

A Jump Start on Literacy: The Effectiveness of a  
Caregiver-Implemented Phonological Awareness Intervention

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A dissertation  
submitted in partial fulfillment of the  
requirements for the degree of

Doctor of Philosophy

University of Washington

2022

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Program Authorized to Offer Degree:

College of Education

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**Abstract**

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There is a large body of research that has focused on ways that we can develop preschool-aged children's early literacy and language skills within early childhood educational settings. Evidence supports how important a young child's literacy experiences are on their future reading skills. However, there continues to be little research that focuses on what caregivers can do with their children at home to best prepare their young children for the literacy expectations that they will encounter when they begin their formal years of schooling, particularly in the area of Phonological Awareness. This dissertation aimed to demonstrate that when caregivers received adequate coaching and support, they could successfully implement early literacy experiences with their child at home. This was examined with a multiple probe across skills design to determine if the early literacy intervention utilized by caregivers has a functional relation on their young child's early literacy skills development within the area of Phonological Awareness. Caregivers also provided insight into the effectiveness of the literacy-based coaching model and their participating children provided feedback related to their overall experiences with their caregiver.

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## **ACKNOWLEDGEMENTS**

I would like to thank the members of my dissertation committee for their time, feedback, and mentorship throughout this journey which includes Dr. Roxanne Hudson, Dr. Kathleen Meeker, Dr. Kristen Missal, and Dr. Tracy Jirikowic. I am also incredibly thankful for the community of adult learners that I have formed while in this program. Thank you for your support, encouragement, and friendship throughout this journey together.

To my family and friends who have supported me over the years and given me the confidence to pursue this dream, I'm forever thankful for your support. To my former students and their families who have all made a lasting impression on me and my teaching. Lastly, this project would not have been possible if it were not for the devoted dyads who participated in this project. Much gratitude and appreciation.

## **DEDICATION**

Thank you to truly the best “part” of a partnership, Corey. Your unwavering support and confidence that I can achieve whatever I set my mind to allowed me to pursue this life-long dream. 143.

To my boys, Xavier and Cassian. Thank you for your patience, encouragement, and love as mom pursued this dream. Remember your dreams are achievable no matter how big or small when you’ve got your family. I can’t wait to see all the good that you two do.

To my mother, Patti Munce. Thank you for always emphasizing and modeling how important a growth mindset is. You put your children’s needs above your own always and truly modeled a strong work ethic in everything you’ve done. I’m so proud to be your daughter.

Finally, I’d like to dedicate this project to my late grandparents Bill and Katie Munce. Neither of them made it past junior high school but they always emphasized the importance of pursuing my education and dreaming big.

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## **CHAPTER ONE**

### **Introduction and Statement of the Problem**

In 2008 the National Early Literacy Panel (NELP) conducted a meta-analysis which focused on identifying what teachers and parents could do to improve young children's literacy and language outcomes. Additionally, the report provided a detailed examination of early correlates of future literacy proficiency and a review of interventions for improving young children's early literacy skills. In the years since its report, there has been continued research within the early childhood educational setting on developing and improving young children's early literacy and language skills. This body of evidence has shown that young children who begin Kindergarten with strong language and literacy skills have more success in school (Adams, 1990; Bailet et al., 2009). Research has also indicated that literacy experiences in young children's lives lay the foundation for future reading success (Lonigan et al., 2008a). Despite the continued research emphasis of early literacy skills development within the early childhood setting, there has been very little research focused on what caregivers could be doing at home to best prepare their young children for the literacy expectations at the beginning of Kindergarten. A comprehensive early literacy approach that reflects a balance between early childhood home- and school-based experiences to promote young children's foundational early literacy skills is necessary in order for young children to become future proficient readers. This project aims to demonstrate that when caregivers receive adequate coaching and support, they can successfully implement early literacy experiences with their child at home which will give their child a jump start on the literacy experiences found in Kindergarten and beyond.

### **Early Literacy Development**

Early literacy is often defined as a period of literacy acquisition that encompasses the development of skills, knowledge, and behaviors that increasingly approximate conventional literacy (Sulzby & Teale, 1991; Whitehurst & Lonigan, 1998, 2002). Conventional literacy includes decoding, oral reading fluency, reading comprehension, writing, and spelling. Preschool-aged children typically acquire early literacy skills prior to receiving formal literacy instruction (Lonigan, 2004; Whitehurst & Lonigan, 1998). Many young children acquire these skills within the context of their homes as well as an early childhood educational setting (e.g., preschool, head start, daycare).

Of all the early literacy skills, phonological awareness has been most strongly related to future reading abilities (Lonigan et al., 1998; NELP, 2008) and also has consistently predicted future reading outcomes (Wagner & Torgesen, 1987). Phonological awareness, "...is not an intuitive or naturally developing ability, as language skills may be for some children, but rather may require deliberate teaching and practice opportunities" (Phillips et al., 2008, p. 4).

Therefore, it is important that young children are exposed and taught early literacy skills and concepts prior to starting Kindergarten so that they have a solid foundation upon which to continue to build. Due to the important role that phonological awareness skills play in young children's future reading abilities, it will be the early literacy focus of this dissertation proposal and will be discussed in more depth in Chapter Two.

### **Caregiver Roles in Early Literacy Development**

Caregivers, including parents, are often referred to as a child's first teacher (Bornstein, 1995) and for good cause for we know that reading comes easier for those children whose caregivers provide models of literacy, support their own child's literacy development as well as use rich language at home (Snow et al., 1991). Many early literacy experiences for children

occur at home with a caregiver. These experiences are often referred to as either informal or formal experiences (Senechal et al., 1998). Informal experiences include literacy opportunities such as reading a book to a child at bedtime while looking/talking about the pictures. An example of a formal literacy experience at home could also include a shared reading opportunity, but in addition to just reading the book the caregiver asks questions regarding the story and expands the activity beyond just basic oral reading. Research that has been completed over the past 40 plus years on children's early literacy skill development has shown the effects of caregiver-child interactions on children's future reading skills (Wasik & Feldman, 2013).

In addition to shared book reading activities, nursery rhymes, songs and finger plays have been shown to be great ways to keep children not only engaged in early literacy experiences but to help build their literacy foundation. Caregivers often also participate in cultural oral storytelling. Cultural oral storytelling entails passing on stories that have been told throughout a family's lifetime. These are not necessarily book readings, but rather oral retellings of a family's history. These are usually engaging for many children and are relevant to their own lives and/or the lives of their caregivers (Curenton, 2006). Research has shown that a home that is rich with literacy experiences and caregiver models with many types of reading materials that are readily accessible to children, positively influences early literacy skills and also impacts future school-age literacy skills (Senechal & LeFevre, 2014). Not only is this shared reading experience important in developing children's exposure to print but is also a valuable way to develop positive feelings/emotions with caregivers and to establish literacy routines at home. Early literacy experiences in general vary greatly for children not only in the early childhood setting but at home as well. It is important to note however that not all children have a caregiver read to

them regularly and/or have access to literacy materials which evidence has suggested can impact their future success with formal reading instruction (Adams, 1990).

Caregivers who do take on these home-based learning opportunities, have children with better receptive and expressive language skills and higher levels of print awareness skills when compared with caregivers who support their child's early literacy skills development in less direct ways (Bennett et al., 2002). Findings such as these suggest that caregivers are promising agents of change in their child's early literacy skills development.

### **Home-Based Efforts to Improve Children's Early Literacy Skills**

Part of the NELP (2008) meta-analysis included 32 studies that focused on parents as the agents of the early literacy intervention. The studies varied greatly but demonstrated moderate-to-large effect sizes on oral language outcomes (ES = 0.37, 18 studies) and general cognitive abilities (ES = 0.92, 6 studies). Given the diversity of the interventions, the lack of experimental replication, and the limited number of studies that were used the panel was unable to make comparisons by intervention features. Rather, the report urged future researchers to further explore the effects of home-based parent/caregiver implemented early literacy interventions with young children.

Wasik and Feldman (2013) noted that the two components of most home-based literacy programs included the programs used to educate parents and parent-child literacy interaction time. They highlighted that despite these two components being essential for implementation success, they have received far less research than school-based early childhood interventions. Most programs that use time to educate parents, focus on a wide range of topics particularly social-emotional well-being rather than explicitly literacy focused. As they note, "Because of the strong relationship between parent-child interactions and later school success, ways to positively

influence parent behavior remains a high priority” (Wasik & Feldman, 2013, p.152). They urged future researchers to examine what specific components would be necessary during parent education opportunities to make parent implemented interventions an effective way of promoting young children’s early literacy and language skills. Despite this urging, limited research in this area has occurred over the past decade. The small body of research that has been completed will be reviewed and discussed in more detail in the next chapter.

## CHAPTER TWO

### **A Review of the Literature & Theory of Change**

This chapter focuses first on the theoretical framework that is being used within this study. Next, the review of the literature focuses on the foundational literacy skills for preschool-aged children that are strongly related to their future reading success by investigating the National Early Literacy Panel (NELP, 2008) report. Then, the review examines and summarizes phonological awareness skill development and its role in a young child's future reading performance. This review also examines how phonological awareness skills develop in young children within early childhood centers as well as at home with caregivers. Furthermore, the review examines and summarizes studies of caregiver-implemented phonological awareness interventions with preschool-aged children. Finally, the review focuses on caregiver coaching models before introducing the theory of change and purpose of study.

The theoretical framework used within this study is the Simple View of Reading (Gough & Tunmer, 1986). This framework suggests that early literacy skills are composed of two groups: print-related and meaning-related. Print-related skills help children learn the alphabetic principle which is essential for becoming accurate and fluent decoders. It includes print awareness, alphabet knowledge and phonological awareness. Meaning-related skills includes language and vocabulary skills, which helps young children understand the text after decoding it (Lonigan et al., 2008b; Whitehurst & Lonigan, 1998). When combined, these foundational skills pave the way for future success in reading (Lonigan et al, 2008b; Whitehurst & Lonigan, 1998). It is important to note that although both print and meaning-related skills are correlated during development, they predict different pieces of future literacy abilities and therefore respond to different types of instruction (Bowyer-Crane et al., 2008; Lonigan et al., 2008a, 2013). Skills

related primarily to print were also identified within the National Early Literacy Panel's (NELP, 2008) report described in more detail below.

### **The National Early Literacy Panel (NELP)**

The body of research that is often referenced and discussed when talking about early literacy skills development and instructional practices is the National Early Literacy Panel (NELP, 2008) report. The NELP was appointed in 2002 and tasked by the National Institute for Literacy and the National Center for Family Literacy with reviewing existing research on teaching literacy to preschool and kindergarten-aged children. The NELP came to be after the National Reading Panel (NRP, 2000) completed a meta-analysis on which pieces of teaching reading were most beneficial when teaching school-aged children to read. However, this report did not consider how early childhood aged children develop literacy skills and thus the NELP was born.

NELP's primary goal was to identify interventions, parenting activities, and instructional practices that promote the development of young children's early literacy skills. However, to do this, the panel first needed to establish which early skills or abilities were precursors of later literacy achievement. The NELP conducted a meta-analysis of experimental peer-reviewed studies that allowed the panel to make some important conclusions about what young children need to learn about language and literacy as well as the instructional practices that are most likely to help preschool-aged children develop these skills. The panel found that code-focused interventions usually had moderate to large effects both on measures of conventional literacy such as reading and spelling and on measures of precursor literacy skills such as phonological awareness and alphabetic knowledge. Effect sizes across outcome domains for code-focused interventions were as follows: Alphabetic knowledge (AK) = 0.38; Memory = 0.27; Oral

Language = 0.32; Phonological Awareness (PA) = 0.82; Print Knowledge = 0.47; Rapid Automated Naming (RAN) = 0.38; Reading Readiness = 0.20; Reading = 0.44; Spelling = 0.61; and Writing = 0.61. These results indicated the positive and significant impact that these interventions have on young children's conventional literacy skills and on skills that predict future literacy outcomes.

The panel identified 11 variables that were moderate-to-strong predictors of either later decoding or reading comprehension proficiency. Six of these variables maintained their value when the factors of IQ and socioeconomic status (SES) were controlled for and included: *alphabet knowledge, phonological awareness, rapid automatized naming of letters or digits, rapid automatized naming of objects or colors, writing or name writing, and phonological memory*. The additional five variables that were moderately correlated with later decoding or reading comprehension but either did not maintain power when other variables were accounted for or were not identified as being evaluated that way by the body of research included: *print concepts, print knowledge, reading readiness, oral language and visual processing*. The NELP found that these 11 variables consistently predicted later literacy achievement for both preschool-aged children as well as kindergarteners. Additionally, these measures were more predictive of literacy achievement within a short time span (e.g., end of Kindergarten/beginning of first grade) than of later literacy growth. Given phonological awareness strong effect sizes and science-base in emergent literacy, the remainder of this chapter will focus on phonological awareness.

### **Phonological Awareness**

Phonological Awareness refers to a child's explicit awareness of the sound structure of spoken words separate from their meaning (Gillon, 2005; Philips et al., 2008; Wagner & Torgesen, 1987). Phonological awareness skills are broken into four developmental levels which

include word, syllable, onset-rime, and phoneme. Young children's progression through these skills typically occurs from bigger to smaller linguistic units as well as from simpler to more advanced tasks. However, this progression is not dependent on mastery of one level to another (Anthony et al., 2002, 2003; Lonigan et al., 2000). Phonological awareness growth can be thought to occur as a continuum. As young children's skills progress, they learn to blend, segment and manipulate words, syllables, and onset and rime which lays the groundwork for developing phonemic awareness. Phonemic awareness is the most critical of the phonological skills to learn and refers to the ability to detect the smallest sound pieces in words, the phonemes (Ehri et al., 2001; Phillips et al., 2008). According to the National Reading Panel (NRP, 2000), segmenting words into phonemes and blending phonemes into words contributes more to a child's ability to read and spell well than any other phonological awareness skills.

Word level of phonological awareness begins to develop early in a child's life as they learn to separate individual words from a phrase/sentence that they hear. During this phase, young children are able to tap or count the number of words in a sentence (e.g., Tap for every word you hear in the sentence: *I like cake.*), blend two words together to form a compound word (e.g., Listen as I say two small words *gold...fish*. Can you put the two words together to make a bigger word? */goldfish/*), break a compound word into its two words (e.g., Can you jump the word parts in *goldfish*? How many times did you jump? */two/*), and when provided a compound word, delete one of the smaller words (e.g., Say *goldfish*. Now say *goldfish* without the *fish*. */gold/*).

Next, at the syllable level, which develops around three years old, young children detect separate parts of words. During this phase a young child can blend syllable parts into words to form the whole word (e.g., Can you put these two-word parts together to make a whole word:

*lock\*et?* /locket/), break a whole word into syllables (e.g., Can you jump the word parts in *locket?* (*lock\*et*) How many times did you jump? /two/), and when given a whole word delete one of the syllables (e.g., Say *burger*. Now say *burger* without the *er*. /Burg/).

During preschool, young children develop onset-rime awareness skills. During this stage, syllables can be divided into smaller parts by separating the first one or two sounds of the word (onset) from the last sounds in the word (rime) (e.g., Can you say *wig* in two parts? /w/.../ig/) as well as taking the onset and rime and blending sounds together to form a whole word (e.g., What whole word am I trying to say: /d/.../og/? /dog/). Additionally, during this phase, young children can identify if two words rhyme (e.g., Do these two words rhyme: *mat*, *rat?* /yes/), and provide a rhyming word when given a word (e.g., Tell me a word that rhymes with *pet?* /wet/).

Finally, at the phonemic level, young children break words or syllables into individual phonemes and manipulate them (Daly et al., 2005). During this phase when a young child is provided a word, they can recognize the individual sounds in the words (e.g., What is the first sound in *map?* /m/; What is the middle sound in *map?* /a/; What is the last sound in *map?* /p/), identify words that have the same beginning sound (e.g., Which word has the first same sound as *map*: *cat*, *fan*, or *man?*), blend the sounds together to form a word (e.g., What word is /m/ /u/ /g/? /mug/), separate each word into individual phonemes and say sounds (e.g., How many sounds in *bug?* /three/. Can you say them by sound? /b/ /u/ /g/), recognize the word that remains when a phoneme is removed from that word (e.g., What is *track* without the /t/?), make a new word by adding a phoneme (e.g., What word do you have if you add /t/ to the beginning of *rack?* /track/), make a new word by replacing a phoneme for another (e.g., The word is *mug*. Change /m/ to /l/. What's the new word? /lug/), and also recognize the odd word when provided a couple of words

(e.g., Which word does not belong: *bus, ball, mouse*) These skills can begin developing during preschool, but for many young children will fully develop during their Kindergarten year.

### ***Phonological Awareness and Future Reading Outcomes***

Phonological awareness skills are one of the strongest predictors of future reading (Adams, 1990; Ezell & Justice, 2005; Lonigan et al., 1998; NELP, 2008). For example, when phonological awareness skills were measured in both preschool and Kindergarten, they significantly and uniquely predicted children's future decoding, spelling and reading comprehension outcomes (Lonigan et al., 2008b). In addition, to consistently predicting future reading outcomes it also consistently predicts the rate at which children acquire reading skills (Storch & Whitehurst, 2002; Wagner & Torgesen, 1987) with phonemic awareness being one of the best predictors of children's ability to read (Ehri et al., 2001). Lonigan et al., (2000) found that preschool age children who were better at detecting syllables, rhymes, and phonemes were more prepared to learn to read and this was the case when controlling for other factors like IQ, memory, and socio-economic status. It is estimated that many children with significant reading problems have a core deficit in their ability to process phonological information (Blachman et al., 1999; Ehri et al., 2001).

Young multilingual learners also follow similar patterns of literacy development across languages. If they have strong phonological awareness skills in their first language, it is likely to facilitate their phonological awareness development in their second language. Whereas if they have lower levels of linguistic proficiency particularly in vocabulary knowledge, it may slow their development of phonological awareness in their second language (Durgunoğlu, 2002). Research has also shown that phonological awareness levels are correlated across languages (Durgunoğlu, 1998; Durgunoğlu et al., 1993). Early literacy skills including phonological

awareness are typically addressed within early childhood education settings, however there is much variance in the quantity and quality of instruction that young children receive.

### ***Phonological Awareness Development in Early Childhood Centers***

The NELP (2008) report highlighted the importance of phonological awareness skill development in preschool-aged children and provided strong evidence on effective ways for educators to teach it within early childhood settings. Phonological awareness instruction should be clear and explicit, include frequent models, and provide young children with multiple opportunities to practice newly acquired skills. Explicit instruction rather than implicit instruction is especially necessary and effective for those young children who have low early literacy skills, as well as those potentially at-risk for future reading difficulties (Ehri et al., 2001; Foorman & Torgesen, 2001).

Preschool-aged children, “may enter the preschool classroom with relatively advanced (phonological awareness) skills, many others, likely those with one or more familial risk factors or language delays, may demonstrate very undeveloped skills and perform quite poorly on initial assessments or informal probes” (Phillips et al., 2008, p.5). This variance in how young children perform on phonological awareness assessment measures should not delay instruction in phonological awareness but rather should encourage early childhood teachers in these settings to teach phonological awareness skills within the range of a young child’s current abilities. This could be facilitated by placing young children in homogeneous small groups that provides instruction on the level of the continuum for each small group of children. Though the NELP (2008) report did not specifically provide recommendations for instructional group sizes for preschool-aged children, they referred to the National Reading Panels (NRP, 2000) recommendation of small group sizes due to the ability for the teacher to individualize

instruction as based on a small group of children's specific phonological awareness needs. This makes sense given the varied needs of young children in this setting as well as the challenges that can be presented with regards to attention to tasks at this age. Providing young children with a literacy-rich early childhood learning environment provides more opportunities for them to participate in purposeful and meaningful literacy activities. When young children engage in these types of activities with their peers through both direct and indirect teaching experiences, they begin to develop knowledge around print, language, and literacy (Teale & Sulzby, 1986).

Despite the large body of research highlighting the positive impact that high-quality, systematic, explicit, and research-based phonological awareness instruction can have on young children's phonological awareness skills development, findings suggest low rates of this type of instruction occurring in many early childhood settings (Lonigan et al., 2011). Additionally, research suggests that early childhood educators' knowledge in this area varies widely (Phillips & Piasta, 2013) and that many particularly those providing early childcare and preschool education are not only lacking in phonological awareness knowledge but also unsure how to appropriately promote young children's phonological awareness skill development (Dickinson & Brady, 2005; Moats & Foorman, 2003). This can obviously lead to missed opportunities of supporting and promoting young children's phonological awareness skills development within their preschool-aged years within early childhood centers.

### ***Phonological Awareness Development at Home with Caregivers***

There is a large body of research on phonological awareness interventions within early childhood settings (e.g., Ehri et al., 2001; Foorman & Torgesen, 2001; Lonigan et al., 2011; NELP, 2008; Phillips et al., 2008), however there is a very limited amount of research that has focused on young children's phonological awareness skills development at home with

caregivers. Parent-implemented (PI) interventions are a valuable piece of early intervention programs and have been used to positively support young children's literacy, behavior, social-emotional, and other educational outcomes (Hughes & Mac Naughton, 2000). A small body of research on PI interventions have been used to improve language (Heidlage et al., 2020; Roberts & Kaiser, 2011) and other literacy outcomes besides phonological awareness (Edwards, 2014; Pratt et al., 2015) for young children, many of whom are identified with a disability or who are at risk for a developmental delay/disability. The term parent-implemented is often used in the literature however the term caregiver-implemented will be used within this study and includes adopted/foster parents, grandparents, aunts/uncles, and close family friends in addition to parents throughout this proposal. Despite the limited research on caregiver-implemented phonological awareness interventions, the results that are present are encouraging.

### **Caregiver-Implemented Phonological Awareness Interventions**

When reviewing the limited literature on caregiver-implemented phonological awareness interventions (see Table 2.1), single-case design studies appear to be the research methodology of preference. The first study (Sundman-Wheat et al., 2012) utilized a concurrent multiple baseline across participants design that focused on six preschool aged children who were identified as at-risk for reading difficulties within their Head Start program. Participating families were noted as being racially/ethnically diverse and representative of the population served by Head Start centers in urban areas. They were identified as at-risk as based on the criteria of scoring fewer than 10 sounds correctly on the Dynamic Indicators of Basic Early Literacy Skills (DIBELS) First Sound Fluency (FSF) measure and fewer than 10 letters correct on the DIBELS Letter Knowledge (LK) measure.

The phonological awareness intervention was developed by the research team after examining the literature regarding evidence-based interventions to teach both alphabetic knowledge and phonological awareness skills. This resulted in 27 lessons within this intervention package. The materials needed for the intervention included the scripted lesson plans, letter flashcards, and picture flashcards for the mnemonic strategy. Additional materials that were provided to parents included a DVD containing a demonstration of how to complete the lessons as well as suggestions to provide young children effective praise.

Within the baseline phase, consenting parents attended one 60-to 90-minute individual training session on the scripted phonological awareness intervention. During the training parents were provided instruction on the intervention, models, opportunities to role-play and feedback from the trainer. Parents received feedback specifically on the role-play that they conducted and were trained until they reached 90% accuracy in administering the intervention. Within each lesson there were three parts: (1) teach one new letter through a mnemonic device, (2) review letters from the previous three sessions, and (3) teach onset identification through a three-stage process. After attending the training and receiving the materials parents were asked to implement the intervention for nine weeks (three lessons per week) for 15-20 minutes per lesson. Additionally, researchers inquired with the participating children's Head Start teachers regarding early literacy skills instruction and were informed that explicit instruction in phonological awareness was limited in their classes. It was noted however that given that the six participants were enrolled in four different Head Start classrooms, it was not feasible for the research team to monitor instructional activities throughout the study.

Dyads moved into the intervention phase in randomized order, with the four entrance points being one week apart. Once parents were instructed to begin the intervention, their

children's FSF and LK skills were measured twice a week. The follow-up phase began immediately upon the completion of the intervention and lasted for two weeks. Assessments during this phase remained twice weekly. Parents were also provided an opportunity at this time to provide suggestions to the research team via interviews on ways that the intervention program could be adjusted to be easier for them to implement or more engaging for their children.

Overall results indicated that all six children's FSF scores increased from baseline phase to intervention phase and five out of six children demonstrated increased scores from the intervention phase to the follow-up phase. Results from the LK assessments revealed growth over time for all six children. Parents reported via interviews that their children all enjoyed the intervention and also reported that the lessons themselves were easy to follow and parent-friendly.

A second study (McConnell & Kubina, 2016) which utilized a multiple probe design across participants study focused on three male Caucasian children who had just started Kindergarten and were identified as at-risk for reading difficulty as based on their scores on the DIBELS LK assessment. Parents were provided individualized training on an early literacy intervention that contained the first 30 lessons from the *Teach Your Child to Read in 100 Easy Lessons* book (TYCTR; Engelmann et al., 1983). These lessons were based on the fast-cycle component DISTAR Reading I and II (Engelmann & Bruner, 1977) and written especially for parents. Each parent was provided a copy of the book for home. The lessons were designed with basic concepts of direct instruction including a review of previous material, correct letter pronunciation and blending, and directions for error correction procedures. Within the lessons, the children were introduced to letter sounds, instructed on how to correctly produce letter sounds, blending letter sounds, sounding out words, rhyming words, and reading whole words.

Consented parents attended two training sessions held across two days, totaling approximately two hours and thirty minutes for each parent. During these sessions' parents completed sample lessons with the trainer while receiving corrections and feedback, watched a 70-minute interactive video on the TYCTR lessons, and were provided models of letter sounds. Parents were guided in an instructional method of model, lead, and test throughout the lessons. The intervention occurred for six weeks (five lessons a week) for 15 minutes per lesson. The children were assessed with one of eight different sentence list sheets to measure progress over time. Each sentence list sheet contained sentences using all 15-letter sounds that were being taught by parents. Each child was assessed daily to measure the effect of the instruction on the child's ability to sound out words during a timed probe. Overall, results indicated that children made improvements on assessment measures.

Alternatively, one larger scale experimental study (Justice et al., 2005) was completed that included twenty-two (18 boys, 4 girls) pre-Kindergarten children identified with language impairments. All children were native English speakers and resided in homes in which English was the home language. Twenty children were identified as Caucasian and 2 identified as Asian American. Inclusion parameters included that children were required to receive a standard score of 85 or below on the receptive and/or expressive subtest of the *Test of Early Language Development* (TELD; Hresko et al., 1991), pass a hearing screening, receive a standard score of 80 or higher on the *Kaufman Brief Intelligence Test* (KBIT; Kaufman & Kaufman, 1990), and had no known history of either a gross sensory or neurological impairment as noted by parent report.

Children were randomly assigned to either an experimental or comparison group, with each group composed of 11 children. Consenting parents were provided 10 storybooks with two

task cards at the end of each book and a reading schedule based on four storybook readings per week over the course of 10 weeks. The experimental group had rhyme/alliteration tasks which focused on young children's ability to recognize and produce rhymes and identify letter sounds whereas the comparison group had a vocabulary building task.

Parent training was conducted in families' homes in 15-minute individual sessions, during which time the researcher explained the goal of the tasks and modeled tasks. All parents were instructed to read the storybooks with their children in the way they normally would at home. At the end of each storybook reading, parents were asked to help their children complete two tasks that were printed on the task cards found in the back pocket of the provided book. The specific task instructions varied by control and experimental group however both the experimental and comparison groups utilized forty parent-child shared reading book sessions. Each child was individually administered an informal criterion-referenced measure of phonological awareness at pre-and post-test. These measures were adapted from the literature to examine both rhyme and alliteration skills.

Pre-and-post phonological awareness assessment results demonstrated that the experimental conditions accelerated children's rhyme awareness skills fourfold over the comparison condition. For the experimental group the mean change for rhyme was 0.72 of a standard deviation unit and 0.38 for alliteration. A paired-samples *t* test on the composite scores showed that pretest and posttest scores were significantly different for rhyme  $t(10) = 3.39$  ( $p < 0.01$ ), but not for alliteration,  $t(10) = 1.18$  ( $p = 0.27$ ). For the control group, the mean change for rhyme was 0.14 of a standard deviation unit and 0.40 for alliteration. A paired-samples *t* test on the composite scores showed that pretest and posttest scores were not significantly different for rhyme,  $t(10) = 0.60$  ( $p = 0.56$ ), or alliteration,  $t(10) = 1.17$  ( $p = 0.27$ ). This finding shows that

phonological awareness growth over 40 shared reading sessions for the control group children was modest.

Despite the limited research on caregivers implementing phonological awareness interventions at home with their young children, we have evidence that caregivers can apply evidence-based strategies for teaching their own children (Roberts & Kaiser, 2011). When caregivers receive high-quality training and coaching in order to implement interventions with fidelity, these interventions can also be considered evidence-based practices (Wong et al., 2013).

**Table 2.1**

*Summary of Existing Research on Caregiver-Implemented Interventions*

Author/Year	Participants	Design	DV	IV	Intervention Specifics	Results
Justice et al., (2005)	N: 22 Age: Mean 5.2 All children had language impairments	Quantitative; Assignment: 11 in experimental and 11 in control groups	*Pre-test and Post-test PA assessment *Parent effectiveness questionnaire	Author developed intervention	1 parent training session; 40 shared story-book sessions based on 10 books;	*PA performance showed differential effects for rhyme but not alliteration
McConnell et al., (2016)	N: 3; Age: 5	Single case; Multiple <u>probe</u> across participants	*Oral Reading Fluency on word sheets;	Teach Your Child to Read in 100 Easy Lessons	2-Individual parent instruction sessions. 30 lessons (5 lessons per week) in 15-minute sessions	*Functional relation for all 3
Sundman-Wheat et al., (2012)	N: 6 Age: 4.5-5.3	Single case; Concurrent <u>Multiple-baseline</u> across participants	*DIBELS FSF *DIBELS LK	Author developed	1 parent training <u>session</u> ; 27 lessons (3 lessons per week) in 15–20-minute sessions	* Functional relation for five of the six participants in FSF and six out of six for LK.

Note. PA is phonological awareness; FSF is First Sounds Fluency; LK is Letter Knowledge

**Caregiver Coaching Model**

Caregivers who participate in interventions with their young child at home, are often provided either training(s) and/or coaching on the intervention itself by service providers. With regards to the caregiver-implemented phonological awareness intervention studies discussed above, all provided caregivers with trainings rather than coaching. Caregiver coaching has been

defined as a process that improves current skills, develops new skills, and builds upon caregivers existing knowledge to support both children and family outcomes (Rush & Shelden, 2011). More details on the four effective components of caregiver coaching are identified below which include collaborative partnerships (Dunst & Trivette, 2009; Friedman et al., 2012), goal setting (McCollum & Yates, 1994; Rush & Shelden, 2005), focused observations (Ives, 2008; Rush & Shelden, 2011), and reflection and feedback (NCQTL, 2014; Rush & Shelden, 2011), as based on practice-based coaching (see Figure 2.1).

**Figure 2.1**

*National Center for Quality Teaching and Learning Practice Based Coaching Model*



## **Effective Components of Coaching**

### ***Collaborative Partnership***

The first component and the one that is considered a fundamental component of effective caregiver coaching is establishing a collaborative partnership (Gigi An et al., 2019). This partnership relies heavily on building rapport and trust between coaches and caregivers (Turnbull et al., 2015). This doesn't always happen instantly, but rather requires time and effort between both parties to establish. An additional important aspect of this piece is the nondirective nature in which caregivers and coaches both acknowledge that each bring unique experiences, knowledge, abilities, and strengths to the table (Gigi An et al., 2019). The coach may be an expert in child development and/or early intervention, however caregivers have been a constant

in their child's life and because of this are often referred to as their child's first teachers (Bornstein, 1995).

Both the Office of Head Start (Administration for Children and Families, 2011) and the Division for Early Childhood (DEC) of the Council for Exceptional Children (2014) recommend that service providers including coaches establish and maintain collaborative relationships with families to help support children's overall development. DEC's (2014) recommended practices specifically encourage providers to support families in "learning sensitive and responsive ways to interact with the child and promote the child's development" (DEC, 2014, p.14).

### ***Goal Setting***

Next is the goals setting step in the coaching process which involves input from both coaches and caregivers. In this step coaches address the family's priorities and concerns regarding their child's strengths and needs (F4; DEC, 2014). The National Center on Quality Teaching and Learning (NCQTL, 2014) recommends that this step includes a needs assessment to help determine appropriate goals, and an action plan that will break down goals into more manageable tasks. This assessment includes a variety of methods, including observations and interviews, as well as gathering additional information that the family may want to share (A6; DEC, 2014).

This assessment data is then used to develop goals within an Individualized Education Plan that are observable and measurable. Coaches work with caregivers to ensure that the goals that they create together follow this format as well. In addition, it is important that the goals are easy to understand and could be implemented by other caregivers (Gigi An et al., 2019). To support the caregivers and child in reaching the shared goal, coaches may need to break down

the goal into more manageable tasks (objectives) and gradually add difficulty, duration and/or complexity of tasks (NCQTL, 2014).

### ***Focused Observations***

The third component of caregiver coaching includes engaging in focused observations to examine the current coaching practices and goals and provides opportunities for caregivers to develop new skills and strategies within the area of focus (Gigi An et al., 2019; Ives, 2008; NCQTL, 2014). However, this step should also be bidirectional in which both coach and caregiver learn and reflect from observing each other (Friedman et al., 2012; NCQTL, 2014; Rush & Shelden, 2011). This step also allows for the coach and caregiver to review current goals and determine if the plan is meeting the needs of the child and family. Coaches can coach caregivers on a specific intervention and model how that may look so that caregivers better understand the strategy and how it looks during implementation. Following this observation, caregivers can discuss, reflect, and even practice the strategy themselves (Rush & Shelden, 2011). Additionally, coaches and caregivers work together to systematically and regularly share expertise, knowledge and information that can help plan and implement future interventions (TC2; DEC, 2014).

### ***Reflection and Feedback***

The final component of caregiver coaching which is also considered an important but often overlooked component is the reflection and feedback piece. Providing feedback is one way to address needs, strengths, progress, and challenges for the family (Gigi An et al., 2019) and includes both supportive and corrective statements (NCQTL, 2014). This is an important step as it helps build the relationship between coach and caregiver and also highlights the progress that

the caregiver has made with the intervention/goals as well as indicates potential missed opportunities for improvement throughout the process.

During this piece it is important that caregivers provide feedback to coaches with regards to what was working, what may have been a challenge, and together they plan next steps moving forward. It is also important that coaches don't immediately attribute the lack of a certain outcome solely on a caregivers' performance/abilities. Rather, coaches need to take time to reflect on the strengths of caregivers, the individual child's progress, the supports and resources that caregivers had, the specific feedback that coaches provided during the coaching process and the unique challenges that may have been experienced by the caregiver (Gigi An et al., 2019). Reflecting on these components will highlight for coaches' areas for improvement in their coaching practices as well as the implementation of the intervention/strategy by the caregiver.

### **Coaching Model**

As coaches work with caregivers specifically on building upon existing literacy knowledge and skills to support literacy outcomes for the child and family it is important that they incorporate these components of caregiver coaching. Building a collaborative partnership is the foundation upon which the coaching model is built upon. This partnership allows coaches and caregivers to focus efforts on setting goals that take into account the literacy needs/strengths of the family as a whole. Once these goals are set, coaches and caregivers can participate in bidirectional observations that emphasize the coaching process as a whole and provides opportunities for reflection and feedback on both sides.

Coaching models have been successfully used with caregivers and/or families within the context of supporting young children's social-emotional and behavioral development especially in the fields of early intervention (EI) and infant mental health (IMH). However, there is little

evidence of its use with supporting a child's early literacy skills development (Jordan et al., 2000; Levin & Aram, 2012; Zigler et al., 2008). As already reviewed, there is but a small body of research on caregiver-implemented interventions in early literacy in general and of that research, none of the studies utilized a coaching model to support caregivers and families throughout the process, but rather utilized an initial training with caregivers. Additionally, these types of caregiver trainings were offered in-person only. After attending trainings caregivers were then asked to proceed with the literacy interventions on their own with little to no additional support or follow-up (Justice et al., 2005; Sundman-Wheat et al., 2012). Given this study's desire to highlight strengths-based literacy interactions between caregivers and their young children while also providing ongoing support to caregivers, a virtual coaching model was developed and is based off practice-based coaching model and is described in more detail below as well as in the next chapter.

### **Theory of Change**

Within this study the lead researcher hypothesized that when caregivers are provided with adequate coaching and support, they can successfully implement a phonological awareness intervention with their preschool-aged child which would result in demonstrated gains in their child's phonological awareness skills (See figure 2.2). The prior review of existing literature on caregiver-implemented phonological awareness interventions though limited in number, has shown positive outcomes for young children's phonological awareness skill development.

**Literacy-Based Caregiver Coaching Model.** The model of literacy-based caregiver coaching that was used was based on practice-based coaching (NCQTL, 2014) with further guidance and support from the Promoting First Relationships program as well as the Filming

Interactions to Nurture Development (FIND, Fisher et al., 2016) program particularly around the areas of strengths-based feedback and virtual support and coaching.

***Collaborative Partnerships.*** Given that caregiver coaching was designed to be provided virtually within this study, it was important that collaborative partnerships were formed from the very beginning. During this step, it was also important that the coach honored the unique strengths and abilities that caregivers shared about their children as well as acknowledge caregivers as experts on their children.

***Planning within the Intervention.*** During this step information was gained directly from caregivers regarding their priorities and concerns regarding the intervention/experiences. Caregivers were asked questions related to what they hoped to achieve for both their child as well as themselves throughout this process. Additionally, during this step the coach reviewed key concepts of the lessons as well as reviewed specific lesson components with caregivers.

***Strengths-based video-coaching feedback.*** During coaching sessions, caregivers viewed an edited clip of themselves engaging in a lesson with their child. After viewing the clip, the coach highlighted strengths-based interactions that occurred between caregivers and their child around the lesson components. Additionally, these edited clips were used to introduce new skills or strategies and/or to discuss ways that caregivers could adjust/modify lesson components as based on child feedback.

***Opportunities for Modeling and Practicing.*** Opportunities to model aspects of lessons that may be unclear or need some additional guidance for caregivers was an important step within this coaching model. Additionally, providing caregivers with opportunities to practice aspects of strategies/lessons as well as time to discuss, reflect, and practice the strategy/lesson component was an important part of this final step (Rush & Shelden, 2011).

**Implementation of Phonological Awareness Intervention.** As caregivers continue to receive coaching support throughout the intervention, they begin to implement the phonological awareness intervention experiences/lessons with their child. The individualized, strengths-based video-coaching feedback component of these virtual coaching sessions could likely contribute to improved confidence in their ability to implement the intervention. Additionally, the flexibility that was built into the intervention implementation (e.g., choosing days of the week; time of the day) as well as the scheduling of virtual coaching sessions could aid in the implementation fidelity of the intervention.

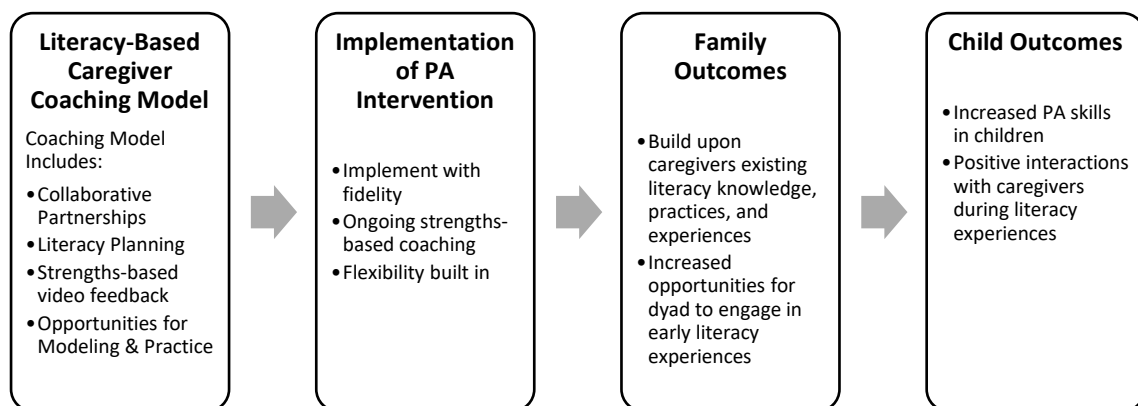
**Family Outcomes.** As caregivers continue to implement phonological awareness lessons with their children while receiving coaching, they may begin to experience some positive outcomes as a family. Caregivers may begin to identify how their own literacy knowledge, practices, and experiences are expanding throughout this process, perhaps even seeing evidence of this within the video feedback section of coaching. They may also notice ways that they can build in phonological awareness experiences throughout the family's daily routines. Furthermore, caregivers may notice that these experiences provide them and their children with increased opportunities to engage in meaningful and purposeful early literacy experiences together.

**Child Outcomes.** As caregivers continue to implement this phonological awareness intervention with their children, their children should begin to demonstrate increased phonological awareness skills performance on tasks. For these children, phonological awareness was an early literacy area of concern prior to the intervention. For some, this maybe their first experience working on their phonological awareness skills either at home or in an early childhood center setting. For others, this maybe their first time working individually with a

caregiver on an early literacy activity. An additional outcome from this study, will be increased opportunities for positive interactions with caregivers during these literacy experiences. This theory of change proposes a pathway to give young children with lower phonological awareness skills an opportunity to participate in phonological awareness experiences with their caregiver in a familiar and comfortable setting that can provide them with a jumpstart on the types of literacy experiences they will have when they begin their formal years of school.

**Figure 2.2**

*Theory of Change*



**Purpose of Study**

The NELP (2008) meta-analysis of parent-and home-based literacy programs demonstrated some statistically significant positive effects on children’s cognitive abilities and oral language skills. However, the panel urged researchers to further explore the effects of coordinating home and caregiver programs on young children’s early literacy skills development. Despite this urging, limited research in this area has occurred over the past decade. Much research has and is still primarily focused on improving young children’s early literacy skills development within the context of their early childhood educational setting (e.g., preschool, head start) rather than within their families. It is believed that caregivers are an untapped resource that

could be used successfully in implementing phonological awareness skill experiences for their preschool aged children. This study's hypothesis is that with adequate coaching and support, caregivers can successfully implement phonological awareness experiences with their child which will provide their child with a jump start on the literacy experiences of Kindergarten and beyond. This study focused on answering the following research questions:

**Research Question 1:** *Is there a functional relation between caregiver implemented phonological awareness experiences and preschool children's phonological awareness skills?*

**Research Question 2:** *How do caregivers view the effectiveness of a virtual literacy-based coaching model after implementing phonological awareness experiences at home with their preschool-aged child?*

**Research Question 3:** *How do preschool-aged children view the phonological awareness experiences with their caregiver?*

## CHAPTER THREE

### Research Methodology

This chapter focuses on the research methodology utilized in this study. First, participant recruitment and characteristics as well as setting are described. Next, the descriptive, dependent, and independent variables are discussed. Then, the experimental design including data collection and analysis procedures are outlined. Finally, fidelity and reliability procedures are discussed.

#### Consenting Procedures

After Institutional Review Board (IRB) approval was obtained from the University of Washington's human subjects division (Appendix A), study recruitment began. A recruitment flyer (Appendix A) was dispersed via email (Appendix A) to four Pacific Northwest early childhood centers, 19 Pacific Northwest Cooperative preschools, three Pacific Northwest Parent-Education programs, three Pacific Northwest Early Intervention provider centers, and posted on two Pacific Northwest parent pages via social media. As a result of this, 22 caregivers emailed with interest and asked for additional information. From this, 12 caregivers signed consent forms (Appendix A) to participate in the study. Inclusion criteria included: (a) children were in their year before Kindergarten, (b) child and caregiver were both proficient in English, and (c) child demonstrated below level proficiency on the *Comprehensive Test of Phonological Processing- 2* (CTOPP-2; Wagner et al., 2013) phonological awareness subtest. The only additional criterion for caregivers was that they: had access to an electronic device (e.g., laptop computer, cell phone) that had reliable internet access for coaching sessions as well as recording/uploading lesson sessions. The role of caregivers was loosely defined and was open to include mothers, fathers, grandparents, aunts/uncles, foster/adopted parents, and/or close family friends. From the 12 consented caregivers, six were invited to participate in the study. The six were selected to

ensure equitable racial, gender, preschool experience, and other demographic representation in the study.

### **Descriptive Variable**

The descriptive variable that was used for this study was the *Comprehensive Test of Phonological Processing-2* (CTOPP-2<sup>nd</sup> edition; Wagner et al., 2013). The *CTOPP-2* is a norm-referenced test that measures phonological processing skills related to reading for individuals aged 4 to 24. It is often used to identify early childhood aged children who are at risk of future reading difficulties and would benefit from early intervention services. Reliability of the *CTOPP-2* subtests was demonstrated by average internal consistency coefficients to exceed .80, and .85 or higher for all composites. Validity of the subtests and composites was demonstrated by correlations. The average coefficients for the subtests ranged from .49 (moderate) to .84 (very large). This indicates that the *CTOPP-2* is both a reliable and valid tool to measure young children's phonological processing skills. The *CTOPP-2* was virtually administered to children at the beginning of the study, prior to beginning phonological awareness experiences with caregivers to ensure that the children were performing in the below average level in this area. Additionally, it was used to provide in depth information regarding the child's skills in phonological awareness at both the onset and end of the study. It was administered virtually given the ongoing Covid-19 pandemic. Prior to implementing it virtually, Dr. Richard Wagner one of the developers of the *CTOPP-2* was consulted about administering the test virtually. His guidance was to make it look and sound virtually as you would face-to-face. To ensure this Dr. Wagner suggested that audio files be used for the blending words subtest and that the proctor share their screen with images from the sound matching subtest. This guidance was adhered to during the virtual implementation of the descriptive variable. For the purposes of this study, the

4- to 6-year-old version was utilized. The phonological awareness composite is composed of Elision, Blending words, and Sound matching subtests. Raw scores were converted to a scaled score as based on child’s age and the sum of the scaled scores was converted into a composite score. Composite scores in the 90-110 range were described as average, between the 80-89 range as below average and 70-79 as poor. Child participant scores are in Table 3.1 and described below.

**Table 3.1**

*Participant CTOPP-2 Descriptive Measure*

Child	Onset Score	Onset Descriptive Category	End Score	End Descriptive Category
Foster	88	Below Average	105	Average
Brendan	86	Below Average	90	Average
Frances	86	Below Average	92	Average
Nora	88	Below Average	86	Below Average
Kyle	71	Poor	Ongoing	Ongoing
Kevin	75	Poor	Ongoing	Ongoing

*Note.* Phonological Awareness Subtest which included Elision, Blending Words and Sound Matching Composite Scores

**Participants**

Six caregiver-child dyads met all inclusion criteria and participated in the study (Table 3.2). Complete data is reported for four caregiver-child dyads while data collection for the other two dyads is ongoing.

**Tessa and Foster.** This dyad was composed of mother Tessa who reported her age range between 43 and 47 years old and her son Foster who was 48 months old at the onset of the study and the youngest child participant in the study. He attended a Pacific Northwest Preschool two half days a week. He had one older sibling. Tessa identified both herself and Foster as White and reported that English was the family’s primary language at home. She noted that she had a four-year college degree and the household income for 2021 was reported in the \$100,000-\$149,999

range. Tessa had noted her desire to participate in this study, given that her child had not been in preschool for the past year due to the ongoing Covid-19 global pandemic. Foster received Occupational Therapy services and there was not a family history of dyslexia or reading difficulties reported.

When inquired about home literacy practices, Tessa reported that she reads daily to Foster as do other caregivers in the home. They primarily use print books during these shared reading opportunities, and Foster also uses educational materials from Leap Frog primarily the Leap Pad independently at home. Tessa reported that she began reading to Foster when he was an infant. He began to show interest in books when he was a toddler. He began making up stories, learning his letter names and letter sounds while in preschool.

Foster completed the *CTOPP- 2* phonological awareness subtest during one virtual session with the researcher at the onset of the study. His scaled scores were as follows (Age 4 years, 0 months): Elision- 8; Blending Words- 7; and Sound Matching- 9. His composite score was an 88 with a descriptive category of “below average.” The same subtest was also administered virtually at the end of the study. His scaled scores were as follows (Age 4 years, 5 months): Elision- 11; Blending Words- 10; and Sound Matching-11. His composite score was a 105 with a descriptive category of “average.”

**Table 3.2**

*Participant Demographics*

Caregiver & Child	Age	Early Childhood Setting	Frequency	Disability	Race of Child
Tessa & Foster	48	Preschool	2-half-days	Yes	White
Becca & Brendan	52	Preschool	4-half-days	No	White
Kelly & Frances	58	Co-op Preschool	4-half-days	No	White
Theresa & Nora	51	Co-op Preschool	3-half-days	No	White
Eva & Kyle	60	HeadStart Preschool	4-full days	Yes	Mixed (Asian & White)
Diana & Kevin	61	Preschool	4.5-full days	Yes	White

*Note.* Age is reported in months. Disability status as reported by caregivers.

**Becca and Brendan.** This dyad was composed of mother Becca who reported her age range between 38 and 42 years old and her son Brendan who was 52 months old at the onset of the study. Brendan attended a Pacific Northwest Preschool for four half-days a week and had three older siblings. Becca identified herself and Brendan as White and reported that English was the family's primary language at home. She noted that she had attended some college and the household income for 2021 was reported in the \$100,000-\$149,999 range. Brendan had never received Special Education services and a family history of dyslexia or reading difficulties was not reported.

When inquired about home literacy practices, Becca reported that she reads daily to Brendan as do other caregivers in the home. They primarily use print books during these shared reading opportunities, and Brendan also uses educational apps on a tablet independently at home. Becca reported that she began reading to Brendan when he was an infant, that he showed interest in books and began making up stories when he was a toddler. He learned his letter names as a toddler and has been working on his letter sound skills while attending preschool.

Brendan completed the *CTOPP-2* phonological awareness subtest during one virtual session with the researcher at the onset of the study. His scaled scores were as follows (Age 4 years, 4 months): Elision- 7; Blending Words- 7; and Sound Matching- 9. His composite score was an 86 with a descriptive category of "below average." The same subtest was also administered virtually at the end of the study. His scaled scores were as follows (Age 4 years, 8 months): Elision- 6; Blending Words- 9; and Sound Matching- 10. His composite score was a 90 with a descriptive category of "average."

**Kelly and Frances.** This dyad was composed of mother Kelly who reported her age range between 38-42 and her daughter Frances who was 58 months old at the onset of the study.

She attended a Pacific Northwest Cooperative Preschool for four half-days a week. She was an only child. Kelly identified herself and Frances as White and reported that English was the family's primary language at home. She noted that she had a four-year college degree and the household income for 2021 was reported to be above \$150,000. Frances had never received Special Education services and a family history of dyslexia or reading difficulties was not reported.

When inquired about home literacy practices, Kelly reported that she reads daily to Frances as do other caregivers in the home. They primarily use print books during these shared reading opportunities. At home, Frances uses magnetic letters independently at home. Kelly reported that she began reading to Frances when she was an infant and at this time Frances also began to show an interest in books. She began making up stories, learning her letter names and letter sounds while a toddler.

Frances completed the *CTOPP-2* phonological awareness subtest during one virtual session with the researcher at the onset of the study. Her scaled scores were as follows (Age 4 years, 10 months): Elision- 8; Blending Words- 6; and Sound Matching- 9. Her composite score was an 86 with a descriptive category of "below average." The same subtest was also administered virtually at the end of the study. Her scaled scores were as follows (Age 5 years, 2 months): Elision- 9; Blending Words- 10; and Sound Matching- 7. Her composite score was an 26 with a descriptive category of "average."

**Theresa and Nora.** This dyad was composed of mother Theresa who reported her age range between 38 and 42 years old and her daughter Nora who was 51 months old at the onset of the study. She attended a Pacific Northwest Cooperative Preschool for three half-days a week. She was an only child. Theresa identified herself and Nora as White and reported that English

was the family's primary language at home. She noted that she had a four-year college degree and the household income for 2021 was reported to be over \$150,000. Nora had never received Special Education services and did have a family history of dyslexia or reading difficulties reported. Theresa noted that both she and her husband both have attention deficit hyperactivity disorder (ADHD) and are concerned that Nora may also have it.

When inquired about home literacy practices, Theresa reported that she reads daily to Nora and that Nora's father reads every other day to her at home. They have used a combination of digital books, print books, online media/apps and magazines with Nora during these shared reading opportunities. Nora independently engages with educational videos/apps/games on a tablet as well as works on literacy related workbooks at home. Theresa reported that she began reading to Nora when she was an infant and that she showed interest in books at this time as well. Nora began making up stories while in preschool. She began learning her letter names and letter sounds as a toddler and has continued to learn them as a preschooler.

Nora completed the *CTOPP-2* phonological awareness subtest during one virtual session with the researcher at the onset of the study. Her scaled scores were as follows (Age 4 years, 3 months): Elision- 8; Blending Words- 8; and Sound Matching- 8. Her composite score was an 88 with a descriptive category of "below average." The same subtest was also administered virtually at the end of the study. Her scaled scores were as follows (Age 4 years, 6 months): Elision- 7; Blending Words- 9; and Sound Matching- 7. Her composite score was an 86 with a descriptive category of "below average."

**Eva and Kyle.** This dyad was composed of mother Eva who reported her age range between 33 and 37 years old and her son Kyle who was 60 months old at the onset of the study. He attended a Pacific Northwest Head Start preschool for four full days a week. He had one

older sibling. Eva identified herself as Asian and Kyle as a mix of Asian and White and reported that English was the family's primary language at home, though Eva noted that English was her second language. She noted that she had a doctorate degree and the household income for 2021 was reported to be in the \$40,000-\$49,000 range. Kyle was diagnosed with autism spectrum disorder (ASD) and received Special Education services within his inclusive early childhood setting which included Speech and Language therapy, Applied Behavior Analysis, and Physical Therapy. Eva noted that she herself had been diagnosed with dyslexia and was concerned that Kyle may also have it.

When inquired about home literacy practices, Eva reported that she reads daily to Kyle and that other caregivers in the home read every other day to him. They have used a combination of digital books and print books with Kyle during these shared reading opportunities. Kyle independently engages with flash cards, literacy-related workbooks, and educational games on a tablet. Eva reported that she began reading to Kyle when he was a toddler and that he showed interest in books at this time as well. Kyle began making up stories while in preschool. He also began learning his letter names and letter sounds as a preschooler.

Kyle completed the *CTOPP-2* phonological awareness subtest during one virtual session with the researcher at the onset of the study. His scaled scores were as follows (Age 5 years, 0 months): Elision- 5; Blending Words- 5; and Sound Matching- 6. His composite score was a 71 with a descriptive category of "Poor." The same subtest will be administered virtually once he has completed the study.

**Diana and Kevin.** This dyad was composed of mother Diana who reported her age range between 38 and 42 years old and her son Kevin who was 61 months old at the onset of the study and the oldest child participant. He attended an inclusive Pacific Northwest Preschool for four

full days and one half a day a week. He was an only child. Diana identified herself and Kevin as White and reported that English was the family's primary language at home. She noted that she had a Professional degree and the household income for 2021 was reported to be in the range of \$100,000- \$149,000. Kevin has received Special Education services including Speech and Language therapy, Occupational Therapy, and Physical Therapy. He also received home visits from an early intervention provider and did have a family history of dyslexia or reading difficulties reported.

When inquired about home literacy practices, Diana reported that she reads daily to Kevin and that Kevin's father also reads daily to him at home. They have used a combination of print books and online media/apps with Kevin during these shared reading opportunities. Kevin independently engages with magnetic letters and educational videos at home. Diana reported that she began reading to Kevin when he was an infant and that he showed interest in books as a toddler. Kevin began making up stories while a toddler as well. He began learning his letter names and letter sounds as a preschooler.

Kevin completed the *CTOPP-2* phonological awareness subtest during one virtual session with the researcher at the onset of the study. His scaled scores were as follows (Age 5 years, 1 month): Elision- 5; Blending Words- 6; and Sound Matching- 7. His composite score was a 75 with a descriptive category of "Poor." The same subtest will be administered virtually once he has completed the study.

All caregivers received a gift card as compensation for their participation in the study.

## **Researcher**

The main researcher on this project provided all of the coaching during the virtual caregiver coaching sessions. The researcher is a certified Special Education teacher with over a

decade of teaching experiences in both general and special education early childhood classrooms. They hold a master's degree in early intervention and are a fourth-year doctoral candidate in Special Education. They have had opportunities over the years to support and coach family members in implementing interventions with their young children at home. They've also had experience coaching and training early childhood educators over the years on literacy-related topics.

### **Setting**

The phonological awareness lessons/experiences took place at a convenient location of the dyad's choosing in their own home. This often included such locations as the kitchen table, the child's room, or at a small child size table. Caregivers were encouraged to implement the sessions in a quiet, reduced distraction room of the selected setting. The setting for the virtual coaching sessions were at the caregiver's preference given its virtual nature.

### **Dependent Measure**

The dependent variable was the percentage of correct child responses from researcher developed probes which were referred to as learning checks with dyads. These were administered by caregivers during baseline, intervention, maintenance, and phase-change conditions. Caregivers administered five questions per target skill (syllable, onset-rime, and phoneme). Caregivers were instructed not to assist their children on probes/learning checks and not to provide any feedback on responses. Data collected during probes was video recorded and the researcher scored responses as either correct, incorrect, or no-response and noted this data on a scoring sheet. A correct response was recorded if the child provided the correct answer to the question. It was recorded as incorrect if the child provided an answer different from the correct response. No response was recorded if after the caregiver asked the question, waited 10 seconds,

and then provided one repeat of the question, the child didn't respond or said, "*I don't know.*" Percentage correct was calculated and graphed (e.g., child correctly answered 4 out of 5 questions was graphed as 80% correct).

### **Independent Variable**

The independent variable that was utilized for this study was a phonological awareness intervention that was originally designed for use as an intervention tool for early childhood educators and young children with ASD (Hudson et al., 2017) but was modified by the researcher to better meet the needs of the caregiver-child dyad. The original intervention contained 27 lessons, that began on the word level and progressed through syllable, onset-rhyme, and phoneme levels of phonological awareness. For this study, lessons were modified by the researcher to 24 lessons that began at the syllable level (See Appendix B for syllable lesson example) and progressed through the onset-rime (See Appendix B for onset-rime lesson example) and beginning phoneme levels (See Appendix B for lesson examples). Lessons that included word level skills were omitted from this study because word level skill development at this age is typically not an area of concern. An additional six lessons were developed by the researcher (two on each skill level) if needed for intervention phase as detailed below. Each lesson was designed to take no more than 15 minutes to complete and included two different activities/games per lesson, with some activities repeating. The lessons were softly scripted for caregivers and encouraged movement, provided opportunities for caregivers to include items that their child enjoys/likes, and utilized a variety of engaging materials (See Table 3.3). Caregivers were asked to implement the lessons three times a week. Caregivers received an organized binder with only the focal skill level lessons and the materials that they would need for those lessons (e.g., manipulatives, picture cards). For example, during the syllable level of the

intervention, caregivers were only provided the syllable level lessons and did not have access to the onset-rime or phoneme level lessons. This phonological awareness intervention was designed based on specific feedback that was received from a prior feasibility study (Anderson, 2022). Firstly, caregivers and children responded favorably to the first few lessons. Secondly, the time of 15 minutes or less for each lesson appeared to be feasible for families within existing routines/schedules. Thirdly, it had a high level of engagement due to the variety of activities and different materials provided. Finally, the provided script was reported as easy for caregivers to follow and implement.

**Table 3.3**

*Materials used for Target Skills in Lessons*

Skill	Level	Materials	Movement
Blending word parts to make words	Syllable	Puppets, animal picture cards	Jumping, hopping, clapping, unifix cubes
Breaking whole words into parts	Syllable	high-interest home environment items, picture cards with syllable sorting mat	tapping sticks
Matching/Sorting words by end sounds (rime)	Onset-Rime	word family picture cards, rhyming BINGO cards and board, magnifying glass	unifix cubes
Blending Onset-Rime parts to make whole words	Onset-Rime	picture cards, magnifying glass, puppet	unifix cubes
Identifying words that rhyme	Onset-Rime	Rhyming Picture book	
Generating Rhyming Words	Onset-Rime	stuffed animal	throwing and catching
Identify first sounds in words	Phoneme	picture cards	
Matching/Sorting words by first sounds	Phoneme	picture cards, home environment items, First Sounds BINGO cards and board	walking around room, unifix cubes
Blending phonemes to make whole words	Phoneme	puppet	Simon Says
Segment words into phonemes	Phoneme	puppet, Elkonin boxes	unifix cubes

## **Fidelity Measures**

**Procedural Fidelity of Lesson Implementation.** Procedural fidelity within single-subject research is very important because of the implementation of the independent variable over time (Horner et al., 2005). For this project the lead research collected procedural fidelity on all lessons for all participants across phases. For interobserver agreement (IOA) procedural fidelity data was collected in at least 20% of lessons for each participant across phases (total number varied by participant depending on the number of lessons in each phase). This was completed via the use of a procedural fidelity checklist (Appendix P). The checklist included specific steps that were to be completed by caregivers while implementing lessons with their child. Implementation fidelity was measured by the percentage of components of the lesson implementation checklist that were completed by caregiver during the lessons. For example, if 11 out of 11 items were addressed on the checklist, the lesson implementation fidelity would be calculated as follows:  $(11/11) \times 100 = 100\%$  accuracy. The procedural fidelity was measured by the lead researcher and a fellow doctorate student in Special Education by utilizing the checklist and viewing uploaded video recordings. The scorer was provided additional training in scoring and reliability during training was at 100%. Data was reported separately for each participant and condition (See Table 3.4).

**Table 3.4***Interobserver Agreement for Lesson Implementation Fidelity*

<i>Condition</i>	<i>Participants</i>				<i>Participants</i>			
	Percentage of Sessions Scored				Percentage of Agreement of Fidelity			
	Tessa	Becca	Kelly	Theresa	Tessa	Becca	Kelly	Theresa
Baseline	38%	40%	20%	40%	100%	100%	100%	100%
Syllable	20%	20%	33%	33%	100%	100%	100%	100%
Onset-Rime	40%	40%	30%	20%	100%	100%	95%	100%
Phoneme	30%	33%	30%	20%	95%	100%	100%	87%
Maintenance	50%	50%	100%	100%	100%	100%	100%	100%

**Interobserver Agreement of Dependent Variable.** To calculate interobserver agreement (IOA), at least 30% of all caregiver administered probes (learning checks) in all phases were randomly selected and scored by researcher and a doctorate student in Special Education (Gast & Ledford, 2018). The scorer viewed lesson recordings and completed the probe/learning check score sheets as well as the lesson implementation fidelity sheets. The scorer and lead researcher met weekly to compare data and calculate IOA. The acceptable IOA rate for this study was 80% and was calculated on an item-by-item level by taking the number of agreements and dividing it by both the agreements and disagreements and then multiplying by 100 (Ledford & Gast, 2018).

The lead researcher provided the scorer with training on how to observe lesson implementation and how to record the child responses to probes on the scoring sheets. A recorded lesson was viewed by both researcher and scorer together and they scored data for both. Next, the researcher and the scorer watched a different recorded lesson and the lead researcher and scorer independently scored data for both and then compared scores. Reliability during training was at 100% (see Table 3.5).

**Table 3.5***Interobserver Agreement for Learning Checks/Probes*

<i>Condition</i>	<i>Participants</i>				<i>Participants</i>			
	Percentage of Sessions Scored				Percentage of Agreement of Learning Checks			
	Foster	Brendan	Frances	Nora	Foster	Brendan	Frances	Nora
Baseline	38%	40%	40%	40%	100%	93%	100%	100%
Syllable	40%	20%	33%	33%	100%	100%	90%	90%
Onset-Rime	40%	40%	30%	30%	95%	100%	100%	100%
Phoneme	30%	33%	33%	30%	100%	100%	100%	100%
Maintenance	50%	50%	100%	100%	100%	93%	100%	100%

**Coaching Implementation Fidelity.** All caregiver coaching sessions were recorded and uploaded to a password protected Google folder. A coaching fidelity checklist was developed for both the Planning (Appendix E) and Feedback (Appendix E) coaching sessions. Each of these checklists included specific steps that were to be completed during coaching sessions. The planning checklist consisted of nine steps and the feedback checklist had eight steps. Implementation fidelity was measured by the percentage of components of the coaching checklist that were covered during the coaching session. For example, if nine out of nine items were addressed on the planning checklist, the coaching fidelity would be calculated as follows:  $(9/9) \times 100 = 100\%$  accuracy. For interobserver agreement (IOA) coaching implementation fidelity data was collected in 20% of recordings across all phases. A doctoral candidate in the Special Education department completed the checklist to ensure that fidelity of implementation for the coaching sessions was completed at 80-100% accuracy across all coaching phases and dyads (Lane & Gast, 2014). The scorer was provided additional training in scoring and reliability during training was at 100%. Table 3.6 displays coaching fidelity for all caregivers except Eva and Diana who are still receiving coaching as part of the study.

**Table 3.6***Interobserver Agreement for Coaching Fidelity*

Condition	<i>Participants</i>				<i>Participants</i>			
	Percentage of Sessions Scored				Percentage of Agreement of Fidelity			
	Tessa	Becca	Kelly	Theresa	Tessa	Becca	Kelly	Theresa
Planning	25%	33%	33%	25%	100%	100%	94%	89%
Feedback	22%	20%	33%	29%	100%	100%	100%	100%

**Social Validity.** Social validity is used to estimate the importance, effectiveness, appropriateness, and/or satisfaction of participants experiences in relation to this particular intervention (Kennedy, 2005). To gain insight into how caregivers viewed the effectiveness of the literacy-based coaching model (Research Question 2) utilized during the phonological awareness experiences, caregivers were asked to complete a post-study survey using a Likert-based agreement scale and open-ended questions (Appendix F). This survey was developed using Qualtrics and caregivers were able to complete the survey online via their cellphone or computers with an anonymous emailed link.

To better understand how participating children viewed the phonological awareness experiences with their caregiver (Research Question 3) they were asked to virtually complete a short survey that included reflective statements that children answered yes or no about certain aspects of the experiences with their caregiver (Appendix F). A few open-ended questions were also included to see if children had additional information to share. This was administered by researcher during the *CTOPP-2* (Wagner et al., 2013) administration immediately following the maintenance phase. All questions on child survey were read aloud to child participants and they could either answer yes/no or put their thumb up for a yes response or their thumb down for a no response.

### **Virtual Literacy-based Caregiver Coaching Model**

The prior research around caregiver-implemented phonological awareness interventions discussed in detail in Chapter Two did not use a coaching model of training and support. However, given the importance of using a coaching model with caregivers to improve developmental outcomes for children (Fettig & Barton, 2014) it was necessary to develop a virtual literacy-based coaching model to support caregivers in implementing literacy interventions and strategies at-home with their children. Coaching sessions with caregivers occurred weekly for 15 minutes at a date and time that worked best for their schedules. Caregivers were provided a technology checklist (Appendix C) to complete prior to the initial coaching session so that the researcher had a better idea of their technological needs and abilities (e.g., Do they have access to a computer/tablet with Zoom?). During the initial coaching training session, time was devoted for a brief tutorial on the features/functions of the Zoom video conferencing platform for those that needed it and caregivers were also provided support in recording/uploading recorded videos to a university protected google drive folder as needed. Additionally, a step-by-step guide with clear directions was provided to caregivers on how to navigate the Zoom platform (Appendix C) as well as how to upload recorded lesson videos to the Google drive folder (Appendix C). More details on the pieces that were included within this coaching model are detailed below (Figure 3.1).

Caregiver sessions were split into two different types of sessions: planning and feedback. During planning sessions, the coach would take time to inquire with caregivers on the week's prior lessons. Then, the coach would review the upcoming week's lessons key concepts. During coaching sessions, the coach modeled key concepts of the lessons and clarified lesson components that involved multiple parts that may have been confusing. Seeing a model of how it may look in practice may have helped caregivers better understand the strategy and how it may

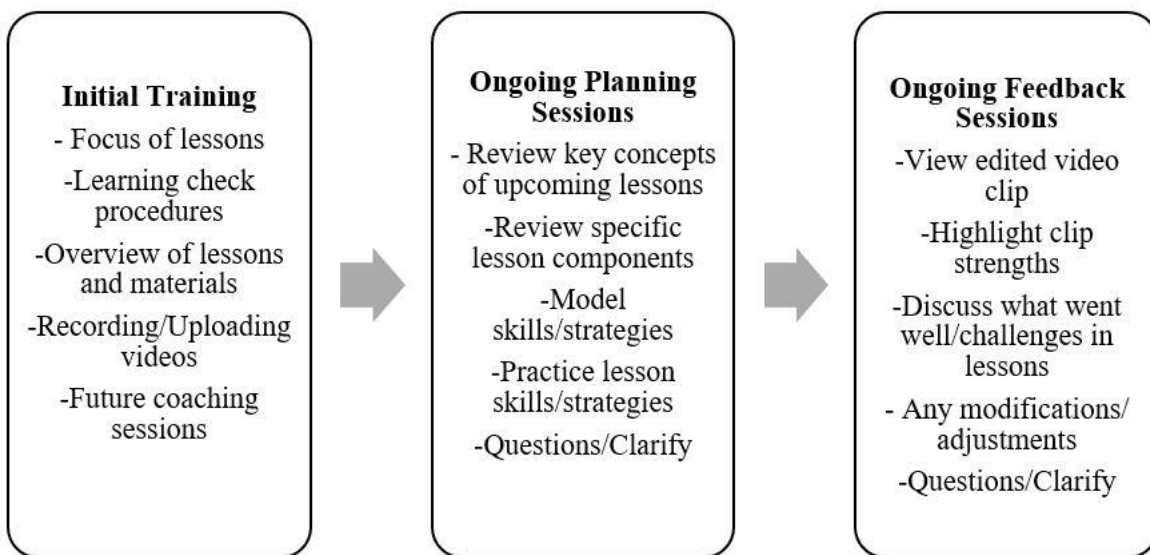
look during their own implementation. Additionally, after providing caregivers with a model, there was time devoted to discuss, reflect, and provide opportunities for the caregiver to practice the strategy/lesson component themselves (Rush & Shelden, 2011).

During feedback sessions, time was devoted to highlighting strengths viewed from edited video recording clips from one of the prior week's lessons. After caregivers uploaded their lessons for the week with their child, the coach observed the videos. After viewing, the coach edited a lesson recording to specifically highlight skills/interactions that were then shared with caregivers during their next coaching session. These snippets ranged in length from 15 seconds to 45 seconds and highlighted strengths during interactions between caregivers and their children around lesson components. Additionally, these snippets were used as springboards to conversations around brainstorming ways that caregivers could extend lesson components into existing routines. Furthermore, during this opportunity caregivers would highlight what went well for them and their child and also share challenges or things that maybe didn't go as well as they'd originally thought during the lesson. Together the coach and caregiver could discuss possible options to try for the next lesson. Using video recording snippets as opportunities to observe lessons, while also actively listening to caregivers' comments during sessions, and asking caregivers questions could have also helped guide caregivers through their own processes of self-exploration (Hanft et al., 2004). This also built upon the strengths-based perspective that is fundamental for working with caregivers and families. This level of follow-up support with caregivers has been documented as related to higher rates of fidelity and improved child outcomes (Fixsen et al., 2005) and aligns with previous studies and reviews of evidence-based family coaching practices (Fettig & Barton, 2014).

Within both types of sessions, the coach continued to focus on partnership building by demonstrating a caring attitude through verbal encouragement, patience, as well as providing a comfortable and safe virtual environment for caregivers to learn, practice, and apply strategies/concepts without judgement. Additionally, the coach provided opportunities for caregivers to demonstrate their own knowledge and interests related to lessons. Evidence suggests that when a family's funds of knowledge (González et al., 2005) are incorporated within a coaching model it also recognizes capacity and strengths within families and helps build the foundation to a collaborative partnership (Friesen & Butera, 2015).

**Figure 3.1**

*Caregivers Training and Coaching*



**Experimental Design and Procedures**

A multiple-probe design (Horner & Baer, 1978) across phonological awareness skills (syllable, onset-rhyme, and phoneme) and replicated across six participants was utilized to answer the first research question around the effectiveness of the phonological awareness intervention on children's phonological awareness skills. The design included three phases

(baseline, intervention, and maintenance) which are discussed in more detail below. In multiple-probe designs, the intervention is introduced in a staggered fashion across tiers. For example, the intervention is introduced within Tier 1 when the first probe condition (baseline) is low and stable for that skill. When the Tier 1 skill is judged by visual analysis as having reached criterion, another probe condition occurs. The intervention is introduced in Tier 2 when data for that skill are low and stable. This process continues until criterion is met across all tiers by participants. In this design, visual analysis was used to make decisions regarding condition changes (Barton et al., 2018). A multiple-probe design across skills design is typically used to assess interventions that are designed to improve desirable behaviors or skills (Ledford & Gast, 2018) and are an appropriate design for academic or other non-reversible behaviors/tasks. A multiple baseline across participants design was considered but was ruled out due to extended times some participants may be in baseline which could lead to attrition threats.

Caregivers received phonological awareness lessons for each skill at a time as well as the materials needed for implementation in a binder. They attended weekly virtual coaching sessions that lasted approximately 15-minutes via Zoom. During one week of the coaching sessions, the focus was on previewing upcoming lessons for the week, providing models of lesson content and opportunities to practice, and discussing ways that concepts could be embedded within existing literacy routines. During the following weeks coaching session, caregivers were provided opportunities to reflect on what worked well/what did not work well, collaboratively problem solve challenges/issues from prior lessons, and review/discuss strengths-based performance feedback via edited video recording snippets. All coaching sessions were recorded to measure coaching fidelity which is discussed in more detail below. Caregivers were

also asked to record intervention lessons and probe/learning check sessions with their children and uploaded these videos to a secure university protected Google drive folder.

### ***Probe Conditions***

Probes were developed on each phonological awareness skill (syllable, onset-rime and phoneme) by lead researcher and based on skills developed at each level. In video recorded probe sessions, each caregiver administered five probes per target skill for a total of 15 trials per probe session. An example of a syllable probe was, “*What word do these sounds make cook-ie?*” An example of an onset-rime probe was, “*Do fry and try rhyme?*” Finally, an example of a phoneme probe was, “*What is the first sound in mask?*” Throughout probe conditions, the responses were categorized as either correct, incorrect, or no response as detailed above.

### ***Baseline***

During baseline, caregivers administered 5 intermittent probes for each of the three phonological awareness skills (See Appendix D for baseline probes). Once visual analysis indicated that the child was performing low and stable on skills, the first tier of intervention (syllable level) began. While this tier of intervention was being implemented, no other phonological awareness skill levels were implemented. Additionally, during this phase, children were not exposed to any other part of the phonological awareness intervention but continued to receive their typical literacy instruction in their early childhood setting.

### ***Intervention***

The phonological awareness intervention for each tier began when each child had a stable response to baseline via visual analysis. After that was reached, the child moved to the tiered syllable intervention phase (Tier 1 was syllable level, Tier 2 was onset-rime level, and Tier 3 was phoneme level). These tiers were assigned as above as based on the ways in which young

children typically develop their phonological awareness skills (Lonigan et al., 2000). At that time, caregivers began implementing the three phonological awareness lessons at that level a week. During this phase, all children were probed on their phonological awareness skills within this level (See Appendix D). Visual analysis criterion was utilized in order to visually see a clear change in level. During this phase probes for each intervention tier were administered after every lesson. Once visual analysis of the data indicated stable performance in all tiers, the caregiver was instructed to move to Tier 2 and once stable within that tier was instructed to proceed to move to Tier 3. The child was said to have met criterion for that skill level if within two consecutive sessions within a minimum of five sessions they scored at 80%-100%.

### ***Maintenance***

Maintenance phase data was measured one week after completing the study for four participants as well as two weeks after completing the study for two of the four participants. At this time, caregivers administered probes for each level of phonological awareness skills utilized within the study (See Appendix D). The procedures used in baseline probe conditions were also used in maintenance sessions.

### **External Validity**

To promote external validity, this study included clearly defined operational terms and a sufficient number of participants. In single-case design studies external validity can be strengthened when effects are shown with at least three participants (Horner et al., 2005). Due to the risk of attrition threats in single-case studies, six dyads were recruited to participate to ensure the minimum required number of dyads needed. The descriptions of the caregiver and child dyad participants as well as the baseline, intervention, and maintenance conditions are descriptive and clear (Horner et al., 2005) which aids in potential replications of this study in the future.

## CHAPTER FOUR

### Results

The primary purpose of this study was to determine if there was a functional relation between caregiver implemented phonological awareness experiences and their child's phonological awareness skills. It was theorized that when caregivers receive adequate virtual coaching and support from an early childhood educator, they could implement phonological awareness experiences with their child to provide them with a jump start on the literacy experiences found in Kindergarten and beyond. The following research questions were asked:

**Research Question 1:** *Is there a functional relation between caregiver implemented phonological awareness experiences and preschool children's phonological awareness skills?*

**Research Question 2:** *How do caregivers view the effectiveness of a virtual literacy-based coaching model after implementing phonological awareness experiences at home with their preschool-aged child?*

**Research Question 3:** *How do preschool-aged children view the phonological awareness experiences with their caregiver?*

This chapter begins by describing the terms that will be used to explain the data analysis used within this study. The second section reports the results of the caregiver-implemented intervention on the participating children's syllable, onset-rime, and phoneme skill levels. Within this section generalization and maintenance data is also reported per child. The third section describes the results of the caregivers' perceptions of the virtual literacy-based coaching that they received. The fourth section describes how participating children viewed the

phonological awareness experiences with their caregiver. Finally, the last section provides results related to the lesson implementation and coaching fidelity of caregivers across levels.

### **Data Analysis**

The performance of child participants on probes were analyzed using visual data analysis. The graphs allowed for visual analysis of the relationship between the caregiver-implemented phonological awareness lessons and the child's phonological awareness skill. Line graphs were used to present data across skill levels (syllable, onset-rime and phoneme) during baseline, intervention, between phases (generalization) and maintenance phases. It also demonstrated a picture of the length of data in each phase. Several terms will be discussed throughout the results chapter and are defined below.

**Level.** Level refers to the mean performance during each phase (Horner et al., 2005). This is particularly important when analyzing data after an intervention was introduced. If the level changed after phase change, then the intervention had an immediate effect. Level change was examined during baseline and after phonological awareness lessons began in each phase. In addition to visual analysis of level change, mean level of phases was also calculated and included below for each participant.

**Trend.** Trend refers to the rate of increase or decrease of the data (Horner et al., 2005). When visually analyzing data, the following two characteristics were described: trend direction and trend magnitude. Trend direction is referred to as accelerating (increasing in ordinate value over time), decelerating (decreasing in ordinate value over time), or zero celerating (data series is parallel to the abscissa) (Barton, et al., 2018). In this study, if child data had an accelerating trend, it meant that the caregiver-implemented phonological awareness lessons were having a positive effect on their phonological awareness skills performance. If child data was zero

celerating or in other words remained the same, it meant that there was no effect on their phonological awareness skills performance. If child data demonstrated a decelerating trend, it meant that the caregiver-implemented phonological awareness lessons were having an adverse effect. Trendlines were analyzed during each phase after each probe and prior to each phase change. Trend was also characterized by magnitude and was described as steep or gradual and paired with a direction (e.g., steep accelerating trend or gradual decelerating trend) (Barton et al., 2018).

**Variability.** In general, data are described as stable or variable without numerical quantification (Kennedy, 2005). Data are generally reported as either highly variable, somewhat variable, or stable; there are no guidelines for quantifying the magnitude of variability (Barton et al., 2018). During baseline phase, less variability meant that caregivers were not providing their child with phonological awareness lessons or activities and thus their child wasn't demonstrating changes in phonological awareness skills. During intervention phases, less variability indicated that caregivers were implementing phonological awareness lessons with their child consistently.

**Tau-U.** Tau-U is based on Kendall's rank correlation and the Mann-Whitney U, which follow the same sampling distribution and allow for estimation of standard errors and confidence intervals around Tau-U values. It was used to examine statistical significance of any differences and to determine effect sizes given that it incorporates both trend and nonoverlap to estimate intervention effects and may be a more appropriate effect size estimation for single-case design research than other methods (Brossart et al., 2014). An effect size of 0.20 or less is considered small, 0.20-0.60 is moderate, 0.60-0.80 is large and values above 0.80 indicate a very large effect (Vannest & Ninci, 2015). This study categorized Tau-U results for each child as indicating the absence of a functional relation if the Tau-U value was  $< 0.20$  and as indicating the presence of a

functional relation if the Tau-U value was  $> 0.20$ . Prior to calculating Tau-U for each tier, the baseline trend was evaluated to see if it needed to be corrected by using the Tau-U online calculator (Vannest et al., 2016). If the baseline Tau-U trend was statistically significant, then it was corrected for baseline trend and is noted in child participant results if applicable. Tau-U values as well as  $p$  significance values were then calculated by using an online Tau-U calculator. Please see Table 4.1 for Tau-U results and significance values for all participants across levels.

**Social validity surveys.** Social validity surveys were administered to caregivers and children. Data tables are used to display and compare participant data (Spriggs et al., 2014). Data were analyzed by looking for patterns in responses across participants and is discussed in more depth in the next chapter.

## Results

The first research question aimed to determine if there was a functional relation between caregiver implemented phonological awareness experiences and preschool children's phonological awareness skills (syllable, onset-rime, and phoneme levels). Visual analysis as well as descriptive information for all six children are included below and broken down per dyad. Mean ( $M$ ) scores were calculated as percentages of correct responses to probes.

### *Foster and Tessa*

Results for Foster's syllable, onset-rime, and phoneme skills is illustrated in Figure 4.1. Focusing first on his syllable level data during baseline, it is characterized by highly variable scores (range 20%- 100%) with a steep decelerating trend occurring on last two baseline probes prior to intervention being implemented ( $M_{accuracy} = 58\%$ ). Foster had baseline data for all three skills collected over eight different probe sessions due to his variability in syllable scores. Once the syllable level lessons within the intervention began there was an immediate steep

accelerating trend in Foster's syllable skill performance (100%). Foster's data remained stable throughout the five syllable lessons that his mother Tessa completed with him ( $M_{accuracy} = 100\%$ ) before he met criterion (two consecutive sessions within a minimum of five sessions at 80% or higher). Foster's syllable intervention results were nonsignificant and yet there was a moderate effect size ( $\text{Tau-U} = 0.48, p = 0.16$ ) when baseline scores were corrected using the Tau-U calculator. This indicates that the intervention lessons had a functional relation on his syllable level skills development as measured by the probes.

Foster's onset-rime baseline data was characterized by highly variable scores ( $M_{accuracy} = 60\%$ ). In phase change 2 between syllable and onset-rime levels, Foster's scores were lower and more stable ( $M_{accuracy} = 25\%$ ) across the four sessions. Once the onset-rime level lessons within the intervention began there was an immediate steep accelerating trend in Foster's onset-rime skill performance (60%). There was a stable performance throughout the 10 onset-rime lessons, however Foster did not meet criterion for this skill (two consecutive sessions within a minimum of five sessions at 80% or higher). Detailed data collection notes that were taken during this level noted that Foster was answering yes for all of the yes/no probe questions which were showing a stable and consistent performance at 60%. Given that Foster continued to answer yes for all of them, the lead researcher asked Tessa his mother to try to incorporate the learning check questions throughout the lesson to see if that impacted Foster's responses to the questions. This was done for three lessons and during all three Foster continued to respond with yes responses to the questions. However, notes taken by lead researcher after viewing onset-rime lesson recordings indicated that Foster had likely developed a higher and stable level of onset-rime awareness, that were not captured by the measurement system. Foster's onset-rime intervention results indicate non-significant findings with no effect size ( $\text{Tau-U} = 0, p = 1.00$ ).

which indicates that the intervention lessons did not have a functional relation on his onset-rime level skills development as measured by the probes.

Foster's phoneme baseline data was low and stable across all eight sessions ( $M_{accuracy} = 2\%$ ). In phase change 2 between syllable and onset-rime levels, Foster's scores remained low and stable across the four sessions ( $M_{accuracy} = 5\%$ ). In phase change 3 between onset-rime and phoneme levels, Foster's scores remained low and zero celerating across the three sessions ( $M_{accuracy} = 0\%$ ). Once the phoneme level lessons within the intervention began there was a zero celerating trend in Foster's phoneme skill performance (0%). Foster's data remained low and stable throughout the ten-phoneme lesson that his mother Tessa completed with him ( $M_{accuracy} = 4\%$ ) and Foster did not meet criterion for this skill (two-consecutive sessions within a minimum of five sessions at 80% or higher). Detailed data collection notes that were taken during learning checks during this level reveal that Foster was providing both real and make-believe rhyming words to the words he was asked to identify the first sound of. Though this was not demonstrating his phoneme skills development, it did provide strong evidence that he had indeed developed strong onset-rime skills with his ability to produce rhyming words. Foster's phoneme intervention results indicate non-significant findings with no effect size (Tau-U = -0.01,  $p = 0.96$ ), which indicates that the intervention lessons did not have a functional relation on his phoneme level skills development as measured by the probes.

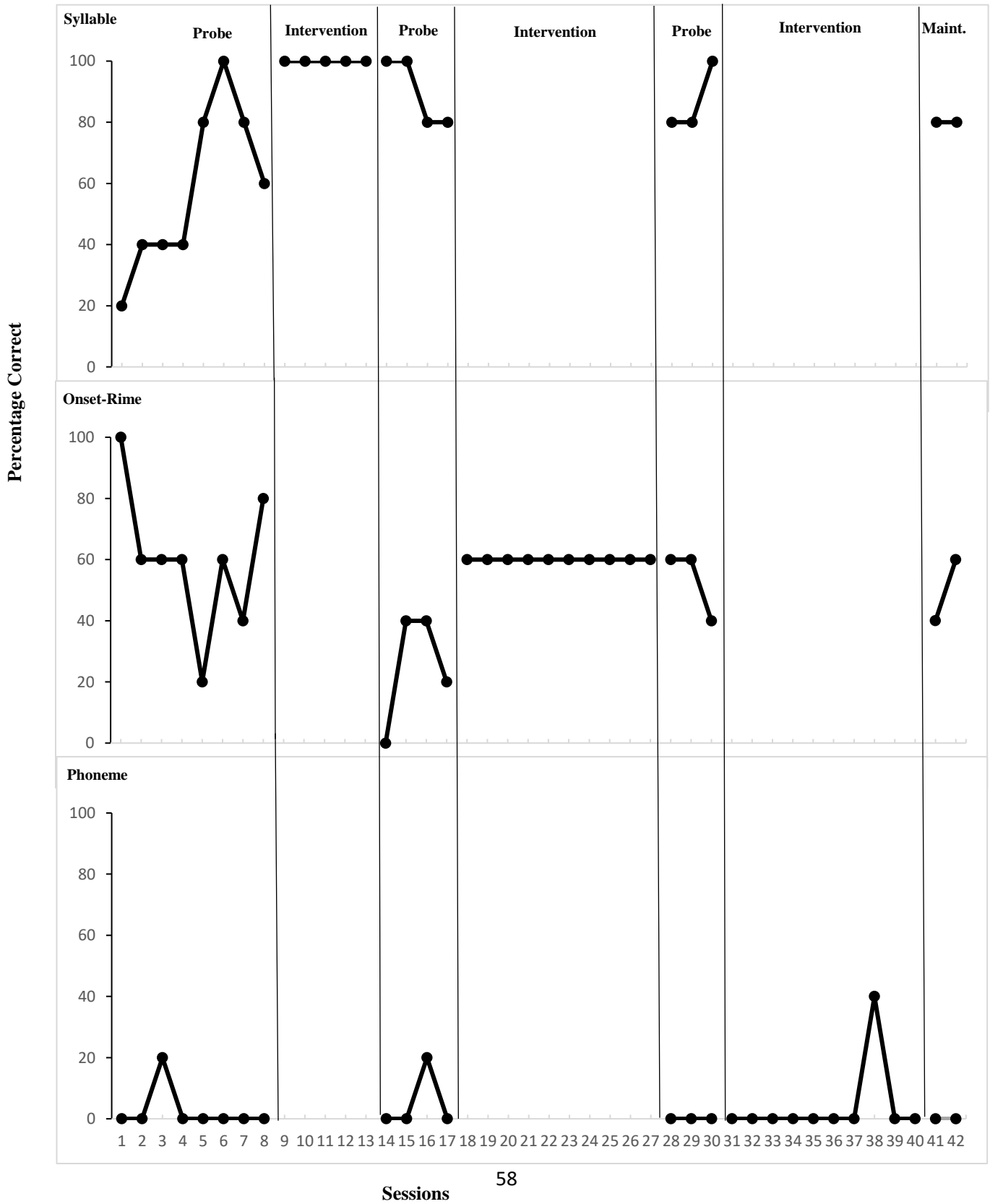
**Generalization.** Foster's generalization of syllable skills remained stable and high in phase change 2 between syllable and onset-rime levels ( $M_{accuracy} = 90\%$ ), as well as phase change 3 between onset-rime and phoneme levels ( $M_{accuracy} = 87\%$ ). His generalization of onset-rime skills remained low and stable in phase change 3 between onset-rime and phoneme levels ( $M_{accuracy} = 53\%$ ). A review of scoring sheets indicated that Foster continued to answer yes for

all of the learning check yes/no probe questions, which means that the measurement didn't accurately represent his learning of onset-rime.

***Maintenance.*** Foster demonstrated 80% correct responses to the syllable probes, 40% correct responses to the onset-rime probes, and 0% correct responses to the phoneme probes administered during the maintenance phase one week post study. He demonstrated 80% correct responses for syllable, 60% correct responses for onset-rime probes, and 0% correct responses for phoneme probes administered during the maintenance phase two weeks post study.

**Figure 4.1**

*Foster's visual analysis of phonological awareness skills*



### ***Brendan and Becca***

Results for Brendan's syllable, onset-rime, and phoneme skills is illustrated in Figure 4.2. Focusing first on his syllable level data during baseline, it is characterized by high stable scores ( $M_{accuracy} = 76\%$ ). Brendan had baseline data for all three skills collected over five different probe sessions. Once the syllable level lessons within the intervention began there was an immediate accelerating trend in Brendan's syllable skill performance and a small level rise from 80% to 100%. Brendan's data remained stable throughout the five syllable lessons that his mother Becca completed with him ( $M_{accuracy} = 100\%$ ) before he met criterion (two consecutive sessions within a minimum of five sessions at 80% or higher). Consistent with visual analysis, Brendan's syllable results indicate significant findings with a very large effect size (Tau-U = 1.00,  $p = 0.00$ ) which indicates that the intervention lessons had a functional relation on his syllable level skills development as measured by the probes.

Brendan's onset-rime baseline data was characterized by high and stable scores ( $M_{accuracy} = 76\%$ ) across five sessions. In phase change 2 between syllable and onset-rime levels, Brendan's scores remained high and stable ( $M_{accuracy} = 80\%$ ) across the three sessions. Once the onset-rime level lessons within the intervention began there was an immediate accelerating trend in Brendan's onset-rime skill performance with a small level change from 80% to 100%. There was a stable performance throughout the five onset-rime lessons ( $M_{accuracy} = 100\%$ ), with Brendan meeting criterion for this skill (two consecutive sessions within a minimum of five sessions at 80% or higher). Consistent with visual analysis, Brendan's onset-rime results indicate significant findings with a very large effect size (Tau-U = 1.00,  $p = 0.00$ ) which indicates that the intervention lessons had a functional relation on his onset-rime level skills development as measured by the probes.

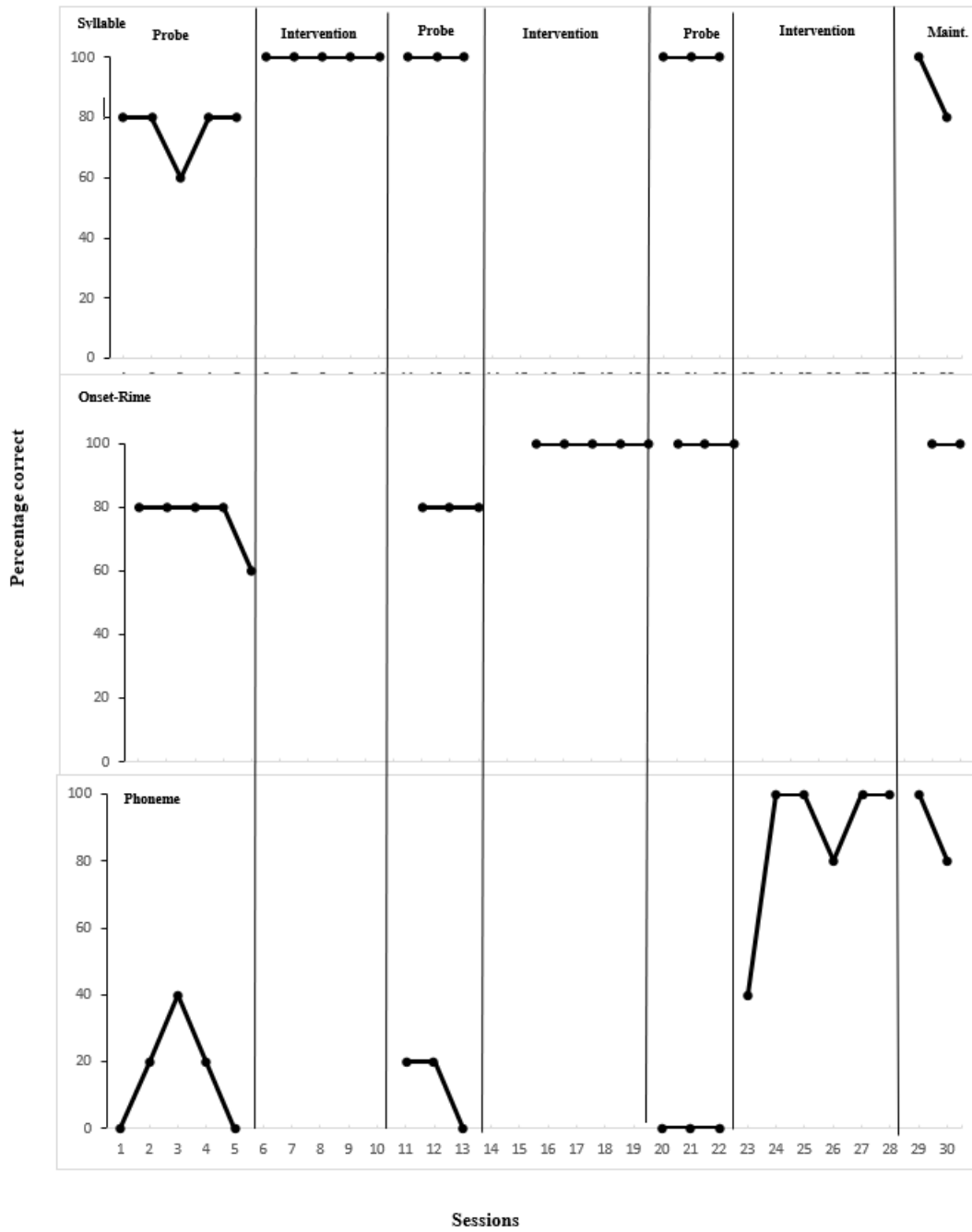
Brendan's phoneme baseline data was low and stable across all five sessions ( $M_{accuracy} = 20\%$ ). In phase change 2 between syllable and onset-rime levels, Brendan's scores remained low and stable across the three sessions ( $M_{accuracy} = 13\%$ ). In phase change 3 between onset-rime and phoneme levels, Brendan's scores remained low and zero celerating across the three sessions ( $M_{accuracy} = 0\%$ ). Once the phoneme level lessons within the intervention began there was an immediate accelerating trend in Brendan's phoneme skill performance (60%). There was a stable performance throughout the six phoneme lessons ( $M_{accuracy} = 90\%$ ), with Brendan meeting criterion for this skill (two consecutive sessions within a minimum of five sessions at 80% or higher). Consistent with visual analysis, Brendan's phoneme results indicate significant findings with a very large effect size ( $\text{Tau-U} = 0.97, p = 0.00$ ) which indicates that the intervention lessons had a functional relation on his phoneme level skills development as measured by the probes.

**Generalization.** Brendan's generalization of syllable skills remained stable and high in phase change 2 between syllable and onset-rime levels ( $M_{accuracy} = 100\%$ ), as well as phase change 3 between onset-rime and phoneme levels ( $M_{accuracy} = 100\%$ ). His generalization of onset-rime skills remained high and stable in phase change 3 between onset-rime and phoneme levels ( $M_{accuracy} = 100\%$ ).

**Maintenance.** Brendan demonstrated 100% correct responses to the syllable, onset-rime, and phoneme probes administered during the maintenance phase one week post study. He demonstrated 80% correct responses for syllable and phoneme probes, and 100% for onset-rime probes administered during the maintenance phase two weeks post study.

**Figure 4.2**

*Brendan's visual analysis of phonological awareness skills*



### ***Frances and Kelly***

Results for Frances's syllable, onset-rime, and phoneme skills is illustrated in Figure 4.3. Focusing first on her syllable level data during baseline, it is characterized by highly variable scores ( $M_{accuracy} = 52\%$ ) over five sessions (range of 20-80%). Once the syllable level lessons within the intervention began there was zero celeration after the first lesson, however after the second lesson there was a steep accelerating trend in Frances' syllable skill performance (100%). Frances's data remained stable throughout the six syllable lessons that her mother Kelly completed with her ( $M_{accuracy} = 80\%$ ) before she met criterion (two consecutive sessions within a minimum of five sessions at 80% or higher). Frances' syllable results were nonsignificant and yet there was a moderate effect size ( $\text{Tau-U} = 0.67, p = 0.06$ ) which indicates that the intervention lessons had a functional relation on her syllable level skills development as measured by the probes.

Frances' onset-rime baseline data was characterized by somewhat variable scores ( $M_{accuracy} = 72\%$ ) across five sessions. In phase change 2 between syllable and onset-rime levels, Frances' scores were highly variable ( $M_{accuracy} = 70\%$ ) across the five sessions (range 20%-100%). Once the onset-rime level lessons within the intervention began there was an immediate steep accelerating trend in Frances' onset-rime skill performance (80%). There was a somewhat variable performance (range 60%-100%) throughout the 10 onset-rime lessons ( $M_{accuracy} = 72\%$ ), with Frances meeting criterion for this skill (two consecutive sessions within a minimum of five sessions at 80% or higher). Detailed notes taken by lead researcher after viewing lesson recordings indicated that Frances had likely developed a higher and more stable level of onset-rime awareness, that was not measured by the assessment probes. Frances's onset-rime results indicate non-significant findings with a small effect size ( $\text{Tau-U} = 0.04, p = 0.90$ ) which

indicates that the intervention lessons did not have a functional relation on her onset-rime level skills development as measured by the probes.

Frances's phoneme baseline data was low and zero celerating across all five sessions ( $M_{accuracy} = 0\%$ ). In phase change 2 between syllable and onset-rime levels, Frances's scores remained low and stable across the three sessions ( $M_{accuracy} = 8\%$ ). In phase change 3 between onset-rime and phoneme levels, Frances' scores were highly variable (range 0%-80%) across the seven sessions ( $M = 46\%$ ). This was likely due to the fact that Kelly reported during a coaching session that she had been talking about and working on phoneme skills with Frances during this phase despite being instructed by the lead researcher not to provide any phoneme learning experiences during this phase. Once the phoneme level lessons within the intervention began there was an immediate accelerating trend in Frances's phoneme skill performance (100%). There was stable performance throughout the six phoneme lessons ( $M_{accuracy} = 97\%$ ), with Frances meeting criterion for this skill (two consecutive sessions within a minimum of five sessions at 80% or higher). Frances's phoneme results indicate significant findings with a very large effect size ( $\text{Tau-U} = 1.00, p = 0.00$ ) which indicates that the intervention lessons did have a functional relation on her phoneme level skills development as measured by the probes. It's important to note that given Kelly began discussing first sounds in words with Frances prior to the phoneme lessons beginning it is difficult to solely demonstrate that the phoneme lessons had a functional relation on Frances' phoneme skills development. More about this will be discussed in the next chapter.

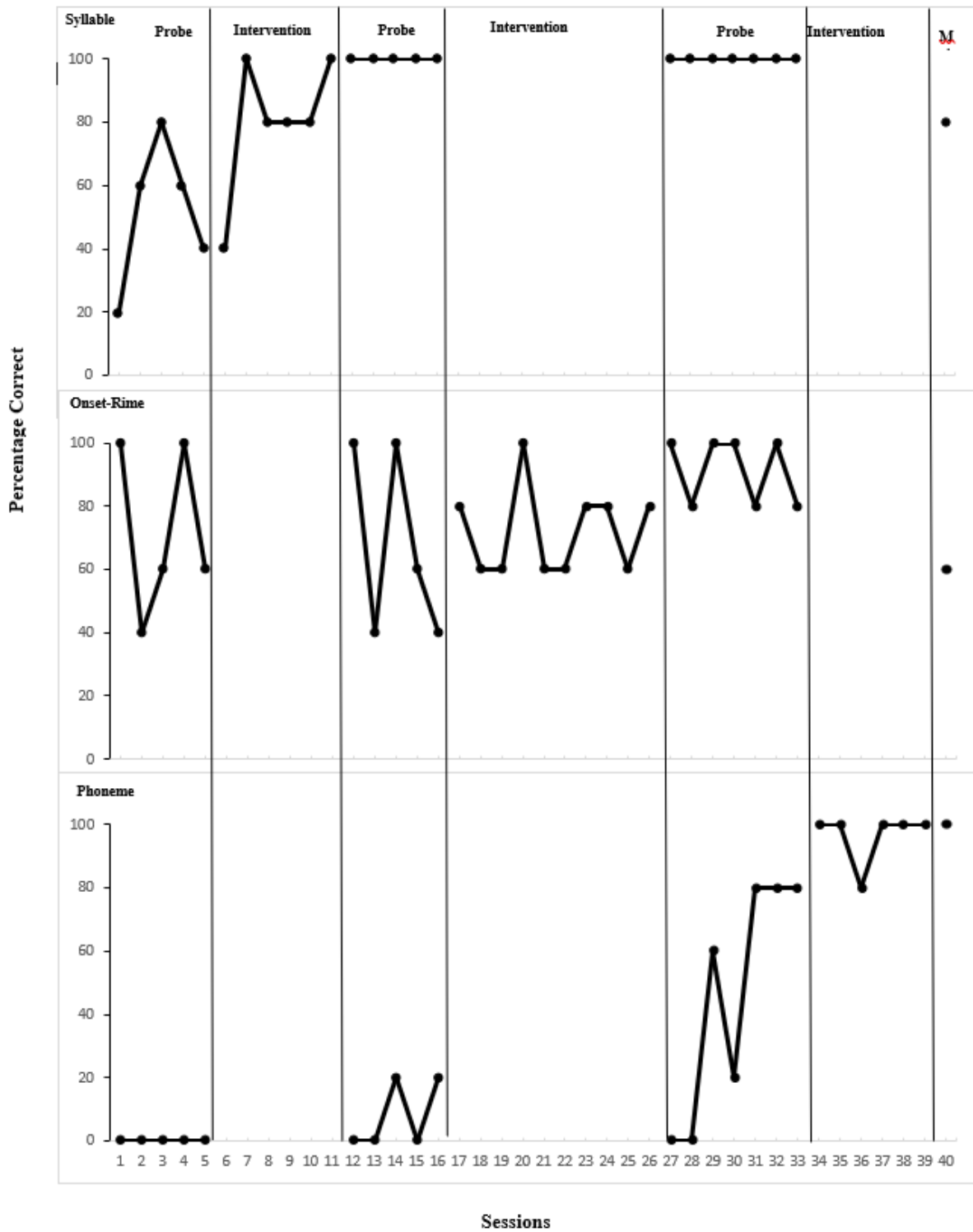
**Generalization.** Frances's generalization of syllable skills remained stable and high in phase change 2 between syllable and onset-rime levels across the ( $M_{accuracy} = 100\%$ ), as well as phase change 3 between onset-rime and phoneme levels ( $M_{accuracy} = 100\%$ ). Her generalization of

onset-rime skills remained high and stable in phase change 3 between onset-rime and phoneme levels ( $M_{accuracy} = 95\%$ ).

***Maintenance.*** Frances demonstrated 80% correct responses for syllable probes, 60% on onset-rime probes and 100% on phoneme probes administered during the maintenance phase one week post study.

**Figure 4.3**

*Frances's visual analysis of phonological awareness skills*



### ***Nora and Theresa***

Results for Nora's syllable, onset-rime, and phoneme skills is illustrated in Figure 4.4. Focusing first on her syllable level data during baseline, it is characterized by low and zero accelerating scores ( $M_{accuracy} = 0\%$ ) over five sessions. Once the syllable level lessons within the intervention began there was an immediate steep accelerating trend in Nora's syllable skill performance (80%). Nora's data remained stable throughout the six syllable lessons that her mother Theresa completed with her ( $M_{accuracy} = 87\%$ ) before she met criterion (two consecutive sessions within a minimum of five sessions at 80% or higher). Consistent with visual analysis, Nora's syllable results indicate significant findings with a very large effect size (Tau-U = 1.00,  $p = 0.00$ ) which indicates that the intervention lessons had a functional relation on her syllable level skills development as measured by the probes.

Nora's onset-rime baseline data was characterized by stable scores ( $M_{accuracy} = 60\%$ ) across five sessions, though detailed notes by researcher indicated that Nora answered yes for all of the yes/no onset-rime probe questions. In phase change 2 between syllable and onset-rime levels, Nora's scores remained stable ( $M_{accuracy} = 40\%$ ) across the three sessions. Once the onset-rime level lessons within the intervention began there was an immediate accelerating trend in Nora's onset-rime skill performance (60%). There was a somewhat variable performance (range 40%-80%) throughout the 10 onset-rime lessons ( $M_{accuracy} = 62\%$ ), with Nora not meeting criterion for this skill (two consecutive sessions within a minimum of five sessions at 80% or higher). A review of the scoring sheets indicated that Nora often answered either yes or no to all of the learning checks, which impacted the probe's ability to measure her onset-rime skill development. Detailed notes taken by lead researcher after viewing lesson recordings indicated that Nora may have in fact developed higher and more stable level of onset-rime awareness skill

development, that was not measured by the assessment probes. Nora's onset-rime results indicate non-significant findings with a small effect size ( $Tau-U = 0.10, p = 0.76$ ) which indicates that the intervention lessons did not have a functional relation on her onset-rime level skills development.

Nora's phoneme baseline data was low and zero celerating across all five baseline sessions ( $M_{accuracy} = 0\%$ ). In phase change 2 between syllable and onset-rime levels, Nora's scores remained low and zero celerating across the three sessions ( $M_{accuracy} = 0\%$ ). In phase change 3 between onset-rime and phoneme levels, Nora's scores remained low and zero celerating across the three sessions ( $M_{accuracy} = 0\%$ ). Once the phoneme level lessons within the intervention began there was a zero celerating trend in Nora's phoneme skills performance (0%) until after she completed the third phoneme lesson at which time there was a gradual accelerating trend which remained low and stable throughout the remaining phoneme lessons ( $M_{accuracy} = 18\%$ ), with Nora not meeting criterion for this skill (two consecutive sessions within a minimum of five sessions at 80% or higher). Detailed notes taken by lead researcher after viewing lesson recordings indicated that for the first two learning check probes, Nora was answering by just repeating the words her mother Theresa said which was consistent with what she had done during baseline and between phase learning checks. However, after the third phoneme lesson she began to produce initial sounds as responses even if they weren't correct which at least indicated that she understood what her mother was asking her to do within the learning checks. Nora often responded with the /k/ sound during these learning checks. Nora's phoneme results indicate significant findings with a large effect size ( $Tau-U = 0.70, p = 0.03$ ) which indicates that the intervention lessons did have a functional relation on her phoneme level skills development.

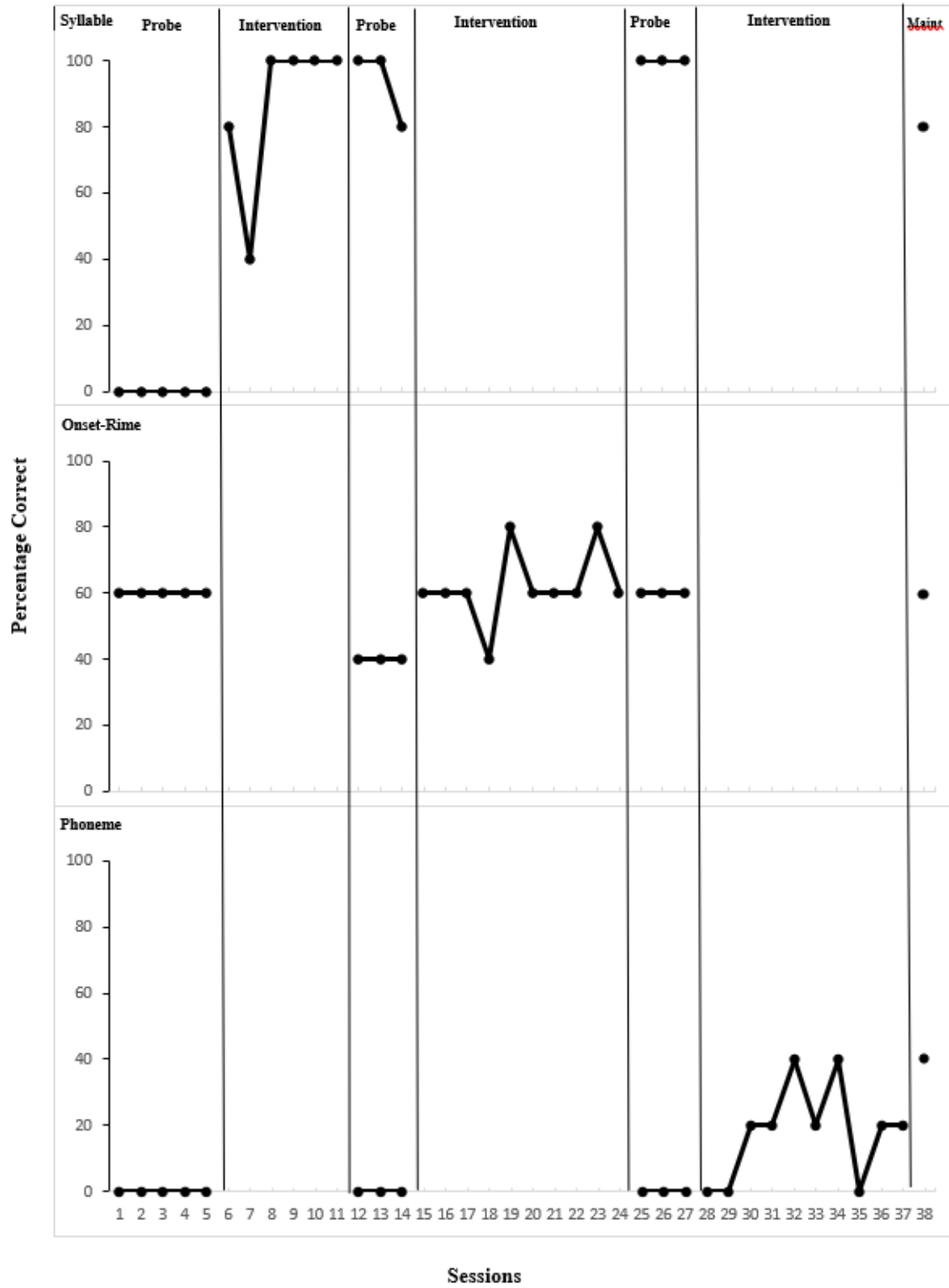
**Generalization.** Nora's generalization of syllable skills remained stable and high in phase change 2 between syllable and onset-rime levels across the ( $M_{accuracy} = 93\%$ ), as well as

phase change 3 between onset-rime and phoneme levels ( $M_{accuracy} = 100\%$ ). Her generalization of onset-rime skills remained stable in phase change 3 between onset-rime and phoneme levels ( $M_{accuracy} = 60\%$ ), though scoring sheet data indicated that she continued to answer yes for all of the yes/no probe questions.

***Maintenance.*** Nora demonstrated 80% correct responses for syllable probes, 60% for onset-rime probes, and 40% for phoneme probes administered during the maintenance phase one week post study.

**Figure 4.4**

*Nora's visual analysis of phonological awareness skills*



### ***Kyle and Eva***

Results for Kyle's syllable skills is illustrated in Figure 4.5. Looking at his syllable level data during baseline, it is characterized by low stable scores ( $M_{accuracy} = 16\%$ ). Kyle had baseline data for all three skills collected over five different probe sessions. Once the syllable level lessons within the intervention began there was an immediate accelerating trend in Kyle's syllable skill performance (40%). Kyle's data were highly variable during the first five syllable lessons (range 0-100%). During these learning checks, detailed notes indicated that Kyle was often repeating the word parts that his mother Eva said to him, rather than putting parts together to make one word. Eva noted that due to Kyle's diagnosis of ASD, at times he does engage in echolalia. By lesson six, Kyle's skills stabilized and remained high and stable through lesson eight ( $M_{accuracy} = 48\%$ ) before he met criterion (two consecutive sessions within a minimum of five sessions at 80% or higher). Kyle's syllable results were nonsignificant and yet there was a moderate effect size ( $\text{Tau-U} = 0.48, p = 0.16$ ) which indicates that the intervention lessons had a functional relation on his syllable level skills development as measured by the probes.

Kyle's onset-rime baseline data was characterized by low zero accelerating scores ( $M_{accuracy} = 0\%$ ) across five sessions since detailed notes taken by lead researcher indicated that Kyle was not providing a verbal response to the onset-rime probe questions during baseline. In phase change 2 between syllable and onset-rime levels, Kyle began answering the probe questions with either a yes or no response and his scores remained low and stable ( $M_{accuracy} = 40\%$ ) across the three sessions. Due to prolonged and frequent illness within Kyle's family during an ongoing global pandemic in addition to the Dyad's capacity to only complete two lessons per week, the onset-rime lessons were not complete at the time of this writing and are continuing.

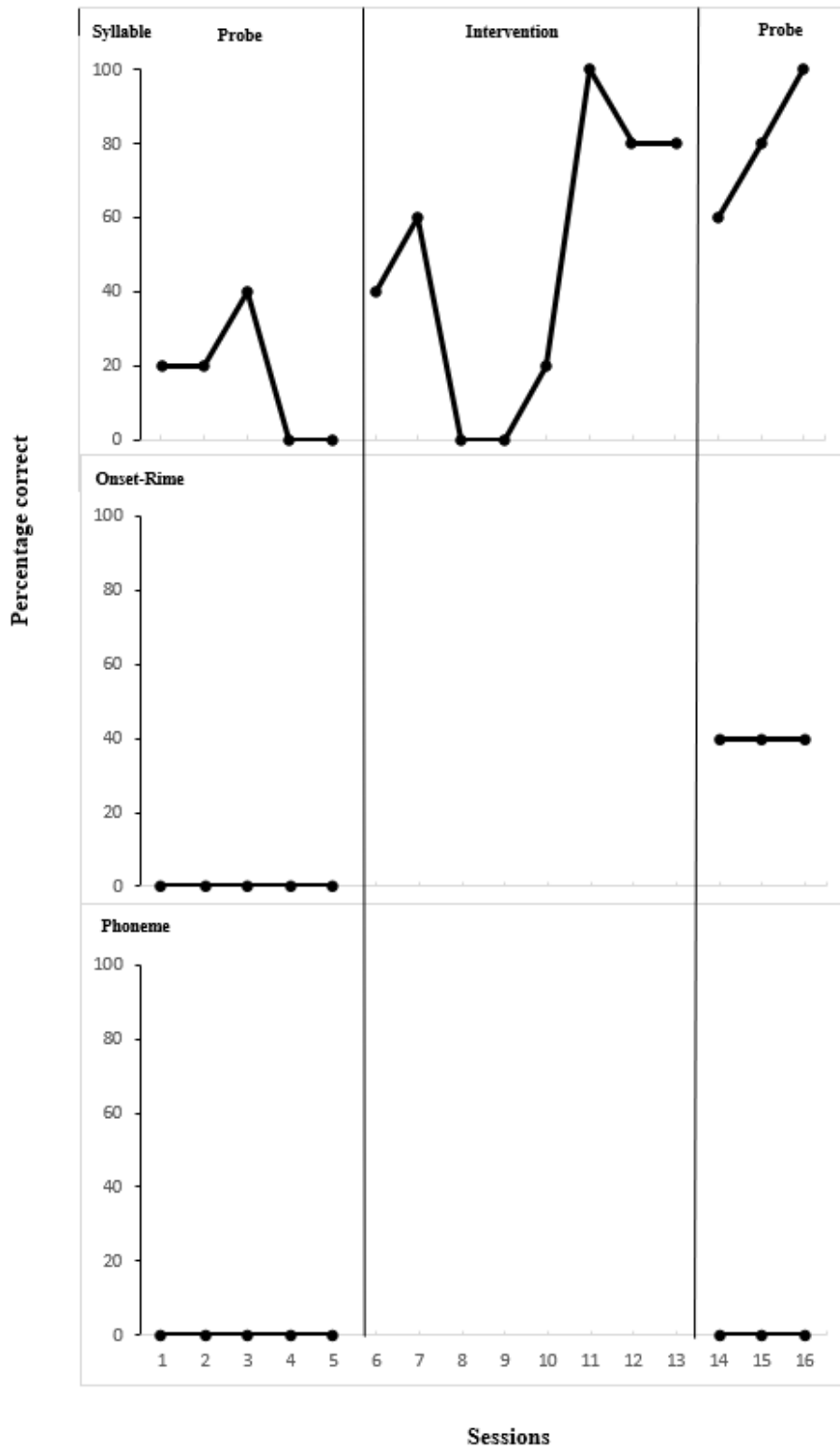
Kyle's phoneme baseline data was low and zero celerating across all five sessions ( $M_{accuracy} = 0\%$ ). In phase change 2 between syllable and onset-rime levels, Kyle's scores remained low and zero celerating across the three sessions ( $M_{accuracy} = 0\%$ ). He is in the process of completing onset-rime lessons before proceeding with phoneme lessons.

**Generalization.** Kyle's generalization of syllable skills remained stable in phase change 2 between syllable and onset-rime levels ( $M_{accuracy} = 80\%$ ).

**Maintenance.** Given that Kyle's data collection is ongoing, there are no maintenance scores at this time.

**Figure 4.5**

*Kyle's visual analysis of phonological awareness skills*



### ***Kevin and Diana***

Results for Kevin's syllable is illustrated in Figure 4.6. Looking at his syllable level data during baseline, it is characterized by somewhat variable scores ( $M_{accuracy} = 35\%$ ). Kevin had baseline data for all three skills collected over eight different probe sessions due this variability. Once the syllable level lessons within the intervention began there was an immediate accelerating trend in Kevin's syllable skill performance (60%). Kevin's data remained relatively stable throughout the six syllable lessons that his mother Diana completed with him ( $M_{accuracy} = 77\%$ ) before he met criterion (two consecutive sessions within a minimum of five sessions at 80% or higher). Consistent with visual analysis, Kevin's syllable results indicate significant findings with a large effect size ( $\text{Tau-U} = 0.67, p = 0.01$ ). This indicates that the intervention lessons had a functional relation on his syllable level skills development.

Kevin's onset-rime baseline data was characterized by somewhat variable scores (range of 20% -80%) across eight sessions ( $M_{accuracy} = 50\%$ ). A review of the learning check scoring sheets in baseline indicated that Kevin often answered yes to all of the learning checks which could have impacted the probe's ability to measure his onset-rime skills. There was a highly variable performance (range 20%-100%) throughout the ten onset-rime lessons ( $M_{accuracy} = 46\%$ ). After completing five onset-rimes lessons, his caregiver was asked if she would incorporate the learning check questions throughout the remaining lessons with Kevin to see if that would more accurately represent his onset-rime skills development. At lesson 16, when she began this there was an immediate accelerating trend (60%) in Kevin's onset-rime awareness and he provided both yes and no responses to the questions that his caregiver incorporated within the next two lessons before returning to answering yes to all questions. Consistent with visual analysis, Kevin's onset results indicate non-significant findings with no effect size ( $\text{Tau-U} = -0.19, p =$

0.51). This indicates that the intervention lessons did not have a functional relation on his onset-rime level skills development.

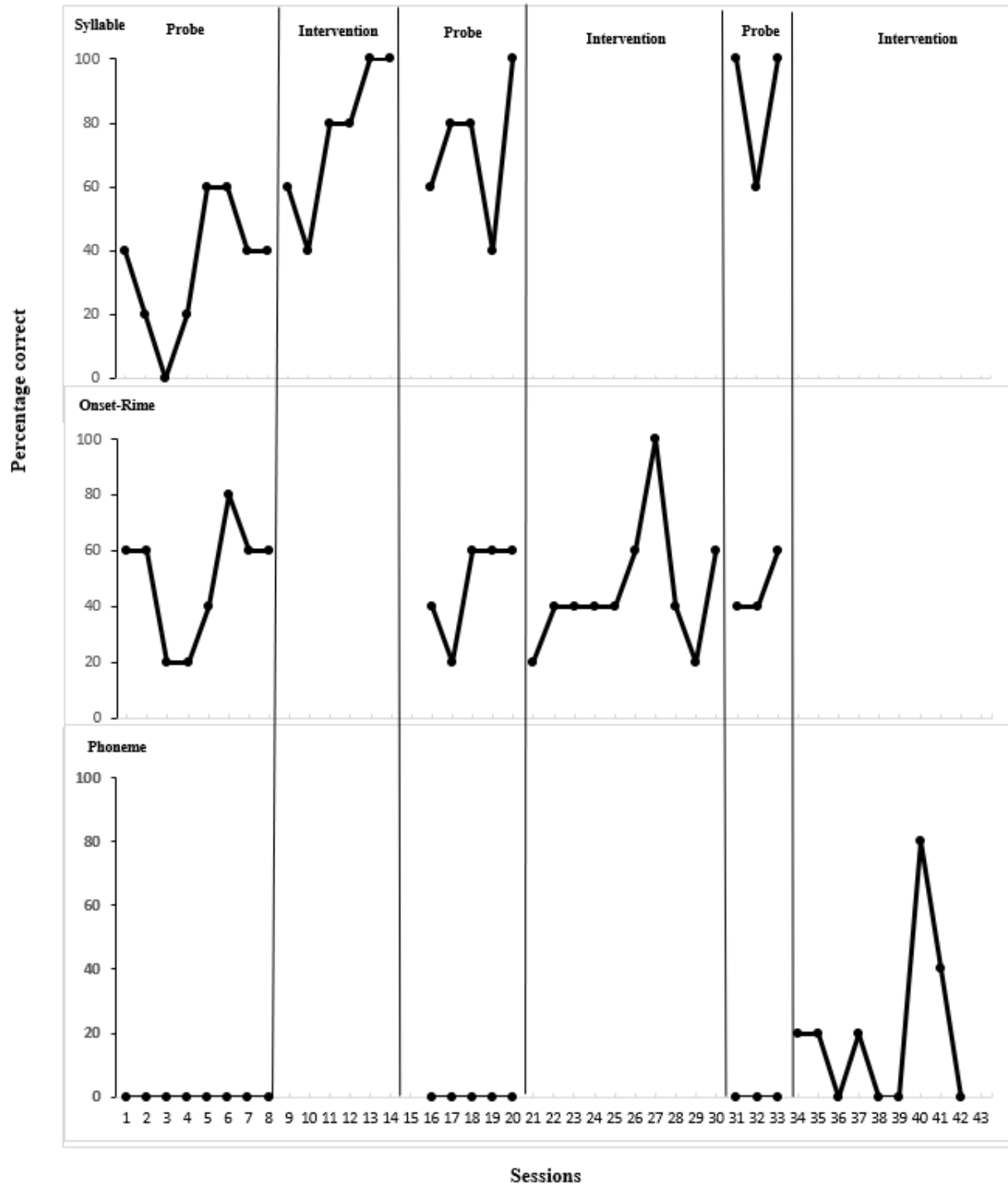
Kevin's phoneme baseline data was low and zero celerating across all eight sessions ( $M_{accuracy} = 0\%$ ). In phase change 2 between syllable and onset-rime levels, Kevin's scores remained low and zero celerating across the five sessions ( $M_{accuracy} = 0\%$ ). In phase change 3 between onset-rime and phoneme levels, Kevin's scores remained low and zero celerating across the three sessions ( $M_{accuracy} = 0\%$ ). Once the phoneme level lessons within the intervention began there was an immediate accelerating trend with a small level change (0% to 20%) in Kevin's phoneme skills performance which remained low and stable until after he completed the seventh phoneme lesson at which time there was an accelerating trend with a large level change (0% to 80%). The next lesson had a decelerating trend with a medium level change (80% to 40%) with lesson nine decelerating back down to zero. Due to an extended two-week vacation between syllable and onset-rime lessons, Kevin's phoneme data was unable to include the last lesson ( $M_{accuracy} = 20\%$ ). Consistent with visual analysis, Kevin's onset results indicate significant findings with a moderate effect size ( $\text{Tau-U} = 0.56, p = 0.05$ ). This indicates that the intervention lessons did have a functional relation on his phoneme level skills development.

**Generalization.** Kevin's generalization of syllable skills remained somewhat variable in phase change 2 between syllable and onset-rime levels ( $M_{accuracy} = 72\%$ ) and were more stable during phase change 3 between onset-rime and phoneme levels ( $M_{accuracy} = 86\%$ ). His generalization of onset-rime skills remained stable in phase change 3 between onset-rime and phoneme levels ( $M_{accuracy} = 47\%$ ), though scoring sheet data indicated that he continued to answer either all yes or all no for all of the yes/no probe questions.

***Maintenance.*** Kevin's data collection is ongoing, there are no maintenance scores at this time.

**Figure 4.6**

*Kevin's visual analysis of phonological awareness skills*



**Table 4.1***Tau-U results and significance values for participants across levels*

<i>Participants</i>	<i>Condition</i>			<i>Significance Values p</i>		
	<i>Tau-U Effect Sizes</i>					
	Syllable	Onset-Rime	Phoneme	Syllable	Onset-Rime	Phoneme
Foster	0.48	0.00	-0.01	0.16	1.00	0.96
Brendan	1.00	1.00	0.97	0.00*	0.00*	0.00*
Frances	0.67	0.04	1.00	0.06	0.90	0.00*
Nora	1.00	0.10	0.70	0.00*	0.76	0.03*
Kyle	0.48	Ongoing	Ongoing	0.16	Ongoing	Ongoing
Kevin	0.67	-0.19	0.56	0.01*	0.51	0.05*

\* indicates *p*- value significant

In summary, there was a functional relation between caregiver implemented phonological awareness experiences at the syllable level only for Foster, at all three levels for Brendan, at the syllable and phoneme levels for Frances, Nora, and Kevin and as based on completed data thus far at the syllable level for Kyle. For the four participants who completed all three levels, their skills remained high and stable during maintenance phase.

### **Lesson Implementation Fidelity**

Lesson implementation fidelity data was calculated for each level of the intervention for each caregiver. This was calculated by the lead researcher by completing the procedural fidelity checklist (Appendix E) after viewing each uploaded lesson recording. Information collected from these checklists was incorporated within future caregiver coaching sessions. The information collected for each caregiver across levels and based on notes completed by the lead researcher on checklists is summarized below (see Table 4.2).

**Table 4.2***Caregiver Lesson Implementation Fidelity Averages*

Caregiver	Syllable %	Onset-Rime %	Phoneme %
Tessa	95%	96%	91%
Becca	98%	98%	95%
Kelly	92%	95%	83%
Theresa	95%	94%	91%
Eva	98%	Ongoing	Ongoing
Diana	98%	97%	94%

Across the syllable, onset-rime, and phoneme lessons implementation fidelity data, the fidelity percentages were over 90% for all caregivers in all levels which is indicative of high levels of lesson implementation fidelity. There is one exception for Kelly within the phoneme level where her percentage was 83%. Across the levels the more challenging aspect of fidelity within the checklist for caregivers was keeping the lessons under the 15-minute mark.

Observations made during the lesson recordings indicated that some caregivers were able to respond to their child’s needs within the lessons and transition to the next activity quicker as based on the feedback they were receiving from their child. Others may have gone beyond the recommended 15 minutes as based on their child’s engagement in activities or their own challenges of managing time devoted to each activity. It was clear to the lead researcher that the first time a new activity was introduced it took the caregivers a bit longer to implement it, but the next time they had that same lesson they were able to implement it quicker. It is unclear what impact, if any, going over the recommended 15 minutes had on their children’s phonological awareness skills development. Research however has continued to emphasize that for phonological awareness activities, keeping the time brief can aid in keeping young children engaged in tasks and maximize their learning (NRP, 2000).

Looking specifically at the syllable lesson implementation fidelity data Becca, Eva and Diana had the highest level of fidelity with 98% with Kelly having the lowest at 92%. Based on

notes taken, Kelly had difficulty keeping lessons under 15 minutes and had some difficulty consistently sticking to the script and modeling activities for her child. Within the onset-rime lessons, Becca again had the highest level of fidelity with 98% with Theresa having the lowest at 94%. Based on notes taken, in addition to having difficulty consistently keeping lessons under the recommended 15-minute mark, Theresa had some difficulty following the script and multiple times, had to go back and re-read the script to correct herself with the learning task that she was asking her child to complete. For phoneme lessons, Becca again had the highest level of fidelity with 98% with Kelly having the lowest at 83%. Based on notes taken, Kelly was able to keep lessons under the 15-minute mark but had difficulties with following the script and providing models for her child during the lessons.

### Caregiver Coaching Fidelity

Caregiver coaching fidelity data was calculated for both planning and feedback sessions for each caregiver, except for Eva and Diane since they were still receiving coaching within the study at the time of this writing. This was calculated by the lead researcher by completing the coaching fidelity checklist (see Appendix E) for the type of coaching session that occurred after viewing the recorded coaching sessions. The information collected for caregivers across the two sessions is summarized below (See Table 4.3).

**Table 4.3**

*Caregiver Coaching Planning and Feedback Sessions Fidelity Averages*

Caregiver	# of Planning Sessions	Fidelity %	# of Feedback Sessions	Fidelity %
Tessa	5	96%	8	100%
Becca	6	94%	5	100%
Kelly	6	91%	6	100%
Theresa	5	94%	8	100%
Eva	Ongoing	Ongoing	Ongoing	Ongoing
Diana	8	93%	7	100%

Tessa had the highest level of planning fidelity (96%) whereas Kelly had the lowest (91%). During planning sessions, the coach would review the key concepts of the upcoming week's three lessons. Also, they would review the specific lesson components that were included and model the skill/strategy if it was the first time that the caregiver would be implementing that activity. Additionally, after reviewing lessons and modeling skills there were opportunities for caregivers to ask questions. The fidelity during feedback sessions was 100% across all participants. Feedback sessions were devoted to highlighting strengths viewed from edited video recording clips from one of the prior week's lessons. Additionally, during this time caregivers were provided an opportunity to discuss what worked well with the lessons and what, if any challenges may have come up. Furthermore, the coach and caregiver were able to brainstorm modifications/adjustments for future lessons. This adds to Barton and Fetting's (2013) call to expand the caregiver-implemented intervention literature to examine fidelity components including those practices that work for caregivers under different conditions for types of interventions or outcomes.

### **Research Question 2: Caregiver Coaching Social Validity**

The second research question aimed to gather caregivers' views on the effectiveness of the virtual literacy-based coaching model that they received throughout the study. At the conclusion of the study, caregivers were emailed a survey developed in Qualtrics with 13 multiple choice questions with a likert-based agreement scale. Table 4.4 and 4.5 displays a detailed version of the survey and caregivers' responses to the statements. Overall, caregivers viewed the virtual literacy-based coaching model that they received as a beneficial aspect of their ability to implement phonological awareness experiences at home with their young children.

In addition to the multiple-choice statements there were also three open-ended questions included on the survey. The first question aimed to gain information about the beneficial components of the coaching process. Tessa noted that it was “great having face-to-face time to ask questions, get advice, and troubleshoot the lessons.” Theresa echoed those comments by noting the beneficial aspects of having questions answered, seeing examples, and reasons for the lessons. She also noted the benefit of, “Talking about how my daughter and I were doing and what we did well or could do better.” Kelly noted that it was beneficial to “learn about what was developmentally appropriate for my child’s age.” Becca noted that she felt “more confident in my understanding of presenting the lessons to my son. And encouraged that I was doing it correctly and helping him when shown the video clips of positive learning moments.”

When asked about the challenging aspects of the coaching process, Tessa noted that “I felt sometimes it was a little rushed and (that) maybe allowing 5-10 more minutes would be better to go over last lessons, adjusting, and going over future lesson requirements.” On the contrary, Kelly noted that despite, “the flexibility and understanding of the coach, it was challenging to find the time and also remember the coaching sessions with work, school, and other commitments.” Becca noted that it was challenging to “remember to show up on time, but the coach was super understanding and always reached out to check in if I was late.” Theresa noted that it was difficult to, “understand how to apply the process to teaching it to my daughter so she would understand. The script was helpful, but sometimes it was hard to explain why we were doing this. Also remembering how to say letter sounds correctly was challenging for me.”

When asked what specific aspects of the coaching process they would recommend be changed for future use, Becca noted that the “coaching was excellent, and I wouldn’t recommend any changes.” Kelly noted that, “I don’t know that I’d change anything.” Tessa recommended

“allowing more time for coaching sessions.” Theresa’s response to this question was more aligned with feedback on lessons than the coaching with her noting that the learning checks were a challenge, and that once her daughter told an answer she never changed it even if it was wrong. Also, she noted, “it was also very hard to keep her focused on the lesson at times but that’s pretty normal for a four-year old.”

**Table 4.4**  
*Caregiver Coaching Social Validity*

<i>Statement</i>	<i>Responses</i>				
	Strongly Agree	Somewhat Agree	Neither Agree/Disagree	Somewhat Disagree	Strongly Disagree
I believe that the coaching I received deepened my understanding of phonological awareness.	Tessa Kelly Becca Theresa				
I believe that the coaching I received impacted my child's phonological awareness skills development.	Tessa Kelly Becca Theresa				
I believe that the coaching I received helped me improve my child's literacy skills.	Tessa Kelly Becca Theresa				
I believe that the coaching I received aided in my ability to implement the lessons with my child.	Tessa Kelly Becca Theresa				
I believe that the coaching I received was a positive experience.	Tessa Kelly Becca	Theresa			
During the coaching process, I felt supported and encouraged.	Tessa Kelly Becca Theresa				
During the coaching process, I had opportunities to practice lesson activities.	Kelly Theresa	Tessa Becca			

**Table 4.5**

*Caregiver Coaching Social Validity*

<i>Statement</i>	<i>Responses</i>				
	Strongly Agree	Somewhat Agree	Neither Agree/Disagree	Somewhat Disagree	Strongly Disagree
During the coaching process, I found models of lesson activities helpful.	Tessa Kelly Becca	Theresa			
During the coaching process, I found the amount of time devoted to coaching sessions reasonable.	Kelly Becca Theresa			Tessa	
During the coaching process, my confidence in doing the lessons grew.	Tessa Kelly Becca	Theresa			
During the coaching process, I believe that viewing the video clips positively impacted my confidence.	Tessa Kelly Becca Theresa				
During the coaching process, I formed a trusting partnership with the coach.	Tessa Kelly Becca Theresa				
If offered in the future I would participate in a coaching relationship to learn new ways to engage in early literacy experiences with my child.	Tessa Kelly Becca Theresa				
Overall, I believe that my child made growth on their phonological awareness skills.	Tessa Kelly Becca Theresa				

**Research Question 3: Child Social Validity**

The third research question aimed to gather participating children’s views of the overall experience with their caregiver. At the conclusion of the study, a virtual zoom session was held with the lead researcher and participating children so that they could answer questions related to their experiences in the study. Each child was asked seven questions related to their experience that they could answer yes or no to. Given the age of the participants the lead researcher instructed children to either say yes or give a thumbs up if their answer was yes or say no or give a thumbs down if their answer was no. Prior to reading the statements they were reminded that

they were answering these questions as based on the lessons they completed with their caregiver. Table 4.6 reflects the children's responses to the yes/no statements. Overall, child participants reported positive feedback related to completing these experiences with their caregivers.

There were also four open-ended questions that children were asked as well. When asked what your favorite part of the lessons were, Brendan responded that he liked the dancing and jumping. Nora responded that she liked the boxes which her caregiver interpreted as the Elkonin boxes and the different cards. Foster reported that he liked the puppet the best as well as the magnify glass. Frances reported that she liked the puppet the best. When asked what part of the lessons they did not like, Brendan, Nora, Foster, and Frances all responded that they liked all of it. When asked about their learning during the lessons, Brendan noted that he learned a lot with his mom. Nora noted that she learned about boxes and using cubes in the boxes and how to play BINGO. Foster responded that he learned to play word games and that the word games were so fun. Frances noted that she learned a lot about words and rhyming.

**Table 4.6**

*Child Social Validity*

<i>Statement</i>	<i>Responses</i>	
	<b>YES</b>	<b>NO</b>
I liked the activities.	Brendan Nora Frances Foster	
I liked the games.	Brendan Nora Frances Foster	
The materials were fun.	Brendan Nora Frances Foster	
I had fun doing these types of things with my caregiver.	Brendan Nora Frances Foster	
I learned a lot by doing these lessons.	Brendan Nora Frances Foster	
My caregiver helped me when I needed help.	Brendan Nora Frances Foster	
I would like to do more lessons like these with my caregiver.	Brendan Nora Frances Foster	

## CHAPTER FIVE

### Discussion

This study examined if there was a functional relation between caregiver-implemented phonological awareness experiences and preschool children's phonological awareness skills across syllable, onset-rime, and phoneme levels. Results indicated a functional relation for all six children across the syllable level experiences, a functional relation for one child out of four across the onset-rime level experiences and a functional relation for three out of four children across the phoneme level experiences. This study extends the small body of literature on caregiver-implemented phonological awareness interventions and demonstrated that when caregivers receive adequate coaching and support, they can indeed successfully implement phonological awareness experiences at home with their children which results in demonstrated gains in their child's phonological awareness skills. Additionally, this study answers the call from the NELP (2008) for the need to further explore the effects of coordinating home and caregiver programs on young children's early literacy skills development. Furthermore, this study resulted in high social validity results. Caregivers overall were pleased with the coaching and support they received throughout the study. They also agreed that the coaching that they received impacted their child's overall early literacy skills development. Children also enjoyed the activities and games that they got to complete with their caregiver during these phonological awareness experiences.

### Phonological Awareness Experiences Findings

This study provided evidence that caregiver-implemented phonological awareness experiences had a functional relation on participating young children's phonological awareness skills development particularly on the syllable and phoneme levels. This is particularly important

because young children who have strong skills in these areas are better prepared to learn to read when they enter Kindergarten (Lonigan et al., 2000). To my knowledge, this study was the first to examine the effectiveness of caregiver-implemented phonological awareness experiences across three levels of phonological awareness skills (syllable, onset-rime, and phoneme). The limited body of caregiver-implemented phonological awareness interventions have primarily focused on one level such as phoneme (McConnell & Kubina, 2016; Sundman-Wheat et al., 2012) or two such as rhyme and phoneme (Justice et al., 2016). Research has demonstrated that phonological awareness skills progression is not dependent on mastery of one level to another (Anthony et al., 2002, 2003; Lonigan et al., 2000), however the skills that the young children developed within each level of lessons including blending and segmenting syllables and onset and rimes of words may have better prepared them for later activities that focused on developing their phonemic awareness.

### ***Measures***

One element common across this study and two other caregiver-implemented phonological awareness intervention studies (Justice et al., 2005; McConnell & Kubina 2016) is the use of researcher-created dependent measures. This may have been due to the limitations of standardized phonological awareness assessments in measuring specific focal skills of intervention lessons and/or due to the study designs (single-case versus large scale experimental design). It is possible that some of the findings in these studies are due to the tight alignment between the researcher-created measures and the interventions. There is initial evidence suggesting a possible transfer to a more distal measure in the current study (e.g., *CTOPP-2*), which provides a good rationale for additional research using a more distal measure.

The use of standardized measures may also help the measurement difficulties found in this study. The probe/learning check that was developed for the onset-rime level quickly appeared to be problematic and not a reliable way to measure young children's onset-rime skills. For example, both Foster and Nora consistently answered either all yes or all no responses to the learning checks throughout baseline, intervention, and maintenance phases. This greatly impacted their skill development as representative of correct responses to learning checks on this level. Detailed observation notes taken by lead researcher after viewing their onset-rime lessons indicated that they were developing their onset-rime awareness skills as lessons progressed, but the probe was not accurately measuring their progress. For Foster, when his caregiver started the learning check with him, he would even say, "I'm going to say yes to all of them," and would often provide a yes response before his caregiver had even had a chance to say the two words. Even when caregivers were guided to incorporate learning check questions throughout the lesson, rather than all at the end, the children caught on and continued with their yes/no response pattern. Age of participants may have also impacted demonstrated onset-rime progress as prior research has suggested that older children make greater growth related to younger children with regards to both onset-rime and phoneme skills development (Justice et al., 2005), and both Foster and Nora were the youngest participants in the study. Perhaps a more accurate way to measure onset-rime skill development would be to have young children produce a word that rhymes with a provided target word (Justice et al., 2005). The onset-rime probe/learning check will need to be redesigned for use in future studies.

### ***Dyad Experiences at the Phoneme Level***

The phoneme level of phonological awareness skills contributes the most to a young child's ability to read and spell than any other phonological awareness skill (NRP, 2000) and

because phonemes are the smallest segments of sound, they are the most difficult of the phonological awareness skills to learn. All participating children had low and stable baseline skills in this area, and it was clearly an area of instructional need for all of them as based on baseline scores as well as scores on the onset administration of the *CTOPP-2* sound matching subtest. Though the phoneme level lessons did have a functional relation on Nora's phoneme skills, she had a lot of difficulty with the activities/lessons that she completed with her caregiver. Initially during baseline and phase change probes, Nora would just copy the words that her caregiver asked her to give the first sounds to. As the phoneme lessons progressed, she began to respond with some sounds particularly the /k/ sound which she responded to quite a few of the questions. Similarly, some of the phoneme activities were more challenging for Foster as well. He at times asked his caregiver if they could move to the next activity within the lessons as he was frustrated at his inability to identify and/or produce the first sounds in words. He would also ask his caregiver for the ability to see the printed letter rather than just hear it. Phoneme level skills typically begin developing during preschool, but for many young children will not fully develop until Kindergarten. Given that Nora and Foster were the youngest two participants in the study, it is likely that this was their first experience focusing on the auditory sounds of words and was a more challenging phonological awareness skill for them to practice and acquire.

During phoneme lessons, caregivers were observed to make limited errors when modeling blendable letter sounds for their children within phoneme lessons, yet despite providing caregivers with a video which included auditory representations of blendable letter sounds and a cheat sheet (Appendix C), at times caregivers had difficulty modeling certain sounds correctly (e.g., /b/ and /d/ sounds) (McConnell & Kubina, 2016). It's important that caregivers are modeling blendable correct letter sounds for their children given the importance of

young children developing strong phonemic awareness. The level of support and modeling that caregivers may benefit from receiving in order to model correct letter sounds may vary, but was something that caregivers noted they were particularly appreciative of and were definitely more cognizant of their phoneme production during the phoneme lessons after viewing the video.

### **Challenges and Benefits of Caregiver-Implemented Interventions**

There are both challenges and benefits to completing research with caregivers and their young children. There are many reported benefits of utilizing caregivers as interventionists (Gang & Poche, 1982). In addition to the phonological awareness lessons directly impacting participating young children's phonological awareness skills, there were other observed additional benefits from participation. One observed benefit was the increased oral language opportunities particularly around the area of vocabulary. Though vocabulary development was not a measurable outcome of this study there were many observed opportunities during the lessons for this skill development. For example, during one of the lessons Frances asked her mother, "*What is a marble?*" and "*What is a pail?*" Kelly took this opportunity to explain what those two words meant to her child and even explicitly connected the word marble to a game that Frances had played that used marbles. In addition to the children inquiring about what unfamiliar words meant, caregivers also used these lessons as opportunities to see if their children knew what certain words meant. For example, Tessa asked Foster during the oral reading of the book, "*A Wocket in my Pocket,*" if he knew what a bureau (a word featured in the story) was. He did not, so she began to explain to him what the word meant and that it isn't a word that we use very often these days. Both child and caregiver-initiated conversations around unfamiliar words were observed for all participants throughout the study.

Theresa noted during one of the coaching sessions, how she felt as though these lessons were also benefiting her child's speech skills, particularly around the area of correct word sounds production. Though Nora has not been formally diagnosed with a speech impairment, her mother noted that she struggles at times, with correctly producing some sounds (articulation difficulties) which can make it difficult for others to understand her clearly. Theresa often encouraged Nora to look at her lips and copy making the sounds with her own mouth. She also noted towards the end of the study that now when Nora is trying to say a word that her caregivers can't understand, they ask her to break the word into syllables which has made it much easier for Theresa and other caregivers to understand her expressive speech. For some young children with articulation concerns, these lessons could provide an increased opportunity for verbal interactions with caregivers. Additionally, the level of modeling and practicing that is involved within the lessons could help foster speech sound production for some young children.

One challenge that came up was the ability for some caregivers to consistently implement three lessons per week with their young child. Though many dyads were able to consistently complete three lessons per week as guided, some dyads particularly those who also received home-based therapy services, found two lessons a week more feasible within their schedules. Some caregivers may have difficulty competing with duties at home and work and thus may have reduced capacity for more intervention sessions per week (Reese et al., 2010). When providing caregiver-implemented interventions, fitting into the family's schedule is a necessary and critical aspect of success.

Another particularly challenging aspect of caregiver-implemented interventions at home is the lack of experimental control that occurs when research takes place in a natural setting with enhanced environmental validity such as the home. Caregivers innately want their children to do

well and likely want coaches, teachers, and other adults to be impressed with their children's abilities as seen from the recorded lessons. The coach observed Kelly become frustrated when during recorded phoneme learning checks, Frances was not scoring well on them, and Kelly acknowledged this frustration during one of the coaching sessions. Because of this, Kelly took it upon herself to begin having conversation with Frances about the sounds in words during car rides to and from school during phase change sessions between the onset-rime and phoneme levels of the intervention. This occurred despite being explicitly instructed by the coach not to have any discussions or lessons around the phonological awareness skills outside of the focal activities/lessons in the study. This highlights a particular limitation to caregiver-implemented interventions at home and also demonstrates the reality of doing research with families in an uncontrolled setting such as the home. Surprisingly this was not addressed as a limitation in other caregiver-implemented studies that were reviewed.

Caregiver involvement in interventions for their children has long been recognized as necessary for promoting sustainable improvements in children (Brofenbenner, 1974). Incorporating caregiver-implemented interventions at an early age is beneficial not only for the young child, but for caregivers as well in that they are able to familiarize themselves with some of the skills that their young children may be asked to demonstrate prior to entering formal schooling (Powell et al., 2010). Additionally, caregiver-implemented interventions have the potential to increase generalizations by creating consistent opportunities for young children to practice learned skills in a variety of contexts (Boyd et al., 2010). Furthermore, caregiver involvement in their child's learning has long been considered an important factor related to positive outcomes in their child's education (Berger, 1995).

### **Caregivers as Agents of Change**

The relationships that caregivers have with their children shape their developmental path (Shonkoff, 2010). Using caregivers as intervention agents has been endorsed by policymakers (Black et al., 2017; Snow et al., 1998) and is also a potential alternative to school-based interventions which can sometimes be difficult for families to access (Justice et al., 2005) or not available within a young child's early childhood setting. This study highlighted how caregivers were indeed agents of change within their children's lives during these lessons. One aspect of this intervention that was both unexpected and a great success was how caregivers changed the lessons to better fit their children and context. Rather than following the lessons, exactly as written, caregivers showed agency in making the lessons more relevant. They did this in terms of the materials and activities they used, using the lessons as steppingstones to other additional practice opportunities, incorporating other family members and adapting or modifying as based on their child's needs.

### ***Materials and Activities***

Caregivers were encouraged throughout the study to incorporate their child's high-interest items into the lessons as they saw fit. Given that caregivers know their child best (Bornstein, 1995), there wasn't any explicit guidance within lessons on how or when to do this. Many caregivers used this opportunity to work on skills incorporated within the lessons in engaging and purposeful ways for their young children. For example, Theresa knew that her daughter loved the movie *Encanto* and knew all of the characters within the movie very well so during one of the syllable lessons she asked Nora, "*How many word parts in Bruno?*" Nora took her stick and tapped twice and said two. Theresa often used words/objects of high interest during lessons to help keep her child engaged to tasks.

During one of the syllable lessons, Kelly chose names of Frances' cousins to have Frances break into syllables. Additionally, Kelly realized that Frances took quite a liking to the puppet provided by the study whom Frances dubbed Fozzy during the syllable lessons, so Kelly decided to include Fozzy in many of the future lessons. As lessons progressed Kelly realized that when Frances had Fozzy and answered the questions as the puppet it took less pressure off her to get the answers correct. Additionally, Frances was in fact often trying to teach Fozzy about word parts (syllables), rhyming words, and letter sounds during lessons.

### ***Steppingstones to Other Activities***

During coaching sessions, caregivers also shared how they saw these activities as a steppingstone to build off and continue reinforcing their child's phonological awareness skill development at home. This was evidenced by Tessa noting how she and Foster played "*Phoneme I Spy*," one of the activities in the phoneme lessons in the car while waiting to pick up her other child. Theresa also noted that given her child's interest and engagement with the rhyming book "*A Wocket in my Pocket*," she began purposefully selecting books that featured rhyming and had conversations with Nora about the rhyming words and patterns in books. Becca noted during the syllable lessons that Brendan would clap the word parts of everyday words he would use such as, "*Noodles has two-word parts*," which demonstrated to her that he was really beginning to understand the concept of words being made up of parts or syllables and was extending this learning to familiar words throughout the day. Additionally, Kelly shared during a coaching session how Frances had woken her up in the middle of the night asking her if two words rhymed. This was exciting for Kelly to witness her child's rhyme awareness and interest developing, though she would have preferred those types of questions during the day when she wasn't sleeping.

### *Extending Family Experiences*

Multiple caregivers also took activities presented during lessons as opportunities to include other family members. For example, Tessa had her older child play word bird with Foster. During this activity, Foster would say a word and then toss the bird to his sibling who would provide a word that rhymed with the original word. Then his sibling would say a new word and toss the bird to Foster for them to provide a rhyming word. Tessa noted that Foster often wanted to share with his older sibling his word games that he was playing with mom.

Diana also included Kevin's father on a few of the lessons which made for an opportunity for the whole family to partake in the word game. Becca also had opportunities where her older children played games with Brendan which she noted likely increased his engagement and enjoyment level. Caregivers were able to include other family members in meaningful and purposeful ways that also didn't take away from their participating child's ability to focus on activities.

### *Adapt and Adjust*

The theme of caregivers truly knowing their children best (Bornstein, 1995) was further evidenced within this study with caregivers' ability to adapt and/or adjust lessons as based on their child's unique needs. Tessa was able to adjust within lessons or switch activities to reduce Foster's frustration level. When Foster would begin to display any sign of frustration, such as raising his voice or putting his head in his arm, Tessa would draw him back by providing more models of tasks herself or reducing the number of steps in an activity. This innate ability to read her child and adjust as necessary, reduced Foster's frustration and likely increased his engagement and enjoyment in lessons. Eva was also very in sync with Kyle's needs. She would often only spend a few minutes on each activity before quickly moving to another to keep Kyle engaged. She also would at times incorporate his action figures into lesson activities to aid in his

engagement and time on task. Additionally, Theresa decided to use the phoneme lessons as an opportunity to also talk about letter names as Nora had just learned her letters by name at preschool. She felt that it was important for Nora to learn that those sounds corresponded with letters and would show her letters on cards or items in the room to help foster this connection. Diane often used stickers as positive reinforcement for Kevin staying focused and engaged during lessons.

Caregivers were able to include names, objects, materials, and other family members that were of interest to their children during the lessons. This ability to adapt lessons to better meet the needs of their child at the time likely helped with child engagement and provided additional evidence that caregivers are promising agents of change in their child's early literacy skills development. It's important that we continue to research caregiver-implemented interventions in the area of language and emergent literacy as the caregivers' roles as agents of change in their young children's lives (Brooks-Gunn et al., 2000).

### **Literacy-based Caregiver Coaching Model**

The virtual literacy-based caregiver coaching model that was developed for this study and based off the practice-based coaching model (NCQTL, 2014) improved caregivers current phonological awareness knowledge, provided opportunities to develop new skills to support lesson implementation fidelity with their child, highlighted strengths-based interactions with their child, and provided a space to see models of activities and practice so that they could support their own child's phonological awareness development within these experiences. Research has established the importance of caregivers receiving high-quality training and coaching in order to implement interventions with fidelity with their children (Wong et al., 2013) and the results of this study proved that the virtual literacy-based caregiver coaching model

provided high-quality coaching. Though this coaching model wasn't the focal measurable outcome of this study, it was included in the theory of change motivating this study because of the effectiveness of coaching models with caregivers when aiming to improve developmental outcomes for children (Fettig & Barton, 2014). Two prior caregiver-implemented phonological awareness studies only utilized a single session training style approach for caregivers (Justice et al., 2005; Sundman-Wheat et al., 2012) and the other provided only two training sessions (McConnell et al., 2016) with all studies providing minimal ongoing support to caregivers during the intervention process. This limited support and guidance to caregivers could have impacted the amount of growth that those participating children made on those phonological awareness interventions. If this study had also used a single session of training, caregivers may not have had such high levels of implementation fidelity and as a result the participating children may not have made as much progress on their phonological awareness skills as they did. In fact, some studies have reported much lower rates of implementation fidelity than reported in this study (McConnell & Kubina, 2016; Sundman-Wheat et al., 2012).

The coaching model in this study included weekly coaching sessions with caregivers which allocated time for planning and feedback between the coach and the caregivers. One area within the planning phase that wasn't consistently addressed across caregivers was the coach offering caregivers opportunities to practice with the coach the strategy or lesson component. This may have been a particularly important opportunity to offer Kelly given her lower lesson implementation fidelity percentages across the three levels. If Kelly had perhaps been offered a chance more often to practice lesson components, she may have had a higher percentage of lesson implementation fidelity. It is important to note however, that for the times when caregivers were offered to practice strategies or lesson components during planning sessions,

none of the caregivers opted to do so. It will be important for coaches to think about how these opportunities to practice can be presented in meaningful and purposeful ways for caregivers given the virtual nature of the coaching sessions.

During feedback sessions, the coach would begin sessions by asking caregivers what went well for them and what challenges they experienced with their child during the prior week's lessons. If challenges were presented the coach would brainstorm with caregivers on potential future adjustments and/or modifications. This is noticeably different from other caregiver-implemented phonological awareness interventions (Justice et al., 2005; McConnell et al., 2016; Sundman-Wheat et al., 2012) as caregivers weren't provided an opportunity to reflect or discuss prior lessons. It's important that coaches and caregivers have opportunities to brainstorm together and that the coach acknowledges the important role that caregivers play in their children's lives as those who know them best.

An important part of this coaching model included the strengths-based video feedback that caregivers received. The coach would purposefully select a snippet of one of the weekly lessons to view with caregivers. After watching the clip, the coach would highlight positive interactions that were witnessed during the video. The emphasis of strengths-based interactions between dyads during lessons may have led to caregivers feeling more confident in their ability to implement lesson activities with their children and higher rates of overall lesson implementation fidelity. Strengths-based video feedback within coaching has also led to positive developmental outcomes for young children (Fisher et al., 2016; Kelly et al., 2008).

Additionally, several other studies that included positive verbal performance-based feedback as based on specific examples of the caregivers' behaviors during sessions have led to higher rates of fidelity (Chaaban et al., 2009; Mobayed et al., 2000; Rocha et al., 2007) and have contributed

to the growing body of literature that supports the use of performance-based feedback as an effective practice for changing adult behaviors (Barton et al., 2011; Casey & McWilliam, 2011). This aspect of the coaching feedback session also received a high level of positive feedback at the end of the study via the coaching social validity survey. Often within caregiver-implemented interventions if feedback is provided during training or coaching sessions it focuses more on corrective feedback to work on getting caregivers closer to fidelity (Justice et al., 2005) rather than focusing on a strengths-based approach.

Overall, caregivers responded favorably to their coaching experiences as demonstrated in the validity survey around their coaching experiences. The coaching sessions were purposely selected to take around 15 minutes to better meet the needs of families, however it was interesting to note the differences in the preferred amount of time caregivers would have liked for coaching. Tessa would have preferred more time for coaching sessions whereas Kelly noted that it was challenging at times to find the time to attend weekly sessions. For most of the caregivers coaching sessions averaged around 15–20-minutes for both planning and feedback sessions, however Eva’s averaged 45-60 minutes each week. She often discussed unique challenges she was facing as a caregiver of a young child with ASD. She also spoke about other home-based therapy services that Kyle received. During one coaching session in particular, Eva became quite emotional commenting on how thankful she was to have her child be involved in this study as she worried just as other caregivers do about her child’s development and had found that often research projects don’t want to include young children with identified disabilities in them. Given her own history of dyslexia and her difficulties with reading and spelling she wanted to do whatever she could to expose her child to a variety of early literacy experiences prior to beginning his formal schooling. It appeared that these coaching sessions went beyond

just supporting Eva around this study, but also provided her with an opportunity to talk without judgement. It will be important for coaches to consider the unique wants and needs of each caregiver to better determine an appropriate amount of time for coaching sessions. This may mean varied times devoted to caregiver coaching as based on individual wants and needs.

One additional piece worth mentioning with regards to the virtual coaching sessions were the benefits of the coaching being provided virtually. This has demonstrated some promising advantages in other studies that have used virtual coaching (Daczewitz, 2013; Stith et al., 2012). Often trainings or coaching sessions for caregivers occur at young children's early childhood setting and potentially present some barriers for caregivers' attendance including lack of reliable transportation, childcare, and commute time (Symon, 2001). These barriers are consistent within EI and IMH services and are one reason why family coaching and consultation models have been used more regularly in recent years in both EI and IMH with regards to parent- or caregiver-implemented interventions (Fettig et al., 2016). Given the amount of time that young children spend with their caregivers, it makes sense that learning experiences be provided by a caregiver throughout a child's daily routine in a natural learning environment such as the home, rather than solely within the child's early childhood setting or when an interventionist or practitioner can visit. Given how many Americans now have reliable access to broadband internet speeds of 25 Mbps or higher, which is the speed necessary for sufficient videoconferencing (U.S. Department of Commerce, 2013), providing coaching services to caregivers from a distance is a viable option. By providing coaching sessions virtually, it eliminated these potential barriers and also provided space for flexibility and accommodation around the needs of the dyad. Making this an easy and smooth process for caregivers was noted as being valued by multiple caregivers in the social validity survey.

## **Limitations**

Although the overall purpose of this study was to determine if there was a functional relation between a caregiver-implemented phonological awareness intervention and preschool children's phonological awareness skills, the results should be considered in conjunction with several limitations. As related to the caregiver inclusion criteria, given the fact that this study was completed virtually (coaching sessions completed via Zoom and lessons recorded and uploaded via Google drive), this required caregivers to have a computer/cell phone as well as stable internet connection, which could have excluded potentially interested caregivers in participating. Also, potential participants may not have been comfortable having their child video recorded and this recording stored on a university protected Google drive.

Another limitation was the fact that lessons and coaching were only provided in English which could have limited the inclusion of dyads from other linguistic backgrounds. Also, participating in this study was a time commitment on caregivers. On average they devoted 45 minutes a week to implementing lessons with their child and 15 minutes to coaching sessions which equals an hour a week for 12 weeks' time. This may not be feasible within family's schedules and may have limited the diversity of the participant pool.

Additionally, the researcher's role could be an impacting factor in interpreting the results of this study. There is a possibility that caregivers performed well during lessons because they knew that the lesson recordings were being viewed by the lead researcher and were part of this study. They may have acted differently if the lessons were not recorded. Additionally, they may have wanted to do their best for the researcher/coach. With regards to the coaching social validity survey they completed, caregivers may not have felt comfortable sharing their true

feelings given that the lead researcher was also the coach meeting with caregivers virtually every week.

Finally, the probes/learning checks that were used for this study were developed by the lead researcher as based on their knowledge around phonological awareness skills development and the focal skills of these lessons. They were implemented with a small group of young preschool aged children prior to the study to determine if they accurately measured outcomes, however further research on the probe's reliability is warranted. As noted above, the onset-rime probes will need to be completely redesigned to represent children's onset-rime knowledge development more accurately and will need to not be a yes or no style of response.

### **Future Directions in Research**

This study demonstrated that when caregivers receive ongoing coaching and support, they can implement phonological awareness experiences with their child in their natural setting with fidelity which ultimately has a positive impact on their child's phonological awareness skills development. Despite the previously discussed limitations, this study extends the limited research on caregiver-implemented phonological awareness interventions. Future research should look into how families may be able to embed phonological awareness learning opportunities within existing routines throughout the day rather than an isolated 15-minute lesson. As was evidenced within this study once caregivers had an ideal and model of skills they were able to act as agents of change in their young children's early literacy skills development. Additionally, if this study were to be replicated in the future, it would be useful to include an outcome that could measure young children's expressive language and/or vocabulary development of participating children given the level of verbal interactions that occurred within the dyads around unfamiliar words and definitions across phonological awareness lessons.

Furthermore, research could examine how this model of coaching along with these phonological awareness lessons could be taken up by early childhood professionals so that they could support caregivers in the home in fostering their child's phonological awareness skills development.

## **Conclusion**

This study provided strong evidence of the effectiveness of caregiver-implemented phonological awareness experiences on their young children's phonological awareness skills development. It demonstrated the importance of caregivers receiving ongoing coaching and support which led to high levels of fidelity with lesson implementation. Overall, caregivers enjoyed supporting their young children's early literacy skills development within these experiences and were able to adapt lessons to meet their own child's unique interests and needs. Additionally, young children had fun and enjoyed the time with their caregivers as they completed these phonological awareness activities. This was evidenced by the high levels of social validity from both caregivers and their young children. Furthermore, caregivers acted as agents of positive change in their own children's lives in meaningful and purposeful ways that kept their young children engaged and having fun while also providing them with a jumpstart on their literacy experiences prior to beginning their formal years of school.

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<https://doi.org/10.1007/s10935-008-0132-1>

## **Appendix A: Human Subjects and Recruitment Information**

**NOT RESEARCH**

October 20, 2021

Dear ERIN ANDERSON:

On 10/20/2021, the University of Washington Human Subjects Division (HSD) reviewed the following application:

Type of Review:	Initial Study
Title of Study:	A Jump Start on Literacy: The Effectiveness of a Caregiver-Implemented Phonological Awareness Intervention
Investigator:	ERIN ANDERSON
IRB ID:	STUDY00014239
Funding:	None
IND, IDE, or HDE:	None

**HSD determined that the proposed activity is not research**, as defined by federal and state regulations. Therefore, review and approval by the University of Washington IRB is not required.

This determination was made because this study is not intended to contribute to generalizable knowledge. **You may still publish the results your study.** More guidance can be found here:

<https://www.washington.edu/research/policies/guidance-is-it-research-2/>

This determination applies only to the activities described in this application. **Depending on the nature of your study, you may need to obtain other approvals or permissions to conduct your activity. For example, you might need to apply for access to data or specimens (e.g., to obtain UW student data). Or, you might need to obtain permission from facilities managers to conduct activities in the facilities (e.g., Seattle School District; the Harborview Emergency Department).**

If you need to make changes in the future that may affect this determination or are not sure, contact us or submit a new request for a determination. You can create a modification by clicking Create Modification within the study.

I wish you great success!

Sincerely,

Dana Gold, MA  
IRB Administrator, Committee D  
Email: [deg4@uw.edu](mailto:deg4@uw.edu)  
Phone: 206.543.5602

# Are you a caregiver of a preschool aged child?

We are seeking caregivers of children ages 4-5 to participate in a virtual study to explore the effectiveness of early literacy experiences at home.



Interested in learning more?

Please email: [eem41@uw.edu](mailto:eem41@uw.edu)

or text 360-209-3774

**Erin Anderson**  
College of Education  
University of Washington

## Participation will involve:

- Individualized virtual coaching support from an early childhood educator
- Weekly early literacy experiences and materials for you to use with your child
- Uploading video recordings
- Providing feedback on experience

Qualified participants who complete the study will receive a \$100 gift card as well as get to keep all provided materials.

My name is Erin Anderson and I'm a fourth-year doctoral candidate at the University of Washington. I'm in the process of recruiting for my dissertation study and wanted to inquire to see if you would be willing to share my attached recruitment flyer with your families?

I am seeking caregivers with a child between the ages of 4-5 to participate in a **virtual** study to explore the effectiveness of early literacy experiences at home. I will be providing caregivers with all the materials and lessons. Caregivers can contact me directly for more information regarding the study (contact information is included on the flyer). I have received IRB approval from the University of Washington as well.

I greatly appreciate your assistance in getting this recruitment flyer to your families that may be interested in participating.

Best,

Erin Anderson  
Doctoral Candidate  
College of Education  
[eem41@uw.edu](mailto:eem41@uw.edu)

UNIVERSITY OF WASHINGTON  
CONSENT FORM  
PA Lessons Project

Researcher: Erin Anderson, Ph. D Candidate, Special Education Department; [eem41@uw.edu](mailto:eem41@uw.edu)  
Faculty Advisor: Dr. Roxanne Hudson, Special Education Department; [rhudson@uw.edu](mailto:rhudson@uw.edu)

**RESEARCHER'S STATEMENT**

I am asking you and your child to take part in a research study. The purpose of this consent form is to give you the information you will need to help you decide whether you and your child should be in the study or not. Being in the study is voluntary. Please read the form carefully. You may ask questions about the purpose of the research, what I would ask you to do, the possible risks and benefits, your rights as a volunteer, and anything else about the research or this form that is not clear. When all your questions have been answered, you can decide if you want to be in the study or not. This process is called "informed consent." I will give you a copy of this form for your records.

**PURPOSE OF THE STUDY**

I want to know more about the effectiveness of lessons given by caregivers (for example parents, grandparents, aunts) on improving their child's understanding of how the sounds of our language work. This is called phonological awareness, and it is an important early childhood skill. Additionally, I'm looking to understand your opinion of the lessons and training you would receive. Furthermore, I also want to know the opinions of the participating children about the experience. Knowing the opinions of the participants will help me improve the lessons and training.

**STUDY PROCEDURES**

I am recruiting caregivers who have a preschool aged child (4-5 years old) who have not officially started Kindergarten for this study. Data collection for this study will take place in the Winter months (December 2021-March 2022). If you give consent to be a part of this study, I will ask your child to do some tasks so I can see how well they understand the sound systems of English. I will repeat these tasks at the end of the study so I can see how they have changed.

Then, I will ask you to do lessons with your child that include a set of activities that will tell me how well your child learned the information. I will provide training and guidance in implementing these tasks with your child.

Next, you will attend individual virtual (Zoom) coaching sessions (which will be recorded) with me that are scheduled at your convenience. At that time, I will also give you all the materials for the first set of lessons. I will give you training and coaching support on how to implement the lessons and you will have opportunities to ask questions throughout.

Next, you will follow the provided directions to complete 3 phonological awareness lessons with your preschool aged child each week after we have met. You will video record all lessons (cell phone recording is fine) and will upload recordings to a secure password protected google drive (link will be provided by me). The schedule of one coaching session a week and 3 lessons with your child a week will continue until I tell you to stop.

Finally, two weeks after completing the final lesson, you will be asked to administer and video record two final learning checks with your child. You will also be asked to complete an anonymous online questionnaire about your experiences with the coaching/training that you received and your child's literacy experiences at home. Furthermore, your child will be asked questions about their experiences with you during the lessons. You and your child may decline to answer any questions that are presented in the questionnaire.

You and your child can choose to discontinue participation at any time.

#### **RISKS, STRESS, OR DISCOMFORT**

Some caregivers may find it challenging to attend the pre-scheduled virtual coaching sessions. It may also be challenging at times for caregivers to administer the lessons three times a week with their preschool-aged child. Some caregivers may feel uncomfortable sharing personal information or their opinions about the materials or coaching. They may also feel uncomfortable when their responses to the questionnaire at the end of the study are analyzed for the purposes of a study.

#### **BENEFITS OF THE STUDY**

You may not benefit from this study. One potential benefit of participating is that you will get to keep all materials and lessons to utilize in the future with your child if you so choose. Another potential benefit is that you will gain a deeper understanding of phonological awareness skills and will get an idea of the type of skills that your child might be working on at school either now or in the future. An additional benefit is that your child may begin to show improvements in their phonological awareness skills from your working together with them during the lessons.

#### **CONFIDENTIALITY OF INFORMATION**

All data collected will be kept confidential. I will issue you a pseudonym and all your information will be coded with that name. All hard copy data will be stored in a locked filing cabinet. The uploaded video recordings and recorded coaching sessions will be secured safely on my University of Washington issued Google drive folder which is password protected. University staff members may review the data to ensure that it is being done safely and within legal compliance. If this takes place, your records may be reviewed. It is important to note that these staff members will protect your privacy as well.

You will remain identifiable in some of the data that is collected during this study. This includes video recordings of the coaching sessions as well as the uploaded lesson sessions with your child. This identifiable data will also be stored in the password protected University of Washington issued Google drive folder of the lead researcher. You will have the option of reviewing all recordings in which you are identifiable. The information collected as part of this research will not be used or distributed for future research studies. The link between your identifier and the research data will be destroyed after the records retention period required by state and/or federal law.

#### **OTHER INFORMATION**

Participation in this study is completely voluntary. At any time during the study, you may choose to stop participating without penalty or loss of benefits to which you are otherwise entitled. If you decide to consent to participate in this study, you will receive a \$100 gift card as compensation for completion of the study.

If you have any questions about this research study, please contact Erin Anderson at [eem41@uw.edu](mailto:eem41@uw.edu). If you have any questions about your rights as a research subject, please contact Dr. Roxanne Hudson at the University of Washington College of Education, [rhudson@uw.edu](mailto:rhudson@uw.edu).

---

Signature of Researcher

Printed Name

Date

#### **PARTICIPANTS STATEMENT**

This study has been explained to me. I have had a chance to ask questions. If I have questions later about the research, I can contact the lead researcher listed on the first page of this consent form. If I have questions about my rights as a research subject, I can also call the Human Subjects Division at (206)543-0098. I will receive a copy of this consent form.

\_\_\_\_\_ I give permission for the lead researcher to store recorded virtual coaching sessions and lesson recordings that I record to the lead researchers University protected Google drive.

\_\_\_\_\_ I do NOT give permission for the lead researcher to store recorded virtual coaching sessions as well as lesson recordings that I record to the lead researchers University protected Google drive.

I give permission for the lead researcher to give a phonological awareness measure virtually with my child as well as ask them questions about their thoughts about the study.

I do NOT give permission for the lead researcher to give a phonological awareness measure virtually with my child as well as ask them questions about their thoughts about the study.

I give permission for the lead researcher to contact me in the future to clarify information.

I do NOT give permission for the lead researcher to contact me in the future to clarify information.

---

Signature of Participant

Printed Name

Date

## **Appendix B: Lesson Examples**

# Lesson 1

## Lesson components:

- Puppet Play
- Jumping Jingles

## Materials Needed:

- Puppet

**Key Concepts:** Words are made up of smaller parts that we can think and talk about.

We can blend word parts to make real words.

Be sure to video record lesson and upload as directed.

## **Puppet Play (5 min)**

Explain to your child in simple terms that your puppet/stuffed animal can only say word parts, not full words, and that you will need your child's help to figure out what your puppet/animal wants. Make up your own name for the puppet.

**Oh no! Can you help me? This is my puppet /Insert Name/. /Puppet name/ can't say words... S/he can only say word parts. But you can say words. Listen carefully to the word parts that /Puppet name/ says, and then help me say the word that the word parts make.**

Have the puppet say

**Air--plane**

Then say:

**Oh dear. What did s/he say? I think s/he said air and plane what word does that make?**

Guide your child to blend the words to say airplane.

**Airplane! air and plane together make airplane! That's right!**

**Let's see what else /puppet name/ has to say...**

Try some more 2 syllable words with the puppet and continue until your child has mastered them (If your child gets first five correct and is able to do so easily move onto 3-syllables below).

~~tur~~-le  
Pen-guin  
Pic-nic  
Wat-er  
Rain-deer

Chick-en  
Tooth-brush  
Ti-ger  
Don-key  
Pupp-y

**More Support:** If your child is unable to blend word parts to form whole word, model with them and provide as much as little support as they need.

**EASY:** Move to 3-syllable words below.

~~vi-o-lin~~  
~~hur~~-i-cane  
~~happ~~-i-ness  
gin-ger-bread  
~~bi-cy-cl~~  
Sub-ma-rine

Tri-cy-cl  
~~Som~~-brer-o  
~~Ratt~~-le-snake  
~~Sum~~-er-time  
Bull-doz-er  
An-i-mal

Tor-na-do  
Un-der-ground  
com-put-er  
la-dy-bug  
~~Af-ter~~-noon  
Pop-si-cl

### **Jumping Jingles (5 min)**

Have your child stand up with enough room to jump safely. Then, demonstrate a word for them:

Now I am going to say a word. First, I'll say the word, then I'll say the word again and I will jump for each word part.

App-le

Jump once and then again as you say each syllable.

Your turn. App-le. Jump as I say the word parts.

If your child does not respond to the first try, hold their hand and jump together as you say the word parts. If your child needs additional support, you can continue to jump together for word parts.

Here are some 1-2 syllable words:

Ball  
Pan-da  
Blue

App-le  
Wat-er  
Tree

Broth-er  
Kitt-en  
Rabb-it

Sis-ter	So-da	Fish
Can-dy	Ti-ger	Li-on
Book	Cat	Tea-cher
Jack-et	Fa-ther	
Hat	Pig	
Moth-er	cow	
Pen-cil	Flow-er	

### Learning Check 1

Say: I am going to say some words in small parts. We are going to see if you can put the word parts together to make a whole word. It's okay if you aren't sure, just try your best. Be sure to give a 3-second pause between the syllable dashes. If your child doesn't respond within 10 seconds after reading prompt, repeat prompt one time before moving on to next. Remember do not give your child the answers or any help for these learning checks. You do not need to keep track of answers and do not provide any further instruction after the check is complete.

1. What word do these sounds make ball-boy?
2. What word do these sounds make broth-er?
3. What word do these sounds make di-no-saur?
4. What word do these sounds make sis-ter?
5. What word do these sounds make tram-po-line?

Be sure to upload video as directed.

# Lesson 16

## Lesson components:

- Blending Onset-Rime
- Word Birds

## Materials Needed:

- Puppet
- A stuffed bird toy/stuffed animal

**Key Concepts:** We can think of words that sound the same at the end.  
We can blend word parts together to make a word.

Be sure to video record lesson and upload as directed.

## Blending Onset-Rime Activity (5 min)

Explain to your child that your puppet is back and still can only talk in word parts and that you will need your child's help to decipher what your puppet wants. Together you can make up your own name for the puppet.

**Oh no! Can you help me? This is my puppet (puppet name). (Puppet name)can't say words... S/he can only say word parts. But you can say words. Listen carefully to the word parts that (puppet name) says, and then help me say the word that the word parts make.**

Have the puppet say v-at. Then say: **Oh dear. What did S/he say? I think S/he said v-at what word does that make? V-at.**

Guide the child to blend the onset and rime to make sat.

**Vat! That's right!**

**Let's see what else /puppet name/ has to say...**

Begin with these words that start with continuous sounds:

m-an	sh-ell	s-ock
m-ap	l-et	v-at
r-ap	f-in	n-ap
m-ug	s-ing	s-ack
r-ag	l-unch	f-ox

When your child is ready, you can add in words that start with unvoiced stop sounds:

c-at	h-at	p-at
c-an	p-ack	t-all
p-an	t-ack	k-ing
t-an	p-in	p-op
c-ap	ch-in	t-op
t-ap	p-et	t-ug

When your child has mastered that, you can add in words that start with voiced stop sounds:

b-at	d-ell	j-ug
b-an	b-et	b-ug
g-ap	g-et	d-ug
b-ack	j-et	t-ag
b-ag	d-ock	b-ig

### **Word Bird (5 min)**

Put together a list of words your child has been working with from the previous activities, so the words and their rimes are familiar.

Explain the general idea to your child. Say:

**I'm going to say a word and throw you this toy bird/stuffed animal. When you catch the animal, you tell me a word that sounds the same at the end as the word I said.**

If you threw the stuffed animal and said /cat/, your child may produce the rhyming word /hat/ or any other words that rhyme. It's okay if the word is a made-up word as long as it has the same rime sounds. Then say:

**That's great! Good job.**

**Now say: Now you say a word. Then you throw the animal back to me. I will come up with a word that rhymes with it. Then I will say the word and toss the animal back to you.**

Complete this step with your child, then repeat the process, re-iterating the instructions as necessary until your child becomes comfortable with the process.

To challenge your child, consider asking for two words that rhyme with the words you say, not just one. To do this, take a step back to some of the simpler and easier to rhyme words before asking for two rhymes for more difficult to rhyme words. The game is complete when your five minutes is up.

### **Learning Check 16**

Say: **We are going to see if you can tell when words rhyme. It's okay if you aren't sure, just try your best. I'm going to say two words and you tell me if they rhyme by saying yes. If you don't think they rhyme, then say no.** If your child doesn't respond within 10 seconds after reading prompt, repeat prompt one time before moving on to next. Remember do not give your child the answers or any help for these learning checks. You do not need to keep track of answers and do not provide any further instruction after the check is complete.

1. Do flag and flop rhyme?
2. Do fire and tire rhyme?
3. Do mile and tile rhyme?
4. Do flow and fill rhyme?
5. Do band and hand rhyme?

Be sure to upload video as directed.

## Lesson 22

### Lesson components:

- First Sounds Matching Activity
- Odd Sound Out

### Materials Needed:

- first sounds picture cards
- Odd sound out cards

**Key Concepts:** We can listen carefully and isolate the beginning sound.

Be sure to video record lesson and upload as directed.

### First Sounds Matching (5 min)

Say to your child: **We are going to listen carefully to words and figure out the first sound in each one. I'm going to say a word, and if you have the card with the same first sound as that word, you hold it up.**

Hand your child the deer picture card. Have them name the picture and help them say the first sound. For example, deer, /d/.

Then say: **I am going to say a word. If it starts with the same sound as deer, /d/, then you hold your card up. Ready, domino. Does that have the same sound as deer? /d/ domino, /d/ deer. Yes, you hold up your card.**

Read another word that does not start with /d/. **Let's try this one. Crayon. /c/. Does crayon, /c/ have the same sound as deer?**

Help your child figure out if it has the same sound or not. Continue comparing the word deer with the following 5 words:

**Dragon comb Deer Doll coat door**

Then hand your child a new card. Say: **Here's a new card. Two. What is the first sound in Two? /t/. Help your child isolate the first sound in Two. Now continue the activity, but now have your child figure out which cards start with /t/.**

Read these words and isolate the initial sound for your child, then see if they can figure out if it has the same initial sound as /two/.

**table sock fish ticket tree six heart**

Help your child as much as necessary to be successful. As they get more independent, provide less help. Continue activity for 5 minutes.

### **Odd Sound Out (5 min)**

Place initial sound picture cards with the same numbers in front of your child (Pictures may look different than model below).



Give your child the symbol note above with the circle and the line through it.

Say: I'm going to look at each picture and say its name and its first sound. House /h/, helicopter /h/, zebra /zxx/. Which one is not the same?

Touch each picture and say the initial sound. /h/, /h/, /zxx/, this one is different. I'm going to put my card on this one. Zebra starts with a different sound. Now it's your turn.

Place initial sound picture card 2 on the table (two pictures will have the same beginning sound and 1 with a different sound. Help your child name the pictures in the row and say each initial sound. (e.g., lion /lll/, goat /g/, lizard /lll/. Have your child then put the symbol card over the picture that does not have the same initial sound. Provide help isolating the initial sound as needed. Try to complete initial sound picture cards 1-5.

### **Learning Check 22**

Say: We are going to see if you know the first sound in some words. It's okay if you aren't sure, just try your best. If your child doesn't respond within 10 seconds after reading prompt, repeat prompt one time before moving on to next. Remember do not give your child the answers or any help for these learning checks. You do not need to keep track of answers and do not provide any further instruction after the check is complete.

1. What is the first sound in table?
2. What is the first sound in mask?
3. What is the first sound in lake?
4. What is the first sound in park?
5. What is the first sound in rose?

Be sure to upload video as directed.

## **Appendix C: Support Materials for Implementation**

Tech Checklist		
1	I have access to a laptop, cell phone, or tablet with Zoom.	<input type="checkbox"/> Yes <input type="checkbox"/> No
2	I have access to a cell phone or tablet to record lessons.	<input type="checkbox"/> Yes <input type="checkbox"/> No
3	I can access <u>wifi</u> for video coaching calls.	<input type="checkbox"/> Yes <input type="checkbox"/> No
4	I feel comfortable joining a call and using Zoom.	<input type="checkbox"/> Yes <input type="checkbox"/> No
5	I feel comfortable uploading a video to a shared Google folder.	<input type="checkbox"/> Yes <input type="checkbox"/> No

## STEP 1: DOWNLOAD ZOOM

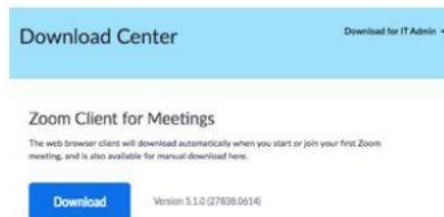
**On an iPhone or iPad:** Go to the Apple App Store and search for “ZOOM Cloud Meetings.” Click “Get” to download and install the Zoom app.



*The Zoom app in the App Store*

**On an Android phone or tablet:** Go to the Google Play App Store and search for “Zoom Cloud Meetings.” Click “Install.”

**On a computer:** On the Download Center website [zoom.us/download](https://zoom.us/download), click “Download” in the “Zoom Client for Meetings” section.

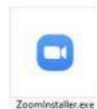


**Click the blue Download button to download Zoom from the website [zoom.us/download](https://zoom.us/download)**

After Zoom is downloaded, you must install it onto your computer.

**If you have an Apple computer, like a MacBook:** Double-click the file called *Zoom.pkg*, which is typically saved to your Downloads folder. The install program opens and guides you through the process.

**If you have a PC:** Double-click the file called *ZoomInstaller.exe* file to install the program.



**Double-click ZoomInstaller.exe to install Zoom on your PC.**

## STEP 2: JOIN A MEETING

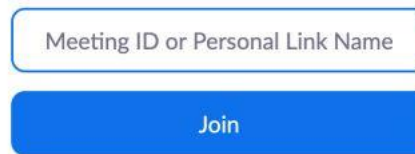
### **JOIN A MEETING**

After you install Zoom, there are a few different ways to join a Zoom meeting. You can click the link in your invitation email, go to the Zoom website and enter the meeting ID, or dial into the meeting on a phone.

**Click the link in an invitation email:** If you have an email invitation, click “Join Zoom Meeting” in that email. This takes you to the Zoom website.

**Go to the Zoom website:** Go to [zoom.us/join](https://zoom.us/join), and enter the 9-digit meeting ID from your invitation email. If the meeting requires a password, that will be in your email, too.

### Join a Meeting



Meeting ID or Personal Link Name

Join

---

When you are on the Zoom website, if you are asked if you want to open Zoom, click “Open zoom.us.” Zoom opens, showing you a preview of your camera image. Then click either “Join with Video” or “Join without Video.” If you use video, other people in the meeting will see you. If not, they will just see your name. Next, Zoom asks about audio. Click “Join with Computer Audio” so you can hear and be heard in the meeting.

**Dial into the meeting on a phone:** If you don’t have access to a computer, tablet, or smartphone, you can use a phone to dial into the meeting. The phone number to use will be in your invitation email, or you can find the number to use in the Zoom International Dial-in Numbers list [zoom.us/zoomconference](https://zoom.us/zoomconference).

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### **STEP 3: PARTICIPATE IN MEETING**

#### **PARTICIPATE IN A MEETING**

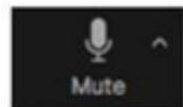
Once you've joined the meeting, you can see and hear other participants. Each participant is represented by a square that displays their face (*if they've chosen to join with video*) or just their name.

If you're in a large meeting, make sure your microphone is muted. Your computer microphone is pretty sensitive, and if you're unmuted, it can pick up a lot of background noise. The mute button, which looks like a microphone, is in the bottom left corner of the Zoom screen. If the microphone has a red line through it, you're muted, and no one in the meeting can hear you.



***If the microphone has a red line through it, you are muted.***

Click the button again to unmute yourself if you want to talk in the meeting.



***If the microphone has no red line through it, you can be heard in the meeting.***

Only one person in the meeting can talk at a time. Zoom indicates who is speaking by highlighting their image with a yellow square.

---

# Upload video files to shared Google Drive

## From your computer

You can upload, view, share, and edit files with Google Drive. When you upload a file to Google Drive, it will take up space in your Drive, even if you upload to a folder owned by someone else.

**Important:** You can upload up to 750GB a day per account.

## Upload files

On your computer, you can upload from [drive.google.com](https://drive.google.com) or your desktop. You can upload files into private or shared folders.


1. On your computer, go to [drive.google.com](https://drive.google.com).
2. Open your participant folder that Erin shared with you.
3. At the top left, click New > File Upload.
4. Choose the video file you want to upload.

## Drag files into Google Drive

1. On your computer, go to [drive.google.com](https://drive.google.com).
2. Open your participant folder that Erin shared with you.
3. To upload video files, drag them into the Google Drive folder.


## From Android phone/tablet

### Upload files

1. On your Android phone or tablet, open the Google Drive app.
2. Tap .
3. Tap Upload.
4. Find and tap the video file you want to upload.
5. Move the video file into your participant folder that Erin shared with you.

## From iphone/ipad

### Upload files

1. On your iPhone or iPad, open the Google Drive app.
2. Tap .
3. Tap Upload.
4. Find and tap the files you want to upload.
5. Move the video file into your participant folder that Erin shared with you.

# **Blendable Sounds Cheat Sheet**

**a- apple**

**b- ball**

**c- cat**

**d- dog**

**e- egg**

**f- fan**

**g- go**

**h- hat**

**i- itch**

**j- jug**

**k- kite**

**l- little**

**m- must**

**n- no**

**o- October**

**p- pan**

**q- queen**

**r- read**

**s- sun**

**t- tip**

**u- up**

**v- vest**

**w- wet**

**x- six**

**y- yellow**

**z- zoo**

## **Appendix D: Outcome Measures**

## Week 1

**Day 1:** Administer the following three tasks with your child. Remember do not give them the answers or any help. **Be sure to video record tasks and upload as directed.**

Say: I am going to say some words in small parts. We are going to see if you can put the word parts together to make a whole word. It's okay if you aren't sure, just try your best. Be sure to give a 3-second pause between the syllable dashes. If your child doesn't respond within 10 seconds after reading prompt, repeat prompt one time before moving on to next.

1. What word do these sounds make tur-tle?
  2. What word do these sounds make an-i-mal?
  3. What word do these sounds make pup-ny?
  4. What word do these sounds make la-dy-bug?
  5. What word do these sounds make cat-boy?
- 

Say: We are going to see if you can tell when words rhyme. It's okay if you aren't sure, just try your best. I'm going to say two words and you tell me if they rhyme by saying yes. If you don't think they rhyme, then say no. If your child doesn't respond within 10 seconds after reading prompt, repeat prompt one time before moving on to next.

1. Do pat and cat rhyme?
  2. Do rat and run rhyme?
  3. Do spot and dot rhyme?
  4. Do sit and pot rhyme?
  5. Do tree and bee rhyme?
- 

Say: We are going to see if you know the first sound in some words. It's okay if you aren't sure, just try your best. If your child doesn't respond within 10 seconds after reading prompt, repeat prompt one time before moving on to next.

1. What is the first sound in tug?
  2. What is the first sound in sun?
  3. What is the first sound in map?
  4. What is the first sound in hip?
  5. What is the first sound in cat?
-

**Day 2:** Administer the following three tasks with your child. Remember do not give them the answers or any help. **Be sure to video record tasks and upload as directed.**

Say: **I am going to say some words in small parts. We are going to see if you can put the word parts together to make a whole word. It's okay if you aren't sure, just try your best.** Be sure to give a 3-second pause between the syllable dashes. If your child doesn't respond within 10 seconds after reading prompt, repeat prompt one time before moving on to next.

1. What word do these sounds make ta-co?
  2. What word do these sounds make co-co-nut?
  3. What word do these sounds make cook-ie?
  4. What word do these sounds make pop-sick-le?
  5. What word do these sounds make post-er?
- 

Say: **We are going to see if you can tell when words rhyme. It's okay if you aren't sure, just try your best. I'm going to say two words and you tell me if they rhyme by saying yes. If you don't think they rhyme, then say no.** If your child doesn't respond within 10 seconds after reading prompt, repeat prompt one time before moving on to next.

1. Do red and bed rhyme?
  2. Do try and dry rhyme?
  3. Do stop and store rhyme?
  4. Do blue and pig rhyme?
  5. Do may and hay rhyme?
- 

Say: **We are going to see if you know the first sound in some words. It's okay if you aren't sure, just try your best.** If your child doesn't respond within 10 seconds after reading prompt, repeat prompt one time before moving on to next.

1. What is the first sound in taco?
  2. What is the first sound in moon?
  3. What is the first sound in lamp?
  4. What is the first sound in pop?
  5. What is the first sound in ring?
-

**Day 3:** Administer the following three tasks with your child. Remember do not give them the answers or any help. **Be sure to video record tasks and upload as directed.**

Say: **I am going to say some words in small parts. We are going to see if you can put the word parts together to make a whole word. It's okay if you aren't sure, just try your best.** Be sure to give a 3-second pause between the syllable dashes. If your child doesn't respond within 10 seconds after reading prompt, repeat prompt one time before moving on to next.

1. What word do these sounds make pur-ple?
  2. What word do these sounds make yell-ow?
  3. What word do these sounds make ba-nan-a?
  4. What word do these sounds make blue-jay?
  5. What word do these sounds make kan-ga-roo?
- 

Say: **We are going to see if you can tell when words rhyme. It's okay if you aren't sure, just try your best. I'm going to say two words and you tell me if they rhyme by saying yes. If you don't think they rhyme then say no.** If your child doesn't respond within 10 seconds after reading prompt, repeat prompt one time before moving on to next.

1. Do blue and glue rhyme?
  2. Do pig and rug rhyme?
  3. Do coat and boat rhyme?
  4. Do cup and cap rhyme?
  5. Do rice and dice rhyme?
- 

Say: **We are going to see if you know the first sound in some words. It's okay if you aren't sure, just try your best.** If your child doesn't respond within 10 seconds after reading prompt, repeat prompt one time before moving on to next.

1. What is the first sound in purple?
  2. What is the first sound in yellow?
  3. What is the first sound in banana?
  4. What is the first sound in cup?
  5. What is the first sound in eat?
-

**Day 4:** Administer the following three tasks with your child. Remember do not give them the answers or any help. Be sure to video record tasks and upload as directed.

Say: I am going to say some words in small parts. We are going to see if you can put the word parts together to make a whole word. It's okay if you aren't sure, just try your best. Be sure to give a 3-second pause between the syllable dashes. If your child doesn't respond within 10 seconds after reading prompt, repeat prompt one time before moving on to next.

1. What word do these sounds make hat-man?
  2. What word do these sounds make ti-ger?
  3. What word do these sounds make el-e-phant?
  4. What word do these sounds make ra-coon?
  5. What word do these sounds make fla-min-go?
- 

Say: We are going to see if you can tell when words rhyme. It's okay if you aren't sure, just try your best. I'm going to say two words and you tell me if they rhyme by saying yes. If you don't think they rhyme, then say no. If your child doesn't respond within 10 seconds after reading prompt, repeat prompt one time before moving on to next.

1. Do tiger and tree rhyme?
  2. Do flower and power rhyme?
  3. Do fast and blast rhyme?
  4. Do deer and car rhyme?
  5. Do pen and den rhyme?
- 

Say: We are going to see if you know the first sound in some words. It's okay if you aren't sure, just try your best. If your child doesn't respond within 10 seconds after reading prompt, repeat prompt one time before moving on to next.

1. What is the first sound in porcupine?
2. What is the first sound in red?
3. What is the first sound in cap?
4. What is the first sound in hummingbird?
5. What is the first sound in water?

**Day 5:** Administer the following three tasks with your child. Remember do not give them the answers or any help. **Be sure to video record tasks and upload as directed.**

Say: **I am going to say some words in small parts. We are going to see if you can put the word parts together to make a whole word. It's okay if you aren't sure, just try your best.** Be sure to give a 3-second pause between the syllable dashes. If your child doesn't respond within 10 seconds after reading prompt, repeat prompt one time before moving on to next.

1. What word do these sounds make por-cu-pine?
  2. What word do these sounds make read-y?
  3. What word do these sounds make pic-ture?
  4. What word do these sounds make hum-ming-bird?
  5. What word do these sounds make water-boy?
- 

Say: **We are going to see if you can tell when words rhyme. It's okay if you aren't sure, just try your best. I'm going to say two words and you tell me if they rhyme by saying yes. If you don't think they rhyme, then say no.** If your child doesn't respond within 10 seconds after reading prompt, repeat prompt one time before moving on to next.

1. Do kite and bite rhyme?
  2. Do dinner and winner rhyme?
  3. Do bush and bread rhyme?
  4. Do rub and tub rhyme?
  5. Do take and track rhyme?
- 

Say: **We are going to see if you know the first sound in some words. It's okay if you aren't sure, just try your best.** If your child doesn't respond within 10 seconds after reading prompt, repeat prompt one time before moving on to next.

1. What is the first sound in bat?
  2. What is the first sound in tiger?
  3. What is the first sound in hippo?
  4. What is the first sound in racoon?
  5. What is the first sound in monkey?
-

## Baseline Probe- Scoring Sheet Week 2

Child #: .....

Day 1 date: \_\_\_\_\_

<b>WORD</b> Syllable level	<b>Correct</b> <b>Response</b>	<b>Incorrect</b> <b>Response</b>	<b>No Response</b> <b>Provided</b>
donkey			
bicycle			
jacket			
rattlesnake			
pencil			

<b>WORDS</b> onset-rime	<b>Correct</b> <b>Response</b>	<b>Incorrect</b> <b>Response</b>	<b>No Response</b> <b>Provided</b>
tall/ball (Y)			
rake/rat (N)			
hand/band (Y)			
dot/pit (N)			
free/key (Y)			

<b>WORD</b> phoneme	<b>Correct</b> <b>Response</b>	<b>Incorrect</b> <b>Response</b>	<b>No Response</b> <b>Provided</b>
bug /b/			
son /s/			
mom /m/			
top /t/			
car /k/			

Child # \_\_\_\_\_

Day 2 date: \_\_\_\_\_

<b>WORD</b>	<b>Correct Response</b>	<b>Incorrect Response</b>	<b>No Response Provided</b>
otter			
computer			
beaver			
tomato			
father			

<b>WORDS</b>	<b>Correct Response</b>	<b>Incorrect Response</b>	<b>No Response Provided</b>
bread/dead (Y)			
cry/fry (Y)			
stand/stomp (N)			
red/peg (N)			
play/day (Y)			

<b>WORD</b>	<b>Correct Response</b>	<b>Incorrect Response</b>	<b>No Response Provided</b>
mask /m/			
love /l/			
pie /p/			
rice /r/			
wish /w/			

---

Child #: \_\_\_\_\_

Day 3 date: \_\_\_\_\_

<b>WORD</b>	<b>Correct Response</b>	<b>Incorrect Response</b>	<b>No Response Provided</b>
teacher			
giraffe			
broccoli			
tulip			
family			

<b>WORDS</b>	<b>Correct Response</b>	<b>Incorrect Response</b>	<b>No Response Provided</b>
fight/right (Y)			
pug/rig (N)			
man/fan (Y)			
sip/sap (N)			
fire/tire (Y)			

<b>WORD</b>	<b>Correct Response</b>	<b>Incorrect Response</b>	<b>No Response Provided</b>
map /m/			
yawn /y/			
beaver /b/			
cart /k/			
park /p/			

---

## Intervention Syllable Learning Checks- Scoring Sheet

Child #: \_\_\_\_\_

Lesson 1 date: \_\_\_\_\_

WORD	Correct Response	Incorrect Response	No Response Provided
hallboy			
brother			
dinosaur			
sister			
trampoline			

Lesson 2 date: \_\_\_\_\_

WORD	Correct Response	Incorrect Response	No Response Provided
chicken			
hurricane			
penguin			
violin			
cartoon			

Lesson 3 date: \_\_\_\_\_

WORD	Correct Response	Incorrect Response	No Response Provided
pizza			
apricot			
cookie			
baker			
fishstick			

Child #: \_\_\_\_\_

Lesson 4 date: \_\_\_\_\_

WORD	Correct Response	Incorrect Response	No Response Provided
spider			
yellow			
recipe			
redo			
raccoon			

Lesson 5 date: \_\_\_\_\_

WORD	Correct Response	Incorrect Response	No Response Provided
dogman			
monkey			
different			
popcorn			
butterfly			

Lesson 6 date: \_\_\_\_\_

WORD	Correct Response	Incorrect Response	No Response Provided
tomato			
milkshake			
pretzel			
crocodile			
water			

Child #: \_\_\_\_\_

Lesson 7 date: \_\_\_\_\_

<b>WORD</b>	<b>Correct Response</b>	<b>Incorrect Response</b>	<b>No Response Provided</b>
president			
sippy			
flower			
octopus			
sandbox			

Lesson 8 date: \_\_\_\_\_

<b>WORD</b>	<b>Correct Response</b>	<b>Incorrect Response</b>	<b>No Response Provided</b>
molecule			
flyswatter			
paper			
family			
father			

### Intervention Onset-Rime Learning Checks- Scoring Sheet

Child #: \_\_\_\_\_

Lesson 11 date: \_\_\_\_\_

WORDS	Correct Response	Incorrect Response	No Response Provided
paper/tree (N)			
car/far (Y)			
mint/hint (Y)			
ant/fly (N)			
bent/dent (Y)			

Lesson 12 date: \_\_\_\_\_

WORDS	Correct Response	Incorrect Response	No Response Provided
king/ring (Y)			
slip/flip (Y)			
kiss/kid (N)			
jet/wet (Y)			
make/mask (N)			

Lesson 13 date: \_\_\_\_\_

WORDS	Correct Response	Incorrect Response	No Response Provided
slip/lip (Y)			
pie/fly (Y)			
nose/fire (N)			
joke/poke (Y)			
like/mean (N)			

Child #: \_\_\_\_\_

Lesson 14 date: \_\_\_\_\_

WORDS	Correct Response	Incorrect Response	No Response Provided
stop/top (Y)			
flat/pat (Y)			
man/mean (N)			
mad/glad (Y)			
ran/time (N)			

Lesson 15 date: \_\_\_\_\_

WORDS	Correct Response	Incorrect Response	No Response Provided
clap/rap (Y)			
cry/try (Y)			
milk/mask (N)			
fill/will (Y)			
stop/sand (N)			

Lesson 16 date: \_\_\_\_\_

WORDS	Correct Response	Incorrect Response	No Response Provided
flag/flop (N)			
fire/tire (Y)			
mile/tile (Y)			
flow/fill (N)			
band/hand (Y)			

Child #: \_\_\_\_\_

Lesson 17 date: \_\_\_\_\_

WORDS	Correct Response	Incorrect Response	No Response Provided
can/mop (N)			
fish/wish (Y)			
flower/power (Y)			
toe/test (N)			
cap/map (Y)			

Lesson 18 date: \_\_\_\_\_

WORDS	Correct Response	Incorrect Response	No Response Provided
try/snow (N)			
bar/far (Y)			
rock/sock (Y)			
love/late (N)			
fin/win (Y)			

Lesson 19 date: \_\_\_\_\_

WORDS	Correct Response	Incorrect Response	No Response Provided
why/see (N)			
bark/sock (N)			
pocket/rocket (Y)			
see/bee (Y)			
sing/wing (Y)			

## Intervention Phoneme Learning Checks- Scoring Sheet

Child #: \_\_\_\_\_

Lesson 21 date: \_\_\_\_\_

WORD	Correct Response	Incorrect Response	No Response Provided
tub /t/			
sat /s/			
mad /m/			
hug /h/			
cap /k/			

Lesson 22 date: \_\_\_\_\_

WORD	Correct Response	Incorrect Response	No Response Provided
table /t/			
mask /m/			
lake /l/			
park /p/			
rose /r/			

Lesson 23 date: \_\_\_\_\_

WORD	Correct Response	Incorrect Response	No Response Provided
party /p/			
yesterday /y/			
basket /b/			
cat /k/			
east /e/			

Child #: \_\_\_\_\_

Lesson 24 date: \_\_\_\_\_

WORD	Correct Response	Incorrect Response	No Response Provided
band /b/			
tissue /t/			
hop /h/			
race /r/			
monster /m/			

Lesson 25 date: \_\_\_\_\_

WORD	Correct Response	Incorrect Response	No Response Provided
popsicle /p/			
rest /r/			
cast /k/			
hungry /h/			
walk /w/			

Lesson 26 date: \_\_\_\_\_

WORD	Correct Response	Incorrect Response	No Response Provided
candle /k/			
ring /r/			
zoo /z/			
me /m/			
talk /t/			

Child #: \_\_\_\_\_

Lesson 27 date: \_\_\_\_\_

WORD	Correct Response	Incorrect Response	No Response Provided
cow /k/			
box /b/			
hand /h/			
ear /e/			
tablet /t/			

Lesson 28 date: \_\_\_\_\_

WORD	Correct Response	Incorrect Response	No Response Provided
rat /r/			
milk /m/			
computer /c/			
nose /n/			
water /w/			

Lesson 29 date: \_\_\_\_\_

WORD	Correct Response	Incorrect Response	No Response Provided
long /l/			
movie /m/			
pack /p/			
gas /g/			
horn /h/			

Child #: \_\_\_\_\_

Lesson 30 date: \_\_\_\_\_

<b>WORD</b>	<b>Correct Response</b>	<b>Incorrect Response</b>	<b>No Response Provided</b>
book /b/			
vote /v/			
pick /p/			
lamp /l/			
dog /d/			

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**Learning Check Week 1:** Administer the following three tasks with your child. Remember do not give them the answers or any help. **Be sure to video record tasks and upload as directed.**

Say: **I am going to say some words in small parts. We are going to see if you can put the word parts together to make a whole word. It's okay if you aren't sure, just try your best.** Be sure to give a 3-second pause between the syllable dashes. If your child doesn't respond within 10 seconds after reading prompt, repeat prompt one time before moving on to next.

1. What word do these sounds make pow-er?
  2. What word do these sounds make tor-na-do?
  3. What word do these sounds make snap-dra-gon?
  4. What word do these sounds make gold-fish?
  5. What word do these sounds make piz-za?
- 

Say: **We are going to see if you can tell when words rhyme. It's okay if you aren't sure, just try your best. I'm going to say two words and you tell me if they rhyme by saying yes. If you don't think they rhyme, then say no.** If your child doesn't respond within 10 seconds after reading prompt, repeat prompt one time before moving on to next.

1. Do car and far rhyme?
  2. Do snake and bake rhyme?
  3. Do tip and flip rhyme?
  4. Do town and cow rhyme?
  5. Do fish and most rhyme?
- 

Say: **We are going to see if you know the first sound in some words. It's okay if you aren't sure, just try your best.** If your child doesn't respond within 10 seconds after reading prompt, repeat prompt one time before moving on to next.

1. What is the first sound in cat?
  2. What is the first sound in fine?
  3. What is the first sound in donut?
  4. What is the first sound in sing?
  5. What is the first sound in hat?
-

**Learning Check Week #2:** Administer the following three tasks with your child. Remember do not give them the answers or any help. **Be sure to video record tasks and upload as directed.**

Say: **I am going to say some words in small parts. We are going to see if you can put the word parts together to make a whole word. It's okay if you aren't sure, just try your best.** Be sure to give a 3-second pause between the syllable dashes. If child doesn't respond within 10 seconds after reading prompt, repeat prompt one time before moving on to next.

1. What word do these sounds make gar-den?
  2. What word do these sounds make but-ter-fly?
  3. What word do these sounds make pur-ple?
  4. What word do these sounds make fam-i-ly?
  5. What word do these sounds make ba-nan-a?
- 

Say: **We are going to see if you can tell when words rhyme. It's okay if you aren't sure, just try your best. I'm going to say two words and you tell me if they rhyme by saying yes. If you don't think they rhyme then say no.** If your child doesn't respond within 10 seconds after reading prompt, repeat prompt one time before moving on to next.

1. Do locket and rocket rhyme?
  2. Do pail and sail rhyme?
  3. Do song and snow rhyme?
  4. Do class and barn rhyme?
  5. Do tire and fire rhyme?
- 

Say: **We are going to see if you know the first sound in some words. It's okay if you aren't sure, just try your best.** If your child doesn't respond within 10 seconds after reading prompt, repeat prompt one time before moving on to next.

1. What is the first sound in tip?
  2. What is the first sound in miss?
  3. What is the first sound in list?
  4. What is the first sound in paper?
  5. What is the first sound in rope?
-

## **Appendix E: Fidelity Measures**

Participant ID:
PA Lesson #:
Observer ID:

Condition	Procedural Item	Observed	Comments
Present in All Conditions	Same caregiver(s) involved	<input type="checkbox"/>	
	Quiet environment	<input type="checkbox"/>	
	Minimal Distractions	<input type="checkbox"/>	
Baseline Only	NO PA instruction provided	<input type="checkbox"/>	
Intervention Only	Materials prepared	<input type="checkbox"/>	
	Caregiver introduced activity	<input type="checkbox"/>	
	Caregiver followed script	<input type="checkbox"/>	
	Caregiver modeled lesson focal skill(s)	<input type="checkbox"/>	
	Caregiver provided child opportunities to practice focal skill(s)	<input type="checkbox"/>	
	Caregiver provided positive encouragement	<input type="checkbox"/>	
	Time spent 15 min or less	<input type="checkbox"/>	
	Caregiver completed lesson check	<input type="checkbox"/>	

Steps Completed: \_\_\_\_\_

(\_\_\_\_\_/) X 100 = \_\_\_\_\_ % accuracy

Date:
Participant ID:
Coaching Session #:
Observer ID:

Did the Coach...	Completed	Comments
<b>Establish a Collaborative Partnership by...</b>		
Greeting caregiver?	<input type="checkbox"/>	
Communicating respectfully by listening fully?	<input type="checkbox"/>	
<b>Plan by...</b>		
Asking caregiver if they have any concerns regarding their child's performance on lessons or learning checks?	<input type="checkbox"/>	
Reviewing key concepts of lessons?	<input type="checkbox"/>	
Developing/Reviewing specific lesson components?	<input type="checkbox"/>	
<b>Modeling &amp; Practicing by...</b>		
Coach modeling skill/strategy?	<input type="checkbox"/>	
Asking caregivers if they want to practice strategy/lesson component?	<input type="checkbox"/>	
Asking if caregiver has any questions?	<input type="checkbox"/>	
Closing (Thank you, note next coaching session)?	<input type="checkbox"/>	

Steps Completed: \_\_\_\_\_

(\_\_\_\_\_/9) X 100 = \_\_\_\_\_% accuracy

Date:
Participant ID:
Coaching Session #:
Observer ID:

Did the Coach...	Completed	Comments
<b>Establish a Collaborative Partnership by...</b>		
Greeting caregiver?	<input type="checkbox"/>	
Communicating respectfully by listening fully	<input type="checkbox"/>	
<b>Reflect by...</b>		
Reviewing edited video recording snippets of lesson?	<input type="checkbox"/>	
Highlighting strengths from video recorded lessons?	<input type="checkbox"/>	
Discussing what went well for caregivers and/or what challenges they experienced with their child during the lesson?	<input type="checkbox"/>	
Brainstorming adjustments/modifications as necessary?	<input type="checkbox"/>	
Asking if caregiver has any questions?	<input type="checkbox"/>	
Closing (Thank you, note next coaching session)?	<input type="checkbox"/>	

Steps Completed: \_\_\_\_\_

(\_\_\_\_\_/8) X 100 = \_\_\_\_\_ % accuracy















## **Appendix F: Social Validity Measures**

	<b>Strongly Agree</b>	<b>Agree</b>	<b>Neither Agree nor Disagree</b>	<b>Disagree</b>	<b>Strongly Disagree</b>
I believe that the coaching that I received deepened my understanding of phonological awareness.					
I believe that the coaching I received aided in my ability to implement the lessons with my child.					
I believe that the coaching I received impacted my child's phonological awareness skills development.					
I believe that the coaching I received helped me improve my child's literacy skills.					
During the coaching process, I believe that viewing the video clips positively impacted my confidence.					
During the coaching process, I felt supported and encouraged.					
During the coaching process, I had opportunities to practice lesson activities.					
During the coaching process, I found models of lesson activities helpful.					
During the coaching process, I found the amount of time devoted to coaching sessions reasonable.					
During the coaching process, my confidence					

in doing the lessons grew.					
During the coaching process, I formed a trusting partnership with the coach.					
If offered in the future I would participate in a coaching relationship to learn new ways to engage in early literacy experiences with my child.					
I believe the coaching I received was a positive experience.					
Overall, I believe that my child made growth on their phonological awareness skills.					

**Open Ended Questions:**

1. What were the beneficial components of the coaching process?
2. What were the challenging components of the coaching process?
3. What specific aspects of the coaching process would you recommend changing for future use?
4. What other information/comments would you like to share about the coaching process?

	YES	NO
<b>I liked the activities.</b>		
<b>I liked the games.</b>		
<b>The materials were fun.</b>		
<b>I had fun doing these things with my caregiver.</b>		
<b>I learned a lot by doing these lessons.</b>		
<b>My caregiver helped me when I needed help.</b>		
<b>I would like to do more lessons like these with my caregiver.</b>		

**Open Ended Questions:**

1. What was your favorite part of these lessons?
2. What part of the lessons did you not like?
3. How would you say you learned by doing these lessons?
4. What else do you want to tell me about this experience?