary to build word-reading skills that are especially helpful for individuals with language

difficulties (Weiner, 1994). This creates an avenue for future research. Researchers could add

more time and explicit practice on phonological and morphological awareness to analyze if more

foundational practice will lead to parents giving more precise feedback.

**Reading Feedback Strategy Selection**

The inclination of both mothers to provide the morphologically-focused "Dividing a Word" strategy must be noted. The mother in parent-child dyad 1 was using the "Dividing a Word" strategy at baseline and maintained its use during instruction over each of the other two strategies. The mother in parent-child dyad 2, on the other hand, immediately picked up the strategy with instruction and maintained a high percentage of use until the next strategy's introduction. Both mothers had average to above average non-verbal intelligence but phonological awareness abilities that were below average (25th and 9th percentile for dyad 1 and dyad 2 respectively). These scores lead to hypothesis as to why choosing a strategy that emphasizes morphological ability, rather than the phonologically-focused "Sounding Out and Blending" feedback strategy, might be preferred. Breaking up a word into smaller parts with clear meanings appears to be easier for parents with language deficits. Furthermore, this also explains the inability of the mother in parent child dyad 2 to provide the "Sounding Out and Blending" strategy during intervention.

Additionally, it is important to consider how use of the study's three target strategies also depended on the nature of the reading passage. For example, it was difficult for the parents to provide "Diving a Word" when their child struggled with one syllable words. In these instances, it was much more likely that a parent would use the "Sounding Out and Blending" strategy. These findings could lead educators to instruct parents in "Sounding Out and Blending" when a child is learning to learn shorter and less complex words. Educators could later transition to "Dividing a Word" instruction when a child is consistently reading multisyllabic words. Parents were more likely to use "Using a Meaning-Based Comment or Question" in regard to errored nouns or verbs compared to errors with conjunctions, prepositions, or adverbs. Errors in the

reading of nouns and verbs are likely to change the meaning of the sentence while errors reading

conjunctions and prepositions might only make the sentence syntactically inappropriate. Mansell,

Evans, and Hamilton-Hulak (2005) found that parents were more likely to provide feedback

when a child made an error that dramatically changed the meaning of a sentence. Additionally,

they concluded that the more errors a child committed, the more likely parents were to provide

"picture clues" that brought the child's attention to the meaning of the word.

**Participant Variability**

The variability in the children's reading skills may have contributed to slightly different

outcomes. The child in dyad 1 demonstrated an average of nearly 26 errors for each probe

session. The child in dyad 2 demonstrated an average of 6.5 errors for each session. Each child's

reading abilities posed different challenges to intervention. The child in dyad 2 frequently

committed a single error, or no errors, during the "Model" and "Coach" components of the

intervention. This perhaps limited the potential of the parent to demonstrate her understanding of

the strategy as the investigator could not expose the parent to the targeted response with great

frequency. Contrarily, there were also potential limitations for parent-child dyad 1. Because the

child in dyad 1 demonstrated a significant number of errors every five minutes, the child's

frustration influenced the interaction. Per parent report, before intervention she frequently

ignored or gave her child the correct word during shared reading interactions. Therefore, her

child was not accustomed to getting frequent reading correction from mom. This accounted for

the mother's propensity to ask her child to "try again" after she previously went through a

strategy. Asking her child to "try again" was much quicker than moving through the steps of one

of the intervention's target strategies and resulted in less frustration from the child. These

findings are supported by Mansell, et. al., (2005) who found that the more miscues a child

committed, the more often a parent provided terminal feedback or simply ignored the error. However, this study was able to significantly decrease the terminal feedback provided after instruction into the three target strategies.

**Attention Deficit Disorder and Reading**

The ability of both children to attend to the reading may have influenced the outcomes of the study. Both of the parent-child dyads had boys diagnosed with Attention Deficit Disorder (ADD). Attention Deficit Disorder is a neurodevelopmental disorder that makes it hard for a person to pay attention, and some individuals can have trouble sitting still or controlling their behaviors (ASHA, 2020). This inattention can manifest itself during reading due to issues skipping over words, forgetting frequently used words and phrases, missing story details, and not processing every sound, particularly in longer words and passages (Plourde, Boivin, Forget-Dubois, Brendgen, Vitaro, Marino, & Dionne, 2015). Moreover, ADD also affected the ability of the children to attend to parental feedback. Each of the three target strategies were longer than the feedback each child was accustomed to receiving from his mom. Deficits in the children's attention and ability to control behavior pushed the parents to provide quicker feedback that had a greater chance of not distracting or frustrating the child. For example, parents would frequently say "try again," or "sound it out," or just give the child the correct word. Some of these behaviors continued throughout intervention, not because the parents were unable to use the target strategies, but instead because the parents were making a calculated decision that the study's strategies could demotivate the child to continue reading with them. These findings are supported by Mansell et. al. (2005).

**Utilizing the Simple View of Reading for Better Instruction**

Intervention to improve the reading outcomes of struggling readers must address both decoding and comprehension skill. Hoover and Gough's (1990) Simple View of Reading positions that reading ability depends on 1) the ability to read printed words effectively and 2) the ability to comprehend the language used in the story. This study used two strategies to aid in word reading: "Sounding Out and Blending" and "Dividing a Word," and one strategy that encouraged thinking about the meaning of the story: "Using a Meaning Based Comment or Question." Once the parents received instruction in each of the three strategies, both parents were able to use decoding and comprehension strategies when appropriate. The parents frequently went back and forth from one form of feedback to the other, with great effect, in spite of limited instruction on when to use one strategy versus another. Instructing parents in both decoding and language comprehension strategies ensures that they have the tools to provide support for both of the two pivotal reading skills.

These findings are especially important considering that mixed approaches to feedback, incorporating graphonemic and meaning-based cues, are most beneficial for children with language impairment (Kouri, 2016). If a parent is able to provide phonemic cues in combination with feedback regarding the context of the story, children will be more likely to correct errors. However, previous research has not considered that parents might struggle to give feedback in either graphonemic or meaning-based cues, depending on their own literacy and language deficits. The results of the present study suggest that parents with language deficits can be trained to effectively implement graphonemic and meaning-based reading cues through telepractice.

**Limitations and Future Research**

  This study's limitations provide opportunities for future research for both children and parents with literacy and language deficits. First and foremost, the present study is limited by the small sample size (two white middle-class parent-child dyads) and the short-term nature of the study. The study's assessment does not allow us to draw conclusions about the nature of change over time, nor does it allow for us to make sweeping generalizations about its effect in other parent-child dyads as a result of the study design and lack of cultural and socioeconomic diversity. Future research could include more dyads, including fathers/daughters and other racial/socioeconomic groups, and include follow-up sessions after cessation of intervention to determine generalization of parents' use of miscue feedback over time.

  This study only evaluated parental use of feedback strategies and did not track the effects of parental miscue feedback on the child's reading outcomes. The study only tracked the total number of the children's reading errors. Moreover, because these children had an ADD diagnosis, future studies could evaluate the optimal time and support needed to instruct readers with ADD. A longitudinal study could track carryover improvement of children's reading skills following parent intervention and analyze if reading comprehension improved alongside reading fluency.

  Furthermore, future studies could incorporate the use of surveys to ensure the social validity of the intervention. The nature of the intervention changed the dynamics of child-parent reading interactions. Shared reading without parental correction is a valuable asset to not only improve the child's willingness to read, but also to build a personal connection between parent and child. As a parent adds critiques and interruptions to that routine, it is vital that researchers

assess the parents' thoughts on providing the training to ensure parents will continue to use the learned strategies over time.

**Conclusion**

      The results of this study indicate that the adult learning model, Teach-Model-Coach-Review provided via telepractice, is a potentially effective way to instruct parents to provide reading feedback to school-aged children with reading difficulties. The parent training model is also effective for parents who have language deficits themselves. However, more research is needed to evaluate if more explicit phonological and morphological awareness training can help parents with language impairment provide more precise miscue feedback to their children. This study also extends the literature about the effects of the Teach-Model-Coach-Review on reading to use over telepractice. Thus, this study's findings add to the limited literature on the use of parent training reading programs and sets a precedence for making those programs more accessible for families that struggle with reading.

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## Appendix A

| Target Strategies | | |
|---|---|---|
| Code | Definition | Example |
| Strategy 1<br>Segmenting and Blending | Parent provides a sounding out and blending model and encourages the child to sound out the miscue and repeat the word. | Child: "Sonsar."<br>Target: Sonar<br>Parent: {/s-o-n-ar/ - /sonar/. Your turn!} |
| Strategy 2<br>Dividing a Word | Parent breaks down the parts of the target word for the child and encourages the child to segment and repeat the word. | Child: "Sonsar."<br>Target: Sonar<br>Parent: {/so/ -/nar/ - /sonar/. Your turn!} |
| Strategy 3<br>Using a Meaning-Based Cue | Parent asks a question to draw the child's attention to the context of the story following a miscue to encourage the child to re-evaluate his/her production. | Child: "She flew the planet over the ocean."<br>Target: She flew the plane over the ocean.<br>Parent: "Wait, you said 'She flew the planet over the ocean.' Were we talking about a planet?" |

| Additional Parent Behaviors | | |
|---|---|---|
| Code | Definition | Example |
| Phonemic Cue | Parent provides the child with the first sound or a clue to the sound of a letter. | Child: "Sensar."<br>Target: Sonar<br>Parent: {Wait, that's the long 'o' sound}.<br>OR<br>Parent provides an exaggerated model of "SO" as they wait for child to continue reading. |
| Request Segmentation | Parent instructs the child to sound out the miscue. | Child: "Sonsar."<br>Target: Sonar<br>Parent: {Sound it out.} |
| Suggesting | Parent offers a suggestion for fluent reading. | E.g., Parent: {Can you read slower?"}. |
| Terminal Feedback | Parent provides the correct word for the child's miscue or provides the whole phrase or sentence in which the word(s) was produced incorrectly. | **Word**<br>Child: "One kind is called *sore.*"<br>Target: Sonar<br>Parent: {Sonar}.<br>**Phrase/Sentence**<br>Child: "People are looking." Target: People are still looking.<br>Parent: {People are still looking}. |
| Ignoring | Parent ignores miscue. | Child: *pulse that tells the emerald state of the dolphin* (target: emotional).<br>Parent: ignores |
| Repetition Request | Parent prompts the child to go back and try again. | Child: "The only thing to do was to try to mimic was too far from."<br>Target: The only thing to try to do was to mimic the sound of a dolphin.<br>Parent: {Go back, try that again}. |

**Appendix B**

# Sounding-Out and Blending

**What is <u>sounding-out and blending</u> a word?**

<u>Sounding-out</u> is the process of saying each sound in a word separately. For example, if your child does not read the word "red" correctly, you can sound out the word (or say the sound of each letter): "r" then "e" and then "d".

<u>Blending</u> is the process of slowly combining the sounds that you sounded out. For example, after you break apart "red", you blend "r," "e," and "d" to form "red".

**When do I use this strategy?**
Use the <u>sounding-out and blending</u> strategy when your child reads a word incorrectly or skips over a word.

1) Say "Stop reading. Let's go back to this word."
2) Point to each letter of the word and say the sound of the letter.
3) Slowly blend together each sound to read the whole word.
4) Then, have your child sound-out and blend the sounds while he/she points to each letter.
5) Have your child reread the word or entire sentence.

**Why should I use this strategy when reading with my child?**

Having your child sound-out and blend words that are read incorrectly or skipped will

show him/her how to read words he or she does not know. This strategy also helps to

**Appendix C**

# Dividing a Word

**What is <u>dividing a word</u>?**
<u>Dividing a word</u> is the process of making a word simpler to read by breaking the word into smaller parts. For example, if your child does not read the word "opened" correctly, cover the "ed" with your finger and say "open. Then, cover "open" with your finger and say "ed". If you child does not read the word "description" correctly, cover "cription" and say "des", cover "des" and "tion" and say "crip", and then cover "des" "crip" and say "tion".

**When do I use this strategy?**

Use the <u>dividing a word</u> strategy when your child reads a word incorrectly or skips a word.

1) Say "Stop reading. Let's go back to this word."
2) Point to the word that was not read correctly or skipped.
3) Divide the word into parts.
4) Cover up each part of the word and read each part to your child individually.
5) Then, have your child repeat each part of the word while pointing to it.
6) Have your child reread the word or the entire sentence using the correct word.

**Why should I use this strategy when reading with my child?**

Helping your child to divide a word that is read incorrectly will show him or her how to read words he or she does not know. Your child will learn how to break down bigger

**Appendix D**

# Using a Meaning-Based Comment or Question

**What is a <u>meaning-based comment</u> or <u>question</u>?**

A <u>meaning-based comment</u> or <u>question</u> is a prompt or clarifying question that you can ask your child to encourage them to think about the meaning of the sentence or the events of the story.

For example, if your child incorrectly reads the word "library" as "laundry", you can say to him or her: "You said the word "laundry." Does laundry make sense in the sentence? Think about the meaning of the sentence you just read." You can also say, "Think about what is going on in the story."

**When do I use this strategy?**

Use the meaning-based comment or question strategy when your child reads a word incorrectly.

1) Say "Stop reading. Let's go back to this word."
2) Point to the word that was read incorrectly and tell your child what word he or she said.
3) Ask your child "Does [insert word] make sense in the sentence?" and "Think about what is going on in the story."
4) Wait for your child's response.
5) Encourage your child to reread the word so that it makes sense in the sentence.

**Why should I use this strategy when reading with my child?**

Questioning and providing a meaning-based cue following words that your child reads incorrectly will show him or her how to correct misread words. This strategy also helps to teach your child to think about the meaning of each word in the context of the

**Appendix E**

<u>Sounding Out and Blending Hierarchy</u>
- Point and say each sound, then blend sounds together to produce whole world then have child repeat everything
- Point and say each sound then have child repeat after you (do not include blending of final word)
- Point to each sound and say them with the child, can lower volume to whisper then to only mouthing the sound
- Point to each sound but say nothing while waiting for kid to say each sound and slide finger under whole word for blending
- Say, "Point to all the sounds as you say them"
- Say, "Sound it out" OR "Try again"


<u>Dividing a Word Hierarchy</u>
- Cover up parts of the word and say the whole word, then have the child repeat everything
- Cover up parts of the word and have child repeat each sound after you say them (do not include saying the whole word)
- Cover up parts of the word and say them with child, can lower volume to whisper then just to mouthing the sound
- Cover up parts of the word and have child read parts of the word and then slide your finger under the whole word (while not saying anything)
- Say, "I see ___ syllables/parts in the word, can you find them for me?"
- Say, "Can we split that word into smaller parts?" OR "Are there any smaller parts/words you know in that word?"
- Say, "Split the word up" OR "Try again"
- 

<u>Using a Meaning-Based Cue Hierarchy</u>
- Say, "You said ___, I think ___ would fit better here, right? Read it again"
- Determine if a visual, semantic, or syntactic cue would be better. Visual cues are the simplest, then semantic, then syntactic. For visual say, "You said ___, does ___ or ___ look better?" For semantic say, "You said ___, does ___ or ___ make more sense here?" For syntactic say, "You said ___, is ___ how we say it? or do we use ___?" Then have the child read it again.

**Appendix F**

<u>Sounding Out and Blending</u>

Day 1 – Protocol Outline / General Overview

Day 2 – Focus on Digraphs

Day 3 – Focus on long/short vowel patterns

Day 4 – Focus on Fading Support (Hierarchy)

Day 5 – Review


<u>Dividing the Word</u>

Day 1 – Protocol Outline / General Overview

Day 2 – Focus on Familiar Words / Syllables

Day 3 – Focus on Prefix / Suffix / Vowel Patterns

Day 4 - Focus on Fading Support (Hierarchy)

Day 5 – Review


<u>Using a Meaning-Based Cue</u>

Day 1 – Protocol Outline / General Overview

Day 2 – Simple Comments and Questions ("What is a flane?" "I didn't know we were talking

about ___?")

Day 3 – More Complex Questions and Comments / Visual, Semantic, and Syntactic Cues

Day 4 - Focus on Fading Support (Hierarchy)

Day 5 - Review